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Queensland Fire and Emergency Services
02-Apr-2019

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

Preliminary Site Investigation & Sampling, Analysis and Quality Plan

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

Client: Queensland Fire and Emergency Services

ABN: 93035163778

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Abbreviations

Abbreviation	Description
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
AHD	Australian Height Datum
ANZG	Australia and New Zealand Guidelines
ASC	Assessment of Site Contamination
ASRIS	Australian Soil Resource Information System
ASS	Acid Sulfate Soils
ATC	Alcohol Type Concentrate
CLID	Contaminated Land Investigation Document
CLR	Contaminated Land Register
COC	Chain of Custody
COPC	Chemicals of Potential Concern
CSM	Conceptual Site Model
DES	Department of Environment and Science
DNRM	Department of Natural Resources and Mines
DO	Dissolved Oxygen
DQI	Data Quality Indicators
DQO	Data Quality Objectives
DSI	Detailed Site Investigation
EC	Electrical Conductivity
ECF	Electrochemical Fluorination
EMR	Environmental Management Register
EPP (Waters)	Environmental Protection Policy (Waters)
ESA	Environmentally Sensitive Areas
EV	Environment Value
FSANZ	Food Standards Australia New Zealand
GDE	Groundwater Dependent Ecosystems
HEPA	Heads of Environment Protection Authority
IBC	Intermediate Bulk Container
LOR	Limit of Reporting
mbgl	Metres Below Ground Level
NAPL	Non-Aqueous Phase Liquid

Abbreviation	Description
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
NRME	[Department of] Natural Resources, Mining and Energy
NSW OEH	New South Wales Office of Environment and Heritage
ORP	Oxidation / Reduction Potential
PFAA	Perfluoroalkyl acids
PFAS	Per- and Poly-Fluoroalkyl Substances
PFCA	Perfluorinated carboxylates
PFHxS	Perfluorohexane sulfonate
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PFSA	Perfluorinated sulfonates
POP	Persistent Organic Pollutant
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance / Quality Control
QFES	Queensland Fire and Emergency Services
RGWB	Registered Groundwater Bore
RPD	Relative Percent Difference
SAQP	Sampling, Analysis and Quality Plan
SHEMP	Safety, Health and Environmental Management Plan
SOP	Standard Operating Procedure
SPR	Source Pathway Receptor
SWL	Static Water Level
SWMS	Safety Work Method Statement
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TOPA	Total Oxidisable Precursor Assay
US EPA	United States Environmental Protection Agency
UST	Underground Storage Tank
WRC	Whitsundays Regional Council

Glossary of Terms

Term	Definition
Aquifer	Geologic formation, group of formations, or part of a formation capable of transmitting and yielding economic or significant quantities of water.
Aquitard	Geologic formation, group of formations, or part of a formation capable of yielding quantities of water, but not in economic or significant quantities.
Bore	A cylindrical drill hole sunk into the ground from which water is pumped for use or monitoring.
Borehole	A hole produced in the ground by drilling for the investigation and assessment of soil and rock profiles.
Discharge	A release of water from a particular source.
Drainage	Natural or artificial means for the interception and removal of surface or subsurface water.
Finished Foam	Finshed foam is formed following aeration of the foam concentrate.
Groundwater	Water located within an aquifer; that is, held in the rocks and soil beneath the earth's surface.
Groundwater monitoring well	A bore which has been specifically constructed to allow groundwater measurements to be taken and groundwater samples to be collected.
Groundwater recharge	A hydrologic process by which water enters the aquifer by moving downwards from surface water to groundwater.
Hydrogeology	The study of subsurface water in its geological context.
Hydrology	The study of rainfall and surface water runoff processes.
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment.
Perched water	Unconfined groundwater held above the water table by a layer of impermeable rock or sediment.
Pollutant	Any matter that is not naturally present in the environment.
Runoff	The portion of water that drains away as surface flow.
Saturated zone	This portion of the subsurface below the groundwater table in which all pores in the soil and rock are completely filled with water.
Stormwater	Water that travels through drains following precipitation events.
Surface water	Water flowing or held in streams, rivers and other wetlands in the landscape.
Tributary	A river or stream flowing into a larger river or lake.
Unsaturated zone	The portion of the subsurface above the groundwater table. The soil and rock in this zone contains air as well as water in its pores.
Water table	The surface of saturation in an unconfined aquifer at which the pressure of the water is equal to that of the atmosphere.

Executive Summary

Queensland Fire and Emergency Services (QFES) has engaged AECOM Australia Pty Ltd (AECOM) to undertake an evaluation of concentration and distribution of per- and poly-fluoroalkyl substances (PFAS) at six fire and rescue stations in Queensland. The six fire and rescue stations (referred to as 'sites' or 'fire stations' in this report) are located at Airlie Beach, Ayr, Gladstone, Home Hill, Proserpine and Toowoomba. Historical practices and operations at the QFES facilities may have included the use of firefighting foam containing PFAS. There have been no previous environmental investigations undertaken to characterise the potential presence of PFAS in environmental media (such as soil and groundwater) beneath these six fire stations.

The overarching purpose of the works is to characterise the potential for PFAS impacts at the six sites, including the concentration and distribution of PFAS in environmental media, within and at the boundaries at each of the six fire stations. This report has been completed in accordance with Australian guidance for investigation of sites potentially impacted by PFAS including the *National Environmental Protection Council (NEPC), National Environmental Management (Assessment of Site Contamination) Measure (1999, as amended 2013)* (NEPC, 2013) and the PFAS *National Environmental Management Plan* (HEPA, 2018).

This report presents a preliminary site investigation for each fire station, which included reviews of the site and environmental setting, the findings of the site visits and anecdotal information obtained regarding historical operations and practices. The report has identified that firefighting foams containing PFAS (3M Lightwater) have been stored at all six fire stations with training exercises using foam conducted on all the sites. Some data gaps have been identified during the reviews including the limited information available on the training exercises using foam at the sites (such as the frequency of training, the volumes used and the clean-up activities), the brands of firefighting foams used prior to 3M Lightwater and the potential for PFAS within these foams. However, it is considered that there is sufficient information available on historical practices for the purposes of this report.

The information obtained during the data reviews has been used to develop a preliminary PFAS conceptual site model and complete a qualitative assessment of the source-pathway-receptor linkages. The results of this assessment have identified the potential for complete exposure pathways to exist at the sites and detailed site investigations would be required to understand the risk profile at each site.

Based on the data reviews, a site investigation design has been proposed for each of the six fire stations. A sampling, analysis and quality plan has been developed for completion of these detailed site investigations, which includes best practice procedures for PFAS investigations to collect representative samples of surface water, groundwater, soil and sediment in accordance with established and recognised methodology.

1.0 Introduction

1.1 Background

Queensland Fire and Emergency Services (QFES) has engaged AECOM Australia Pty Ltd (AECOM) to undertake an evaluation of concentration and distribution of per- and poly-fluoroalkyl substances (PFAS) at six fire and rescue stations in Queensland. The stations (referred to as 'sites' or 'fire stations' in this report) are located at Airlie Beach, Ayr, Gladstone, Home Hill, Proserpine and Toowoomba. The location and layout of these six sites are presented in **Figure F1** to **Figure F12**, **Appendix A**.

Historical practices and operations at the QFES facilities may have included the use of firefighting foam containing PFAS. There have been no previous environmental investigations undertaken to characterise the potential presence of PFAS in environmental media (such as soil and groundwater) beneath these six fire stations.

1.2 Objectives

The overarching purpose of the works is to characterise the potential for PFAS impacts, including concentration and distribution in environmental media, within and at the boundaries at each of the six fire stations.

The specific requirements of this phase of works are to:

- Conduct a preliminary site investigation (PSI) to establish site history and site and environmental setting at each of the six fire stations
- Develop a sampling, analysis and quality plan (SAQP) for detailed site investigations (DSIs) at each of the six fire stations. This includes establishing the procedure for the collection of relevant samples of surface water, groundwater, soil and sediment at each site in accordance with established and recognised methodology
- Provide budget estimates for DSIs at each fire station in accordance with the SAQP. The budget estimates have been provided to QFES under separate cover
- Complete the PSI and SAQP in accordance with Australian guidance for investigation of sites potentially impacted by PFAS including the *National Environmental Protection Council (NEPC), National Environmental Management (Assessment of Site Contamination, (ASC)) Measure (NEPM) (1999, as amended 2013)* (NEPC, 2013) and the PFAS *National Environmental Management Plan* (Heads of Environmental Protection Agencies (HEPA), 2018).

1.3 Scope of Work

To achieve the objectives listed above, the following activities were completed:

- Review of the site and environmental setting for each of the six sites (presented in **Sections 3.0** to **8.0**), including:
    - Site history and historical aerial photography review
    - Search of the Queensland Government databases (Environmental Management Register, Contaminated Land Register, registered groundwater bore (RGWB) database, Queensland Globe database
    - Review of analytical results of samples collected from the six sites and any other environmental investigation results provided by QFES
    - Review of geological/hydrogeological, topographic, zoning, land use and other environmental maps and plans
    - Site visit to inspect each site and surrounding land use

  - Interviews with current QFES staff to acquire anecdotal information concerning use of firefighting foams at each of the six sites

- Development of a conceptual site model (CSM) and qualitative assessment of source-pathway-receptor linkages (presented in **Section 9.0**)
- Development of an overarching SAQP which includes targeted site investigation design at each site (presented in **Section 10.0**).

2.0 Background to PFAS and Regulatory Framework

2.1 Background to PFAS

Class B fluorine-containing firefighting foams (firefighting foams) are used for their effectiveness in extinguishing flammable liquid fires and include fluoroprotein, aqueous film forming foam and film forming fluoroprotein foam. Firefighting foams have been used in Australia since the 1960s and have been mainly stored and used for fire suppression and firefighting training at military installations and civilian airports, as well as at petroleum refineries, at storage facilities and at chemical manufacturing plants.

Foams are supplied as concentrates, which are then mixed with water and air to form firefighting foam. PFAS are a complex family of more than 3,000 man-made fluorinated organic chemicals (Wang *et al.*, 2017) that have been produced since the mid-20th century (see **Plate 1**).

Firefighting foams are estimated to contain between 200 and 600 types of PFAS (PFAS National Environmental Management Plan (NEMP), (HEPA 2018) with both known and unidentified PFAS of differing molecular structures present in varying proportions. Foams were produced to meet firefighting performance specifications rather than formulated to contain a specified mixture of PFAS. PFAS have been produced using two main manufacturing processes, electrochemical fluorination (ECF) and telomerisation. ECF has been used since the 1940s and produces a mixture of even and odd numbered carbon chain lengths of approximately 70% linear and 30% branched substances (Interstate Technology and Regulatory Council (ITRC), 2017). Telomerisation has been used since the 1970s and produces mainly even numbered, straight carbon chain isomers.

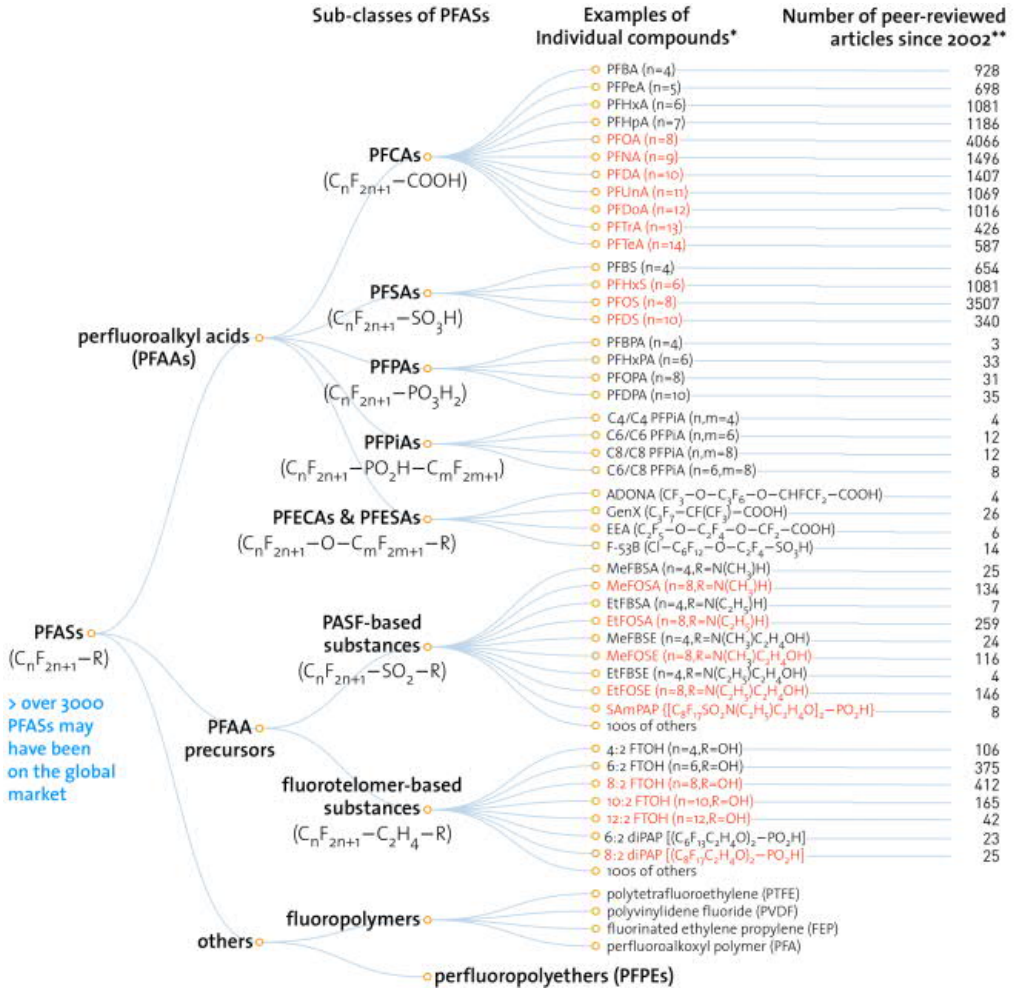


Plate 1 PFAS sub classes (Plate sourced from (Wang et al., 2017))

Since the late 1990s, environmental researchers have identified PFAS as being environmentally persistent and non-biodegradable, meaning these compounds can travel long distances when released into the environment. They are leachable from soil, mobile in groundwater, and are considered to be bioaccumulative. Research into the potential human health and ecological effects associated with these compounds is currently ongoing, but these chemicals have been identified as emerging environmental chemicals of potential concern (COPC).

The awareness and emphasis on various PFAS is at an early stage and evolving. The early focus has been on two of the longer fluorinated carbon chain perfluoroalkyl acids (PFAAs), namely perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). PFOS is listed under the Stockholm Convention as a Persistent Organic Pollutant (POP, May 2009[1]). PFOA, its salts and PFOA-related compounds were nominated in 2015, and the earliest date for listing is 2019. Australia has not yet ratified the listing of PFOS (or potential future listing of PFOA). Ratification would require acceptance of international standards, including requirements relating to waste that has PFOS or PFOA, or related chemicals, above agreed limits.

There is also increasing focus on perfluorohexane sulfonate (PFHxS), PFOS and PFOA homologues, precursors and transformation compounds. PFHxS has been identified for specific assessment by Food Standards Australia and New Zealand (FSANZ, 2017).

At the time of preparing this report, Australian analytical laboratories, using National Association of Testing Authority accredited methods, are currently able to analyse for around 30 PFAS. An analytical technique to assess the potential presence of carboxylic and sulfonic acid precursor compounds, which may not be detected using standard analysis, is currently available and termed 'total oxidisable precursor assay' (TOPA). The complexity of these potential contaminants including the lack of identification of the compounds in use, their combinations, transformation products and their behaviours contributes uncertainty to the assessment of the risks of the possible health and environmental effects. Development of environmental criteria in Australia to date has focused on PFOS, PFOA and PFHxS.

2.2 Overview of Practices and Migration Processes Relevant to PFAS

2.2.1 Practices and Mechanisms for Release of PFAS

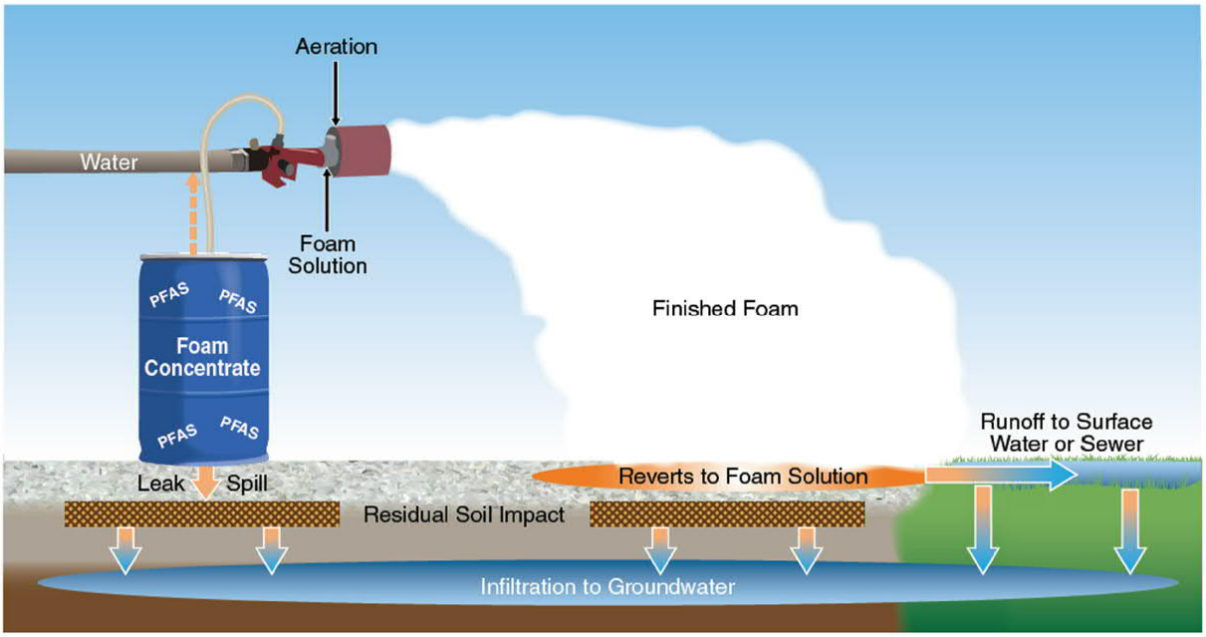
Firefighting foams used at the six sites have the potential to be released into the environment through a variety of practices and mechanisms including the following:

- Low volume release of foam concentrate during storage, transfer or equipment calibration
- Moderate volume discharge of foam solution for apparatus testing
- Occasional high volume discharge of foam solution for firefighting and fire suppression / prevention
- Periodic discharge for firefighting training
- Leaks from foam distribution piping between storage and pumping locations.

The use of firefighting foam involves mixing foam concentrate and water to make foam solution. When applied to a fire, the foam solution is aerated at the nozzle to produce finished foam. During training or an incident, thousands of litres of foam solution may be applied. This is shown graphically in **Plate 2**.

[1] Stockholm Convention on Persistent Organic Pollutants, United Nations Environment Program (UNEP), May 2009.

Plate 2 Release of firefighting foam (ITRC 2017)



2.2.2 Migration Processes

PFAS are moderately to highly soluble, depending upon the individual PFAS chemical structure. They can be readily dissolved/leached by infiltrating rainwater, groundwater or surface water, and are readily transported away from source areas. The key migration processes for PFAS in water at the fire stations are considered to include transport in stormwater drains and groundwater flow.

2.2.2.1 Unsaturated Zone Transport

Some PFAS can leach from soils and pavements under neutral water[2] conditions. Consequently, the infiltration of water through the soil profile may mobilise some PFAS adsorbed onto and situated within the pore spaces of soil particles (although the rate of mobilisation can be impacted by the soil chemistry and the PFAS chain length and ionic composition). PFAS precursors may also degrade to generate PFOS and PFOA and other shorter chained PFAS in certain physicochemical environments down hydraulic gradient of identified sources.

2.2.2.2 Wastewater and Stormwater Transport

Following release events, finished foam (i.e. following aeration of the foam concentrate and which potentially contained PFAS) can enter stormwater or sewerage systems. Standard treatment of wastewater at the six sites is considered unlikely to have been effective in removing PFAS. General treatment plant processes, for example sedimentation, clarification and aerobic biodegradation of organic matter, can result in changes in PFAS concentration such as an increase in concentrations of PFAAs in the effluent, due to degradation of precursor compounds.

2.2.2.3 Groundwater Transport

The five general processes used to describe the fate and transport of contaminants such as PFAS in groundwater (Domenico and Schwartz, 1990) are:

1. Advection – transport in groundwater flow
2. Diffusion – molecular diffusion in an aquifer, independent of flow
3. Dispersion – hydrodynamic spreading of a contaminant
4. Adsorption and desorption – retardation of transport

[2] Neutral water conditions are considered to be water with a pH of greater than 6 and less than 8.

5. Degradation – biodegradation of long-chain fluorocarbons.

PFAS investigations have indicated some PFAAs (such as PFOS and PFOA) appear to have little contaminant transport retardation (i.e. adsorption or degradation) based on the extent of the observed contaminant plume and properties of identified PFAS. This is likely the result of the hydrophilic properties of the functional end groups of some PFAS. These and other physicochemical properties will, in some instances, prevent PFAS from adsorbing to most soil particles. PFOS and PFOA are understood to be transported at nearly the same rate as groundwater or surface water (FSANZ, 2017).

As PFAS are transported with water, the concentrations will generally decrease with distance from the source area due to the processes of advection, diffusion and dispersion. The environmental fate of the PFAS contaminant mass is expected to be significantly influenced by groundwater movement, extraction of groundwater and surface water drainage away from a source.

While data are limited, based on a literature review, it is generally considered that PFOS, PFOA and PFHxS are persistent contaminants in the environment, and PFOS has been listed as a persistent organic pollutant under Annex B of the Stockholm Convention since 2009.

2.3 Uncertainties in Assessing PFAS

Of the hundreds of PFAS identified in firefighting foams, toxicological and ecotoxicological data are only available for a few individual compounds (PFOS, PFHxS and PFOA). It should be noted that PFAS are always found as complex mixtures and it is currently unclear if the toxicity of the compounds will act in an additive, synergistic or antagonistic manner. The amount and variety of the different compounds can also be influenced by the nature of the source (i.e. the potential for different active ingredients in the firefighting foam over time), the amount of time the PFAS has been present in the environment, movement and dispersion from the source and the characteristics of the environment.

2.4 Relevant Regulation and Guidance

This report has been prepared with reference to the following legislation and guidance.

Environmental Protection (Water) Policy, 2009

The principal legislative basis for water quality management in Queensland is the Environmental Protection (Water) Policy (EPP), 2009, which identifies a process for identifying environmental values of waterways and establishing corresponding water quality objectives to protect identified environmental values. The relevant environmental values for the area each fire station is in may include some or all of the following: aquatic ecosystems, irrigation, farm supply/use, stockwater, human consumption, primary recreational use (i.e. swimming), secondary recreational use (i.e. boating), visual recreation, drinking water, industrial use and cultural and spiritual values.

National Environment Protection (Assessment of Site Contamination [ASC]) Measure (NEPM) 1999, amended April 2013

The ASC NEPM provides guidance on the assessment and remediation of contaminated sites, investigation levels, laboratory analysis procedures, human health and ecological risk assessment methodology, risk communication and community consultation and health and safety issues related to site assessment and remediation. Schedule A of the amended ASC NEPM identifies the tiered process to be followed in the assessment of site contamination, namely: preliminary investigation, detailed investigation and risk assessment. Schedule B of amended ASC NEPM provides detailed guidance for data collection, sample design and reporting. The 2013 amendment to Schedule B of the ASC NEPM includes more detailed and specific guidance on site assessment and human health and ecological risk assessment. The amended ASC NEPM also requires consideration and assessment of ecological risk at all contaminated sites. The methodology used by AECOM followed the tiered process presented in the ASC NEPM.

National Environmental Management Plan (NEMP), HEPA 2018

In January 2018, the PFAS NEMP was issued (HEPA, 2018). This document provides a nationally consistent practical risk based framework for the assessment and management of PFAS contamination. The plan provides guidance on the sampling of material potentially contaminated with PFAS, sets out health and environmental guideline values for use in site investigations in Australia and

provides guidance on a range of other issues including the reuse of PFAS contaminated materials, treatment and remediation and landfill disposal.

At the time of preparation of this report, ecological screening guideline values for protection of marine waters are in development. Proposed screening guideline values are identified in *CRC CARE Technical Report 43. Practitioner guide to risk-based assessment, remediation and management of PFAS site contamination* (CRC CARE, 2018), however, these have not yet been adopted.

At the time of preparing this report, a draft version of the NEMP (v2.0) has been issued for consultation (HEPA, 2019).

Queensland Auditor Handbook Module 6 (DES, 2018)

Although there is no statutory requirement for a Contaminated Land Investigation Document (CLID) to be produced, QFES has requested that the detailed site investigation complies with the Queensland Auditor Handbook for Contaminated Land. Module 6 of the handbook describes the required content of a CLID including the requirement for a site suitability statement in accordance with section 389(2)(a) of the Environmental Protection Act 1994.

3.0 Airlie Beach Fire Station Data Review

3.1 Site Setting

3.1.1 Site Identification

Airlie Beach Fire Station is located in the suburb of Mandalay, approximately 2 km southeast of Airlie Beach City Centre. The fire station is accessed from Shute Harbour Road, refer to **Figure F1** and **Figure F2** in **Appendix A**. Site identification details are shown in **Table 1**.

Table 1 Airlie Beach Fire Station Site Identification

Item	Details
Site Address	2495 Shute Harbour Road, 4802
Registered Site Owner	The State of Queensland
Site Occupier	QFES
Local Government Area	Whitsunday Regional Council
Current Zoning	Special Use
Future Zoning	Community facilities
Lot and Plan	Lot 276 / HR1926
Tenure	Freehold
Latitude / Longitude	-20.27797, 148.72772
Site Area	4,930m^2
Current / Future Site Use	Fire Station

3.1.2 Site Inspection and Interview

A site visit was completed on 13 February 2019 by an AECOM environmental scientist accompanied by QFES representatives (Inspectors Russell Collier and Mat McFarlane) and the findings are summarised below. Photographs taken during the site visit are included in **Appendix B**.

3.1.2.1 Site Infrastructure and Features

The site layout is detailed on **Figure F2** in **Appendix A**. The site is rectangular with buildings in the western and north-western portion of the site with the central, southern and eastern areas consisting of roadways and grassed areas. The main buildings on-site are the Engine Room and offices (in the southwest) and training rooms, a storage shed and workshop/gym located along the north-western site boundary. Training facilities (including heat and smoke training) are located in the northern corner of the site. The Engine Room houses two fire-fighting appliances (i.e. fire trucks). The station is crewed by permanent roster of four firefighters and an ancillary crew of four firefighters after regular hours and on weekends. Approximately 40% of the site is sealed by concrete and the remainder is unsealed / grass cover.

A concrete in-ground water tank used for pump testing and water drafting training (Case 4 Pit), with dimensions 1600 x 1000 x 1800 mm and a capacity of 2,830 L, was located near the southeast site boundary. The Case 4 Pit was covered by a steel plate that did not prevent water ingress and has since been decommissioned and backfilled with sand and capped with concrete.

No existing groundwater monitoring wells were observed during the site visit.

Stormwater is collected in a concrete spoon drain located along the western boundary and an earth drain located along the eastern boundary. Surface water also flows towards the north-eastern corner of the site, a topographic low point where surface water is known to pool. No evidence of an

underground stormwater drainage system (i.e. manholes) was observed. In-ground hydrants are present across the site for training purposes.

3.1.2.2 Interview Information

An interview was conducted with Russell Collier, the QFES Area Commander who has worked in the Mackay region for 30 years (i.e. since the late 1980s). The QFES representative reported that foam concentrate has been used at the station during this time. Protein foams were used at the site before the station switched to aqueous film-forming foam (AFFF) during the 1990s (identified as 3M Lightwater in QFES, 2016). In 2003 3M Lightwater fluorinated foams were removed by a contractor and replaced with a non-fluorinated 3M RF3x6 and RF6 alcohol type concentrate (ATC) foam. The foam was later rebranded from 3M to Solberg. Datasheets for 3M Lightwater and RF3x6 are presented in **Appendix C**).

No infrastructure (such as tanks) was used to store foam concentrate. Historically fire appliances did not have on-board foam tanks. Foam remained in the 20 L containers received from the supplier and was historically stored in either the shed or workshop located along the western boundary. Foam concentrate was used for training purposes on site, however due to the expense, use of foams was limited. The QFES representative could not recall how out of date foams were disposed of. It is considered possible that they may have been used for training purposes.

The QFES representative was not aware of any incidents where foam concentrate was inadvertently discharged at the site. Minor spills may have occurred during decanting foam concentrate from containers, however, it was noted that there was little need for decanting on site as foam concentrate was historically pumped directly from the container into the fire appliance using a spear.

There was no register to record historical foam usage at the site; the current system allows for recording of foam volumes and requires a risk assessment to be completed prior to use / training.

The QFES representative also identified that the site may be sited on a former landfill. (Refer to the discussion on surrounding landuse in **Section 3.1.3**).

3.1.3 Surrounding Land Use

The site is surrounded by recreational land, residential and commercial businesses. Commercial businesses continue further south east of the site. Shute Harbour Road is located on the western site boundary. Details of surrounding land uses are provided in **Table 2** below.

Table 2 Airlie Beach Fire Station Surrounding Land Use

Direction	Land Use
West	Shute Harbour Road bounds the site to the west.
Southwest	Shute Harbour Road bounds the site to the southwest, beyond which are residential properties and bushland.
South	Shute Harbour Road bounds the site to the south, beyond which are residential properties along Shute Harbour Road. A caravan park 'Island Gateway Holiday Park' is located at the intersection of Shute Harbour Road and Jubilee Pocket Road.
Southeast	Airlie Beach Bowls Club bounds the site to the southeast. Beyond are commercial properties. Adjacent to these businesses, Campbell Creek traverses north beneath Shute Harbour Rd and eventually into Pioneer Bay.
East	The Police and Community Youth Clubs (PCYC), Whitsunday Sports Park bounds the site to the east. Beyond is bushland that extends to a nearby creek which flows into Pioneer Bay.
North, Northeast and Northwest	PCYC Whitsunday Sports Park bounds the site to the northeast. Beyond is undisturbed bushland with a boat yard 'Edge's Boatyard' located approximately 520m to the northeast. Car parking areas for the sports park are present beyond the north and north-western boundaries beyond which is bushland and Pioneer Bay. Residential properties are present approximately 450m to the northwest. The sports field was reported by the QFES representative to be on a former landfill site.

3.1.4 Title Search

A copy of the current title, reference 50268219 is included in **Appendix D**. The site owner is listed as The State of Queensland.

3.1.5 Environmental Management Register (EMR) / Contaminated Land Register (CLR)

A search of the Department of Environment and Science (DES) EMR and CLR for Lot 276 Plan HR1926 indicated that the site is not included on either the EMR or CLR. The search result is included in **Appendix E**.

3.1.6 Historical Aerial Photographs

Historical aerial photographs sourced from QImagery online mapping portal for the site have been reviewed. The available photographs cover a period of 72 years between 1945 and 2017. Aerial photographs were reviewed at intervals of 1 to 13 years (at the most appropriate scale) to allow for tracking of changes in use of the site and surrounding properties over time (see **Appendix F**). The key observations made during the review of aerial photographs are summarised in **Table 3** as follows:

Table 3 Historical Aerial Photography Review for Airlie Beach Fire Station

Date	Description	Scale / Photo No.
1945	Site is undeveloped along with surrounding areas. Minor development on coastline west of the site. No development present onsite. Minor roads and buildings developed to the west along coastline.	Qimagery 1:33,700 MAP120 Frame 5020
1960	Site is undeveloped. Shute Harbour Road and Jubilee Pocket Road are constructed with some minor dwellings nearby. Agricultural activities are present southeast near Campbell Creek.	Qimagery 1:21,800 QAP1144/61
1970	Development/activity onsite. Dwelling numbers increased with some clearing undertaken to the southeast.	Qimagery 1:24,000 QAP2214/44
1975	Development undertaken onsite, possibly the fire station. Minor increase in agricultural land and number of dwellings.	Qimagery 1:30,000 QAP2974/174
1985	The Fire Station has been constructed with the building and slab visible. Possible use of a scrap yard/dump to the northeast of the site. Building constructed adjacent to the northern boundary. Some residential expansion to the south. 'Edge's Boatyard' and 'Island Gateway Holiday Park' are developed.	Qimagery 1:4,900 QAP4445/2607
1996	Fire station concrete slab expansion. Airlie Beach Bowls Club to the south east is constructed along with the PCYC Sports Park to the east. Residential density increasing to the south and south east. Agricultural area has reduced. Development of the commercial area is underway to the southeast.	Qimagery 1:10,000 QAP5524/151
2001	No significant changes to site or surrounding area.	Qimagery 1:7,500 QAP5878/64
2004	No significant changes to site. Airlie Beach Skate Park developed adjacent to the northern boundary.	Qimagery 1:37,500 QAP6141/102
2017	Fire Station concrete slab and building has further expanded. Development of commercial industries and residential properties to the southeast.	Qimagery 1:9,000 L16-7480E-3624N

In summary, development of the site does not occur until circa 1975. Imagery from 1975 is poor quality but depicts a building onsite. This may be the fire station. Expansion of the concrete slab is observed in 1996 and 2017. Other than the construction of various buildings and concrete slab, the site appears to have undergone little change. Review of the aerial photographs could not confirm if the site or surrounding area to the northeast was historically used for landfill.

3.1.7 Review of Potential for Off-Site Sources of PFAS

Review of the land use of the area within 4 km of the site has identified the following potential off-site sources of PFAS:

- A possible former landfill beneath PCYC Whitsunday Sports Park to the north-east of the site
- The Port of Airlie, located approximately 600m to the north west
- Whitsunday Airport, located approximately 3 km to the east of the site.

The potential for other off-site sources of PFAS to be present in the area cannot be discounted.

3.1.8 Review of Previous Environmental Reports

A report supplied by QFES (*Report on In-ground Tank Water Contamination by PFAS v1.3* (QFES, 2016) indicated that five water samples were collected from the Airlie Beach station. Two water samples from the Case 4 Pit and two town (tap) water samples and a rinsate sample. Samples were analysed for PFAS and TOPA. Results are presented for 'tap' and 'sample'. The Case 4 Pit sample indicated the total PFAS concentration was 0.12 µg/L, with concentrations of PFOA below the laboratory limit of reporting (LOR). The sum of PFHxS+PFOS (0.097 µg/L) was below the recreational water guideline (HEPA, 2018), but above the drinking water guidelines (HEPA, 2018). TOPA results suggested the potential presence of precursors. Laboratory results for the tap water sample were all below the laboratory LOR.

The report indicated that the Case 4 Pit had a capacity of 2,830 L. At the time of preparation of the QFES report, the tank was used for pump testing and water drafting training and was covered by a steel plate cover that did not prevent water ingress. The tank was 75% full at the time of sampling.

The QFES report identified that the class B foam concentrate typically used by QFES prior to 2003 was 3M Lightwater, which is known to have contained PFOS as an active ingredient. 3M Lightwater foam is a type of foam manufactured by ECF, which breaks down to long chain PFAS such as PFOS, PFHxS and PFOA (see **Appendix C**).

No other historical contaminated land or environmental reports for the site have been supplied to AECOM.

3.2 Environmental Setting

3.2.1 Topography

Contour mapping from the Queensland Globe online interactive mapping portal indicates the site slopes down towards the north-east. The area is generally below 10 m above sea level.

3.2.2 Soil and Acid Sulfate Soils (ASS)

Mapping from the Australian Soil Resource Information System (ASRIS) indicates the soil type underlying the site is Hydrosol with Chromosols and Dermosols in the surrounding area. Hydrosols are soils that are saturated with water for long periods of time—typically a grey (or greenish-grey) colour.

Acid sulfate soils (ASS) are likely to occur in low-lying areas of the site, given its proximity to low-lying coastal areas. ASRIS indicates a low probability of occurrence for ASS to be present. The Whitsunday Regional Council (WRC) interactive online mapping indicates there are areas of the site where there is a 'known presence' of ASS. The south western area is noted as 'Land above 5m above Australian Height Datum (AHD) and below 20m AHD'.

3.2.3 Geology

Geological mapping indicates that the site is underlain by Airlie Volcanics, which is early Permian. This consists of mixed mafites and felsites (mainly volcanics), which comprises felsic to intermediate volcaniclastics and lavas.

Registered groundwater bore cards for bores located nearby (RN141307, RN162365) indicate the geology beneath the site to comprise loose soil and rocks, fractured rocks with alternating clay layers, and rock to a depth of at least 52m (the maximum depth of these bores).

3.2.4 Surface Water

Campbell Creek is listed as 'minor' in Queensland Globe and is located approximately 500m to the east of the site boundary. The coastline (Pioneer Bay) is located 230m to the north. There are no other surface water features within 500m of the site.

WRC online interactive mapping indicates the site and adjacent land is not within a flood risk area ('property not affected').

3.2.5 Hydrogeology

The Groundwater Resources of Queensland 1:2,500,000 mapping indicates the aquifer beneath the site to comprise acid to intermediate volcanics, with a yield of <5 L/s and salinity of 500 to 1500 mg/L, the groundwater is noted to be suitable for most purposes, marginal for human consumption and low salt tolerant crops.

A search of the Department of Natural Resources and Mines (NRME) registered groundwater bore database in February 2019 identified nine bores within 1 km and these are summarised in **Table 4**. All nine bore cards are included in **Appendix G** with the registered bore locations shown on **Figure F1, Appendix A**.

Table 4 Registered groundwater bores within 1 km of the Airlie Beach Fire Station

Bore ID	Distance / Direction from the site	Screened Depth	Additional Comments / Use if Known
RN63942	375m southeast	Not Specified	Not specified
RN63581	400m northwest	Abandoned and destroyed	
RN63950	500m southeast	Abandoned and destroyed	
RN63423	500m southeast	Unclear – Plastic casing to 16.8m	Well depth could be up to 183m.
RN63949	600m southeast	11.8 to 14.0 m in conglomerate.	Abandoned but still usable.
RN141307	520m south	Open hole from 18.5 – 52m within rock	SWL noted as 5.5 mbgl.
RN162365	650m southwest	15.5 – 21.5m in fractured rock and clay layers	For water supply. SWL noted as 4.5 mbgl. Volcanic aquifer at 18m.
RN131648	900m south	15.0 to 31.0m within Deco Basalt	Used for water supply. Static water level (SWL) at 15 m below ground level (mbgl)
RN46384	900m south	0 to 9.7m within Alluvium.	Abandoned but still usable.

Based on the proximity of surface water features to the site, the inferred groundwater flow direction is to the north.

3.2.6 Surface Water Environmental Values

Campbell Creek is located approximately 500m to the east of the site and flows in a northerly direction into Pioneer Bay. The creek falls into the Proserpine River Basin, and the Site falls into the Whitsunday coastal creeks fresh waters. Environmental Protection (Water) Policy 2009 (EPP Water) defines the Proserpine River fresh waters as an aquatic ecosystem with high ecological value and outlines environmental values (EVs) associated with the catchment area (DNRM), 2010). The relevant EVs are listed in **Table 5**.

Table 5 Surface Water Environmental Values for the Proserpine River Catchment

Waterway Name	Aquatic Ecosystems	Irrigation	Farm Supply/Use	Stock water	Aquaculture	Human Consumer	Primary Recreation	Secondary Recreation	Visual Recreation	Drinking Water	Industrial Use	Cultural and Spiritual Values
Whitsunday coastal creeks fresh waters	X	X	X	X		X	X		X	X		X

3.2.7 Groundwater Dependent Ecosystems and Environmentally Sensitive Areas

A search of the groundwater dependent ecosystems (GDE)[3] database indicated the following aquatic ecosystems are present within 4 km of the site:

- Wetland at Proserpine River – fractured rocks - low potential GDE
- Wetland at Proserpine River- Alluvia with groundwater connectivity to underlying fractured rock aquifers- moderate potential GDE.

No subterranean and terrestrial GDEs were identified.

A search of the environmentally sensitive areas (ESAs)[4] indicated that the site is classed as a river improvement area (Category C). An area to the south of the site is classed as Category B endangered regional ecosystems (biodiversity status). The coastal area is also classed as marine plants (Category B).

3.3 Summary of Key Findings

The key information collated from the interviews and review of available information on the site and the environmental setting is summarised below:

- Based on aerial photographs, the fire station has been present since 1975 (approximately 44 years) and was undeveloped prior to this time. The site is surrounded by commercial and residential properties and recreational land.
- Based on the interview information, firefighting foams have been used at the site since at least the late 1980s. Firefighting foam containing PFAS (3M Lightwater) was used at the site between the 1990s and approximately 2003. 3M Lightwater foam is a type of foam manufactured by ECF, which breaks down to long chain PFAS such as PFOS, PFHxS and PFOA. Protein-type foams were used prior to the use of 3M Lightwater. The type of protein foam has not been identified and the potential for this foam to have contained PFAS is uncertain. Since 2003, Solberg foam has been used, which reportedly does not contain PFAS.
- There is no information on the types of foam used prior to the late 1980s and the potential for use of other types of foam concentrates containing PFAS cannot be discounted.
- The current inventory is 120 L Solberg foam. Foam concentrate is stored in 20 L containers. No infrastructure (e.g. tanks) is known to have stored foam and fire appliances did not have on-board trucks.
- Firefighting training using foam has occurred in the northern corner of the site. The historical training procedures using foam have not been identified. The volume of foam used has not been

[3] http://www.bom.gov.au/water/groundwater/gde/map.shtml
[4] https://environment.des.qld.gov.au/licences-permits/maps_of_environmentally_sensitive_areas.php

specified but was noted to be low due to the cost of the foam concentrate. It was not identified how out of date foam concentrate is disposed of. AFFFs were removed from site by a contractor. No inadvertent releases of foam concentrate were identified.

- PFAS was identified in the water samples collected in 2016 from the Case 4 Pit. PFHxS+PFOS (0.097 µgL) was detected. Two samples of tap water were also analysed and PFAS was not detected.
- The adjacent sports field to the northeast was reportedly a former landfill which, potentially could have received waste containing PFAS. Two other potential off-site sources of PFAS have been identified, Whitsunday Airport and the Port of Airlie.
- The site is underlain by Airlie Volcanics with nearby registered bores indicating the standing water level to be 5.5 mbgs. Groundwater flow is likely to be towards the marine environment of Pioneer Bay located 230m to the north. A minor watercourse, Campbell Creek, is located approximately 500m to the east.
- Stormwater drainage consists of spoon and earth drains with flow directed to the north-eastern corner of the site before discharging off-site.

4.0 Ayr Data Fire Station Review

4.1 Site Setting

4.1.1 Site Identification

Ayr Fire Station is located in the centre of Ayr, with the main entrance via Queen Street. Refer to **Figure F3** and **Figure F4** in **Appendix A**. Site identification details are shown in **Table 6**.

Table 6 Ayr Fire Station Site Identification

Item	Details
Site Address	47-49 Soper Street, Ayr, 4807
Site Owner	The State of Queensland
Site Occupier	QFES
Local Government Area	Burdekin Shire Council
Zoning	Public Purposes
Lot and Plan	Lot 95 / RP702279
Tenure	Freehold
Latitude / Longitude	-19.57163, 147.40968
Site Area	2,023m^2
Current / Future Site Use	Fire Station

4.1.2 Site Inspection

A site visit was completed on 13 February 2019 by an AECOM consultant accompanied by a QFES representative (Stephen Knight) and the findings of the site visit are summarised below. Photographs taken during the site visit are included in **Appendix B**.

4.1.2.1 Site Infrastructure and Features

The site layout is detailed on **Figure F4**, **Appendix A**. Site features include a two-storey fire station with three engine bays, housing two firefighting appliances. A mess hall, storage room, workshop and car parking area are also present. The station is crewed by four firefighters in a continuous day shift roster system in addition to auxiliary firefighters. All training activities are conducted on a large open space concreted yard.

A concrete in-ground water tank (Case 4 Pit), with dimensions of 900 mm diameter x 2300 mm deep and a capacity of 1460 L, was used for pump testing and water drafting training. The Case 4 Pit was covered by a steel plate to prevent water ingress and has since been decommissioned and filled with sand and capped with concrete.

Stormwater drainage consists of a series of interconnected drainage pits with flow directed to the north-west of the site before discharging off-site.

No information was identified regarding the use of fill at the site.

4.1.2.2 Interview Information

An interview was held with the QFES North Region Southern Area Commander (Stephan Knight) and the Station Officer (Kevin Trueman). Firefighting foams were reported to have been used on the site since the fire station was built. Protein firefighting foams were used historically, followed by AFFF (identified as 3M Lightwater in QFES, 2016) before being replaced approximately 15 years ago (2003) with Solberg Re-healing RF3x6 ATC Class B low expansion foam concentrate and Solberg Fire Break Class A foam concentrate. Solberg foam reportedly does not contain PFAS (see data sheet in **Appendix C**).

Firefighting foams have not been stored in portable tanks or infrastructure at the site and are stored in 20 L containers (as received from the supplier) in a shed located in the southern corner of site. Historically, only two to three 20 L drums were stored at the site. At the time of the inspection, approximately 20 x 20 L drums were observed within the storage shed. Since 2015/2016 additional drums have been stored on site to provide supply to five regional fire stations (Ayr, Home Hill, Bowen, Collinsville and Gumlu). A total of 600 L of Solberg foam concentrate was present during the site visit. AFFF foams were reportedly too expensive to be used regularly on-site for training purposes. The station frequently used training foams (i.e. 'Fire Break') or detergent for training in the previously grassed areas (refer to **Figure F4**, **Appendix A**). The previously grassed areas were concreted sometime between 2000 and 2005.The volume of foam used for training purposes has not been specified. All foams were reportedly used prior to the use by date. No inadvertent releases of foam concentrate were identified.

4.1.3 Surrounding Land Use

The site is surrounded by a mixture of commercial businesses and residential properties. Soper Street bounds the site to the north-east and Queen Street to the north-west. The Kalamia Hotel and Home Hardware store bound the site to the south-west and south-east respectively.

Details of surrounding land uses are provided in **Table 7** below.

Table 7 Ayr Fire Station Surrounding Land Use

Direction	Land Use
West	Adjacent to the site to the west is Queen Street, beyond which are residential properties.
South-West	Adjacent to the site to the southwest is the Kalamia Hotel and car park, beyond which is a shopping plaza.
South	Adjacent to the site to the south are residential properties, beyond which are MacMillan Street and more residential properties.
Southeast	Adjacent to the site to the southeast is a Home Hardware store, beyond which are Soper Street and residential properties.
East	Soper Street bounds the site to the east, beyond which are residential properties.
North	Adjacent to the site to the north is Soper Street.
Northeast	Beyond Soper street are commercial properties (Ben's Leading Appliances / Burdekin Communications).

4.1.4 Title Search

A copy of the current title, reference 20221064 was obtained and is included in **Appendix D**. The site owner is listed as The State of Queensland.

4.1.5 EMR / CLR

A search of the DES EMR and CLR for Lot 95 / RP702279 indicated that the site is not included on either the EMR or CLR. The search result included in **Appendix E**.

4.1.6 Historical Aerial Photographs

A review of historical aerial photography for the site was undertaken, with a total of seven photographs reviewed from the QImagery online mapping portal. The historical aerial photographs spanned a period of 46 years with the most recent from 2005, to the earliest 1959. Aerial photographs were reviewed at intervals of 5 to 12 years (at the most appropriate scale) to allow for tracking of changes in use of the site and surrounding properties over time (see **Appendix F**). The key observations made during the review of aerial photographs are summarised in **Table 8**.

Table 8 Historical Aerial Photography Review for Ayr Fire Station

Date	Description	Scale / Photo No.
1959	The site appears to be unsealed / grassed and is occupied by a large building (the current fire station building) with several smaller buildings or structures visible in the central and southern parts of the site. Site access is via Soper Street. The Kalamia Hotel is visible adjoining the site to the south-west and the site is surrounded by residential land.	1:9,000 QAP0943-74 Run 2
1964	No significant changes to the site or surrounding area.	1:12,000 Q1479-5087 Run 7
1969	A large shed / industrial building has been constructed adjacent to the south-eastern site boundary. No other significant changes to the site or surrounding area.	1:12,000 Q2009-063 Run 34
1983	No significant changes to the buildings on site. The site access track now continues through the site from Soper Street to Queen Street and appears to be sealed (concrete).	1:16,000 QF3985-980 Run 1
1986	No significant changes to the site or surrounding area.	1:25,100 QAP4488 Run 2
1998	The main building has been extended to the south. The large building adjacent to the south-east of the site has been extended. No other significant changes to the site or surrounding area.	1:10,000 QAP5674-080 Run 1
2003	No significant changes to the site or surrounding area.	1:25,000 QAP5959-283 Run 3

In summary, aerial imagery indicates that the main fire station building has been present since at least 1959 and the site and surrounding area has undergone few change since then. As firefighting foams containing PFAS have only been used in Australia since the 1960s, the site history covering this period has been established.

4.1.7 Review of Potential Off-Site Sources of PFAS

A high level review of the landuse of the area within 4 km of the site has identified the following potential sources of PFAS:

- A fuel depot (Lowes Petroleum Service) is located 1.6 km to the east of the site and
- A business/industrial park is located 2.2 km west of the site and includes scrap metals, tank direct and agricultural business services.

4.1.8 Review of Previous Environmental Reports

4.1.8.1 2016 Water Sampling by QFES

Water sampling was conducted in 2016 (QFES, 2016) with a total of five water samples collected, two Case 4 Pit samples, two tap water samples from town water supply and a rinsate sample. All samples were analysed for PFAS and TOPA. Results are presented for 'tap' and 'sample'. The Case 4 Pit samples indicated a total PFAS concentration of 0.98 µg/L. PFOA (0.031 µg/L) was below the Australian health-based guidelines for both drinking and recreational water (HEPA, 2018). The sum of PFHxS+PFOS (0.12 µg/L) was above the drinking water and below the recreational water guidelines (HEPA, 2018). TOPA results suggested the potential presence of precursors.

Concentrations of PFOS and PFHxS were detected in the tap sample (0.012 and 0.01 µg/L respectively) but concentrations of all other PFAS analysed were below laboratory LOR. The concentration of PFHxS+PFOS was below the Australian drinking water guideline value (HEPA, 2018).

The report indicates that the Case 4 Pit was 1,460 L capacity and is located at the rear of the main building. The tank is used for pump testing and water drafting training and is covered by a steel grated plate to prevent water ingress. At the time of sampling the tank was 90% full.

The QFES report identified that the Class B foam concentrate typically used by QFES prior to 2003 was 3M Lightwater, which is known to have contained PFOS as an active ingredient.

4.1.8.2 2018 Water Sampling by Queensland Government

The following information from the Queensland Government website[5]:

> *The Queensland Government is assisting the Burdekin Shire Council in response to the detection of perfluorinated substances in two groundwater bores that previously supplied part of Ayr's town water network.*
>
> *Water sampling undertaken by Queensland Health showed levels of PFAS above Australian drinking water quality guidelines in these two bores, in results received on 25 May 2018.*
>
> *Burdekin Shire Council ceased sourcing water from the affected bores on the same day as the results were made available.*
>
> *Council undertook further water testing, with results received on 30 May. It notified the Queensland Government that elevated PFAS levels remained in only one bore, and that the Ayr town water was within Australian drinking water quality guidelines, posing no immediate health risk to people.*

The location of the two bores that reported detectable concentrations of PFAS are not known. According to the Burdekin Shire Council website the Ayr water supply network consists of six bores at Nelson's Lagoon, twelve bores at South Ayr Borefield and one bore at the Council Chambers.

4.2 Environmental Setting

4.2.1 Topography

Queensland Globe online interactive mapping indicates the site is relatively flat, and between 0 – 10m above sea level.

4.2.2 Soil and ASS

Mapping from the ASRIS indicated the site is underlain by soils of the Burdekin Delta, comprising alluvial sediments. ASRIS indicated that there is an extremely low probability of occurrence of ASS at the site.

4.2.3 Geology

Geological mapping (Queensland Globe) indicates that the majority of the site is underlain by Quaternary flood plain alluvium, comprising clay, silt, sand and gravel.

The bore card for the closest registered bore to Site (RN153347) indicates the geology beneath the site to comprise silty sand, overlying fine to medium grained sands which are underlain by medium to coarse sand and gravel (Burdekin River Formation).

4.2.4 Surface Water

The closest water feature to the site is an ephemeral creek or overland flow channel, situated in Nelsons Lagoon Park, 700 m southeast of the Site. The creek appears to flow into a lagoon/pond located 1 km east of the Site. Further south of Nelsons Lagoon Park is Plantation Creek (1.5km south of the Site). Approximately 1.1 km to the north of the Site is an un-named channel which appears to flow into Lilliesmere Lagoon, 2.5 km north of the site boundary. Lilliesmere Lagoon flows north into Kalamia Creek.

Burdekin Regional Council online interactive mapping indicates the site and adjacent land is within a 'Blue Storm Tide Evacuation Zone'. Residents in the Blue Zone face a low risk of flooding from a

[5] https://www.qld.gov.au/environment/pollution/management/disasters/investigation-pfas/ayr

cyclone storm tide. The Blue Zone may experience storm tide flooding higher than approximately 4 metres above Highest Astronomical Tide.

4.2.5 Hydrogeology

The Groundwater Resources of Queensland 1:2,500,000 mapping indicates the aquifer beneath the site to comprise unconsolidated sediments, with a yield of >15 L/s and salinity of 1500 - 5000 mg/L, the groundwater is noted to be suitable for most stock, some domestic use and irrigation.

A search of the NRME registered groundwater bore database in February 2019 identified 29 bores within 1 km of the site and five within 500m. The closest five bores are summarised in **Table 9**. Bore cards for the closest five bores are included in **Appendix G** with the registered bore locations shown on **Figure F3**, **Appendix A**.

Table 9 Registered groundwater bores within 500 m of Ayr Fire Station

Bore ID	Distance and Direction	Screened Depth	Additional Comments / Use if Known
RN153347	140m north-east	10 – 11m within Burdekin River Alluvium (sand and gravel)	Water supply, quality potable, SWL 4.8 mbgl, yield is 2.0 L/s
RN96317	175m south-east	7.9 – 8.5m within sand, gravel and clayey sand.	Water supply, SWL 5.7 mbgl, yield is 2.5 L/s
RN96606	360m north-west	11.9 – 12.2m within fine to coarse clayey sand.	Water supply, SWL 7.7 mbgl, yield is 2.0 L/s
RN125197	445m north-west	9.3 – 12.5m within sand and gravel.	Water supply, SWL 7.3 mbgl, yield not stated
RN125601	500m north-west	10.85 – 11.5m within Burdekin River Alluvium (sand and gravel).	Water supply, SWL 6.6 mbgl, quality listed as potable, yield is 2.0 L/s

Regional groundwater flow is potentially directed to the south towards the Burdekin River located 5.5 km away.

4.2.6 Surface Water Environmental Values

EVs and water quality objectives for the Haughton Basin area under EPP Water are under development. As per DES guidance, in areas where no water quality objectives are scheduled, the Queensland water quality guidelines apply as default objectives, see **Table 10**.

Table 10 Queensland Water Quality Guidelines: Surface Water Environmental Values

Waterway Name	Aquatic Ecosystems	Irrigation	Farm Supply/Use	Stock water	Aquaculture	Human Consumer	Primary Recreation	Secondary Recreation	Visual Recreation	Drinking Water	Industrial Use	Cultural and Spiritual Values
Queensland water quality guidelines	X	X	X	X	X	X	X	X	X	X	X	X

4.2.7 Groundwater Dependent Ecosystems and Environmentally Sensitive Areas

A search of the GDE database indicated the following aquatic ecosystems are present within 4 km of the site: Wetland at Burdekin River –moderate potential GDE. No subterranean and terrestrial GDEs were identified.

A search of the ESAs indicated that the site is classed as a river improvement area (Category C). Areas along the Burdekin River and Plantation Creek (to the south of the site) are classed as Category B endangered regional ecosystems (biodiversity status).

4.3 Summary of Key Findings

The key information collated from the interviews and review of available information on the site and the environmental setting is summarised below:

- Based on aerial photographs and anecdotal information, the fire station has been present since 1955 (approximately 64 years). The landuse prior to fire station development is not known. The site is surrounded by commercial and residential properties.
- Based on the interview information, firefighting foams have been used at the site. Firefighting foam containing PFAS (3M Lightwater) was used at the site between the 1990s and approximately 2003. Protein-type foams were used prior to the use of 3M Lightwater. The type of protein foam has not been identified and the potential for this foam to have contained PFAS is uncertain. Since 2003, Solberg foam has been used, which reportedly does not contain PFAS.
- There is no information on the types of foam used prior to the late 1980s and the potential for use of other types of foam concentrates containing PFAS cannot be discounted.
- The current inventory is 600 L Solberg foam which includes stockpile supply for five rural fire stations. Foam concentrate is stored in 20 L containers. No infrastructure (e.g. tanks) is known to have stored foam. Historically lower volumes of foam concentrates were stored.
- AFFF foams were reportedly too expensive to be used regularly on-site. The Station frequently used training foams (i.e. 'Fire Break') or detergent for training new starters across the grassed areas (concreted between 2000 and 2005). The volume of foam used has not been specified. It is understood that foams were used prior to their use by date. No inadvertent releases of foam concentrate were identified.
- PFAS was identified in the water samples collected in 2016 from the Case 4 Pit. PFHxS+PFOS (0.12 µg/L) and PFOA (0.031 µg/L) were detected. The Queensland Government website[6] indicates that PFAS was detected in groundwater in two bores that form part of Ayr's town water network in May 2018. The locations of these bores are not known. The information on the Queensland Government website indicated that the PFAS concentrations were below Australian drinking water guidelines (HEPA, 2018).
- The site is underlain by Quaternary Alluvium with nearby registered bores indicating the standing water level to be approximately 5 to 8 mbgs. The nearest major surface water features are greater than 1 km from the site with Lilliesmere Lagoon approximately 2.5 km to the north and Plantation Creek approximately 1.5 km to the south of the site.
- Stormwater drainage consists of a series of interconnected drainage pits with flow directed to the north-west of the site before discharging off-site.
- A high level review of the area within 4 km of the site has identified the potential for off-site sources of PFAS including a fuel depot, metal works and agricultural industry.

