Airservices Australia

Adelaide Airport

Preliminary Site Investigation

January 2018

Executive summary

Airservices Australia (Airservices) engaged GHD Pty Ltd to conduct a Preliminary Site Investigation (PSI) at the Adelaide Airport with particular regard to the potential for contamination from per- and poly-fluorinated alkyl substances (PFASs).

Based on the review of available site history information, site inspection, site interviews and preliminary sampling program, the following potential sources of PFASs have been identified:

- The fire station and surrounding area – wash down of vehicles and hoses, drainage associated with the bunded areas that contained foam, the daily and six-monthly foam discharges adjacent to the fire station. AFFF was used at the fire station between 1980 and 2010 (3M Lightwater foam was used until circa 2003 and then ansulite foam was used until 2010).
- The fire training ground – routine discharge of foam in this area from 2000 to 2010.
- The former fire training ground - routine discharge of foam in this area from 1980 to 2000.
- The old concrete water tank - routine discharge of foam in this area from 1980 to 2000.
- The landfill area adjacent the south eastern boundary - routine discharge of foam in this area from 1980 to 2000.
- The Netley Regional Training School site, to the east of the airside boundary on Transport Avenue - regular discharge of foam in this area from 1980 to 2000 (from extinguishers only).
- The emergency services reporting point – emergency drills conducted annually in this area with fire related emergency training on a biannual basis (where foam was sometimes used).
- Discharge of foam associated with a significant fuel spillage of approximately 100 Litres occurred at Bay 8 Apron in 1997.
- Outside the perimeter gate near Morphett Road Gate 10 – this area was used at least once for fire training purposes, prior to 2000.

Other potentials sources of contamination have also been identified on site, including:

- Airport hangars are understood to contain small volumes of AFFF (approximately 20 litres) stored for use in case of fire.
- Exxon Mobil JOSF AFF Storage Area – identified to contain AFF 800 L AST.

The following potential sensitive receptors were identified:

- Site workers whose activities may result in exposure to site soils, surface water and groundwater.
- Nearby residents using groundwater bores.
- Consumers of seafood from the down gradient surface water receiving environment of the Gulf St Vincent who may ingest contaminants.
- Recreational users of the Gulf St Vincent who may ingest contaminants or have dermal exposure to contaminants.
- Flora and fauna in the hydraulically down-gradient marine surface water receiving environment of the Gulf St Vincent.
- Terrestrial fauna consuming impacted plant material (e.g. grasses). This in turn may impact their predators.

The preliminary sampling program was undertaken to target soil, groundwater and surface water at site boundaries and former source areas of most likely impact. Based on the data reviewed in this study and the CSM, the following summary is made:

- The primary source of PFAS contamination (use of AFFF containing PFASs) no longer exists, however secondary sources of PFAS contamination remain and include contaminated soil and groundwater.
- PFAS concentrations in shallow soils at the fire station and at the former water tank fire training area were above the adopted human health (residential – direct contact) and ecological guidelines, indicating that in these areas soils may present an unacceptable risk to human health (for more sensitive land use) and ecological receptors.
- Groundwater results at the source of PFAS impacts (including the fire station, former fire training ground and the former water tank training area) exceedance of the HISL and enHealth drinking water guidelines. Concentrations in groundwater were also above the ecological guidelines (toxicity effects on aquatic organisms), indicating the groundwater has the potential to be toxic to aquatic organisms (given the shallow groundwater table and likely interaction of groundwater with surface water).
- Groundwater and surface water down gradient of the identified sources and or other possible sources reported concentrations above the HISL and enHealth drinking water and recreational guidelines.
- Surface water samples from across the site's drains and within the Patawalonga and Brownhill Creek inlet reported concentrations above the adopted human health (drinking water and recreational) and ecological guidelines (toxicity effects on aquatic organisms).
- Surface water results were potentially above the HISL for human consumption of fish (LOR was above HISL).

This report should be read in accordance with the limitations set out in Section 10.

Table of contents

Table index

Appendices

1. Introduction

Airservices Australia (Airservices) engaged GHD Pty Ltd (GHD) to undertake a preliminary site investigation (PSI) for the Adelaide Airport located at 1 James Schofield Drive, Adelaide Airport, South Australia 5950 (herein referred to as the site) with particular regard to the potential for contamination from per- and poly-fluorinated alkyl substances (PFASs).

1.1 Background

Aqueous film-forming foam (AFFF) has been used for fire-fighting purposes around Australia for decades. On airports, AFFF has been used at fuel depots, hangars and for operational and fire training purposes.

AFFF has not been used in the provision of aviation rescue and fire-fighting (ARFF) services by Airservices since 2010 but continues to be used around fuel depots, hangars etc. at many airports. AFFF products currently or historically used on airport sites contain PFASs. Depending on the type of AFFF used, the principal PFAS constituents could have included perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and fluorotelomers such as 6:2 fluorotelomer sulfonate (6:2FtS) and 8:2 fluorotelomer sulfonate (8:2FtS).

PFASs are non-biodegradable chemicals that have not only contaminated the sites at which AFFF was employed but also the assets used to apply it. These PFASs are highly persistent in the environment, can bioaccumulate and can be harmful to animal and human health (US EPA 2014).

1.2 Objectives

The objective of this PSI was to identify where there is potential for PFAS contamination to be present at Adelaide Airport as a result of previous activities by ARFF and other AFFF users. A preliminary and targeted soil, groundwater and surface water sampling program was undertaken to validate and further investigate the desktop findings of the PSI.

The report also seeks to identify potential sensitive receptors and stakeholders that may be impacted by possible PFAS contamination arising from activities (both historic and current) utilising AFFF at Adelaide Airport.

1.3 Scope

The scope of work for the preliminary site investigation included:

- Review of historical aerial photographs to gain an understanding of site development over time and identify potential areas where AFFF may have been used
- Review of current certificates of title and key lessees to identify site activities that may have included the use of AFFF
- Review of published data on geology, hydrology and hydrogeology to gain an understanding of site conditions and identify sensitive receptors
- Search of the groundwater bore database to understand beneficial uses for groundwater in the area
- Review of historical reports provided by Airservices to provide some background to previous investigations and site conditions
- A detailed site inspection to gain an understanding of site condition and inspect areas where there is potential for AFFF to have been used

- Preliminary and targeted soil, groundwater and surface water sampling program
- Interviews with personnel who have an understanding of current and historical site activities to identify areas where AFFF may have been used
- Development of a Conceptual Site Model (CSM) and potential source, pathway, receptor linkages
- Conclusions

2. Data quality objectives

The Data Quality Objective (DQO) process was applied to the preliminary investigation as described below, to ensure that data collection activities were appropriate and achieved the stated objectives. The DQO steps have been addressed as follows.

Table 1 Data quality objectives

Step	
Step 1: State the problem.	Where was AFFF historically used on the Airport site? Do possible source, pathway, receptor linkages present an unacceptable risk?
Step 2: Identify the decision.	To address the problem set out in Step 1, the following decisions are required to achieve the task objective and to identify data gaps and additional information that may be required: • What activities have occurred at the site which may have used AFFF (PFAS containing foam)? • Where was AFFF stored on site? • What sensitive receptors are present at and surrounding the site?
Step 3: Identify inputs to the decision.	To inform the decisions and identify key data gaps and needs, the following information is considered necessary: • Review of site conditions • Review of available history information • Interviews with site personnel • Detailed site inspection • Development of a Conceptual Site Model
Step 4: Define the study boundaries.	The Adelaide Airport property boundaries.
Step 5: Develop a decision rule.	The key decision rules are: Are there areas of the site, outside the known fire station, former, and current fire training grounds, where PFASs may be present and does this present a potential unacceptable risk? • If NO – further investigations can be targeted in these known areas. • If YES – more extensive investigations may be required.
Step 6: Specify limits on decision error	There is potential for anecdotal information to not always be accurate or to be limited in nature, and it is also difficult to assess site activities from historical aerial photographs based on poor resolution. Where possible, any possible sources of PFAS contamination will be cross-checked through multiple lines of evidence. The two decision errors that exist include: • False positive – an area identified as potentially containing PFAS contamination does not. • False negative – Areas containing PFAS contamination are not identified.

Step	
Step 7: Optimise the design for obtaining data.	The CSM design will be optimised through: • Identification of potential PFAS sources from existing information and investigations conducted by others. • A preliminary and high level review of the likely hydraulic characteristics of the upper aquifer to estimate the groundwater flow direction and seepage velocities at various locations of the site. • A review of the surface water pathways across and leaving the site.

3. Site information

3.1 Site location

Adelaide Airport is located near Glenelg Beach (approximately 1.2 km south-west from the site) and approximately 5 km south-west from the Adelaide City central business district (CBD).

The site location is outlined in Figure 1 in Appendix A and location details are provided in Table 2. A summary of the current properties within the site and relevant lessees is summarised in Section 2.2.

Table 2 Site identification

Street Address	1 James Schofield Drive, Adelaide Airport SA 5950
Allotment/Plan	A50 / D49654
Site Area	Approximately 645 hectares (Ha)
Certificate of Title	CT 5671/505
Registered Proprietor	Commonwealth of Australia of Adelaide SA 5000
Current Land Use	Airport and associated commercial enterprises
Land Development Plan Zoning	Airfield (Infrastructure)

3.2 Site lease information

A review of the site lease records provided by Airservices has been undertaken. A summary of the relevant lessees within Adelaide Airport is presented in Table 3 and certificates of title are provided in Appendix B.

The current operating lease holder for Adelaide Airport is Adelaide Airport Limited (AAL), while some portions of the site have been sub-leased to several other entities including Airservices. The lessees identified are those that are considered to have a significant presence on site and/or the potential to undertake activities that have the potential to cause contamination. Others may also be included on the certificate of title, which are not identified here.

Table 3 Current and historical Lessee summary

Lessee	Comments
Airservices	Leased areas include the following: • Portions comprised in Certificate of Title Register Book Volume 6137 Folio 606 (Lease commencing on 6 July 1995): – Portion A, D, E, F, G, H, J, L, M, R, P in GP 154 of 1995 – Portion Q in GP 534 of 1995 – Portion A in GP Plan 154 of 1995 • Portions comprised in Certificate of Title Register Book Volume 5608 Folio 67 (Lease commencing on 23 April 1998) – Portion S and T in GP Plan 156 of 1998
Yandal Pty Ltd	Portion A1 and A2 in GP 338 of 1989

Lessee	Comments
Export Park Pty Ltd	Portion C in GP 31 of 1995 (Lease commencing on 13 April 1995)
Civil Aviation Authority	Portion M in GP 154 of 1995 (Lease commenced from 1 January 1990 and expiring on 30 December 2009)
Tyco Australia Pty Ltd	Portion A5 in FP 49710
Australian Helicopters Pty Ltd	Portion H1 and H2 in GP 314 of 2005
Celtic Industries Pty Ltd	Portion B4 in FP 50072
Hot Melt Packaging Systems Pty Ltd	Portion B5 in FP 50072

3.3 Site description

A site inspection was completed by GHD on the 6 June 2016. Key site features are outlined on Figures 2a and 2b in Appendix A. A summary of the findings is provided below and site photographs are included in Appendix C.

The airport includes the following key infrastructure, which is described in further detail below:

- Airside (i.e. inside the airport security fence protecting access to the runways):
  - Runways
  - Fire Station
  - Current Fire Training Ground
  - Former Fire Training Ground and associated training areas
  - Radar
- Landside (i.e. on airport land but outside the airport security fence protecting access to the runways):
  - Terminal
  - Control Tower
  - Commercial Areas
  - Car Park Areas
  - Netley site (not inspected by GHD)

The areas surrounding the major infrastructure airside are characterised by grass and a series of surface water drainage channels that run west from the fire station in the southern portion of the site. Surface water drainage channels also run west from the Burbridge Business Park (non-airside) in the north western portion of the site.

Runway

The Adelaide Airport includes one major runway, that runs in a north east to south west direction. There is also a minor runway (for smaller craft) which runs in a north west to south east direction. There is a series of taxiways supporting the runways, which are located to the north of the major runway.

Fire Station

The fire station, which was built in the 1950s, is located west of the intersection of the two runways. The fire station is a one storey building, incorporating offices, lounge area, kitchen and change rooms, with an attached garage for the fire trucks and elevated observation deck for the fire control centre. South of this main building is a wash down bay and associated storage area. A 15 kL tank is located adjacent to the southern wall of the wash down bay, formerly used for the bulk storage of AFFF at the airport. The wash down bay discharges to grassed open ground approximately 10 m to the south via three water pipes that stand approximately 75 cm above ground and used to lead to a sprinkler system. The hose drying rack is adjacent to the wash down bay to the south east on a bunded hardstand area that has a drain that discharges to stormwater. A small diesel above-ground storage tank (AST) is situated within a bunded area to the east of the hose drying rack.

To the west of the main building are some complementary buildings that were not inspected as part of the site inspection but are understood to be used by the firefighters for training and include a gym.

The fire truck garage is surrounded by hard stand to the north, south and west where there is a carpark, with concrete at the northern entrance and the remainder bitumen. To the east there is a hydrant and beyond the hardstand in all directions is open ground. The drainage system from the hardstand includes a collection trench that discharges to stormwater.

The fire station is surrounded by grass and surface water drainage lines directly to the north and south and lead to the open surface water drain to the south west.

There is an old aircraft fuselage located south of the buildings that is used for positioning drills anywhere surrounding the fire station.

Current fire training ground

The current fire training ground was built in 2000 and contains the following:

- A bunded concrete hardstand with replica airplane that drains to the waste water treatment system.
- A bunded kerosene tank.
- A bunded waste water treatment system includes an oil/water separator pump, a sewer pump and a triple interceptor trap. All waste water from the bund, which appeared in good condition, is contained in the treatment system and discharged to sewer.
- A water tank on hardstand.

The area immediately outside the fire training ground pad is road base and outside that is unsealed ground (now largely exposed soil). Around the other bunded areas, it is mostly unsealed ground. The road to the fire training ground from the sealed internal road is unsealed and approximately 50 m long. Sections of the sealed road approaching the unsealed roads have become degraded due to the weight of the fire trucks.

Former fire training ground

The former training ground (which ceased use in approximately 2000) is an area of open ground of indeterminate size located approximately 200 m south east of the current drill ground. A small stockpile of approximately 20 m^3 containing material scraped from the former surface was present and contained concrete, bricks, metal posts, traces of ash-like material and hardstand gravel. Foam (not known whether linked to AFFF) was noted in surface water pooled at the site. The area was not bunded and no remaining infrastructure was present.

Former concrete water tank area

An approximately 6 m diameter, old concrete water tank is located adjacent to the eastern boundary road, directly west of Watson Ave. There was no cover and inside the former tank were a number of rusted 205 L metal drums that are understood (based on anecdotal information provided by the fire fighters) to have previously contained AFFF and which were used for fire training exercises at this location. This practice ceased more than 15 years ago and the firefighters present during the site inspection had not undertaken any training exercises, or visited that site, since that time.