[6] https://www.qld.gov.au/environment/pollution/management/disasters/investigation-pfas/ayr

5.0 Gladstone Fire Station Data Review

5.1 Site Setting

5.1.1 Site Identification

Gladstone Fire Station is located in West Gladstone, approximately 1.5 km from Gladstone city centre. The fire station is accessed from Charles Street, refer to **Figure F5** and **Figure F6** in **Appendix A**. Site identification details are shown in **Table 11**.

Table 11 Gladstone Fire Station Site Identification

Item	Details
Site Address	5-9 Breslin Street, Gladstone, 4680
Registered Site Owner	The State of Queensland
Site Occupier	QFES
Local Government Area	Gladstone Regional Council
Zoning	Community Facilities
Future Zoning	Low Density Residential
Lot and Plan	Lot 5 to 10 on RP606760
Tenure	Freehold
Site Owner	The State of Queensland
Latitude / Longitude	-23.858260, 151.249317
Site Area	4,630m^2
Current / Future Site Use	Fire Station

5.1.2 Site Inspection and Interview

A site visit was completed on 22 January 2019 by an AECOM consultant accompanied by a QFES representative (Inspector Bruce Ogle) and the findings of the site visit are summarised below. Photographs taken during the site visit are included in **Appendix B**.

5.1.2.1 Site Infrastructure and Features

The site is the major fire station in the Gladstone area. The station is manned by six firefighters. The site layout is detailed on **Figure F6** in **Appendix A**.

Site infrastructure is summarised below:

- Approximately 70% of the site is sealed by concrete, the remainder is occupied by grass
- Three engine bays housing five fire appliances, one operational support unit, one rescue, two firefighting and one aerial appliance
- Five-storey training tower
- Case 4 Pit (8,630 L) located in the centre of the site
- Approximately 1,000 L UST connected to an old BP bowser. The tank was observed to be filled with water, with the faint smell of unleaded fuel
- General administration building
- Former automotive workshop with below ground vehicle servicing pit

- Training hut and foam storage building
- Undercover car parking
- Grassed area in western portion of site formerly used as a foam training area
- Waste laydown area for temporary storage of general waste, cardboard, waste oils and batteries.

No information was identified regarding the use of fill at the site.

5.1.2.2 Interview Information

The site has operated as a fire station since circa-1973. The QFES Officer (Bruce Ogle) interviewed has been stationed at the Gladstone QFES site for 12 years (i.e. since 2006). He indicated that foam concentrates have been present at the site since 1976, and the foam type has changed several times with protein-type foams, AFFF and Solberg foams used.

There is currently 8,380 L of non-fluorinated foam stored at the site, consisting of 4 x 1000 L IBCs and 132 x 20 L pails of Solberg 3x6 ATC Class B foam, 20 x 20 L pails of Solberg Firebreak Class A foam and 16 x 20 L pails of Solberg HX foam. Foam concentrate is stored in the new shed in the west of the site on pallets (in 20 L containers), with smaller quantities in the old shed. Previously foam was stored in the training hut and the small building in the southern portion of the site. The foam concentrate stored at Gladstone Fire Station is stockpile supply for use in the greater Gladstone region (Agnes Waters to Mt Larcom and west to the range at Calliope).

The QFES representative was not aware of any inadvertent releases of foam concentrate from the storage areas to ground; however, foam concentrate has been released during training operations on the grassed area in the west of the site (refer to **Figure F6, Appendix A**). The time period and frequency of the training and the type of foam concentrates used has not yet been established and further information is being sought.

Site surface water run-off flows in drains from the property in the central portion of the northern boundary, to the north under Breslin Street and into the culvert adjacent to Kooyong Park and then through an old landfill (now sports fields) into Auckland Inlet located 950m to the north-west of the site.

A decommissioned well is present adjacent to the former workshop which was reported to be 6 to 7m deep. The well was formerly used to supply water during training exercises and has now been decommissioned by infilling with concrete.

An unused 1000 L UST is connected to an old fuel bowser. It was reported that the tank contains mostly water, with faint smell of unleaded fuel. A service pit is present in the former workshop to work under vehicles. It was reported that water seeps into the service pit, indicating that the groundwater table is shallow.

5.1.3 Surrounding Land Use

The site is surrounded by commercial and industrial businesses. Breslin Street is located on the northern site boundary. Details of surrounding land uses are provided in **Table 12** below.

Table 12 Gladstone Fire Station Surrounding Land Use

Direction	Land Use
South	Adjacent south of the site are residential properties, a roadway (Walters Avenue) and a commercial property, the Suncourt Motor Inn.
North	Adjacent north of the site is a roadway (Breslin Street) beyond which is an unnamed canal / surface water channel followed by Kooyong Park, more residential properties and a child care centre.
East	Adjacent east of the site is Charles Street and residential properties, beyond which is Quoin Street and Gladstone West State School.
West	Adjacent west of the site is a commercial office building, beyond which are a residential property, a commercial retail property and the Dawson Highway and the North Coast Railway Line 145m west of the site.

5.1.4 Title Search

A copy of the current title certificates, references 30377116 (Lots 5 to 8 / RP606760), 30377117 (Lot 9 / RP606760) and 30377118 (Lot 10 / RP606760) were obtained and are included in **Appendix D**. The site owner is listed as The State of Queensland.

5.1.5 EMR / CLR

A search of the DES EMR and CLR on Lot 5 / RP606760 (one of the six lots which makes up the site) indicated that the site is not included on either the EMR or CLR. The search result included in **Appendix E**. Searches were not conducted for the other five lots as it was considered that the result for Lot 5 / RP606760 would be representative of the site.

5.1.6 Historical Aerial Photographs

A review of the historical aerial photography survey data was undertaken for the site, with a total of six photographs reviewed from the QImagery online mapping portal. The historical aerial photographs spanned a period of 48 years with the most recent from 2007, to the earliest 1959. Aerial photographs were reviewed at intervals of two to 14 years (at the most appropriate scale) to allow for tracking of changes in use of the site and surrounding properties over time (see **Appendix F**). The key observations made during the review of aerial photographs are summarised in **Table 13** as follows:

Table 13 Historical Aerial Photography Review for Gladstone Fire Station

Date	Description	Scale / Photo No.
1959	There is a small structure (potentially a shed) and a few trees on site. The remainder of the site and surrounding area appear to be vacant land. Breslin Street, Charles Street and Walters Avenue are visible. The North Coast Railway line and Dawson highway are visible to the west of the site.	Q926 – 82, Run 4, 1:12,000
1969	The site has been cleared and is vacant. Residential properties are present adjacent to the south, north and east of the site. Gladstone State School is present to the east of the site.	Q2041-25, Run 3, 1:11,900
1971	The site remains vacant and cleared. No other significant changes.	QAP2358-039. Run 1, 1:24,000
1973	The site remains unoccupied. No other significant changes.	QAP2689-129, Run 8, 1:31,900
1975	The main fire station building is now present with a slab covering the site. Two other buildings are present adjacent to the western site boundary, beyond which (now Gladstone Camping Centre) is what appears to be an industrial property or a property under construction.	Q3145-1015, Run 8, 1:12,000
1989	The surrounding area has undergone further (mainly residential) development. The image quality is not good enough to note any changes to the site.	Q4831-38, Run 10, 1:25,000
1996	No significant changes to the site. The canal / drainage channel to the north of the site is visible.	QP5464-78, Run19C, 1:12,000
2007	No significant changes are visible at the site or surrounding area.	QAP6266-047, Run 8, 1:40,000
2014	A new shed has been constructed at the rear (west) of the property.	Google Earth Pro

In summary, development of the site does not occur until circa 1973 to 1975. Aerial imagery from 1973 shows the site is vacant, and imagery from 1975 shows the fire station building is present. From around 1969 the surrounding area starts to undergo mainly residential development.

5.1.7 Review of Potential Off-Site Sources of PFAS

A high level review of the landuse of the area within 4 km of the site has identified the following potential sources of PFAS:

- Glen Creek Park (former landfill), located approximately 280m west of the site
- Industrial area beyond the Auckland Inlet, approximately 2 km west of the site, which includes a fuel depot, mechanical repairs depot and a waste management
- Rails yards are present 2.1 km to the south west of the site
- The Port of Gladstone is located 2.5 km south east of the site
- Gladstone Airport is located 2.75 km south west of the site
- Gladstone Power Station is located approximately 3 km to the west
- Queensland Alumina (QAL) plant 4 km to the east

There is also a shale oil plant located 7 km south of the site.

The potential for other off-site sources of PFAS to be present in the area cannot be discounted.

5.1.8 Review of Previous Environmental Reports

The QFES report (QFES, 2016) indicated that five water samples were collected from the Gladstone station including two samples from the Case 4 pit, two samples from a tap supplying town water and a rinsate sample. Samples were analysed for PFAS and TOPA. Results are presented for 'tap' and 'sample'. The Case 4 pit sample result indicated a total PFAS concentration of 61 µg/L. The analytical results indicated PFHxS+PFOS was 41.9 µg/L, which exceeded NEMP drinking water and recreational water guideline values (HEPA, 2018). PFOA (1.4 µg/L) was above the Australian health-based drinking water guideline, but below the recreational water guideline. TOPA results suggested the potential presence of precursors. Laboratory results for the tap water sample were all below laboratory LOR.

The report indicated that the Case 4 pit has a capacity of 8,630 L capacity and is located adjacent to the training tower. The pit is used for pump testing and water drafting training and is covered by a steel plate cover. The pit is not waterproofed to prevent water ingress and the tank was reported to be 84% full at the time of sampling.

The QFES report identified that the class B foam concentrate typically used by QFES prior to 2003 was 3M Lightwater, which is known to have contained PFOS as an active ingredient.

No other previous contaminated land or environmental reports have been supplied to AECOM.

5.2 Environmental Setting

5.2.1 Topography

Gladstone Regional Council online interactive mapping indicates the site is relatively flat, with elevation between 10 and 20 mAHD. The land is more elevated on the southern boundary and gently sloping towards the north / north-west boundary.

5.2.2 Soil and ASS

Mapping from the Queensland Globe indicates the soil types underlying the site and surrounding area are hard pedal mottled-yellow duplex soils.

Mapping from the ASRIS indicates site has an extremely low probability of ASS occurrence. However, mapping from the Gladstone Regional Council interactive mapping indicates the site is located within an area of ASS 5 to 20 mAHD.

5.2.3 Geology

Geological mapping indicates that the site is underlain by Quaternary miscellaneous unconsolidated sediments comprising mud, sandy mud, muddy sand and minor gravel: estuarine channels and banks, supratidal flats and coastal grasslands.

The bore card for a registered groundwater bore located 325m south of the site (RN136123) indicates the geology beneath the site to comprise 0 – 0.5m grey sandy loam, 0.5 – 1.0m dense silty gravel, 1 – 13m brown sandy clay, 13 – 17.10m seams of water bearing silty gravel and 17 – 17.3m shale clay (Wandilla Formation).

5.2.4 Surface Water

An unnamed canal is located approximately 45m to the north of the site boundary and flows west towards Auckland Inlet which is located 950m northwest of the site. There are no other surface water features within 500m of the site. Gladstone Regional Council interactive mapping indicates a stormwater pit midway along the northern boundary and a stormwater pipe adjacent to the northern boundary of the site. Another stormwater pit is located on Charles Street at the entrance to the fire station.

Gladstone Regional Council online interactive mapping indicates the site and adjacent land is not within a flood risk area.

5.2.5 Hydrogeology

The Groundwater Resources of Queensland 1:2,500,000 mapping indicates the aquifer beneath the site to comprise metamorphic rocks, with a yield of <5 L/s and salinity of <1500 mg/L, the groundwater is noted to be suitable for most purposes, marginal for human consumption and low salt tolerant crops.

A search of the NRME registered groundwater bore database in January 2019 identified two bores within 1 km of the site. The bores are summarised in **Table 14**. Bore cards are included in **Appendix G** with the registered bore locations shown on **Figure F5**, **Appendix A**.

Table 14 Registered groundwater bores within 1 km of Gladstone Fire Station

Bore ID	Distance and Direction	Screened Depth	Additional Comments / Use if Known
RN136123	325 south	13 – 17m within silty gravel (Wandilla Formation)	SWL noted as 11.1m depth, quality noted as potable, yield 1 L/s. Installed in 2005, role for water supply
RN136127	710 south	17 – 19.7m within coarse gravel (Quaternary undefined)	Abandoned but still useable, SWL noted as 12.7m depth, installed in 2002. Quality noted as TDS 6000, yield 2.53 L/s

Based on the proximity of surface water features to the site, the inferred groundwater flow direction is to the north-west.

5.2.6 Surface Water Environmental Values

An unnamed canal to the north of the site runs in a westerly direction and flows into Auckland Inlet. Creeks in the Calliope River Basin are classified as South of Calliope River – Gladstone area fresh waters. EPP Water outlines EVs associated with the catchment area (DERM, 2010). The relevant EVs are listed in **Table 15.**

Table 15 Surface Water Environmental Values for the Calliope River Basin

Waterway Name	Aquatic Ecosystems	Irrigation	Farm Supply/Use	Stock water	Aquaculture	Human Consumer	Primary Recreation	Secondary Recreation	Visual Recreation	Drinking Water	Industrial Use	Cultural and Spiritual Values
South of Calliope River fresh waters	X	X	X	X		X	X	X	X		X	X

5.2.7 Groundwater Dependent Ecosystems and Environmentally Sensitive Areas

A search of the GDE database indicated the following aquatic ecosystems are present within 4 km of the site: Wetland at Calliope River – moderate to high potential GDE. No subterranean and terrestrial GDEs were identified.

A search of the ESAs indicated that the site is within a river improvement area (Category C). Areas along the Auckland Inlet are classed as Category B endangered regional ecosystems (biodiversity status) and marine plants (Category B).

5.3 Summary of Key Findings

The key information collated from the interviews and review of available information on the site and the environmental setting is summarised below:

- Based on aerial photographs and anecdotal information, the fire station has been present since 1973 (approximately 46 years) and was previously undeveloped. The site is surrounded by commercial and residential properties.
- Based on the interview information and QFES report, different firefighting foams have been used at the site including 3M Lightwater, which is known to contain PFAS. The period of AFFF use and use of other types of foam that potentially contained PFAS is not known.
- The current inventory is 16,000 L of Solberg foam stored in IBCs and additional Solberg foam stored 20 L containers. The foam concentrate stored at Gladstone Fire Station is for use in the greater Gladstone region.
- Firefighting training using foam has occurred on-site in the grassed area in the western portion of the site. The volume of foam used and the frequency of the training events have not been specified. It was not identified how out of date foam concentrate is disposed of. No inadvertent releases of foam concentrate were identified.
- PFAS was identified in water samples collected in 2016 from the Case 4 pit with PFHxS+PFOS (41.9 µg/L), and PFOA (1.4 µg/L) detected. Two samples of tap water were also analysed and PFAS was not detected.
- A high level review of the area within 4 km of the site has identified the potential for off-site sources of PFAS including a fuel depot, airport, power station, heavy industry and a waste management facility.
- The site is underlain by Quaternary alluvial deposits. Groundwater is potentially at shallow as indicated by the groundwater seepages into the service pit. Groundwater flow is potentially towards Auckland Inlet located 950m to the northwest.
- Stormwater run-off from the property enters underground drainage, which runs under Breslin Street (to the north of the site) and into the culvert adjacent to Kooyong Park and then through an old landfill (now sports fields) into Auckland Inlet.

6.0 Home Hill Fire Station Data Review

6.1 Site Setting

6.1.1 Identification

Home Hill Fire Station is located in the centre of Home Hill, and is accessed via Tenth Avenue. Refer to **Figure F7 and Figure F8** in **Appendix A**. Site identification details are shown in **Table 16**.

Table 16 Home Hill Fire Station Site Identification

Item	Details
Site Address	83 Tenth Avenue, Home Hill, 4806
Registered Site Owner	Lot 6 / H616666 and Lot 8 / SP123356 are owned by The State of Queensland. Lot 7 / H616103 notes that Burdekin Shire Council is the registered Trustee.
Site Occupier	QFES / Queensland Ambulance Service
Local Government Area	Burdekin Shire Council
Zoning	Public Purpose
Lot and Plan	The site is shared with Queensland Ambulance Service (QAS). There are six buildings located on site, located over Lot 6 / H616666, Lot 7 / H616103 and Lot 8 / SP123356.
Tenure	Freehold
Latitude / Longitude	-19.66099 / 147.41598
Site Area	1,811m^2
Current / Future Site Use	Fire Station

6.1.2 Site Inspection and Interview

A site visit was completed on 13 February 2019 by an AECOM consultant accompanied by a QFES representative and the findings of the site visit are summarised below. Photographs taken during the site visit are included in **Appendix B**.

6.1.2.1 Site Infrastructure and Features

The site is not permanently manned (and has an ancillary crew of approximately eight). The site layout is detailed on **Figure F8** in **Appendix A**. The site is shared with QAS. The old fire station building was constructed in 1968, the SES building was constructed between 1970 and 1975 and the new fire station building was built in 2002. There are six buildings located on site:

- The old fire station building (pre-2002) in the east of the site
- The SES Building and storage shed (constructed 1975) in the east of the site
- The QAS Storage shed located in the west of the site
- Storage area for wrecked cars/ awning and slab (constructed 2014)
- The main fire station building (in the east of the site), including admin/offices and engine shed.

The station is crewed by approximately eight auxiliary firefighters. All training activities are conducted on the open space concrete or grassed areas. A concrete in-ground water tank (Case 4 Pit), with dimensions of 900 mm diameter x 2400 mm deep and a capacity of 1530 L, is located in the north-east of the site. The pit was used for pump testing and water drafting training. The Case 4 Pit was covered by a steel plate to prevent water ingress and has since been decommissioned and backfilled

with sand. Water drafting training is now undertaken in a semi-permanent water tank located adjacent to the Engine Room.

Perimeter drains are located in the south-western portion of the site and a surface depression is located in the grassed area at the centre of the site. The surface water flow direction is unknown but the southern portion of the site drains to Tenth Avenue to the west.

No information was identified regarding the use of fill at the site.

6.1.2.2 Interview Information

An interview was held with the QFES Northern Region Southern Commander (Stephen Knight) and the Station Officer (Steven Brennan). Protein firefighting foams were used historically, followed by AFFF (3M Lightwater) before being replaced approximately 15 years ago (2003) with Solberg Re-healing RF3x6 ATC Class B low expansion foam concentrate and Solberg Fire Break Class A foam concentrate. Solberg foam reportedly does not contain PFAS (see data sheet in **Appendix C**).

The QFES representatives mentioned that AFFF foam was generally not used for training on-site as it was too expensive. The station frequently used training foams (i.e. 'Fire Break') or detergent for training new starters.

Firefighting foams have not been stored in portable tanks or infrastructure at the site. Historically, only two to three 20 L drums of foams were delivered to the site per year. The drums were stored on site for maximum of one week prior to being used (decanted into fire appliance or for training purposes). Currently, two 20 L drums of Class A and six 20 L drums of Class B foams are stored in the ancillary shed to the Engine Room (new building). Pallets of foam arrive at larger stations (the nearest is Ayr for Home Hill) and drums are collected from the larger stations by QFES personnel who also return empty drums from the Home Hill station at the same time.

Foams were used for training prior to their expiry date and the QFES representatives indicated that the foam use occurred across the grassed area in the centre of the site.

6.1.3 Surrounding Land Use

The site is surrounded by a mixture of residential, health care, school and community properties. There are three industrial businesses operating to the north east, west and south west (230m, 250m and 185m from site respectively). Details of surrounding land uses are provided in **Table 17** below.

Table 17 Home Hill Fire Station Surrounding Land Use

Direction	Land Use
West	Tenth Avenue bounds the site to the west. Beyond which is Home Hill Memorial Park and a bowls club and Home Hill Engineering Works (250m away).
South-West	Beyond Tenth Avenue is Burdekin Memorial Hall and an industrial unit (unknown use).
South and Southeast	Adjacent to the site to the south and south-east are buildings associated with the Home Hill Health Services, beyond which are residential properties.
East	Adjacent to the site to the east is Eleventh Avenue, beyond which are residential properties.
North	Adjacent to the site to the north is RSL Park and two residential properties.
Northeast	Beyond Tenth Street are residential properties and an industrial unit (unknown use / operation).

6.1.4 Title Search

A copy of the current title certificates (references 49015321, 50262221 and 50312846) were obtained and are included in **Appendix D**. The site owner for Lot 6 / H616666 and Lot 8 / SP123356 is The State of Queensland. Lot 7 / H616103 notes that Burdekin Shire Council is the registered Trustee.

6.1.5 EMR / CLR

A search of the EMR and CLR for the three lots (Lot 6 / H616666, Lot 7 / H616103 and Lot 8 / SP123356) indicated that the site is not included on either the EMR or CLR. The search result included in **Appendix E**.

6.1.6 Historical Aerial Photographs

An historical aerial photography survey was undertaken for the site, with a total of nine photographs reviewed from the QImagery online mapping portal. The historical aerial photographs spanned a period of 47 years with the most recent from 2005, to the earliest 1958. Aerial photographs were reviewed at intervals of 1 to 10 years (at the most appropriate scale) to allow for tracking of changes in use of the site and surrounding properties over time (see **Appendix E**). The key observations made during the review of aerial photographs are summarised in **Table 18** as follows:

Table 18 Historical Aerial Photography Review for Home Hill Fire Station

Date	Description	Scale / Photo No.
1958	The site is unoccupied and is unsealed, with grass cover. The Home Hill Health Services main building is present to the south of the site and a long rectangular building possibly associated with the Health Service, adjacent south of the site. The Bowls Club is located to the west and three residential properties bound the site to the north.	1958 1:12,000 QAP0864-043
1959	The site remains vacant. No significant changes to site or surrounding area.	1959 1:9,000 QAP0946-021
1964	The site remains vacant. One of the residential properties bounding the site to the north has been demolished.	1964 1:9,600 QAP15003-628
1969	A small building has been constructed in the eastern half of the site – possibly an early fire station building. No other significant changes to site or surrounding area.	1969 1:12,000 QAP2009-030
1979	No significant changes to site or surrounding area.	1979 1:25,000 QAP32006-583
1989	The rectangular building located adjacent to the southern site boundary is no longer present. Another small building has been constructed adjacent to the potential early fire station building. No significant changes to site or surrounding area.	1989 1:11,900 QAP4750-102
1994	A concrete access road has been constructed adjacent to the small building in the east of the site.	1994 1:10,000 QAP5319-049
2003	The existing (main) fire station building has been constructed in the western half of the site, with an access track linking the main building to the two small buildings in the eastern half of the site.	2003 1:25,000 QAP5960-051
2005	No significant changes to site or surrounding area.	2005 1:40,000 QAP6244-004

In summary, the site remained vacant, unsealed land until the late 1960s when a small building, possibly associated with the fire station, was constructed. Aerial imagery indicates that the main (existing) fire station building has been present since circa 2003 and the site and surrounding area have undergone minor change since then.

6.1.7 Review of Potential Off-Site Sources of PFAS

A high level review of the landuse of the area within 4 km of the site has identified the following potential sources of PFAS:

- An industrial unit, is located approximately 200m to the north east of the site; and
- Wilmar Sugar Inkerman Mill is located 2 km north west of the site.

6.1.8 Review of Previous Environmental Reports

A QFES report (QFES, 2016) indicated that five water samples were collected from the Home Hill fire station with two samples from the Case 4 Pit, two samples from the a tap supplying towns water and a rinsate sample. All samples were analysed for PFAS and TOPA. Results are presented for 'tap' and 'sample'. The Case 4 Pit sample indicated a total PFAS concentration of 0.105 µg/L with the concentration of PFOA below the laboratory LOR. However, the sum of PFHxS+PFOS (0.097 µg/L) was above the Australian health drinking water and below the recreational water guidelines (HEPA, 2018). TOPA results suggested the potential presence of precursors. Concentrations of PFAS within tap water samples were below laboratory LOR.

The report indicates that the Case 4 Pit is 1,530 L capacity and is located at the north-east of the property. The tank is used for pump testing and water drafting training and is covered by a steel plate to prevent water ingress. At the time of sampling the tank was 70% full.

The in-ground water tank samples indicated a total PFAS concentration of 0.105 µg/L. The in-ground tank water analysis shows that PFOA concentrations were below laboratory LOR. However, the sum of PFHxS+PFOS (0.097 µg/L) was above the Australian health drinking water and below the recreational water guidelines (HEPA, 2018).

The QFES report identified that the class B foam concentrate typically used by QFES prior to 2003 was 3M Lightwater, which is known to have contained PFOS as an active ingredient.

6.2 Environmental Setting

6.2.1 Topography

Contour mapping from Queensland Globe online interactive mapping indicates the site is relatively flat and between 10 and 20 m above sea level.

6.2.2 Soil and ASS

Mapping from the ASRIS indicates the site is underlain by Anthroposols which are soils which have been modified or constructed by humans.

Mapping from ASRIS indicates that there is an extremely low probability of occurrence of ASS.

6.2.3 Geology

Geological mapping (Queensland Globe) indicates that the majority of the site is underlain by Quaternary flood plain alluvium, comprising clay, silt, sand and gravel.

The bore card for the closest registered bore to Site (RN 186025) indicates the geology beneath the site to comprise topsoil, overlying red silts which are underlain by coarse brown sands.

6.2.4 Surface Water

The closest water feature to site is a canal, situated 660m north of the Site. The canal flows in an easterly direction and appears to connect into a reservoir located 4km north east of the site. Further north, approximately 3 km of the site, is the Burdekin River, which is the major hydrological feature in the area.

Burdekin Regional Council online interactive mapping indicates the site and adjacent land is not within the Storm Tide Evacuation Zone.

6.2.5 Hydrogeology

The Groundwater Resources of Queensland 1:2,500,000 mapping indicates the aquifer beneath the site to comprise unconsolidated sediments, with a yield of >15 L/s and salinity of 500 - 1500 mg/L, the groundwater is noted to be suitable for most purposes and marginal for human consumption, and low tolerant crops.

A search of the NRME registered groundwater bore database in February 2019 identified 24 bores within 1 km of the site and seven within 500m. The closest seven bores are summarised in **Table 19**. Bore cards for the closest seven bores are included in **Appendix G** with the registered bore locations shown on **Figure F7**, **Appendix A**.

Information on the Burdekin Shire Council website indicates that the Home Hill water supply scheme consists of eight groundwater bores located on the western portion of the town. The supply is supplemented by two emergency bores. The capacity of the borefield is 290 L/s.

Table 19 Registered groundwater bores within 500 m of the Home Hill Fire Station

Bore ID	Distance and Direction	Screened Depth	Additional Comments / Use if Known
RN186025	220m south	19 - 20.1m within sand	Water supply, quality potable, SWL 9.7mBGL
RN175675	370m north-east	18.8 – 20m within sand	Water supply, quality potable, SWL 9.45mBGL
RN175547	390m north-east	18.9 – 20.12m within sand	Water supply, quality potable, SWL 9.45mBGL
RN175674	420m north-east	18.8 – 20m within sand	Water supply, quality potable, SWL 10.3mBGL
EN175546	460m north-east	18.9 – 20.12m within sand	Water supply, quality potable, SWL 9.45mBGL
RN153225	490m north	Unclear, possibly 15.15 – 16.15m sand and stones	Water supply, quality potable, SWL 6.5mBGL
RN175676	500m south-east	19 - 20.2m within sand	Water supply, quality potable, SWL 9.3mBGL

Based on the proximity of surface water features to the site, the inferred groundwater flow direction is to the north or north-west, towards the Burdekin River.

6.2.6 Surface Water Environmental Values

EVs and water quality objectives are not yet defined for the Haughton Basin area under EPP Water and are under development. As per DES guidance, in areas where no water quality objectives are scheduled, the Queensland water quality guidelines apply as default objectives, see **Table 20**.

Table 20 Queensland Water Quality Guidelines: Surface Water Environmental Values

Waterway Name	Aquatic Ecosystems	Irrigation	Farm Supply/Use	Stock water	Aquaculture	Human Consumer	Primary Recreation	Secondary Recreation	Visual Recreation	Drinking Water	Industrial Use	Cultural and Spiritual Values
Queensland water quality guidelines	X	X	X	X	X	X	X	X	X	X	X	X

6.2.7 Groundwater Dependent Ecosystems and Environmentally Sensitive Areas

A search of the GDE database indicated the following aquatic ecosystems are present within 4 km of the site: Wetland at Burdekin River – moderate potential GDE. No subterranean and terrestrial GDEs were identified.

A search of the ESAs indicated the site is within a Category C river improvement area. Areas to the north of the site along the Burdekin River are classed as Category B endangered regional ecosystems (biodiversity status).

6.3 Summary of Key Findings

The key information collated from the interviews conducted on-site and review of available information on the site and the environmental setting identified during the review of on-Site records is summarised below:

- Based on aerial photographs, the site was developed in the mid to late 1960s with the current fire station building built in the late 1990s/early 2000s. Prior to development, the site was unoccupied and the landuse is not known. The site is surrounded by commercial and residential properties and recreational land.
- Based on the interview information, firefighting foams containing PFAS have been present at the site with AFFF (3M Lightwater AFFF) used prior to 2003. Since this time, Solberg foam has been used, which reportedly does not contain PFAS.
- The current inventory is 160 L Solberg foam. Foam concentrate is stored in 20 L containers in the ancillary shed to the Engine Room. No infrastructure (e.g. tanks) is known to have stored foam. Foam storage has always been low with drums collected from larger station on an as needed basis.
- Firefighting training using foam has occurred on the grassed area in the centre of the site. The volume of foam used has not been specified but was noted to be low due to the cost of the foam concentrate. All foams are reportedly used prior to the use by date. No inadvertent releases of foam concentrate were identified.
- PFAS was identified in two water samples collected in 2016 from the Case 4 Pit. PFHxS+PFOS (0.097 µg/L) was detected. Two samples of tap water were also analysed and PFAS was not detected.
- A high level review of the area within 4 km of the site has identified the potential for off-site sources of PFAS including a sugar mill (heavy industry).
- The site is located within the flood plain of the Burdekin River and is underlain by Quaternary flood plain alluvium. Nearby registered bores indicate the standing water level for abstraction purposes to be 6.5 to 10 mbgs. Groundwater flow is likely to be directed to the north or northwest towards the Burdekin River, located approximately 3 km away.
- Stormwater drainage consists of perimeter drains. The southern portion drains to Tenth Avenue to the west. A surface depression is located in the grassed area at the centre of the site.

7.0 Proserpine Fire Station Data Review

7.1 Site Setting

7.1.1 Site Identification

Proserpine Fire Station is located in central Proserpine and is accessed via Main Street. Refer to **Figure F9** and **Figure F10** in **Appendix A**. Site identification details are shown in **Table 21**.

Table 21 Proserpine Fire Station Site Identification

Item	Details
Site Address	102 Main Street, Proserpine, 4800
Registered Site Owner	State of Queensland
Site Occupier	QFES
Local Government Area	Whitsundays Regional Council
Zoning	Major Centre
Lot and Plan	Lot 1 / RP706146
Tenure	Freehold
Latitude / Longitude	-20.402313, 148.584109
Site Area	2,023m^2
Current / Future Site Use	Fire Station

7.1.2 Site Inspection and Interview

A site visit was completed on 13 February 2019 by an AECOM consultant accompanied by QFES representatives (Russell Collier and Matt McFarlane) and the findings of the site visit are summarised below. Photographs taken during the site visit are included in **Appendix B**.

7.1.2.1 Site Infrastructure and Features

The site layout is detailed on **Figure F10**, **Appendix A**. The fire station was empty at the time of the inspection. Site features include a two-storey fire station with the ground floor containing several interconnected rooms (training room, changing rooms and storage areas) on either side of the Engine Room. The second floor contains a desk-based training area. At the rear of the site is a workshop which also contains an in-ground vehicle inspection pit.

Training activities were historically conducted on the large open space concreted yard in-between the fire station and workshop. Staining was noted on the concrete slab (refer to **Plate 3** in **Appendix B**).

A concrete in-ground water tank (Case 4 Pit), with dimensions of 1060 mm diameter x 3840 mm deep and a capacity of 3,390 L, was located in the central area of the site and used for pump testing and water drafting training. The in-ground tank (Case 4 Pit) was covered by a steel plate that partially prevented water ingress and has since been decommissioned and filled with sand and capped with concrete.

Perimeter stormwater drains are located on the eastern side of the site and a concrete spoon drain bisects through the centre of the fire station. The surface water flow direction is towards the Main Street in the north.

No information was identified regarding the use of fill at the site.

7.1.2.2 Interview Information

An interview was conducted with Russell Collier, the QFES Area Commander who has worked in the Mackay region for 30 years. Use of the station ceased in February 2017 and operations were migrated to a new station located in Proserpine.

It was reported that foam concentrate has continuously been used at the station since the 1950s. Protein foams were used at the site during the 1980s and AFFF use began during the 1990s, but ceased roughly 15 years ago (2003). No infrastructure was used to store foam concentrate and foams were kept in the 20 L drums from the supplier. Pallets of foam concentrate were historically collected from a central office or station such as Mackay. Foams were stored in 20 L drums in the southern portion of the main fire station building. Pallets of training foam 'Fire Break' were occasionally stored in the workshop at the southern portion of the site, for the Rural Fire Brigade. No foam drums are currently stored on the site.

Foam concentrate was used for training purposes across the open area in the middle of the site, which is sealed with concrete, between the firefighting station and the rear shed. Foam concentrate was not used very often (unknown frequency) for training purposes due to the high cost. When training exercises involved the use of foam only one 20 L container was reportedly used. The area of foam usage was hosed down after training exercises.

The QFES representative was not aware of any incidents where foam was inadvertently discharged at the site. There was no register to record historical foam concentrate usage at the site; the current system allows for recording of foam volumes and requires a risk assessment to be completed prior to use / training.

7.1.3 Surrounding Land Use

The site is surrounded by commercial and industrial businesses. Main Street is located on the northern site boundary with residential, commercial and industrial.

Details of surrounding land uses are provided in **Table 22** below.

Table 22 Proserpine Fire Station Surrounding Land Use

Direction	Land Use
West	Adjacent west of the site are commercial businesses. Residential dwellings are also present. Rail corridor is located 550m to the west traversing north to south.
Southwest	Adjacent south-west is the Proserpine Ex-Services Club. Residential and commercial businesses are further beyond.
South	Adjacent south of the site are residential dwellings.
Southeast	Adjacent southeast of the site are residential dwellings.
East	Adjacent east of the site is a Ford dealership. Beyond the dealership are commercial businesses and a church. Residential dwellings are also present.
Northeast	Adjacent north northeast of the site is Main Street, beyond are commercial buildings (the Whitsundays Regional Council and a shopping plaza).
North & Northwest	Adjacent north north-west of the site is Main Street, beyond are hardware and machinery businesses, the Proserpine Hospital, a pharmacy, hotel, ambulance service and other commercial businesses. Approximately 360m north to northwest is the Proserpine sugar mill (Wilmar Sugar), with the Proserpine river north of the sugar mill.

7.1.4 Title Search

A copy of the current title, reference 20154201 was obtained and is included in **Appendix D**. The site owner is listed as The State of Queensland represented by public safety business agency.

7.1.5 EMR / CLR

A search of the DES EMR and CLR for Lot 1 / RP706146 indicated that the site is not included on either the EMR or CLR. The search result is included in **Appendix E**.

7.1.6 Historical Aerial Photographs

An historical aerial photography survey was undertaken for the site, with a total of eight photographs were reviewed from the QImagery online mapping portal. The historical aerial photographs spanned a period of 60 years with the most recent from 2005, to the earliest 1945. Aerial photographs were reviewed at intervals of 1 to 15 years (at the most appropriate scale) to allow for tracking of changes in use of the site and surrounding properties over time (see **Appendix F**). The key observations made during the review of aerial photographs are summarised in **Table 23** as follows:

Table 23 Historical Aerial Photography Review for Proserpine Fire Station

Date	Description	Scale / Photo No.
1945	A building is established on or near the site; it is set back from the road and is unlikely to be the current fire station building (the photograph has poor resolution). Surrounding the site are commercial and residential buildings. Some agricultural activity is undertaken on the outskirts of Proserpine. The sugar mill appears to be constructed towards north-northwest of town. Railway constructed to the east of the site.	Qimagery 1:33,700 MAP120/4909
1960	A building is visible on site; it is unlikely to be the fire station building as it is set further back from the road than the existing fire station building.	Qimagery 1:12,000 QAP1149/41
1962	The fire station building is present. Some commercial, residential and industrial expansion to the south and west of town. No significant changes identified.	Qimagery 1:12,000 QAP1320/1120
1974	No changes on-site. Further expansion to the south and southeast. Buildings and silos constructed at the sugar mill.	Qimagery 1:12,000 QAP2738/7766
1983	Buildings on-site are constructed to the south. Town density increasing to the south. A water body, possibly man made, is present to the north east of the site, approximately 650m. Bruce Highway is constructed to the east.	Qimagery 1:12,000 QAP3985/948
1992	A building on-site is constructed to the south. Expansion of residential and commercial properties to the south. Buildings and a silo added to the sugar mill. No significant changes identified.	Qimagery 1:10,000 QAP5127/206
2001	A small portion of the rear of the main building has been demolished, and the large shed in the south of the site has been extended to the south. Building density increasing along Main Street. The shopping plaza to the northeast has been constructed approximately 150m. Industrial expansion undertaken east of the sugar mill. Town expansion continuing to the south and southeast.	Qimagery 1:7,500 QAP5878/73
2005	Low resolution photograph, however, there appear to be minor changes to the main building onsite. Clearing undertaken to the south with residential and commercial expansion. Agriculture is still undertaken north of the Proserpine River.	Qimagery 1:40,000 QAP6259/18

In summary, the site was developed around 1962. Aerial imagery from 1945 was of low resolution, however a building on-site is depicted. This may be the fire station. Aerial imagery indicates a single building was initially built on site, and additional buildings were constructed during the period 1983 to 2005. Other than the construction and removal of various buildings, the site has undergone little change.

7.1.7 Review of Potential Off-Site Sources of PFAS

A high level review of the land use of the area within 4 km of the site has identified the following potential sources of PFAS:

- A helicopter pad is present 350m to the north of the site;
- Wilmar Sugar Mill is located 360m to the north west of the site;
- An industrial area is located approximately 850m south west of the site, the area includes bulk fuel storage, fertilizer depot, a scrap yard / recycling yard, vehicle smash repairs yard, Mill Track (Concrete & Precast Product Manufacturers), and Elgas Depot;
- Dowden's pumping and water treatment plant is located 950m south west of the site; and
- The Proserpine treatment plant is located 1 km north of the site.

7.1.8 Review of Previous Environmental Reports

7.1.8.1 2016 QFES Water Sampling

The QFES (2016) report indicated that five water samples were collected from the Proserpine Fire Station in 2016; two samples were from the Case 4 Pit, two samples of tap water supplied by towns water and a rinsate sample. All samples were analysed for PFAS and TOPA. Results are presented for 'tap' and 'sample'. The Case 4 Pit samples indicated a total PFAS concentration of 1.1 µg/L The analysis also detected PFOA (0.011 µg/L) at a concentration below the Australian health-based guidelines for both drinking and recreational water (HEPA, 2018). However, the sum of PFHxS+PFOS was 0.90 µg/L, which was above both the drinking water and the recreational water guidelines (NEMP, 2018). TOPA results suggested the potential presence of precursors. Concentrations of PFAS within the tap water sample were below laboratory LOR.

The report indicates that the Case 4 Pit is 3,390 L capacity and is located in the central area of the property. The tank is used for pump testing and water drafting training and is covered by a steel plate cover that partially prevents water ingress. The tank was 10.4% full at the time of sampling.

The QFES report identified that the class B foam concentrate typically used by QFES prior to 2003 was 3M Lightwater.

No other historical environmental reports have been supplied to AECOM.

7.1.8.2 Queensland Government Information

The following information was sourced from the Queensland Government website[7]:

> *Testing undertaken by Queensland Health and the Whitsunday Regional Council in April 2018 identified a single groundwater bore adjacent to the Proserpine Showgrounds that contained PFAS slightly above drinking water criteria, returning a result for PFOS of 0.08 micrograms per litre (µg/L), slightly exceeding the drinking water criteria of 0.07 µg/L. Whitsunday Regional Council immediately disconnected the bore from the water supply.*
>
> *Testing subsequently carried out by Queensland Health and the Whitsunday Regional Council showed no quality issues with water being supplied to Proserpine residents.*
>
> *DES understands that testing at three other drinking water supply bores along the Proserpine River did not detect any PFAS. In addition to the bore near the Proserpine Showgrounds, DES tested 23 groundwater bores and all samples returned to date are well within the relevant health based guideline values.*
>
> *Eight stormwater drainage locations were also tested and returned PFAS results below drinking water criteria while surface water sampling in the Proserpine River and Lagoon Creek did not detect any PFAS. Groundwater use surveys, and sampling and analysis of private groundwater bores, have been conducted. The results of the analysis of private bores showed no results of concern.*

[7] https://www.qld.gov.au/environment/pollution/management/disasters/investigation-pfas/proserpine

The four bores with detectable PFAS concentrations were not identified, however, the Whitsundays Regional Council[8] identified that none of these bores were used for the town water supply.

7.2 Environmental Setting

7.2.1 Topography

Contour mapping from Whitsunday Regional Council online interactive mapping, indicates the site slopes gently down towards the north / north-west, sloping down from an elevation of 13 m to 12.5 mAHD.

7.2.2 Soil

Mapping from the ASRIS indicates the soil types underlying the site and surrounding area are Rudosols. Rudosols are usually young soils in the sense that soil forming factors have had little time to pedologically modify parent rocks or sediments. The component soils can vary widely in terms of texture and depth.

Mapping from ASRIS indicates the Site is situated within an area where there is a high probability of ASS occurrence. The WRC interactive online mapping indicates the site is classed as 'Land above 5m AHD and below 20m AHD', indicating that ASS may be present at the site and that this should be a consideration if any excavation is proposed.

7.2.3 Geology

Geological mapping indicates that site is underlain by the Quaternary flood plain alluvium, which comprises clay, silt, sand and gravel.

The bore card for the closest registered groundwater bore (RN141173) located 175m south east of the site, indicates the geology comprise 0 and 7m silty soil and silty clay, 7 and 11m grey mangrove clay with organics, terminating in lightly clayed sand, proven to a maximum depth of 12.7m.

7.2.4 Surface Water

An unnamed water feature is located approximately 600m to the east of the site boundary; it appears to drain to the east in to a tributary to the Proserpine River. The Proserpine River is located approximately 700m north of the site boundary. There are no other surface water features within 1 km of the site. WRC online interactive mapping indicates the site and adjacent land is not within a flood risk area.

7.2.5 Hydrogeology

The Groundwater Resources of Queensland 1:2,500,000 mapping indicates the aquifer beneath the site to comprise sedimentary strata, with a yield of 5-15 L/s and salinity of <500 mg/L, the groundwater is noted to be suitable for most purposes.

A search of the NRME registered groundwater bore database in February 2019 identified 47 bores within 1 km of the site. There are 13 bores within 500m of the site and these are summarised in **Table 24**. Bore cards are included in **Appendix G** with the registered bore locations shown on **Figure F9**, **Appendix A**.

Table 24 Registered groundwater bores within 500m of Proserpine Fire Station

Bore ID	Distance and Direction	Screened Depth	Additional Comments / Use if Known
RN141173	175m east	11.2 – 12.2m within Proserpine River Alluvium (clayey sand and sand)	For water supply, SWL recorded as 2 mbgl, quality 397µs/cm.
RN85023	205m south-west	Unclear – however, appears to be 18 – 24m within the Edgecumbe Beds (conglomerate and sandstone)	None provided
RN131776	225m south	11.5 – 13.5m within the Proserpine	For water supply, quality

[8] https://www.whitsunday.qld.gov.au/633/PFAS-Per-and-Poly-fluorinated-Substances

Bore ID	Distance and Direction	Screened Depth	Additional Comments / Use if Known
		Alluvium (coarse gravel).	listed as potable, SWL 2 mbgl
RN63163	270m south-east	6 – 9.5m within the Proserpine Alluvium (sand).	SWL listed as 3.0m BGL
RB131618	320m south-west	7 – 11m within the Proserpine Alluvium (sand and gravel).	For water supply, SWL listed as 5 mbgl
RN131790	430m south-east	9 – 15 within the Proserpine Alluvium (sand and gravel).	For water supply, SWL listed as 4.5 mbgl
RN131792	460m southwest	9 – 12m within the Proserpine Alluvium (sand).	For water supply, quality listed as potable
RN12200050	380m north-east	Unclear but appears to be 24 – 27.7m within alluvium	Noted as abandoned but still useable. GW chemistry marked on card.
RN12200225	380m north-east	9.7 – 14.7m alluvium (sand and gravel)	GW chemistry marked on card.
RN182094	440m north	3.4 – 6.5m within Proserpine River Alluvium (sand)	Role listed as monitoring. SWL 3.2 mbgl
RN81863	460m north	14 – 22m, aquifer not listed	Role listed as water supply. SWL 3.05 mbgl
RN182097	500m north-west	6.4 – 9.4m within Proserpine River Alluvium (clay and sand)	Role listed as monitoring. SWL 6.7 mbgl

Based on the proximity of surface water features to the site, the inferred groundwater flow direction is to the north, towards the Proserpine River.

7.2.6 Surface Water Environmental Values

The Proserpine River is located approximately 700m to the north of the site and flows in an easterly direction into Repulse Bay. The river falls into Proserpine River Basin, and the Site falls into the Proserpine River fresh water catchment. EPP Water defines the Proserpine River fresh waters as an aquatic ecosystem with high ecological value and outlines EVs associated with the catchment area (DNRM, 2010). The relevant EVs are listed below.

Table 25 Surface Water Environmental Values for the Proserpine River Basin

Waterway Name	Aquatic Ecosystems	Irrigation	Farm Supply/Use	Stock water	Aquaculture	Human Consumer	Primary Recreation	Secondary Recreation	Visual Recreation	Drinking Water	Industrial Use	Cultural and Spiritual Values
Proserpine River fresh waters	X					X		X	X			X

7.2.7 Groundwater Dependent Ecosystems and Environmentally Sensitive Areas

A search of the GDE database indicated the following aquatic ecosystems are present within 4 km of the site: Wetland at Proserpine River – moderate potential GDE. No subterranean and terrestrial GDEs were identified.

A search of the ESAs indicated that the site is classed within a river improvement area (Category C).

7.3 Summary of Key Findings

The key information identified during the review of on-Site records is summarised below:

- Based on aerial photographs, the fire station has been present since about 1962 (approximately 57 years). The site had undergone some development prior to this time, however, the previous landuse is not known. The site is surrounded by commercial and residential properties and recreational land.
- Use of the station ceased in February 2017 and operations were migrated to a new station located in Proserpine. Based on the interview information, firefighting foams were been used at the site since at least the late 1980s. Firefighting foam containing PFAS (3M Lightwater) was used between the 1990s and approximately 2003. The type of protein foam has not been identified and the potential for this foam to have contained PFAS is uncertain. Since 2003, Solberg foam has been used, which reportedly does not contain PFAS. There is no information on the types of foam used prior to the late 1980s and the potential for use of other types of foam concentrates containing PFAS cannot be discounted.
- The site is currently vacant and no foams are currently stored. Historically foams were stored in 20 L drums from the supplier in the southern portion of the main fire station building and occasionally in the workshop at the southern portion of the site. No infrastructure (e.g. tanks) is known to have stored foam.
- Firefighting training using foam has occurred on-site in the open area in the central portion which is sealed with concrete. The period of the training is not known. The volume of foam used has not been identified, however its use was noted to be limited. It was not identified how out of date foam concentrate is disposed of. No inadvertent releases of foam concentrate were identified.
- PFAS was identified in two water samples collected in 2016 from the Case 4 Pit. PFHxS+PFOS (0.90 µg/L), PFHxS and PFOA (0.011 µg/L) were detected. Two samples of tap water were also analysed and PFAS was not detected.
- Information on the Queensland Government website indicated that PFAS was detected in groundwater in one bore used for drinking water purposes at a concentration that marginally exceeded the drinking water guidelines in April 2018. This was located at Proserpine Showgrounds approximately 1.6 km from the site. A total of 26 other bores were sampled with all results within health based guidelines. The locations of these bores are not known. The information on the Queensland Government website indicated that the PFAS concentrations were below Australian drinking water guidelines (HEPA, 2018). Information on the Queensland Government website[9] indicates that PFAS was not detected in surface water samples from the Proserpine River and Lagoon Creek.
- A high level review of the area within 4 km of the site has identified the potential for off-site sources of PFAS including a sugar mill, water treatment / treatment plants and other industrial facilities.
- The site is underlain by Quaternary flood plain alluvium with nearby registered bores indicating the standing water level to be between 3 and 7 mbgs. Groundwater flow is potentially towards Proserpine River located 700m to the north. Lagoon Creek is located approximately 1.9 km to the west and southwest.
- Stormwater drainage consists a perimeter drains on the eastern side of the site and a concrete spoon drain bisect through the centre of the Fire Station. The surface water flow direction is towards the Main Street in the north.

[9] https://www.qld.gov.au/environment/pollution/management/disasters/investigation-pfas/proserpine

8.0 Toowoomba Fire Station Data Review

8.1 Site Setting

8.1.1 Site Identification

Toowoomba Fire Station is located in the suburb of Harristown, approximately 2 km from Toowoomba city centre. The fire station is accessed from Anzac Avenue, refer to **Figure F11** and **Figure F12** in **Appendix A**. Site identification details are shown in **Table 26**.

Table 26 Toowoomba Fire Station Site Identification

Item	Details
Site Address	201 Anzac Avenue, Harristown, Toowoomba, 4350
Registered Site Owner	The State of Queensland
Site Occupier	QFES
Local Government Area	Toowoomba Region
Zoning	Medium impact industry / Manufacturing and industrial land use
Lot and Plan	Lot 2 / RP132831
Tenure	Freehold
Latitude / Longitude	-27.571767, 151.924085
Site Area	6,457m^2
Current / Future Site Use	Fire Station

8.1.2 Site Inspection and Interview

A site visit was completed on 22 January 2019 by two AECOM consultants accompanied by a QFES representative (Inspector Peter Bradow) and the findings of the site visit are summarised below. Photographs taken during the site visit are included in **Appendix B**.

8.1.2.1 Site Infrastructure and Features

The site is crewed by 20 permanent fire fighters from fire and rescue, fire and emergency SES and the rural fire teams. Site infrastructure includes:

- Two engine bays with side rooms attached housing one firefighting appliance
- Co-located at the rear of the property is the training facility where BA Hazmat operate
- A station tower and smoke room
- Fire and emergency services building connected to the station tower and smoke room. The building operates as maintenance facility for equipment and PPE with a designated washroom room at rear
- Located at the rear of the training car park is a large concrete in-ground tank, Case 4 Pit (165,400 L capacity)
- SES occupies four of the buildings in the north western portion of the site, including three demountable buildings designated for storage and training purposes and one building located on concrete hard stand utilised by office staff. A 2,000 L water tank is located at the rear (west) of the building.

- Regional Technical Rescue occupies a shed located in the central portion of the western boundary of the site. The shed is designated for storage of equipment including, rescue boats, life jackets, kayaks.
- Rural Fire and Services staff occupy a demountable located on the southern portion of western boundary of the site. A 2,000 L water tank is located at the rear (west) of the demountable
- Confined space training area which includes an old silo, several large concrete pipes and drains
- Perimeter drain, running along the northern site boundary in the western portion of the site
- A garage building located at the front of the site, with a 5000 L water tank located adjacent
- A foam shed located near the entrance of the site, currently used for storage of foam, firefighting appliances, and operative equipment. Prior being built in 2006, the area was covered by grass and was also formerly used as a foam storage area.

No information was identified regarding the use of fill at the site.

8.1.2.2 Interview Information

The site has operated as a fire station since 1976. Inspector Peter Bradow has been stationed at the Toowoomba QFES site for 21 years (i.e. since approximately 1997). He reported that blood and bone foams (i.e. protein foams) and AFFF (identified as 3M Lightwater in QFES, 2016) were used prior to 2003. In 2003 Toowoomba QFES stopped using AFFF and began using Solberg RF3x6 ATC foam concentrate. Prior to 2006, a grassed area located to the east of the tower (located in the central southern portion of the site) was used to store foam concentrate. A shed with a sealed floor, has now been erected at the same location which is utilised as a foam storage facility. Historically, foam concentrate was stored in 20 L drums and the total volume of foam concentrate stored on site never exceeded 200 L. There has never been a foam pump system located on site and foam has always been decanted from drums into trucks.

Training exercises at the site were conducted in the carpark / training area (sealed with concrete) with foam sprayed to ground. The finished foam was captured in the perimeter drains to the north. Foam training exercises were historically carried out once a month where finished foam levels were reported to reach ~2 m high which drained towards the north-western corner of the carpark. Foam training exercises no longer take place on site and are conducted in Charlton, another suburb of Toowoomba located to the north-west of the site.

Appliance / equipment testing was carried out regularly with foam pumps in the trucks activated once a week and finished foam sprayed across the carpark/ training area to ensure systems were functioning. Dissipation of foam reportedly took between one and two weeks. Inadvertent releases of foam may have occurred when decanting foam from drums during training exercises.

The training tower was historically used for foam training exercises where firefighting foam, smoke and water were pumped into the tower. This training was discontinued in 2003. Foam concentrate (type not identified) was also reported to be used on grass and plants on site as a wetting agent.

Out of date foam concentrate was historically used for training purposes on-site, with any waste foams or old fire extinguishers collected from site by a waste removal contractor. The introduction of new regulations regarding use of foams containing PFAS resulted in all fire extinguishers and AFFF drums being sent to Brisbane.

Current foams stored on site include Solberg RF3x6 ATC Class B foam and Fire Brake Class A foam. These are kept in the foam storage shed near the entrance of the site. Equipment and personal protective equipment involved in foam usage off-site now undergoes decontamination procedures off-site before being brought back to the washroom facility on-site. It was reported that Toowoomba Regional Council now manages the stormwater from the washroom.

Historically, foam usage on and off-site was not recorded. As of last year (2018), a foam usage and spill register came into use at the site.

The large concrete in-ground tank (Case 4 Pit), located in the north-western corner of the carpark was used for static water supply and collection of stormwater run-off. The pit was decommissioned approximately six months ago (in 2018).

Prior to 2006 a fuel depot was reported to operate to the north of the site.

8.1.3 Surrounding Land Use

The site is surrounded by commercial / industrial businesses. Anzac Avenue is located on the eastern site boundary, with more commercial properties and the South Western Railway line beyond.

Details of surrounding land uses are provided in **Table 27** below.

Table 27 Toowoomba Fire Station Surrounding Land Use

Direction	Land Use
West	Adjacent west of the site is cleared grassland, which was a former scrap yard. No scrap remains, but the buildings are still present. Beyond the scrap yard to the south west is a stone mason's yard and to the west is depot and welding works.
South-West	Adjacent south-west is a stone mason yard.
South	Adjacent south of the site are commercial buildings including Motor Mecca (a mower shop), the former scrap yard and Tentworld, beyond these businesses is Reece Plumbing and Australian Stockmans Saddlery.
Southeast	Anzac Avenue, beyond which is a commercial property (snack bar), the South Western Railway line, and a livestock auction yard is located 100m south-east of the site, beyond the railway. Concordia College and Harristown State High School are located adjacent to the livestock auction yard, 375m and 700m south-east of the site boundary respectively.
East	Anzac Avenue bounds the site to the east, beyond which is the Stock Exchange Hotel, an automotive mechanical workshop, other commercial properties and the South Western Railway line.
North	Adjacent north and north-west of the site is a metal working workshop.
Northeast	A commercial retail park at 189 Anzac Avenue bounds the site to the north-east. Beyond which is a large (unknown use) industrial site. Toowoomba Regional Council depot is located approximately 130m north east of the site, beyond Anzac Avenue.

8.1.4 Title Search

A copy of the current title, reference 14794124 is included in **Appendix D**. The site is owned by The State of Queensland. The title reference indicates there is an easement burdening the land Lot 3 / SP217391 over Easement B and benefiting the land over Easement C on SP199158.

8.1.5 EMR / CLR

A search of the DES EMR and CLR for Lot 2 / RP132831 indicated that the site is not included on either the EMR or CLR. The search result is included in **Appendix E**.

8.1.6 Historical Aerial Photographs

An historical aerial photography survey was undertaken for the site, with a total of 15 photographs reviewed from the Toowoomba Regional Council, Interactive Mapping and the QImagery online mapping portal. The historical aerial photographs spanned a period of 72 years with the most recent from 2018, to the earliest 1946. Aerial photographs were reviewed at intervals of 1 to 17 years (at the most appropriate scale) to allow for tracking of changes in use of the site and surrounding properties over time (see **Appendix F**). The key observations made during the review of aerial photographs are summarised in **Table 28**.

Table 28 Historical Aerial Photography Review for Toowoomba Fire Station

Date	Description	Scale / Photo No.
1946	The western portion of the site is unoccupied and is cleared grassland. The eastern half of the site is occupied by what appears to be residential building. The road which is now Anzac Avenue bounds the site to the east, beyond which is a railway line and an oval. The Toowoomba Regional Council Depot building is present approximately 130m to the northeast. The Livestock Auction Yard is visible approximately 140m to the south east of the site. To the north, west and south the land is cleared, with a few houses and sparse tree cover.	Toowoomba Regional Council Interactive Mapping Portal / Unknown scale
1955	Image quality is poor. No significant changes identified.	
1963	An oval track mark is visible on the ground across part of the northern portion of the site. A large building has been constructed adjacent to the southern site boundary. Another building has been constructed adjacent to the western site boundary. The area adjacent north and west of the site has been cleared of trees and disturbed. Unidentified objects (possibly vehicles / machinery) are present to the west of the site. Another oval shape track is present in the field adjacent to the south-western site corner.	
1971	Image is poor quality, there does not appear to be any development on-site. The building and land which is now the J.H. Wagner and Sons stonemason and stone yard is now visible to the south west of the site. More development in the surrounding area – industrial buildings to the south and north.	
1972	The site appears to be undeveloped however, image quality is not good.	Qimagery 1:47,900 QAP2553/1
1975	The site is now occupied by the fire station – the slab and one building are visible. Some industrial development is starting to take place to the north and south of the site.	Qimagery 1:30,000 QAP2838/46
1982	There are three main buildings visible on site. More development in the surrounding area.	QImagery 1:24,900. Helidon QAP4010/2
1988	Significant industrial development in the surrounding area is visible – unknown industry types. There appears to be a scrap yard which bounds the site to the west and south. Stark Court (cul-de-sac) is now visible to the east of the site.	QImagery 1:25,000. Helidon QAP4731/97
1992	No significant changes to site or surrounding area.	QImagery 1:30,000. Helidon QAP5031/54
1994	No significant changes to site or surrounding area.	Toowoomba Regional Council Interactive Mapping Portal / Unknown scale
1998	A new building has been built in the south-western most corner of the site. No other significant changes to the fire station site or surrounding area.	
2000	Another new building has been built on site along the western site boundary. There are now six buildings on site. No other significant changes to the fire station or surrounding area.	
2003	The building in the south-western most corner is no longer present. A new building is present in the north-western corner. An above ground cylindrical tank (used for confined space training) is visible in the main yard, adjacent to the northern site boundary. No significant changes to the surrounding area.	
2006	A training operation is visible, occurring on site, in the main yard area, close to the northern site boundary. A small building has been constructed in the north-western portion of the site. The land adjacent	

Date	Description	Scale / Photo No.
	to the north-eastern site boundary had been cleared of buildings and industry. No other significant changes noted.	
2009	A building has been constructed in the south-western corner and the small building along the northern site boundary has been extended. The cleared industrial land adjacent to the north-western site boundary is now a commercial / retail park. No other significant changes to the site or surrounding area.	
2010	No significant changes to site. The scrap yard which bounds the site to the south and west has been cleared of scrap and only the buildings remain.	
2013	A new building and cylindrical tank are visible adjacent to the main building at the front of the site (east). No other significant changes noted.	
2015	A large building has been constructed at the mid-point along the northern site boundary. Another new building is also present along the southern site boundary. No other significant changes.	
2017	The large building which was constructed at the mid-point along the northern site boundary (visible in 2015 imagery) is no longer present. No other significant changes noted.	
2018	No significant changes noted.	

In summary, development of the site does not occur until circa 1975, although the 2016 QFES Report indicated the site was built prior to 1970. Imagery from 1971 and 1972 have poor resolution.

Aerial imagery indicates that three buildings were initially built on site, and more were constructed or removed through the period 1975 to 2017. In 1998 a new building was constructed in the south west corner of the site, later removed in 2003. In 2000 a new building was constructed in the western portion of the site and in 2003 an above ground cylindrical tank (used for confined space training) is visible in the central northern portion of the site. Imagery from 2006 shows the area in the central part of the site being used for fire-fighting training. In 2009 new building in the south western corner was constructed and the existing building in the western part of the site was extended.

From around 1963 the surrounding area starts to undergo industrial development. A stone mason is present to the southwest of the site, a scrap yard adjacent to the south and west and other unknown industrial properties to the north and north-west.

8.1.7 Review of Potential Off-Site Sources of PFAS

Review of the landuse of the area within 4 km of the site has identified the following potential sources of PFAS:

- SES Toowoomba Group – 192A Stephen Street, 200m to northwest
- Lowes Petroleum (BP Bulk fuel depot) 252 Anzac Avenue, 800m to south
- Toowoomba Airport, Bridge Street, 3.2 km to northwest
- Rural Fire Service – 2 Phillips Street, 3.6 km to east-northeast
- Viva Energy (formerly Shell) Toowoomba, 18-22 Brook Street, 3.8 km to north east
- Puma Energy fuel station 4 km to the north east of the site.

8.1.8 Review of Previous Environmental Reports

The 2016 QFES report indicated that Case 4 Pit at the Toowoomba site was empty and dry. There are therefore no samples and no analytical results for this site. The report indicates that the in-ground tank is 165,400 L capacity and is located at the rear of the training station car park. The tank had not been used for 8 to 10 years. No other historical environmental reports have been supplied to AECOM.

8.2 Environmental Setting

8.2.1 Topography

Contour mapping from Toowoomba Regional Council online interactive mapping indicates the site slopes gently down towards the west / north-west, sloping from 648 to 645 mAHD. The site walkover indicated the eastern half of the site is approximately 1 to 1.5m higher in elevation than the western half of the site, there is a ramp which slopes down in the centre of the site, joining these two areas. With the exception of this ramp, both areas of the site are relatively flat. The QFES representative indicated that surface-water run-off is towards the north-west into the perimeter drain, located along the site boundary.

8.2.2 Soil

Mapping from the Queensland Globe indicates the soils underlying the site and surrounding area are deep red clay soils with lateritic fragments from the Ruthven-Middle Ridge. The Atlas of Australian Soils of Queensland indicates the soils to be uniform, fine cracking dark clay horizons underlain by brown / mottled clay, underlain by rock before 1.5m depth.

Mapping from the Queensland Globe indicates the presence of ASS at the site is unlikely.

8.2.3 Geology

Geological mapping indicates that the site is underlain by the Main Range Volcanics, comprising of olivine basalt.

The bore card for the closest registered groundwater bore to the site (RN87119) indicates the geology beneath the site to comprise 0 – 1 m soil, 1 – 42 m red clay, 42 – 51 m decomposed basalt, 51 – 54 m basalt, 54 – 73 m honeycomb basalt (vesicular), 73 – 76 m basalt.

8.2.4 Surface Water

An unnamed water course listed as ‘minor’ in the Queensland Globe is located approximately 320m to the north-west of the site boundary, it is likely that this creek is ephemeral. There are no other surface water features within 500m of the site. The unnamed surface water course appears to flow into Spring Creek which is located 1.7 km south-west of the site at its closest point. Toowoomba Regional Council online interactive mapping indicates there is a stormwater pipe which is located within an easement, along the northern edge of the site.

Toowoomba Regional Council online interactive mapping indicates the site and adjacent land is not within a flood risk area (‘property not affected’).

8.2.5 Hydrogeology

The Groundwater Resources of Queensland 1:2,500,000 mapping indicates the aquifer beneath the site to comprise basic volcanics (Main Range Volcanics), with a yield of 5 to 15 L/s and salinity of 500 to 1500 mg/L, the groundwater is noted to be suitable for most purposes, marginal for human consumption and low salt tolerant crops.

A search of the NRME registered groundwater bore database in January 2019 identified four bores within 600 m of the site and 17 within 1 km. The closest four bores are summarised in **Table 29**. All 17 bore cards are included in **Appendix G** with the registered bore locations shown on **Figure F11, Appendix A**.

Table 29 Registered groundwater bores within 1 km of Toowoomba Fire Station

Bore ID	Distance and Direction	Screened Depth	Additional Comments / Use if Known
RN87119	25m south	54 – 73m within basalt	Installed in 1992. Unknown use. Yield recorded in 1992 indicates 6.3 L/Sec with a SWL of 21.5m BGL. Water quality parameters are not recorded, but water is noted to be potable. Aquifer – Basalt. Geology described as: 0 – 1m soil, 1 – 29m clay, 29 – 46m decomposed basalt, 46 – 49m basalt.
RN83682	121m north	34 – 46m within basalt	Installed in 1989. Unknown use. Yield recorded in 1989 indicates 5.05 L/Sec with a SWL of 19.3m BGL. Water quality parameters are not recorded, but water is noted to be potable. Aquifer – Basalt. Geology described as: 0 – 1m soil, 1 – 42m red clay, 42 – 51m decomposed basalt, 51 – 54m basalt, 54 - 73m honeycomb basalt (vesicular), 73 - 76m basalt.
RN87103	340m north	24 – 35m within basalt	Installed in 1991. Unknown use. Yield recorded in 1991 indicates 0.757 L/Sec with a SWL of 18.3m. Water quality parameters indicate water is potable. Water quality parameters are indicated on bore card. Aquifer – Basalt. Geology described as: 0 – 1m soil, 1 – 42m red clay, 42 – 51m decomposed basalt, 51 – 54m basalt, 54 - 73m honeycomb basalt (vesicular), 73 - 76m basalt.
RN119640	575m north west	58 – 94m in basalt	Installed in 2006 for water supply. Yield recorded in 2006 indicates 2 L/Sec with a SWL of 26m. Water quality parameters indicate water is potable. Water quality parameters are not recorded. Aquifer – Basalt. Geology described as: 0 – 3m black soil, 3 – 9m yellow clay, 9 – 15m weathered basalt, 15 – 60m soft basalt, 60 – 96m basalt, 96 - 118m brown clay, 118 - 150m greenish shale, 150 – 156m white sandstone.

Based on the proximity of surface water features to the site, the inferred groundwater flow direction is to the north-west.

8.2.6 Surface Water Environmental Values

EVs and water quality objectives are not yet defined for the Toowoomba area under EPP Water. As per DES guidance, in areas where no water quality objectives are scheduled, the Queensland water quality guidelines apply as default objectives, see **Table 30**.

Table 30 Queensland Water Quality Guidelines: Surface Water Environmental Values

Waterway Name	Aquatic Ecosystems	Irrigation	Farm Supply/Use	Stock water	Aquaculture	Human Consumer	Primary Recreation	Secondary Recreation	Visual Recreation	Drinking Water	Industrial Use	Cultural and Spiritual Values
Queensland water quality guidelines	X	X	X	X	X	X	X	X	X	X	X	X

8.2.7 Groundwater Dependent Ecosystems and Environmentally Sensitive Areas

A search of the groundwater dependent ecosystems (GDE) database indicates the following aquatic ecosystems are present within 4 km of the site: Wetland-moderate potential GDE No subterranean and terrestrial GDEs were identified.

A search of the environmentally sensitive areas database indicated that there are no ESAs on the site. There are some Queensland Heritage Register Places (Category A) located to the north of the site.

8.3 Summary of Key Findings

The key information identified during the review of on-Site records is summarised below:

- Based on aerial photographs, the fire station has been present since 1975 (approximately 44 years) and had previously been developed for residential landuse. The site is surrounded by commercial and industrial properties.
- Based on the interview information, firefighting foams have been used at the site since at least the late 1980s. Historical firefighting foams used prior to 2003 were protein foams and AFFF (3M Lightwater). 3M Lightwater is known to contain PFAS, the potential for the protein foam to contain PFAS is unknown. Since 2003, Solberg foam, which reportedly does not contain PFAS, has been used. There is uncertainty on the types of foam used prior to the late 1990s and the potential for use of other types of foam concentrates containing PFAS cannot be discounted.
- The inventory of foam concentrate stored at the site was reported to be less than 200 L for the last 20 years. Foam concentrate is stored in 20 L containers. The containers were originally stored in a grassed area east of the tower and is now stored in a shed that occupies the same location.
- Firefighting training using foam has occurred on-site in the car park / training area and in the tower typically at a frequency of once per month. The finished foam was captured in the concrete lined perimeter drains, which flowed towards the north-eastern corner of the site, potentially flowing east off-site via stormwater drainage under Stark Court and into Adams Park. Foam concentrate was also placed on the garden beds and grass for use as a wetting agent. Equipment testing also occurred weekly in the car park / training area.
- A number of potential off-site sources of PFAS have been identified. These include a fuel depots and an airport.
- The site is underlain by Main Range Volcanics. Groundwater is likely to be approximately 10 mbgs (based on AECOM's knowledge of groundwater in this area). The local groundwater flow direction is unknown, but inferred to be to the north-west, towards an unnamed creek, located approximately 320m to the northwest. Stormwater from the site is captured within the site's stormwater system and is likely to flow off-site towards the northwest.

9.0 Preliminary PFAS Conceptual Site Model

9.1 Introduction

The purpose of the CSM is to provide a summary of:

- The nature and extent of PFAS impacts
- Potential migration mechanisms for PFAS to move away from source areas
- Human and ecological receptors in the area of the site
- The exposure pathways by which identified receptors may be exposed to PFAS from the site.

In accordance with national guidance on assessment of contamination (NEPM, 2013), potential risks to receptors are evaluated based on three components:

- **Source**: A potentially hazardous substance that has been released into the environment
- **Receptors**: A person, ecosystem or ecological member potentially at risk of experiencing an adverse response following exposure to the source or derivatives of the source
- **Pathway**: A mechanism by which receptors can become exposed to the source or derivatives of the source.

This relationship is commonly known as a Source-Pathway-Receptor (SPR) linkage. Where one or more elements of the SPR linkage are missing, the exposure pathway is considered to be incomplete and no further assessment is required.

9.2 Overall CSM for the Fire Stations

As all fire stations have had similar uses, practices and features, an overall CSM is presented below, providing a summary of primary and secondary sources, migration and exposure pathways and receptors. Preliminary SPR linkages are presented in **Section 9.3**.

9.2.1 Source of Impact

9.2.1.1 Primary source areas

The results of the investigation have identified the historical use and storage of foam concentrate potentially containing PFAS at the six QFES sites. Based on the findings of this PSI, the following primary sources have been identified:

- The current and former foam storage areas where foam concentrate containing PFAS was stored
- Discharge of foam containing PFAS to ground during training exercises or equipment / appliance testing
- Leaks or spills of foam concentrate in storage areas or other areas around site during training exercises
- The use of foam concentrate (type unknown) as a wetting agent on garden beds (Toowoomba fire station only).
- Stormwater management infrastructure.

9.2.1.2 Secondary sources

The features at the site identified below are considered to potentially lead to PFAS impacts as a result of leaching of PFAS from items. There is no information available to confirm whether PFAS are actually present in any of these areas or media.

- PFAS in concrete infrastructure that has been in contact with foam concentrate containing PFAS (e.g. pads, perimeter drain, stormwater drainage pipes). For example it was identified in DEHP (2016) that concrete and bitumen areas used for foam training have been found to retain PFAS,

which are difficult to remove from the matrices and may subsequently leach to impact surface water

- PFAS in water within Case 4 Pits. There is potential for water to have seeped out of the pits
- PFAS in surface soil where firefighting foam containing PFAS was discharged to surface
- PFAS in unsaturated zone soil beneath potential primary source zones following leaching from ground surface
- PFAS in sediment along surface water drainage channels that discharged water from the site.

9.2.1.3 Off-site Sources

Nearby off-site potential sources of PFAS may affect groundwater quality beneath the sites. A high level review has identified a number of potential off-site sources at all six fire stations. The potential for other off-site sources of PFAS to be present at these sites cannot be discounted.

9.2.2 Migration Mechanisms

The mechanisms listed below are considered relevant to the migration of PFAS at the site, however, no data are available to confirm whether all these mechanisms are actually occurring.

- Discharge or spilling of firefighting foam containing PFAS at the ground surface or leakage from infrastructure followed by sorption of contaminants to soil
- Discharge of firefighting foam containing PFAS and migration into stormwater drainage systems and into water bodies (local creeks or the marine environment)
- Localised dispersion of firefighting foam containing PFAS with the wind during historical foam application
- Infiltration and vertical migration of PFAS from source areas through the unsaturated zone to groundwater
- Sorption of PFAS to soil in areas where firefighting foams were historically used
- Leaching of PFAS from areas of contaminated soil and infiltration to groundwater or migration in overland (surface) water
- Leaching of PFAS within concrete structures to surface soil and infiltration to groundwater, or migration in surface water
- Sorption of PFAS to soil below the groundwater table during migration with groundwater. Sorption to soil slows down the migration of PFAS but sorbed PFAS may continue to diffuse back into groundwater and act as a secondary source, if conditions are suitable
- Lateral and vertical migration of PFAS in groundwater under the influence of groundwater flow and PFAS dispersion
- Release of water containing PFAS via seepage or infiltration to the subsurface (e.g. water sourced from Case 4 Pits)
- Migration of PFAS impacted groundwater along preferential pathways
- Uptake of PFAS by plants and animals and potential bioaccumulation and biomagnification
- Transport of sediment containing PFAS in stormwater drains.

9.2.3 Potential Pathways

The following exposure pathways for contaminants to impact receptors on- and off-site include:

9.2.3.1 Human Health Exposure Pathways:

Primary

- Persons incidentally ingesting PFAS impacted soil
- Persons drinking or using PFAS impacted groundwater from groundwater abstraction bores

- Ingestion of livestock and agricultural produce following uptake of PFAS.

Secondary

- Persons in direct contact with PFAS impacted stormwater on- or off-site
- Persons in direct contact with PFAS impacted surface water and sediment during recreational activities
- Inhalation of PFAS impacted dust.

9.2.3.2 Ecological Exposure Pathways:

Primary

- Ecological receptors in direct contact with PFAS impacted soil, sediment and surface water

Secondary

- Ecological receptors via bioaccumulation and biomagnification.

9.2.4 Potential Receptors

The following potential receptors have been identified:

On-Site

- Personnel who work at the sites (current and future QFES employees). This includes intrusive (i.e. involved in soil excavation) maintenance workers who may conduct infrequent maintenance activities at the site and come into contact with impacted soil and/or stormwater and/or groundwater
- Visitors to the site who stay for a short period and are not frequently present at the sites
- The terrestrial ecosystem on the sites.

Off-Site

- Current and future users of the land and properties surrounding the site for residential and recreational purposes
- Persons exposed to groundwater extracted for domestic uses, stock watering, industrial activities, recreational activities, irrigation for agriculture, parks and gardens
- Consumers of livestock or agricultural produce from the local area
- Recreational users of the surface water
- The terrestrial ecosystem off the sites. This includes flora and fauna on adjacent land and higher order predators.
- The aquatic ecosystems:
  - Airlie Beach- Campbell Creek and Pioneer Bay
  - Ayr- Lilliesmere Lagoon and Plantation Creek
  - Gladstone- Auckland Inlet
  - Home Hill- Burdekin River
  - Proserpine- Proserpine River
  - Toowoomba- unnamed creek / Spring Creek.

9.3 Preliminary SPR Linkages

An exposure pathway can either be direct, where the receptor comes into direct contact with the affected environmental media (e.g. drinking water) or indirect, where exposure occurs at different location or in a different medium than the source. Based on the findings presented in this report, an

assessment of the SPR linkages are presented in **Table 31** to qualitatively assess the significance of the SPR linkages identified and to identify potential risk drivers.

Table 31 Preliminary SPRs

Primary Source	Secondary Sources	Pathway	Transport Mechanism	Receptor	Linkage
On-Site areas where firefighting foams have been discharged or spilt to the environment. Off-Site areas where firefighting foams have been discharged or spilt to the environment	PFAS in soil	Excavation of soil during construction / maintenance activities	Human health: incidental ingestion of soil, direct contact with soil (dermal contact and dust inhalation)	Intrusive maintenance / landscaping workers	Unlikely due to use of occupational health and safety controls
		General QFES activities	Human health: incidental ingestion of soil, direct contact with soil (dermal contact and dust inhalation)	Site workers and visitors	Possible. QFES workers would not be subject to the same occupational health and safety controls as excavation workers
		Direct exposure as well as uptake and bioaccumulation in plants and terrestrial biota	Ecological: ingestion of plants and terrestrial biota by higher order ecological receptors	Terrestrial ecosystem	Unlikely due to the commercial / industrial nature of the sites
	PFAS in concrete lined pits and drains	Leaching of PFAS within concrete structures to soil, groundwater and surface water.	Human health - Incidental ingestion or contact with soil, groundwater or surface water. Ecological – uptake and bioaccumulation.	Surface soil, groundwater, and surface water	Possible, due to the concentrations of PFAS detected within the Case 4 pits and the likely discharge of finished foam from site into lined concrete drains.
	PFAS in groundwater	Groundwater transport in aquifer followed by bore extraction for domestic uses, industrial activities and/or recreational activities	Human health: direct ingestion or incidental ingestion or direct contact with groundwater (off-Site)	Off-Site groundwater users	Possible. Bores for water supply are present surrounding all six sites. Unregistered bores may also be present in the surrounding area. It is noted that groundwater in the vicinity of the Airlie Beach, Home Hill, Gladstone and Toowoomba sites is considered marginal for human consumption based on salinity
		Groundwater transport in aquifer followed by	Livestock: direct ingestion or incidental ingestion or direct	Livestock	Unlikely. Fire stations are located in urban areas and

Primary Source	Secondary Sources	Pathway	Transport Mechanism	Receptor	Linkage
		extraction for stockwatering	contact of groundwater (off-site)		groundwater in the vicinity of the sites is unlikely to be used for stock watering purposes
		Groundwater transport in aquifer followed by extraction for irrigation for agriculture, parks and gardens	Uptake by plants	Flora	Possible. Bores for water supply are present surrounding all six sites. Unregistered bores may also be present in the surrounding area
	PFAS in surface water (creek water, marine water)	Surface water transport via overland flow into on- and off-site drains that discharge into creeks or marine waters	Human health: direct or incidental ingestion or direct contact with off-site surface water (i.e. surface water, drainage overland flow water)	Recreational users	Possible. Runoff from the sites will enter surrounding stormwater channels which drain to creeks or potentially marine waters (at Airlie Beach)
		Direct exposure, as well as uptake and bioaccumulation in aquatic biota	Ecological: direct exposure as well as ingestion of biota by higher order ecological receptors	Aquatic / Marine ecosystem	Possible. Potential for finished foams containing PFAS to have been discharged via stormwater / drainage channels to local creeks or marine waters
			Human health: direct ingestion of biota	Off-site residents	
	Accumulation of PFAS in creek / marine sediment	Incidental exposure during recreational activities	Human health: incidental ingestion or direct contact of sediment (off-site)	Off-site residents	
		Direct exposure, as well as bioaccumulation in aquatic biota	Ecological: direct exposure, as well as ingestion of biota by higher order ecological receptors	Aquatic / Marine ecosystem	
			Human health: direct ingestion of biota	Residents	

10.0 SAQP

10.1 Introduction

The SAQP outlines the proposed detailed scope of work, sampling locations and depths, rationale for the sampling locations, sampling methodologies for sampling various media, sample nomenclature, quality assurance and quality control (QA/QC) regime, data quality objectives, laboratory analyses and field documentation. The SAQP also identifies other management considerations for the proposed works including health and safety and environmental procedures, hours of operations and waste management. The SAQP provides general information relevant to all six sites, together with detail on suggested sampling locations for each site. The SAQP provides a summary of information relevant to the proposed sampling program, including:

- Data quality objectives
- Quality assurance / quality control
- Health, safety and environmental management
- Regulatory overview
- Rationale for the proposed sample locations
- Methodology
- Analytical suite
- Summary of screening levels
- Waste management
- Sample nomenclature
- Fieldwork documentation.

10.2 Data Quality Objectives

The amended NEPM, Schedule B [2]) Guideline on Site Characterisation (2013) specifies that the nature and quality of the data produced in an investigation should be determined by the data quality objectives (DQOs). As referenced by the NEPM, the DQO process is detailed in the United States Environmental Protection Agency (US EPA) *Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4 : EPA/240/B-06/001), February 2006.*

The US EPA defines the process as *'a strategic planning approach based on the Scientific Method that is used to prepare for a data collection activity. It provides a systematic procedure for defining the criteria that a data collection design should satisfy, including when to collect samples, where to collect samples, the tolerable level of decision errors for the study, and how many samples to collect'.*

The process of establishing appropriate DQOs is defined by the US EPA (2006) according to the following seven steps:

Table 32 The seven steps in defining DQOs

Step	Data Quality Objective Step
1	***State the problem*** – Define the problem that necessitates the study; identify the planning team, examine budget, schedule.
2	***Identify the goal of the study –*** State how environmental data will be used in meeting objectives and solving the problem, identify study questions, define alternative outcomes.
3	***Identify information inputs*** – Identify data & information needed to answer study questions.
4	***Define the boundaries of the study*** – Specify the target population & characteristics of interest, define spatial & temporal limits, scale of inference.
5	***Develop the analytic approach*** – Define the parameter of interest, specify the type of inference, and develop the logic for drawing conclusions from findings.
6	***Specify performance or acceptance criteria*** – Develop performance criteria for new data being collected or acceptable criteria for existing data being considered for use.
7	***Develop the plan for obtaining data*** – Select the resource-effective sampling and analysis plan that meets the performance criteria.

The approach adopted relative to the seven steps presented above is discussed below.

10.2.1 Step 1 – State the Problem

A report prepared by QFES in November 2018 indicated that PFAS was detected in water held within Case 4 Pits, at five of the six sites under investigation. No results were reported for Toowoomba Fire Station due to the in-ground water tank being empty and dry. Concentrations of PFAS were also detected in tap water sampled from the Ayr fire station.

The findings of a review of the historical use of firefighting foams containing PFAS at these fire stations have been documented in this report and there is potential for PFAS to have been released to ground at all six fire stations. The extent of the potential presence of PFAS in the different environmental media (soil, groundwater, surface water and sediment) is not known and characterisation of potential source areas, boundary locations and downstream (for surface water) and down-gradient (for groundwater) is required to inform the potential presence of complete source-pathway-receptor linkages at each fire station.

The works should be undertaken in accordance with the regulatory framework outlined in **Section 10.5**.

10.2.2 Step 2 – Identify the Goal of the Study

The overarching purpose of the works is to characterise the potential for PFAS impacts, including concentration and distribution in environmental media (soil, groundwater, surface water and sediment), within and at the boundaries at each of the six fire stations.

10.2.3 Step 3 – Identify Information Inputs

To allow assessment of the data against the study goal listed in step 2 above, the following inputs have been considered:

- Anecdotal information on historical operations provided from interviews with personnel familiar with the fire stations
- Observations made during the site inspections completed in January and February 2019
- The data review information (site and environmental setting) presented in this PSI

- Tier 1 health and ecological investigation and screening levels of each protected beneficial use applicable within the boundary of the study area
- Quantitative site characterisation data including visual observations, laboratory analytical data from field samples (samples of water from the Case 4 pits on each site and tap water samples), comparison of analytical data with screening criteria appropriate for the land use
- Hydrogeological and hydrological data for each of the six sites including inferred groundwater and surface water flow direction
- The potential for preferential pathways e.g. stormwater drains.

10.2.4 Step 4 – Define the Boundaries of the Study

The lateral extent of the study area defined for decision making is the area of each fire station (Lot on Plan boundaries) as outlined in figures in **Appendix A**. The vertical extent of the investigation is the depth to the shallow aquifer system beneath each site. This is considered to be less than 20 mbgl.

The temporal boundary of the study is the current conditions at the time of the proposed fieldwork timeframes, which is estimated to be between March – June 2019.

The final location of boreholes / monitoring wells may be adjusted from those indicated in this SAQP dependent on a number of factors, including: accessibility, the presence of buried structures / underground services, the presence of overhead wires, the presence of adequate flat, firm ground to place a drill rig safely and consideration of new data or anecdotal information.

10.2.5 Step 5 – Develop the Analytical Approach

The decision rules can be defined as:

- If the laboratory quality assurance/quality control data are within the acceptable ranges, the data should be considered suitable for use.
- If the PFAS concentrations are reported above the laboratory LOR or risk-based screening levels in one or more samples, then it should be considered whether further assessment is required.

The decision on the acceptance of the analytical data should be made on the basis of the Data Quality Indicators (DQIs) as follows:

- **Precision:** A quantitative measure of the variability (or reproducibility) of data.
- **Accuracy**: A quantitative measure of the closeness of reported data to the “true” value.
- **Representativeness**: The confidence (expressed qualitatively) that data are representative of each media present at each fire station.
- **Completeness**: A measure of the amount of useable data from a data collection activity.
- **Comparability**: The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.

10.2.5.1 Precision

Suitable criteria and/or performance indicators for assessment of precision include:

- Performance of intra-laboratory duplicate sample sets through calculation of relative percentage differences (RPDs).
- Performance of inter-laboratory duplicate sample sets through calculation of RPDs.
- The RPDs should be assessed as acceptable if less than or equal to 30% as per the NEPM Schedule B3. Where the results shows greater than 30% difference a review of the cause should be conducted (NEPC, 2013). It is noted that RPDs that exceed this range may be considered acceptable where:
    - results are less than 10 times the LOR (no limit)
    - results are less than 20 times the LOR and the RPD is less than 50%

- heterogeneous materials are encountered.

10.2.5.2 Accuracy (Bias)

The closeness of the reported data to the “true” value is assessed through review of performance of:

- method blanks, which are analysed for the analytes targeted in the primary samples
- Matrix spikes and surrogate recoveries
- Laboratory control samples.

10.2.5.3 Representativeness

To ensure the data produced by the laboratory is representative of conditions encountered in the field, the following steps are taken by the laboratory and subsequently reviewed by the Consultant:

- Blank samples should be run in parallel with field samples to confirm there are no unacceptable instances of laboratory cross contamination.
- Review of RPD values for field and laboratory duplicates to provide an indication that the samples are generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities.
- The appropriateness of collection methodologies, handling, storage and preservation techniques should be assessed to ensure/confirm there was minimal opportunity for sample interference or degradation (i.e. volatile loss during transport due to incorrect preservation / transport methods).

10.2.5.4 Completeness

In validating the degree of completeness of the analytical data sets acquired during the program the following is considered:

- Whether standard operating procedures (SOPs) for sampling protocols have been adhered to.
- Copies of all chain of custody (CoC) documentation are reviewed and presented.

It can therefore be considered whether the proportion of “useable data” generated in the data collection activities is sufficient for the purposes of assessing the problem as stated in Step 1 above.

10.2.5.5 Comparability

Given that assessment data can comprise several data sets from separate sampling episodes, issues of comparability between data sets are reduced through adherence to SOPs and regulator endorsed or made guidelines and standards on each data gathering activity.

In addition, the data should be collected by experienced field staff familiar with PFAS contamination investigations and National Association of Testing Authorities (NATA) accredited laboratories should be employed in all laboratory programs for soil, sediment and water analysis.

10.2.5.6 Step 6 – Specify Performance or Acceptance Criteria

Specific limits for this project are in accordance with the appropriate guidance made or endorsed by state and national regulations, appropriate indicators of data quality, and standard procedures for field sampling and handling.

This step also examines the certainty of conclusive statements based on the available new site data collected. This should include the following points to quantify tolerable limits:

- A decision can be made based on a certainty assumption of 95% confidence in any given data set. A limit on the decision error should be 5% that a conclusive statement may be a false positive or false negative.
- A decision error in the context of the decision rule presented above would lead to either underestimation or overestimation of the risk level associated with a particular sampling area.

Sampling errors may occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the site. To address this, the SAQP outlines minimum numbers of samples proposed to be collected from each media.

- As such, there may be limitations in the data if aspects of the SAQP cannot be implemented. Some examples of this scenario include but are not limited to:
  - Proposed surface water sample locations may be dry at the time of sampling; and
  - Proposed samples are not collected due to access being restricted to a given location.
- Limitations in ability to acquire useful and representative information from the data collected. The data are proposed to be collected from multiple locations and sample media. Some examples of this scenario include:
  - Measurement errors can occur during sample collection, handling, preparation, analysis and data reduction. To address this the following measures are proposed:
    - Collection of sufficient sample mass to facilitate analysis reported to standard laboratory detections limits. Collection of insufficient sample mass may result in raised detection limits.
    - Field staff to follow a standard procedure when collecting samples, including decontamination of tools, removal of adhered soil to avoid false positives in results, and use of appropriate sample containers and preservation methods.
    - Laboratories to follow a standard procedure when preparing samples for analysis and undertaking analysis.
- Laboratories to report quality assurance/ quality control data for comparison with the DQIs established for the project.

10.2.6 Step 7 – Optimise the Design for Obtaining Data

The methodology presented in this SAQP is designed to meet the objectives described in **Section 1.0** and to achieve the nominated DQOs. Optimisation of the data collection process should be achieved by:

- Working closely with the analytical laboratories and sampling equipment suppliers to ensure that appropriate procedures and processes are developed and implemented prior to and during the fieldwork, to ensure that sample handling, and transport to and processing by the analytical laboratories is as smooth as possible; and
- Conducting sampling according to the environmental consultant's SOPs for the type of sampling being conducted.

The scope of works should be carried out to a level of accuracy and confidence presented in the NEPM (NEPC, 2013).

10.3 Quality Assurance / Quality Control

A QA/QC program should be implemented to ensure that data collected is sufficiently accurate and reproducible for the purposes of the investigation. The objective of the QA/QC program is to provide an assessment of the reliability of the data presented for interpretation in terms of the DQOs.

10.3.1 Summary of QA/QC Program

The objective of the QA/QC program is to provide an assessment of the reliability of the data presented for interpretation. All work completed should be conducted in accordance with the environmental sampling protocols presented in **Table 33** below.

Table 33 Essential Elements of the Field QA/QC Program

Aspect	Description
Use of experienced personnel	Field work should be undertaken by trained personnel with previous experience in contaminated site assessment. Field personnel should be familiar with: • Identification of potential contamination sources. • Field sampling techniques. • Site-specific health and safety protocols.
Record keeping	Date, field personnel details, observations and findings of field activities including (but not limited to): • Recording of sample description and collection details on field sheets.
Sample collection	Samples should be collected with reference to applicable industry guidelines.
Quality control sampling	Quality control field duplicates and triplicates for soil and groundwater should be collected. In addition, rinsate and trip blanks should be collected during sampling.
Sample labelling	A unique sample identification number should be used for each sample to specify the sample origin (sample location ID and date), preservation standards and analytical requirements.
Chain of Custody	CoC procedures should be adopted for sample transfers. CoC documentation includes sample numbers; date of sampling/collection; analyses required; and release and receipt of parties accepting sample custody.
Sample storage	Samples should be collected in appropriate sample containers supplied by the analytical laboratory. Where required, sample containers should be prepared with preservation solutions based on the analyte of interest. Samples should be placed in cool storage on ice prior to transfer to the laboratory.
Equipment decontamination	All non-dedicated field equipment used in the sampling process should be subject to appropriate decontamination procedures.

10.3.2 Analytical Data Validation

Analytical data validation is the process of assessing if data are in compliance with laboratory method requirements and SAQP specifications. The primary objectives of this process are to ensure that data of known quality are reported, and to identify if the data can be used to fulfil the overall project objectives.

Where sample analysis is undertaken, specific elements of data validation that should be checked and assessed are:

- Preservation and storage of samples upon collection and during transport to the laboratory
- Sample holding times
- Required limits of reporting
- Frequency of conducting quality control measurements
- Laboratory blanks
- Rinsate blanks
- Field duplicates

- Laboratory duplicates
- Inter-laboratory duplicates
- Laboratory control samples
- Matrix spike/matrix spike duplicates
- Surrogates
- The occurrence of apparently unusual or anomalous results (e.g. laboratory results that appear to be inconsistent with field observations or measurements).

Analytical data that fail to meet the predetermined DQIs and acceptable limits of accuracy and precision should be managed using the following corrective actions on a case-by-case basis:

- Re-analyse suspect samples, provided sample or extract is within holding time (results should be reviewed as received).
- Evaluate and amend sampling and/or analytical procedures.
- Re-sampling and re-analysis.
- Accept the data as an estimate with an acknowledged level of bias and imprecision.
- Discard the data.

In the event that data of questionable reliability are used, restrictions and limitations associated with the use of such data should be clearly identified. Failure to meet the DQIs should be reported, and the significance to the outcomes of this intrusive investigation should be assessed.

The types of quality control samples to be collected are listed in **Table 34**.

Table 34 Quality Control Sample Definitions

Quality Sample	Description
Duplicate	Used to document the precision of the sampling process. Independent samples which are sampled as close as possible to the primary sample in space and time. They are separate samples taken from the same source and stored in separate containers and analysed independently. Duplicate samples should be collected at a rate of one per 10 primary samples in accordance with the NEMP (HEPA, 2018).
Triplicate	Used to document inter-laboratory precision. Independent samples which are sampled as close as possible to the primary sample in space and time. They are separate samples taken from the same source and stored in separate containers and analysed at the secondary laboratory. Triplicate samples should be collected at a rate of one per 10 primary samples in accordance with the NEMP (HEPA, 2018).
Rinsate blank	Used to assess the adequacy of the decontamination of the sampling equipment. A sample of analyte free water will be poured over the decontaminated equipment (e.g. augers, interface probe) prior to the collection of the next sample. The sample should be analysed for the same suite as the primary samples and collected at a rate of one per sampling day.

10.4 Health, Safety and Environmental Management

Site-specific Safety, Health and Environmental Management Plans (SHEMPs) should be developed for each fire station site prior to implementing the fieldworks. Activity-specific Safe Work Method Statement (SWMS) should be undertaken for all routine activities. The purpose of the Environmental Management component of the SHEMP is to protect the surrounding environment from the field activities by managing soil or groundwater waste appropriately, minimising the spread of weeds and addressing the risk of potential aquifer cross-contamination during drilling activities.

10.5 Regulatory Overview

The assessment should be performed consistent with State and local government environmental legislation and requirements.

A summary of regulatory framework and proposed Tier 1 investigation and screening levels for further assessment works at the fire stations is provided in the sections below.

10.5.1 Standards and Guidance Documents

Guidance provided in the following documents should be referenced during the sampling program:

- Practitioner guide to risk-based assessment, remediation and management of PFAS site contamination, Technical Report No. 43, *CRC Care 2018*
- Heads of Environmental Protection Agencies Australia and New Zealand (HEPA) 2018 *PFAS National Environmental Management Plan*
- National Environment Protection Council (1999) *National Environment Protection (Assessment of Site Contamination) Measure, Schedule B2: Guideline on Site Characterisation (as amended in May 2013*)
- Standards Australia (AS4482.1-2005) *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds*
- Standards Australia (AS 4482.2-1999) *Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile Substances*
- Western Australian Department of Health (2009) *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia*.

10.5.2 Screening Criteria

The principal legislative basis for water quality management in Queensland is the *Environmental Protection (Water) Policy (EPP), 2009*, which identifies a process for identifying environmental values of waterways and establishing corresponding water quality objectives to protect identified environmental values.

Tier 1 screening assessment criteria have been selected with consideration of the Site conditions and the current and future land use. The criteria presented below are generic Tier 1 risk based criteria. Where concentrations of a contaminant of potential concern exceed the generic Tier 1 assessment criteria, then further consideration of the specific exposure pathway is required which may warrant further investigation, assessment or the development of a strategy to mitigate the potential risks identified.

10.5.3 Soil

10.5.3.1 Human Health

The primary references for PFAS in soils is the NEMP (HEPA, 2018) for commercial / industrial and open space land uses and CRC CARE (2018) where there is a potential risk as a result of consumption of home grown poultry, eggs or other animal products.

10.5.3.2 Ecological

The primary guidelines for PFAS in soils are the NEMP (HEPA, 2018) and draft CRC CARE (2018) for residential land use. These guidelines may be considered relevant due to the potential for secondary consumers (e.g. insectivorous birds and mammals) to forage in the area.

10.5.4 Groundwater and Surface Water

The primary reference for PFAS in groundwater is the NEMP (HEPA, 2018). Human health guidelines are available for drinking water and recreational use and ecological guidelines are available for the protection of freshwater and marine ecosystems. As the NEMP (HEPA, 2018) does not provide guideline levels for all EVs, the DSI will need to consider how EVs for each site will be protected.

10.6 Rationale for the Proposed Sampling Locations

Based on the assessment of the SPR linkages, site investigations are recommended to assess the nature and extent of PFAS contamination in environmental media beneath the six sites and at the site boundaries.

Detailed sampling plans for each fire station including proposed sampling locations, rationale, analytical suite, etc. presented in the **Table 35** to **Table 40** below with proposed sampling locations shown in figures in **Appendix A**.

As identified in **Section 1.0**, this SAQP is based on the information available at the time of preparation (January and February 2019), which includes an initial historical review of site activities based on mapping, historical aerial photographs, one previous environmental report (QFES) and site inspections conducted by the AECOM project team in January and February 2019.

Table 35 Sampling Plan for Airlie Beach Fire Station

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested sampling depths	Analytical Suite	QA/QC
Airlie Beach						
SB01/MW01	In southern portion of site adjacent and down gradient of Case 4 Pit and up-gradient of foam training area.	Geoprobe-push tube / shell and auger / air hammer Low flow sampling technique.	15m	Soil: 0.1m, 0.5m, 1.0m, 2.0m, 5.0m, 10m, 15m	Two soil samples from 0-1.0m depth interval and one sample from the vadose zone at each bore to be analysed for standard PFAS suite. Other soil samples to be held on hold pending analytical results. One groundwater sample per well to be analysed for low level PFAS suite. One soil and one groundwater sample from the site will be analysed for TOPA.	Duplicate / triplicate samples to be collected at 1:10, three rinsate samples.
SB02/MW02	In western portion of site adjacent to foam store and cross-gradient to foam training area.					
SB03/MW03	In eastern corner of site within and down-gradient of foam training area and also in low lying water ponding area.					
SB04/MW04	Along northern boundary down gradient of foam training area and other site features.					
SED1/SW1	Samples from earth drain, which may have received finished foam.	Grab sample	NA	NA	Sediment sample to be analysed for standard PFAS suite. Surface water sample to be analysed for trace level PFAS suite.	
SED2/SW2	Samples from concrete lined spoon drain which may have received finished foam.					
SED3/SW3	Samples from earth lined drain, which may have received finished foam.					
SED4/SW4	Samples from ponding area in eastern corner of site if surface water is present.					
SS1	To characterise for PFAS impacts in shallow soil at potential foam training area in eastern portion of site.	Hand auger	0.5	0.1m, 0.5m	Two soil samples per soil bore for standard PFAS suite	

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested sampling depths	Analytical Suite	QA/QC
SS2	To characterise for PFAS impacts in shallow soil at potential foam training area in northern portion of site.					
SS3	To characterise for PFAS impacts in shallow soil at potential foam training area in southern portion of site.					
SS4	To characterise for PFAS impacts in shallow soil at potential foam training area in northern portion of site.					

Table 36 Sampling Plan for Ayr Fire Station

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested soil sampling depths	Analytical Suite	QA/QC
Ayr						
SB01/MW01	In central portion of the site adjacent to Case 4 Pit.	Geoprobe-push tube / shell and auger / air hammer Low flow sampling techniques	8m	0.1m, 0.5m, 1.0m, 2.0m, 5.0m, 8m	Two soil samples from 0-1.0m depth interval and one sample from the vadose zone at each bore to be analysed for standard PFAS suite. Other soil samples to be held on hold pending analytical results. One groundwater sample per well to be analysed for low level PFAS suite. One soil and one groundwater sample from the site will be analysed for TOPA.	Duplicate / triplicate samples to be collected at 1:10 and three rinsate samples
SB02/MW02	In northern portion of site in grassed area. Potentially up-gradient of foam training areas at the site.					
SB03/MW03	In eastern portion of the site at location of former grassed area that may have been formerly used for foam training. Location is also potentially along down-gradient boundary.					
SB04/MW04	In southern portion of the site at location of former grassed area that may have been formerly used for foam training. Location is also adjacent to former foam shed and potentially along down-gradient boundary.					
SS1	To assess potential PFAS impacts in shallow soil in grassed area in western portion of the site where foam training may have formerly occurred.	Hand auger	0.5	0.1m, 0.5m	Two soil samples per soil bore for standard PFAS suite	
SS2	To assess potential PFAS impacts in shallow soil in grassed area in southern portion of the site where foam training may have formerly occurred.					
SED/SW1	Samples from drainage pits which may have received finished foam.	Grab samples	NA	NA	Sediment sample to be analysed for standard PFAS suite. Surface water sample to be analysed for trace level	
SED/SW2	Samples from drainage pits which may have received finished foam.					
SED/SW3	Samples from drainage pits which may					

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested soil sampling depths	Analytical Suite	QA/QC
	have received finished foam.				PFAS suite.	
Tap 01	PFAS was detected in tap water in 2016. Repeat sampling.	Grab samples	NA	NA	Super trace PFAS suite	
Tap 02	PFAS was detected in tap water in 2016. Repeat sampling.					

Table 37 Sampling Plan for Gladstone Fire Station

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested soil sampling depths	Analytical Suite	QA/QC
Gladstone						
MW01	In southwestern portion of the former foam training area, potentially along the up-gradient boundary.	Geoprobe-push tube / shell and auger / air hammer Low flow sampling techniques	4m	0.1m, 0.5m, 1.0m, 2.0m, 4.0m	Two soil samples from 0-1.0m depth interval and one sample from the vadose zone at each bore to be analysed for standard PFAS suite. Other soil samples to be held on hold pending analytical results. One groundwater sample per well to be analysed for low level PFAS suite. One soil and one groundwater sample from the site will be analysed for TOPA.	Duplicate / triplicate samples to be collected at 1:10 and three rinsate samples
MW02	In northern portion of former foam training area, potentially along the down-gradient boundary.					
MW03	Located in a central portion of site adjacent to and down gradient of old foam storage area.					
MW04	Along northern site boundary potentially down-gradient of site activities including the waste laydown area.					
MW05	Along northern site boundary potentially down-gradient of the training tower.					
MW06	In north-western corner providing background groundwater conditions.					
SS1	To assess potential PFAS impacts in shallow soil in grassed area in western portion of the site where foam training may have formerly occurred.	Hand auger	0.5m	0.1m, 0.5m	Two soil samples per soil bore for standard PFAS suite	
SS2	To assess potential PFAS impacts in shallow soil in grassed area in western portion of the site where foam training may have formerly					

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested soil sampling depths	Analytical Suite	QA/QC
	occurred.					
SED/SW1	Samples from drainage pits which may have received waste foam.	Grab samples	NA	NA	Sediment sample to be analysed for standard PFAS suite. Surface water sample to be analysed for trace level PFAS suite.	
SED/SW2	Samples from drainage pits which may have received waste foam.					
SEEP1	Sample of groundwater seepage from workshop pit walls.	Grab sample	NA	NA	Low level PFAS suite	

Table 38 Sampling Plan for Home Hill Fire Station

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested soil sampling depths	Analytical Suite	QA/QC
Home Hill						
MW01	Along the downgradient northern site boundary and adjacent to grassed area potentially used for foam training.	Geoprobe-push tube / shell and auger / air hammer Low flow sampling techniques	10m	0.1m, 0.5m, 1.0m, 2.0m, 5.0m, 10m	Two soil samples from 0-1.0m depth interval and one sample from the vadose zone at each bore to be analysed for standard PFAS suite. Other soil samples to be held on hold pending analytical results. One groundwater sample per well to be analysed for low level PFAS suite. One soil and one groundwater sample from the site will be analysed for TOPA.	Duplicate / triplicate samples to be collected at 1:10 and three rinsate samples
MW02	In the central portion of the site within the former foam training area in an area of surface depression.					
MW03	In the eastern portion of the site adjacent to Case 4 Pit					
MW04	In southern portion of the site potentially upgradient of the area used for foam training.					
SS1	To assess potential PFAS impacts in shallow soil in grassed area in northern portion of the site adjacent to where foam training may have formerly occurred.	Hand auger	0.5m	0.1m, 0.5m	Two soil samples per soil bore for standard PFAS suite	
SS2	To assess potential PFAS impacts in shallow soil in grassed area in southern portion of the site adjacent to SES building.					
SS3	To assess potential PFAS impacts in shallow soil in grassed area in northern portion of the site in area to where foam training may have formerly occurred.					

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested soil sampling depths	Analytical Suite	QA/QC
SED1/SW	Samples in perimeter drain on southern boundary which may have received waste foam.	Grab samples	NA	NA	Sediment sample to be analysed for standard PFAS suite. Surface water sample to be analysed for trace level PFAS suite.	
SED2/SW	Samples in perimeter drain on north-western boundary which may have received waste foam.					

Table 39 Sampling Plan for Proserpine Fire Station

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested soil sampling depths	Analytical Suite	QA/QC
Proserpine						
MW01	Adjacent to Case 4 Pit and potentially within the area used for training exercises using foam. Along central western portion of the site.	Geoprobe-push tube / shell and auger / air hammer Low flow sampling techniques	6m	0.1m, 0.5m, 1.0m, 2.0m, 6.0m	Two soil samples from 0-1.0m depth interval and one sample from the vadose zone at each bore to be analysed for standard PFAS suite. Other soil samples to be held on hold pending analytical results. One groundwater sample per well to be analysed for low level PFAS suite. One soil and one groundwater sample from the site will be analysed for TOPA.	Duplicate / triplicate samples to be collected at 1:10 and three rinsate samples Duplicate / triplicate samples to be collected at 1:10
MW02	In former grassed area potentially within the area used for training exercises using foam. Along the central eastern portion of the site.					
MW03	In former grassed area potentially within the area used for training exercises using foam. Along the central eastern portion of the site.					
MW04	In grassed area behind workshop (access permitting) providing Upgradient background groundwater quality.					
SS1	Soil bore in grassed area within area potentially used for foam training exercises using foam.	Hand auger	0.5m	0.1m, 0.5m	Two soil samples for standard PFAS suite	

Table 40 Sampling Plan for Toowoomba Fire Station

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested soil sampling depths	Analytical Suite	QA/QC
Toowoomba						
MW01	In central eastern portion of the site adjacent to area used for current and historical foam storage shed.	Geoprobe-push tube / shell and auger / air hammer Low flow sampling techniques	15m	0.1m, 0.5m, 1.0m, 2.0m, 5.0m, 10m, 15m	Two soil samples from 0-1.0m depth interval and one sample from the vadose zone at each bore to be analysed for standard PFAS suite. Other soil samples to be held on hold pending analytical results. One groundwater sample per well to be analysed for low level PFAS suite. One soil and one groundwater sample from the site will be analysed for TOPA.	Duplicate / triplicate samples to be collected at 1:10 and three rinsate samples
MW02	In central portion of site adjacent / down gradient of training tower where training using foam occurred.					
MW03	In central western portion of the site adjacent to area formerly used for foam training and the Case 4 Pit.					
MW04	In southwestern portion of the site adjacent to provide groundwater quality information potentially flowing to the southwest. Up/cross gradient to the site features.					
MW05	In central portion of site adjacent / down gradient of area used for training exercises using foam.					
SS1	Soil bore in grassed area in northern portion adjacent to area potentially used for foam training exercises using foam.	Hand auger	0.5m	0.1m, 0.5m	Two soil samples for standard PFAS suite	
SS2	Soil bore in grassed area in western portion adjacent to SES Building.					
SS3	Soil bore in garden bed in southern portion of site along southern site boundary.					

Proposed Location ID	Location/Rationale	Proposed sampling technique	Expected depth (mbgs)	Suggested soil sampling depths	Analytical Suite	QA/QC
SS4	Soil bore in garden bed in southern portion of site adjacent to foam storage area along southern site boundary.					
SS5	Soil bore in garden beds adjacent SES building					
SED1/SW1	Samples from perimeter drain which may have received waste foam.	Grab samples	NA	NA	Sediment sample to be analysed for standard PFAS suite. Surface water sample to be analysed for trace level PFAS suite.	
SED2/SW2	Samples from perimeter drain which may have received waste foam.					

A summary of the total numbers of samples proposed to be collected are identified in the table below.

Table 41 Summary of numbers of proposed samples to be collected

Item	Airlie Beach	Ayr	Gladstone	Home Hill	Proserpine	Toowoomba
No. of soil samples	24	16	24	20	14	26
No. of QAQC soil samples	8	4	8	8	6	8
No. of groundwater samples	4	4	7	4	4	5
No. of surface water samples	4	3	2	2	0	2
No. of tap water samples	0	2	0	0	0	0
No. of QAQC water samples	3	3	3	3	3	3

10.7 Methodology for Sample Collection and Handling

10.7.1 General PFAS Sampling Guidance

Guidance on PFAS groundwater sampling is provided in the NEMP (2018). The guidance includes the following:

- Quality control samples (duplicates and triplicates) should be sampled at a frequency of 1 in 10, which is greater than the 1 in 20 samples identified in AS4482.1-2005 and ASC NEPM (see **Section 10.3**).
- Rinsate samples should be collected to verify decontamination or if there is doubt about whether materials are PFAS free. Field and trip blank samples should be collected to verify the integrity of the sampling and decontamination procedures. Rinsate and blank samples should use PFAS-free water that has been certified by the laboratory (see **Section 10.3**).
- Precautions should be taken to limit cross contamination of samples. Materials and products that should not be worn or used during any stage of sampling at the Site or during transport include new clothing (fabric treatments), stain and water resistant products, sunscreen, cosmetics, fast food wrappers, Teflon, sampling containers with Teflon lined lids, foil, sticky notes, waterproof papers, drilling fluids, decontamination solutions and reusable freezer blocks.
- The general order of sampling in the field is important to reduce the chance of sample contamination. Sampling should proceed from areas of likely low concentration of PFAS contamination to areas of likely higher concentration.
- For each groundwater sample collected, the required minimum volume is 250 mL as per USEPA (2009). Polypropylene or HDPE sample containers should be used. Glass containers with lined lids are not suitable for PFAS analysis.
- Decontamination of sampling equipment should not use detergents unless they have been confirmed to be PFAS-free. Deionised water (which is certified to be PFAS-free) should be used.
- Equipment (e.g. pumping equipment, water quality meter, interface probe) containing Teflon parts or LDPE tubing should not be used. The equipment recommended for collecting groundwater samples includes low flow peristaltic pumps using silicone or HDPE tubing. Consumable sampling equipment should not be reused.
- Larger sample volumes may be necessary if the required limits of reporting are ultra-trace and /or if a TOPA analysis is to be performed on the same sample.

Further information on sampling requirements were presented in interim guidance on the assessment and management of PFAS published by Western Australia's Department of Environmental Regulation

(January 2017) identified the following potential sources of environmental sample contamination during PFAS investigations and recommended mitigation practices and alternatives.

These requirements should be implemented during the sampling program.

Product	Mitigation practice	Alternative product or practice when PFAS sampling is to be undertaken
Clothing and food		
New clothing	Not to be used/consumed by sampling personnel[1]	Wash all field clothing a minimum of six times after purchase to remove surface coatings before using at the site.
Clothing with stain-resistant, rain-resistant, or waterproof coatings/ treated fabric (for example GORE-TEX®)		Avoid sampling during rain if possible; polyethylene rain gear (for example disposable LDPE), vinyl or polyvinyl chloride (PVC) clothing are acceptable.
Tyvek® clothing		None
Fast food wrappers and containers		Use rigid plastic containers or bags or stainless steel containers for all food brought to site.
Pre-wrapped foods and snacks (for example chocolate bars, energy bars, granola bars and potato chips		Use plastic (rigid containers or bags) or stainless steel containers to bring food to site.
Sampling equipment and containers		
Teflon® containing or coated field equipment (tubing, bailers, tape and plumbing paste)	Do not use at site[2]	High Density Polyethylene (HDPE) or silicone tubing, and HDPE or polypropylene field equipment recommended. Concawe (2016) reports that although high purity Teflon tubing does not cause 'blank contamination' in contrast to common Teflon tubing, some researchers have found that Teflon could adsorb PFAS.
Teflon® lined lids on containers (for example sample containers, rinsate water storage containers)	Do not use at site[2]	Polypropylene lids[3] for sample containers and polypropylene or HDPE containers for rinsate.
Glass sample containers with lined lids	Do not use	Use polypropylene or HDPE for sample containers[3] (PFAS adsorb strongly to glass).
Other products		
Aluminium foil	Do not use[1]	Thin HDPE sheeting (commonly used as drop cloths for painting or home improvement) can be used.
Self-sticking notes and similar office products (for example 3M Post-It notes)	Do not use at site[2]	Avoid the use of these products at the site.
Waterproof paper, notebooks, and labels	Do not use at site[2]	Standard paper and paper labels.
Drilling fluid containing PFAS	Do not use at site[2]	PFAS-free drilling fluids or use alternative techniques (for example sonic drilling) which do not require drilling fluids.
Detergents and decontamination solutions (for example Decon 90® Decontamination Solution)	Do not use	Follow water-only decontamination approach.
Reusable chemical or gel ice packs (for example BlueIce®)	Do not use	Ice contained in plastic (polyethylene) bags (double bagged).