Radar

The radar and associated building were not inspected as part of the site inspection and are not considered to be a potential source of PFASs based on their explicit use for radar, and which did not include fire training exercises.

Terminal

The current terminal, which was built as part of the airport redevelopment and opened in 2005, is located on the north eastern portion of the site. The terminal includes both domestic and international terminals, as well as a regional airline terminal in the eastern portion. Terminal drop off parking is located to the north of the terminal plaza, with car hire further to the north, and a taxi rank to the north west of the terminal. The terminal and car parking areas are characterised by hardstands with some garden beds.

A number of freight facilities are located directly to the west of the terminal.

Control Tower

The control tower was not inspected as part of the site inspection and is not considered to be a potential source of PFASs, based on their explicit use as a control tower, and which did not include fire training exercises. GHD previously undertook geotechnical and environmental investigations to inform the design of the tower although it is noted that PFASs were not tested for at the time.

Commercial areas

There are two commercial areas at the airport, located within the northern and western portions of the site. The northern commercial centre includes a number of hangers used for maintenance and commercial aspects of aviation. It is understood from anecdotal information provided by the Airservices personnel and firefighters interviewed, that some small tanks containing AFFF are likely to still be present in some hangars and would be deployed via a venturi system (not deluge system) should a fire occur, until the fire brigade arrived. The quantities of AFFF at any one place are estimated to be small (20 L).

There are also a number of commercial offices, the Australian Federal Police, a service station, Masters, IKEA and a number of food and beverage shops in the north east.

In the north west is the Burbridge Commercial District which contains large warehousing facilities for logistical commercial operators, as well as the Exxon Mobil Joint Owned Storage Facility (JOSF) site that has been identified as a former source of petroleum hydrocarbon contamination and a known area of storage of AFFF (800 L AST) (Golder, 2016).

The eastern commercial area, Harbourtown, is a retail shopping district with a large number of outlet stores, a large car park and a McDonalds.

There is a large grassed stormwater drain on the northern perimeter of the site, adjacent to Sir Donald Bradman Drive and some garden beds surrounding the commercial buildings. The remainder of the commercial area of the site is characterised by sealed surfaces.

Car Park Area

Long term car parking is located to the west of the terminal and covers a portion of the former airport building and carpark. This area was not inspected as part of the site inspection and is not considered to be a potential source of PFASs based on its current use for car parking and previous use as the airport building.

3.4 Surrounding land uses

Land uses immediately surrounding the airport are summarised as follows:

- **North** –Sir Donald Bradman Drive, followed by Kooyonga Golf Course and low to medium density residential area further north
- **South** – Brownhill Creek followed by Glenelg Golf Club, commercial/industrial area located east of the golf club, and surrounded by low to medium density residential properties
- **East** – Keswick Creek, followed by commercial/industrial area and low to medium density residential properties
- **West** – Tapleys Hill Road, followed by Adelaide Shores Golf Club, Patawalonga Creek, commercial and recreational areas, sewage treatment plant, then West Beach and Gulf St Vincent

3.5 Key stakeholders

The following key stakeholders have been identified at the site and surrounding areas:

- Adelaide Airport Limited
- Site lessees, including Airservices
- Nearby residents to the west, north-west, south, and south-west
- SA Water as operators of the Glenelg Treatment Works and Adelaide Airport Stormwater Harvesting Scheme
- City of West Torrens as owners of the down gradient recreational parks
- Owners of the Adelaide Shores Golf Course, Glenelg Golf Course, and Kooyonga Golf Course
- Commercial and recreational fisherman operating in Gulf St Vincent

4. Site conditions

4.1 Topography

The Adelaide Airport exhibits relatively flat topography, although some parts of the site were slightly higher (e.g. fire training ground). The regional topography tends to slope towards the west and south west in the direction of Patawalonga Creek and Gulf St Vincent.

4.2 Geology

4.2.1 Regional geology

The Geological Survey Map of South Australia Department of Mines (1:250 000 scale) indicated that the site is categorised as the St Kilda Formation, comprising of light grey shelly stranded beach ridge deposits with shelly silts and sands overlain in places by modern intertidal and swamp deposits.

4.2.2 Soil profile

Borelogs from previous reports indicated soils at the site are comprised of variable fill material for the top 1 mbgl. Fill material included gravels, gravelly silty sands, and clayey sands. Natural soils on site were predominantly sandy clay material which is consistent with the published geology. The preliminary sampling program identified soils comprising sand, clayey sand and sandy clay, while surface soils were typically characterised as silty clay material with some silt present in the shallow profile.

4.3 Hydrogeology

GHD conducted a search of the WaterConnect Groundwater Database on 13 June 2016 for all registered wells within 2.5 km from the centre of the site. The results of the search are presented in Appendix D.

The search of registered groundwater wells indicated the following:

- There are 872 registered groundwater wells within the search area, 124 of which are located within the airport. Information regarding the latest status of the wells (including whether still operational or not) showed only 110 out of the 872 wells were operating.
- There are a wide-range of purposes for the registered wells including:
  - Domestic (219 wells)
  - General usage (1 well)
  - Monitoring (55 wells)
  - Investigative (174 wells)
  - Industrial (4 wells)
  - Drainage (27 wells)
  - Irrigation (10 wells)
  - Recharge (2 wells)
  - Observation (25 wells)
  - Geothermal energy (5 wells)
  - 350 wells had an unknown purpose
- The recorded bore depth ranged between 0.3 mbgl to 340 mbgl.

- Recorded standing water levels (SWLs) for the registered wells ranged from 0.01 m to 33.53 m bgl. There were 18 wells with a recorded SWL of 0.0 m bgl; it is assumed that SWLs were not measured for these wells.
- The monitoring wells were screened at a wide range of depths, at a shallow aquifer, with the majority of the wells screened less than 20 mbgl.
- Recorded salinity for the registered wells ranged from 229 mg/L to 35,583 mg/L total dissolved solids (TDS) and 416 micro-Siemens per Centimetre (µS/cm) to 36,920 µS/cm. indicating a wide range from fresh to saline. Field EC measurements collected during the preliminary sampling program ranged from 550 µS/cm to 39,210 µS/cm
- Recorded pH for the registered wells ranged from pH 6.4 to pH 11.1, and groundwater pH measured in the preliminary sampling program ranged between pH 6.78 to pH 7.64.
- Groundwater flow direction is understood to be to the north-west towards the Torrens River and Gulf St. Vincent.

4.4 Hydrology

There are several surface drains on site, including the following locations:

- West of the Fire Station area
- North-west of the Airport apron

The nearest surface water bodies adjacent to the site include the following (refer to Figure 2):

- Brownhill Creek/Keswick Creek that meet on the eastern boundary and form the Brownhill Creek (historically diverted and located along the eastern and southern boundaries of Adelaide Airport)
- Patawalonga Creek (located to the immediate west of the site)
- Sturt River (located approximately 0.4 km south-west from the site)
- Gulf St Vincent (located approximately 1 km west from the site)
- Torrens River (located approximately 1.6 km north-west from the Adelaide Airport terminal and likely the primary receptor for groundwater)

Based on the site topography, all captured stormwater on site eventually runs into Patawalonga Creek and discharges into Gulf St Vincent.

In addition, there is the Adelaide Airport Stormwater Harvesting Scheme, that sees water collected from the Brownhill Creek catchment stored in the local aquifer, and available as an alternative supply of treated non potable water.

5. Site history

5.1 Aerial photographs

A review of historical aerial photographs between 1959 and 2016 was completed. A summary of the key findings is outlined in Table 4 and a copy of the photographs is provided in Appendix E.

Table 4 Historical aerial photograph summary

Date	Description
1959	The Adelaide Airport was comparatively smaller compared to the current setting. The main runway and taxiways can be seen developed on site and the terminal buildings and aircraft apron were located at the northern portion of the site. Some land disturbance was noted at the south-east of the terminal building; however, due to the poor resolution of the aerial imagery, it is unclear what activities or development was being undertaken at that time. The fire station can be seen located between two taxiways at south-western portion of the aerial imagery. However, the fire training ground has not been developed at this time. The surrounding area was mainly dominated by residential properties with pockets of commercial/industrial areas noted to the east of the site.
1969	Extension works of the main runway appeared to be in progress. The airport apron area has been developed where the ground is covered in bitumen/concrete compared to in the 1959 aerial photography. Surface drains can be seen at the edge of the apron. The area south to the terminal building can be seen cleared of vegetation. There were two buildings visible within the fire station area, the paddock north to the fire station building appeared semi-vegetated and an open surface drain was also visible at the west of the station. The open drain runs towards the south-west and discharges into Patawalonga Creek. The surrounding area appeared relatively unchanged and similar to the 1959 aerial photograph. Patawalonga Creek can be seen running along the western boundary of the site.
1979	Extension work of the main runway had been finished. Near the north-east end of the main runway and taxiway, the area had been developed into a separate apron for smaller aircraft. The fire station area appeared similar to that in the 1969 historical aerial photography, except a mock up plane appeared to be located at the grassed area north-west of the fire station (poor quality image but observed when the aerial image was enlarged). The former fire training ground can be seen near the southern end of the site, where the mock plane is visible. Landfill activities can be seen in the southeast corner of the airport site, both south and east of the training ground area. South-west of the former training ground, along the access driveway, is a gravel hardstand area; no building was identified except a few vehicles.
1989	Further development can be seen at the north of the airport terminal and apron area. The aircraft apron has been extended towards north and north-east, where hangars and a helicopter landing pad were noted. At the north-western corner of the site, some land disturbance activity was apparent. Extension of the fire station building was also noted in the 1989 aerial photography. At the former fire training ground, apart from the large mock up plane, another two smaller mock up plane can also be seen on the grassed area, east of the training ground. Further west from the training ground, a large area filled with possible soil stockpiles was noted. The former landfill area located at the south-eastern corner appeared to be revegetated.
1999	The northern portion of the site was further developed, where more hangars and sheds were noticed. The Mobil JOSF site can be seen built at the northern end of the site. Some construction activities appeared to be occurring at the north-eastern corner of the site. The main runway has also been extended towards the south-west, where Patawalonga Creek has been filled and diverted.

Date	Description
	The fire station and former fire training ground area appeared similar to the 1989 historical aerial photography. Some land disturbance activities were visible along the south and south-western portion of the site.
2001	The northern portion of the site remained similar to that of 1999 aerial imagery, only the apron at the north-eastern corner extended. The current fire training ground area had been built north-west of the former training ground, the ground appeared to be cleared of vegetation. The mock up plane had been moved to the concrete pad at the current training ground. The former training ground had been cleared but the ground remained bare, no vegetation noted. The south and south-western portion of the site was noted to be semi-vegetated in 2001, since the land disturbance activities occurred in 1999.
2010	A new terminal building had been built at the north-eastern corner of the site. The former terminal building has been demolished and turned into a carpark. At the south of the apron and terminal building, an open surface drain can be seen running in parallel to the taxiway and main runway. Further development and extension was noted at the fire station building. Two above ground storage tanks can be seen within the fire station compound. At the south-west of the fire station compound, a white elongated structure that appears like an aircraft body was noted on the grassed area. The former landfill site at the south-eastern corner appeared to been filled and revegetated. In the surrounds, more development of commercial/industrial buildings was noted to the east, south-east, north-west and west of the site.
2016	The site appeared similar to that in the 2010 historical aerial image. Some further development was noted at the terminal building and car park area. More buildings and car park area were noted at the northern end of the site. Near the western boundary of the site, a helicopter landing pad and aircraft apron and hangar can be noticed located east and south-east of the Harbour Town Adelaide shopping complex at the western boundary of the site. The fire station compound and current fire training ground remained similar to that in the 2010 aerial photography.

5.2 Previous reports

A number of reports were provided by Airservices for review. These are outlined below with a summary of the key points. These historical investigations (excluding the Golder 2016 investigation) were undertaken at the former and current FTGs (drill grounds) which are known PFAS sources and are likely to be the areas most heavily impacted by PFASs due to the volume of AFFF used during historical training.

5.2.1 Soil and Groundwater Consulting (S&G Consulting) (2002)

Environmental Site Assessment Former Fire Fighting Training Area, S&G Consulting, August 2002

Soil & Groundwater Consulting Pty Ltd (S&G) was commissioned by Airservices in July 2002 to undertake an environmental site assessment of the former firefighting training area at the Adelaide Airport. The scope of works involved drilling 15 soil bores and laboratory testing of selected soil samples for petroleum hydrocarbon contaminants. No PFAS assessment was undertaken.

The following summarises the site history information related to the former fire training ground:

- The former firefighting training area comprises an area of approximately 1,000 m^2, and is located in the south eastern portion of the airport, approximately 800 m east of the fire station. It is understood that the site was originally developed by importing unclassified fill to raise the surface level above the surrounding area, and was raised further in 1991 with compacted quarry rubble.
- Historically, a mock plane was located in the firefighting training area, which was used for training drills on a twice-weekly basis from the 1970s. The training drills were reported to have involved lighting the fuselage of the mock plane using approximately 400 L of Jet A1 fuel, and up to 60 L of motor spirit as an accelerant. Anecdotal evidence suggested other accelerants including paint residues, methyl ethyl ketone, xylene and toluene based solvents were also used. Approximately 4,000 L of water was used to extinguish each fire (no information was provided as to whether this was just water or whether AFFF may have also been used).
- It is understood that the former firefighting training area has not been used since 2000, when the current fire training area was constructed.

5.2.2 S&G Consulting (2007)

Results of June 2007 Groundwater Monitoring Event, Adelaide Airport Fire Training Facility, S&G Consulting, August 2007

This is a fax report presenting the results of groundwater monitoring of two groundwater monitoring wells in the vicinity of the underground holding tank at the fire training facility at Adelaide Airport in June 2007.

Groundwater samples were collected and analysed for petroleum hydrocarbon contaminants of concern. No PFAS assessment was undertaken.

5.2.3 GHD (2008)

Report on ARFF National Testing Project, Preliminary Site Contamination Assessment – Former Adelaide ARFF Drill Ground, Adelaide Airport, GHD, August 2008

GHD was engaged by Airservices to undertake a preliminary site contamination assessment at the former fire training ground. The scope of works included site history assessment, targeted test pitting at five locations and groundwater monitoring at seven existing monitoring wells on site. Collected soil and groundwater samples were analysed for PFOS, PFOA and other petroleum hydrocarbon contaminants of concern.

The following summarises the findings of this assessment report:

- The former fire training ground has been used for firefighting exercises which involved using AFFF (mainly 3M Light Water™).
- The 3M Light Water™ AFFF has not been used at the current fire training ground.
- Impact of PFOS and PFOA was identified in soils and groundwater at the former training ground area, likely due to the use of 3M Light Water AFFF on the site.
- There is a potential risk to the environment and human health due to the presence of PFASs identified in soil and groundwater, however due to the limited sample size, the contamination was not delineated on site.