Notes

[1] Sampling personnel includes all personnel who:

- are directly involved in the collection, handling and/or processing of samples prior to the samples leaving the site;
- handle any part of well development equipment that directly contacts bore water being sampled;
- handle any part of equipment that directly contacts surface water or aquatic sediment;
- are within 2–3m of the borehole during soil sampling; or
- are within 2–3m of the collection and processing area on aquatic vessels during sediment or surface water sampling.

Personnel are not included as sampling personnel if they remain at least 2–3m away from sample collection areas prior to and during sampling.

[2] Entire sample collection and processing area, including vehicles used by sampling personnel.

[3] USEPA and ASTM method for the analysis of PFAS in solid and liquids specify polypropylene or HDPE with polypropylene lids. Check with the laboratory with regards to preference for polypropylene or HPDE.

10.7.2 Drilling

The soil bores and the shallow groundwater monitoring wells should be installed by a combination of non-destructive digging using water lance (with samples collected by hand augering at specific

intervals to allow undisturbed samples to be collected), hand augering and rig-mounted drilling via a Geoprobe using push tube, solid or hollow stem auger, air rotary / hammer techniques pending the lithology of the well locations.

Groundwater monitoring wells should be installed to a depth that will be determined based on field observations and historical documentation. Each well should be constructed with 50-mm slotted uPVC to the target depth with a sand pack with lengths varying on location, site and well conditions. The screened interval depth should be determined based on site conditions.

The drilling work should be completed by a licensed Queensland drilling company with groundwater monitoring wells constructed in accordance with the Minimum Construction Requirements for Water Bores in Australia (Edition 3, February 2012). The drilling program should be directed by an experienced field technician present throughout the drilling program. The field technician should co-ordinate logistics, log the intersected geology and collect soil samples for laboratory analysis.

10.7.3 Logging of Soil Bores

To support subsequent data interpretation, soil bores will have the geological strata logged in the field in general accordance with the Unified Soil Classification System.

For each soil bore the following details will be clearly presented on the logs:

- Name of the field technician supervising the investigation and the rig/equipment type and the sampling method
- Date of sampling, unique sampling location number, depth of sampling, sample type and unique sample number
- All field records will be rigorously documented and comprise field observations of colour, odour, field-screening results and details of any unusual material encountered
- Completed graphic logs will be presented with surface elevations (to accuracy ±10 mm) with depth scale in metres.

10.7.4 Soil Sampling

Soil samples should be collected and handled in a manner that ensures field personnel safety, and the integrity of the sample itself.

Soil samples collected near the ground surface (no greater than 0.15 mbgl) should to be collected using a hand auger. Non-destructive digging like vacuum excavation will be used to clear the locations for underground utilities up to 1.5 mbgs. The vacuum excavation will be stopped approximately 100mm before the desired depth and soil samples should be collected by hand auger. Some shallow soil bores could be constructed to a maximum of 1.5 mbgs using hand augering technique.

Field personnel should describe the nature of each sediment sample (soil type, colour, staining, etc.).

Soil samples beyond 1.5 mbgs should be collected from plastic sleeves recovered from the push tube on the Geoprobe drilling rig or drill cuttings recovered from solid stem auger or air hammer drill as part of the monitoring well installations.

Soil samples for laboratory analysis should to be collected in 250 mL unpreserved lab supplied containers. One PFAS specific sample container will be required for each sample. The soil sample volume required by the laboratory is dependent upon the number of analytes requested to be analysed.

10.7.5 Surveying and Groundwater Gauging

All the newly installed monitoring wells should be surveyed by an accredited surveyor for MGA horizontal co-ordinates and Australian Height Datum levels for ground level and top of casing (TOC).

Groundwater levels should be gauged using a calibrated interface probe to the TOC and groundwater recorded. Recordings can be utilised to establish non aqueous phase liquid (NAPL) thickness (if present) and the standing water level elevation.

10.7.6 Well Development

Following completion of the monitoring well to the target depth and installation of a monitoring well screen, the bore should be developed to remove particulate matter that may be present from well drilling and construction. Wells should be developed by air lifting by the licensed driller with water quality parameters taken by the field engineer during the development process. The development reduces sample turbidity by removing fine particulate matter from the filter pack and the geologic formation near the well. If air lifting is not possible, purging with a pump and surging with a stainless-steel bailer (or other appropriate alternative method) will be necessary.

10.7.7 Groundwater Sampling

Groundwater monitoring wells (where there is no dedicated pump) should be gauged prior to sampling with an oil/water interface probe to measure depth to groundwater, total depth of the wells, and to detect the presence of non-aqueous phase liquid (NAPL) (if encountered). Each well should be sampled using a low flow pump. Before and between sampling each well, the interface probe and all other equipment placed down the well should be decontaminated using demineralised water (deionised water) to reduce the risks of cross contamination. The low flow sampling should use new HDPE sample tubing at each well. Waste tubing may be left in place for re-use if further sampling rounds are required.

Groundwater quality parameters (temperature, pH, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (ORP)) and surface water level should be measured in the field and be stable prior to sample collection to demonstrate conditions of the groundwater in the well. Groundwater used for the measurement of water quality parameters should be collected in a new laboratory-supplied plastic bottle at each location.

Groundwater collected for sample analysis should be collected in the appropriate laboratory supplied sample containers as described in **Section 10.7.1**.

For intra-laboratory and inter-laboratory samples (duplicate and triplicate sampling), the consultant should attempt to reduce potential heterogeneity in the groundwater collected by alternating between primary and intra/inter-laboratory bottles during sampling to allow mixing.

Sample containers shall be placed in a cooler with ice and kept, if possible, at approximately 4°C during transit to the laboratory. Samples will be transported directly to the laboratory for analytical testing under standard chain of custody procedures.

Primary and duplicate samples for all media types and their associate QA/QC samples should be analysed by NATA accredited laboratories for the analytes being investigated.

10.7.8 Tap Sampling

Water samples should to be collected using the first flush in appropriate sample bottles as outlined above for groundwater samples.

10.7.9 Surface Water Sampling

The surface water sample collection method employed is dependent on the nature of the location and should be in accordance with Australian Standard for Water Quality Sampling (AS5567: 1998).

At drain locations, surface water grab samples are to be collected using a sampling pole to retrieve water from near the water surface, and towards the centre of the drain (where possible with consideration to hazards associated with working near a water body). Care should be taken to ensure the water column at the sampling location is not agitated during sampling. For some sites and sample locations, sampling will need to take into account recent rainfall.

At each sample location, field personnel will note the water body morphology, soil type and nature of surface water flow. Surface water samples are to be collected in appropriate sample bottles supplied by the laboratory, as outlined in **Section 10.7.1**.

10.7.10 Sediment Sampling

Sediment samples shall be collected and handled in a manner that ensures field personnel safety, and the integrity of the sample itself. Sediment samples collected from near the ground surface (no greater

than 0.2 mbgs) are to be collected by a gloved hand or clean trowel. Care will be taken to minimise disturbance of sediment samples to prevent oxidation.

Field personnel will describe the nature of each sediment sample (soil type, colour, staining, etc.). Sediment samples for analysis are to be collected in 250 mL plastic containers for PFAS. The sediment sample volume required by the laboratory is dependent upon the number of analytes requested to be analysed.

10.7.11 Equipment Required for Sampling

The equipment identified in **Table 42** should be used by the consultant and subcontractors during the fieldwork.

Table 42 Sampling Equipment

Equipment Item	Reason for Equipment Use
Utility Location Equipment	Identification of underground surfaces (e.g. electrical, gas) so that suitable locations can be nominated for the groundwater wells.
Non-Destructive Drilling (NDD) Rig	Clear each borehole to confirm they are clear of utilities.
Drill Rig (Geoprobe)- push tube and solid stem auger, etc.	Required to drill boreholes, collect soil samples and install on-site groundwater wells.
Hand Auger	Collection of samples from near to the ground surface during NDD.
Brush, Bucket and Deionised Water	Decontaminate of the hand auger and shovel between sample collections.
Interface Probe	To measure the stabilised water level in the monitoring wells.
Water Quality Meter	Collection of field water quality parameters for each water sample. Parameters include: temperature, pH, EC, DO, and ORP.
Submersible low-flow pump	Collection of groundwater samples.
Surveying Equipment	Surveying of the location, surface elevation and top of casing of each groundwater well to infer groundwater flow and direction.

10.7.12 Calibration

The water quality meter should be calibrated at the commencement of field activities by the supplier prior to the sampling program. The calibration should be in accordance with manufacturers' instructions or NATA publication "General Requirements for Registration: Supplementary Requirement: Chemical Testing (NATA 1993) and Technical Note No. 19 (NATA 1994)". The field technician/s will need to recalibration for longer field mobilisations (greater than one day), or if the meter loses calibration and needs to be recalibrated.

10.8 Analytical Suite and Laboratory Analysis Methods

All media sampled shall be analysed for the PFAS suite identified in **Table 43** below.

Table 43 Sample Analytical Suite for PFAS

PFAS Group	Compound	CAS No.
Perfluoroalkyl Sulfonic Acids	Perfluorobutane sulfonic acid (PFBS)	375-73-5
	Perfluoropentane sulfonic acid (PFPeS)	2706-91-4
	Perfluorohexane sulfonic acid (PFHxS)	355-46-4
	Perfluoroheptane sulfonic acid (PFHpS)	375-92-8
	Perfluorooctane sulfonic acid (PFOS)	1763-23-1
	Perfluorodecane sulfonic acid (PFDS)	335-77-3
Perfluoroalkyl Carboxylic Acids	Perfluorobutanoic acid (PFBA)	375-22-4
	Perfluoropentanoic acid (PFPeA)	2706-90-3
	Perfluorohexanoic acid (PFHxA)	307-24-4
	Perfluoroheptanoic acid (PFHpA)	375-85-9
	Perfluorooctanoic acid (PFOA)	335-67-1
	Perfluorononanoic acid (PFNA)	375-95-1
	Perfluorodecanoic acid (PFDA)	335-76-2
	Perfluoroundecanoic acid (PFUnDA)	2058-94-8
	Perfluorododecanoic acid (PFDoDA)	307-55-1
	Perfluorotridecanoic acid (PFTrDA)	72629-94-8
	Perfluorotetradecanoic acid (PFTeDA)	376-06-7
Perfluoroalkyl Sulfonamides	Perfluorooctane sulphonamide (FOSA)	754-94-6
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6
(n:2) Fluorotelomer Sulfonic Acids	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0

Standard laboratory LOR are identified in **Table 44** below.

Table 44 Laboratory Limits of Reporting

Sample Media	Parameter	Technique/Method Reference	LOR*
Groundwater	Low level PFAS Suite	LC/MS-MS	0.002 – 0.1 µg/L
Surface water & tap water	Super trace PFAS Suite	LC/MS-MS	0.0003 – 0.001 µg/L
Soil and sediment	Standard PFAS Suite	LC/MS-MS	0.0002 – 0.001 mg/kg

Notes: LC/MS-MS = Liquid chromatography–mass spectrometry, GC = Gas chromatography

*LOR for ALS

10.9 Summary of Screening Levels

Tier 1 screening assessment criteria have been selected with consideration of the site conditions and the current and future land use. Currently available Australian human health and ecological assessment criteria for PFAS have been identified in **Table 45** below.

Table 45 Currently available PFAS assessment criteria

Exposure Scenario	Human Health		Ecological		Notes
	PFHxS + PFOS	PFOA	PFOS	PFOA	
Soil (Industrial/ Commercial)	20 mg/kg	50 mg/kg	0.14 mg/kg	-	These screening values should not be used to assess potential health risks to on-site workers involved in firefighting training activities (NSW OEH, 2017)
Groundwater and Surface Water (Human Health)	0.07 µg/L	0.56 µg/L			Drinking water (FSANZ, 2017)
	0.7 µg/L	5.6 µg/L			Recreational water- swimming pools, paddling pools, surface water (FSANZ, 2017)
Freshwater Creeks	-	-	0.00023 µg/L (0.051 µg/L)[a]	19 µg/L	The water quality guidelines (ANZECC, 2000) advise that the 99% level of protection be used for chemicals that bioaccumulate and biomagnify in wildlife when assessing 'slightly to moderately disturbed' systems. These criteria are relevant to assessing surface water and groundwater discharging to this water body.
Marine Waters	-	-	0.00023 µg/L (0.051 µg/L)[a]	19 µg/L	The PFAS NEMP (HEPA, 2018) advises that freshwater values are to be used on an interim basis until final marine guideline values can be set using the nationally-agreed process under the Australian and New Zealand Guidelines for Fresh and Marine Water Guidelines. The water quality guidelines advise that the 99% level of protection be used for chemicals that bioaccumulate and biomagnify in wildlife when assessing 'slightly to moderately disturbed' systems. These criteria are relevant to assessing surface water and groundwater discharging to this water body.

Note: a = Batley et al (2018) *Application of revised methodologies for default guideline value derivations: PFOS in freshwater*, presented at the Society of Environmental Toxicology and Chemistry scientific conference in November 2018, reported a draft revised 99% species protection criterion of 0.051 µg/L for PFOS. This value will be adopted to assess the potential significance of any exceedances of the HEPA (2018) criterion. AECOM understands that this criterion is currently subject to further review to include data from recently published scientific research.

10.10 Waste Management

10.10.1 Soil

Excess soil cuttings generated from soil boring activities should be stored in 205 L waste drums and labelled accordingly with details such as location, date, contact details of the field technician or project manager and number of drums for said location. Drums are expected to be stored at each fire station and following waste characterisation, disposal should be arranged by the contractor, to an appropriate disposal facility upon receipt of laboratory results in accordance with the requirements of the *Environmental Protection Act, 1994*. The storage location should be agreed with QFES representative prior to mobilising to Site. If required, waste soil should be disposed of under a contaminated soil disposal permit.

10.10.2 Waste Water from Well Development

Waste water generated during development of the wells should be diverted to a 205 L waste drum, which will be labelled accordingly with details such as location, date, contact details of the field technician or project manager and number of drums for said location. Drums are expected to be stored at each site and disposal should be arranged by the contractor to an appropriate disposal facility upon receipt of laboratory results in accordance with the requirements of the Environmental Protection Act, 1994.

Due to the minor volume of water that will be generated during the monitoring event due to the use of low flow sampling technique, purged groundwater will be transferred to the waste drums containing potentially contaminated well development sludge aligning with development locations. The storage location will be agreed with the QFES representative prior to mobilising to each fire station.

10.11 Sample Nomenclature and Labelling

This section outlines the sample nomenclature for each type of sample. In general, the identification will be the sample location (e.g. MW01, SW11), and followed by the date in YYMMDD format.

10.11.1 Sample Nomenclature

All samples collected should have unique identification (ID) numbers:

- Site_MW0XX-YYMMDD
- Site_SB0XX-YYMMDD
- Site_SS-YYMMDD
- Site_TW0XX-YYMMDD
- Site_SW0XX-YYMMDD
- Site_SED0XX-YYMMDD

Where:

- Site is either ‘AB’ for Airlie Beach, ‘AY’ for Ayr, ‘GS’ for Gladstone, ‘HH’ for Home Hill, ‘PR’ for Proserpine and ‘TW’ for Toowoomba.
- GW is Groundwater sample ;
- SB is Soil Bore sample
- SS is Surface Soil sample
- TW is Tap Water sample
- SW is Surface Water sample
- SED is Sediment sample
- YYMMDD provides date information i.e. year / month /date that sampling occurred.

10.11.2 Quality Assurance / Quality Control Sample Nomenclature

All QA/QC samples collected during the project (for all types of samples collected) will have a naming convention for QA/QC samples and will follow the naming convention as outlined below:

- Duplicate: Site_QC10X-YYMMDD
- Triplicate: Site_QC20X-YYMMDD
- Rinsate: Site_QC30X-YYMMDD

Where:

- Site is either 'AB' for Airlie Beach, 'AY' for Ayr, 'GS' for Gladstone, 'HH' for Home Hill, 'PR' for Proserpine and 'TW' for Toowoomba.
- QCXXX is a QA/QC sample with a specific number; and
- YYMMDD provides date information i.e. year / month /date that sampling occurred.

To ensure QA/QC sample information is correctly documented, a QA/QC Sample Register should be used to document:

- Date of sample collection
- Name of person the sample was collected by
- QA/QC sample number (e.g. QC01)
- QA/QC Sample Type (i.e. duplicate, triplicate, rinsate)
- Parent (or Primary) Sample ID
- Sample Matrix (e.g. water or soil).

Note: QA/QC sample numbering starts at QC101/QC201/QC301 at the beginning of each fieldwork event. Samples with the same QC sample number can be distinguished by the date the sample was collected.

10.12 Fieldwork Documentation

10.12.1 Field Notes

Field notes shall be maintained to record all field sampling events and include observations made at each sample location. Field notes should include information specific to the sample media as follows:

10.12.1.1 Field Records – Soil Sampling

At each sampling point the field records should include, as a minimum, the following information:

- The sampling time, date and the name of the sampler.
- A description of the sampling rig, company and names of drillers/drivers, if applicable.
- Weather conditions.
- The geo-coordinates for each sample location and location of quality control (e.g. duplicate and triplicate) sample collection points (where needed).
- A description of the sampling locations.
- Observations of contamination or the absence of contamination.
- Evidence of visual or odorous contamination.
- A description of the soil and geological profile in accordance with the Unified Soil Classification System protocol. Records of field observations must be recorded and maintained to support subsequent interpretation and conceptualisation of site conditions.

- The potential for an off-site source of the contamination based on the surrounding land-use and immediate area topography, drainage features etc.
- The sample collection method and the equipment decontamination method.

10.12.1.2 Field Records – Groundwater and Surface Water Sampling

At each sampling location for groundwater the field records will include the minimum of the following information:

- Sampling time, date and the name of the sampler.
- Weather conditions.
- Sample collection method.
- Presence of light non-aqueous phase liquid.
- Field screening (turbidity, colour, odour etc.).
- The geo-coordinates for each sample location and location of quality control (e.g. duplicate and triplicate) sample collection points (where needed).
- Purging records (for groundwater samples) including water quality meter calibration records.
- Sample equipment decontamination procedures where non-disposable sampling equipment is utilised.

10.12.2 Sample Labels

Sample containers will be labelled, as a minimum, with the following information:

- Consultant project number
- Name of sampler
- Sample ID
- Date of sample collection

A ball point pen shall be used for labelling, to ensure that the lettering is not erased during transit to the laboratory.

10.12.3 Chain of Custody Forms

A chain of custody form shall be completed, documenting the sample identification number and analytes. The chain of custody documents the chain of events from sample collection to delivery at the laboratory and provides a traceable account of sample handling. The chain of custody form shall be signed by both the sample collector and the receiving laboratory.

The chain of custody form shall include the following information:

- Job number (Note: Name of site is not listed for confidentiality of project)
- Date of sample collection
- Sample ID
- Type of containers
- Name of sampler
- Laboratory to be used
- Analyses required
- Any comments
- Signatures of the sampler and laboratory receiver.

Upon receipt of the original documents accompanying the samples at the laboratory, the laboratory shall provide a sample receipt document (noting temperature of samples upon receipt, analyses required and any non-conformances) and return the signed chain of custody form to confirm analyses to be performed.

10.12.4 Sampling Documentation

Field sampling sheets should be completed for each location and will include the following information (as appropriate for the media being sampled):

- Name of sampler
- Sample location
- Date /time of monitoring/ sampling
- Sampling method
- Observations of the sampled media (as described in **Section 10.12.1**)
- Information provided by landholders on water use etc.

10.12.5 Calibration Records

Records of all equipment calibration should be included in the DSI report.

10.12.6 Laboratory Reports

Laboratory reports should be issued in accordance with the requirements of NATA endorsement and should include the following information appended within the DSI report:

- The sample receipt notifications (detailing samples have been received in adequate condition and within the maximum hold times)
- The test results for the samples
- The test results for the laboratory's in-house duplicates
- The test results for the laboratory's in-house surrogate and matrix spike recovery determination
- The extraction (where applicable) and analysis dates which would be used to determine compliance with the permitted holding times.

10.12.7 Reporting

The DSI report should be prepared as a CLID in compliance with the requirements of the Auditor Handbook Module 6 (DES, 2018).

11.0 References

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12.0 Limitations

AECOM has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of QFES and only those third parties who have been authorised in writing by AECOM to rely on the report.

The report is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The report is prepared in accordance with the scope of work and for the purpose outlined in the Proposal (891595) dated 16 November 2018.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

The methodology adopted and sources of information used by AECOM are outlined in the report.

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This report was prepared between 08 January 2019 and 2 April 2019. The information in this report is considered to be accurate at the date of issue and is in accordance with conditions at the Site and surrounding areas at the dates sampled. Opinions and recommendations presented herein apply to the Site and surrounding areas existing at the time of our investigation and cannot necessarily apply to changes to Site and surrounding areas of which AECOM is not aware and has not had the opportunity to evaluate. This document and the information contained herein should only be regarded as validly representing the Site and surrounding area conditions at the time of the investigation unless otherwise explicitly stated in a preceding section of this report. AECOM disclaims responsibility for any changes that may have occurred after this time.

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List of Appendices

Appendix A

Figures

List of Figures

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DATUM GDA 1994, PROJECTION MGA ZONE XX

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Metres

1:10,000 (when printed at A3)

LEGEND

- Registered Groundwater Bores
- Streams
- Lakes
- 1km Site Radius
- Site Boundary
- Cadastre

Data sources:

Base Data: (c) 20XX (data source)
(additional data)

Queensland Fire and Emergency Services (QFES)

Site Location Plan - Airlie Beach

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	29-Mar-2019
VERSION	<version number>

Figure F1

A3 size

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DATUM GDA 1994, PROJECTION MGA ZONE XX

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Metres

1:600 (when printed at A3)

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- Registered Groundwater Bores
- Proposed Montioring Well
- Proposed Sediment/ Surface Water Sampling Location
- Proposed Surface Soil Sampling Location
- Hydrant
- Drainage Line
- Concrete Spoon Drain
- Hydrant Water Mains
- Approximate Foam Training
- Site Boundary
- Cadastre

Due to the scale of the drawing and flat gradient, 10 mAHD contour cannot be displayed.

Data sources:

Base Data: (c) 20XX (data source)
(additional data)

Queensland Fire and Emergency Services (QFES) Airlie Beach Site Layout and Suggested Sampling Locations

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	29-Mar-2019
VERSION	<version number>

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DATUM GDA 1994, PROJECTION MGA ZONE XX

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Metres

1:10,000 (when printed at A3)

LEGEND

- Registered Groundwater Bores
- Streams
- Lakes
- 1km Site Radius
- Site Boundary
- Cadastre

Data sources:

Base Data: (c) 20XX (data source)
(additional data)

Queensland Fire and Emergency Services (QFES)

Site Location Plan - Ayr

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	21-Feb-2019
VERSION	<version number>

Figure F3

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A3 size

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DATUM GDA 1994, PROJECTION MGA ZONE XX

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Metres

1:350 (when printed at A3)

LEGEND

- Registered Groundwater Bores
- Proposed Montioring Well
- Proposed Sediment/ Surface Water Sampling Location
- Proposed Surface Soil Sampling Location
- Drainage Pit
- Hydrant
- Drainage Line
- Concrete Spoon Drain
- Hydrant Water Mains
- Previously grassed areas potentially used for foam training excercises
- Site Boundary
- Cadastre

Due to the scale of the drawing and flat gradient, 10 mAHD contour cannot be displayed.

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Queensland Fire and Emergency Services (QFES)

Ayr Site Layout and Suggested Sampling Locations

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	29-Mar-2019
VERSION	<version number>

Figure F4

A3 size

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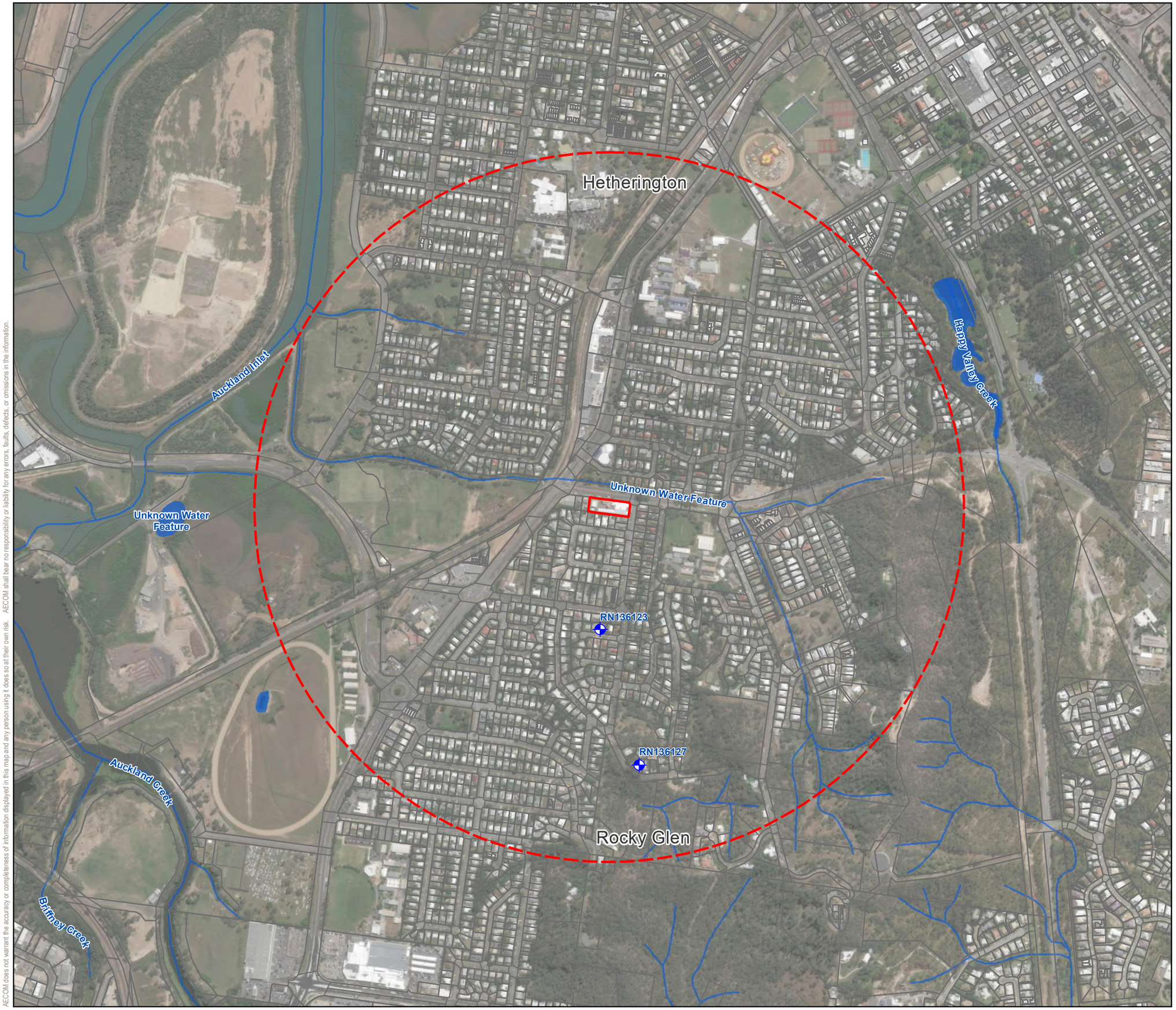

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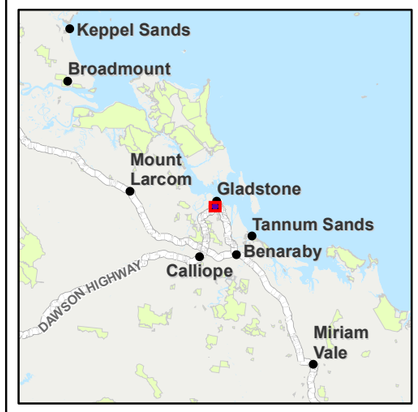
- Streams
- Lakes
- 1kmSiteRadius
- Site Boundary
- Cadastre



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(additional data)

Queensland Fire and Emergency Services (QFES)

Site Location Plan - Gladstone

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	22-Feb-2019
VERSION	<version number>

Map F5

Filename: \\aubne1fp003\Projects\605X\60595892\400_TECH\431_Stage 1 Report\4.0 GIS\02_MXDs\20190115_QFES_Sites_WW\F5_SitePlan_QFES_Gladstone_20190115_v1_A3.mxd

A3 size

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N

DATUM GDA 1994, PROJECTION MGA ZONE XX

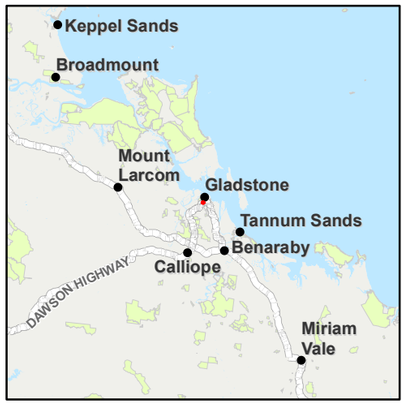
0 5 10 20

Metres

1:500 (when printed at A3)

LEGEND

- Registered Groundwater Bores
- Proposed Montioring Well Sampling Location
- Sediment/ Surface Water Sampling Location
- Surface Soil Sampling Location
- Seepage Sample Sampling Location
- Storm Water Pits
- Storm Water Pipes
- Contours 10m
- Approximate are used for foam training exercises
- Site Boundary
- Cadastre



Data sources:

Base Data: (c) 20XX (data source)
(additional data)

Queensland Fire and Emergency Services (QFES)

Gladstone Site Layout and Suggested Sampling Locations

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	29-Mar-2019
VERSION	<version number>

Figure F6

Filename: \\aubne1fp003\Projects\605X\60595892\400_TECH\431_Stage 1 Report\4.0 GIS\02_MXDs\20190115_QFES_Sites_WW\F6_SiteLayout_QFES_Gladstone_20190115_v2_A3.mxd

A3 size

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N

DATUM GDA 1994, PROJECTION MGA ZONE XX

0 125 250 500
Metres

1:10,000 (when printed at A3)

LEGEND

- Registered Groundwater Bores
- Streams
- Lakes
- 1km Site Radius
- Site Boundary
- Cadastre

Data sources:

Base Data: (c) 20XX (data source)
(additional data)

Queensland Fire and Emergency Services (QFES)

Site Location Plan - Home Hill

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	22-Feb-2019
VERSION	<version number>

Figure F7

A3 size

Filename: \\aubne1fp003\Projects\605X\60595892\400_TECH\431_Stage 1 Report\4.0 GIS\02_MXDs\20190115_QFES_Sites_WW\F7_SitePlan_QFES_HomeHill_20190115_v2_A3.mxd

AECOM
www.aecom.com

N

DATUM GDA 1994, PROJECTION MGA ZONE XX

0 5 10 20
Metres

1:500 (when printed at A3)

LEGEND

- Registered Groundwater Bores
- Proposed Montioring Well
- Proposed Sediment/ Surface Water Sampling Location
- Proposed Surface Soil Sampling Location
- Drainage Pit
- Hydrant
- Drainage Line
- Hydrant Water Mains
- Fence
- Approximate are used for foam training exercises
- Natural Depression
- Site Boundary
- Cadastre

Due to the scale of the drawing and flat gradient, 10 mAHD contour cannot be displayed.

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Queensland Fire and Emergency Services (QFES)
Home Hill Site Layout and Suggested Sampling Locations
Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	29-Mar-2019
VERSION	<version number>

Figure F8

A3 size

Filename: \\aubne1fp003\Projects\605X\60595892\400_TECH\431_Stage 1 Report\4.0 GIS\02_MXDs\20190115_QFES_Sites_WW\F8_SiteLayout_QFES_HomeHill_20190115_v1_A3.mxd

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N

DATUM GDA 1994, PROJECTION MGA ZONE XX

0 125 250 500

Metres

1:10,000 (when printed at A3)

LEGEND

- Registered Groundwater Bores
- Streams
- Lakes
- 1km Site Radius
- Site Boundary
- Cadastre

Data sources:

Base Data: (c) 20XX (data source)
(additional data)

Queensland Fire and Emergency Services (QFES)

Site Location Plan - Proserpine

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	22-Feb-2019
VERSION	1

Figure F9

Filename: \\aubne1fp003\Projects\605X\60595892\400_TECH\431_Stage 1 Report\4.0 GIS\02_MXDs\20190115_QFES_Sites_WW\F9_SitePlan_QFES_Proserpine_20190115_v1_A3.mxd

A3 size

AECOM
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N

DATUM GDA 1994, PROJECTION MGA ZONE XX

0 4.25 8.5 17

Metres

1:450 (when printed at A3)

LEGEND

- Proposed Montioring Well Sampling Location
- Proposed Sediment/ Surface Water Sampling Location
- Proposed Soil Bore
- Proposed Surface Soil Sampling Location
- Registered Groundwater Bores
- Hydrant
- Drainage Line
- Hydrant Water Mains
- Approximate area used for foam training excercises
- Site Boundary
- Cadastre

Due to the scale of the drawing and flat gradient, 10 mAHD contour cannot be displayed.

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Queensland Fire and Emergency Services (QFES)
Prosperine Site Layout and Suggested Sampling Locations
Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	29-Mar-2019
VERSION	1

Figure F10

A3 size

Filename: \\aubne1fp003\Projects\605X\60595892\400_TECH\431_Stage 1 Report\4.0 GIS\02_MXDs\20190115_QFES_Sites_WW\F10_SiteLayout_QFES_Proserpine_20190115_v1_A3.mxd

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N

DATUM GDA 1994, PROJECTION MGA ZONE XX

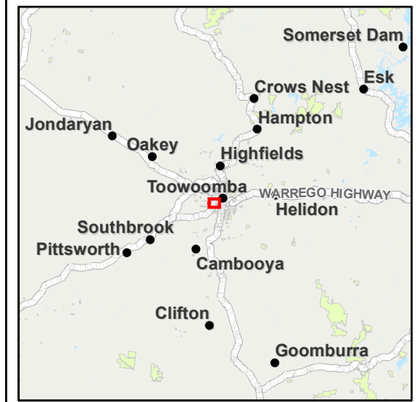
0 125 250 500

Metres

1:10,000 (when printed at A3)

LEGEND

- Registered Groundwater Bores
- Streams
- Lakes - Queensland
- Site Boundary
- 1km Site Radius
- Cadastre



Data sources:

Base Data: (c) 20XX (data source)
(additional data)

Queensland Fire and Emergency Services (QFES)

Site Location Plan - Toowoomba

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	22-Feb-2019
VERSION	<version number>

Figure F11

Filename: \\aubne1fp003\Projects\605X\60595892\400_TECH\431_Stage 1 Report\4.0 GIS\02_MXDs\20190115_QFES_Sites_WW\F11_SitePlan_QFES_Toowoomba_20190115_v1_A3.mxd

A3 size

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N

DATUM GDA 1994, PROJECTION MGA ZONE XX

0 5 10 20

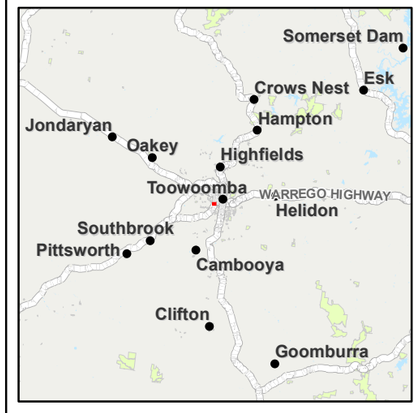
Metres

1:600 (when printed at A3)

LEGEND

- Proposed Montioring Well Sample Locations
- Proposed Sediment/ Surface Water Sample Locations
- Proposed Surface Soil Sample Locations
- Storm Water Pits
- Storm Water Pipes
- Approximate area used for foam training exercises
- Structures
- Site Boundary
- Cadastre

Due to the scale of the drawing and flat gradient, 10 mAHD contour cannot be displayed.



Data sources:

Base Data: (c) 20XX (data source) (additional data)

Queensland Fire and Emergency Services (QFES) Toowoomba Site Layout and Suggested Sampling Locations

Evaluation of Concentration and Distribution of PFAS from Selected QFES Facilities

PROJECT ID	60595892
CREATED BY	WeirW
LAST MODIFIED	29-Mar-2019
VERSION	<version number>

Figure F12

A3 size

Filename: \\aubne1fp003\Projects\605X\60595892\400_TECH\431_Stage 1 Report\4.0 GIS\02_MXDs\20190115_QFES_Sites_WW\F12_SiteLayout_QFES_Toowoomba_20190115_v2_A3.mxd

Appendix B

Site Photographs

AECOM Imagine it. Delivered.

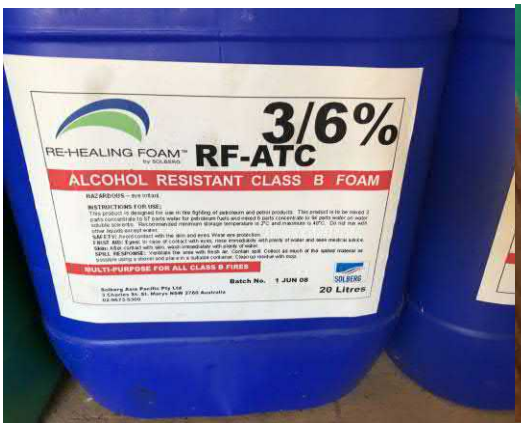
PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Airlie Beach Fire Station	2495 Shute Harbour Road, Airlie Beach	13/02/2019	60595892

Plate No. 1

Direction Photo Taken:
N/A

Description:
Class A and Class B Foams stored in storage shed midway along north-western site boundary.



Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Airlie Beach Fire Station	2495 Shute Harbour Road, Airlie Beach	13/02/2019	60595892

Plate No. 2

Direction Photo Taken:
N/A

Description:
Storage of Class A and Class B Foam in foam storage shed midway along north-western site boundary.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Airlie Beach Fire Station	2495 Shute Harbour Road, Airlie Beach	13/02/2019	60595892

Plate No. 3

Direction Photo Taken:
North-west

Description:
Stacked containers used for smoke training in foreground. A single container used for heat training in background.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Airlie Beach Fire Station	2495 Shute Harbour Road, Airlie Beach	13/02/2019	60595892

Plate No. 4

Direction Photo Taken:
North

Description:
Training tower located in the centre of the site. The workshop is visible in the background.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Airlie Beach Fire Station	2495 Shute Harbour Road, Airlie Beach	13/02/2019	60595892

Plate No. 5

Direction Photo Taken: North

Description: Surface depression location in the north-east corner of the Property.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Airlie Beach Fire Station	2495 Shute Harbour Road, Airlie Beach	13/02/2019	60595892

Plate No. 6

Direction Photo Taken: N/A

Description: Case 4 Pit for drafting training located in the south-east corner of the site. Filled and sealed with concrete in 2018.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Airlie Beach Fire Station	2495 Shute Harbour Road, Airlie Beach	13/02/2019	60595892

Plate No. 7

Direction Photo Taken: South-west

Description: Miscellaneous waste between western boundary fence and the storage shed. Concrete spoon drain visible in the foreground.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Airlie Beach Fire Station	2495 Shute Harbour Road, Airlie Beach	13/02/2019	60595892

Plate No. 8

Direction Photo Taken: North-west

Description: View along the driveway to the site with the grassed area in the background the primary area for foam training.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Ayr Fire Station	47-49 Soper Street, Ayr, 4807	13/02/2019	60595892

Plate No. 1

Direction Photo Taken:
N/A

Description:
Class A and Class B Foams stored in storage shed in the southern corner of the site.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Ayr Fire Station	47-49 Soper Street, Ayr, 4807	13/02/2019	60595892

Plate No. 2

Direction Photo Taken:
N/A

Description:
Storage of 11 x 20L Class A drums and 17 x 20L Class B drums in a storage shed in the southern corner of the site.

AECOM Imagine it. Delivered.

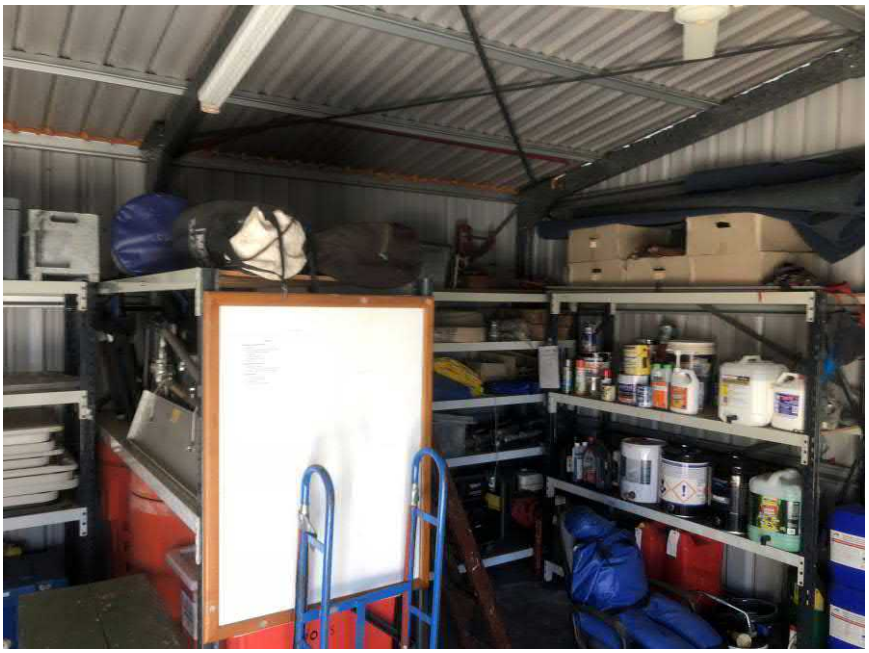
PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Ayr Fire Station	47-49 Soper Street, Ayr, 4807	13/02/2019	60595892

Plate No. 3

Direction Photo Taken:
N/A

Description:
Storage shed located in the southern corner of site, including miscellaneous fuel, oil, cleaning chemicals and foam storage.



Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Ayr Fire Station	47-49 Soper Street, Ayr, 4807	13/02/2019	60595892

Plate No. 4

Direction Photo Taken:
North

Description:
Grassed area in the western portion of the site bisected by the driveway. A radio tower is located adjacent to the breathing apparatus and workshop rooms.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Ayr Fire Station	47-49 Soper Street, Ayr, 4807	13/02/2019	60595892

Plate No. 5

Direction Photo Taken: South

Description: View from inside the Engine Room across the site. The covered carpark and storage room as visible in the background.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Ayr Fire Station	47-49 Soper Street, Ayr, 4807	13/02/2019	60595892

Plate No. 6

Direction Photo Taken: South-east

Description: Miscellaneous waste items between storage shed and southern site boundary.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Ayr Fire Station	47-49 Soper Street, Ayr, 4807	13/02/2019	60595892

Plate No. 7

Direction Photo Taken:
N/A

Description:
Oil/water separator and pump for treatment of intercepted stormwater from the stormwater drain in front of the storage shed in the southern corner of the site.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 1

Direction Photo Taken:
N/A

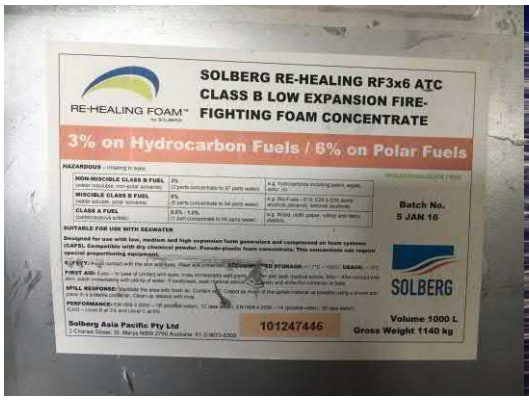
Description:
Storage of Foam concentrate in storage shed.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 2

Direction Photo Taken:
N/A

Description:
Class B Foam labels.



AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 3

Direction Photo Taken:
North-west

Description:
Class A foam concentrate label.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 4

Direction Photo Taken:
West

Description:
Shed constructed over grassed area historically used for training purposes and subject to foam usage.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 5

Direction Photo Taken: West

Description: Grassed area historically used for training purposes and subject to foam use. Breslin Street beyond site fence on right side of photo.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 6

Direction Photo Taken: South

Description: Grassed area historically used for training purposes and subject to foam use. Western neighbouring property beyond site fence on right side of photo.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 7

Direction Photo Taken: West

Description: Grassed area historically used for training purposes and subject to foam use.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 8

Direction Photo Taken: North

Description: Waste laydown area. Used for containment and storage and waste materials.

AECOM Imagine it. Delivered.

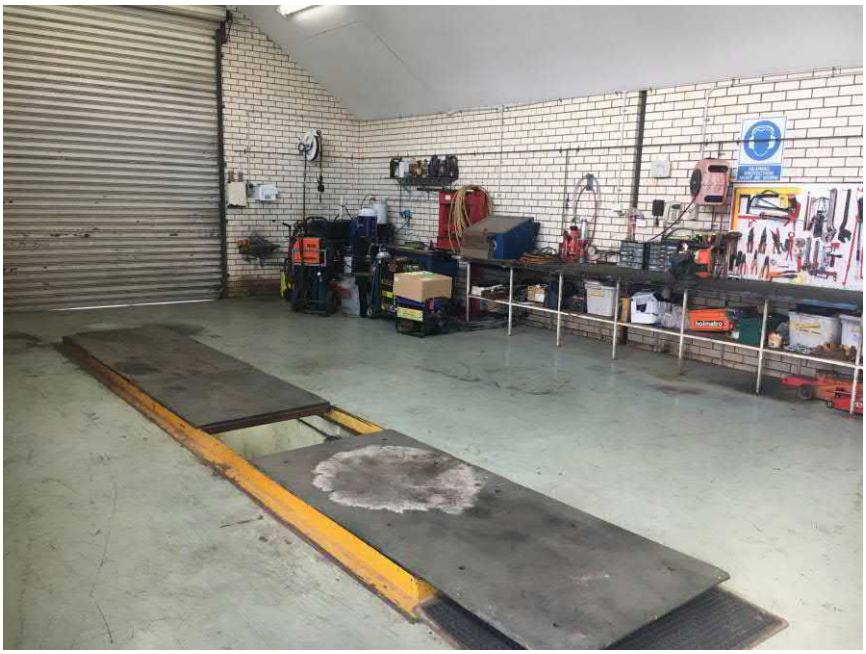
PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 9

Direction Photo Taken: South-west

Description: Inside site workshop. Pit used when working under vehicle visible.



Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 10

Direction Photo Taken: East

Description: Stormwater drainage channel located across Breslin Street. Receives stormwater discharge from site.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Gladstone Fire Station	1 Charles Street, Gladstone, 4680	29/01/2019	60595892

Plate No. 11

Direction Photo Taken:
N/A

Description:
Decommissioned bowser connected to predominantly water filled 1000L UST. Slight hydrocarbon odour remains.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Home Hill Fire Station	83 Tenth Avenue, Home Hill, 4806	13/02/2019	60595892

Plate No. 1

Direction Photo Taken:
N/A

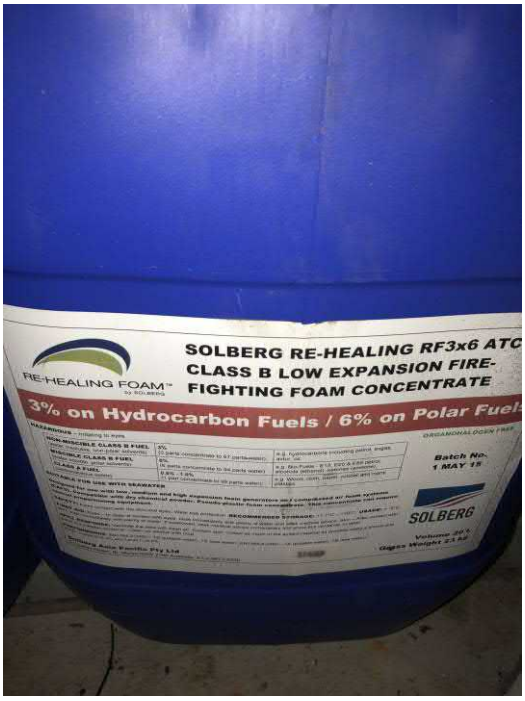
Description:
20L Class A foam drums stored in the workshop/storage shed adjoining the engine room.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Home Hill Fire Station	83 Tenth Avenue, Home Hill, 4806	13/02/2019	60595892

Plate No. 2

Direction Photo Taken:
N/A

Description:
20L Class B foam drums stored in the workshop / storage shed adjoining the engine room.



AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Home Hill Fire Station	83 Tenth Avenue, Home Hill, 4806	13/02/2019	60595892

Plate No. 3

Direction Photo Taken:
N/A

Description:
Interior of workshop / storage shed located in north-western corner of site. The area included foam and miscellaneous chemical storage.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Home Hill Fire Station	83 Tenth Avenue, Home Hill, 4806	13/02/2019	60595892

Plate No. 4

Direction Photo Taken:
North

Description:
Concrete hardstand area outside workshop / storage, used for vehicle wash-down. AST in the background is used for drafting training.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Home Hill Fire Station	83 Tenth Avenue, Home Hill, 4806	13/02/2019	60595892

Plate No. 5

Direction Photo Taken:
South-east

Description:
Location of decommissioned Case 4 Pit used for drafting training.

Site Name:	Site Location:	Date of Photographs:	Project No:
QFES – Home Hill Fire Station	83 Tenth Avenue, Home Hill, 4806	13/02/2019	60595892

Plate No. 6

Direction Photo Taken:
North-east

Description:
View along the length of the site towards Eleventh Avenue. The grassed area in the background is used for foam training. Note the surface stains on the concrete hardstand and surface water flow towards the east.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Proserpine Fire Station	102 Main Street, Proserpine, 4800	13/02/2019	60595892

Plate No. 1

Direction Photo Taken:
North

Description:
Interior of shed historically used for foam storage.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Proserpine Fire Station	102 Main Street, Proserpine, 4800	13/02/2019	60595892

Plate No. 2

Direction Photo Taken:
North

Description:
The rear of the Fire Station, showing the various extensions and multi-level use.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Proserpine Fire Station	102 Main Street, Proserpine, 4800	13/02/2019	60595892

Plate No. 3

Direction Photo Taken: North

Description: Site hardstand area in foreground and Fire Station in the background. Concrete hardstand was gradually sealed over time.

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Proserpine Fire Station	102 Main Street, Proserpine, 4800	13/02/2019	60595892

Plate No. 4

Direction Photo Taken: East

Description: Remanence of a lean-to shelter which previously contained a fuel bowser and underground storage tank (unknown if it has been removed).

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Proserpine Fire Station	102 Main Street, Proserpine, 4800	13/02/2019	60595892

Plate No. 5

Direction Photo Taken: South-east

Description: Exterior of workshop at the rear of the site. A hose drying rack is visible on the left of the photograph.

Site Name:	Site Location:	Date of Photographs:	Project No:
QFES – Proserpine Fire Station	102 Main Street, Proserpine, 4800	13/02/2019	60595892

Plate No. 6

Direction Photo Taken: South

Description: Exterior frontage to Main Street. The two roller doors provide access to the historical Engine Room and the upstairs area was historically used for training purposes.

AECOM Imagine it. Delivered.

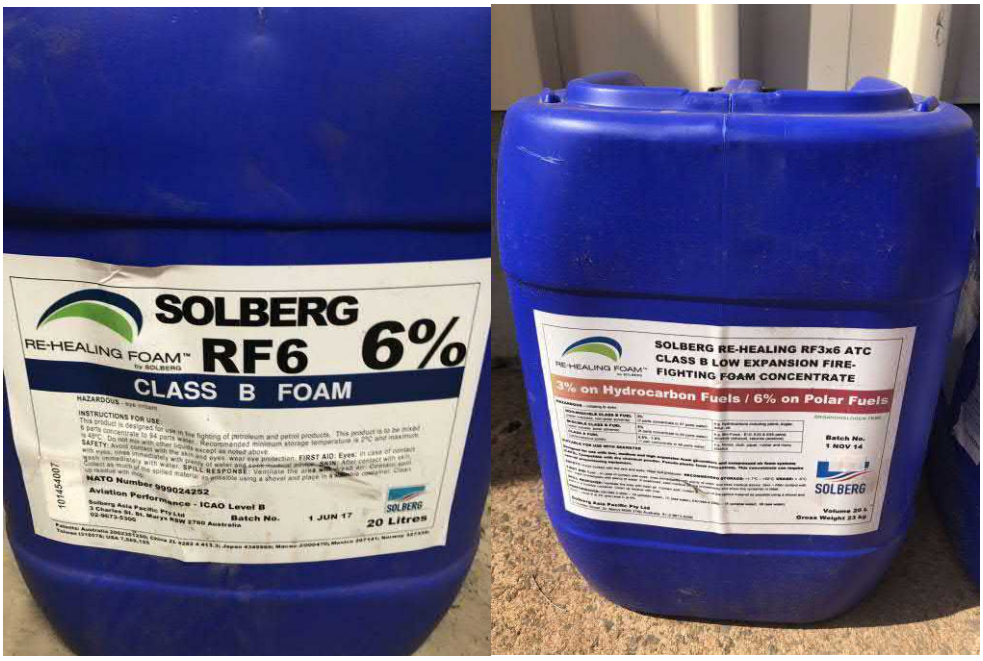
PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Toowoomba Fire Station	201 Anzac Avenue, Toowoomba	22/01/2019	60595892

Plate No. 1

Direction Photo Taken:
N/A

Description:
Class B Foams in current use at site. Stored in foam storage shed at entrance of site.



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Toowoomba Fire Station	201 Anzac Avenue, Toowoomba	22/01/2019	60595892

Plate No. 2

Direction Photo Taken:
South

Description:
Located on southern boundary of site, at rear of foam storage building, next to driveway.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Toowoomba Fire Station	201 Anzac Avenue, Toowoomba	22/01/2019	60595892

Plate No. 3

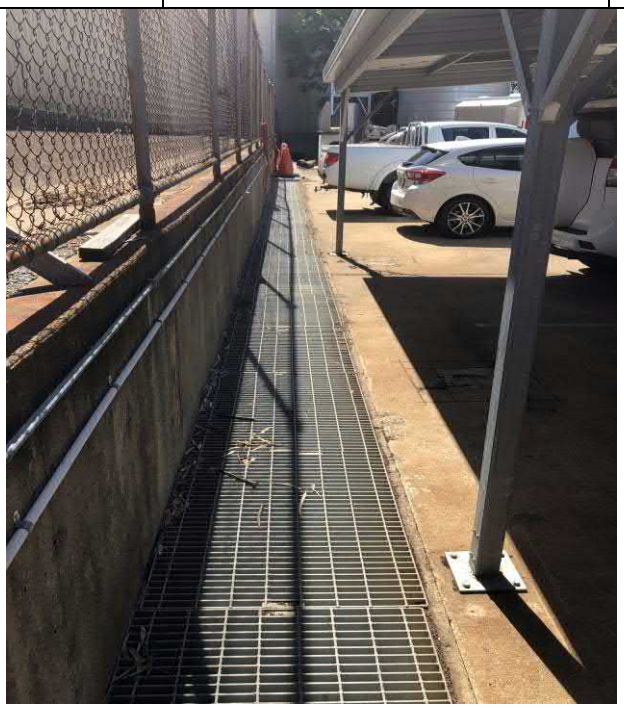
Direction Photo Taken:
East

Description:
Large shed at entrance of QFES Toowoomba. Shed built in 2006 and used for foam storage. Prior to 2006, the area was covered by grass and was used to store foams.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Toowoomba Fire Station	201 Anzac Avenue, Toowoomba	22/01/2019	60595892

Plate No. 4



Direction Photo Taken:
West

Description:
Northern boundary perimeter drain. Foam used for training exercises on the carpark drains to the north-western boundary of the site.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Toowoomba Fire Station	201 Anzac Avenue, Toowoomba	22/01/2019	60595892

Plate No. 5

Direction Photo Taken: South-East

Description: View of training area taken from roof of training tower. Area historically used for foam training exercises. Water drains to north-west boundary of the site, underneath carpark canopy. Confined space training area on the right side of image.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Toowoomba Fire Station	201 Anzac Avenue, Toowoomba	22/01/2019	60595892

Plate No. 6

Direction Photo Taken: North-west

Description: Training tower. Historically, smoke, water and foams were pumped into training tower for simulation exercises.

AECOM Imagine it. Delivered.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Date of Photograph:	Project No:
QFES – Toowoomba Fire Station	201 Anzac Avenue, Toowoomba	22/01/2019	60595892

Plate No. 7

Direction Photo Taken:
West

Description:
Room designated for washdown of equipment used (PPE). All equipment is required to undergo decontamination procedures before being brought back to site for final wash down. Toowoomba Council monitors drain connected to washroom facility for contamination.

Appendix C

Data Sheets

Material Safety Data Sheet

3M RF-ATC 3X6 ALCOHOL RESISTANT FOAM CONCENTRATE

Infosafe No.: HXEH7
OBSOLETE Date : 01/11/2006
OBSOLETE by: 3M AUSTRALIA PTY LIMITED

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name
3M RF-ATC 3X6 ALCOHOL RESISTANT FOAM CONCENTRATE

Product Code
AF-0105-5941-3, AF-0105-5942-1, AF-0105-5943-9

Company Name
3M AUSTRALIA PTY LIMITED

Address
Building A, 1 Rivett Road North Ryde
NSW 2113 Australia

Emergency Tel.
1800 097 146 (24H) (Australia only)

Telephone/Fax Number
Tel: 136 136
Fax: (02) 9677 5170

Email
productinfo.au@mmm.com

Recommended Use
Fire fighting foam.

2. HAZARD IDENTIFICATION

Hazard Classification
HAZARDOUS SUBSTANCE.
NON-DANGEROUS GOODS.

Classified as Hazardous according to criteria of National Occupational Health & Safety Commission, Australia (NOHSC).
Not Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Risk Phrase(s)
Not applicable

Safety Phrase(s)
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28 After contact with skin, wash immediately with plenty of
S24/25 Avoid contact with skin and eyes.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization
Liquid

Ingredients

Name	CAS	Proportion
Water	7732- 18- 5	60- 70 %

Emulsifiers		15- 20 %
Surfactants		5- 10 %
Thickening agents		1- 5 %
Diethylene Glycol Butyl Ether	112- 34- 5	5- 10 %

4. FIRST-AID MEASURES

Inhalation
Remove person to fresh air. If signs/symptoms develop, get medical attention.

Ingestion
Do not induce vomiting unless instructed to do so by medical personnel. Give person two glasses of water. Never give anything by mouth to an unconscious person. Get medical attention.

Skin
Remove contaminated clothing and shoes. Immediately flush skin with large amounts of water. Get medical attention. Wash contaminated clothing and shoes before reuse.

Eye
Get immediate medical attention. Immediately flush eyes with large amounts of water for at least 15 minutes.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Product is a fire-extinguishing agent. Non flammable.

Specific Methods
Not applicable.

Other Information
EXPOSURE HAZARDS DURING FIRE
Material will not burn.

FIRE FIGHTING PROCEDURES
Wear full protective equipment (Turnout Gear) and a self-contained breathing apparatus (SCBA).
Combustion Products from Fire Combustion Products from Fire are listed in Section 10, STABILITY AND REACTIVITY.

6. ACCIDENTAL RELEASE MEASURES

Spills & Disposal
Ventilate area with fresh air. Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Collect as much of the spilled material as possible. Clean up residue with water. Place in a metal container approved for transportation by appropriate authorities. Dispose of collected material as soon as possible.

Personal Precautions
Observe precautions from other sections of this Material Safety Data Sheet.

7. HANDLING AND STORAGE

Precautions for Safe Handling
Keep container tightly closed when not in use. For industrial or professional use only.

Conditions for Safe Storage
Refer to Incompatibility - Materials to Avoid.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Controls, Personal Protection

Special Information, Exposure/Protection
The extent to which the following recommendations for exposure control and protection are observed should depend on the risk assessment undertaken for the specific conditions under which this product is used, including occupational hygiene measurements.

National Exposure Standards
No Exposure Limit Established

Engineering Controls
Recommended Ventilation:
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below Occupational Exposure Limits and/or control mist, vapour, or spray. If ventilation is not adequate, use respiratory protection equipment.

Respiratory Protection
Avoid breathing vapours. Avoid breathing vapours of foam concentrate in confined spaces or during large spill cleanup. Select one of the following approved respirators based on airborne concentration of contaminants and in accordance with regulations: Half facepiece or fullface air-purifying respirator with GP1 filters. Select and use respirators according to AS/NZS 1715. Respirators should comply with AS/NZS 1716 performance specifications. For information about respirators, call 3M on 1800 024 464.

Eye Protection
Avoid eye contact with vapour, spray, or mist. During operations in which eye exposure is likely, the following should be worn alone, or in combination, as appropriate: Indirect Vented goggles. Select and use eye protection in accordance with AS/NZS 1336. Eye protection should comply with the performance specifications of AS/NZS 1337.

Hand Protection
Gloves made from one of the following material(s) are recommended. (Gloves should be selected and used in accordance with AS/NZS 2161): Neoprene. Nitrile rubber.

Body Protection
Avoid prolonged or repeated skin contact.

Other Information
Prevention of Accidental Ingestion:
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form
Liquid

Appearance
Light brown to dark amber liquid with mild detergent

Odour
Glycol odour

Melting Point
Not applicable

Boiling Point
100°C

Solubility in Water
50% by weight

Specific Gravity
1.09

pH Value
6-9

Vapour Pressure
<= 18 mmHg @ 20°C

Vapour Density (Air=1)
1

Evaporation Rate
Cal

Viscosity

Ca 1500-4000 centipoise

Volatile Component
83 %

Flash Point
Not applicable

Auto-Ignition Temperature
Not applicable

Flammable Limits - Lower
Not applicable

Flammable Limits - Upper
Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability
Stable.

Incompatible materials
None known.

Hazardous Decomposition Products
Carbon monoxide during combustion. Carbon dioxide during combustion. Oxides of nitrogen during combustion. Toxic vapour, gas, particulate during combustion.

Hazardous Polymerization
Hazardous polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicology Information
Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, uncoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness. Prolonged or repeated exposure may cause: Liver Effects: Signs/symptoms may include loss of appetite, weight loss, fatigue, weakness, abdominal tenderness and jaundice. Kidney/Bladder Effects: Signs/symptoms may include changes in urine production, abdominal or lower back pain, increased protein in urine, increased blood urea nitrogen (BUN), blood in urine, and painful urination. The DILUTED (ready to use) foam is classified non hazardous based on LD50, skin and eye irritation toxicology testing.

Inhalation
May be absorbed following inhalation and cause adverse systemic health effects as stated in other Toxicological Information Section. Upper Respiratory Tract Irritation: Sings/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Ingestion
May be absorbed following ingestion and cause target organ effects. Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhoea.

Skin
Contact with the skin during product use is not expected to result in significant irritation.

Eye
Eye irritation: Sings/symptoms can include redness, swelling, pain, tearing and hazy vision.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Not determined

Environmental Protection
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Disposal
Discharge small quantities of less than 20 litres to a municipal or industrial waste water treatment system. Reduce discharge rate if foaming occurs. As a disposal alternative, dispose of waste product in a facility permitted to accept chemical waste.

14. TRANSPORT INFORMATION

Transport Information
ADG (Road/Rail)
UN UNMBER: NONE ALLOCATED
PROPER SHIPPING NAME: NONE ALLOCATED
DANGEROUS GOODS CLASS: NONE ALLOCATED
SUBSIDIARY RISK: NONE ALLOCATED
PACKING GROUP: NONE ALLOCATED

IATA (Airfreight)
UN UNMBER: NONE ALLOCATED
PROPER SHIPPING NAME: NONE ALLOCATED
DANGEROUS GOODS CLASS: NONE ALLOCATED
SUBSIDIARY RISK: NONE ALLOCATED
PACKING GROUP: NONE ALLOCATED

IMO (Seafreight)
UN UNMBER: NONE ALLOCATED
PROPER SHIPPING NAME: NONE ALLOCATED
DANGEROUS GOODS CLASS: NONE ALLOCATED
SUBSIDIARY RISK: NONE ALLOCATED
PACKING GROUP: NONE ALLOCATED

U.N. Number
None Allocated

Proper Shipping Name
None Allocated

DG Class
None Allocated

Packing Group
None Allocated

15. REGULATORY INFORMATION

Regulatory information
Product Certifications
AICS - Yes; components checked

Poisons Schedule
Not Scheduled

Hazard Category
Irritant

16. OTHER INFORMATION

REASON FOR REISSUE
19/11/04 Updated fire fighting procedures and Viscosity.

Other Information
REASON FOR REISSUE: Editorial corrections and selection.

The information on this data sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this data sheet, which involves using the product, or otherwise that in accordance with instructions of use on product packaging is the responsibility of the user. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the Snr Regulatory Services Officer on (02)9498-9287.

END OF MSDS

RE-HEALING™ RF3X6% ATC™ FOAM CONCENTRATE

CONCENTRATES

SOLBERG

RE-HEALING® FOAM
AUTHENTIC FLUORO-FREE

Description

RE-HEALING™ RF3x6 ATC foam concentrate from SOLBERG® is an innovative environmentally sustainable fluorosurfactant and fluoropolymer-free foam concentrate used to effectively extinguish Class B hydrocarbon fuel fires at 3% and polar solvent fuel fires at 6% solution. RE-HEALING RF3x6 ATC foam can be used in fresh, salt or brackish water. RE-HEALING RF3x6 ATC foam possesses excellent burn back resistance due to its remarkable flow and rapid resealing characteristics. RE-HEALING foam concentrates are formulated using a new high performance synthetic foam technology to replace traditional AFFF, FFFP foam concentrates and older protein and fluoroprotein foams.

Application

RE-HEALING RF3x6 ATC foam concentrate is intended for use on Class B hydrocarbon or polar solvent fuel fires. The foam can be used to prevent re-ignition of a liquid spill and control hazardous vapors. On Class A fuels, RE-HEALING RF3x6 ATC foam will improve extinguishment in deep-seated fires. Foam discharge devices such as air aspirating, as well as non-air aspirating equipment, including standard sprinkler heads, can be used to obtain maximum results. The product is mixed 3 parts foam concentrate to 97 parts water for hydrocarbon fuels or 6 parts foam concentrate to 94 parts water for polar solvent fuels. It may also be used as a pre-mix solution. RE-HEALING RF3x6 ATC foam is compatible with most dry powder (chemical) agents.

Performance

Fire Performance

RE-HEALING RF3x6 ATC foam concentrate has been tested to and meets the fire performance test criteria of European Standard EN 1568 Part 3 & 4 and International Civil Aviation Organization (ICAO) Levels B and C.

Foam Proportioning

RE-HEALING RF3x6 ATC foam concentrate can be proportioned at the proper foam solution percentage using common foam proportioning devices such as:

- Eductors
- Inline balanced pressure proportioners
- Ratio controllers
- Self-educting nozzles

Typical Physical Properties

at 77 °F (25 °C)

Appearance:	Brown liquid
Freezing Point: *(No quality loss after thawing)*	23 °F (-5 °C)
Maximum storage temp:	120 °F (49 °C)
pH:	7.0 - 8.5
Refractive index:	1.3750 - 1.3850
Specific gravity:	1.050 - 1.085
Viscosity:	4300 - 5900 cP*
Sediments:	<0.05%

**Brookfield Viscometer Spindle #4, Speed 30 rpm*

Storage

The storage temperature range for RE-HEALING RF3x6 ATC foam concentrate is 35 °F to 120 °F (1.7 °C to 49 °C).

When stored in original containers or in manufacturer recommended equipment and within the specified temperature range, the shelf life is 20 years.

Compatibility

RE-HEALING RF3x6 ATC foam concentrate should not be mixed with other foam concentrates. For questions about compatibility or mixing, consult Solberg Technical Services.

SOLBERG

Materials of Construction Compatibility

RE-HEALING RF3x6 ATC foam concentrate is compatible with multiple materials of construction such as carbon steel, stainless steel, brass, polyethylene and PVC. Galvanized steel should not be used in direct contact with the foam concentrate. For questions about materials of construction compatibility, consult Solberg Technical Services.

Inspection

RE-HEALING RF3x6 ATC foam concentrate or pre-mix solution should be inspected annually per National Fire Protection Association (NFPA) Standards 11 and 25.

A sample of the foam concentrate should be sent to the manufacturer for quality conditioning testing in accordance to NFPA 11.

Environmental Information

RE-HEALING foam concentrates are fluorosurfactant, fluoropolymer-free products for use on Class B hydrocarbon fuels with no environmental concerns for persistence, bioaccumulation or toxic break down.

Certifications

SOLBERG manufactured products are thoroughly inspected and undergo rigorous quality control tests. These evaluations analyze the foam's physical parameters as well as the finished product's fire performance. A Certificate of Analysis (CoA) is issued with every batch.

RE-HEALING RF3x6 ATC foam concentrate is Approved to European Standard EN 1568 Part 3 & 4 and International Civil Aviation Organization (ICAO) Airport Services Manual (DOC 9137-AN/898) Part 1 - Rescue and Firefighting, Levels B and C (6% solution) Certified.

Ordering Information

RE-HEALING RF3x6 ATC foam concentrate is available in pails, drums, totes and bulk quantities.

PART NO.	DESCRIPTION	APPROXIMATE SHIPPING WEIGHT	APPROXIMATE CUBE
20030	RE-HEALING RF3x6% ATC, 5 gallon (20 litre) pail	45 lb (21 kg)	1.25 ft³ (0.04 m³)
20031	RE-HEALING RF3x6% ATC, 55 gallon (200 litre) drum	495 lb (224 kg)	11.83 ft³ (0.33 m³)
20032	RE-HEALING RF3x6% ATC, 265 gallon (1000 litre) tote	2465 lb (1118 kg)	50.05 ft³ (1.42 m³)
20033	RE-HEALING RF3x6% ATC, bulk	Call Customer Services	

SOLBERGFOAM.COM

AMERICAS
THE SOLBERG COMPANY
1520 Brookfield Avenue
Green Bay, WI 54313
USA
Tel: +1 920 593 9445

EMEA
SOLBERG SCANDINAVIAN AS
Radøyvegen 721 - Olsvollstranda
N-5938 Sæbøvågen
Norway
Tel: +47 56 34 97 00

ASIA-PACIFIC
SOLBERG ASIA PACIFIC PTY LTD
3 Charles Street
St. Marys NSW 2760
Australia
Tel: +61 2 9673 5300

Appendix D

Title Certificate Search Results

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30440915
Search Date: 23/01/2019 12:23 **Title Reference: 50268219**
Date Created: 01/06/1999

Previous Title: 40020092

REGISTERED OWNER

Dealing No: 710748568 26/06/2007

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF COMMUNITY SAFETY)

ESTATE AND LAND

Estate in Fee Simple

LOT 276 CROWN PLAN HR1926
Local Government: WHITSUNDAY

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 40020092 (Lot 276 on CP HR1926)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Corrections have occurred - Refer to Historical Search

** End of Current Title Search **

Requested By: D-ENQ PROPERTY & TITLE SEARCH

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30440921
Search Date: 23/01/2019 12:23 **Title Reference: 20221064**
Date Created: 06/10/1923

Previous Title: 20156177

REGISTERED OWNER

Dealing No: 711179308 14/11/2007

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF COMMUNITY SAFETY)

ESTATE AND LAND

Estate in Fee Simple

LOT 95 REGISTERED PLAN 702279
Local Government: BURDEKIN

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 10369205 (POR 281)

2. SUBSTITUTE TITLE No 601192780 (N127962) 16/02/1927
   A PROVISIONAL CERTIFICATE OF TITLE
   WAS ISSUED ON 31 MAR 1927

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - Yes 31/03/1927 601192780 Certificate No. 1

Corrections have occurred - Refer to Historical Search

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ PROPERTY & TITLE SEARCH

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30623009
Search Date: 19/02/2019 11:42 **Title Reference: 30377116**
Date Created: 03/02/1972

Previous Title: 30327180
30327181

REGISTERED OWNER

Dealing No: 711162573 08/11/2007

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF COMMUNITY SAFETY)

ESTATE AND LAND

Estate in Fee Simple

LOT 5 REGISTERED PLAN 606760
Local Government: GLADSTONE
LOT 6 REGISTERED PLAN 606760
Local Government: GLADSTONE
LOT 7 REGISTERED PLAN 606760
Local Government: GLADSTONE
LOT 8 REGISTERED PLAN 606760
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 30057154 (ALLOT 5 SUBN SEC 85A)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Corrections have occurred - Refer to Historical Search

** End of Current Title Search **

Requested By: D-ENQ PROPERTY & TITLE SEARCH

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30623097
Search Date: 19/02/2019 11:46 **Title Reference: 30377117**
Date Created: 03/02/1972

Previous Title: 30327182
30327183

REGISTERED OWNER

Dealing No: 711162573 08/11/2007

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF COMMUNITY SAFETY)

ESTATE AND LAND

Estate in Fee Simple

LOT 9 REGISTERED PLAN 606760
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 30057154 (ALLOT 5 SUBN SEC 85A)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Corrections have occurred - Refer to Historical Search

** End of Current Title Search **

Requested By: D-ENQ PROPERTY & TITLE SEARCH

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30623106
Search Date: 19/02/2019 11:46 **Title Reference: 30377118**
Date Created: 03/02/1972

Previous Title: 30327184
30327185

REGISTERED OWNER

Dealing No: 711162573 08/11/2007

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF COMMUNITY SAFETY)

ESTATE AND LAND

Estate in Fee Simple

LOT 10 REGISTERED PLAN 606760
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 30057154 (ALLOT 5 SUBN SEC 85A)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Corrections have occurred - Refer to Historical Search

** End of Current Title Search **

Requested By: D-ENQ PROPERTY & TITLE SEARCH

CURRENT RESERVE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30623002
Search Date: 19/02/2019 11:41

Title Reference: 49015321
Date GAZETTED: 30/07/1983
PAGE: 1849

Opening Ref: RES 2576
Purpose: LOCAL GOVERNMENT
Sub-Purpose: STATE EMERGENCY SERVICE
Local Name:
Address: ELEVENTH AVENUE, HOME HILL
County (R) No: R174
File Ref: RES 20703

TRUSTEES

BURDEKIN SHIRE COUNCIL Gazetted on 30/07/1983 Page 1849

LAND DESCRIPTION

LOT 7 CROWN PLAN H616103 GAZETTED ON 30/07/1983 PAGE 1849
Local Government: BURDEKIN

Area: 0.120700 Ha. (SURVEYED)

EASEMENTS AND ENCUMBRANCES

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

** End of Current Reserve Search **

Requested By: D-ENQ PROPERTY & TITLE SEARCH

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30623005
Search Date: 19/02/2019 11:41 **Title Reference: 50262221**
Date Created: 07/04/1999

Previous Title: 40019297

REGISTERED OWNER

Dealing No: 710725660 21/06/2007

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF COMMUNITY SAFETY)

ESTATE AND LAND

Estate in Fee Simple

LOT 6 CROWN PLAN H61666
Local Government: BURDEKIN

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 40019297 (Lot 6 on CP H61666)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Corrections have occurred - Refer to Historical Search

** End of Current Title Search **

Requested By: D-ENQ PROPERTY & TITLE SEARCH

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30623006
Search Date: 19/02/2019 11:41 **Title Reference: 50312846**
Date Created: 23/05/2000

Previous Title: 50193311

REGISTERED OWNER

Dealing No: 718110327 26/06/2017

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF HEALTH)

ESTATE AND LAND

Estate in Fee Simple

LOT 8 SURVEY PLAN 123356
Local Government: BURDEKIN

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 40012250 (Lot 5 on CP H616105)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Corrections have occurred - Refer to Historical Search

** End of Current Title Search **

Requested By: D-ENQ PROPERTY & TITLE SEARCH

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30440919
Search Date: 23/01/2019 12:23 **Title Reference: 20154201**
Date Created: 30/06/1910

Creating Dealing: 602718546

REGISTERED OWNER

Dealing No: 719049034 16/10/2018

THE STATE OF QUEENSLAND
(REPRESENTED BY PUBLIC SAFETY BUSINESS AGENCY)

ESTATE AND LAND

Estate in Fee Simple

LOT 1 REGISTERED PLAN 706146
Local Government: WHITSUNDAY

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 20114072 (POR 193)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

** End of Current Title Search **

Requested By: D-ENQ PROPERTY & TITLE SEARCH

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30440916
Search Date: 23/01/2019 12:23 **Title Reference: 14794124**
Date Created: 11/08/1972

Previous Title: 14313102

REGISTERED OWNER

Dealing No: 718918430 08/08/2018

THE STATE OF QUEENSLAND
(REPRESENTED BY PUBLIC SAFETY BUSINESS AGENCY)

ESTATE AND LAND

Estate in Fee Simple

LOT 2 REGISTERED PLAN 132831
Local Government: TOOWOOMBA

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 19508057 (POR 262)

2. EASEMENT No 711799707 17/07/2008 at 13:57
   burdening the land to
   LOT 3 ON SP217391 OVER EASEMENT B ON SP199154

3. EASEMENT No 711799743 17/07/2008 at 14:02
   benefiting the land over
   EASEMENT C ON SP199158

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ PROPERTY & TITLE SEARCH

Appendix E

EMR / CLR Search Results

Department of Environment and Science (DES)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454, Brisbane QLD 4001, AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Catherine Gillett
AECOM Level 8
540 Wickham Street
Fortitude valley QLD 4006

Transaction ID: 50509597 EMR Site Id: 29 January 2019
Cheque Number:
Client Reference:

This response relates to a search request received for the site:
Lot: 276 Plan: HR1926
2495 SHUTE HARBOUR RD
JUBILEE POCKET

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

If you have any queries in relation to this search please phone 13QGOV (13 74 68)

Administering Authority

Department of Environment and Science (DES)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454, Brisbane QLD 4001, AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE

ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Catherine Gillett
AECOM Level 8
540 Wickham Street
Fortitude valley QLD 4006

Transaction ID: 50509595 EMR Site Id: 29 January 2019
Cheque Number:
Client Reference:

This response relates to a search request received for the site:

Lot: 95 Plan: RP702279
47 SOPER ST
AYR

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

If you have any queries in relation to this search please phone 13QGOV (13 74 68)

Administering Authority

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GPO Box 2454, Brisbane QLD 4001, AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Catherine Gillett
AECOM Level 8
540 Wickham Street
Fortitude valley QLD 4006

Transaction ID: 50513658 EMR Site Id: 19 February 2019
Cheque Number:
Client Reference:

This response relates to a search request received for the site:
Lot: 5 Plan: RP606760
3 CHARLES ST
WEST GLADSTONE

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

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Administering Authority

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400 George St Brisbane, Queensland 4000
GPO Box 2454, Brisbane QLD 4001, AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Catherine Gillett
AECOM Level 8
540 Wickham Street
Fortitude valley QLD 4006

Transaction ID: 50513656 EMR Site Id: 19 February 2019
Cheque Number:
Client Reference:

This response relates to a search request received for the site:
Lot: 6 Plan: H61666
86 ELEVENTH AV
HOME HILL

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

If you have any queries in relation to this search please phone 13QGOV (13 74 68)

Administering Authority

Department of Environment and Science (DES)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454, Brisbane QLD 4001, AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Catherine Gillett
AECOM Level 8
540 Wickham Street
Fortitude valley QLD 4006

Transaction ID: 50513655 EMR Site Id: 19 February 2019
Cheque Number:
Client Reference:

This response relates to a search request received for the site:
Lot: 7 Plan: H616103
84 ELEVENTH AV
HOME HILL

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

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ABN 46 640 294 485
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GPO Box 2454, Brisbane QLD 4001, AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Catherine Gillett
AECOM Level 8
540 Wickham Street
Fortitude valley QLD 4006

Transaction ID: 50513657 EMR Site Id: 19 February 2019
Cheque Number:
Client Reference:

This response relates to a search request received for the site:
Lot: 8 Plan: SP123356
83 TENTH AV
HOME HILL

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

If you have any queries in relation to this search please phone 13QGOV (13 74 68)

Administering Authority

Department of Environment and Science (DES)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454, Brisbane QLD 4001, AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Catherine Gillett
AECOM Level 8
540 Wickham Street
Fortitude valley QLD 4006

Transaction ID: 50509596 EMR Site Id: 29 January 2019
Cheque Number:
Client Reference:

This response relates to a search request received for the site:
Lot: 1 Plan: RP706146
102 MAIN ST
PROSERPINE

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

If you have any queries in relation to this search please phone 13QGOV (13 74 68)

Administering Authority

Department of Environment and Science (DES)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454, Brisbane QLD 4001, AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Catherine Gillett
AECOM Level 8
540 Wickham Street
Fortitude valley QLD 4006

Transaction ID: 50509598 EMR Site Id: 29 January 2019
Cheque Number:
Client Reference:

This response relates to a search request received for the site:
Lot: 2 Plan: RP132831
201 ANZAC AV
HARRISTOWN

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

If you have any queries in relation to this search please phone 13QGOV (13 74 68)

Administering Authority

Appendix F

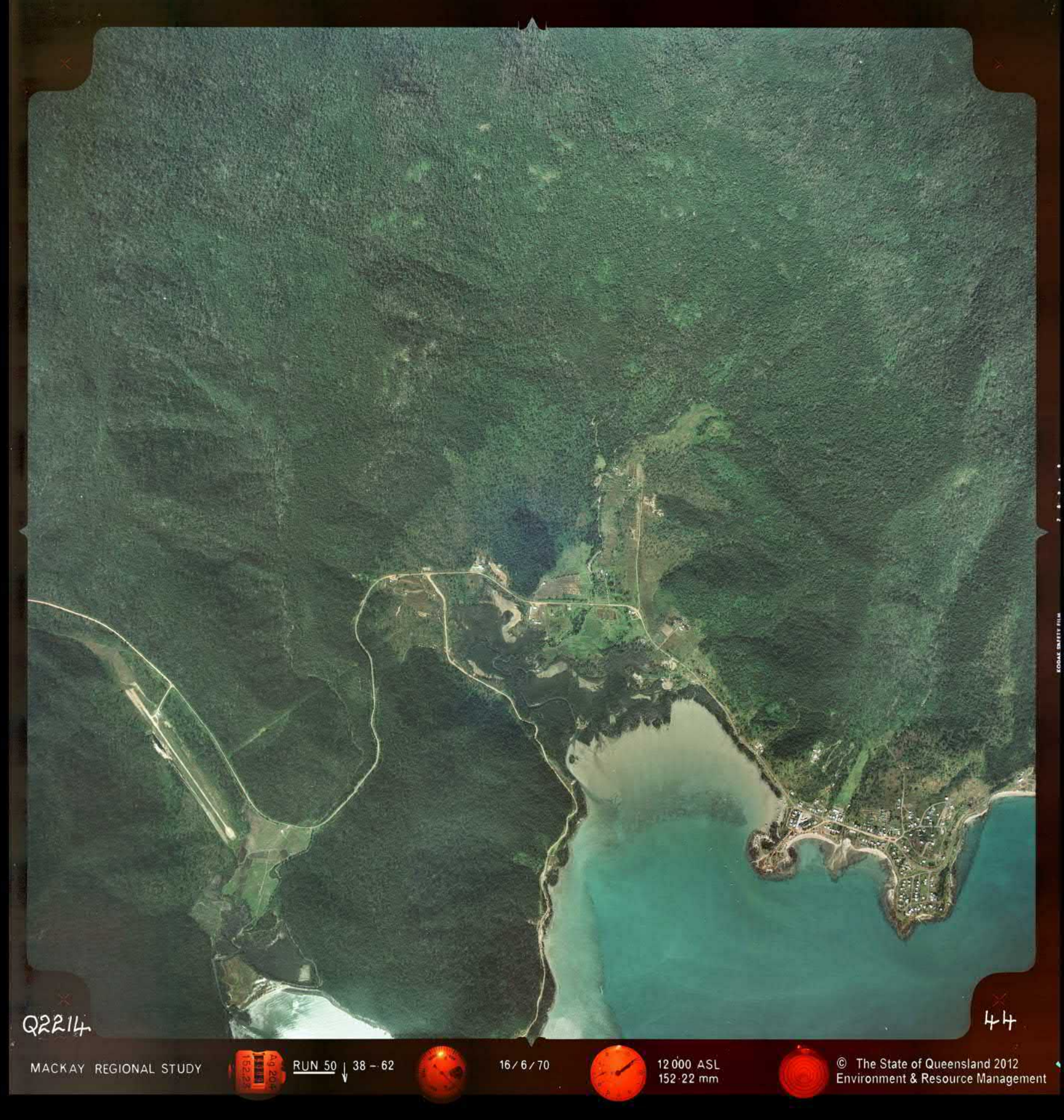
Historical Aerial Photographs

AIRLIE BEACH

KD. 1274. PROSERPINE AND LINDEMAN IS: AREA 9. (29-6-45) K17. 17,000' RUN 2.

Q1144 - 61

PROSERPINE RUN 2 5·6·61 MAG·504 LENS 9666 153·54 M/M 12.000'



Q2214

44

MACKAY REGIONAL STUDY

RUN 50 | 38 – 62

16/6/70

12 000 ASL
152·22 mm

8657 I.II.IV
PROSERPINE

4900m
RUN 7

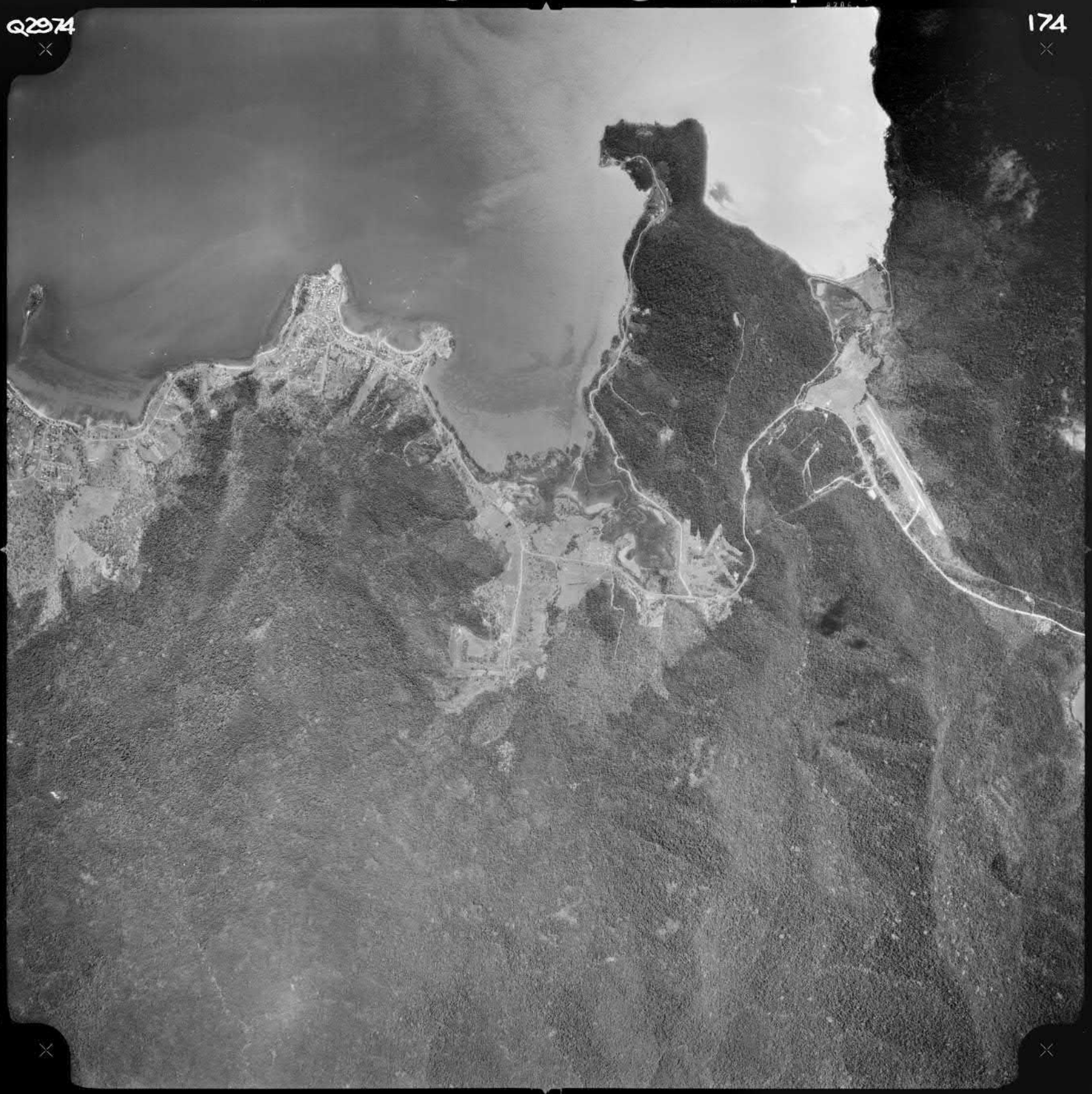
24-8-75

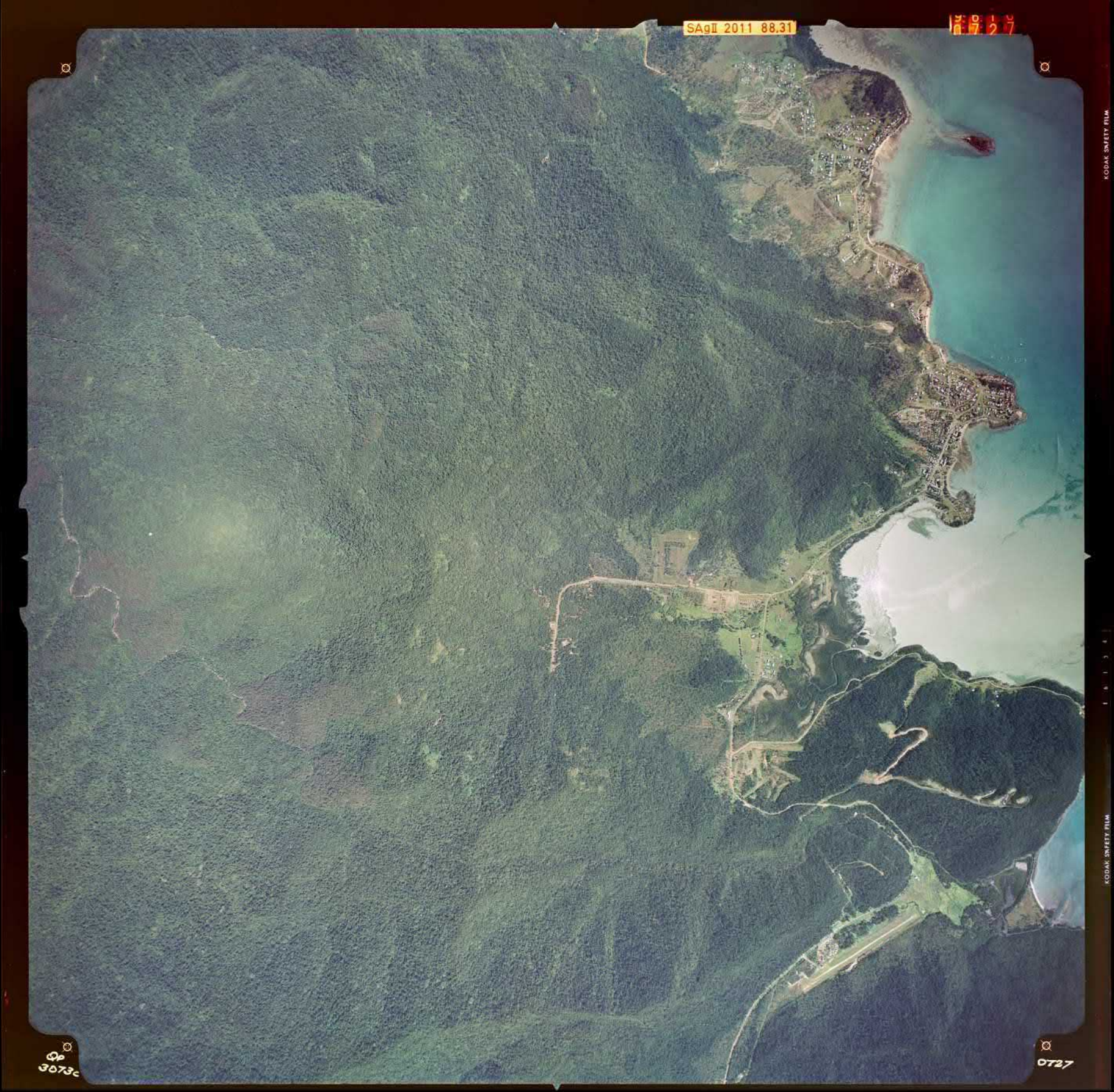
EST

151.92mm

Q2974

174





PROSERPINE IRRIGATION AND FLOOD MITIGATION

E.S.T.

RUN 1
0725 - 0740

31 - 7 - 79
3050 m ASL

Q4212

78

8657
PROSERPINE

56-92
RUN 8

MAG 653
27.6.83

4200m ASL
400m DATUM
EST

QP4445

2607

PALUMA - MANDALAY
ROAD
ROAD NO. 851

152.53 UAg 322

2602-2611
RUN 3

MAG 464
3.9.85

770m ASL
10m DATUM
EST

ST LAWRENCE - TOWNSVIL
BEACH PROTECTION AUTH
1:50000

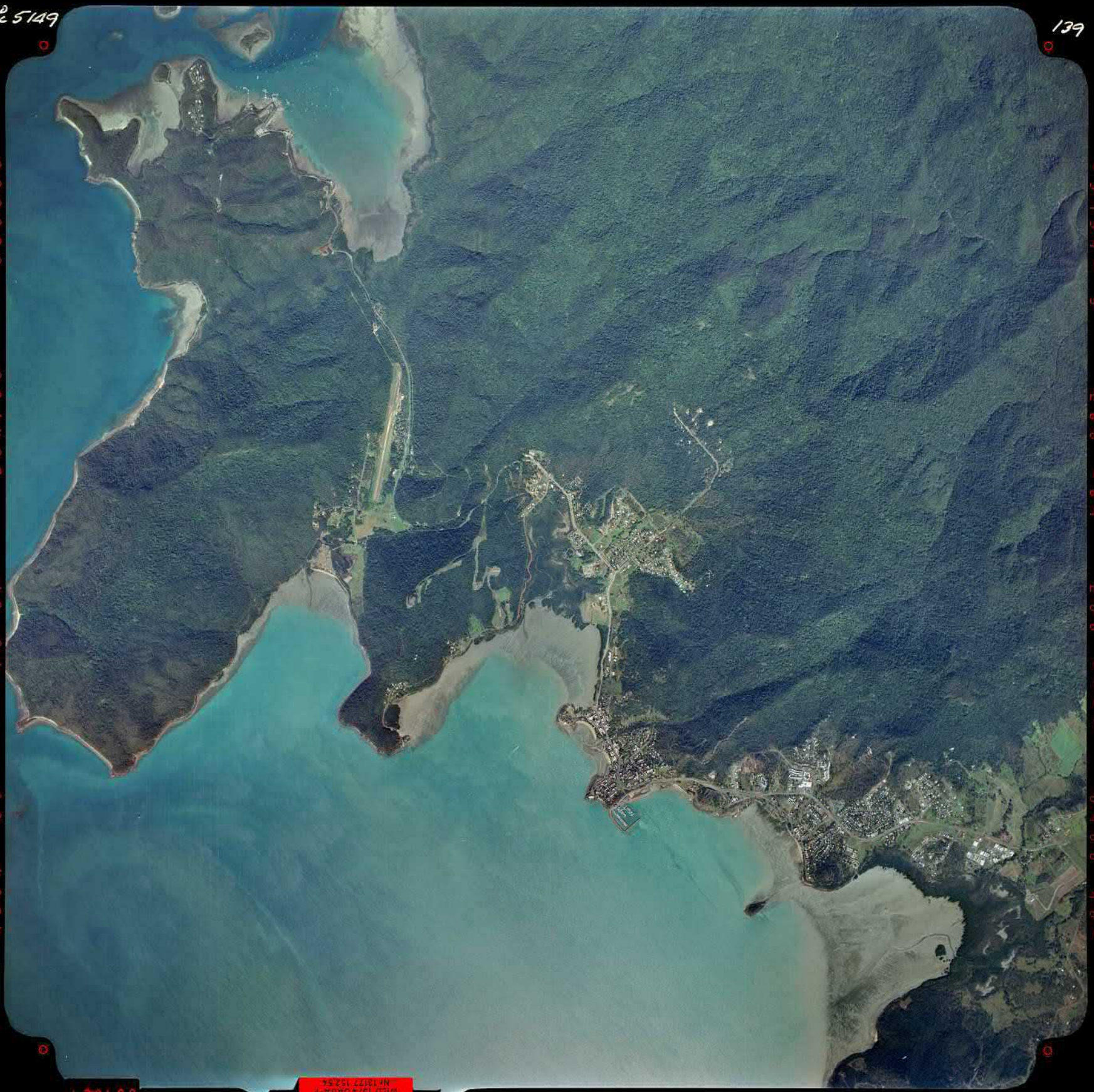
RUN 12
129-142

17/08/93
7620m ASL

EST

OPc 5149

139



PROSERPINE - WHITSUNDAY
MAPPING PROJECT
1:10000

RUN 20
136-171

26.11.96
1925m ASL
400m DATUM

EST

QP5524

151

QAP 05878
Proserpine-Shute Harbour Rd
Road. No: 851

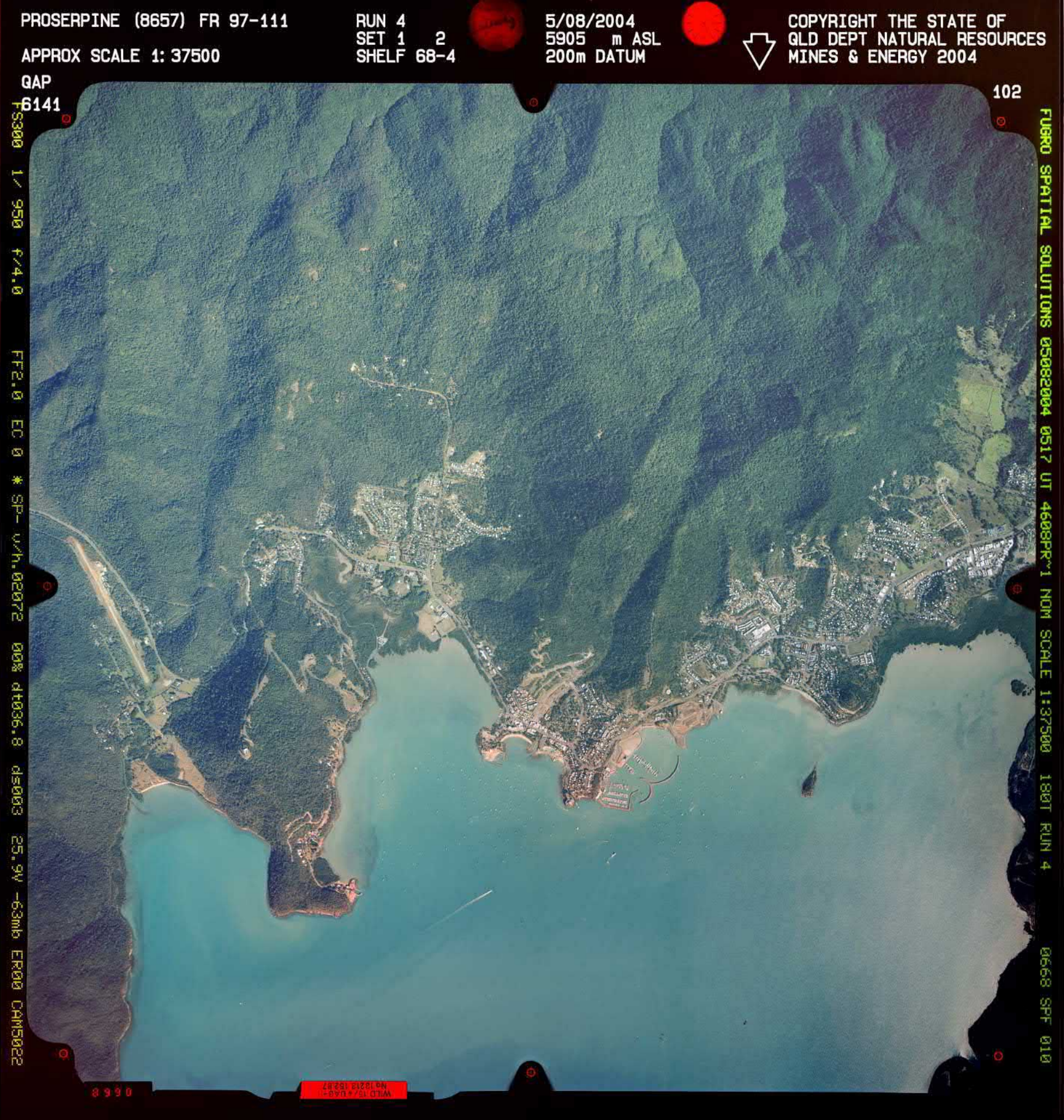
Run 7
060 – 067

A:1160mASL
Datum: 15m
03-11-01

Photo Scale
Approx
1:7500

QAP
5878

064


PROSERPINE (8657) FR 97-111
APPROX SCALE 1: 37500
QAP
6141
RUN 4
SET 1 2
SHELF 68-4
5/08/2004
5905 m ASL
200m DATUM
COPYRIGHT THE STATE OF
QLD DEPT NATURAL RESOURCES
MINES & ENERGY 2004
102
FUGRO SPATIAL SOLUTIONS 05082004 0517 UT 4608PR~1 NOM SCALE 1:37500 180T RUN 4 0668 SPF 010
FS300 1/ 950 f/4.0 FF2.0 EC 0 * SP- v/h.02072 00% dt036.8 ds003 25.9V -63mb ER00 CAM5022

AYR

Q943— 74

BURDEKIN VALLEY RUN 2 10·8·59 LENS 9666 153·50 M/M 4.550

Q907 - 46

AYR RUN 4 28·6·59 LENS 9666 153·50 M/M 12,500

Q1479-5087

BURDEKIN DELTA
RUN 7
6100' ASL

FLT DIR →
4-7-64
1307-1317

CAM RC8
AG-215
152.46 MM
N ↓

Q2009 ROAD 10JL
6050' ASL 10.6.69
TAMAIR TAMWORTH
152.46MM
M.R.D. BRUCE HIGHWAY GRETA CREEK TO TOWNSVILLE RUN 34 FRS 060-071 LENS NO. 98207

QP 3985

980

AYR TOWNSHIP

979-983
RUN 1

MAG 652
28.6.83

2450m ASL
EST

Q4489

7892

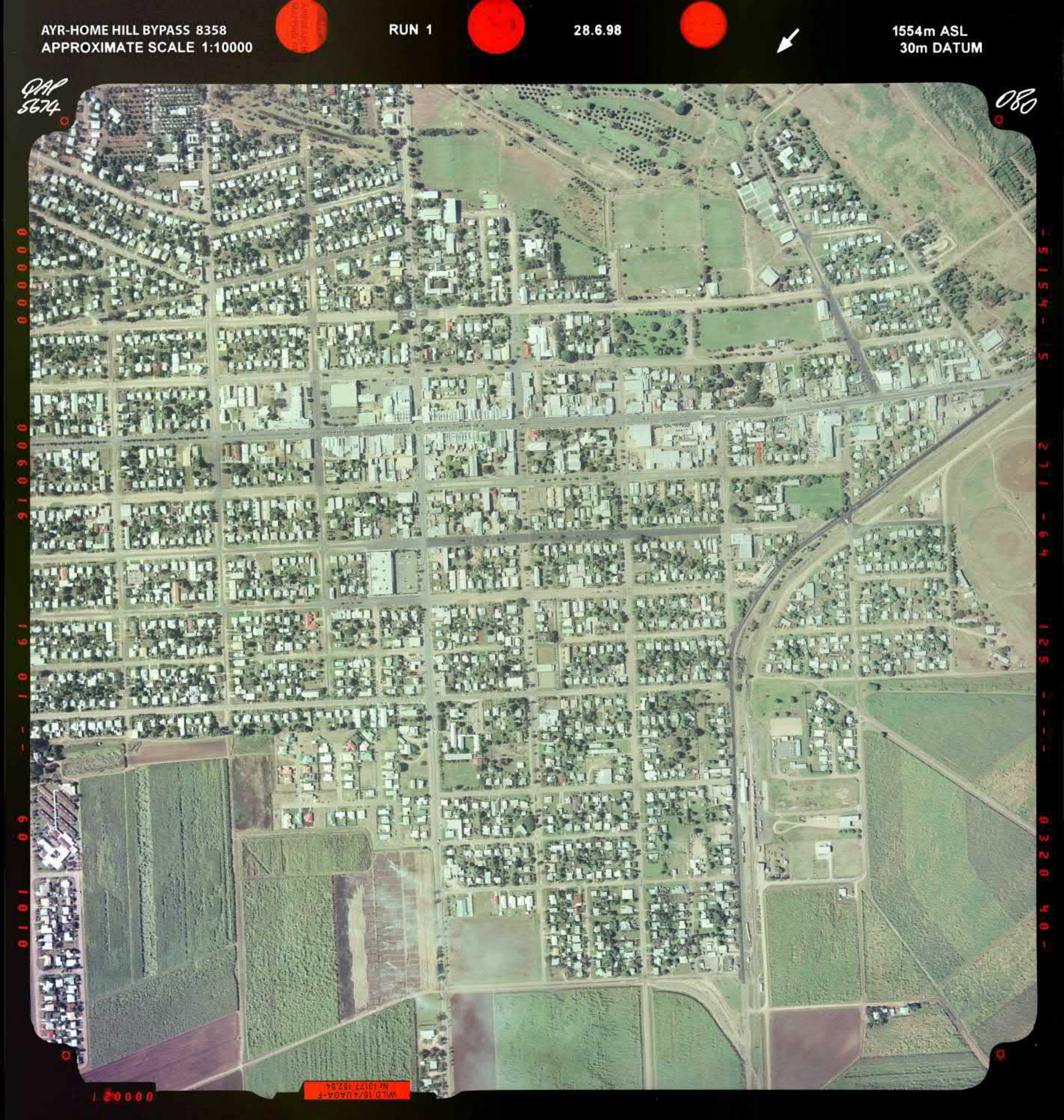
007

8358
AYR

002-027
RUN 2

MAG 543
30.7.86

4210M ASL
400M DATUM
E.S.T.


AYR-HOME HILL BYPASS 8358
APPROXIMATE SCALE 1:10000
RUN 1
28.6.98
1554m ASL
30m DATUM
DAP 5674
080

AYR 8358
APPROX SCALE 1:25000

RUN 3
262-290

153.08mm
16.06.2003

4177mASL
350mDatum

Queensland Government
Natural Resources and Mines

QAC5959

283

FS300 1/ 550 f/5.6 FF--- EC--- SP- v/h.02794 00% dt024.0 ds007 26.8V -54mb ER00 QAC5256

9230

GLADSTONE

Q926 - 82

GLADSTONE RUN 4 26·7·59 LENS 9666 153·50 M/M 12.000

S.PINE-GLADSTONE
275 KV TRAN LINE

16-11-1969
RUN 3

LENS 205
152-70mm

MAG 499
6000'

Q2047

25

TOWN OF GLADSTONE
RUN 1

LENS 464
152.24mm

MAG 469
10-11-1971

13000'

P2358

5609

39

9150 I-IV
GLADSTONE

5050M
RUN 8

MAG 301
19-7-1973

LENS 205
152.69mm

Q2689

129

Q3145

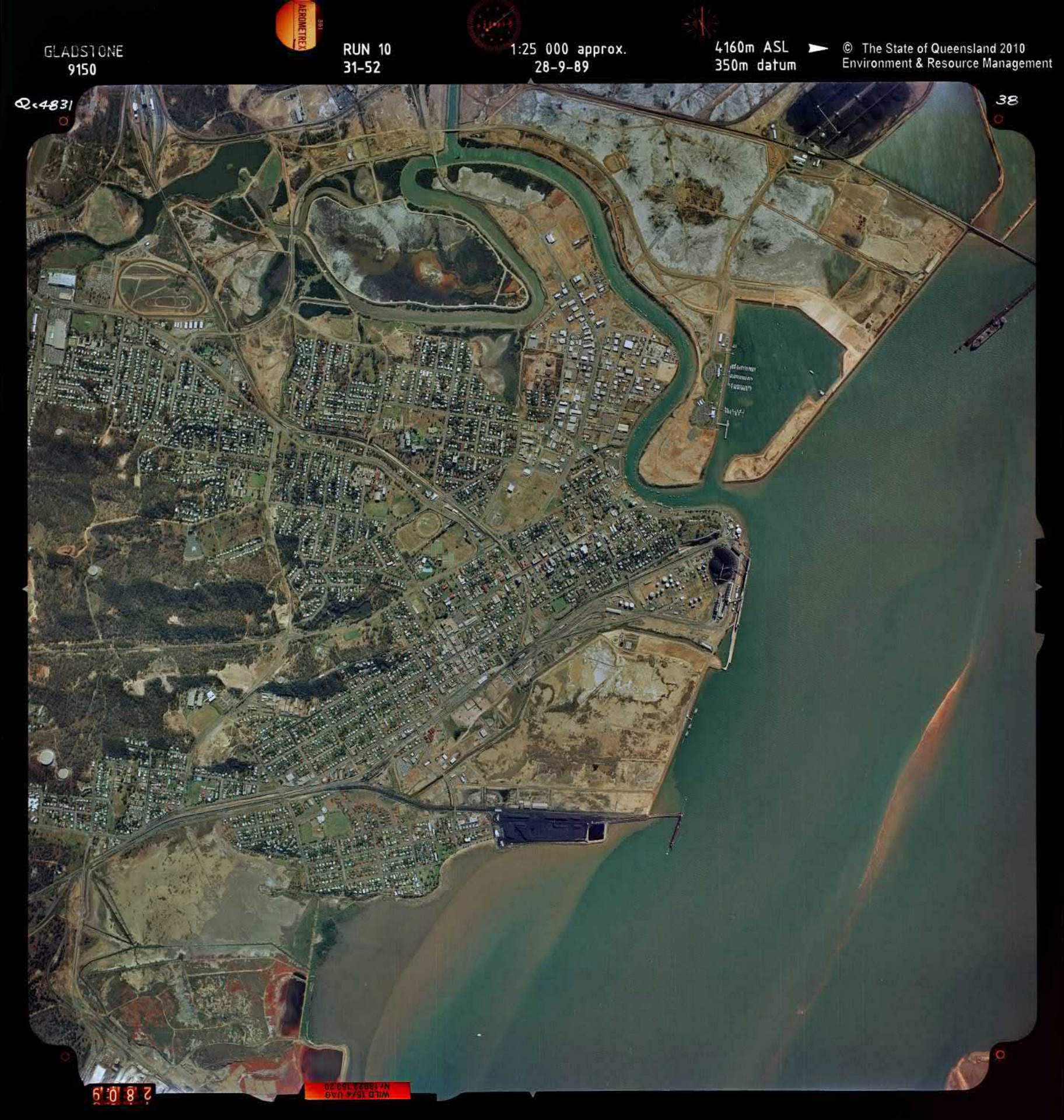
1015

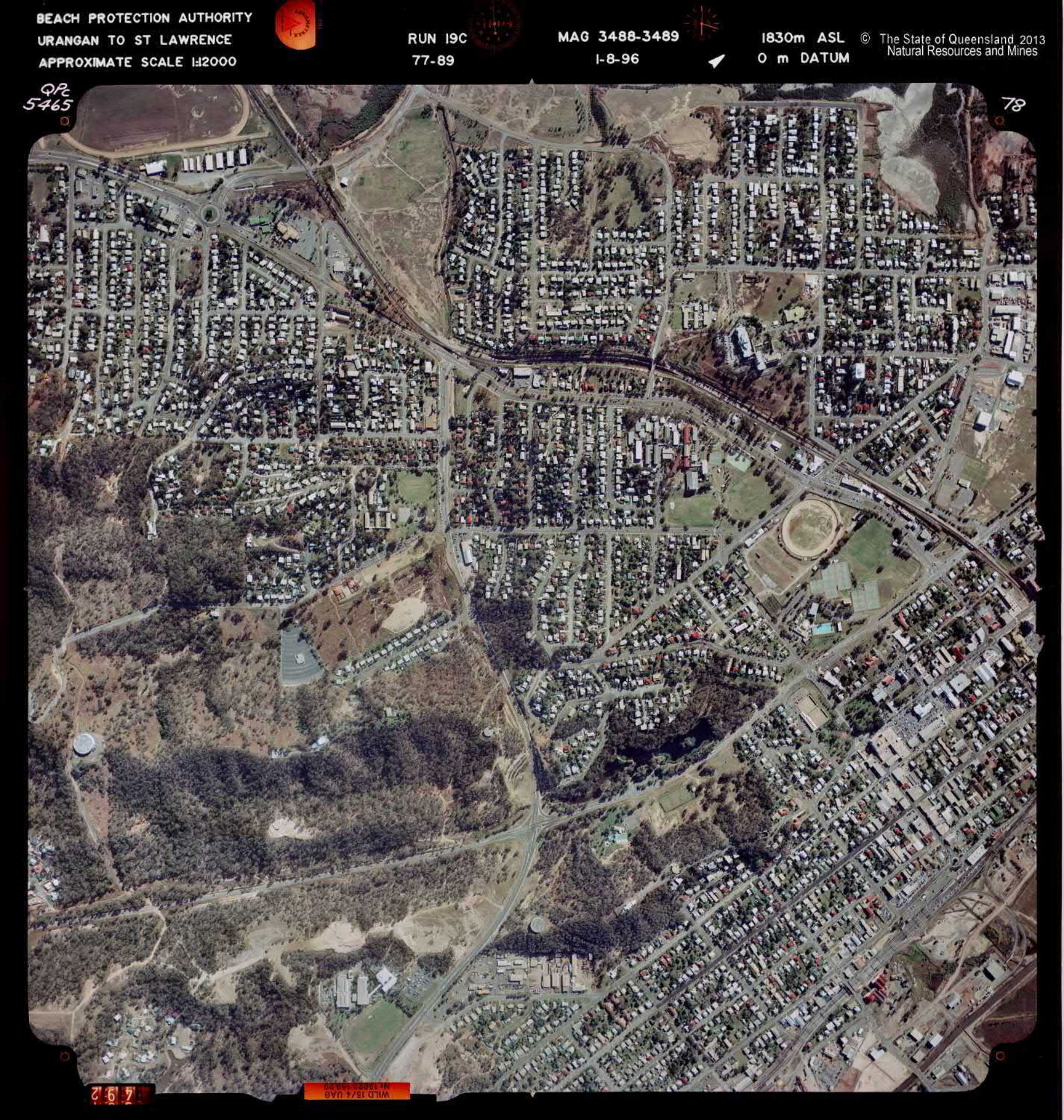
TARGINIE-GRAHAM CK

RUN 8
0991-1034

22-11-75
U.T.