5.2.4 S&G Consulting (2009)

Soil and Groundwater Investigation, Fire Training Facility, Adelaide Airport, South Australia, S&G Consulting, December 2009

S&G Consulting was commissioned to undertake soil and groundwater investigations at the current fire training ground area and the fire truck wash-down area adjacent to the fire station. The investigation involved drilling eight soil bores and groundwater monitoring of two existing groundwater wells on site. Collected soil samples were analysed for PFASs and petroleum hydrocarbon contaminants. Groundwater samples were analysed for petroleum hydrocarbons but not PFASs.

The results indicated the presence of PFOS and PFOA at the surface in the immediate vicinity of the mock plane where AFFF foams were used.

5.2.5 S&G Consulting (2011)

Soil and Groundwater Investigation, Fire Training Facility, Adelaide Airport, South Australia, S&G Consulting, March 2011

S&G Consulting was engaged to undertake a “baseline” soil and groundwater investigation at the current fire training area, which involved drilling eight soil bores and groundwater monitoring at two existing monitoring wells on site. Collected soil samples were analysed for PFASs and petroleum hydrocarbon contaminants.

The results indicated that two of the soil samples were reported with elevated PFAS results greater than the adopted assessment guidelines; however, the results were comparatively lesser than the soil results reported in 2009.

5.2.6 S&G Consulting (2012)

Soil and Groundwater Investigation, Fire Training Facility, Adelaide Airport, South Australia, S&G Consulting, August 2012

S&G Consulting was engaged to undertake a soil and groundwater investigation at the current fire training area, which involved drilling eight soil bores and groundwater monitoring at two existing monitoring wells on site. Collected soil and groundwater samples were analysed for PFASs and petroleum hydrocarbon contaminants.

The results indicated that the PFAS results were all less than adopted human health screening levels, however, one of the sample results exceeded the adopted ecotoxicity guidelines for terrestrial plants. PFAS results in the groundwater exceeded the adopted guidelines for potable water use.

5.2.7 S&G Environmental Consulting (JBS&G) (2013)

Soil and Groundwater Investigation, Fire Training Facility, Adelaide Airport, South Australia, JBS&G, October 2013

S&G Consulting was engaged to undertake a soil and groundwater investigation at the current fire training area, which involved drilling eight soil bores and groundwater monitoring at two existing monitoring wells on site. Collected soil and groundwater samples were analysed for PFASs and petroleum hydrocarbon contaminants.

The results indicated that all PFAS results of the soil samples were below the adopted soil screening levels, while PFAS concentrations in groundwater were reported to exceed the adopted screening levels.

5.2.8 Golder Associates (2016)

Site History and Qualitative Risk Assessment of Perfluorinated Chemical Sources – Adelaide Airport, draft, Golder Associates, April 2016

Golder Associates was engaged by Adelaide Airport Limited (AAL) to undertake a preliminary qualitative assessment of PFASs related human health and ecological risks at the Adelaide Airport and surrounding properties in relation to historical use of PFASs.

The study involves a literature review of PFAS uses in industry and in airports, site inspection and review of site settings and history. Based on the findings of the report the following conclusions were made:

- Thirteen onsite properties (within the airport) were identified with potential PFAS usage:
  - Former firefighting training ground
  - Current firefighting training ground
  - Southern portion of site and former Deeds Road landfill
  - Former onsite landfill
  - Fire Station
  - Exxon Mobil jointly owned storage facility (JOSF)
  - Alliance Airlines
  - Australian Helicopters
  - Pilatus Australia
  - Regional Express
  - Royal Flying Doctor Service
  - TAE Aviation
  - East Commercial Area
- Seven offsite properties were considered to have potential PFAS releases that may impact the airport site through groundwater migration:
  - Peakfresh polybags
  - Plymton Steel
  - Adelaide Waste Recycling Centre
  - Cadillac Painting
  - Former Landfill – Deeds Road
  - Former Landfill – Patawalonga Golf Course

5.3 Interviews

Site interviews were conducted by GHD (accompanied by an Airservices Senior Environmental Specialist) on 6 June 2016 with the following personnel:

- [redacted] – Senior Environment Advisor – Adelaide Airport Limited (AAL)
- [redacted] – Fire Station Manager – Airservices Australia
- [redacted] – Fire Station Environmental Manager – Airservices Australia

A summary of the key findings from the assessment are listed in Section 5.3.1 and 5.3.2. A transcript of the interviews is provided in Appendix F.

5.3.1 Adelaide Airport Senior Environment Advisor [redacted]

Historically soil, groundwater and surface water investigations which included consideration of PFASs have been limited to the former and current fire training areas. More recently AAL have commissioned a site history and qualitative risk assessment of perfluorinated chemical sources for the whole airport site. This report was in draft at the time of the site interview, but AAL discussed their own investigations of groundwater and surface water sampling which are currently being undertaken and are intended to assess boundary conditions as well as target some of the identified potential source areas of PFASs including:

- The fire station
- The former firefighting drill ground
- The current firefighting drill ground

According to AAL, the following pertains to AFFF use and potential PFAS contamination at the airport:

- AAL use existing monitoring wells to assess north westerly groundwater flow direction. The former fire training ground has four existing groundwater monitoring wells and the current training ground has two wells. Reported concentrations of PFASs were below LOR or below adopted guidelines. Elevated concentrations of PFASs were reported in the open drain adjacent and down gradient from the fire station. It is not certain whether shallow groundwater (can be 1-1.5 mbgs) is interacting with surface water or whether elevated concentrations of PFASs are representative of surface water. Next round AAL intend to include two additional surface water samples around the fire station to assess up gradient versus down gradient concentrations and hope this will aid in delineation.
- It is noted that soil was not sampled as part of AAL's investigations.
- The former landfill sits up gradient of fire training grounds and has eleven wells across it and available soil bore data. However, AAL want a further up gradient well installed to improve understanding, not just of PFASs but also of surface water/groundwater interaction. Landfill comprises sand then a peaty layer. Understood to be natural "fill" or reworked natural. Not a uniform soil profile across the site. Surface scrape identified building rubble below the "fill" indicating previous development had occurred. AAL want a greater understanding of what the landfill actually contains.
- Brownhill Creek and Keswick Creek meet at a detention basin and are lined prior to converging, after which they are unlined. Stormwater samples have been collected from numerous locations and measured contaminant concentrations were reported as generally matching trends with the landfill concentrations in that they decrease from up gradient to down gradient. This suggests that there may be some interaction between stormwater and groundwater.
- AAL stated that there is usually water in the (Brownhill Creek) channel although sometimes the flow is minimal.
- There is a spill log for airport incidents that can be keyword searched for specific contaminants. AAL issued a questionnaire to airport tenants asking what chemicals were utilised.
- Hangers have small containers of AFFF of about 20 L that is engaged via a venturi system (not a deluge system) when they use the firehose. There is no bulk storage of AFFF around the airport outside of ARFF, although 800L of AFFF is stored in an AST at Mobil JOSF.

- AAL are not aware as to what happened to the soil from the old training ground when it was moved. Airservices confirmed that the top 300 mm was scraped and the material is currently stockpiled at that location. Only petroleum hydrocarbons were considered as potential contaminants so the stockpile was left to attenuate.
- SA Water has a Stormwater Harvesting Scheme site that is not used in a significant way by the airport. AAL made enquiries to SA Water about potential contamination risks and while SA Water had not assessed for PFASs, they considered that the risk was low.
- The airport receives treated water from the Glenelg treatment works and AAL's understanding is that the process can sometimes increase PFAS concentrations. Water quality is suitable for dual reticulation and is tertiary treated. No other contaminants of concern were identified. The airport has its own filtration system but has also installed monitoring wells dedicated to irrigation areas to assess any impacts deriving from the use of recycled water.
- Extinguisher training was conducted at the Netley Regional Training School on Transport Avenue from approximately 1980 to 2000.

5.3.2 Fire Station Manager and Environmental Manager [redacted]

[redacted] and [redacted] both have over 20 years' experience working at Airservices and provided the following information:

- Airservices has an incident log that dates back to the 1990s detailing how much AFFF was discharged at each incident which they responded to.
- Fuel spillage of approximately 100 Litres occurred at Bay 8 Apron on 10 August 1997. An estimated 20 Litres of AFFF was applied to the spill and around the tanker.
- The only other incident was an offsite fire, at the Brighton Rd Caltex in August 1993 where AFFF was used.
- Historically, AFFF was delivered to the site in 205 L (44 gallon) metal drums where it was transferred into an on-site 15 kL Above Ground Storage Tank (AST). The majority of empty drums were then removed by a licensed contractor for disposal. Anecdotal information indicated that occasionally the empty drums were cut in half to use for outdoor fires. There were no formal records of AFFF storage, and no AFFF is currently stored at the site, although the AST and fittings are still on site.

[redacted] stated that the majority of fire training was currently undertaken at the fire training ground, although historically training occurred at various locations across the airport and included the following:

- Former fire training ground
- The landfill on the southern boundary
- The old receiver building area adjacent Burbridge Business Park
- The transmitter building complex offsite at Netley which is where the majority of fire extinguisher training occurred
- The old concrete water tank near the eastern boundary
- Outside the perimeter gate near Morphett Road Gate 10
- The emergency services reporting point near the eastern boundary, north of the old water tank

‘Crash remote’ training was also undertaken at isolated locations around the airport which included discharge of foam.

In addition, there was historically a daily foam test and six monthly valve and foam consistency test which was completed on each vehicle. These discharges were typically done in the unsealed area in front of the fire station. This test still occurs but not with AFFF since its use ceased around 2010.

Training at the fire training ground occurs at a minimum of three times a week. Foam was always used in training until February 2010, when training changed to release of water only. There are no records of the volumes of foam used during these exercise, although the firefighters interviewed estimated that 500 L was typically put into the tanker but not all of it may have been used. Usually a 1:2 ratio of AFFF (6% v/v):water was used in training resulting in a 3% v/v solution. The bunded area at the training ground includes an updated waste water collection system that discharges to sewer under a trade waste agreement with SA Water. Since the construction of large mock up unit (LMU) training ground the waste water was processed through an oil/water plate separator and discharged to sewer at 3000 L per hour. It is understood from a review of a SA Water Trade Waste Audit Report dated 2 September 2015 that PFASs are not tested for in the pump sump, only pH and TDS.

Fire hoses are flushed at the fire training ground and general wash down of dirt from hoses and vehicles is completed at the fire station on the hardstand containing a wash down bay. Post training flushing historically occurred at the old training sites too. Discharged water from the wash down bay discharges to open ground south of the fire station. Drains flow into the Patawalonga Creek which now also discharges through the Barcoo Outlet. In earlier times the creek flowed out through the Glenelg Lock into Gulf St Vincent.

The sewer water is processed at the Glenelg treatment works and discharges into the Gulf St Vincent. A pipeline supplies water to the airport for terminal toilets and irrigation, as well as for the Adelaide City parklands.

Bulk earthworks associated with development of the Butler Boulevard Burbridge Business Park and Terminal 1 during the airport redevelopment were placed in the southern portion of the site, along with some imported fill material.

Stormwater is collected in settlement ponds along Taxiway Tango, and cleaned of debris via racks, and flows via the stormwater drainage network to the Patawalonga Creek where it discharges via the Barcoo outlet and / or Glenelg Lock into Gulf St Vincent. SA Water has constructed a pumping station near Brownhill Creek in the Glenelg North area.

6. Preliminary and targeted sampling

6.1 Scope of work

Based on the outcomes of the PSI, a Sample Analysis and Quality Plan (SAQP) was developed for the investigation (GHD reference: 31/34071/252133).

The SAQP was prepared so that the field investigations and analyses were undertaken in a way that enabled the collection and reporting of reliable data on which to base any further soil, groundwater and surface water monitoring programs for specific areas of the site.

The historical investigations summarised in Section 5.2 were generally focused on the current and former FTGs which are one of the primary sources of PFASs at Adelaide Airport. The Preliminary Sampling program was designed to investigate potential migration pathways from the FTGs and potential impacts at down gradient sensitive receptors (though did include limited additional sample collection at the FTGs).

The GHD SAQP described drilling methods, sampling equipment, well development strategy, sample collection protocols, sample processing, field and laboratory sample analysis, equipment decontamination and quality-assurance and quality-control (QA / QC) procedures.

The scope of work undertaken, methodology adopted and results of the sampling program are provided in a Preliminary Sampling report (GHD, 2016a).

6.2 Results summary

The investigations completed as part of this scope of work identified shallow soils at the fire station and at the former water tank fire training area containing concentrations above the adopted human health and ecological guidelines, indicating that in these areas, soils may present an unacceptable risk to human health (for more sensitive use) and ecological receptors.

Groundwater results at identified PFAS source areas including the fire station, former fire training ground and the former water tank training area reported concentrations above the ecological guidelines, indicating the groundwater has the potential to be toxic to aquatic organisms, as well as in exceedance of the HISL and enHealth drinking water and recreational guidelines.

Groundwater and surface water down gradient of the identified sources and or other possible sources reported concentrations above the HISL and enHeath drinking water and recreational guidelines.

Surface water samples from drains across the site and within the Patawalonga and Brownhill Creek inlet reported concentrations above the adopted human health (drinking water and recreational) and ecological guidelines (toxicity effects on aquatic organisms).

Surface water samples may contain concentrations above the guidelines for human consumption of fish (given the LOR was potentially greater than the HISL).

Full details of the scope of work undertaken, methodology and results are provided in the Preliminary Sampling report (GHD, 2016a).

.

7. Conceptual site model

Based on our understanding of the contamination issues and site setting a conceptual site model (CSM) has been generated as a basis for assessing the risk posed by any potential *source -> pathway -> receptor* linkages (or pollutant linkages).

The CSM assumes a commercial/industrial land use scenario consistent with the sites current use as an airport. Cross sectional CSMs are provided in Figures 3a and Figure 3b and CSM pathways are shown in Figure 4. A representation is also included in Chart 1.

7.1 Sources

The focus of this assessment is on the potential sources of PFASs on the airport, which are identified as the following:

- The fire station and surrounding area – wash down of vehicles and hoses, drainage associated with the bunded areas that contained foam, the daily and six-monthly foam discharges adjacent to the fire station. AFFF was used at the fire station between 1980 and 2010 (3M Lightwater foam was used until circa 2003 and then ansulite foam was used until 2010).
- The fire training ground – routine discharge of foam in this area from 2000 to 2010.
- The former fire training ground - routine discharge of foam in this area from 1980 to 2000.
- The old concrete water tank - routine discharge of foam in this area from 1980 to 2000.
- The landfill area adjacent the south eastern boundary - routine discharge of foam in this area from 1980 to 2000.
- The transmitter building complex offsite at Netley- - regular discharge of foam in this area from 1980 to 2000 (from extinguishers only).
- The emergency services reporting point – emergency drills conducted annually in this area with fire related emergency training on a biannual basis (where foam was sometimes used).
- Discharge of foam associated with a significant fuel spillage of approximately 100 Litres occurred at Bay 8 Apron in 1997.
- Outside the perimeter gate near Morphett Road Gate 10 – this area was used at least once for fire training purposes, prior to 2000.