6000' AMSL


GLADSTONE
9150
RUN 10
31-52
1:25 000 approx.
28-9-89
4160m ASL
350m datum
© The State of Queensland 2010
Environment & Resource Management
Q<4831
38


BEACH PROTECTION AUTHORITY
URANGAN TO ST LAWRENCE
APPROXIMATE SCALE 1:2000
RUN 19C
77-89
MAG 3488-3489
1-8-96
1830m ASL
0 m DATUM
© The State of Queensland 2013
Natural Resources and Mines
QPC 5465
78

GLADSTONE 9150
APPROX SCALE
1:40,000

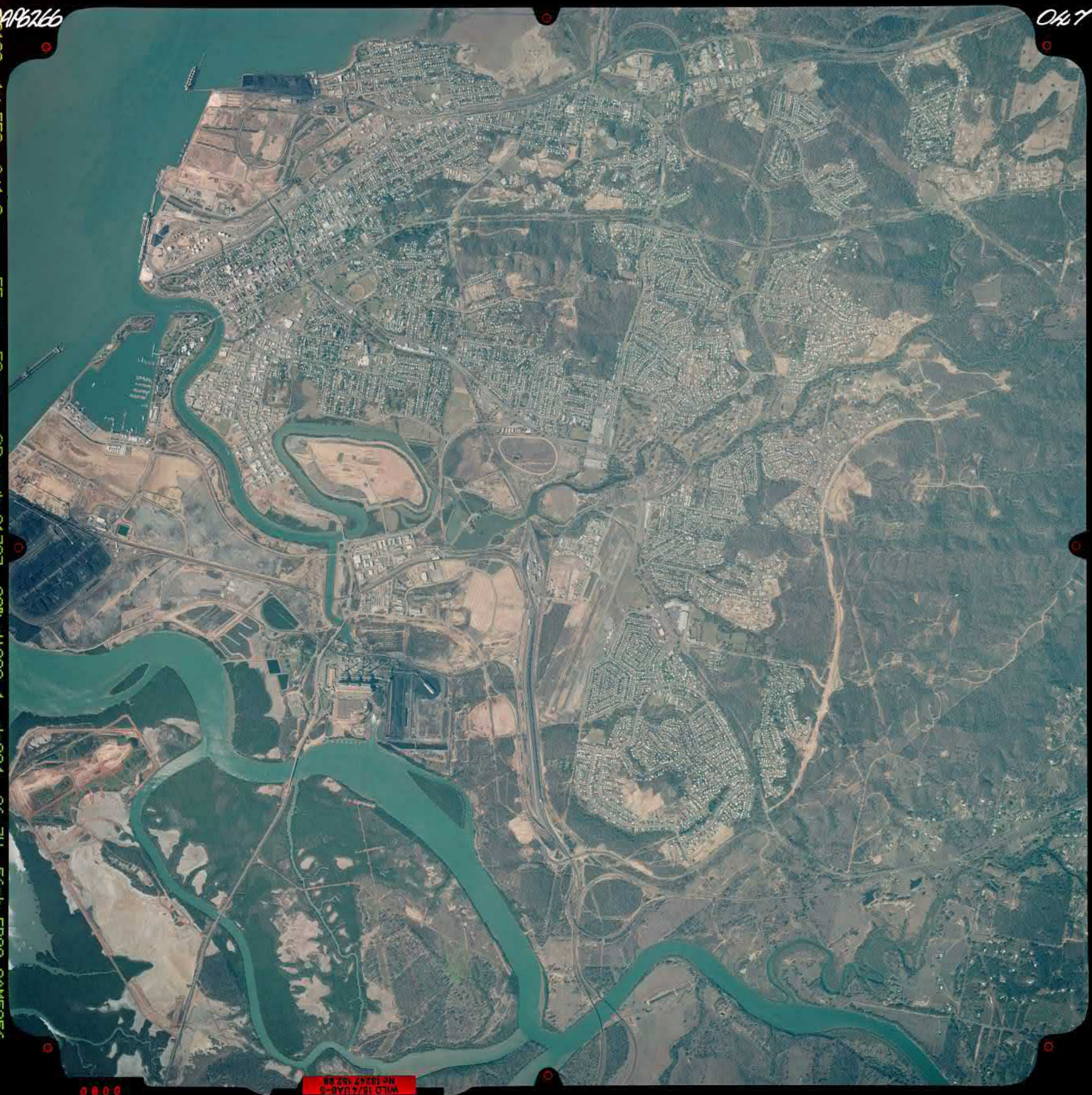
RUN 8
039-053

18.07.2007
6594mASL
470mDATUM

SHELF 70-4
SET 1 2

QAP6266

OAT



HOME HILL

Q864 - 43

NORTHERN CLEVEDON HIGHWAYS RUN16 22.10.58 LENS 8 1/4" 8.270
HOME HILL-GIRU-TOWNSVILLE

Q946 - 21

BURDEKIN VALLEY RUN 10 10·8·59 LENS 8868 153·50 M/M 4.550

AYR
Q'LAND

Ag 204
152.23

RUN 1
3625-3632

4800'
17-7-64

Q1477- 5159

BURDEKIN DELTA
RUN 12
6100' ASL

FLTDIR →
30-6-64
1125-1135

CAM RC 8
AG-215
152·46 MM
N

Q2009 ROAD 10JL
6050' ASL 10.6.69

TAMAIR TAMWORTH
152.46MM

M.R.D. BRUCE HIGHWAY GRETA CREEK TO TOWNSVILLE RUN 32 FRS 009-036 LENS NO. 98207

AYR-CAPE
UPSTART

RUN 5 ↓
6574-6604

4150mASL
350mDATUM
E.S.T.

MAG. 1900
10.8.79

9200

6583

HOME HILL
(CYCLONE DAMAGE)

RUN 1
100-104

7.4.89

1830m ASL

QR 4750

102

AYR BYPASS
1:10000 approx.

RUN 2
030-055

18.10.94
1554m ASL
10m DATUM

EST

Qdc
5319

049

960

AYR 8358
APPROX SCALE 1:25000
RUN 5
030-058
153.08mm
16.06.2003
4177mASL
350mDatum
Queensland Government
Natural Resources and Mines

QAP5960

051


AYR 8358
APPROX SCALE
1:40,000
RUN 3
001-018
8.09.2006
6524mASL
400mDATUM
SHELF 70-7
SET 1 2
© The State of Queensland 2006
Dept of Natural Resources and Mines
QAP624HP
0046

PROSERPINE

KD 1274 PROSERPINE AND LINDEMAN IS: AREA Q (29-6-45) K17. 17,000' RUN 4.
4909

Q1149- 41

PROSERPINE RUN 6 8·6·61 MAG·504 LENS 9666 153·54 M/M 12,000'

HOME HILL TO MIKOOLU
23/10/62

Ag 204
152.23

RUN 17
1117 - 1122

6050 ft.

152.23 mms.

ASPAIR
MELBOURNE
S.V.Y.Q.
23/10/62

Q2010 ROAD 10HJ ©
6050' ASL 14.6.69.

TAMAIR TAMWORTH
152.46MM

M.R.D. BRUCE HIGHWAY GREGORY RIVER TO GRETA CREEK RUN 21 FRS 161-171 LENS NO. 98207

I. W. S. C.
PROSERPINE FLOODING

RUN 4
7760-7782

3. 7. 74.

H:1,890 MASL
F:151·57 M M

7766

Q2788

PROSERPINE RIVER RUN 1 335-345 Mag. No. 1157-1298 E.S.T. 10-1-80 2440 m ASL

QP 3985

948

Town of Proserpine

Run 1

946-949

2 June 1983

MAINLINE UPGRADE
ROCKHAMPTON-CAIRNS
1:10000 APPROX

RUN 30
183-208

25.8.92
1585m ASL
60m DATUM

EST

QR 5127

206

PROSERPINE

RUN 1
072-086

1:7500 approx
17.5.96

1188m ASL
45m DATUM

077.

QAP 05878
Proserpine-Shute Harbour Rd
Road. No: 851

Run 1
068 – 073

A:1160mASL
Datum: 15m
03-11-01

Photo Scale
Approx
1:7500

QAP 5878

073

BOWEN 8557
APPROX SCALE
1:40,000

RUN 8
001-018

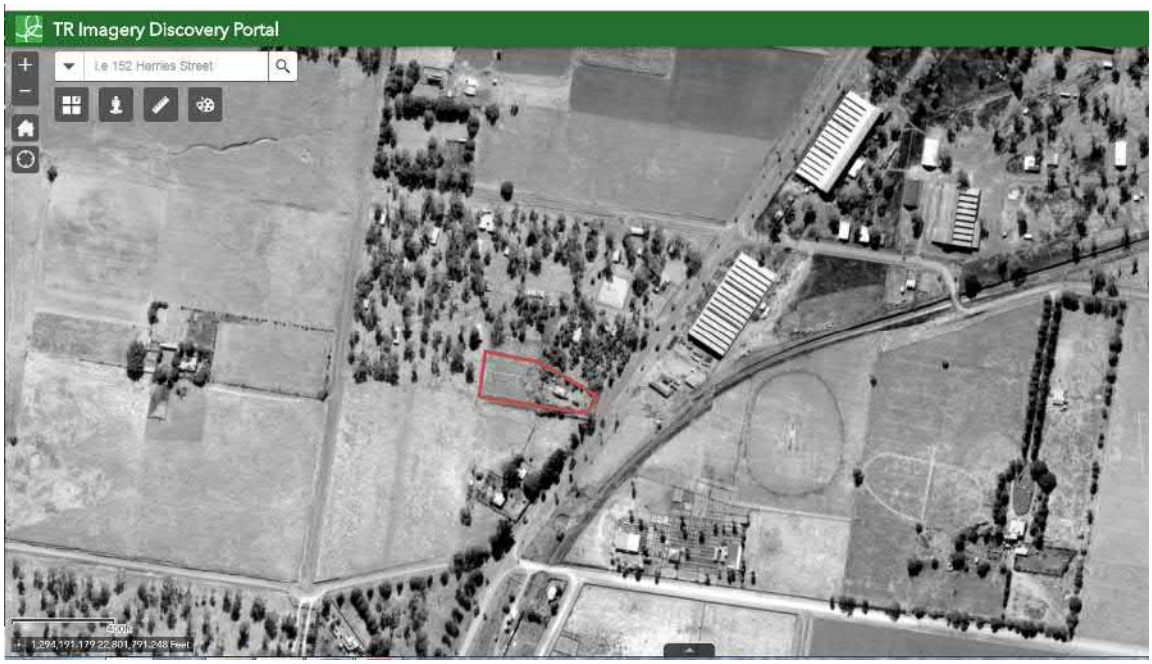
30.06.2007
6524mASL
400mDATUM

SHELF 69-4
SET 1 2

QAP6259

018

TOOWOOMBA


TR Imagery Discovery Portal
i.e 152 Herries Street

1946


TR Imagery Discovery Portal
i.e 152 Herries Street

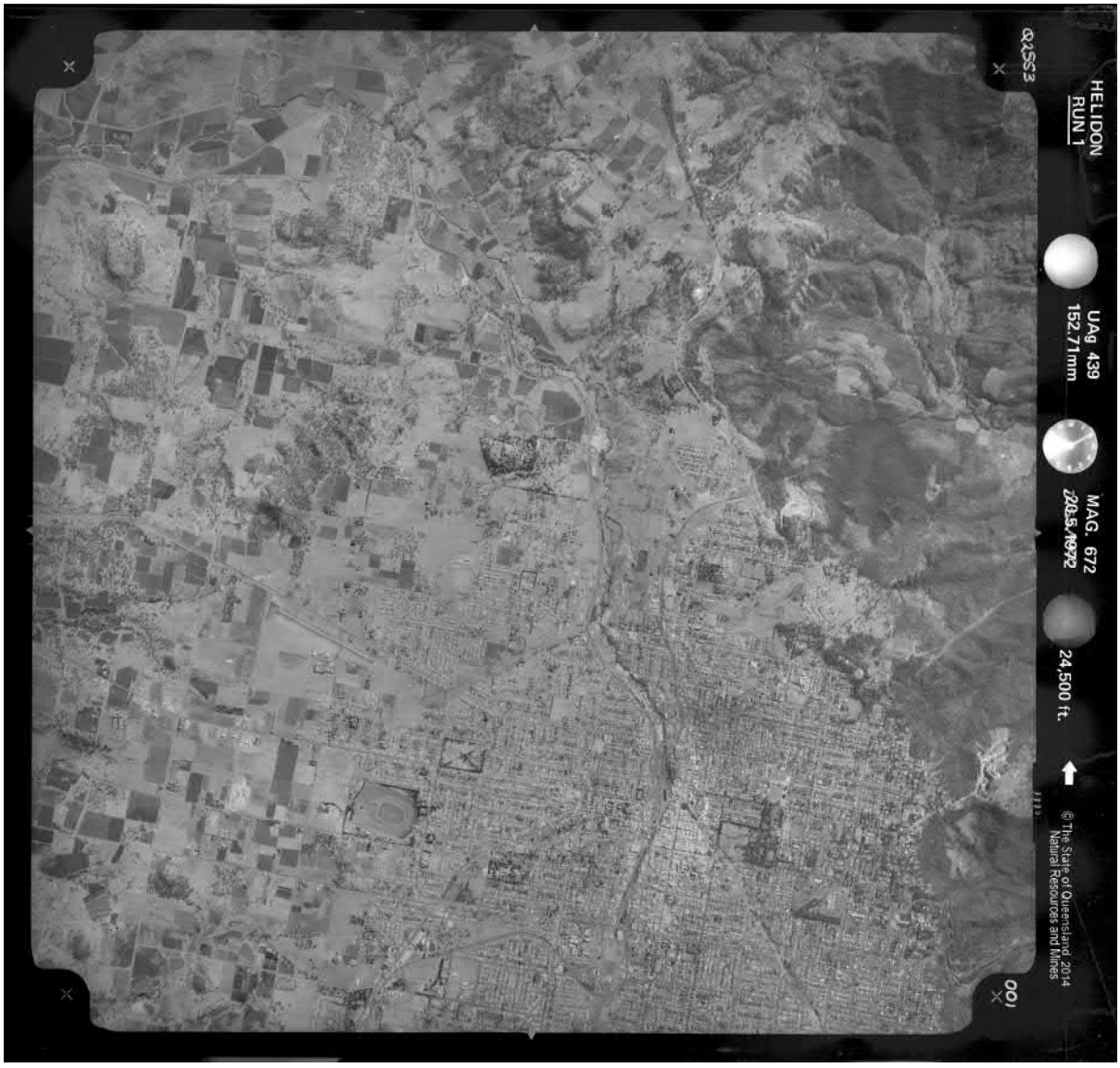
1955


TR Imagery Discovery Portal
i.e 152 Herries Street

1963


TR Imagery Discovery Portal
i.e 152 Herries Street

1971


HELIDON
RUN 1
UAg 439
152.71mm
MAG. 672
20.5.1972
24,500 ft.
Q2SS3
© The State of Queensland 2014
Natural Resources and Mines

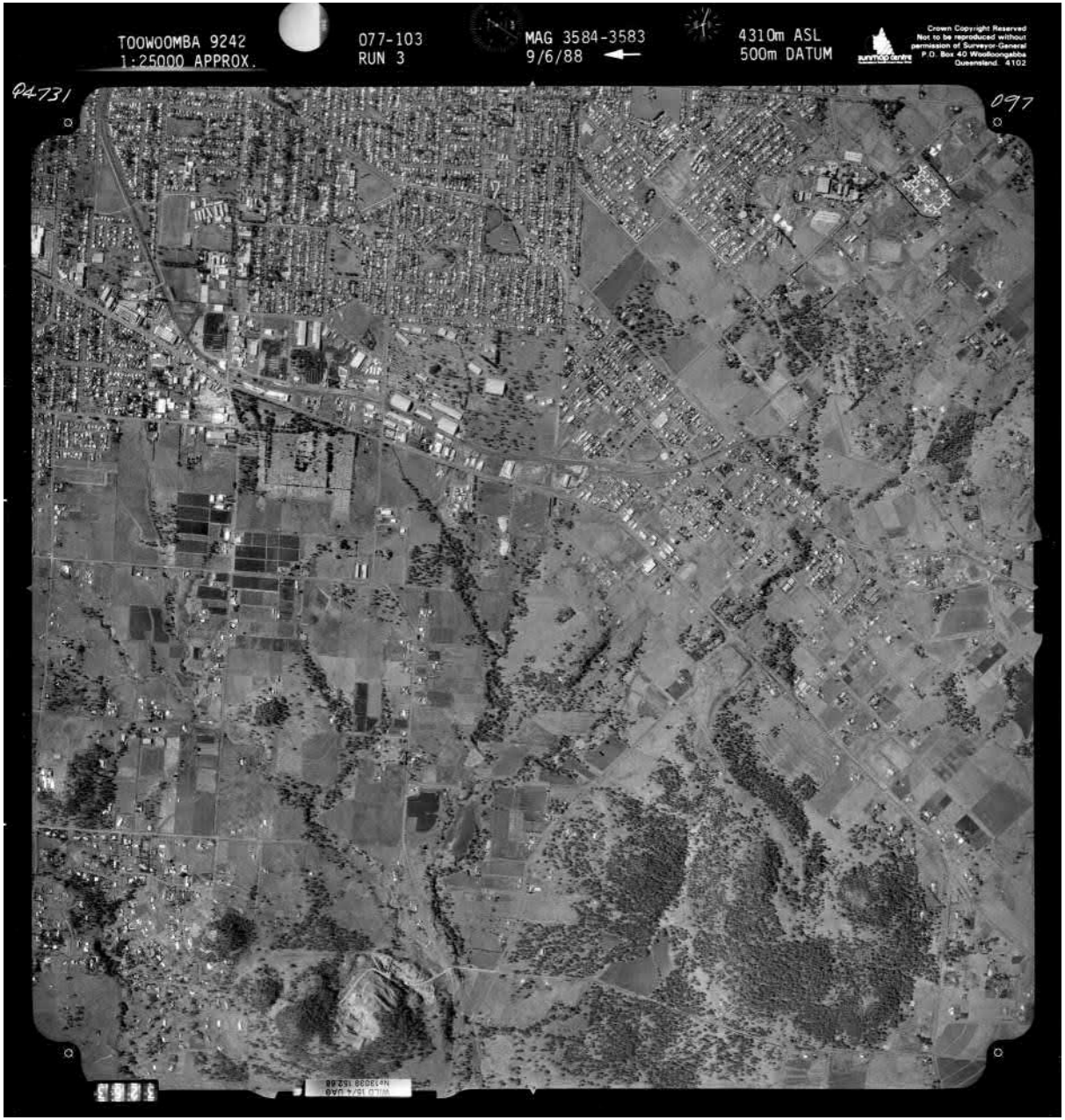
1972

TOOWOOMBA
9242 I-IV
RUN 2
5050 M
28-5-1975
MAG 294
152.70MM
LENS 439
© The State of Queensland 2009
Dept Environment & Resource Management
46
Q2833

1975

© The State of Queensland 2014
Natural Resources and Mines
500m Datum
4300m ASL
EST
MAG 652
13.5.82
RUN 3
2-30
HELIDON
9342
2

1982


TOOWOOMBA 9242
1:25000 APPROX.
077-103
RUN 3
MAG 3584-3583
9/6/88
4310m ASL
500m DATUM
Crown Copyright Reserved
Not to be reproduced without
permission of Surveyor-General
P.O. Box 40 Woolloongabba
Queensland. 4102
Q4731
097

1988


TOOWOOMBA
RUN 2
52 - 62
1:30000 approx
9-6-92
5120m ASL
DATUM 550m
© The State of Queensland 1992
Natural Resources and Mines
QPC 5031
54

1992


TR Imagery Discovery Portal
i.e 152 Herries Street

1994


TR Imagery Discovery Portal
i.e 152 Herries Street

1998


TR Imagery Discovery Portal
i.e 152 Herries Street

2000


TR Imagery Discovery Portal
201 Anzac Ave, Harristown
Show search results for 201 An...

2003


TR Imagery Discovery Portal
201 Anzac Ave, Harristown
Show search results for 201 An...

2006


TR Imagery Discovery Portal
201 Anzac Ave, Harristown
Show search results for 201 An...

2009


TR Imagery Discovery Portal
201 Anzac Ave, Harristown

2010


TR Imagery Discovery Portal
201 Anzac Ave, Harristown

2013


TR Imagery Discovery Portal
201 Anzac Ave, Harristown

2015


TR Imagery Discovery Portal
201 Anzac Ave, Harristown

2017


TR Imagery Discovery Portal
201 Anzac Ave, Harristown
Show search results for 201 An...

2018

Appendix G

Registered Groundwater Bore Database Cards

AIRLIE BEACH

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
63423	Sub-Artesian Facility	Existing		Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description	L9 RP35914		
Parish	1216 - CONWAY		
Original Name			
Driller Name			
Drill Company			
Const Method			
Bore Line			
D/O File No	MA2506	**Polygon**	
R/O File No		**Equipment**	TE
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	20-16-55	**Basin**	1220
Longitude	148-43-47	**Sub-area**	000
GIS Latitude	-20.281999184	**Lot**	9
GIS Longitude	148.729593845	**Plan**	RP735914
Easting	680621		
Northing	7756367	**Map Scale**	503 - 1: 50 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657-3
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

1 ***records for RN*** **63423**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/01/1976	1	0.00	16.80	Plastic Casing		AP - Aperture Size	100

Strata Logs

0 ***records for RN*** **63423**

Stratigraphies

0 ***records for RN*** **63423**

Bore Report

From Year:

Aquifers

0 *records for RN* **63423**

Pump Tests Part 1

0 *records for RN* **63423**

Pump Tests Part 2

0 *records for RN* **63423**

Bore Conditions

0 *records for RN* **63423**

Elevations

0 *records for RN* **63423**

Water Analysis Part 1

1 *records for RN* **63423**

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	22/08/1984	1	GCL	3723	183.00		GB	2300	7.4	54	1426.80	1259.69	629	358	1.3	3.9	

Water Analysis Part 2

1 *records for RN* **63423**

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	22/08/1984	1	225.0	0.6	120.0	80.0	0.00	435.0	0.00	1.0	520.0	0.20	13.0	32.0				

Water Levels

0 *records for RN* **63423**

Wire Line Logs

0 *records for RN* **63423**

Field Measurements

0 *records for RN* **63423**

Special Water Analysis

0 *records for RN* **63423**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
63942	Sub-Artesian Facility	Existing		Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description	L2 RP18658		
Parish	1216 - CONWAY		
Original Name			
Driller Name			
Drill Company			
Const Method			
Bore Line			
D/O File No	MA0187	**Polygon**	
R/O File No		**Equipment**	OR
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	20-16-45	**Basin**	1220
Longitude	148-43-51	**Sub-area**	000
GIS Latitude	-20.279261281	**Lot**	12
GIS Longitude	148.730820305	**Plan**	RP891517
Easting	680752		
Northing	7756668	**Map Scale**	503 - 1: 50 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657-3
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

0 *records for RN* **63942**

Strata Logs

0 *records for RN* **63942**

Stratigraphies

0 *records for RN* **63942**

Aquifers

0 *records for RN* **63942**

Pump Tests Part 1

0 *records for RN* **63942**

Pump Tests Part 2

0 *records for RN* **63942**

Bore Report

From Year:

Bore Conditions	**0** ***records for RN*** **63942**
Elevations	**0** ***records for RN*** **63942**
Water Analysis Part 1	**0** ***records for RN*** **63942**
Water Analysis Part 2	**0** ***records for RN*** **63942**
Water Levels	**0** ***records for RN*** **63942**
Wire Line Logs	**0** ***records for RN*** **63942**
Field Measurements	**0** ***records for RN*** **63942**
Special Water Analysis	0 ***records for RN*** **63942**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
131648	Sub-Artesian Facility	Existing	11/11/2005	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	1216 - CONWAY		
Original Name	HOUSE BORE		
Driller Name	DALTON, STEPHEN		
Drill Company	QLD DRILLING SERVICES		
Const Method	ROTARY AIR		
Bore Line			
D/O File No	520/0000072	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	05/12/2005	**Data Owner**	
Roles	Water Supply		

Location

Latitude	20-17-10	**Basin**	1220
Longitude	148-43-46	**Sub-area**	
GIS Latitude	-20.2860333	**Lot**	15
GIS Longitude	148.7294669	**Plan**	RP748474
Easting	680603		
Northing	7755920	**Map Scale**	104 - 1: 100 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	GPS	**Map No**	8657
GPS Accuracy	10	**Map Name**	PROSERPINE
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **131648**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	11/11/2005	1	0.00	32.00	Polyvinyl Chloride	6.000	WT - Wall Thickness	140
A	11/11/2005	2	15.00	31.00	Perforated or Slotted Casing	3.000	AP - Aperture Size	140
X	11/11/2005	3	6.00	32.00	Gravel Pack	6.000	GR - Gravel Size	175
X	11/11/2005	4	0.00	6.00	Grout			175

Strata Logs

3 ***records for RN*** **131648**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.50	TOP SOIL
2	0.50	26.00	DECO BASALT
3	26.00	32.00	BASALT

Stratigraphies

0 *records for RN* **131648**

Aquifers

1 *records for RN* **131648**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	25.70	26.00	TCHY - Intermediate Volcanic	11/11/2005	-15.00	N	850 US/CM	0.13	Y	WZ	AIRLIE VOLCANICS

Pump Tests Part 1

0 *records for RN* **131648**

Pump Tests Part 2

0 *records for RN* **131648**

Bore Conditions

0 *records for RN* **131648**

Elevations

0 *records for RN* **131648**

Water Analysis Part 1

0 *records for RN* **131648**

Water Analysis Part 2

0 *records for RN* **131648**

Water Levels

1 *records for RN* **131648**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	11/11/2005		-15.00	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **131648**

Bore Report

From Year:

Field Measurements

0 ***records for RN*** **131648**

Special Water Analysis

0 ***records for RN*** **131648**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
141307	Sub-Artesian Facility	Existing	28/03/2008	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	1216 - CONWAY		
Original Name	LOGGING HOLE		
Driller Name	SINCLAIR, JAMES LESLIE		
Drill Company	WHITSUNDAY WATER SUPPLY		
Const Method	ROTARY AIR - DRAG & DHH		
Bore Line			
D/O File No	520/000/0072	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	18/04/2008	**Data Owner**	DNR
Roles			

Location

Latitude	20-16-58	**Basin**	1220
Longitude	148-43-37	**Sub-area**	
GIS Latitude	-20.2826895	**Lot**	4
GIS Longitude	148.7270679	**Plan**	RP743330
Easting	680357		
Northing	7756293	**Map Scale**	254 - 1: 250 000
Zone	55	**Map Series**	
Accuracy	SKET	**Map No**	SF55-04
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **141307**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	28/03/2008	1	0.00	18.50	Polyvinyl Chloride	5.900	WT - Wall Thickness	140
A	28/03/2008	2	0.00	18.50	Grout			165
A	28/03/2008	3	18.50	52.00	Open Hole			

Strata Logs

4 ***records for RN*** **141307**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.50	TOP SOIL
2	0.50	17.00	CLAY, SANDY; SOME ROCK
3	17.00	17.70	ROCK, BROKEN
4	17.70	52.00	ROCK, BLUE

Stratigraphies

0 *records for RN* **141307**

Aquifers

1 *records for RN* **141307**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	17.00	17.70	XXXX - Unknown	28/03/2008	-5.00	N	617 US/CM	1.20	N	FR	

Pump Tests Part 1

1 *records for RN* **141307**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	28/03/2008	1	141307	-17.00	-17.70		PUM			-52.00				

Pump Tests Part 2

1 *records for RN* **141307**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED (m)	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor
A	28/03/2008	1	10	-5.00				1.20						-52.00		

Bore Conditions

0 *records for RN* **141307**

Elevations

0 *records for RN* **141307**

Bore Report

From Year:

Water Analysis Part 1

0 ***records for RN*** **141307**

Water Analysis Part 2

0 ***records for RN*** **141307**

Water Levels

0 ***records for RN*** **141307**

Wire Line Logs

0 ***records for RN*** **141307**

Field Measurements

1 ***records for RN*** **141307**

Pipe	Date	Depth (m)	Conduct (uS/cm)	pH	Temp (C)	NO3 (mg/L)	DO2 (mg/L)	Eh (mV)	Alkalinity (mV)	Samp	Method	Samp	Source
A	28/03/2008	-52.00	617							PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore

Special Water Analysis

0 ***records for RN*** **141307**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
162365	Sub-Artesian Facility	Existing	25/11/2011	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	1216 - CONWAY		
Original Name			
Driller Name	SINCLAIR, JAMES LESLIE		
Drill Company	WHITSUNDAY WATER SUPPLY		
Const Method	ROTARY AIR		
Bore Line			
D/O File No	MAC/520/000 (0072)	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	01/12/2011	**Data Owner**	
Roles	Water Supply		

Location

Latitude	20-17-02	**Basin**	1220
Longitude	148-43-35	**Sub-area**	
GIS Latitude	-20.2837885692	**Lot**	22
GIS Longitude	148.726329439	**Plan**	RP743332
Easting	680278		
Northing	7756172	**Map Scale**	
Zone	55	**Map Series**	
Accuracy		**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **162365**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	25/11/2011	1	0.00	21.50	Polyvinyl Chloride	5.900	WT - Wall Thickness	125
A	25/11/2011	2	15.50	21.50	Perforated or Slotted Casing	3.000	AP - Aperture Size	125
X	25/11/2011	3	0.00	5.00	Grout			165
X	25/11/2011	4	5.00	21.50	Gravel Pack			165

Bore Report

From Year:

Strata Logs

3 *records for RN* **162365**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.50	ROCKS, LOOSE SOIL
2	0.50	21.00	FRACTURED ROCKS WITH CLAY LAYERS
3	21.00	21.50	FIRM PURPLE ROCK

Stratigraphies

0 *records for RN* **162365**

Aquifers

1 *records for RN* **162365**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	18.00		VOLC - Volcanic	25/11/2011	-4.50	N	910 U/S	0.50	Y	FR	WHITSUNDAY VOLCANICS

Pump Tests Part 1

1 *records for RN* **162365**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	25/11/2011	1	162365	18.00			PUM		AIR	21.80				

Pump Tests Part 2

1 *records for RN* **162365**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED (m)	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor
A	25/11/2011	1	6	-4.60			17.20	0.50						21.80		

Bore Conditions

0 *records for RN* **162365**

Elevations

0 *records for RN* **162365**

Bore Report

From Year:

Water Analysis Part 1	**0** ***records for RN*** **162365**
Water Analysis Part 2	**0** ***records for RN*** **162365**
Water Levels	**0** ***records for RN*** **162365**
Wire Line Logs	**0** ***records for RN*** **162365**
Field Measurements	**0** ***records for RN*** **162365**
Special Water Analysis	0 ***records for RN*** **162365**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
46384	Sub-Artesian Facility	Abandoned but Still Usable	01/01/1973	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description	58		
Parish	1216 - CONWAY		
Original Name			
Driller Name			
Drill Company			
Const Method	HAND AUGER		
Bore Line			
D/O File No	MA0319	**Polygon**	
R/O File No		**Equipment**	NE
H/O File No	L41777B	**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	20-17-12	**Basin**	1220
Longitude	148-43-39	**Sub-area**	000
GIS Latitude	-20.286768789	**Lot**	95
GIS Longitude	148.727463113	**Plan**	RP748476
Easting	680393		
Northing	7755841	**Map Scale**	503 - 1: 50 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657-3
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

2 ***records for RN*** **46384**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/01/1973	1	0.00	9.70	Steel Casing		WT - Wall Thickness	127
A	01/01/1973	2		9.70	Perforated or Slotted Casing		AP - Aperture Size	

Strata Logs

1 ***records for RN*** **46384**

Rec	Top (m)	Bottom (m)	Strata Description

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
902			00/00/0000 SWL -8.50 M TMP NUL C

Stratigraphies

1 *records for RN* 46384

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			ALLUVIUM

Aquifers

1 *records for RN* 46384

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	0.00	9.00	CSAN - Clayey Sand GRAV - Gravel							UC	ALLUVIUM

Pump Tests Part 1

0 *records for RN* 46384

Pump Tests Part 2

0 *records for RN* 46384

Bore Conditions

0 *records for RN* 46384

Elevations

0 *records for RN* 46384

Water Analysis Part 1

0 *records for RN* 46384

Water Analysis Part 2

0 *records for RN* 46384

Water Levels

0 *records for RN* 46384

Wire Line Logs

0 *records for RN* 46384

Field Measurements

0 *records for RN* 46384

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **46384**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
63581	Sub-Artesian Facility	Abandoned and Destroyed		Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description	L51 RP36248		
Parish	1216 - CONWAY		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY/HAMMER DRILLER G FULLER		
Bore Line			
D/O File No	MA0319	**Polygon**	
R/O File No		**Equipment**	OR
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	20-16-36	**Basin**	1220
Longitude	148-43-31	**Sub-area**	000
GIS Latitude	-20.276783625	**Lot**	1
GIS Longitude	148.725146369	**Plan**	RP744889
Easting	680162		
Northing	7756949	**Map Scale**	503 - 1: 50 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657-3
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **63581**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	31/12/1985	1	0.00	24.00	Plastic Casing	5.900	WT - Wall Thickness	127
A	31/12/1985	2	17.00	24.00	Perforated or Slotted Casing		AP - Aperture Size	127
A	31/12/1985	3	0.00	24.00	Gravel Pack		GR - Gravel Size	165

Strata Logs

4 ***records for RN*** **63581**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	3.00	WEATHERED ROCK
2	3.00	17.00	ROCK
3	17.00	19.00	FRACTURED ROCK
4	19.00	25.00	ANDESITE

Stratigraphies

1 ***records for RN*** **63581**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	25.00	AIRLIE VOLCANICS

Aquifers

1 ***records for RN*** **63581**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	17.00	19.00	TCHY - Intermediate Volcanic							FR	AIRLIE VOLCANICS

Pump Tests Part 1

0 ***records for RN*** **63581**

Pump Tests Part 2

0 ***records for RN*** **63581**

Bore Conditions

0 ***records for RN*** **63581**

Elevations

0 ***records for RN*** **63581**

Water Analysis Part 1

0 ***records for RN*** **63581**

Water Analysis Part 2

0 ***records for RN*** **63581**

Water Levels

0 ***records for RN*** **63581**

Bore Report

From Year:

Wire Line Logs

0 ***records for RN*** **63581**

Field Measurements

0 ***records for RN*** **63581**

Special Water Analysis

0 ***records for RN*** **63581**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
63949	Sub-Artesian Facility	Abandoned but Still Usable	30/08/1968	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description	59		
Parish	1216 - CONWAY		
Original Name	CAMBELL CR NO 2		
Driller Name			
Drill Company			
Const Method	CABLE TOOL/ PERCUSSION HAMMER		
Bore Line			
D/O File No	MKY520	**Polygon**	
R/O File No		**Equipment**	OR
H/O File No	1861	**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	20-16-53	**Basin**	1220
Longitude	148-43-53	**Sub-area**	000
GIS Latitude	-20.281515973	**Lot**	901
GIS Longitude	148.731353015	**Plan**	RP864710
Easting	680805		
Northing	7756418	**Map Scale**	503 - 1: 50 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657-3
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

2 *records for RN* **63949**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	30/08/1968	1	0.00	14.00	Steel Casing	9.525	WT - Wall Thickness	203
A	30/08/1968	2	11.80	14.00	Perforated or Slotted Casing			203

Strata Logs

8 *records for RN* **63949**

Rec	Top (m)	Bottom (m)	Strata Description

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.82	BROWN CLAY
3	1.82	4.57	CLAY & BOULDERS
5	4.57	5.18	CEMENTED GRAVEL & BOULDERS
7	5.18	7.01	CLAY & BOULDERS
9	7.01	11.58	BOULDERS
11	11.58	14.02	JOINTED BROWN ROCK
13	14.02	23.46	IGNEOUS ROCK
901			6 ASSOCIATED TEST HOLES

Stratigraphies

1 *records for RN* **63949**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	23.50	WHITSUNDAY VOLCANICS

Aquifers

1 *records for RN* **63949**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	11.50	14.00	CONG - Conglomerate							FR	WHITSUNDAY VOLCANICS

Pump Tests Part 1

1 *records for RN* **63949**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	09/10/1968	1	63949	10.30	14.00	-0.30	PUM	CQ						

Pump Tests Part 2

1 *records for RN* **63949**

Bore Report

From Year:

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED (m)	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor
A	09/10/1968	1	1800	-3.65			0.80	7.57	1800			7.57	10.30			0.00000000

Bore Conditions

0 *records for RN* **63949**

Elevations

0 *records for RN* **63949**

Water Analysis Part 1

0 *records for RN* **63949**

Water Analysis Part 2

0 *records for RN* **63949**

Water Levels

0 *records for RN* **63949**

Wire Line Logs

0 *records for RN* **63949**

Field Measurements

0 *records for RN* **63949**

Special Water Analysis

0 *records for RN* **63949**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
63950	Sub-Artesian Facility	Abandoned and Destroyed	13/09/1968	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description	59		
Parish	1216 - CONWAY		
Original Name	CAMBELL CR NO 6		
Driller Name			
Drill Company			
Const Method	CABLE TOOL/ PERCUSSION HAMMER		
Bore Line			
D/O File No	MKY520	**Polygon**	
R/O File No		**Equipment**	NE
H/O File No	1861	**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	20-16-51	**Basin**	1220
Longitude	148-43-48	**Sub-area**	000
GIS Latitude	-20.280834684	**Lot**	11
GIS Longitude	148.72994073	**Plan**	RP891517
Easting	680659		
Northing	7756495	**Map Scale**	503 - 1: 50 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657-3
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

2 ***records for RN*** **63950**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	13/09/1968	1	0.00	12.80	Steel Casing	9.525	WT - Wall Thickness	152
A	13/09/1968	2	9.10	12.80	Perforated or Slotted Casing	4.445	AP - Aperture Size	152

Strata Logs

6 ***records for RN*** **63950**

Rec	Top (m)	Bottom (m)	Strata Description

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.21	BROWN SANDY CLAY
3	1.21	3.65	CLAY & BOULDERS
5	3.65	5.48	CEMENTED GRAVEL & BOULDERS
7	5.48	7.62	CLAY & BOULDERS
9	7.62	12.80	BOULDERS & GRAVEL
11	12.80	20.72	METAMORPHIC ROCK

Stratigraphies

1 *records for RN* **63950**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	20.70	WHITSUNDAY VOLCANICS

Aquifers

1 *records for RN* **63950**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	7.60	12.80	CONG - Conglomerate							FR	WHITSUNDAY VOLCANICS

Pump Tests Part 1

1 *records for RN* **63950**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	04/10/1968	1	63950	9.10	12.80	-0.40	PUM	CQ						

Pump Tests Part 2

1 *records for RN* **63950**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor

Bore Report

From Year:

					(m)							
A	04/10/1968	1	12000	-3.59	0.20	8.84	6120	8.84	9.10			0.00000000

Bore Conditions

0 ***records for RN*** **63950**

Elevations

0 ***records for RN*** **63950**

Water Analysis Part 1

0 ***records for RN*** **63950**

Water Analysis Part 2

0 ***records for RN*** **63950**

Water Levels

0 ***records for RN*** **63950**

Wire Line Logs

0 ***records for RN*** **63950**

Field Measurements

0 ***records for RN*** **63950**

Special Water Analysis

0 ***records for RN*** **63950**

Bore Report

From Year:

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AYR

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
96317	Sub-Artesian Facility	Existing	05/07/2004	Ayr	1900 - BURDEKIN

Details

Description			
Parish	124 - ANTILL		
Original Name			
Driller Name	BRUCE REENTS		
Drill Company	DC & V REENTS		
Const Method	ROTARY MUD		
Bore Line			
D/O File No	110/000(0007	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles	Water Supply		

Location

Latitude	19-34-22	**Basin**	1191
Longitude	147-24-39	**Sub-area**	
GIS Latitude	-19.5727765761	**Lot**	2
GIS Longitude	147.4107503296	**Plan**	RP708856
Easting	543090		
Northing	7835742	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	20	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **96317**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	05/07/2004	1	0.00	7.90	Plastic Casing	4.850	WT - Wall Thickness	114
A	05/07/2004	2	7.90	8.50	Screen	1.000	AP - Aperture Size	90
A	05/07/2004	3	0.00	1.50	Grout			220

Strata Logs

8 ***records for RN*** **96317**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.90	TOP SOIL
2	0.90	2.40	FINE TO COARSE BROWN SAND AND STONES
3	2.40	2.50	SMALL BAND OF GREY CLAY
4	2.50	5.10	FINE SILTY SAND
5	5.10	8.50	MEDIUM TO COARSE BROWN SAND AND
6			GRAVEL FINE TO MEDIUM CLAYEY BROWN
7			SAND AT 8.5M WATER AT 5.7M SWL 5.7M
8			EST SUPPLY 2.5L/S

Stratigraphies
0 *records for RN* **96317**

Aquifers
0 *records for RN* **96317**

Pump Tests Part 1
0 *records for RN* **96317**

Pump Tests Part 2
0 *records for RN* **96317**

Bore Conditions
0 *records for RN* **96317**

Elevations
0 *records for RN* **96317**

Water Analysis Part 1
0 *records for RN* **96317**

Water Analysis Part 2
0 *records for RN* **96317**

Water Levels
0 *records for RN* **96317**

Wire Line Logs
0 *records for RN* **96317**

Field Measurements
0 *records for RN* **96317**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **96317**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
96606	Sub-Artesian Facility	Existing	18/02/2003	Ayr	1900 - BURDEKIN

Details

Description			
Parish	124 - ANTILL		
Original Name			
Driller Name	BRUCE REENTS		
Drill Company	DC & V REENTS		
Const Method	CABLE TOOL		
Bore Line			
D/O File No	110/0000007	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	DNR
Roles	Water Supply		

Location

Latitude	19-34-13	**Basin**	1191
Longitude	147-24-23	**Sub-area**	
GIS Latitude	-19.570343326	**Lot**	2
GIS Longitude	147.406437321	**Plan**	RP711434
Easting	542629		
Northing	7836016	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	20	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **96606**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	18/02/2003	1	0.00	11.60	Plastic Casing	4.800	WT - Wall Thickness	115
A	18/02/2003	2	11.60	12.20	Screen	1.000	AP - Aperture Size	90
A	18/02/2003	3	0.00	2.00	Grout			220

Strata Logs

12 ***records for RN*** **96606**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.80	TOP SOIL
2	0.80	1.50	FINE TO MEDIUM BROWN SAND
3	1.50	1.80	FINE SANDY SILT
4	1.80	1.90	BROWN SILTY CLAY
5	1.90	2.50	FINE BROWN SAND
6	2.50	5.50	FINE TO COARSE BROWN SAND BAND OF
7			STONE AT 5.5M
8	5.50	7.50	MEDIUM TO COARSE BROWN SAND
9	7.50	9.75	MEDIUM TO VERY COARSE SAND AND STONE
10	9.75	12.50	FINE TO COARSE DIRTY BROWN SAND BLACK
11			CLAY AT 12.50M EST. SUPPLY=2L/S AFTER
12			30MIN TEST SWL=7.70M

Stratigraphies
0 *records for RN* **96606**

Aquifers
0 *records for RN* **96606**

Pump Tests Part 1
0 *records for RN* **96606**

Pump Tests Part 2
0 *records for RN* **96606**

Bore Conditions
0 *records for RN* **96606**

Elevations
0 *records for RN* **96606**

Water Analysis Part 1
0 *records for RN* **96606**

Water Analysis Part 2
0 *records for RN* **96606**

Bore Report

From Year:

Water Levels

0 *records for RN* **96606**

Wire Line Logs

0 *records for RN* **96606**

Field Measurements

0 *records for RN* **96606**

Special Water Analysis

0 *records for RN* **96606**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
125197	Sub-Artesian Facility	Existing	17/12/2004	Ayr	1900 - BURDEKIN

Details

Description			
Parish	124 - ANTILL		
Original Name			
Driller Name	REENTS, BRUCE CHARLES		
Drill Company	DC&V REENTS		
Const Method	CABLE TOOL		
Bore Line			
D/O File No	110/000(0007	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	10/02/2005	**Data Owner**	
Roles	Water Supply		

Location

Latitude	19-34-09	**Basin**	1191
Longitude	147-24-22	**Sub-area**	
GIS Latitude	-19.56920795	**Lot**	2
GIS Longitude	147.4062303	**Plan**	BUP71011
Easting	542608		
Northing	7836138	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	20	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **125197**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	17/12/2004	1	0.00	9.30	Plastic Casing	4.850	WT - Wall Thickness	114
A	17/12/2004	2	9.30	12.50	Perforated or Slotted Casing	1.000	AP - Aperture Size	114
A	17/12/2004	3	8.50	12.50	Gravel Pack	7.000	GR - Gravel Size	220
A	17/12/2004	4	2.00	8.50	Cuttings or other fill between casing and hole wall			220
A	17/12/2004	5	0.00	2.00	Grout			220

Bore Report

From Year:

Strata Logs

7 *records for RN* **125197**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.90	TOP SOIL
2	0.90	7.60	FINE TO COARSE BROWN SAND
3	7.60	9.70	COARSE BROWN SAND AND GRAVEL
4	9.70	10.00	FINE BROWN SAND AND STONE
5	10.00	12.50	COARSE LIGHT BROWN SAND AND GRAVEL
6			SWL 7.3M EST SUPPLY 2L/S COND. 400
7			UMHOS PH 9.7

Stratigraphies

0 *records for RN* **125197**

Aquifers

0 *records for RN* **125197**

Pump Tests Part 1

0 *records for RN* **125197**

Pump Tests Part 2

0 *records for RN* **125197**

Bore Conditions

0 *records for RN* **125197**

Elevations

0 *records for RN* **125197**

Water Analysis Part 1

0 *records for RN* **125197**

Water Analysis Part 2

0 *records for RN* **125197**

Water Levels

0 *records for RN* **125197**

Wire Line Logs

0 *records for RN* **125197**

Field Measurements

0 *records for RN* **125197**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **125197**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
125601	Sub-Artesian Facility	Existing	11/10/2006	Ayr	1900 - BURDEKIN

Details

Description			
Parish	124 - ANTILL		
Original Name			
Driller Name	BRUCE REENTS		
Drill Company	DC&V REENTS		
Const Method	CABLE TOOL		
Bore Line			
D/O File No	110/000/0007	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	08/02/2007	**Data Owner**	
Roles	Water Supply		

Location

Latitude	19-34-09	**Basin**	1191
Longitude	147-24-20	**Sub-area**	
GIS Latitude	-19.569186	**Lot**	2
GIS Longitude	147.4055296	**Plan**	RP713917
Easting	542535		
Northing	7836141	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	20	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **125601**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	11/10/2006	1	0.00	10.85	Polyvinyl Chloride	4.850	WT - Wall Thickness	114
A	11/10/2006	2	10.85	11.50	Screen	1.000	AP - Aperture Size	90
X	11/10/2006	3	1.50	11.50	Cuttings or other fill between casing and hole wall			220
X	11/10/2006	4	0.00	1.50	Grout			220

Strata Logs

4 ***records for RN*** **125601**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.90	SANDY BROWN SILT
2	0.90	7.00	FINE TO COARSE BROWN SAND
3	7.00	9.45	MEDIUM TO COARSE BROWN SAND & STONE
4	9.45	11.85	COARSE BROWN SAND GRAVEL & STONE

Stratigraphies

0 *records for RN* **125601**

Aquifers

1 *records for RN* **125601**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	0.90	11.85	SAGR - Sand and Gravel	11/10/2006	-6.60	N	POTABLE		Y	UC	BURDEKIN RIVER ALLUVIUM

Pump Tests Part 1

0 *records for RN* **125601**

Pump Tests Part 2

0 *records for RN* **125601**

Bore Conditions

0 *records for RN* **125601**

Elevations

0 *records for RN* **125601**

Water Analysis Part 1

0 *records for RN* **125601**

Water Analysis Part 2

0 *records for RN* **125601**

Water Levels

0 *records for RN* **125601**

Wire Line Logs

0 *records for RN* **125601**

Field Measurements

0 *records for RN* **125601**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **125601**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
153347	Sub-Artesian Facility	Existing	27/08/2012	Ayr	1900 - BURDEKIN

Details

Description			
Parish	124 - ANTILL		
Original Name			
Driller Name	LIST, CARL DAVID		
Drill Company	AYR BORING COMPANY		
Const Method	AUGER		
Bore Line			
D/O File No	110/000(0007)	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	27/09/2012	**Data Owner**	DNR
Roles	Water Supply		

Location

Latitude	19-34-16	**Basin**	1191
Longitude	147-24-39	**Sub-area**	
GIS Latitude	-19.57111111	**Lot**	5
GIS Longitude	147.4108333	**Plan**	RP702340
Easting	543091		
Northing	7835927	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	4	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **153347**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	27/08/2012	1	0.00	11.00	Polyvinyl Chloride	6.300	WT - Wall Thickness	100
A	27/08/2012	2	10.00	11.00	Perforated or Slotted Casing	2.000	AP - Aperture Size	100
X	27/08/2012	3	7.00	11.00	Gravel Pack		GR - Gravel Size	150
X	27/08/2012	4	6.00	7.00	Bentonite Seal			150
X	27/08/2012	5	0.00	6.00	Grout			150

Bore Report

From Year:

Strata Logs

4 ***records for RN*** **153347**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.30	SANDY LOAM TOP SOIL
2	0.30	4.80	SILTY SAND
3	4.80	8.00	FINE-MED GRAIN SANDS *
4	8.00	11.00	MED-COARSE SAND & STONE

Stratigraphies

0 ***records for RN*** **153347**

Aquifers

1 ***records for RN*** **153347**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	4.80	8.00	SAGR - Sand and Gravel	27/08/2012	-4.80	N	POTABLE	2.00	Y	XX	BURDEKIN RIVER ALLUVIUM

Pump Tests Part 1

0 ***records for RN*** **153347**

Pump Tests Part 2

0 ***records for RN*** **153347**

Bore Conditions

0 ***records for RN*** **153347**

Elevations

0 ***records for RN*** **153347**

Water Analysis Part 1

0 ***records for RN*** **153347**

Water Analysis Part 2

0 ***records for RN*** **153347**

Water Levels

0 ***records for RN*** **153347**

Wire Line Logs

0 ***records for RN*** **153347**

Field Measurements

0 ***records for RN*** **153347**

From Year:

Special Water Analysis

0 ***records for RN*** **153347**

Bore Report

From Year:

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GLADSTONE

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
136123	Sub-Artesian Facility	Existing	18/12/2004	Rockhampton	3360 - GLADSTONE REGIONAL

Details

Description			
Parish	2010 - GLADSTONE		
Original Name			
Driller Name	HENNESSY, LEONARD ARTHUR		
Drill Company	L. A. HENNESSY		
Const Method	CABLE TOOL		
Bore Line			
D/O File No	520/001/66	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	18/02/2005	**Data Owner**	
Roles	Water Supply		

Location

Latitude	23-51-41	**Basin**	1320
Longitude	151-14-56	**Sub-area**	
GIS Latitude	-23.8613889	**Lot**	147
GIS Longitude	151.2488889	**Plan**	RP608970
Easting	321684		
Northing	7360017	**Map Scale**	
Zone	56	**Map Series**	
Accuracy	GPS	**Map No**	9150
GPS Accuracy	20	**Map Name**	GLADSTONE
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **136123**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	18/12/2004	1	0.00	17.10	Polyvinyl Chloride	5.900	WT - Wall Thickness	140
A	18/12/2004	2	0.00	6.00	Grout			
A	18/12/2004	3	13.00	17.10	Perforated or Slotted Casing			

Strata Logs

5 ***records for RN*** **136123**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.50	GREY SANDY LOAM
2	0.50	1.00	HARD DIRTY GRAVEL
3	1.00	13.00	BROWN SANDY CLAY
4	13.00	17.10	SEAMS WATER BEARING GRAVEL, SILTY
5	17.10	17.30	SHALE CLAY

Stratigraphies

0 *records for RN* **136123**

Aquifers

1 *records for RN* **136123**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	13.00	17.10	GRAV - Gravel	15/12/2004	-11.10	N	POTABLE	1.00	Y	WZ	WANDILLA FORMATION

Pump Tests Part 1

0 *records for RN* **136123**

Pump Tests Part 2

0 *records for RN* **136123**

Bore Conditions

0 *records for RN* **136123**

Elevations

0 *records for RN* **136123**

Water Analysis Part 1

0 *records for RN* **136123**

Water Analysis Part 2

0 *records for RN* **136123**

Water Levels

0 *records for RN* **136123**

Wire Line Logs

0 *records for RN* **136123**

Field Measurements

0 *records for RN* **136123**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **136123**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
136127	Sub-Artesian Facility	Abandoned but Still Usable	19/07/2002	Rockhampton	3360 - GLADSTONE REGIONAL

Details

Description			
Parish	2010 - GLADSTONE		
Original Name			
Driller Name	WILSON, DESMOND NORMAN		
Drill Company	WILSONS DRILLING		
Const Method	ROTARY		
Bore Line			
D/O File No	520/001/66	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles	Water Supply		

Location

Latitude	23-51-53	**Basin**	1320
Longitude	151-14-59	**Sub-area**	
GIS Latitude	-23.8648384	**Lot**	52
GIS Longitude	151.2499228	**Plan**	RP608797
Easting	321794		
Northing	7359636	**Map Scale**	
Zone	56	**Map Series**	
Accuracy	UNKN	**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **136127**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	19/07/2002	1	0.00	20.00	Polyvinyl Chloride	5.900	WT - Wall Thickness	140
A	19/07/2002	2	0.00	5.00	Grout			
A	19/07/2002	3	17.00	19.70	Perforated or Slotted Casing	1.250	AP - Aperture Size	140
A	19/07/2002	4	5.00	19.70	Gravel Pack	5.000	GR - Gravel Size	

Strata Logs

4 ***records for RN*** **136127**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	8.00	SANDY LOAM
2	8.00	11.00	MOIST COARSE SAND
3	11.00	16.00	MEDIUM GRAVEL AND COARSE SAND
4	16.00	20.00	COARSE GRAVEL

Stratigraphies

0 *records for RN* **136127**

Aquifers

1 *records for RN* **136127**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	12.90	20.00	SAGR - Sand and Gravel	19/07/2002	-12.70	N	TDS 6000	2.53	Y	UC	QUATERNARY - UNDEFINED

Pump Tests Part 1

0 *records for RN* **136127**

Pump Tests Part 2

0 *records for RN* **136127**

Bore Conditions

0 *records for RN* **136127**

Elevations

0 *records for RN* **136127**

Water Analysis Part 1

0 *records for RN* **136127**

Water Analysis Part 2

0 *records for RN* **136127**

Water Levels

0 *records for RN* **136127**

Wire Line Logs

0 *records for RN* **136127**

Field Measurements

0 *records for RN* **136127**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **136127**

Bore Report

From Year:

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HOME HILL

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
153225	Sub-Artesian Facility	Existing	05/12/2011	Ayr	1900 - BURDEKIN

Details

Description			
Parish	2441 - INKERMAN		
Original Name			
Driller Name	SCHULTZ, JASON		
Drill Company	B&M DRILLING		
Const Method	CABLE TOOL		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	19/01/2012	**Data Owner**	DNR
Roles	Water Supply		

Location

Latitude	19-39-23	**Basin**	1200
Longitude	147-24-59	**Sub-area**	
GIS Latitude	-19.65642464	**Lot**	55
GIS Longitude	147.4165141	**Plan**	H6168
Easting	543664		
Northing	7826485	**Map Scale**	
Zone	55	**Map Series**	
Accuracy		**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **153225**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	05/12/2011	1	0.00	15.15	Polyvinyl Chloride	7.550	WT - Wall Thickness	170
A	05/12/2011	2	15.15	16.15	Stainless Steel	1.020	AP - Aperture Size	170
X	05/12/2011	3	0.00	5.00	Grout			325

Strata Logs

5 ***records for RN*** **153225**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	3.00	HARD BROWN CLAY
2	3.00	2.70	FINE DRY SAND
3	2.70	7.00	HARD BROWN CLAY
4	7.00	8.50	FINE TO MEDIUM DIRTY CLAY BOUND SAND *
5	8.50	16.15	FINE TO MEDIUM SAND AND STONES *

Stratigraphies

0 *records for RN* **153225**

Aquifers

1 *records for RN* **153225**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	15.15	16.15	CSAN - Clayey Sand	05/12/2011	-6.50	N	POTABLE	7.50	Y	XX	BURDEKIN RIVER ALLUVIUM