Other potentials sources of contamination have also been identified on site, including:

- Airport hangars are understood to contain small volumes of AFFF (approximately 20 Litres) stored for use in case of fire
- Exxon Mobil JOSF AFF Storage Area – identified to contain AFF 800 L AST

The outcomes of the Preliminary Sampling suggest that the following are the main sources of PFAS contamination at the site:

- The former fire training ground and surrounding area
- The former water tank used for fire training
- The fire station

This does not preclude the presence of the other potential sources of PFASs as detailed above.

7.2 Pathways

The key mechanisms for contaminant transport at the site have been identified as:

- *Surface water overland flow* – lateral overland flow and migration of contaminants via stormwater during rain events, causing re-deposition of contaminants on other areas of the AAL or off-site. There is the potential for migration of contaminated surface water / storm water from the source in open drainage channels.
- *Groundwater advection/dispersion* - horizontal and vertical migration of contaminants from the AAL soils into the underlying aquifer and through groundwater to the point of surface water discharge or via uptake in spear pumps on nearby residential properties.

Based on the identified receptors and the release and fate and transport characteristics of the contaminants of potential concern, contaminant uptake pathways through which receptors may become exposed to contamination include ingestion and dermal absorption.

- *Ingestion exposure pathway* - Ingestion of contaminants by site workers could occur during site works which will involve excavation and handling of site soils, stormwater, or groundwater. This is not considered to be of a concern for indoor site workers. Ingestion could also occur for nearby residents using spear pumps via direct contact or use of water for food production (watering of home grown produce, poultry etc.).

  Terrestrial and aquatic fauna may ingest contaminants potentially migrating off-site and discharging to the down gradient surface water receiving environment including the Gulf of St Vincent.
- *Dermal exposure pathway* - Exposure may occur via sorption through biological membranes such as skin, based on animal studies. While this has not been confirmed for humans and despite PFOS having a low skin permeability constant, the exposure pathway may be complete as illustrated on the CSM.
- *Inhalation exposure pathway* – PFASs are not considered to be volatile so inhalation is not considered to be a viable exposure route.

7.3 Receptors

The site is located in a highly modified commercial/industrial site setting. The following are the key potential human health and ecological contamination receptors considered to be relevant in the context of the site's setting:

- Site workers whose activities may result in exposure to site soils, surface water and groundwater.
- Nearby residents potentially abstracting groundwater for domestic or irrigation use.
- Consumers of seafood from the down gradient surface water receiving environment of the Gulf of St. Vincent who may ingest contaminants.
- Recreational users of the Gulf of St. Vincent that may ingest contaminants or have dermal exposure to contaminants.
- Flora and fauna in the hydraulically down-gradient marine surface water receiving environment of the Gulf of St. Vincent.
- Terrestrial flora and fauna; fauna through consumption of impacted plant or animal matter (e.g. grasses and worms), which may in turn impact their predators.

7.4 Potential source-pathway receptor linkages

Soil results from shallow soils at the fire station and at the former water tank fire training area reported concentrations above the adopted human health (residential) and ecological guidelines, indicating that in these areas, soils may present an unacceptable risk to human health and ecological receptors.

Groundwater results at the source of PFAS impacts (including the fire station, former fire training ground and the former water tank training area) reported concentrations above the ecological guidelines, indicating the groundwater has the potential to be toxic to aquatic organisms (given the possibility of shallow groundwater discharging to surface water bodies), as well as in exceedance of the HISL and enHealth drinking water guidelines.

Groundwater and surface water down gradient of the identified sources and or other possible sources reported concentrations above the HISL and enHeath drinking water guidelines.

Surface water samples from across the site's drains and within the Patawalonga and Brownhill Creek inlet reported concentrations above the adopted human health (drinking water, recreational and potentially human consumption of fish) and ecological guidelines (toxicity effects on aquatic organisms).

The CSM has identified a number of potential source-pathway-receptor pollutant linkages which are highlighted in Chart 1. These are discussed in Table 5 in the context of the AAL's setting.

Table 5 PFAS contamination – potential pollutant linkages

Potential pollutant linkages	Key exposure routes and risks
Potential human health risks	
Health risks to site workers who may come into contact with contaminated site media	Day to day activities are not likely to expose site personnel to these media. However, it remains a possibility where workers are involved with excavation and handling of contaminated soil, surface water or groundwater. It is expected that this can be managed through good hygiene practices and task-specific management plans.
Health risks to nearby residents who are exposed to potentially contaminated groundwater through spear pumps.	The main risk to human health is considered to be through consumption of extracted water and consumption of food produce irrigated by the extracted water. Consumption of impacted drinking water as well as vegetables, fruit or poultry irrigated with water contaminated by PFASs from abstraction wells may lead to bioaccumulation of PFASs in humans. Dermal exposure has not been identified as a dominant exposure pathway for PFASs.
Health risks to consumers of contaminated seafood arising from migration of contaminants through surface water and groundwater to the Gulf of St Vincent and bioaccumulation of contaminants in biota.	As PFASs are highly persistent and have a high propensity to bio-accumulate through the food-chain, the potential for human exposure to PFASs via consumption of contaminated seafood is an issue that needs further investigation.
Migration of contaminants through surface water and groundwater to the Gulf of St Vincent resulting in human health impacts to recreational users of the Gulf of St Vincent.	The main risk is through incidental ingestion of water. Dermal exposure has not been identified as a dominant exposure pathway for PFASs.

Potential pollutant linkages	Key exposure routes and risks
Potential ecological risks	
Impacts to the off-site marine ecosystem (flora and fauna) of Gulf of St Vincent from migration of contaminants through surface water and groundwater	There is the potential for PFAS contaminated surface water and groundwater to discharge to the adjacent marine ecosystem where marine biota (invertebrates and macrofauna) may be exposed. Predation of species can lead to a wider distribution of PFASs in the marine environment due to bioaccumulation.
Terrestrial ecology – take up of PFASs in plants and subsequent consumption by fauna plus impact to invertebrates via impacted soil	There is potential for prey species to ingest impacted flora or soil and then be predated by larger animals e.g. eagles, snakes, foxes.

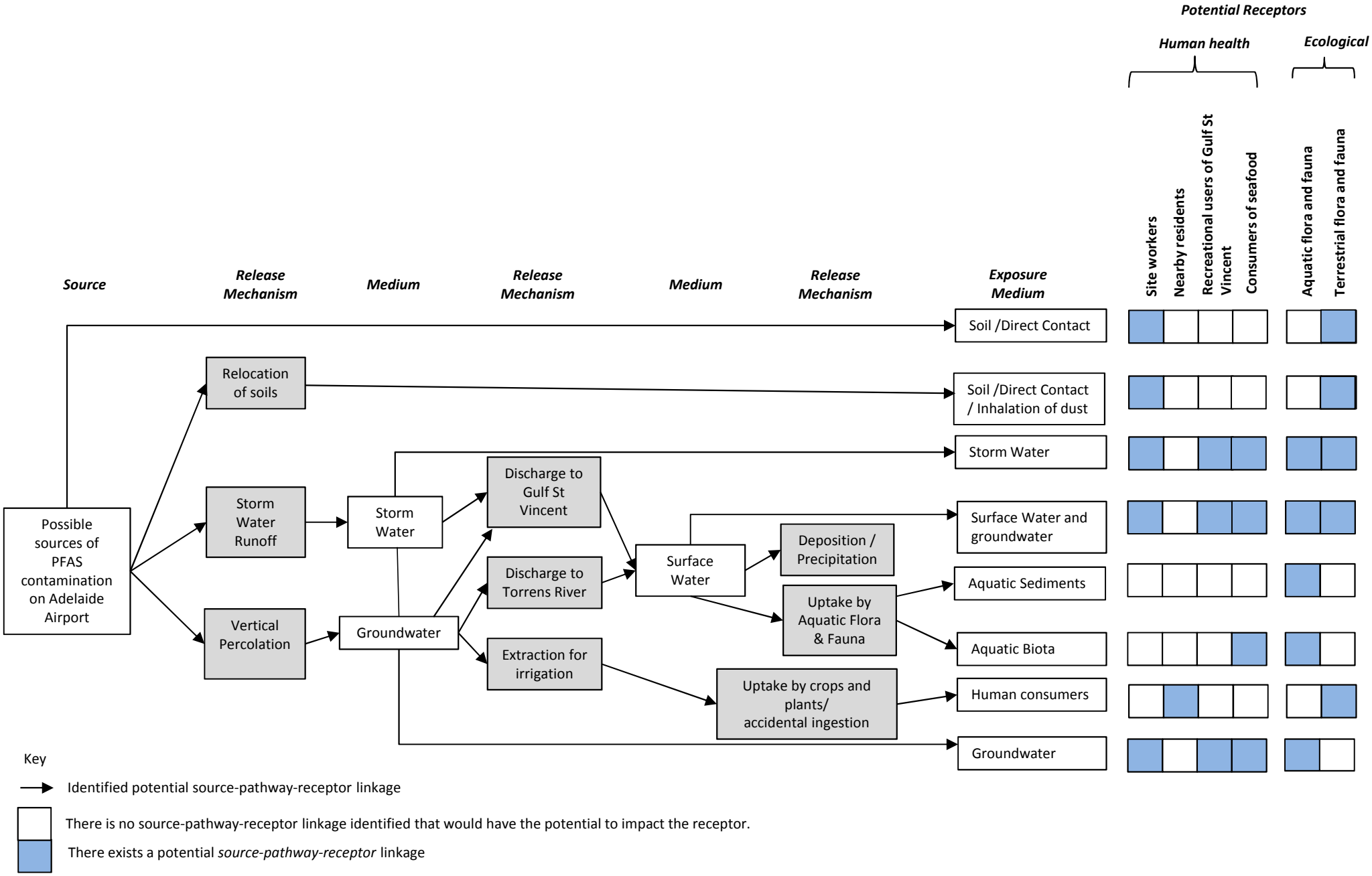


Chart 1 - Conceptual Site Model

8. Conclusions

8.1 Conclusions

Based on the review of available site history information, site inspection and site interviews, the following potential sources of PFASs have been identified:

- The fire station and surrounding area – wash down of vehicles and hoses, drainage associated with the bunded areas that contained foam, the daily and six-monthly foam discharges adjacent to the fire station. AFFF was used at the fire station between 1980 and 2010 (3M Lightwater foam was used until circa 2003 and then ansulite foam was used until 2010).
- The fire training ground – routine discharge of foam in this area from 2000 to 2010.
- The former fire training ground - routine discharge of foam in this area from 1980 to 2000.
- The old concrete water tank - routine discharge of foam in this area from 1980 to 2000.
- The landfill area adjacent the south eastern boundary - routine discharge of foam in this area from 1980 to 2000.
- The transmitter building complex offsite at Netley- - regular discharge of foam in this area from 1980 to 2000 (from extinguishers only).
- The emergency services reporting point – emergency drills conducted annually in this area with fire related emergency training on a biannual basis (where foam was sometimes used).
- Discharge of foam associated with a significant fuel spillage of approximately 100 Litres occurred at Bay 8 Apron in 1997.
- Outside the perimeter gate near Morphett Road Gate 10 – this area was used at least once for fire training purposes, prior to 2000.

Other potentials sources of contamination have also been identified on site, including:

- Airport hangars are understood to contain small volumes of AFFF (approximately 20 Litres) stored for use in case of fire
- Exxon Mobil JOSF AFF Storage Area – identified to contain AFF 800 L AST.

The following potential sensitive receptors have been identified:

- Site workers whose activities may result in exposure to site soils, surface water and groundwater.
- Nearby residents using groundwater bores.
- Consumers of seafood from the down gradient surface water receiving environment of the Gulf St Vincent who may ingest contaminants.
- Recreational users of the Gulf St Vincent who may ingest contaminants or have dermal exposure to contaminants.
- Flora and fauna in the hydraulically down-gradient marine surface water receiving environment of the Gulf St Vincent.
- Terrestrial fauna consuming impacted plant material e.g. grasses. This in turn may impact their predators.

8.2 Summary of preliminary sampling program

Based on the data reviewed in this study and the CSM, the following summary is made:

- The primary source of PFAS contamination (use of PFAS-containing AFFF) no longer exists, however secondary sources of PFAS contamination remain and include contaminated soil and groundwater.
- PFAS concentrations in shallow soils at the fire station and at the former water tank fire training area were above the adopted human health (residential – direct contact) and/or ecological guidelines, indicating that in these areas soils may present an unacceptable risk to human health (for more sensitive land use) and to ecological receptors.
- Groundwater results at the source of PFAS impacts (including the fire station, former fire training ground and the former water tank training area) exceeded the HISL and enHealth drinking water guidelines. Concentrations in groundwater were also above the ecological guidelines (toxicity effects on aquatic organisms), indicating the groundwater has the potential to be toxic to aquatic organisms (given the shallow groundwater table and likely interaction of groundwater with surface water).
- Groundwater and surface water down gradient of the identified sources and / or other possible sources reported PFAS concentrations above the HISL and enHeath drinking and recreation water guidelines.
- Surface water samples from across the site's drains and within Patawalonga Creek and the Brownhill Creek inlet reported concentrations above the adopted human health (drinking water and recreational) and ecological guidelines (toxicity effects on aquatic organisms).
- Although all surface water results were below the LOR, it is noted the HISL for human consumption of fish is below the LOR, therefore the potential exists for results to be above the HISL.