Pump Tests Part 1

0 *records for RN* **153225**

Pump Tests Part 2

0 *records for RN* **153225**

Bore Conditions

0 *records for RN* **153225**

Elevations

0 *records for RN* **153225**

Water Analysis Part 1

0 *records for RN* **153225**

Water Analysis Part 2

0 *records for RN* **153225**

Water Levels

0 *records for RN* **153225**

Wire Line Logs

0 *records for RN* **153225**

Field Measurements

0 *records for RN* **153225**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **153225**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
175546	Sub-Artesian Facility	Existing	05/10/2017	Ayr	1900 - BURDEKIN

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	DOMESTIC AND IRRIGATION		
Driller Name	PARRAVICINI, ROBERT		
Drill Company	BURDEKIN IRRIGATION CO		
Const Method	CABLE TOOL		
Bore Line			
D/O File No	NOR/065185	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	27/11/2017	**Data Owner**	DNR
Roles	Water Supply		

Location

Latitude	19-39-31	**Basin**	1200
Longitude	147-25-12	**Sub-area**	
GIS Latitude	-19.65861111	**Lot**	22
GIS Longitude	147.42	**Plan**	RP717429
Easting	544028		
Northing	7826242	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **175546**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	05/10/2017	1	0.00	20.12	Polyvinyl Chloride	5.000	WT - Wall Thickness	115
A	05/10/2017	2	18.90	20.12	Perforated or Slotted Casing	0.500	AP - Aperture Size	115
X	05/10/2017	3	5.00	7.31	Cuttings or other fill between casing and hole wall			150
X	05/10/2017	4	0.00	5.00	Grout			200

Strata Logs

4 ***records for RN*** **175546**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.20	TOP SOIL
2	1.20	7.31	RED SILT
3	7.31	20.12	BROWN COARSE SAND - WATER @ 9.45
4	20.12		STILL GOING - DID NOT HIT BOTTOM

Stratigraphies

0 *records for RN* **175546**

Aquifers

1 *records for RN* **175546**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	7.31	20.12	SAND - Sand	05/10/2017	-9.45	N	POTABLE	2.60	Y	XX	

Pump Tests Part 1

0 *records for RN* **175546**

Pump Tests Part 2

0 *records for RN* **175546**

Bore Conditions

0 *records for RN* **175546**

Elevations

0 *records for RN* **175546**

Water Analysis Part 1

0 *records for RN* **175546**

Water Analysis Part 2

0 *records for RN* **175546**

Water Levels

0 *records for RN* **175546**

Wire Line Logs

0 *records for RN* **175546**

Field Measurements

0 *records for RN* **175546**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **175546**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
175547	Sub-Artesian Facility	Existing	07/10/2017	Ayr	1900 - BURDEKIN

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	DOMESTIC AND IRRIGATION		
Driller Name	PARRAVICINI, ROBERT		
Drill Company	BURDEKIN IRRIGATION CO		
Const Method	CABLE TOOL		
Bore Line			
D/O File No	NOR/065185	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	27/11/2017	**Data Owner**	DNR
Roles	Water Supply		

Location

Latitude	19-39-29	**Basin**	1200
Longitude	147-25-07	**Sub-area**	
GIS Latitude	-19.6581472958	**Lot**	26
GIS Longitude	147.4186650573	**Plan**	RP713255
Easting	543883		
Northing	7826304	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **175547**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	07/10/2017	1	0.00	20.12	Polyvinyl Chloride	0.500	WT - Wall Thickness	115
A	07/10/2017	2	18.90	20.12	Perforated or Slotted Casing	0.500	AP - Aperture Size	115
X	07/10/2017	3	5.00	7.00	Cuttings or other fill between casing and hole wall			150
X	07/10/2017	4	0.00	5.00	Grout			200

Strata Logs

4 ***records for RN*** **175547**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.30	TOP SOIL
2	1.30	7.00	RED SILT
3	7.00	20.12	BROWN COARSE SAND
4	20.12		WHITE CLAY BOTTOM

Stratigraphies

0 *records for RN* **175547**

Aquifers

1 *records for RN* **175547**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	7.00	20.12	SAND - Sand	07/10/2017	-9.45	N	POTABLE	2.60	Y	XX	

Pump Tests Part 1

0 *records for RN* **175547**

Pump Tests Part 2

0 *records for RN* **175547**

Bore Conditions

0 *records for RN* **175547**

Elevations

0 *records for RN* **175547**

Water Analysis Part 1

0 *records for RN* **175547**

Water Analysis Part 2

0 *records for RN* **175547**

Water Levels

0 *records for RN* **175547**

Wire Line Logs

0 *records for RN* **175547**

Field Measurements

0 *records for RN* **175547**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **175547**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
175674	Sub-Artesian Facility	Existing	05/01/2018	Ayr	1900 - BURDEKIN

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	DOMESTIC		
Driller Name	PARRAVICINI, ROBERT		
Drill Company	BURDEKIN IRRIGATION CO		
Const Method	CABLE TOOL		
Bore Line			
D/O File No	NOR/065185	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	08/02/2018	**Data Owner**	DNR
Roles	Water Supply		

Location

Latitude	19-39-32	**Basin**	1200
Longitude	147-25-11	**Sub-area**	
GIS Latitude	-19.6590747268	**Lot**	5
GIS Longitude	147.4198192388	**Plan**	RP717429
Easting	543999		
Northing	7826211	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **175674**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	05/01/2018	1	0.00	20.00	Polyvinyl Chloride	5.000	WT - Wall Thickness	115
A	05/01/2018	2	18.80	20.00	Perforated or Slotted Casing	0.500	AP - Aperture Size	115
X	05/01/2018	3	5.00	7.00	Cuttings or other fill between casing and hole wall			150
X	05/01/2018	4	0.00	5.00	Grout			200

Strata Logs

4 ***records for RN*** **175674**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.10	TOP SOIL
2	1.10	7.00	RED SILT
3	7.00	20.00	BROWN COARSE SAND - WATER @ 10.3 METRES
4	20.00		STILL GOING DID NOT BOTTOM

Stratigraphies

0 *records for RN* **175674**

Aquifers

1 *records for RN* **175674**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	7.00	20.00	SAND - Sand	05/01/2018	-10.30	N	POTABLE	2.60	Y	XX	

Pump Tests Part 1

0 *records for RN* **175674**

Pump Tests Part 2

0 *records for RN* **175674**

Bore Conditions

0 *records for RN* **175674**

Elevations

0 *records for RN* **175674**

Water Analysis Part 1

0 *records for RN* **175674**

Water Analysis Part 2

0 *records for RN* **175674**

Water Levels

0 *records for RN* **175674**

Wire Line Logs

0 *records for RN* **175674**

Field Measurements

0 *records for RN* **175674**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **175674**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
175675	Sub-Artesian Facility	Existing	09/01/2018	Ayr	1900 - BURDEKIN

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	DOMESTIC		
Driller Name	PARRAVICINI, ROBERT		
Drill Company	BURDEKIN IRRIGATION CO		
Const Method	CABLE TOOL		
Bore Line			
D/O File No	NOR/065185	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	08/02/2018	**Data Owner**	DNR
Roles	Water Supply		

Location

Latitude	19-39-30	**Basin**	1200
Longitude	147-25-07	**Sub-area**	
GIS Latitude	-19.6584503827	**Lot**	24
GIS Longitude	147.4188380695	**Plan**	RP713255
Easting	543883		
Northing	7826273	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	20	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **175675**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	09/01/2018	1	0.00	20.00	Polyvinyl Chloride	5.000	WT - Wall Thickness	115
A	09/01/2018	2	18.80	20.00	Perforated or Slotted Casing	0.500	AP - Aperture Size	115
X	09/01/2018	3	5.00	7.00	Cuttings or other fill between casing and hole wall			150
X	09/01/2018	4	0.00	5.00	Grout			200

Strata Logs

4 ***records for RN*** **175675**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.20	TOP SOIL
2	1.20	7.00	RED SILT
3	7.00	20.00	BROWN COARSE SAND - WATER @ 9.45 METRES
4	20.00		WHITE CLAY BOTTOM

Stratigraphies

0 *records for RN* **175675**

Aquifers

1 *records for RN* **175675**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	7.00	20.00	SAND - Sand	09/01/2018	-9.45	N	POTABLE	2.60	Y	XX	

Pump Tests Part 1

0 *records for RN* **175675**

Pump Tests Part 2

0 *records for RN* **175675**

Bore Conditions

0 *records for RN* **175675**

Elevations

0 *records for RN* **175675**

Water Analysis Part 1

0 *records for RN* **175675**

Water Analysis Part 2

0 *records for RN* **175675**

Water Levels

0 *records for RN* **175675**

Wire Line Logs

0 *records for RN* **175675**

Field Measurements

0 *records for RN* **175675**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **175675**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
175676	Sub-Artesian Facility	Existing	13/01/2018	Ayr	1900 - BURDEKIN

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	DOMESTIC		
Driller Name	PARRAVICINI, ROBERT		
Drill Company	BURDEKIN IRRIGATION CO		
Const Method	CABLE TOOL		
Bore Line			
D/O File No	NOR/065185	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	08/02/2018	**Data Owner**	DNR
Roles	Water Supply		

Location

Latitude	19-39-49	**Basin**	1200
Longitude	147-25-13	**Sub-area**	
GIS Latitude	-19.6635965729	**Lot**	2
GIS Longitude	147.420325127	**Plan**	H61643
Easting	544056		
Northing	7825688	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	20	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **175676**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	13/01/2018	1	0.00	20.20	Polyvinyl Chloride	5.000	WT - Wall Thickness	115
A	13/01/2018	2	19.00	20.20	Perforated or Slotted Casing	0.500	AP - Aperture Size	115
X	13/01/2018	3	5.00	6.00	Cuttings or other fill between casing and hole wall			150
X	13/01/2018	4	0.00	5.00	Grout			200

Strata Logs

4 ***records for RN*** **175676**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.60	TOP SOIL
2	1.60	6.00	RED SILT
3	6.00	20.20	CLEAN BROWN COARSE SAND - WATER @ 9.3 METRES
4	20.20		NO BOTTOM STILL GOING

Stratigraphies

0 *records for RN* **175676**

Aquifers

1 *records for RN* **175676**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	6.00	20.20	SAND - Sand	13/01/2018	-9.30	N	POTABLE	2.60	Y	XX	

Pump Tests Part 1

0 *records for RN* **175676**

Pump Tests Part 2

0 *records for RN* **175676**

Bore Conditions

0 *records for RN* **175676**

Elevations

0 *records for RN* **175676**

Water Analysis Part 1

0 *records for RN* **175676**

Water Analysis Part 2

0 *records for RN* **175676**

Water Levels

0 *records for RN* **175676**

Wire Line Logs

0 *records for RN* **175676**

Field Measurements

0 *records for RN* **175676**

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **175676**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
186025	Sub-Artesian Facility	Existing	24/10/2018	Ayr	1900 - BURDEKIN

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	DOMESTIC		
Driller Name	PARRAVICINI, GLEN		
Drill Company	BURDEKIN IRRIGATION CO		
Const Method	OTHER		
Bore Line			
D/O File No	NOR/065185	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	13/11/2018	**Data Owner**	DNR
Roles	Water Supply		

Location

Latitude	19-39-46	**Basin**	1200
Longitude	147-25-01	**Sub-area**	
GIS Latitude	-19.66277778	**Lot**	31
GIS Longitude	147.41694444	**Plan**	H61627
Easting	543707		
Northing	7825781	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **186025**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	24/10/2018	1	0.00	19.00	Polyvinyl Chloride	5.000	WT - Wall Thickness	115
A	24/10/2018	2	19.00	20.10	Perforated or Slotted Casing	0.500	AP - Aperture Size	115
X	24/10/2018	3	0.00	5.00	Grout			200

Strata Logs

3 ***records for RN*** **186025**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.20	TOPSOIL
2	1.20	6.00	RED SILT
3	6.00	20.10	COARSE BROWN SAND - WATER @ 9.7 METRES

Stratigraphies

0 *records for RN* **186025**

Aquifers

1 *records for RN* **186025**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	6.00	20.10	SAND - Sand	24/10/2018	-9.70	N	POTABLE	2.60	Y	XX	

Pump Tests Part 1

0 *records for RN* **186025**

Pump Tests Part 2

0 *records for RN* **186025**

Bore Conditions

0 *records for RN* **186025**

Elevations

0 *records for RN* **186025**

Water Analysis Part 1

0 *records for RN* **186025**

Water Analysis Part 2

0 *records for RN* **186025**

Water Levels

0 *records for RN* **186025**

Wire Line Logs

0 *records for RN* **186025**

Field Measurements

0 *records for RN* **186025**

Special Water Analysis

0 *records for RN* **186025**

Bore Report

From Year:

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PROSERPINE

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
63163	Sub-Artesian Facility	Abandoned but Still Usable	07/04/1982	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description	L17 RP22625		
Parish	4467 - TAWVALE		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY		
Bore Line			
D/O File No	MA2667	**Polygon**	
R/O File No		**Equipment**	NE
H/O File No	L55253B	**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	20-24-13	**Basin**	1220
Longitude	148-35-10	**Sub-area**	6SR
GIS Latitude	-20.4037373	**Lot**	11
GIS Longitude	148.5861717	**Plan**	RP835215
Easting	665511		
Northing	7743041	**Map Scale**	503 - 1: 50 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657-3
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **63163**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	07/04/1982	1	0.00	10.00	Plastic Casing		WT - Wall Thickness	150
A	07/04/1982	2	6.00	9.50	Perforated or Slotted Casing		AP - Aperture Size	
A	07/04/1982	3	0.00	10.00	Gravel Pack		GR - Gravel Size	

Strata Logs

6 ***records for RN*** **63163**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.30	TOP SOIL
2	0.30	8.20	SANDY MUD
3	8.20	9.50	SAND
4	9.50	10.00	SANDY CLAY
902			SWL 3.0M 7/4/82
903			DRILLER EST 1.9L/S

Stratigraphies

1 *records for RN* **63163**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	9.50	PROSERPINE RIVER ALLUVIUM

Aquifers

1 *records for RN* **63163**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	8.00	9.50	SAND - Sand							UC	PROSERPINE RIVER ALLUVIUM

Pump Tests Part 1

1 *records for RN* **63163**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	07/04/1982	1	63163	6.00	9.50		PUM	CQ						

Pump Tests Part 2

1 *records for RN* **63163**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor

From Year:

					(m)					
A	07/04/1982	1	120	3.00	3.00	1.91	120		6.80	

Bore Conditions

0 *records for RN* 63163

Elevations

0 *records for RN* 63163

Water Analysis Part 1

0 *records for RN* 63163

Water Analysis Part 2

0 *records for RN* 63163

Water Levels

1 *records for RN* 63163

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	07/04/1982		-3.00	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Wire Line Logs

0 *records for RN* 63163

Field Measurements

0 *records for RN* 63163

Special Water Analysis

0 *records for RN* 63163

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
81863	Sub-Artesian Facility	Existing	04/05/1998	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	4467 - TAWVALE		
Original Name			
Driller Name	W BEALE		
Drill Company	WATER DRILL		
Const Method	CABLE TOOL		
Bore Line			
D/O File No	515/6/56	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles	Water Supply		

Location

Latitude	20-23-53	**Basin**	1220
Longitude	148-35-20	**Sub-area**	6SR
GIS Latitude	-20.3981244	**Lot**	37
GIS Longitude	148.5838917	**Plan**	RP702840
Easting	665279		
Northing	7743665	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	SKET	**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

0 *records for RN* **81863**

Strata Logs

0 *records for RN* **81863**

Stratigraphies

0 *records for RN* **81863**

Aquifers

0 *records for RN* **81863**

Pump Tests Part 1

2 *records for RN* **81863**

Bore Report

From Year:

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	04/05/1998	1					PUM							
A	04/07/1998	1	81863	14.00	22.00		PUM	CQ	TURBINE	23.00				

Pump Tests Part 2

2 *records for RN* **81863**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED (m)	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor
A	04/05/1998	1														
A	04/07/1998	1	1440	-3.05	300	2.80	12.46	38.00	1440	38.00				23.00		

Bore Conditions

0 *records for RN* **81863**

Elevations

0 *records for RN* **81863**

Water Analysis Part 1

0 *records for RN* **81863**

Water Analysis Part 2

0 *records for RN* **81863**

Water Levels

0 *records for RN* **81863**

Wire Line Logs

0 *records for RN* **81863**

Field Measurements

0 *records for RN* **81863**

Special Water Analysis

0 *records for RN* **81863**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
85023	Sub-Artesian Facility	Existing	30/06/1991	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description	L22 RP26972		
Parish	4467 - TAWVALE		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY/HAMMER DRILLER G FULLER		
Bore Line			
D/O File No	MA1870	**Polygon**	
R/O File No		**Equipment**	NE
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	20-24-12	**Basin**	1220
Longitude	148-34-57	**Sub-area**	6SR
GIS Latitude	-20.403453586	**Lot**	22
GIS Longitude	148.582533871	**Plan**	RP726972
Easting	665131		
Northing	7743076	**Map Scale**	40C - 40 Chain
Zone	55	**Map Series**	N - New Series
Accuracy	SKET	**Map No**	2314
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **85023**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	30/06/1991	1	0.00	5.60	Plastic Casing			203
A	30/06/1991	2	0.00	24.00	Plastic Casing	5.900	WT - Wall Thickness	137
B	30/06/1991	3	0.00	24.00	Gravel Pack	10.000	GR - Gravel Size	165

Strata Logs

7 ***records for RN*** **85023**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.20	TOP SOIL
2	0.20	1.00	STONES AND CLAY
3	1.00	2.00	BROWN CLAY
4	2.00	4.50	DECOMPOSED ROCK STONES AND CLAY
5	4.50	5.60	DECOMPOSED ROCK
6	5.60	18.00	DECOMPOSED ROCK
7	18.00	24.00	DECOMPOSED ROCK AND WATER

Stratigraphies

1 *records for RN* **85023**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	2.00	24.00	EDGECUMBE BEDS

Aquifers

1 *records for RN* **85023**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	18.00	24.00	CONG - Conglomerate SDST - Sandstone							WZ	EDGECUMBE BEDS

Pump Tests Part 1

0 *records for RN* **85023**

Pump Tests Part 2

0 *records for RN* **85023**

Bore Conditions

0 *records for RN* **85023**

Elevations

0 *records for RN* **85023**

Water Analysis Part 1

0 *records for RN* **85023**

Bore Report

From Year:

Water Analysis Part 2

0 *records for RN* **85023**

Water Levels

0 *records for RN* **85023**

Wire Line Logs

0 *records for RN* **85023**

Field Measurements

0 *records for RN* **85023**

Special Water Analysis

0 *records for RN* **85023**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
105587	Sub-Artesian Facility	Existing	07/11/2003	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	4467 - TAWVALE		
Original Name			
Driller Name	FULLER, GEOFFREY JAMES		
Drill Company	GJ & CRM FULLER & CO P/L		
Const Method	ROTARY AIR		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	17/11/2003	**Data Owner**	
Roles	Water Supply		

Location

Latitude	20-24-24	**Basin**	1220
Longitude	148-35-07	**Sub-area**	6SR
GIS Latitude	-20.40662234	**Lot**	31
GIS Longitude	148.5851883	**Plan**	RP852648
Easting	665405		
Northing	7742723	**Map Scale**	104 - 1: 100 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	GPS	**Map No**	8657
GPS Accuracy	10	**Map Name**	PROSERPINE
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **105587**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	07/11/2003	1	0.00	7.00	Polyvinyl Chloride	5.900	WT - Wall Thickness	141
A	07/11/2003	2	7.00	13.00	Perforated or Slotted Casing	3.000	AP - Aperture Size	141
X	07/11/2003	3	0.00	6.00	Cuttings or other fill between casing and hole wall			200
X	07/11/2003	4	6.00	12.00	Gravel Pack	10.000	GR - Gravel Size	200
X	07/11/2003	5	12.00	18.00	Cuttings or other fill between casing and hole wall			200

Bore Report

From Year:

Strata Logs

8 *records for RN* **105587**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.10	TOP SOIL
2	0.10	2.00	BROWN S/CLAY TO CLAYEY SAND
3	2.00	4.00	BROWN SANDY CLAY FINE
4	4.00	5.00	SOFT FINE S/CLAY
5	5.00	7.00	FIRM SANDSTONE AS A CLAY
6	7.00	9.00	FINE S/CLAY BROWN
7	9.00	15.00	WEATHERED SANDSTONE SOFT TO FIRM
8	15.00	18.00	FIRM

Stratigraphies

0 *records for RN* **105587**

Aquifers

1 *records for RN* **105587**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	7.00	13.00	SDST - Sandstone			N	236PPM	1.00	N	WZ	PROSERPINE RIVER ALLUVIUM

Pump Tests Part 1

0 *records for RN* **105587**

Pump Tests Part 2

0 *records for RN* **105587**

Bore Conditions

0 *records for RN* **105587**

Elevations

0 *records for RN* **105587**

Water Analysis Part 1

0 *records for RN* **105587**

Water Analysis Part 2

0 *records for RN* **105587**

Bore Report

From Year:

Water Levels

0 ***records for RN*** **105587**

Wire Line Logs

0 ***records for RN*** **105587**

Field Measurements

0 ***records for RN*** **105587**

Special Water Analysis

0 ***records for RN*** **105587**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
131618	Sub-Artesian Facility	Existing	02/12/2005	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	4467 - TAWVALE		
Original Name	HOUSE BORE		
Driller Name	THOMPSON, KEVIN		
Drill Company	BACKYARD BORES		
Const Method	AUGER		
Bore Line			
D/O File No	520/0000072	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	22/12/2005	**Data Owner**	
Roles	Water Supply		

Location

Latitude	20-24-17	**Basin**	1220
Longitude	148-34-56	**Sub-area**	
GIS Latitude	-20.4047066	**Lot**	16
GIS Longitude	148.5823515	**Plan**	RP706661
Easting	665111		
Northing	7742938	**Map Scale**	104 - 1: 100 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657
GPS Accuracy		**Map Name**	PROSERPINE
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **131618**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	02/12/2005	1	0.00	7.00	Polyvinyl Chloride	7.000	WT - Wall Thickness	114
A	02/12/2005	2	7.00	11.00	Screen	1.000	AP - Aperture Size	114
X	02/12/2005	3	5.00	11.00	Gravel Pack	10.000	GR - Gravel Size	150
X	02/12/2005	4	4.50	5.00	Bentonite Seal			150
X	02/12/2005	5	0.00	5.00	Grout			150

Bore Report

From Year:

Strata Logs

4 *records for RN* **131618**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	2.00	TOP SOIL
2	2.00	5.00	BLACK CLAY
3	5.00	9.00	ORANGE CLAY
4	9.00	11.00	SAND/GRAVEL

Stratigraphies

0 *records for RN* **131618**

Aquifers

1 *records for RN* **131618**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	9.00	11.00	SAGR - Sand and Gravel	02/12/2005	-5.00	N	260 PPM	0.50	Y	UC	PROSERPINE RIVER ALLUVIUM

Pump Tests Part 1

0 *records for RN* **131618**

Pump Tests Part 2

0 *records for RN* **131618**

Bore Conditions

0 *records for RN* **131618**

Elevations

0 *records for RN* **131618**

Water Analysis Part 1

0 *records for RN* **131618**

Water Analysis Part 2

0 *records for RN* **131618**

Water Levels

1 *records for RN* **131618**

Pipe	Date	Time	Measure (m)	Meas Point	Remark	Meas Type	Coll Auth	Coll Method	Project	Quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	02/12/2005		-5.00	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Wire Line Logs

0 ***records for RN*** **131618**

Field Measurements

0 ***records for RN*** **131618**

Special Water Analysis

0 ***records for RN*** **131618**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
131776	Sub-Artesian Facility	Existing	08/02/1989	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	4467 - TAWVALE		
Original Name	HOUSE BORE		
Driller Name	SAINSBURY, RICHARD BRUCE		
Drill Company	UNDERGROUND DRILLING		
Const Method	ROTARY AIR		
Bore Line			
D/O File No	520/0000072	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	28/02/1989	**Data Owner**	
Roles	Water Supply		

Location

Latitude	20-24-15	**Basin**	1220
Longitude	148-35-01	**Sub-area**	
GIS Latitude	-20.4042469	**Lot**	17
GIS Longitude	148.5836343	**Plan**	RP706661
Easting	665245		
Northing	7742987	**Map Scale**	104 - 1: 100 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657
GPS Accuracy		**Map Name**	PROSERPINE
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **131776**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	08/02/1989	1	0.00	13.50	Polyvinyl Chloride	6.800	WT - Wall Thickness	114
A	08/02/1989	2	11.50	13.50	Perforated or Slotted Casing	2.000	AP - Aperture Size	114
X	08/02/1989	3	0.00	13.50	Gravel Pack	10.000	GR - Gravel Size	150

Strata Logs

3 ***records for RN*** **131776**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.50	BLACK SILTY SOIL
2	0.50	10.50	BROWN AND BLACK CLAY
3	10.50	13.50	COARSE WHITE GRAVEL

Stratigraphies

0 *records for RN* **131776**

Aquifers

1 *records for RN* **131776**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	10.50	13.50	GRAV - Gravel	08/02/1989	-2.00	N	POT	0.69	Y	UC	PROSERPINE RIVER ALLUVIUM

Pump Tests Part 1

0 *records for RN* **131776**

Pump Tests Part 2

0 *records for RN* **131776**

Bore Conditions

0 *records for RN* **131776**

Elevations

0 *records for RN* **131776**

Water Analysis Part 1

0 *records for RN* **131776**

Water Analysis Part 2

0 *records for RN* **131776**

Water Levels

1 *records for RN* **131776**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	08/02/1989		-2.00	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **131776**

Bore Report

From Year:

Field Measurements

0 ***records for RN*** **131776**

Special Water Analysis

0 ***records for RN*** **131776**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
131790	Sub-Artesian Facility	Existing	20/02/1990	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	4467 - TAWVALE		
Original Name	HOUSE BORE		
Driller Name	HEINIGER, NEIL JOHN		
Drill Company	UNDERGROUND DRILLING		
Const Method	ROTARY AIR		
Bore Line			
D/O File No	520/0000072	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	10/09/1990	**Data Owner**	
Roles	Water Supply		

Location

Latitude	20-24-15	**Basin**	1220
Longitude	148-35-16	**Sub-area**	
GIS Latitude	-20.4041003	**Lot**	3
GIS Longitude	148.5877436	**Plan**	RP741940
Easting	665674		
Northing	7742999	**Map Scale**	104 - 1: 100 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657
GPS Accuracy		**Map Name**	PROSERPINE
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **131790**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	20/02/1990	1	0.00	15.00	Polyvinyl Chloride	6.800	WT - Wall Thickness	114
A	20/02/1990	2	9.00	15.00	Perforated or Slotted Casing			114
X	20/02/1990	3	0.00	15.00	Gravel Pack	10.000	GR - Gravel Size	200

Strata Logs

4 ***records for RN*** **131790**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	2.00	ROCKY FILL
2	2.00	5.50	BLACK AND GREY CLAY
3	5.50	9.50	SANDY CLAY
4	9.50	15.00	SAND AND GRAVEL

Stratigraphies

0 *records for RN* **131790**

Aquifers

1 *records for RN* **131790**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	9.50	15.00	SAGR - Sand and Gravel	20/02/1990	-4.50	N		6.32	Y	UC	PROSERPINE RIVER ALLUVIUM

Pump Tests Part 1

0 *records for RN* **131790**

Pump Tests Part 2

0 *records for RN* **131790**

Bore Conditions

0 *records for RN* **131790**

Elevations

0 *records for RN* **131790**

Water Analysis Part 1

0 *records for RN* **131790**

Water Analysis Part 2

0 *records for RN* **131790**

Water Levels

1 *records for RN* **131790**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	20/02/1990		-4.50	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality

Bore Report

From Year:

Wire Line Logs

0 *records for RN* **131790**

Field Measurements

0 *records for RN* **131790**

Special Water Analysis

0 *records for RN* **131790**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
131792	Sub-Artesian Facility	Existing	07/11/1990	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	4467 - TAWVALE		
Original Name	HOUSE BORE		
Driller Name	SINCLAIR, JAMES LESLIE		
Drill Company	UNDERGROUND DRILLING		
Const Method	ROTARY AIR		
Bore Line			
D/O File No	520/0000072	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	13/11/1990	**Data Owner**	
Roles	Water Supply		

Location

Latitude	20-24-18	**Basin**	1220
Longitude	148-34-51	**Sub-area**	
GIS Latitude	-20.4050458	**Lot**	14
GIS Longitude	148.5807036	**Plan**	RP710104
Easting	664939		
Northing	7742902	**Map Scale**	104 - 1: 100 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	8657
GPS Accuracy		**Map Name**	PROSERPINE
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **131792**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	07/11/1990	1	0.00	12.00	Polyvinyl Chloride	6.800	WT - Wall Thickness	114
A	07/11/1990	2	9.00	12.00	Perforated or Slotted Casing	2.000	AP - Aperture Size	114
X	07/11/1990	3	0.00	12.00	Gravel Pack	10.000	GR - Gravel Size	170

Strata Logs

10 ***records for RN*** **131792**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.60	BLACK SANDY SOIL
2	0.60	1.80	MED/COARSE SAND
3	1.80	10.50	BLUE/GREY CLAY WITH SAND LAYERS
4	10.50	12.00	TIGHT SAND
5	12.00	22.00	CLAY WITH SAND LAYERS
6	22.00	22.30	HARD BAND
7	22.30	23.20	HARD CLAY
8	23.20	23.80	SANDY CLAY
9	23.80	24.40	HARD LAYER
10	24.40	25.00	CLAY

Stratigraphies

0 *records for RN* **131792**

Aquifers

1 *records for RN* **131792**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	10.50	12.00	SAND - Sand				POT	0.63	Y	UC	PROSERPINE RIVER ALLUVIUM

Pump Tests Part 1

0 *records for RN* **131792**

Pump Tests Part 2

0 *records for RN* **131792**

Bore Conditions

0 *records for RN* **131792**

Elevations

0 *records for RN* **131792**

Water Analysis Part 1

0 *records for RN* **131792**

Water Analysis Part 2

0 *records for RN* **131792**

Bore Report

From Year:

Water Levels	**0** ***records for RN*** **131792**
Wire Line Logs	**0** ***records for RN*** **131792**
Field Measurements	**0** ***records for RN*** **131792**
Special Water Analysis	0 ***records for RN*** **131792**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
141173	Sub-Artesian Facility	Existing	28/04/2007	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	4467 - TAWVALE		
Original Name	SCHOOL BORE		
Driller Name	SINCLAIR, JAMES LESLIE		
Drill Company	WHITSUNDAY WATER SUPPLY		
Const Method	ROTARY MUD		
Bore Line			
D/O File No	515/0011286	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles	Water Supply		

Location

Latitude	20-24-10	**Basin**	1220
Longitude	148-35-09	**Sub-area**	
GIS Latitude	-20.402736	**Lot**	11
GIS Longitude	148.5857079	**Plan**	RP835215
Easting	665463		
Northing	7743153	**Map Scale**	104 - 1: 100 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	GPS	**Map No**	8657
GPS Accuracy	10	**Map Name**	PROSERPINE
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **141173**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	28/04/2007	1	0.00	12.70	Polyvinyl Chloride	5.900	WT - Wall Thickness	141
A	28/04/2007	2	11.20	12.70	Perforated or Slotted Casing	1.000	AP - Aperture Size	141
X	28/04/2007	3	10.00	12.70	Gravel Pack		GR - Gravel Size	165
X	28/04/2007	4	7.00	10.00	Cuttings or other fill between casing and hole wall			165
X	28/04/2007	5	0.00	7.00	Grout			165

Bore Report

From Year:

Strata Logs

3 *records for RN* **141173**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	7.00	SILTY SOIL & SILTY CLAY
2	7.00	11.00	GREY MANGROVE CLAY WITH WOOD
3	11.00	12.70	LIGHTLY CLAYED SAND, BIG MUD LOSS

Stratigraphies

0 *records for RN* **141173**

Aquifers

1 *records for RN* **141173**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	12.00	12.70	CSAN - Clayey Sand SAND - Sand	28/04/2007	-2.00	N	397US/CM	2.40	Y	SC	PROSERPINE RIVER ALLUVIUM

Pump Tests Part 1

0 *records for RN* **141173**

Pump Tests Part 2

0 *records for RN* **141173**

Bore Conditions

0 *records for RN* **141173**

Elevations

0 *records for RN* **141173**

Water Analysis Part 1

0 *records for RN* **141173**

Water Analysis Part 2

0 *records for RN* **141173**

Water Levels

1 *records for RN* **141173**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	28/04/2007		-2.00	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality

Bore Report

From Year:

Wire Line Logs

0 *records for RN* **141173**

Field Measurements

0 *records for RN* **141173**

Special Water Analysis

0 *records for RN* **141173**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
182094	Sub-Artesian Facility	Existing	28/08/2018	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	MW #1		
Driller Name	VON SNARSKI, MATTHEW		
Drill Company	BACKYARD BORES & GEOTECH		
Const Method	AUGER		
Bore Line			
D/O File No	MAC/520/000 (0072)	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	05/09/2018	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	20-23-54	**Basin**	1220
Longitude	148-35-02	**Sub-area**	
GIS Latitude	-20.39833025	**Lot**	37
GIS Longitude	148.58397172	**Plan**	RP702840
Easting	665287		
Northing	7743642	**Map Scale**	
Zone	55	**Map Series**	
Accuracy		**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **182094**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	28/08/2018	1	0.00	6.50	Polyvinyl Chloride	6.000	WT - Wall Thickness	62
A	28/08/2018	2	3.40	6.50	Perforated or Slotted Casing	0.400	AP - Aperture Size	62
X	28/08/2018	3	0.00	1.40	Grout			150
X	28/08/2018	4	1.40	2.50	Bentonite Seal			150

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
X	28/08/2018	5	2.50	6.50	Cuttings or other fill between casing and hole wall			150

Strata Logs

4 *records for RN* **182094**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.50	TOPSOIL AND BLACK CLAY
2	0.50	3.00	CLAY: BLACK WITH SAND, CRUMBLY
3	3.00	3.20	HARD BLACK CLAY
4	3.20	6.50	SAND, VERY COARSE, WET

Stratigraphies

0 *records for RN* **182094**

Aquifers

1 *records for RN* **182094**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	3.20	6.50	SAND - Sand	28/08/2018	-3.20	N	POTABLE	0.10	Y	UC	PROSERPINE RIVER ALLUVIUM

Pump Tests Part 1

1 *records for RN* **182094**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	28/08/2018	1	182094	3.20	6.50		PUM		BAIL	6.50				

Pump Tests Part 2

1 *records for RN* **182094**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor

Bore Report

From Year:

						(m)						
A	28/08/2018	1	15	-3.20		3.00	0.10				6.50	

Bore Conditions

0 ***records for RN*** **182094**

Elevations

0 ***records for RN*** **182094**

Water Analysis Part 1

0 ***records for RN*** **182094**

Water Analysis Part 2

0 ***records for RN*** **182094**

Water Levels

0 ***records for RN*** **182094**

Wire Line Logs

0 ***records for RN*** **182094**

Field Measurements

1 ***records for RN*** **182094**

Pipe	Date	Depth (m)	Conduct (uS/cm)	pH	Temp (C)	NO3 (mg/L)	DO2 (mg/L)	Eh (mV)	Alkalinity (mV)	Samp	Method	Samp	Source
A	28/08/2018		426							BA	Bailer - Other	GB	Groundwater - from Bore

Special Water Analysis

0 ***records for RN*** **182094**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
182097	Sub-Artesian Facility	Existing	29/08/2018	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	MW #4		
Driller Name	VON SNARSKI, MATTHEW		
Drill Company	BACKYARD BORES & GEOTECH		
Const Method	AUGER		
Bore Line			
D/O File No	MAC/520/000 (0072)	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	05/09/2018	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	20-23-56	**Basin**	1220
Longitude	148-34-51	**Sub-area**	
GIS Latitude	-20.3989631	**Lot**	7
GIS Longitude	148.58093132	**Plan**	RP706105
Easting	664969		
Northing	7743575	**Map Scale**	
Zone	55	**Map Series**	
Accuracy		**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **182097**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	29/08/2018	1	0.00	9.40	Polyvinyl Chloride	6.000	WT - Wall Thickness	62
A	29/08/2018	2	6.40	9.40	Perforated or Slotted Casing	0.400	AP - Aperture Size	62
X	29/08/2018	3	0.00	2.00	Grout			150
X	29/08/2018	4	2.00	3.00	Bentonite Seal			150

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
X	29/08/2018	5	3.00	9.40	Cuttings or other fill between casing and hole wall			150

Strata Logs

5 *records for RN* **182097**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	CLAY: BLACK, SOME SAND
2	1.00	1.50	SAND: BROWN, FINE
3	1.50	3.10	CLAY: DARK BROWN, MOIST, SEEPAGE
4	3.10	8.20	CLAY: LIGHT BROWN, HIGH PLASTICITY, MOIST
5	8.20	9.40	CLAY AND SAND: LIGHT ORANGE, MEDIUM COARSE

Stratigraphies

0 *records for RN* **182097**

Aquifers

1 *records for RN* **182097**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	8.20	9.40	CLAY - Clay SAND - Sand	29/08/2018	-6.70	N		0.10	Y	SC	PROSERPINE RIVER ALLUVIUM

Pump Tests Part 1

1 *records for RN* **182097**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	29/08/2018	1	182097	8.20	9.40		PUM		BAIL	9.40				

Pump Tests Part 2

1 *records for RN* **182097**

Pipe	Date	Rec	Test	SWL(m)	Recov	Resid	Max DD	Q at	Time to	Max Q	Calc	Design	Design	Suct.	Tmsy	Stor

Bore Report

From Year:

		Dur (mins)	Time (mins)	DD (m)	or P RED (m)	Max DD (l/s)	Max DD (mins)	(l/s)	Stat HD (m)	Yield (l/s)	BP (m)	Set (m)	(m2/Day)
A	29/08/2018	1	15	-6.70		0.10						9.40	

Bore Conditions

0 *records for RN* **182097**

Elevations

0 *records for RN* **182097**

Water Analysis Part 1

0 *records for RN* **182097**

Water Analysis Part 2

0 *records for RN* **182097**

Water Levels

0 *records for RN* **182097**

Wire Line Logs

0 *records for RN* **182097**

Field Measurements

0 *records for RN* **182097**

Special Water Analysis

0 *records for RN* **182097**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
12200050	Sub-Artesian Facility	Abandoned but Still Usable	21/11/1973	Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	4467 - TAWVALE		
Original Name	TA34		
Driller Name			
Drill Company			
Const Method	ROTARY RIG		
Bore Line	PRO - PROSERPINE LINE		
D/O File No		**Polygon**	
R/O File No		**Equipment**	NE
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	DNR
Roles			

Location

Latitude	20-23-58	**Basin**	1220
Longitude	148-35-10	**Sub-area**	
GIS Latitude	-20.399553573	**Lot**	198
GIS Longitude	148.586217591	**Plan**	HR1896
Easting	665520		
Northing	7743504	**Map Scale**	104 - 1: 100 000
Zone	55	**Map Series**	M - Metric Series
Accuracy	SKET	**Map No**	V 38920
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

1 ***records for RN*** **12200050**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	21/11/1973	1	0.00	24.50	Plastic Casing			51

Strata Logs

12 ***records for RN*** **12200050**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.30	TOP SOIL

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
3	0.30	0.45	SANDY BROWN CLAY
5	0.45	1.80	FINE SAND
7	1.80	2.10	CLAY
9	2.10	2.70	FINE SAND
11	2.70	5.50	DARK GREY CLAY
13	5.50	6.10	FINE SAND
15	6.10	6.70	GREY CLAY
17	6.70	25.00	SAND & GRAVEL WITH CLAY SEAMS
19	25.00	26.80	BROWN & GREY CLAY
21	26.80	27.70	ANDESITIC TUFF
902			00/00/0000 SWL -2.70 M TMP NUL C

Stratigraphies

2 *records for RN* **12200050**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			ALLUVIUM
DNR	2	0.00	26.00	ALLUVIUM

Aquifers

2 *records for RN* **12200050**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	0.50	6.00	SAND - Sand							UC	ALLUVIUM
2	7.00	25.00	GRAV - Gravel SAND - Sand							UC	ALLUVIUM

Pump Tests Part 1

0 *records for RN* **12200050**

Bore Report

From Year:

Pump Tests Part 2

0 *records for RN* **12200050**

Bore Conditions

0 *records for RN* **12200050**

Elevations

2 *records for RN* **12200050**

Pipe	Date	Elevation (m)	Precision		Datum	Meas	Point	Survey Source
A	22/01/1976	11.64	SVY	Surveyed	AHD - Aust. Height Datum	R	Reference Point	
X	22/01/1976	11.21	SVY	Surveyed	AHD - Aust. Height Datum	N	Natural Surface	

Water Analysis Part 1

2 *records for RN* **12200050**

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	29/03/1988	1	GCL	124268		AI	GB	265	7.8	50	185.33	181.96	53	87	0.8	1.9	0.67
A	16/08/2000	1	GCL	207186		AI	GB	380	7.2	51	249.97	241.24	88	97	1.0	1.9	0.18

Water Analysis Part 2

2 *records for RN* **12200050**

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	29/03/1988	1	32.5	1.3	9.6	7.1	0.00	105.0	0.02	0.4	25.5	0.30	2.6	1.0				
A	16/08/2000	1	40.8	1.6	15.6	12.0	0.87	118.3	0.10	0.1	57.9	0.23	3.5	0.0	0.01	0.00	0.00	0.00

Water Levels

150 *records for RN* **12200050**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	23/01/1976		-0.81	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	11/03/1976		-0.50	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	02/07/1976		-1.70	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	09/09/1976		-2.40	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	02/11/1976		-2.50	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	18/02/1977		-1.25	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	10/05/1977		-0.87	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	15/07/1977		-2.00	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	17/10/1977		-4.12	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	11/11/1977		-4.80	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	14/06/1978		-2.25	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	19/07/1978		-2.20	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	31/08/1978		-2.58	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	06/10/1978		-2.85	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	02/11/1978		-3.08	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	12/12/1978		-3.63	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	14/02/1979		-0.95	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	22/03/1979		-0.73	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	26/04/1979		-1.45	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	13/06/1979		-1.62	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	05/07/1979		-1.55	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	07/09/1979		-2.20	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	09/10/1979		-2.72	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	07/11/1979		-3.85	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	05/12/1979		-3.85	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	17/01/1980		-2.31	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	06/03/1980		-1.40	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	17/04/1980		-1.28	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	22/05/1980		-1.33	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	26/06/1980		-1.40	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	06/08/1980		-1.93	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	07/10/1980		-2.86	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	28/11/1980		-4.10	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	19/02/1981		-1.78	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	09/04/1981		-1.22	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	23/07/1981		-1.65	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	24/09/1981		-2.52	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	26/11/1981		-2.80	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	11/03/1982		-2.95	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	09/06/1982		-1.65	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	26/08/1982		-2.60	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	11/11/1982		-4.39	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	05/02/1983		-3.95	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	17/03/1983		-4.10	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	22/04/1983		-4.20	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	12/05/1983		-3.65	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	10/06/1983		-2.56	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	19/07/1983		-2.44	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	25/08/1983		-2.75	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	23/09/1983		-3.33	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	01/11/1983		-4.25	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	25/11/1983		-4.21	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	16/12/1983		-4.25	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	26/01/1984		-4.20	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	24/02/1984		-3.85	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	22/03/1984		-4.00	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/05/1984		-3.70	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	31/05/1984		-3.76	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/07/1984		-3.77	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	27/07/1984		-3.78	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	23/08/1984		-4.35	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	28/09/1984		-4.60	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	30/10/1984		-4.95	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	11/12/1984		-4.93	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	31/01/1985		-5.05	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	27/02/1985		-4.35	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	18/03/1985		-3.20	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	30/04/1985		-2.35	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	23/05/1985		-2.15	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	28/06/1985		-2.20	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	30/07/1985		-2.30	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	27/09/1985		-3.20	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	20/12/1985		-2.65	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	23/01/1986		-2.90	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	26/02/1986		-1.85	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	04/04/1986		-1.35	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	01/05/1986		-1.20	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	21/05/1986		-1.35	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	25/06/1986		-1.60	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	25/07/1986		-2.05	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	21/08/1986		-2.30	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	22/09/1986		-2.70	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	17/12/1986		-4.00	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	17/02/1987		-4.30	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	15/05/1987		-3.47	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	10/06/1987		-3.44	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	27/07/1987		-3.45	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	26/08/1987		-3.78	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	01/10/1987		-4.10	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	28/10/1987		-4.52	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	24/11/1987		-4.71	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	08/01/1988		-4.95	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	17/02/1988		-4.70	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	02/03/1988		-3.70	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	21/03/1988		-2.71	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	29/03/1988		-2.56	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	10/05/1988		-1.83	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	22/06/1988		-1.82	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	04/08/1988		-1.75	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	16/09/1988		-1.90	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	20/10/1988		-2.65	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	01/03/1989		-1.55	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	31/03/1989		-1.45	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/05/1989		-1.00	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	26/05/1989		-0.95	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	21/06/1989		-1.18	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	04/12/1989		-3.35	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/05/1990		-1.50	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	17/05/1990		-1.56	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	13/06/1990		-1.05	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	06/07/1990		-1.60	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	23/08/1990		-2.23	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	27/09/1990		-2.82	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	01/11/1990		-3.33	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	12/12/1990		-4.30	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	21/01/1991		-1.20	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	06/03/1991		-1.00	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	28/05/1991		-1.90	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	10/07/1991		-2.30	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	06/08/1991		-2.80	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	12/09/1991		-3.30	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	24/10/1991		-3.83	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/12/1991		-3.40	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/02/1992		-4.08	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	17/03/1992		-3.64	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	30/04/1992		-3.32	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/06/1992		-2.94	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	24/07/1992		-3.32	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/09/1992		-3.85	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	20/11/1992		-5.12	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	25/02/1993		-2.79	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	04/10/1993		-3.18	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	08/11/1993		-4.25	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	02/12/1993		-4.47	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	24/01/1994		-4.04	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	29/03/1994		-1.93	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	25/05/1994		-2.10	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	02/08/1994		-2.69	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	13/09/1994		-3.00	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	25/10/1994		-3.67	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	10/01/1995		-3.50	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	03/04/1996		-2.58	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	12/08/1996		-2.66	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	24/06/1997		-1.98	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	03/10/1997		-2.81	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	04/11/1997		-3.95	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	18/02/1998		-2.45	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	28/04/1999		-1.18	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	10/12/1999		-0.80	R	Reference Point	D	NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
X	21/11/1973		-2.70	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality

Wire Line Logs

0 ***records for RN*** **12200050**

Field Measurements

19 ***records for RN*** **12200050**

Pipe	Date	Depth (m)	Conduct	pH	Temp	NO3 (mg/L)	DO2	Eh (mV)	Alkalinity	Samp	Method	Samp Source

Bore Report

From Year:

		(uS/cm)		(C)	(mg/L)	(mV)				
A	11/09/1974	450							GB	Groundwater - from Bore
A	10/05/1977	300							GB	Groundwater - from Bore
A	17/10/1977	260							GB	Groundwater - from Bore
A	06/10/1978	240							GB	Groundwater - from Bore
A	16/01/1979	260							GB	Groundwater - from Bore
A	26/04/1979	250							GB	Groundwater - from Bore
A	07/09/1979	370							GB	Groundwater - from Bore
A	17/04/1980	315							GB	Groundwater - from Bore
A	07/10/1980	260							GB	Groundwater - from Bore
A	09/06/1982	245							GB	Groundwater - from Bore
A	11/12/1984	320					PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore
A	30/07/1985	805					PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore
A	04/04/1986	280					PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore
A	22/09/1986	252					PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore
A	02/06/1987	267					BA	Bailer - Other	GB	Groundwater - from Bore
A	01/10/1987	265					PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore
A	29/03/1988	330					PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore
A	31/03/1989	150					PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore
A	16/08/2000	418	7.1	25.8			PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore

Bore Report

From Year:

Special Water Analysis

0 *records for RN* **12200050**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
12200225	Sub-Artesian Facility	Existing		Mackay	7340 - WHITSUNDAY REGIONAL

Details

Description			
Parish	4467 - TAWVALE		
Original Name			
Driller Name			
Drill Company			
Const Method			
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	DNR
Roles	WR Investigation Sub-Artesian Monitoring		

Location

Latitude	20-23-58	**Basin**	1220
Longitude	148-35-10	**Sub-area**	
GIS Latitude	-20.399576473	**Lot**	198
GIS Longitude	148.586214292	**Plan**	HR1896
Easting	665519		
Northing	7743501	**Map Scale**	
Zone	55	**Map Series**	
Accuracy	SKET	**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

2 *records for RN* **12200225**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	23/11/1989	1	0.00	14.70	Plastic Casing	1.800	WT - Wall Thickness	50
A	23/11/1989	2	9.70	14.70	Perforated or Slotted Casing			50

Strata Logs

11 *records for RN* **12200225**

Rec	Top (m)	Bottom	Strata Description

Bore Report

From Year:

		(m)	
1	0.00	0.50	TOPSOIL - RIVER SILT SLIGHTLY SANDY
2	0.50	1.20	CLAY - DK BROWN SILTY
3	1.20	3.80	CLAY-BROWN-VERY SILTY SANDY FINE
4	3.80	5.50	MANGROVE MUD
5	5.50	5.80	GREY CLAY SILTY FAIRLY STIFF
6	5.80	15.00	SAND WELL ROUNDED GRAVELLY GRAVEL
7			CONTENT INCREASING WITH DEPTH AS DOES
8			GRAVEL SIZE FROM PEA TO 20 MM GRAIN
9			SIZE - WELL WASHED VERY CLEAN
10			PREDOMINANTLY QTZ - ROCK FRAGMENTS,
11			BLUISH PERVASIVE COLOUR IN QTZ GRAINS

Stratigraphies

0 *records for RN* **12200225**

Aquifers

0 *records for RN* **12200225**

Pump Tests Part 1

0 *records for RN* **12200225**

Pump Tests Part 2

0 *records for RN* **12200225**

Bore Conditions

0 *records for RN* **12200225**

Elevations

2 *records for RN* **12200225**

Pipe	Date	Elevation (m)	Precision		Datum	Meas	Point	Survey Source
A	23/11/1989	11.52	SVY	Surveyed	AHD - Aust. Height Datum	R	Reference Point	
X	23/11/1989	11.21	SVY	Surveyed	AHD - Aust. Height Datum	N	Natural Surface	

Water Analysis Part 1

1 *records for RN* **12200225**

Bore Report

From Year:

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	20/12/1989	1	GCL	132414	14.00	AI	GB	330	7.8	61	247.92	235.22	103	120	1.6	1.3	0.34

Water Analysis Part 2

1 *records for RN* **12200225**

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	20/12/1989	1	30.0	0.7	21.5	12.0	0.01	145.0	0.01	0.6	34.5	0.40	1.2	2.0				

Water Levels

88 *records for RN* **12200225**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	20/12/1989		-2.90	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	03/05/1990		-1.40	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	17/05/1990		-1.50	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	13/06/1990		-0.95	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	06/07/1990		-1.50	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	23/08/1990		-2.10	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	27/09/1990		-2.73	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	01/11/1990		-3.23	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	12/12/1990		-4.10	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	21/01/1991		-1.10	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	06/03/1991		-0.90	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	28/05/1991		-1.75	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	10/07/1991		-2.15	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	06/08/1991		-2.70	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	12/09/1991		-3.15	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality
A	24/10/1991		-3.65	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	03/12/1991		-3.27	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/02/1992		-3.90	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	17/03/1992		-3.48	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	30/04/1992		-3.16	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/06/1992		-2.81	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	24/07/1992		-3.26	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/09/1992		-3.71	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	20/11/1992		-4.98	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	25/02/1993		-2.66	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	04/10/1993		-3.07	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	08/11/1993		-4.14	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	02/12/1993		-4.35	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	25/01/1994		-3.85	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	29/03/1994		-1.75	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	25/05/1994		-2.00	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	02/08/1994		-2.57	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	13/09/1994		-2.88	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	25/10/1994		-3.53	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	10/01/1995		-3.35	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/04/1996		-2.43	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	12/08/1996		-2.53	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	24/06/1997		-1.85	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	03/10/1997		-2.70	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	04/11/1997		-3.80	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	18/02/1998		-2.30	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	28/04/1999		-1.03	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	10/12/1999		-2.73	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	19/05/2000		-1.31	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	16/08/2000		-2.64	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	24/10/2000		-3.79	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	01/02/2001		-1.95	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	10/04/2001		-1.84	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	31/07/2001		-2.80	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	19/09/2001		-4.82	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	09/01/2002		-3.24	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	02/04/2002		-2.72	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	19/07/2002		-3.17	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	18/11/2002		-3.92	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	21/01/2003		-8.75	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	14/04/2003		-3.03	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	30/07/2003		-3.67	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	11/11/2003		-7.45	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	13/01/2004		-3.75	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	07/04/2004		-2.74	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	14/07/2004		-3.52	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	04/11/2004		-6.97	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	03/02/2005		-2.62	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	20/04/2005		-2.93	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	26/07/2005		-4.90	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	20/10/2005		-4.70	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	16/01/2006		-4.14	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	07/08/2006		-3.28	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	15/12/2006		-4.77	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	14/03/2007		-1.84	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	03/07/2007		-2.05	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	24/09/2007		-3.88	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	14/12/2007		-3.34	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	19/03/2008		-1.35	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	15/07/2008		-4.31	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	17/09/2008		-4.51	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	05/02/2009		-1.74	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	25/03/2009		-1.25	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	07/10/2009		-8.88	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	10/12/2009		-4.71	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	05/05/2010		-1.48	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	06/07/2010		-4.36	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	13/10/2010		-3.75	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	04/05/2011		-1.28	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	17/08/2011		-3.94	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	20/10/2011		-5.43	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1	Good - Actual Manual Measurements
A	13/02/2012		-2.40	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality
A	09/05/2012		-2.88	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Wire Line Logs

0 ***records for RN*** **12200225**

Field Measurements

2 ***records for RN*** **12200225**

Bore Report

From Year:

Pipe	Date	Depth (m)	Conduct (uS/cm)	pH	Temp (C)	NO3 (mg/L)	DO2 (mg/L)	Eh (mV)	Alkalinity (mV)	Samp	Method	Samp	Source
A	10/12/1999		352	6.4	26.0					PG	Pump - Grundfos	GB	Groundwater - from Bore
A	27/07/2005	15.00	335							PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore

Special Water Analysis

0 *records for RN* **12200225**

Bore Report

From Year:

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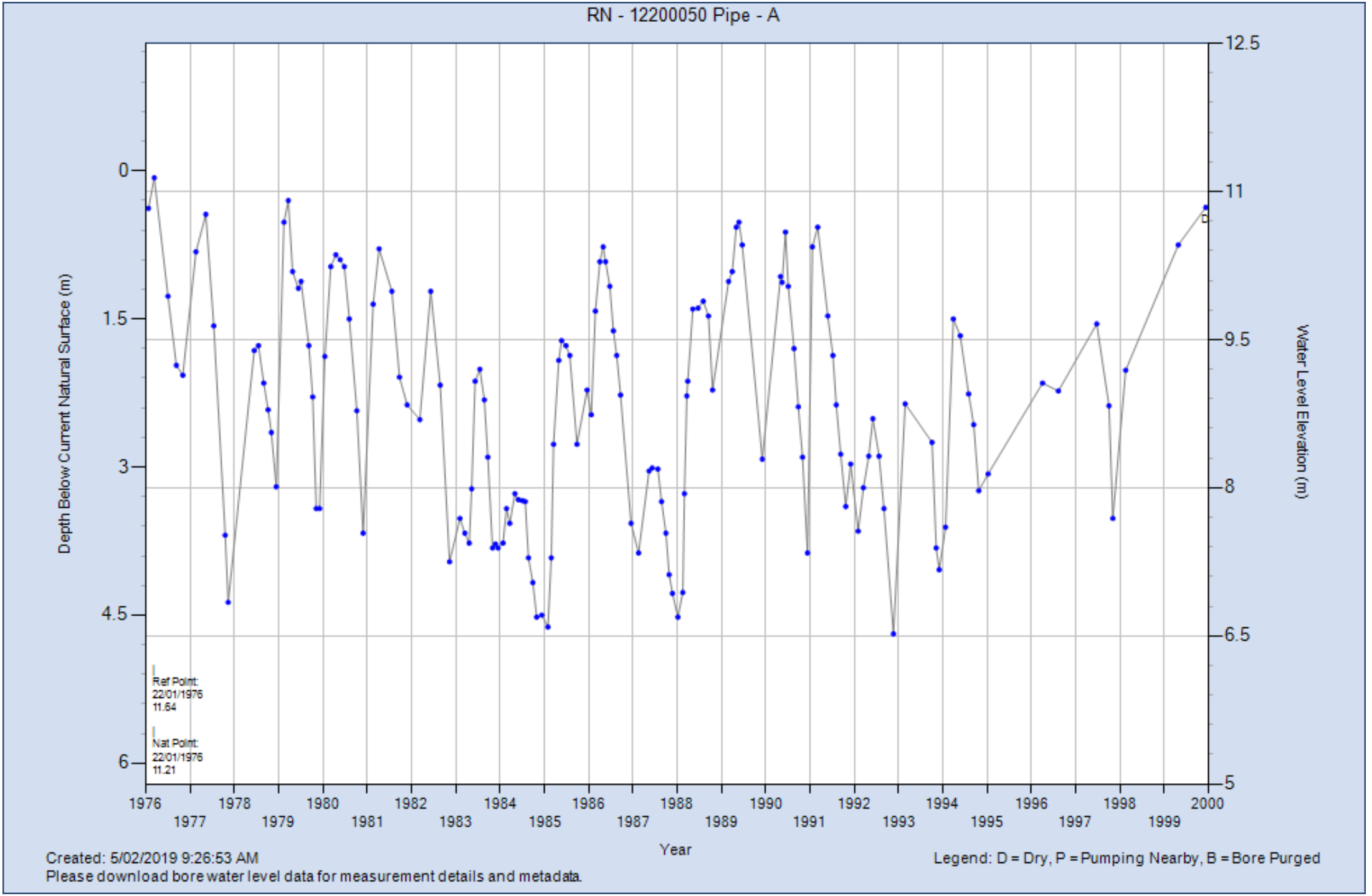
RN - 12200050 Pipe - A
Depth Below Current Natural Surface (m)
Water Level Elevation (m)
0
1.5
3
4.5
6
12.5
11
9.5
8
6.5
5
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
Year
Ref Point:
22/01/1976
11.64
Nat Point:
22/01/1976
11.21
Created: 5/02/2019 9:26:53 AM
Please download bore water level data for measurement details and metadata.
Legend: D = Dry, P = Pumping Nearby, B = Bore Purged

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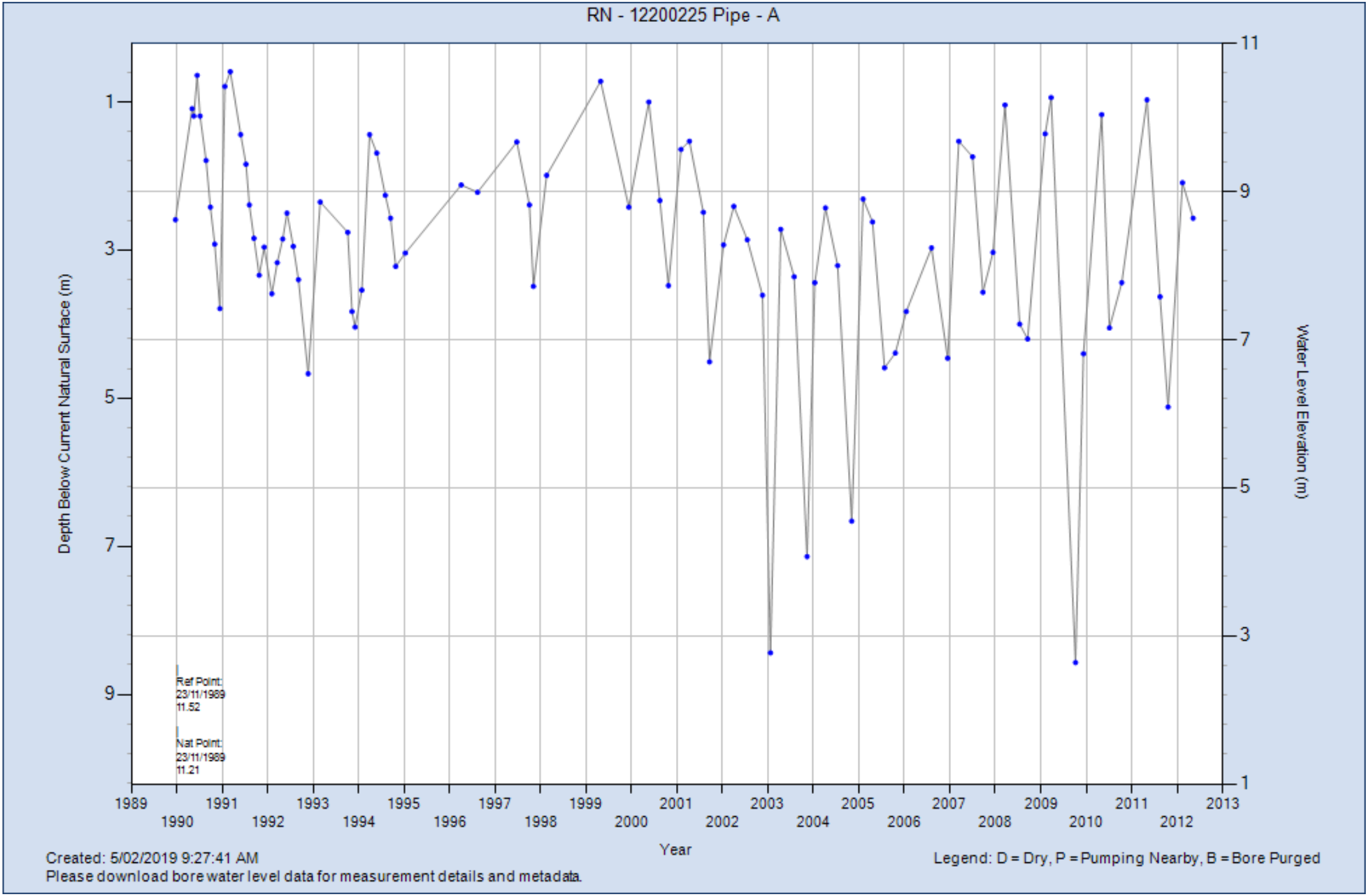
**** End of Report. Produced: 5/02/2019 9:26:53 AM ****



Created: 5/02/2019 9:27:41 AM

Please download bore water level data for measurement details and metadata.

Legend: D = Dry, P = Pumping Nearby, B = Bore Purged

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**** End of Report. Produced: 5/02/2019 9:27:41 AM ****

TOOWOOMBA

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
52879	Sub-Artesian Facility	Abandoned but Still Usable	08/12/1977	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	L1 RP154209		
Parish	1580 - DRAYTON		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY RIG		
Bore Line			
D/O File No	T 4716	**Polygon**	
R/O File No		**Equipment**	NE
H/O File No	L56838B	**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-19	**Basin**	4223
Longitude	151-54-51	**Sub-area**	
GIS Latitude	-27.571901871	**Lot**	1
GIS Longitude	151.914008106	**Plan**	RP154209
Easting	392800		
Northing	6949748	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242-48
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **52879**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	08/12/1977	1	0.00	71.80	Steel Casing	4.900	WT - Wall Thickness	125
A	08/12/1977	2	33.50	35.30	Perforated or Slotted Casing		AP - Aperture Size	125
A	08/12/1977	3	64.00	69.00	Perforated or Slotted Casing			125
A	08/12/1977	4	71.80	74.40	Open Hole			152

Strata Logs

14 ***records for RN*** **52879**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.20	SOIL FILE T4716 DRILLED M STARK
2	1.20	2.10	CLAY DATE 8/12/1977
3	2.10	18.30	DECOMPOSED BASALT CASED 125MMS
4	18.30	33.50	BASALT DEPTH 0-71.8MET
5	33.50	35.30	CRACKS IN BASALT WB
6	35.30	39.60	BASALT SLOTS @ BOTH WB
7	39.60	49.30	BASALT ASH BORE ABANDONED
8	49.30	64.00	BASALT BORE STILL USABLE
9	64.00	69.00	HONEYCOMB BASALT WB SWL 28.7MET
10	69.00	70.00	BROWN CLAY SUPPLY 3.41LPS
11	70.00	74.40	BURNT COAL
902			08/12/1977 SWL -28.70 M TMP NUL C
903			08/12/1977 DISCH 293.7 M3D AIR TST
910	64.00	69.00	QUALITY DESCRIP/CONDUCT: POTABLE

Stratigraphies

2 *records for RN* **52879**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			MAIN RANGE VOLCANICS
DNR	2			MAIN RANGE VOLCANICS

Aquifers

2 *records for RN* **52879**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	33.50	35.30	BSLT - Basic Volcanic							FR	MAIN RANGE VOLCANICS
2	64.00	69.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS

Bore Report

From Year:

Pump Tests Part 1

0 *records for RN* **52879**

Pump Tests Part 2

0 *records for RN* **52879**

Bore Conditions

0 *records for RN* **52879**

Elevations

0 *records for RN* **52879**

Water Analysis Part 1

0 *records for RN* **52879**

Water Analysis Part 2

0 *records for RN* **52879**

Water Levels

1 *records for RN* **52879**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
X	08/12/1977		-28.70	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **52879**

Field Measurements

0 *records for RN* **52879**

Special Water Analysis

0 *records for RN* **52879**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
52971	Sub-Artesian Facility	Existing	25/01/1978	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	L3 RP154209		
Parish	1580 - DRAYTON		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY RIG		
Bore Line			
D/O File No	T 3041	**Polygon**	
R/O File No		**Equipment**	SP
H/O File No	L43617B	**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-19	**Basin**	4223
Longitude	151-54-57	**Sub-area**	630
GIS Latitude	-27.572109165	**Lot**	3
GIS Longitude	151.915807278	**Plan**	RP154209
Easting	392978		
Northing	6949727	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242-48
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **52971**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	25/01/1978	1	0.00	51.50	Steel Casing	4.900	WT - Wall Thickness	150
A	25/01/1978	2	28.00	31.00	Perforated or Slotted Casing		AP - Aperture Size	150
A	25/01/1978	3	44.00	47.00	Perforated or Slotted Casing		AP - Aperture Size	150
A	25/01/1978	4	51.50	62.20	Open Hole			152

Strata Logs

14 ***records for RN*** **52971**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.30	SOIL FILE T5709 DRILLED M STARK
2	0.30	2.70	CLAY DATE 25/01/78
3	2.70	9.70	DECOMPOSED BASALT
4	9.70	14.00	RED BASALT CASED 150MMS 0-51.5MET
5	14.00	28.00	BASALT SLOTS 28-31M & 44-47MET
6	28.00	31.00	CRACKS IN BASALT WB SWL 12.5MET
7	31.00	33.00	COAL ASH WB SUPPLY 6.315 LPS
8	33.00	44.20	BASALT
9	44.20	47.00	HONEYCOMB BASALT WB
10	47.00	50.00	BASALT ASH
11	50.00	62.20	BASALT
902			25/01/1978 SWL -12.50 M TMP NUL C
903			25/01/1978 DISCH 544.3 M3D AIR TST
910	44.20	47.00	QUALITY DESCRIP/CONDUCT: POTABLE

Stratigraphies

3 ***records for RN*** **52971**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			MAIN RANGE VOLCANICS
DNR	2			MAIN RANGE VOLCANICS
DNR	3			MAIN RANGE VOLCANICS

Aquifers

3 ***records for RN*** **52971**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	28.00	31.00	BSLT - Basic Volcanic							FR	MAIN RANGE VOLCANICS

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
2	31.00	33.00	BSLT - Basic Volcanic							WZ	MAIN RANGE VOLCANICS
3	44.20	47.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 *records for RN* **52971**

Pump Tests Part 2

0 *records for RN* **52971**

Bore Conditions

0 *records for RN* **52971**

Elevations

0 *records for RN* **52971**

Water Analysis Part 1

1 *records for RN* **52971**

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	20/02/1978	1	DPI	076216	47.00	PU	GB	1000			725.00	0.00	377	270	2.2	1.7	0.00

Water Analysis Part 2

1 *records for RN* **52971**

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	20/02/1978	1	78.0		70.0	49.0		329.0			199.0			0.0				

Water Levels

1 *records for RN* **52971**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality	
X	25/01/1978		-12.50	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded		130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **52971**

Field Measurements

0 *records for RN* **52971**

From Year:

Special Water Analysis

0 ***records for RN*** **52971**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
61281	Sub-Artesian Facility	Abandoned and Destroyed		Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	L3 RP154209		
Parish	1580 - DRAYTON		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY RIG		
Bore Line			
D/O File No	T 3041	**Polygon**	
R/O File No		**Equipment**	
H/O File No	L43617B	**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-19	**Basin**	4223
Longitude	151-54-56	**Sub-area**	
GIS Latitude	-27.572008338	**Lot**	3
GIS Longitude	151.915509382	**Plan**	RP154209
Easting	392948		
Northing	6949738	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242 48
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

0 ***records for RN*** **61281**

Strata Logs

22 ***records for RN*** **61281**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	SOIL FILE T5709 DRILLED M STARK
2	1.00	5.00	CLAY DATE 27/11/80
3	5.00	21.00	DECOMPOSED BASALT
4	21.00	29.00	BASALT

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
5	29.00	30.00	COAL
6	30.00	32.00	HONEYCOMB BASALT
7	32.00	35.00	BASALT
8	35.00	41.00	HONEYCOMB BASALT
9	41.00	44.00	BASALT
10	44.00	46.00	HONEYCOMB BASALT WATER
11	46.00	50.00	BASALT ASH
12	50.00	57.00	HONEYCOMB BASALT
13	57.00	88.00	BASALT
14	88.00	89.00	CLAY SOAPSTONE(WATER) SOAK
15	89.00	99.00	BASALT
16	99.00	100.00	COAL (WATER)
17	100.00	110.00	BASALT SWL 36.5 MET
18			AIR TEST 2.21 LPS POTABLE
19			HOLE ABANDONED NO CASING
902			27/11/1980 SWL -36.50 M TMP NUL C
903			27/11/1980 DISCH 190.0 M3D AIR TST
910	99.00	100.00	QUALITY DESCRIP/CONDUCT: POTABLE

Stratigraphies

3 ***records for RN*** **61281**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			MAIN RANGE VOLCANICS
DNR	2			MAIN RANGE VOLCANICS
DNR	3			MAIN RANGE VOLCANICS

From Year:

Aquifers

3 *records for RN* 61281

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	44.00	46.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
2	88.00	89.00	BSLT - Basic Volcanic CLAY - Clay							VS	MAIN RANGE VOLCANICS
3	99.00	100.00	COAL - Coal							FR	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 *records for RN* 61281

Pump Tests Part 2

0 *records for RN* 61281

Bore Conditions

0 *records for RN* 61281

Elevations

0 *records for RN* 61281

Water Analysis Part 1

0 *records for RN* 61281

Water Analysis Part 2

0 *records for RN* 61281

Water Levels

1 *records for RN* 61281

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	27/11/1980		-36.50	N	Natural Surface		ACT	Actual	NR	NR	Not Recorded	130	Data is of unknown quality

Wire Line Logs

0 *records for RN* 61281

Field Measurements

0 *records for RN* 61281

Special Water Analysis

0 *records for RN* 61281

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
64170	Sub-Artesian Facility	Existing	01/09/1981	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	R4 S2 P87		
Parish	1580 - DRAYTON		
Original Name	CONCORDIA COLLEGE		
Driller Name			
Drill Company			
Const Method			
Bore Line			
D/O File No	T 6212	**Polygon**	
R/O File No		**Equipment**	SP
H/O File No	L54654B	**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-25	**Basin**	4223
Longitude	151-55-50	**Sub-area**	650
GIS Latitude	-27.573553432	**Lot**	4
GIS Longitude	151.93059095	**Plan**	RP17104
Easting	394438		
Northing	6949579	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242-58
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

1 ***records for RN*** **64170**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/09/1981	1			Steel Casing			127

Strata Logs

6 ***records for RN*** **64170**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	71.62	FILE T6212 DRILLED PRIOR 1981 GIERKE

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
2			DEPTH 71.6MET CASED 127MMS
3			SWL 1/9/1981 17.7MET SUPPLY 3LPS
4			DD 36MET? NO FURTHER DETAILS KNOWN
902			01/09/1981 SWL -17.70 M TMP NUL C
903			01/09/1981 DISCH 261.7 M3D DRILLER

Stratigraphies

0 *records for RN* **64170**

Aquifers

0 *records for RN* **64170**

Pump Tests Part 1

0 *records for RN* **64170**

Pump Tests Part 2

0 *records for RN* **64170**

Bore Conditions

0 *records for RN* **64170**

Elevations

0 *records for RN* **64170**

Water Analysis Part 1

1 *records for RN* **64170**

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	15/06/1983	1	GCL	097791	57.00	PU	GB	670	7.2	77	421.10	414.24	247	136	2.9	1.1	0.00

Water Analysis Part 2

1 *records for RN* **64170**

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	15/06/1983	1	39.5	3.3	43.0	34.0		165.0		0.2	125.0	0.00	8.2	2.9				

Water Levels

1 *records for RN* **64170**

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	01/09/1981		-17.70	N	Natural Surface		ACT	Actual	NR	NR	Not Recorded		130	Data is of unknown quality

Wire Line Logs

0 ***records for RN*** **64170**

Field Measurements

0 ***records for RN*** **64170**

Special Water Analysis

0 ***records for RN*** **64170**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
64375	Sub-Artesian Facility	Existing	13/12/1982	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	LOT11 RP17359		
Parish	1580 - DRAYTON		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY RIG		
Bore Line			
D/O File No	T 5709	**Polygon**	
R/O File No		**Equipment**	HS
H/O File No	L43617B	**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-24	**Basin**	4223
Longitude	151-54-51	**Sub-area**	630
GIS Latitude	-27.573287087	**Lot**	11
GIS Longitude	151.914154217	**Plan**	RP17359
Easting	392816		
Northing	6949595	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242-48
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

6 ***records for RN*** **64375**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	13/12/1982	1	0.00	100.00	Steel Casing	4.900	WT - Wall Thickness	150
A	13/12/1982	2	55.00	58.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	150
A	13/12/1982	3	70.00	78.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	150
A	13/12/1982	4	83.00	85.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	150
A	13/12/1982	5	86.00	88.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	150

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	13/12/1982	6	94.00	97.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	150

Strata Logs

27 ***records for RN*** **64375**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	SOIL FILE T5709
2	1.00	24.00	DECOMPOSED BASALT
3	24.00	34.00	BASALT
4	34.00	38.00	HONEYCOMB BASALT
5	38.00	49.00	BASALT
6	49.00	51.00	PURPLE CLAY
7	51.00	55.00	BASALT
8	55.00	58.00	HONEYCOMB BASALT (WB)
9	58.00	70.00	BASALT
10	70.00	78.00	CRACKS IN BASALT (WB)
11	78.00	83.00	BASALT
12	83.00	85.00	COAL WB
13	85.00	86.00	WHITE CLAY
14	86.00	88.00	HONEYCOMB BASALT (WB)
15	88.00	94.00	BASALT
16	94.00	97.00	HONEYCOMB BASALT
17	97.00	98.00	WHITE CLAY
18	98.00	100.00	SHALE DRILLER L GRUNDY 13/12/1982
19			SWL 30.1 MET SUPPLY 10.1 LS
20			CASED 150MMS TO 100MET SLOTS AT WBEDS
902			13/12/1982 SWL -30.10 M TMP NUL C

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
903			13/12/1982 DISCH 872.6 M3D AIR TST
910	55.00	58.00	QUALITY DESCRIP/CONDUCT: POTABLE
911	70.00	78.00	QUALITY DESCRIP/CONDUCT: POTABLE
912	83.00	85.00	QUALITY DESCRIP/CONDUCT: POTABLE
913	86.00	88.00	QUALITY DESCRIP/CONDUCT: POTABLE
914	94.00	97.00	QUALITY DESCRIP/CONDUCT: POTABLE

Stratigraphies

5 *records for RN* **64375**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	97.00	MAIN RANGE VOLCANICS
DNR	2	0.00	97.00	MAIN RANGE VOLCANICS
DNR	3	0.00	97.00	MAIN RANGE VOLCANICS
DNR	4	0.00	97.00	MAIN RANGE VOLCANICS
DNR	5	0.00	97.00	MAIN RANGE VOLCANICS

Aquifers

5 *records for RN* **64375**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	55.00	58.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
2	70.00	78.00	BSLT - Basic Volcanic							FR	MAIN RANGE VOLCANICS
3	83.00	85.00	COAL - Coal							FR	MAIN RANGE VOLCANICS
4	86.00	88.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
5	94.00	97.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 *records for RN* **64375**

Bore Report

From Year:

Pump Tests Part 2

0 *records for RN* **64375**

Bore Conditions

0 *records for RN* **64375**

Elevations

0 *records for RN* **64375**

Water Analysis Part 1

1 *records for RN* **64375**

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	13/12/1982	1	GCL	096035	97.00	AI	GB	650	7.6	18	390.60	347.61	98	99	0.5	4.0	0.02

Water Analysis Part 2

1 *records for RN* **64375**

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	13/12/1982	1	91.0	1.4	23.0	9.8		120.0		0.3	140.0	0.10	2.0	3.0				

Water Levels

1 *records for RN* **64375**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality	
A	13/12/1982		-30.10	N	Natural Surface		ACT	Actual	NR	NR	Not Recorded		130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **64375**

Field Measurements

0 *records for RN* **64375**

Special Water Analysis

0 *records for RN* **64375**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
66765	Sub-Artesian Facility	Existing	06/12/1984	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	S19 P88 & OF S178 P89		
Parish	1580 - DRAYTON		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY RIG DRILLER L.GRUNDY		
Bore Line			
D/O File No	T 6212	**Polygon**	
R/O File No		**Equipment**	SP
H/O File No	L54654B	**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-30	**Basin**	4223
Longitude	151-55-47	**Sub-area**	650
GIS Latitude	-27.574966437	**Lot**	18
GIS Longitude	151.92966318	**Plan**	RP882907
Easting	394348		
Northing	6949422	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242-58
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

4 ***records for RN*** **66765**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	06/12/1984	1	0.00	97.00	Steel Casing	4.900	WT - Wall Thickness	137
A	06/12/1984	2	40.00	46.00	Perforated or Slotted Casing		AP - Aperture Size	137
A	06/12/1984	3	68.00	71.00	Perforated or Slotted Casing		AP - Aperture Size	137
A	06/12/1984	4	90.00	94.00	Perforated or Slotted Casing		AP - Aperture Size	137

Strata Logs

15 ***records for RN*** **66765**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	2.00	SOIL FILE T6212 DATE 06/12/1984
2	2.00	15.00	CLAY
3	15.00	46.00	DECOMPOSED BASALT WB
4	46.00	64.00	BASALT 127MM TUBING TO 97 MET
5	64.00	67.00	HONEYCOMB BASALT
6	67.00	68.00	BASALT
7	68.00	71.00	HONEYCOMB BASALT WB
8	71.00	90.00	BASALT SLOTS 40-46 M & 68-71 M
9	90.00	94.00	CRACKS IN BASALT WB 1.64 L/SEC
10	94.00	97.00	BASALT SLOTS 90-94MET
902			6/12/1984 SWL 22.7 MET
903			06/12/1984 DISCH 81.7 M3D AIR TST
910	40.00	46.00	QUALITY DESCRIP/CONDUCT: POTABLE
911	68.00	71.00	QUALITY DESCRIP/CONDUCT: POTABLE
912	90.00	94.00	QUALITY DESCRIP/CONDUCT: POTABLE

Stratigraphies

3 ***records for RN*** **66765**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			MAIN RANGE VOLCANICS
DNR	2			MAIN RANGE VOLCANICS
DNR	3			MAIN RANGE VOLCANICS

Aquifers

3 ***records for RN*** **66765**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	40.00	46.00	BSLT - Basic Volcanic							WZ	MAIN RANGE VOLCANICS
2	68.00	71.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
3	90.00	94.00	BSLT - Basic Volcanic							FR	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 *records for RN* **66765**

Pump Tests Part 2

0 *records for RN* **66765**

Bore Conditions

0 *records for RN* **66765**

Elevations

0 *records for RN* **66765**

Water Analysis Part 1

0 *records for RN* **66765**

Water Analysis Part 2

0 *records for RN* **66765**

Water Levels

1 *records for RN* **66765**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	06/12/1984		-22.70	N	Natural Surface		ACT	Actual	NR	NR	Not Recorded		130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **66765**

Field Measurements

0 *records for RN* **66765**

Special Water Analysis

0 *records for RN* **66765**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
83682	Sub-Artesian Facility	Existing	14/11/1989	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	L1 RP110956		
Parish	1580 - DRAYTON		
Original Name			
Driller Name			
Drill Company			
Const Method			
Bore Line			
D/O File No	T 220	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-13	**Basin**	4223
Longitude	151-55-26	**Sub-area**	630
GIS Latitude	-27.570426968	**Lot**	1
GIS Longitude	151.923791131	**Plan**	RP110956
Easting	393764		
Northing	6949920	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242-58
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

2 ***records for RN*** **83682**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	14/11/1989	1	0.00	49.00	Steel Casing	4.900	WT - Wall Thickness	168
A	14/11/1989	2	34.00	46.00	Perforated or Slotted Casing	13.000	AP - Aperture Size	168

Strata Logs

5 ***records for RN*** **83682**

Rec	Top (m)	Bottom (m)	Strata Description

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	SOIL DRILLER L GRUNDY DATE 14-11-1989
2	1.00	29.00	CLAY 168 MM.TUBING 0.49 M.
3	29.00	46.00	DECOMPOSED BASALT *WATER BED.
4	46.00	49.00	BASALT SWL.19.3 M.SUPPLY 5.052 LPS.
5	49.00		SLOTS 34-46 M.

Stratigraphies

1 *records for RN* **83682**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			MAIN RANGE VOLCANICS

Aquifers

1 *records for RN* **83682**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	29.00	46.00	BSLT - Basic Volcanic							WZ	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 *records for RN* **83682**

Pump Tests Part 2

0 *records for RN* **83682**

Bore Conditions

0 *records for RN* **83682**

Elevations

0 *records for RN* **83682**

Water Analysis Part 1

0 *records for RN* **83682**

Water Analysis Part 2

0 *records for RN* **83682**

Water Levels

0 *records for RN* **83682**

Bore Report

From Year:

Wire Line Logs

0 *records for RN* **83682**

Field Measurements

0 *records for RN* **83682**

Special Water Analysis

0 *records for RN* **83682**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
87084	Sub-Artesian Facility	Existing	16/10/1991	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	R4 OF S2 P87		
Parish	1580 - DRAYTON		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY DRILLER L.GRUNDY		
Bore Line			
D/O File No	T 6212	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-18	**Basin**	4223
Longitude	151-55-50	**Sub-area**	650
GIS Latitude	-27.571730015	**Lot**	4
GIS Longitude	151.930632132	**Plan**	RP17104
Easting	394441		
Northing	6949781	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242-58
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

7 ***records for RN*** **87084**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	16/10/1991	1	0.00	131.00	Steel Casing	4.800	WT - Wall Thickness	168
A	16/10/1991	2	25.00	43.00	Perforated or Slotted Casing		AP - Aperture Size	168
A	16/10/1991	3	53.00	60.00	Perforated or Slotted Casing		AP - Aperture Size	168
A	16/10/1991	4	74.00	77.00	Perforated or Slotted Casing		AP - Aperture Size	168
A	16/10/1991	5	83.00	86.00	Perforated or Slotted Casing		AP - Aperture Size	168

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	16/10/1991	6	113.00	116.00	Perforated or Slotted Casing		AP - Aperture Size	168
A	16/10/1991	7	123.00	127.00	Perforated or Slotted Casing		AP - Aperture Size	168

Strata Logs

27 *records for RN* **87084**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	SOIL
2	1.00	22.00	RED CLAY
3	22.00	25.00	DECOMPOSED BASALT
4	25.00	43.00	RED BASALT *
5	43.00	53.00	BASALT
6	53.00	60.00	HONEYCOMB BASALT *
7	60.00	74.00	BASALT
8	74.00	77.00	HONEYCOMB BASALT *
9	77.00	78.00	BASALT
10	78.00	80.00	HONEYCOMB BASALT
11	80.00	83.00	BASALT
12	83.00	86.00	HONEYCOMB BASALT *
13	86.00	88.00	BASALT
14	88.00	92.00	HONEYCOMB BASALT
15	92.00	98.00	BASALT
16	98.00	102.00	HONEYCOMB BASALT
17	102.00	105.00	BASALT
18	105.00	107.00	GREY CLAY
19	107.00	111.00	HONEYCOMB BASALT
20	111.00	113.00	BASALT

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
21	113.00	116.00	HONEYCOMB BASALT *
22	116.00	123.00	BASALT
23	123.00	127.00	HONEYCOMB BASALT *
24	127.00	131.00	WEATHERED SANDSTONE
902			SWL 29.1 MET (16/10/1991)
903			(16/10/1991) 3.410 L/SEC AIRLIFT
910			ALL WATER BEDS - POTABLE

Stratigraphies

6 ***records for RN*** **87084**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	127.00	MAIN RANGE VOLCANICS
DNR	2	0.00	127.00	MAIN RANGE VOLCANICS
DNR	3	0.00	127.00	MAIN RANGE VOLCANICS
DNR	4	0.00	127.00	MAIN RANGE VOLCANICS
DNR	5	0.00	127.00	MAIN RANGE VOLCANICS
DNR	6	0.00	127.00	MAIN RANGE VOLCANICS

Aquifers

6 ***records for RN*** **87084**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	25.00	43.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
2	53.00	60.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
3	74.00	77.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
4	83.00	86.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
5	113.00	116.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
6	123.00	127.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS

Pump Tests Part 1

1 *records for RN* **87084**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	22/11/1991	1	87084	25.00	127.00		PUM	CQ						

Pump Tests Part 2

1 *records for RN* **87084**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED (m)	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor
A	22/11/1991	1	1440	24.90			82.60	2.60	1440			0.02	95.00			

Bore Conditions

0 *records for RN* **87084**

Elevations

0 *records for RN* **87084**

Water Analysis Part 1

0 *records for RN* **87084**

Water Analysis Part 2

0 *records for RN* **87084**

Water Levels

1 *records for RN* **87084**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas Type	Coll Auth	Coll	Method	Project	Quality
A	16/10/1991		-29.10	N	Natural Surface		ACT Actual	NR	NR	Not Recorded	130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **87084**

Bore Report

From Year:

Field Measurements

0 ***records for RN*** **87084**

Special Water Analysis

0 ***records for RN*** **87084**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
87103	Sub-Artesian Facility	Existing	19/12/1991	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	L1 RP 150239		
Parish	6000 - NO LONGER USED		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY DRILLER L. GRUNDY		
Bore Line			
D/O File No	T 3174	**Polygon**	
R/O File No		**Equipment**	SP
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-07	**Basin**	4223
Longitude	151-55-24	**Sub-area**	630
GIS Latitude	-27.5685125	**Lot**	1
GIS Longitude	151.92331163	**Plan**	RP150239
Easting	393715		
Northing	6950132	**Map Scale**	104 - 1: 100 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242-58
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

2 ***records for RN*** **87103**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	19/12/1991	1	0.00	37.00	Steel Casing	5.000	WT - Wall Thickness	137
A	19/12/1991	2	24.00	35.00	Perforated or Slotted Casing		AP - Aperture Size	137

Strata Logs

7 ***records for RN*** **87103**

Rec	Top (m)	Bottom (m)	Strata Description

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	3.00	SOIL
2	3.00	16.00	CLAY
3	16.00	36.00	DECOMPOSED BASALT *{.505 L/SEC @ 31M
4	36.00	37.00	BASALT {.757 L/SEC @ 37 MET
902			SWL 18.3 MET (19/12/1991)
903			(19/12/1991) .757 L/SEC AIRLIFT
910			WATER - POTABLE

Stratigraphies

1 *records for RN* **87103**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	16.00		MAIN RANGE VOLCANICS

Aquifers

1 *records for RN* **87103**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	16.00	36.00	BSLT - Basic Volcanic							WZ	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 *records for RN* **87103**

Pump Tests Part 2

0 *records for RN* **87103**

Bore Conditions

0 *records for RN* **87103**

Elevations

0 *records for RN* **87103**

Water Analysis Part 1

1 *records for RN* **87103**

Pipe	Date	Rec	Analyst	Analysis	Depth	Meth	Src	Cond	pH	Si	Total	Total	Hard	Alk	Fig. of	SAR	RAH

Bore Report

From Year:

				No	(m)			(uS/cm)		(mg/L)	Ions (mg/L)	Solids (mg/L)	Merit			
A	25/11/1992	1	GCL	148030	37.00	PU	GB	590	7.5	80	372.64	363.69	205	144	2.7	1.1

Water Analysis Part 2

1 ***records for RN*** **87103**

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	25/11/1992	1	35.0	2.3	32.5	30.0	0.02	175.0	0.02	0.4	90.0	0.10	5.3	2.0				

Water Levels

1 ***records for RN*** **87103**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality	
A	19/12/1991		-18.30	N	Natural Surface		ACT	Actual	NR	NR	Not Recorded		130	Data is of unknown quality

Wire Line Logs

0 ***records for RN*** **87103**

Field Measurements

0 ***records for RN*** **87103**

Special Water Analysis

0 ***records for RN*** **87103**

Bore Report

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
87119	Sub-Artesian Facility	Existing	03/02/1992	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	L2 RP220753		
Parish	1580 - DRAYTON		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY DRILLER D.OTTO (GRUND		
Bore Line			
D/O File No	T 3423	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-20	**Basin**	4223
Longitude	151-55-27	**Sub-area**	630
GIS Latitude	-27.572270821	**Lot**	23
GIS Longitude	151.924130444	**Plan**	RP98651
Easting	393799		
Northing	6949716	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242-58
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

2 ***records for RN*** **87119**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	16/05/1991	1	0.00	76.00	Steel Casing	4.800	WT - Wall Thickness	168
A	16/05/1991	2	54.00	73.00	Perforated or Slotted Casing			

Strata Logs

13 ***records for RN*** **87119**

Rec	Top (m)	Bottom (m)	Strata Description

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	SOIL
2	1.00	42.00	RED CLAY
3	42.00	51.00	DECOMPOSED BASALT
4	51.00	54.00	BASALT
5	54.00	73.00	HONEYCOMB BASALT *
6	73.00	76.00	BASALT
7			.378 L/SEC @ 55 MET
8			2.147 L/SEC @ 61 MET
9			5.052 L/SEC @ 67 MET
10			6.315 L/SEC @ 76 MET
902			SWL 21.5 MET (3/2/1992)
903			(3/2/1992) 6.315 L/SEC AIRLIFT
910			WATER - POTABLE

Stratigraphies

1 ***records for RN*** **87119**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			MAIN RANGE VOLCANICS

Aquifers

1 ***records for RN*** **87119**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	54.00	73.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 ***records for RN*** **87119**

Pump Tests Part 2

0 ***records for RN*** **87119**

Bore Report

From Year:

Bore Conditions

0 *records for RN* **87119**

Elevations

0 *records for RN* **87119**

Water Analysis Part 1

0 *records for RN* **87119**

Water Analysis Part 2

0 *records for RN* **87119**

Water Levels

1 *records for RN* **87119**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	03/02/1992		-21.50	N	Natural Surface		ACT	Actual	NR	NR	Not Recorded	130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **87119**

Field Measurements

0 *records for RN* **87119**

Special Water Analysis

0 *records for RN* **87119**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
94141	Sub-Artesian Facility	Existing	01/02/1995	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description	R4 S2 P87		
Parish	1580 - DRAYTON		
Original Name			
Driller Name			
Drill Company			
Const Method	ROTARY RIG		
Bore Line			
D/O File No	T 6212	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles			

Location

Latitude	27-34-23	**Basin**	4223
Longitude	151-55-48	**Sub-area**	650
GIS Latitude	-27.573064848	**Lot**	4
GIS Longitude	151.930065454	**Plan**	RP17104
Easting	394386		
Northing	6949633	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy		**Map No**	9242-58
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

15 ***records for RN*** **94141**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/02/1995	1	0.00	30.00	Steel Casing	4.900	WT - Wall Thickness	165
A	01/02/1995	2	30.00	38.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	165
A	01/02/1995	3	38.00	42.00	Steel Casing	4.900	WT - Wall Thickness	165
A	01/02/1995	4	42.00	47.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	165
A	01/02/1995	5	47.00	74.00	Steel Casing	4.900	WT - Wall Thickness	165

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/02/1995	6	74.00	75.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	165
A	01/02/1995	7	75.00	76.00	Steel Casing	4.900	WT - Wall Thickness	165
A	01/02/1995	8	76.00	79.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	165
A	01/02/1995	9	79.00	95.00	Steel Casing	4.900	WT - Wall Thickness	165
A	01/02/1995	10	95.00	98.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	165
A	01/02/1995	11	98.00	107.00	Steel Casing	4.900	WT - Wall Thickness	165
A	01/02/1995	12	107.00	109.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	165
A	01/02/1995	13	109.00	119.00	Steel Casing	4.900	WT - Wall Thickness	165
A	01/02/1995	14	119.00	123.00	Perforated or Slotted Casing	4.900	AP - Aperture Size	165
A	01/02/1995	15	123.00	127.00	Steel Casing	4.900	WT - Wall Thickness	165

Strata Logs

21 ***records for RN*** **94141**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	SOIL (1/2/1995 DRILLER L.GRUNDY)
2	1.00	21.00	CLAY (FILE NO.T.6212)
3	21.00	30.00	DECOMPOSED BASALT
4	30.00	38.00	RED HONEYCOMB BASALT (W)
5	38.00	42.00	BASALT
6	42.00	47.00	RED HONEYCOMB BASALT (W)
7	47.00	60.00	BASALT
8	60.00	64.00	RED BASALT
9	64.00	74.00	BASALT
10	74.00	75.00	RED HONEYCOMB BASALT (W)
11	75.00	76.00	BROWN CLAY
12	76.00	79.00	HONEYCOMB BASALT (W)

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
13	79.00	95.00	BASALT
14	95.00	98.00	FRACTURED BASALT (W)
15	98.00	107.00	BASALT
16	107.00	109.00	HONEYCOMB BASALT (W)
17	109.00	119.00	BASALT ASH
18	119.00	123.00	HONEYCOMB BASALT (W)
19	123.00	127.00	BASALT
902			1/2/1995 SWL.25.6 METRES (POTABLE)
903			1/2/1995 YIELD 11.367 L/S AIR LIFT

Stratigraphies

7 ***records for RN*** **94141**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			MAIN RANGE VOLCANICS
DNR	2			MAIN RANGE VOLCANICS
DNR	3			MAIN RANGE VOLCANICS
DNR	4			MAIN RANGE VOLCANICS
DNR	5			MAIN RANGE VOLCANICS
DNR	6			MAIN RANGE VOLCANICS
DNR	7			MAIN RANGE VOLCANICS

Aquifers

7 ***records for RN*** **94141**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	30.00	38.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
2	42.00	47.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
3	74.00	75.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
4	76.00	79.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
5	95.00	98.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
6	107.00	109.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS
7	119.00	123.00	BSLT - Basic Volcanic							VS	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 *records for RN* **94141**

Pump Tests Part 2

0 *records for RN* **94141**

Bore Conditions

0 *records for RN* **94141**

Elevations

0 *records for RN* **94141**

Water Analysis Part 1

0 *records for RN* **94141**

Water Analysis Part 2

0 *records for RN* **94141**

Water Levels

1 *records for RN* **94141**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	01/02/1995		-25.60	N	Natural Surface		ACT	Actual	NR	NR	Not Recorded	130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **94141**

Field Measurements

0 *records for RN* **94141**

Special Water Analysis

0 *records for RN* **94141**

Bore Report

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
119637	Sub-Artesian Facility	Existing	25/05/2006	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name			
Driller Name	FAUNTLEROY, KEN NOEL		
Drill Company	AYR BORING CO		
Const Method	ROTARY AIR		
Bore Line			
D/O File No	T 787/8	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	30/05/2006	**Data Owner**	
Roles	Water Supply		

Location

Latitude	27-34-47	**Basin**	4223
Longitude	151-55-12	**Sub-area**	
GIS Latitude	-27.57966277	**Lot**	271
GIS Longitude	151.92008256	**Plan**	AG4233
Easting	393407		
Northing	6948894	**Map Scale**	
Zone	56	**Map Series**	
Accuracy		**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

9 ***records for RN*** **119637**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	25/05/2006	1	0.00	24.00	Steel Casing	6.400	WT - Wall Thickness	320
A	25/05/2006	2	0.00	142.00	Steel Casing	6.400	WT - Wall Thickness	200
A	25/05/2006	3	52.00	58.00	Perforated or Slotted Casing	10.000	AP - Aperture Size	200
A	25/05/2006	4	88.00	94.00	Perforated or Slotted Casing	10.000	AP - Aperture Size	200
A	25/05/2006	5	130.00	136.00	Perforated or Slotted Casing	10.000	AP - Aperture Size	200

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	25/05/2006	6	36.00	142.00	Gravel Pack	20.000	GR - Gravel Size	420
A	25/05/2006	7	35.00	36.00	Bentonite Seal			420
A	25/05/2006	8	0.00	24.00	Grout			420
A	25/05/2006	9	30.00	35.00	Grout			300

Strata Logs

18 ***records for RN*** **119637**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	3.00	RED SOIL
2	3.00	9.00	BROWN SOIL
3	9.00	20.00	WEATHERED BASALT
4	20.00	30.00	MEDIUM SOFT BASALT
5	30.00	39.00	MEDIUM HARD BASALT
6	39.00	45.00	SOFT FRACTURED BASALT
7	45.00	48.00	BURNT COAL *
8	48.00	51.00	BURNT COAL *
9	51.00	63.00	HARD BASALT
10	63.00	75.00	SOFT FRACTURED BASALT *
11	75.00	78.00	HARD BASALT
12	78.00	87.00	SOFT FRACTURED BASALT *
13	87.00	93.00	PURPLE CLAY
14	93.00	111.00	MEDIUM HARD BASALT
15	111.00	117.00	FRACTURED BASALT *
16	117.00	129.00	MEDIUM SOFT BASALT *
17	129.00	138.00	SOFT SHALE *
18	138.00	142.00	HARD BASALT

Bore Report

From Year:

Stratigraphies

0 *records for RN* **119637**

Aquifers

3 *records for RN* **119637**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	45.00		BSLT - Basic Volcanic COAL - Coal	25/05/2006	-23.00	N	360 PPM	3.00	Y	FR	MAIN RANGE VOLCANICS
2	90.00		BSLT - Basic Volcanic	25/05/2006	-23.00	N	360 PPM	2.00	Y	FR	MAIN RANGE VOLCANICS
3	130.00		BSLT - Basic Volcanic SHLE - Shale	25/05/2006	-23.00	N	360 PPM	3.00	Y	FR	MAIN RANGE VOLCANICS

Pump Tests Part 1

1 *records for RN* **119637**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	11/07/2006	1	119637	45.00	136.00	0.80	PUM	CQ RT		130.00	0.00	0	0.00	0.00

Pump Tests Part 2

1 *records for RN* **119637**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED (m)	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor
A	11/07/2006	1	5910	-24.23	600	-9.79	37.93	6.00	4900	6.00				130.00		

Bore Conditions

0 *records for RN* **119637**

Elevations

0 *records for RN* **119637**

Water Analysis Part 1

0 *records for RN* **119637**

Water Analysis Part 2

0 *records for RN* **119637**

Bore Report

From Year:

Water Levels

0 ***records for RN*** **119637**

Wire Line Logs

0 ***records for RN*** **119637**

Field Measurements

0 ***records for RN*** **119637**

Special Water Analysis

0 ***records for RN*** **119637**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
119640	Sub-Artesian Facility	Existing	15/12/2006	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description			
Parish	1580 - DRAYTON		
Original Name	GREENWATTLE/MOORINA DR		
Driller Name	K FAUNTLEROY		
Drill Company	AYR BORING CO		
Const Method	ROTARY AIR		
Bore Line			
D/O File No	T 787/9	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	19/12/2006	**Data Owner**	
Roles	Water Supply		

Location

Latitude	27-34-10	**Basin**	4223
Longitude	151-55-05	**Sub-area**	
GIS Latitude	-27.5695717	**Lot**	6
GIS Longitude	151.9180756	**Plan**	SP184202
Easting	393199		
Northing	6950010	**Map Scale**	
Zone	56	**Map Series**	
Accuracy		**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

7 ***records for RN*** **119640**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	15/12/2006	1	0.00	15.00	Steel Casing	6.400	WT - Wall Thickness	300
A	15/12/2006	2	0.00	100.00	Steel Casing	6.400	WT - Wall Thickness	200
A	15/12/2006	3	58.00	70.00	Perforated or Slotted Casing	10.000	AP - Aperture Size	200
A	15/12/2006	4	82.00	94.00	Perforated or Slotted Casing	10.000	AP - Aperture Size	200
X	15/12/2006	5	20.00	100.00	Gravel Pack	20.000	GR - Gravel Size	420

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
X	15/12/2006	6	0.00	15.00	Grout			420
X	15/12/2006	7	105.00	156.00	Cuttings or other fill between casing and hole wall			420

Strata Logs

12 *records for RN* **119640**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	3.00	BLACK SOIL
2	3.00	9.00	YELLOW CLAY
3	9.00	15.00	WEATHERED BASALT (MOIST)
4	15.00	30.00	SOFT BASALT
5	30.00	60.00	SOFT BASALT
6	60.00	75.00	FRACTURED BASALT *
7	75.00	85.00	HARD BASALT
8	85.00	96.00	FRACTURED BASALT *
9	96.00	118.00	BROWN CLAY
10	118.00	130.00	GREENISH SHALE
11	130.00	150.00	GREENISH SHALE
12	150.00	156.00	WHITE SANDSTONE

Stratigraphies

0 *records for RN* **119640**

Aquifers

3 *records for RN* **119640**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	15.00		BSLT - Basic Volcanic			N			N	WZ	MAIN RANGE VOLCANICS
2	75.00		BSLT - Basic Volcanic			N		2.00	Y	FR	MAIN RANGE VOLCANICS

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
3	96.00		BSLT - Basic Volcanic			N		2.00	Y	FR	MAIN RANGE VOLCANICS

Pump Tests Part 1

1 *records for RN* **119640**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	16/01/2007	1	119640	60.00	94.00	1.10	PUM	CQ RT		94.00				

Pump Tests Part 2

1 *records for RN* **119640**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED (m)	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor
A	16/01/2007	1	6000	-26.00	660	24.55	59.94	6.00	6000	6.00				94.00		

Bore Conditions

0 *records for RN* **119640**

Elevations

0 *records for RN* **119640**

Water Analysis Part 1

0 *records for RN* **119640**

Water Analysis Part 2

0 *records for RN* **119640**

Water Levels

0 *records for RN* **119640**

Wire Line Logs

0 *records for RN* **119640**

Field Measurements

0 *records for RN* **119640**

Special Water Analysis

0 *records for RN* **119640**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
119652	Sub-Artesian Facility	Existing	14/10/2006	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description			
Parish	1580 - DRAYTON		
Original Name	HARRISTOWN PARK NO 27		
Driller Name	K FAUNTLEROY		
Drill Company	AYR BORING CO		
Const Method	ROTARY AIR		
Bore Line			
D/O File No	T 787/8	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	22/10/2006	**Data Owner**	
Roles	Water Supply		

Location

Latitude	27-34-45	**Basin**	4223
Longitude	151-55-45	**Sub-area**	
GIS Latitude	-27.5791186	**Lot**	114
GIS Longitude	151.9291375	**Plan**	RP16725
Easting	394300		
Northing	6948962	**Map Scale**	
Zone	56	**Map Series**	
Accuracy		**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

7 ***records for RN*** **119652**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	14/10/2006	1	0.00	21.00	Steel Casing	6.400	WT - Wall Thickness	300
A	14/10/2006	2	0.00	194.00	Steel Casing	6.400	WT - Wall Thickness	200
A	14/10/2006	3	127.00	133.00	Perforated or Slotted Casing	10.000	AP - Aperture Size	200
A	14/10/2006	4	157.00	163.00	Perforated or Slotted Casing	10.000	AP - Aperture Size	200
A	14/10/2006	5	181.00	187.00	Perforated or Slotted Casing	10.000	AP - Aperture Size	200

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
X	14/10/2006	6	21.00	194.00	Gravel Pack	20.000	GR - Gravel Size	420
X	14/10/2006	7	0.00	21.00	Grout			420

Strata Logs

10 *records for RN* **119652**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	3.00	RED SOIL
2	3.00	6.00	BROWN CLAY
3	6.00	18.00	BROWN CLAY
4	18.00	21.00	WEAHTERED BASALT
5	21.00	60.00	MED SOFT BASALT (MOIST)
6	60.00	120.00	MED HARD BASALT
7	120.00	145.00	FRACTURED BASALT *
8	145.00	170.00	LAYERS SOFT BROWN BSLT & FRACTURES *
9	170.00	187.00	LAYERS SOFT BROWN BSLT & FRACTURES *
10	187.00	194.00	BROWN WEATHERED MUDSTONE

Stratigraphies

0 *records for RN* **119652**

Aquifers

4 *records for RN* **119652**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	60.00		BSLT - Basic Volcanic			N			N	VS	MAIN RANGE VOLCANICS
2	145.00		BSLT - Basic Volcanic			N		1.00	Y	FR	MAIN RANGE VOLCANICS
3	170.00		BSLT - Basic Volcanic			N		2.00	Y	FR	MAIN RANGE VOLCANICS
4	187.00		BSLT - Basic Volcanic			N	180 PPM, PH 8.3	3.00	Y	FR	MAIN RANGE VOLCANICS

Bore Report

From Year:

Pump Tests Part 1

1 *records for RN* **119652**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	04/12/2006	1	119652	120.00	187.00	1.20	PUM	CD RT		176.00				

Pump Tests Part 2

1 *records for RN* **119652**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED (m)	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor
A	04/12/2006	1	1400	-65.80	60	7.89	74.36	4.00	1400	4.00				176.00		

Bore Conditions

0 *records for RN* **119652**

Elevations

0 *records for RN* **119652**

Water Analysis Part 1

0 *records for RN* **119652**

Water Analysis Part 2

0 *records for RN* **119652**

Water Levels

0 *records for RN* **119652**

Wire Line Logs

0 *records for RN* **119652**

Field Measurements

0 *records for RN* **119652**

Special Water Analysis

0 *records for RN* **119652**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
119952	Sub-Artesian Facility	Existing	01/06/2006	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description			
Parish	1580 - DRAYTON		
Original Name			
Driller Name	HANSEN, IAN STANLEY		
Drill Company			
Const Method	ROTARY AIR		
Bore Line			
D/O File No	DRILLING LOG	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	24/07/2006	**Data Owner**	
Roles			

Location

Latitude	27-34-00	**Basin**	4223
Longitude	151-55-52	**Sub-area**	
GIS Latitude	-27.5666667	**Lot**	57
GIS Longitude	151.9311111	**Plan**	RP16919
Easting	394483		
Northing	6950343	**Map Scale**	
Zone	56	**Map Series**	
Accuracy		**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

6 ***records for RN*** **119952**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/06/2006	1	0.00	36.00	Polyvinyl Chloride	8.400	WT - Wall Thickness	200
A	01/06/2006	2	0.00	70.00	Polyvinyl Chloride	7.650	WT - Wall Thickness	140
A	01/06/2006	3	34.00	41.00	Perforated or Slotted Casing	2.000	AP - Aperture Size	140
A	01/06/2006	4	44.00	65.00	Perforated or Slotted Casing	2.000	AP - Aperture Size	140
A	01/06/2006	5	0.00	7.00	Grout			200

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/06/2006	6	0.00	12.00	Grout			140

Strata Logs

7 *records for RN* **119952**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	10.00	RED CLAY (DRILLER IAN HANSEN)
2	10.00	34.00	RED & GREY CLAY
3	34.00	41.00	FRACTURED BASALT (*)
4	41.00	44.00	BROWN CLAY
5	44.00	64.00	BASALT & HONEYCOMB (*)
6	64.00	69.00	BASALT
7	69.00	70.00	BROWN CLAY

Stratigraphies

0 *records for RN* **119952**

Aquifers

2 *records for RN* **119952**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	34.00	41.00	BSLT - Basic Volcanic			N			Y	FR	MAIN RANGE VOLCANICS
2	44.00	64.00	BSLT - Basic Volcanic	01/06/2006	-21.00	N	200 TDS	1.26	Y	VS	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 *records for RN* **119952**

Pump Tests Part 2

0 *records for RN* **119952**

Bore Conditions

0 *records for RN* **119952**

Elevations

0 *records for RN* **119952**

Bore Report

From Year:

Water Analysis Part 1	**0**	*records for RN*	**119952**
Water Analysis Part 2	**0**	*records for RN*	**119952**
Water Levels	**0**	*records for RN*	**119952**
Wire Line Logs	**0**	*records for RN*	**119952**
Field Measurements	**0**	*records for RN*	**119952**
Special Water Analysis	0	*records for RN*	**119952**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
137577	Sub-Artesian Facility	Existing	01/03/2006	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description			
Parish	1580 - DRAYTON		
Original Name			
Driller Name	PETER HANSEN		
Drill Company	I S & R E HANSEN		
Const Method	ROTARY AIR		
Bore Line			
D/O File No	DRILLING LOG	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	18/04/2006	**Data Owner**	
Roles	Water Supply		

Location

Latitude	27-34-00	**Basin**	4223
Longitude	151-55-53	**Sub-area**	
GIS Latitude	-27.5666667	**Lot**	56
GIS Longitude	151.9313889	**Plan**	SP204416
Easting	394511		
Northing	6950343	**Map Scale**	
Zone	56	**Map Series**	
Accuracy		**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

6 ***records for RN*** **137577**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/03/2006	1	0.00	36.00	Polyvinyl Chloride	8.400	WT - Wall Thickness	198
A	01/03/2006	2	0.00	70.00	Polyvinyl Chloride	7.560	WT - Wall Thickness	141
A	01/03/2006	3	34.00	41.00	Perforated or Slotted Casing	2.000	AP - Aperture Size	141
A	01/03/2006	4	44.00	65.00	Perforated or Slotted Casing	2.000	AP - Aperture Size	141
A	01/03/2006	5	0.00	7.00	Grout			240

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/03/2006	6	0.00	12.00	Grout			182

Strata Logs

8 *records for RN* **137577**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	10.00	RED CLAY (DRILLER PETER HANSEN)
2	10.00	34.00	RED & GREY CLAY
3	34.00	41.00	FRACTURED BASALT (*)
4	41.00	44.00	BROWN CLAY
5	44.00	64.00	BASALT & HONEYCOMB (*)
6	64.00	69.00	BASALT
7	69.00	70.00	BROWN CLAY
8	70.00		.

Stratigraphies

0 *records for RN* **137577**

Aquifers

2 *records for RN* **137577**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	34.00	41.00	BSLT - Basic Volcanic			N		0.50	Y	FR	MAIN RANGE VOLCANICS
2	44.00	65.00	BSLT - Basic Volcanic	01/03/2006	-21.00	N	200 TDS	1.26	Y	VS	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 *records for RN* **137577**

Pump Tests Part 2

0 *records for RN* **137577**

Bore Conditions

0 *records for RN* **137577**

Bore Report

From Year:

Elevations	**0**	*records for RN*	137577
Water Analysis Part 1	**0**	*records for RN*	137577
Water Analysis Part 2	**0**	*records for RN*	137577
Water Levels	**0**	*records for RN*	137577
Wire Line Logs	**0**	*records for RN*	137577
Field Measurements	**0**	*records for RN*	137577
Special Water Analysis	0	*records for RN*	137577

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
137613	Sub-Artesian Facility	Existing	06/09/2005	Toowoomba	6910 - TOOWOOMBA REGIONAL

Details

Description			
Parish	1580 - DRAYTON		
Original Name			
Driller Name	HANSEN, IS		
Drill Company	I S & R E HANSEN		
Const Method	ROTARY AIR		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	25/09/2005	**Data Owner**	
Roles	Water Supply		

Location

Latitude	27-34-35	**Basin**	4223
Longitude	151-55-49	**Sub-area**	
GIS Latitude	-27.5763889	**Lot**	2
GIS Longitude	151.9302778	**Plan**	SP160731
Easting	394410		
Northing	6949265	**Map Scale**	
Zone	56	**Map Series**	
Accuracy		**Map No**	
GPS Accuracy		**Map Name**	
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **137613**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	06/09/2005	1	0.00	46.00	Polyvinyl Chloride	8.000	WT - Wall Thickness	140
A	06/09/2005	2	37.00	46.00	Perforated or Slotted Casing	2.000	AP - Aperture Size	140
X	06/09/2005	3	0.00	5.00	Grout			190

Strata Logs

8 ***records for RN*** **137613**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	5.00	RED CLAY
2	5.00	17.00	RED GREY & YELLOW CLAY
3	17.00	28.00	DECOMPOSED BASALT
4	28.00	30.00	RED CLAY
5	30.00	37.00	BASALT
6	37.00	41.00	HONEYCOMB BASALT *
7	41.00	44.00	BASALT
8	44.00	46.00	HONEYCOMB BASALT *

Stratigraphies

0 *records for RN* **137613**

Aquifers

2 *records for RN* **137613**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	37.00	41.00	BSLT - Basic Volcanic			N	400 TDS	0.22	Y	VS	MAIN RANGE VOLCANICS
2	44.00	46.00	BSLT - Basic Volcanic	06/09/2005	-29.50	N		0.17	Y	VS	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 *records for RN* **137613**

Pump Tests Part 2

0 *records for RN* **137613**

Bore Conditions

0 *records for RN* **137613**

Elevations

0 *records for RN* **137613**

Water Analysis Part 1

0 *records for RN* **137613**

Water Analysis Part 2

0 *records for RN* **137613**

Bore Report

From Year:

Water Levels

0 ***records for RN*** **137613**

Wire Line Logs

0 ***records for RN*** **137613**

Field Measurements

0 ***records for RN*** **137613**

Special Water Analysis

0 ***records for RN*** **137613**

Bore Report

From Year:

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