9. References

Airports Act 1996

Airports (Environment Protection) Regulations 1997

Airservices Interim Contamination Management Strategy and Decision Framework for PFC contamination, June 2015 (the 'Interim Framework', GHD, 2015)

Australian Standard AS 4482.1:2005 Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil

AS/NZS ISO 31000:2009 Risk management - Principles and guidelines

Australian Commonwealth Work Health and Safety Act 2011

Commonwealth Work Health and Safety Regulations 2011

Department of Infrastructure and Regional Development. GEM 002 - PFC Management Actions Advice. March 2015 (DoIRD, 2015)

Environment Protection Act 1970

GHD, August 2008, Report on ARFF National Testing Project, Preliminary Site Contamination Assessment – Former Adelaide ARFF Drill Ground

GHD, 2016: Airservices Australia – Adelaide Airport Sampling and Analysis Quality Plan

GHD, 2016a: Airservices Australia – Adelaide Airport Preliminary Sampling Report

Golder Associates, April 2016, Site History and Qualitative Risk Assessment of Perfluorinated Chemical Sources – Adelaide Airport

JBS&G, October 2013, Soil and Groundwater Investigation, Fire Training Facility, Adelaide Airport

Minnesota Department of Health (MDH, 2009) Soil Reference Values

NEPC 2013, National Environment Protection Council National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013, National Environment Protection Council

Soil and Groundwater Consulting, August 2002, Environmental Site Assessment Former Fire Fighting Training Area

Soil and Groundwater Consulting, August 2007, Results of June 2007 Groundwater Monitoring Event, Adelaide Airport Fire Training Facility

S&G Consulting, December 2009, Soil and Groundwater Investigation, Fire Training Facility, Adelaide Airport

S&G Consulting, March 2011, Soil and Groundwater Investigation, Fire Training Facility, Adelaide Airport

S&G Consulting, August 2012, Soil and Groundwater Investigation, Fire Training Facility, Adelaide Airport

The National Environmental Protection (Assessment of Site Contamination) Measure (NEPC December 1999)

US EPA US EPA 2014, *Emerging Contaminants – Ferfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)*, Emerging Contaminants Fact Sheet – PFOS and PFOA, http://www2.epa.gov/sites/production/files/2014-04/documents/factsheet_contaminant_pfos_pfoa_march2014.pdf, viewed 28 April 2015

10. Limitations

This report has been prepared by GHD for Airservices Australia (Airservices) and may only be used and relied on by Airservices for the purpose agreed between GHD and Airservices.

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

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

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

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

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

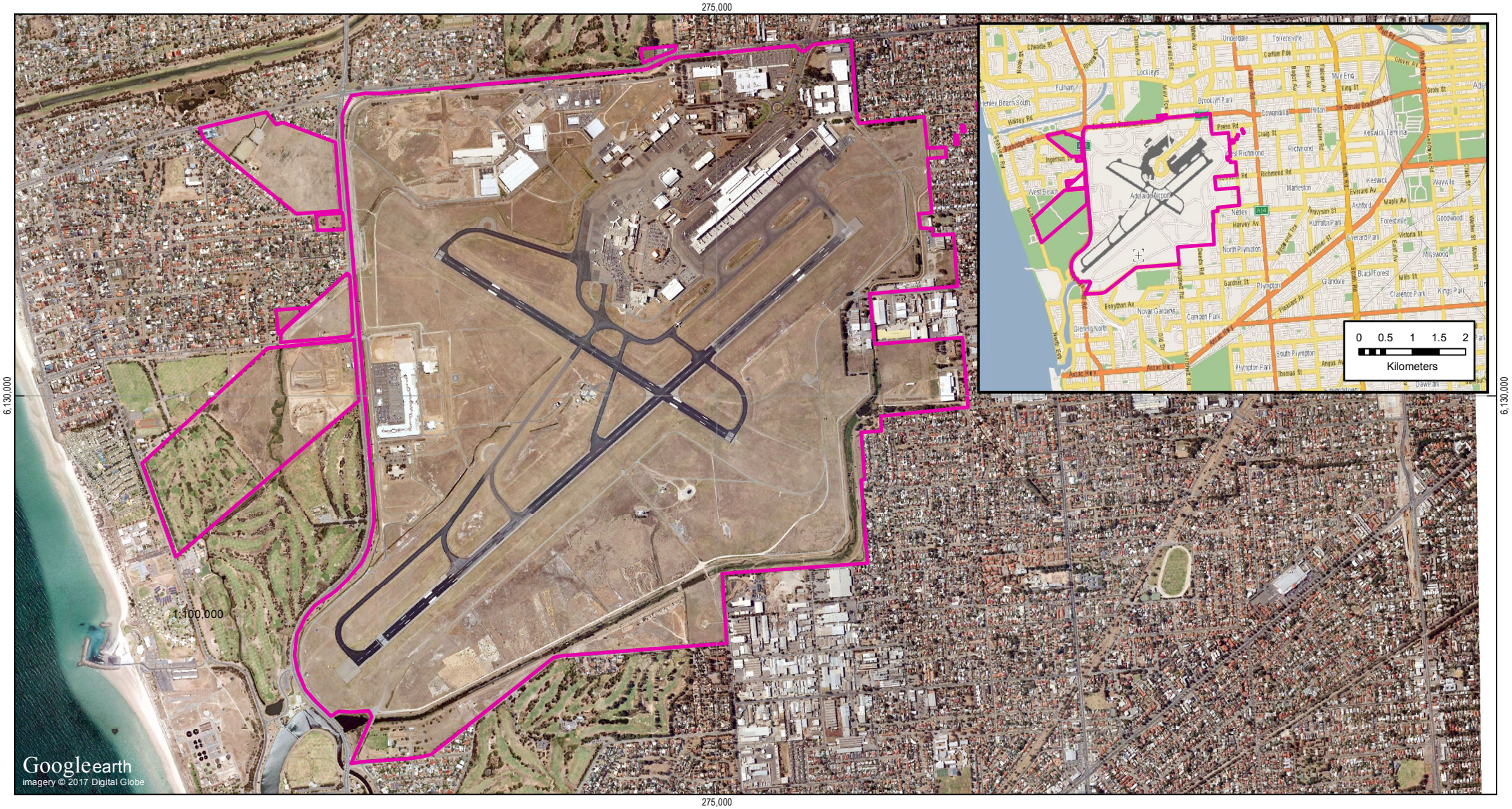
The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

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

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

Appendices

Appendix A – Figures



1:25,000 (at A4)

0 200 400 600 800

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Legend

Site Boundary (Adelaide Airport)

Airservices Australia Pty Ltd
Adelaide Airport
Sampling and Analysis Quality Plan Implementation Report

Job Number	31-34071
Revision	A
Date	17 Feb 2017

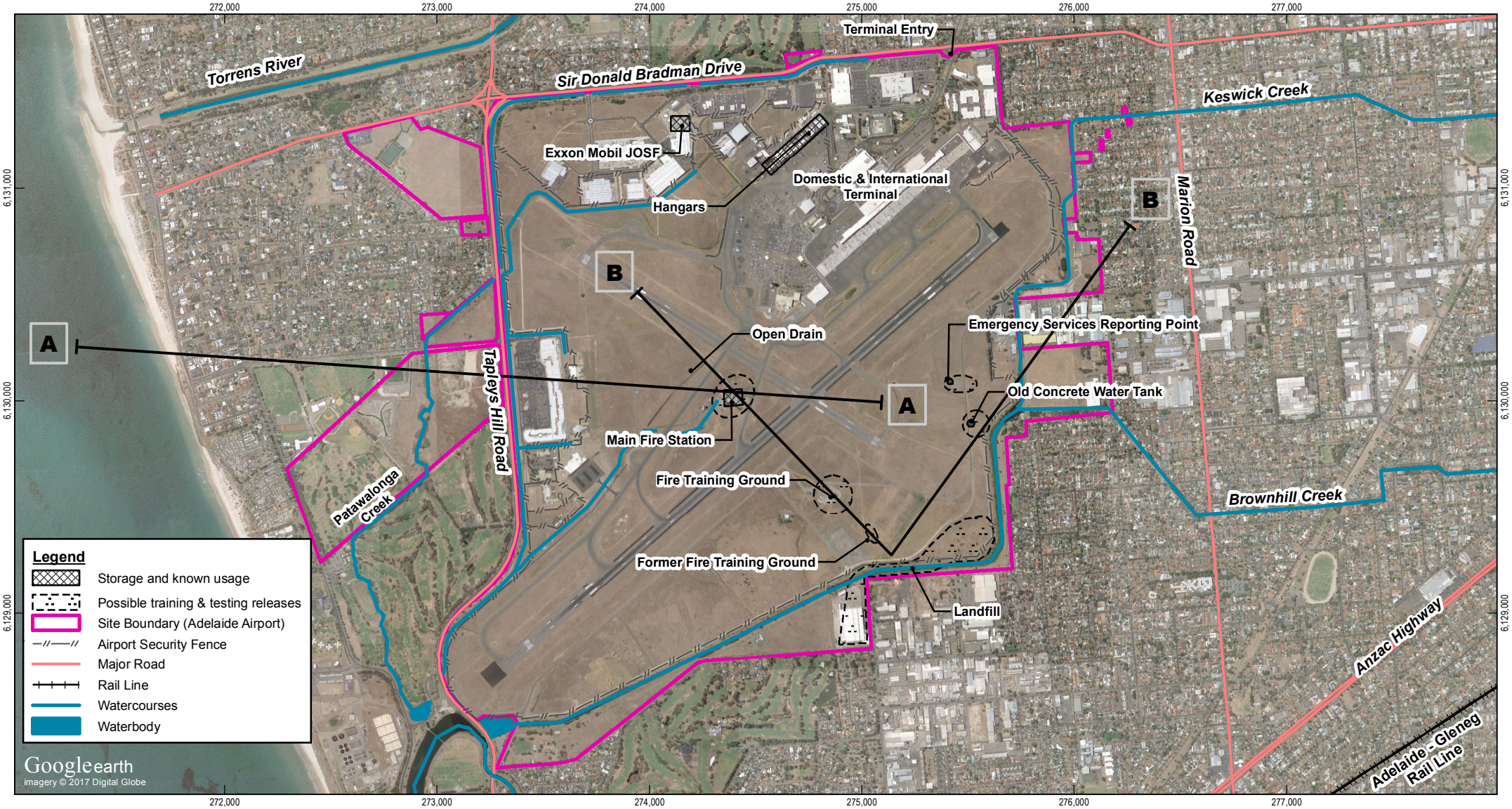
Site Locality Plan

Figure 1

G:\31\34071\GIS\Maps\Working\3134071_AdelaideSAQP_001_SiteLocality_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Google Earth: imagery (May 2015, extracted March 2016); PSMA: street map (2016). Created : jvc



1:25,000 (at A4)

0 200 400 600 800

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	D
Date	17 Feb 2017

Site Layout and Details

Figure 2

S:\GIS\Projects\31-34071\import\34071\GIS Brisbane by jvc\maps\31-34071-103_AdlSiteDetails_revD.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Google Earth: aerial imagery (Mar 2016, extracted Jun 2016). Created : jvc

1:1,600 (at A4)

0 50

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

GHD airservices

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	A
Date	30 Jun 2016

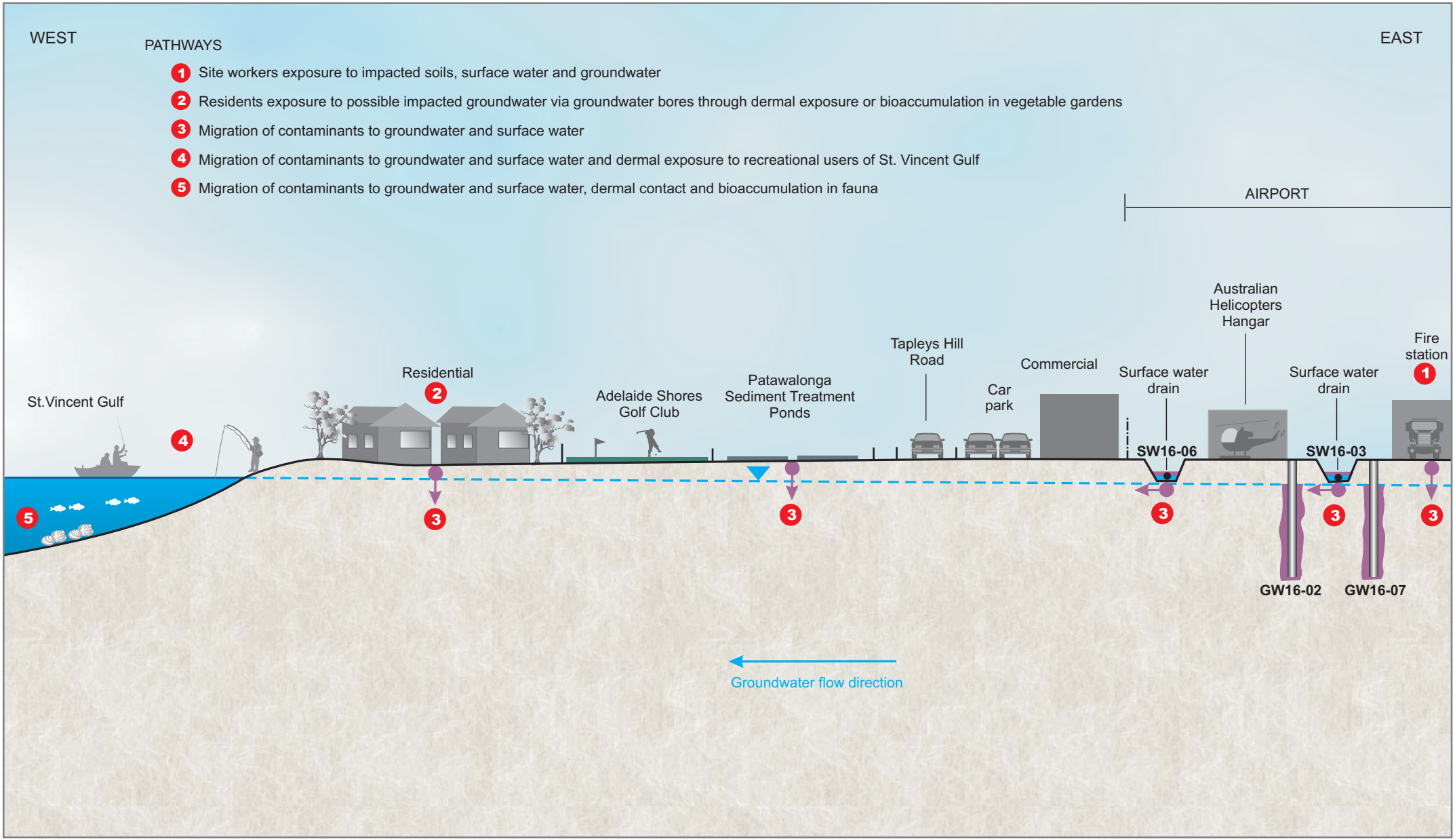
Site Layout and Details

Figure 2b

S:\GIS\Projects\31-34071\import\34071\GIS Brisbane by jvc\maps\31-34071-400_ZoomFireTraining_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Google Earth: aerial imagery (Mar 2016, extracted Jun 2016). Created : MS



LEGEND

Sands
PFAS impact
Migration of contaminants
Standing water level (approximate)

NOTE

Conceptual diagram only - not to scale

Adelaide Airport
Preliminary Sampling Report

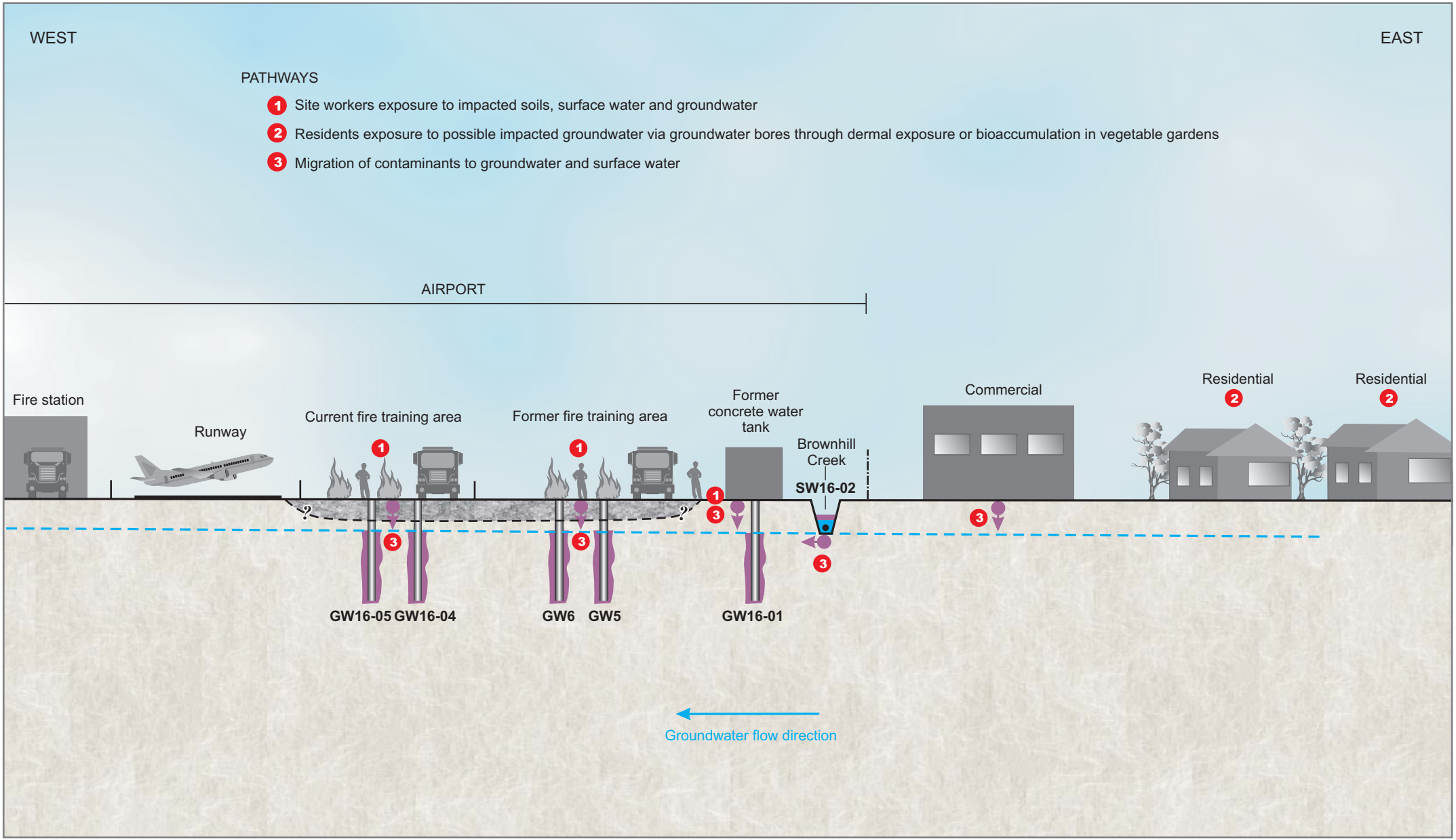
Cross Section A

Job Number	31-34071
Revision	A
Date	25 AUG 2016

Figure 3a

AU\Launceston\Projects\31\34071\3134071_LTN_07.cdr

8/180 Lonsdale Street Melbourne VIC 3000 Australia **T** 61 3 8687 8000 **F** 61 3 8687 8111 **E** melmail@ghd.com **W** www.ghd.com



LEGEND

- Fill (sand, gravelly sand, sandy clay)
- Sands
- PFAS impact
- Migration of contaminants
- Standing water level (approximate)

NOTE

Conceptual diagram only - not to scale

Adelaide Airport

Preliminary Sampling Report

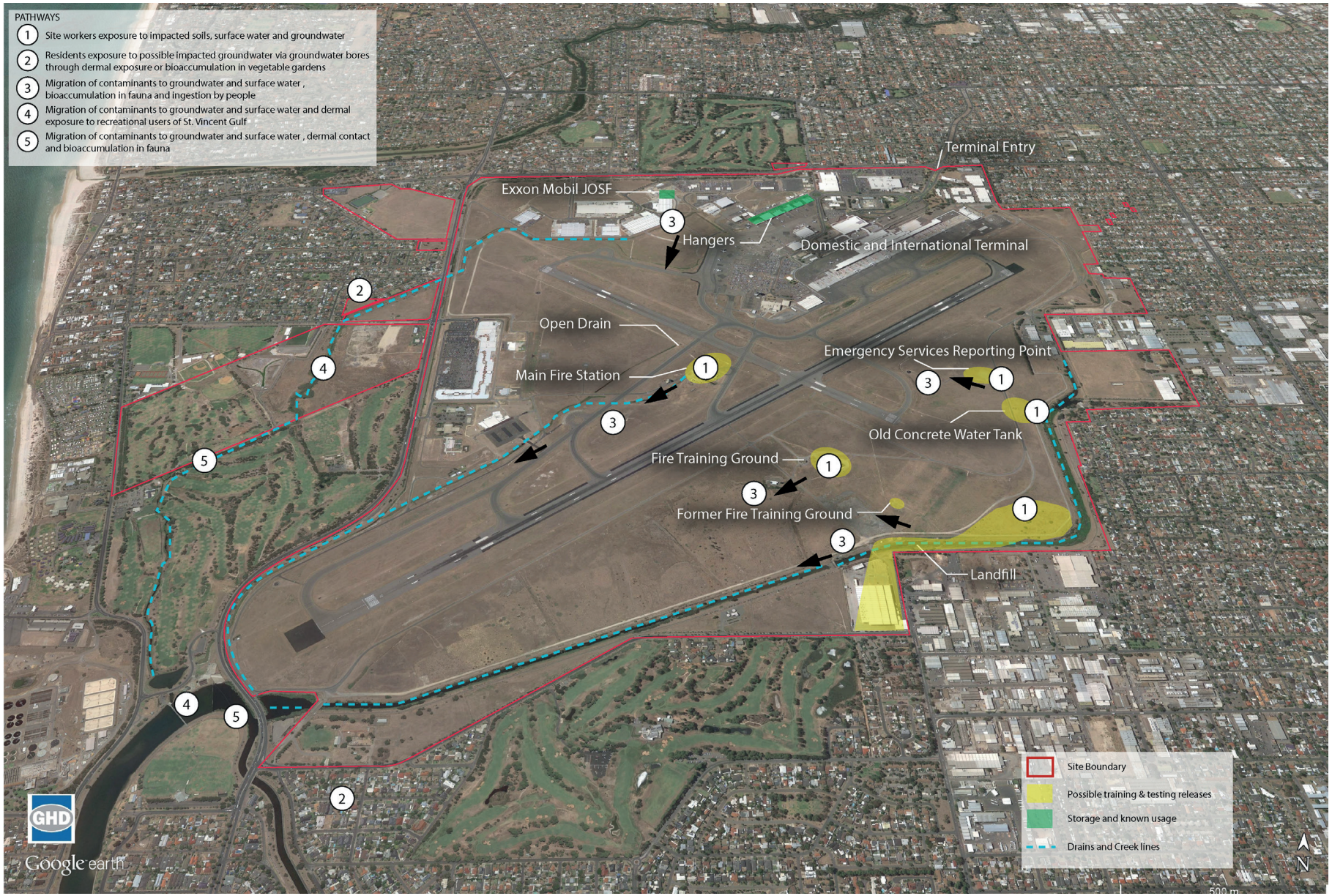
Cross Section A

Job Number 31-34071
Revision A
Date 25 AUG 2016

Figure 3b

AU\Launceston\Projects\31\34071\3134071_LTN_08.cdr

8/180 Lonsdale Street Melbourne VIC 3000 Australia T 61 3 8687 8000 F 61 3 8687 8111 E melmail@ghd.com W www.ghd.com



Paper Size A4

N

GHD

airservices

Air Services Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	B
Date	20 Feb 2017

Conceptual Site Model Pathways Figure: 4

N:\AU\Melbourne\Projects\31\34071\GIS\Maps\Graphics\31_34071_Adelaide_Airport_CSM_Pathways_rev_b.indd

145 Ann Street Brisbane QLD 4000 | T 61 7 3316 3000 | F 61 7 3316 3333 | E bnemail@ghd.com | W www.ghd.com

Appendix B – Certificates of title

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

COST	: $18.00 (GST exempt)	PARENT TITLE	: CT 5671/505
REGION	: GROUND FLOOR, L.T.O. - LGHP12	AUTHORITY	: RT 11178330
AGENT	: GRFL BOX NO : 000	DATE OF ISSUE	: 16/07/2009
SEARCHED ON	: 16/02/2010 AT : 09:45:26	EDITION	: 1

REGISTERED PROPRIETOR IN FEE SIMPLE

COMMONWEALTH OF AUSTRALIA OF ADELAIDE SA 5000

DESCRIPTION OF LAND

ALLOTMENT 50 DEPOSITED PLAN 49654
IN THE AREAS NAMED WEST RICHMOND AND ADELAIDE AIRPORT
HUNDRED OF ADELAIDE

EASEMENTS

SUBJECT TO THE EASEMENT OVER THE LAND MARKED W (RE 7012982)

SUBJECT TO THE EASEMENT OVER THE LAND MARKED Z FOR SEWERAGE PURPOSES (RE 7012982)

SUBJECT TO THE EASEMENT OVER THE LAND MARKED F TO THE SOUTH AUSTRALIAN WATER CORPORATION (RLG 8467654)

SUBJECT TO THE EASEMENT OVER THE LAND MARKED CC.DD.FF AND GG TO DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000) (TG 8495430A)

SUBJECT TO EASEMENTS OVER THE LAND MARKED S AND BB TO DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000) (TG 7186093)

SUBJECT TO EASEMENTS OVER THE LAND MARKED G AN AA TO DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000) (T 1983823 AND TG 7186094 RESPECTIVELY)

SUBJECT TO EASEMENTS OVER THE LAND MARKED H.J.K AND R TO THE COUNCIL FOR THE AREA (T 2580896 T 2788598 T 2986338 AND RE 7012981 RESPECTIVELY)

SUBJECT TO EASEMENTS OVER THE LAND MARKED A.C.D AND E TO THE MINISTER FOR INFRASTRUCTURE (T 1852797 T 2568231 T 2967282 AND T 3458133 RESPECTIVELY)

SUBJECT TO EASEMENTS OVER THE LAND MARKED L AND B FOR SEWERAGE PURPOSES TO THE SOUTH AUSTRALIAN WATER CORPORATION (VM 8413694 AND TG 8467653 RESPECTIVELY)

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12	PARENT TITLE : CT 5671/505
AGENT : GRFL BOX NO : 000	AUTHORITY : RT 11178330
SEARCHED ON : 16/02/2010 AT : 09:45:26	DATE OF ISSUE : 16/07/2009
	EDITION : 1

EASEMENTS

SUBJECT TO A FREE AND UNRESTRICTED RIGHT OF WAY OVER THE LAND MARKED W

TOGETHER WITH THE EASEMENT OVER ALLOTMENT 2 IN FP 6138 ALLOTMENT 32 IN FP 7197 AND ALLOTMENTS 3 AND 4 IN FP 8474 APPURTENANT TO THE WITHIN LAND EXCEPT THOSE PORTIONS MARKED Y.Z AND AB HEREON (T 1912913)

TOGETHER WITH THE EASEMENT OVER ALLOTMENTS 1 TO 4 INCLUSIVE AND 6 TO 48 INCLUSIVE IN DP 8418 AND ALLOTMENTS 49 TO 58 INCLUSIVE IN FP 2036 APPURTENANT TO THE WITHIN LAND EXCEPT THOSE PORTIONS MARKED Y.Z AND AB HEREON (T 1921633)

TOGETHER WITH EASEMENTS OVER THE LAND MARKED N.P.R.S.T AND U ON FP 28155 APPURTENANT TO THE WITHIN LAND EXCEPT THOSE PORTIONS MARKED Y.Z AND AB HEREON (T 1819190 T 1821792 T 1823100 T 1823536 T 1826650 AND T 1831009 RESPECTIVELY)

TOGETHER WITH A RIGHT OF WAY OVER THE LAND MARKED M ON FP 28155 APPURTENANT TO THE WITHIN LAND EXCEPT THOSE PORTIONS MARKED X.Z AND AB HEREON (T 1660076)

SCHEDULE OF ENDORSEMENTS

THE AIRPORTS (TRANSITIONAL) ACT 1996 AND THE AIRPORTS ACT 1996 APPLY TO THE WITHIN LAND

7343328 LEASE TO YANDAL PTY. LTD. COMMENCING ON 1.9.1988 AND EXPIRING ON 31.8.2028 OF PORTION (A1 AND A2 IN GP 338/1989)

7917861 PARTIAL SURRENDER OF LEASE 7343328

7917862 EXTENSION OF LEASE 7343328 EXPIRING ON 12.4.2045

7917863 LEASE TO EXPORT PARK PTY. LTD. COMMENCING ON 13.4.1995 AND EXPIRING ON 12.4.2045 OF PORTION (C IN GP 31/1995)

8108261 LEASE TO AIRSERVICES AUSTRALIA COMMENCING ON 6.7.1995 AND EXPIRING ON 30.6.2034 OF PORTION (D.E.H.R.L AND P IN GP 154/1995)

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12	PARENT TITLE : CT 5671/505
AGENT : GRFL BOX NO : 000	AUTHORITY : RT 11178330
SEARCHED ON : 16/02/2010 AT : 09:45:26	DATE OF ISSUE : 16/07/2009
	EDITION : 1

SCHEDULE OF ENDORSEMENTS

8108262	LEASE TO AIRSERVICES AUSTRALIA COMMENCING ON 6.7.1995 AND EXPIRING ON 30.6.2034 OF PORTION (Q IN GP 534/1995)
8108264	LEASE TO AIRSERVICES AUSTRALIA COMMENCING ON 6.7.1995 AND EXPIRING ON 30.6.2034 OF PORTION (A IN GP 154/1995)
8108265	LEASE TO AIRSERVICES AUSTRALIA COMMENCING ON 6.7.1995 AND EXPIRING ON 30.6.2034 OF PORTION (J IN GP 154/1995)
8108266	LEASE TO AIRSERVICES AUSTRALIA COMMENCING ON 6.7.1995 AND EXPIRING ON 30.6.2034 OF PORTION (G IN GP 154/1995)
8108267	LEASE TO AIRSERVICES AUSTRALIA COMMENCING ON 6.7.1995 AND EXPIRING ON 30.6.2034 OF PORTION (F IN GP 154/1995)
81[illegible]358	TRANSFER OF LEASE 7343328 TO FEDERAL AIRPORTS CORPORATION
81[illegible]959	TRANSFER OF LEASE 7917863 TO FEDERAL AIRPORTS CORPORATION
8286761	LEASE TO CIVIL AVIATION AUTHORITY COMMENCING ON 1.1.1990 AND EXPIRING ON 30.12.2009 OF PORTION (M IN GP 154/1995)
8383874	VESTING OF LEASE 8286761 IN AIRSERVICES AUSTRALIA
8495430	PARTIAL SURRENDER OF LEASE 7343328
8496007	PARTIAL SURRENDER OF LEASE 8108261
8496008	LEASE TO AIRSERVICES AUSTRALIA COMMENCING ON 23.4.1998 AND EXPIRING ON 30.6.2034 OF PORTION (S AND T LOCALISER IN GP 156/1998)
8635854	LEASE TO ADELAIDE AIRPORT LTD. COMMENCING ON 29.5.1998 AND EXPIRING ON 28.5.2048 PURSUANT TO THE AIRPORTS (TRANSITIONAL) ACT 1996
8636639	CAVEAT BY HUNTLEY INVESTMENTS PTY. LTD. OVER PORTION
8747695	MORTGAGE OF LEASE 8635854 TO NATIONAL AUSTRALIA BANK LTD.

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12	PARENT TITLE : CT 5671/505
AGENT : GRFL BOX NO : 000	AUTHORITY : RT 11178330
SEARCHED ON : 16/02/2010 AT : 09:45:26	DATE OF ISSUE : 16/07/2009
	EDITION : 1

SCHEDULE OF ENDORSEMENTS

9021827	TRANSFER OF MORTGAGE 8747695 TO ANZ CAPEL COURT LTD.
9449390	UNDERLEASE OF PORTION OF LAND IN LEASE 8108264 TO CIVIL AVIATION SAFETY AUTHORITY COMMENCING ON 1.2.2000 AND EXPIRING ON 31.1.2005 (TENANCY A, STORAGE E, STORAGE F AND CONFERENCE ROOM IN GP 310/2000)
9669862	UNDERLEASE OF PORTION OF LAND IN LEASE 7343328 TO ASTRAZENECA PTY. LTD. COMMENCING ON 15.6.2003 AND EXPIRING ON 14.6.2013 (A5O OFFICE AND A5W WAREHOUSE IN GP 477/1995)
9690093	UNDERLEASE OF LAND IN LEASE 7343328 TO DANZAS AIE PTY. LTD. COMMENCING ON 9.10.2000 AND EXPIRING ON 8.10.2005 (A4O OFFICE AND A4W WAREHOUSE IN GP 477/1995)
9752355	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO CROWN CASTLE AUSTRALIA PTY. LTD. COMMENCING ON 1.11.2001 AND EXPIRING ON 31.10.2011 (AB IN GP 160/1993)
9765019	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AUSTRALAND HOLDINGS LTD. COMMENCING ON 1.10.2003 AND EXPIRING ON 27.5.2048 (W IN GP 363/2003)
9787735	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO NATIONAL JET SYSTEMS PTY. LTD. COMMENCING ON 1.1.2002 AND EXPIRING ON 31.12.2026 (AREA A AREA B AND AREA 11C IN GP 193/2003 9C IN GP 130/1998 AND 10C IN GP 545/1993)
9848429	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AIRPORT WEST PTY. LTD. COMMENCING ON 1.11.2003 AND EXPIRING ON 27.5.2048 OF PORTION (A IN GP 466/2003)
10001921	TRANSFER OF UNDERLEASE 9765019 TO AWPT5 HOLDINGS NO.2 PTY. LTD.
10110484	UNDERLEASE OF PORTION OF LAND IN LEASE 7343328 TO AUSTRALIAN AIR EXPRESS PTY. LTD. COMMENCING ON 1.9.2004 AND EXPIRING ON 30.11.2008 (B102 OFFICE, B1W WAREHOUSE, B4W CANOPY, B101 OFFICE, B5W LOADING RAMP, B1M01 OFFICE, B1M02 OFFICE IN GP 477/1995)

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12	PARENT TITLE : CT 5671/505
AGENT : GRFL BOX NO : 000	AUTHORITY : RT 11178330
SEARCHED ON : 16/02/2010 AT : 09:45:26	DATE OF ISSUE : 16/07/2009
	EDITION : 1

SCHEDULE OF ENDORSEMENTS

10192024	EXTENSION OF UNDERLEASE 9449390 EXPIRING ON 31.1.2010
10327185	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO LEX PROPERTY MANAGEMENT LTD. COMMENCING ON 19.3.2005 AND EXPIRING ON 27.5.2048 (A AND T IN GP 294/2005)
10327197	UNDERLEASE OF LAND IN UNDERLEASE 10327185 TO CEBAS PTY. LTD. COMMENCING ON 23.3.2006 AND EXPIRING ON 22.3.2021
10327198	TRANSFER OF UNDERLEASE 10327185 TO TRUST CO. OF AUSTRALIA LTD.
10327199	MORTGAGE OF UNDERLEASE 10327185 TO NATIONAL AUSTRALIA BANK LTD.
10327200	MORTGAGE OF UNDERLEASE 10327197 TO NATIONAL AUSTRALIA BANK LTD.
10351042	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AUSTRALIAN HELICOPTERS PTY. LTD. COMMENCING ON 1.7.2005 AND EXPIRING ON 30.6.2015 (H1 AND H2 IN GP 314/2005)
10354458	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AUSTRALAND INDUSTRIAL NO.88 PTY. LTD. COMMENCING ON 15.10.2005 AND EXPIRING ON 27.5.2048 (A IN GP 185/2005)
10359859	EXTENSION OF UNDERLEASE 9690093 EXPIRING ON 8.10.2010
10475548	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AWPT5 HOLDINGS NO.2 PTY. LTD. COMMENCING ON 6.3.2006 AND EXPIRING ON 27.5.2048 (E IN GP 363/2003)
10478895	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AUSTRALAND INDUSTRIAL NO. 100 PTY. LTD. COMMENCING ON 21.2.2006 AND EXPIRING ON 27.5.2048 (C IN GP 242/2005)
10491597	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 9848429 TO JAY JAYS TRADEMARK PTY. LTD. COMMENCING ON 23.10.2003 AND EXPIRING ON 22.10.2009 (T13/14 IN GP 353/2004)
10491598	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 9848429 TO JUST JEANS PTY. LTD. COMMENCING ON 23.10.2003 AND EXPIRING ON 22.10.2009 (T53 IN GP 353/2004)

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12
AGENT : GRFL BOX NO : 000
SEARCHED ON : 16/02/2010 AT : 09:45:26

PARENT TITLE : CT 5671/505
AUTHORITY : RT 11178330
DATE OF ISSUE : 16/07/2009
EDITION : 1

SCHEDULE OF ENDORSEMENTS

10491600 UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 9848429 TO JACQUI E PTY. LTD. COMMENCING ON 12.8.2004 AND EXPIRING ON 11.8.2010 (T56 IN GP 353/2004)

10491601 UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 9848429 TO JIREH INTERNATIONAL PTY. LTD. COMMENCING ON 27.10.2005 AND EXPIRING ON 26.10.2012 (T72 IN FP 48371)

10491602 UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 9848429 TO CANTERBURY LACE PTY. LTD. COMMENCING ON 27.10.2005 AND EXPIRING ON 26.10.2010 (T74 IN FP 48371)

10491604 UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 9848429 TO JEANSWEST CORPORATION PTY. LTD. COMMENCING ON 27.10.2005 AND EXPIRING ON 26.10.2010 (T77 IN FP 48371)

10491605 UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 9848429 TO YACKATOON NOMINEES PTY. LTD. COMMENCING ON 27.10.2005 AND EXPIRING ON 26.10.2010 (T79 IN FP 48371)

10513920 UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 9848429 TO PUMPKIN PATCH ORIGINALS LTD. COMMENCING ON 27.10.2005 AND EXPIRING ON 26.10.2010 (T93 IN FP 48371)

10518861 UNDERLEASE OF LAND IN UNDERLEASE 10478895 TO TOLL TRANSPORT PTY. LTD. COMMENCING ON 23.2.2006 AND EXPIRING ON 22.2.2018

10538746 UNDERLEASE OF LAND IN UNDERLEASE 10354458 TO PALCOVE PTY. LTD. COMMENCING ON 15.10.2005 AND EXPIRING ON 14.11.2015 OF PORTION (A IN GP 185/2005)

10566324 UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO COMMONWEALTH OF AUSTRALIA COMMENCING ON 15.9.2005 AND EXPIRING ON 14.9.2013 (A IN GP 376/2005)

10676203 UNDERLEASE OF LAND IN UNDERLEASE 9765019 TO LG ELECTRONICS AUSTRALIA PTY. LTD. COMMENCING ON 7.3.2006 AND EXPIRING ON 12.2.2014

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12	PARENT TITLE : CT 5671/505
AGENT : GRFL BOX NO : 000	AUTHORITY : RT 11178330
SEARCHED ON : 16/02/2010 AT : 09:45:26	DATE OF ISSUE : 16/07/2009
	EDITION : 1

SCHEDULE OF ENDORSEMENTS

10676203A	UNDERLEASE OF LAND IN UNDERLEASE 10475548 TO LG ELECTRONICS AUSTRALIA PTY. LTD. COMMENCING ON 7.3.2006 AND EXPIRING ON 12.2.2014
10676205	TRANSFER OF UNDERLEASE 9765019 TO SAITEYSMCMAHON PROPERTY LTD.
10676205A	TRANSFER OF UNDERLEASE 10475548 TO SAITEYSMCMAHON PROPERTY LTD.
10676206	TRANSFER OF UNDERLEASE 10478895 TO SAITEYSMCMAHON PROPERTY LTD.
10676207	TRANSFER OF UNDERLEASE 10354458 TO SAITEYSMCMAHON PROPERTY LTD.
10711856	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO HUDSONS ADELAIDE AIRPORT PTY. LTD. COMMENCING ON 17.2.2006 AND EXPIRING ON 16.2.2014 (Z TENANCY & T29 TENANCY IN FP 48025)
10711857	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AUSTRALIAN WAY PTY. LTD. COMMENCING ON 24.5.2006 AND EXPIRING ON 23.4.2011 (T9 TENANCY & T10 TENANCY IN FP 48025)
10808204	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AUSTRALAND INDUSTRIAL (AWPT6) PTY. LTD. COMMENCING ON 14.5.2007 AND EXPIRING ON 27.5.2048 (A3, A4 AND A5 IN FP 49710)
10837291	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AUSTRALAND INDUSTRIAL NO. 100 PTY. LTD. COMMENCING ON 1.10.2007 AND EXPIRING ON 27.5.2048 (B1 IN FP 49736)
10879127	MORTGAGE OF UNDERLEASE 10354458 TO TASOVAC PTY. LTD. (SINGLE COPY ONLY)
10879361	MORTGAGE OF UNDERLEASE 10478895 TO TASOVAC PTY. LTD. (SINGLE COPY ONLY)
10887249	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 10808204 TO LASERLITE AUSTRALIA PTY. LTD. COMMENCING ON 14.5.2007 AND EXPIRING ON 13.5.2012 (A4 IN FP 49710)
10887250	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 10808204 TO TYCO AUSTRALIA PTY. LTD. COMMENCING ON 15.8.2007 AND EXPIRING ON 14.8.2014 (A5 IN FP 49710)

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12	PARENT TITLE : CT 5671/505
AGENT : GRFL BOX NO : 000	AUTHORITY : RT 11178330
SEARCHED ON : 16/02/2010 AT : 09:45:26	DATE OF ISSUE : 16/07/2009
	EDITION : 1

SCHEDULE OF ENDORSEMENTS

10887251	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 10808204 TO MIELE AUSTRALIA PTY. LTD. COMMENCING ON 15.10.2007 AND EXPIRING ON 31.10.2012 (B2 IN FP 50072)
10887252	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 10808204 TO CELTIC INDUSTRIES (SA) PTY. LTD. COMMENCING ON 1.9.2007 AND EXPIRING ON 31.8.2012 (B4 IN FP 50072)
10887253	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 10808204 TO HOT MELT PACKAGING SYSTEMS PTY. LTD. COMMENCING ON 1.9.2007 AND EXPIRING ON 31.8.2012 (B5 IN FP 50072)
10902222	MORTGAGE OF UNDERLEASE 9848429 TO NATIONAL AUSTRALIA BANK LTD.
10912611	EXTENSION OF MORTGAGE 10879127 EXPIRING ON 29.6.2010
10912618	EXTENSION OF MORTGAGE 10478895 EXPIRING ON 29.6.2010
10940631	UNDERLEASE OF LAND IN UNDERLEASE 10837291 TO THERMO GAMMA METRICS PTY. LTD. COMMENCING ON 20.12.2007 AND EXPIRING ON 13.1.2018
10962557	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO WITCHERY FASHIONS PTY. LTD. COMMENCING ON 1.4.2007 AND EXPIRING ON 31.3.2012 (T25 TENANCY IN FP 48025)
11006150	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 10808204 TO PROVET SA PTY. LTD. COMMENCING ON 1.4.2008 AND EXPIRING ON 31.3.2018 (B3 IN FP 50072)
11012099	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO RC AIRPORTS PTY. LTD. COMMENCING ON 1.3.2008 AND EXPIRING ON 28.2.2013 (T4 TENANCY IN FP 48025)
11054167	PARTIAL SURRENDER OF LEASE 8108261
11054168	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AIRSERVICES AUSTRALIA COMMENCING ON 1.3.2008 AND EXPIRING ON 30.6.2034 (GPL AND FMA IN FP 50688)

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12
AGENT : GRFL BOX NO : 000
SEARCHED ON : 16/02/2010 AT : 09:45:26

PARENT TITLE : CT 5671/505
AUTHORITY : RT 11178330
DATE OF ISSUE : 16/07/2009
EDITION : 1

SCHEDULE OF ENDORSEMENTS

11062132	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AUSTRALAND INDUSTRIAL NO 158 PTY. LTD. COMMENCING ON 26.5.2008 AND EXPIRING ON 27.5.2048 OF PORTION (C1 C2 AND C3 IN FP 50354)
11082185	TRANSFER OF UNDERLEASE 9765019 TO TONIC PTY. LTD.
11082186	TRANSFER OF UNDERLEASE 10475548 TO TONIC PTY. LTD.
11082187	MORTGAGE OF UNDERLEASE 9765019 TO ST.GEORGE BANK LTD. (SINGLE COPY ONLY)
11082188	MORTGAGE OF UNDERLEASE 10475548 TO ST.GEORGE BANK LTD. (SINGLE COPY ONLY)
11104330	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO QANTAS AIRWAYS LTD. COMMENCING ON 17.2.2006 AND EXPIRING ON 16.2.2021 (Q1, Q11 OVERSIZE BAGGAGE, Q14 AND S2 STORE IN FP 48025)
11104331	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO QANTAS AIRWAYS LTD. COMMENCING ON 17.2.2006 AND EXPIRING ON 16.2.2021 (Q2 OFFICES, Q7 TICKET SALES AND Q3 OFFICES IN FP 48025)
11104332	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO QANTAS AIRWAYS LTD. COMMENCING ON 17.2.2006 AND EXPIRING ON 16.2.2021 (Q4 CLUB LOUNGE IN FP 48025)
11104333	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO QANTAS AIRWAYS LTD. COMMENCING ON 17.2.2006 AND EXPIRING ON 16.2.2021 (Q5 OFFICES IN FP 48025)
11104358	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AIRSERVICES AUSTRALIA COMMENCING ON 1.3.2008 AND EXPIRING ON 30.6.2034 (TR IN FP 51173)
11107101	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 11062132 TO HILLS INDUSTRIES LTD. COMMENCING ON 1.10.2008 AND EXPIRING ON 30.9.2013 (D3 IN FP 51351)
11107102	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 11062132 TO HERBALIFE AUSTRALASIA PTY. LTD. COMMENCING ON 30.7.2008 AND EXPIRING ON 29.7.2013 (C2 IN FP 50354)

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12
AGENT : GRFL BOX NO : 000
SEARCHED ON : 16/02/2010 AT : 09:45:26

PARENT TITLE : CT 5671/505
AUTHORITY : RT 11178330
DATE OF ISSUE : 16/07/2009
EDITION : 1

SCHEDULE OF ENDORSEMENTS

11107103	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 11062132 TO GROUNDHOG SERVICES PTY. LTD. COMMENCING ON 18.8.2008 AND EXPIRING ON 17.8.2013 (D2 IN FP 51351)
11107104	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 11062132 TO HILLS INDUSTRIES LTD. COMMENCING ON 1.10.2008 AND EXPIRING ON 30.9.2013 (D1 IN FP 51351)
11110458	EXTENSION OF UNDERLEASE 10110484 EXPIRING ON 30.11.2012
11110459	UNDERLEASE OF PORTION OF LAND IN LEASE 7343328 TO AUSTRALIAN AIR EXPRESS PTY. LTD. COMMENCING ON 1.1.2005 AND EXPIRING ON 30.11.2008 (RAMP AREA Y IN FP 52214)
11110460	EXTENSION OF UNDERLEASE 11110459 EXPIRING ON 30.11.2012
11137583A	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AUSTRALIAN AIR EXPRESS PTY. LTD. COMMENCING ON 1.1.2007 AND EXPIRING ON 31.12.2009 (TENANCY A1 IN FP 51207)
11172419	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO REGIONAL EXPRESS HOLDINGS LTD. COMMENCING ON 1.11.2007 AND EXPIRING ON 27.5.2048 (BUILDING A AND YARD B IN FP 52577)
11175630	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO WORLD COURIER (AUST) PTY. LTD. COMMENCING ON 15.8.2008 AND EXPIRING ON 14.8.2013 (FOYER, D STAIRS, C STAIRS, G STAIRS, H STAIRS, E OFFICE, F OFFICE, WAREHOUSE, YARD A, YARD B, YARD J AND CARPARK IN GP 36/2004)
11175882	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AUSTRALAND INDUSTRIAL NO 158 PTY. LTD. COMMENCING ON 15.1.2009 AND EXPIRING ON 27.5.2048 (E1 AND E2 IN FP 52199)
11184253	UNDERLEASE OF PORTION OF LAND IN LEASE 7343328 TO TNT AUSTRALIA PTY. LTD. COMMENCING ON 13.11.2008 AND EXPIRING ON 12.11.2013 (A6O OFFICE, A6W WAREHOUSE & A8W CANOPY IN GP 477/95)
11199073	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 9848429 TO ESPRIT (RETAIL) PTY. LTD. COMMENCING ON 23.10.2008 AND EXPIRING ON 22.10.2013 (T22 IN GP 353/2004)

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12	PARENT TITLE : CT 5671/505
AGENT : GRFL BOX NO : 000	AUTHORITY : RT 11178330
SEARCHED ON : 16/02/2010 AT : 09:45:26	DATE OF ISSUE : 16/07/2009
	EDITION : 1

SCHEDULE OF ENDORSEMENTS

11208564	MORTGAGE OF UNDERLEASE 11172419 TO WESTPAC BANKING CORPORATION
11233798	UNDERLEASE OF PORTION OF LAND IN LEASE 7343328 TO QANTAS ROAD EXPRESS PTY. LTD. COMMENCING ON 31.5.2008 AND EXPIRING ON 30.5.2013 (C6W WAREHOUSE AND C6O OFFICE IN GP 477/1995)
11245026	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO PURELY MERINO PTY. LTD. COMMENCING ON 1.12.2006 AND EXPIRING ON 1.12.2011 (T26 TENANCY IN FP 48025)
11245027	TRANSFER OF UNDERLEASE 11245026 TO THE PURELY GROUP PTY. LTD.
11264941	TRANSFER OF UNDERLEASE 10354458 TO ORCHARD MANAGEMENT LTD.
11264942	TRANSFER OF UNDERLEASE 10478895 TO ORCHARD MANAGEMENT LTD.
11273263	UNDERLEASE OF PORTION OF LAND IN UNDERLEASE 9848429 TO ELEVEN FOURTEEN PTY. LTD. COMMENCING ON 14.9.2009 AND EXPIRING ON 13.9.2012 (T69 AND T70 IN FP 48371)
11294484	UNDERLEASE OF PORTION OF LAND IN LEASE 8635854 TO AIRPORT WEST PTY. LTD. COMMENCING ON 1.12.2008 AND EXPIRING ON 27.5.2048 (AREA Y IN FP 52160)
11316530	EXTENSION OF UNDERLEASE 10491597 EXPIRING ON 22.10.2012

NOTATIONS

DOCUMENTS AFFECTING THIS TITLE

EU	11316556	UNREGISTERED	UL	11329890	UNREGISTERED
UL	11331488	UNREGISTERED			

REGISTRAR-GENERAL'S NOTES

APPROVED FILED PLAN NO UNIQUE IDENTIFIER FX27099
APPROVED FILED PLAN NO UNIQUE IDENTIFIER FX38459
APPROVED FILED PLAN NO UNIQUE IDENTIFIER FX42263
APPROVED FILED PLAN NO UNIQUE IDENTIFIER FX48323
APPROVED FILED PLAN NO UNIQUE IDENTIFIER FX50477

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

	PARENT TITLE : CT 5671/505
REGION : GROUND FLOOR, L.T.O. - LGHP12	AUTHORITY : RT 11178330
AGENT : GRFL BOX NO : 000	DATE OF ISSUE : 16/07/2009
SEARCHED ON : 16/02/2010 AT : 09:45:26	EDITION : 1

REGISTRAR-GENERAL'S NOTES

APPROVED FILED PLAN NO UNIQUE IDENTIFIER FX51360
APPROVED GP 325/05
APPROVED GP 326/05
PLAN FOR LEASE PURPOSES GP 10/96
PLAN FOR LEASE PURPOSES GP 130/98
PLAN FOR LEASE PURPOSES GP 154/95
PLAN FOR LEASE PURPOSES GP 160/93
PLAN FOR LEASE PURPOSES GP 185/05
PLAN FOR LEASE PURPOSES GP 193/02
PLAN FOR LEASE PURPOSES GP 193/03
PLAN FOR LEASE PURPOSES GP 221/02
PLAN FOR LEASE PURPOSES GP 241/00
PLAN FOR LEASE PURPOSES GP 242/05
PLAN FOR LEASE PURPOSES GP 247/98
PLAN FOR LEASE PURPOSES GP 290/03
PLAN FOR LEASE PURPOSES GP 290/95
PLAN FOR LEASE PURPOSES GP 293/94
PLAN FOR LEASE PURPOSES GP 294/05
PLAN FOR LEASE PURPOSES GP 31/95
PLAN FOR LEASE PURPOSES GP 310/00
PLAN FOR LEASE PURPOSES GP 314/05
PLAN FOR LEASE PURPOSES GP 327/97
PLAN FOR LEASE PURPOSES GP 328/05
PLAN FOR LEASE PURPOSES GP 33/02
PLAN FOR LEASE PURPOSES GP 338/89
PLAN FOR LEASE PURPOSES GP 34/02
PLAN FOR LEASE PURPOSES GP 345/03
PLAN FOR LEASE PURPOSES GP 353/04
PLAN FOR LEASE PURPOSES GP 36/04
PLAN FOR LEASE PURPOSES GP 363/03
PLAN FOR LEASE PURPOSES GP 37/04
PLAN FOR LEASE PURPOSES GP 376/05
PLAN FOR LEASE PURPOSES GP 423/97
PLAN FOR LEASE PURPOSES GP 428/02
PLAN FOR LEASE PURPOSES GP 462/94
PLAN FOR LEASE PURPOSES GP 463/96
PLAN FOR LEASE PURPOSES GP 466/03
PLAN FOR LEASE PURPOSES GP 470/01
PLAN FOR LEASE PURPOSES GP 477/95
PLAN FOR LEASE PURPOSES GP 502/96
PLAN FOR LEASE PURPOSES GP 534/95

CONT.

Title Register Search

LANDS TITLES OFFICE, ADELAIDE

For a Certificate of Title issued pursuant to the Real Property Act 1886

REGISTER SEARCH OF CERTIFICATE OF TITLE * VOLUME 6038 FOLIO 548 *

REGION : GROUND FLOOR, L.T.O. - LGHP12
AGENT : GRFL BOX NO : 000
SEARCHED ON : 16/02/2010 AT : 09:45:26

PARENT TITLE : CT 5671/505
AUTHORITY : RT 11178330
DATE OF ISSUE : 16/07/2009
EDITION : 1

REGISTRAR-GENERAL'S NOTES

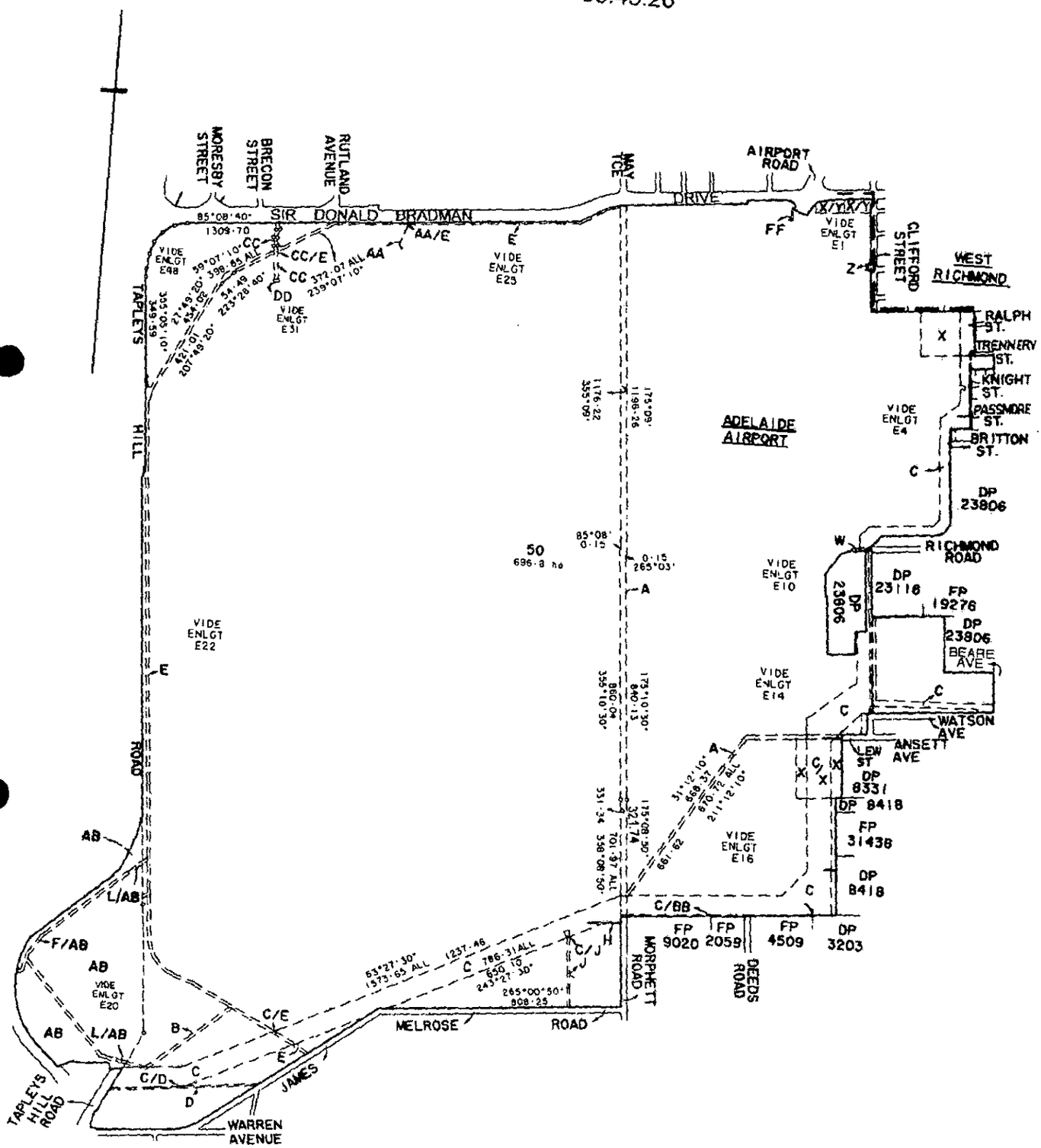
PLAN FOR LEASE PURPOSES GP 535/95
PLAN FOR LEASE PURPOSES GP 545/93
PLAN FOR LEASE PURPOSES GP 574/93
PLAN FOR LEASE PURPOSES GP 581/00
PLAN FOR LEASE PURPOSES GP 60/97
PLAN FOR LEASE PURPOSES GP 601/01
PLAN FOR LEASE PURPOSES GP 614/91
PLAN FOR LEASE PURPOSES GP 66/00
TEXTUAL AMENDMENT VIDE DD 11288342
APPROVED PLAN FOR LEASE PURPOSES FX48025
APPROVED PLAN FOR LEASE PURPOSES FX48371
APPROVED PLAN FOR LEASE PURPOSES FX48643
APPROVED PLAN FOR LEASE PURPOSES FX48994
APPROVED PLAN FOR LEASE PURPOSES FX49391
APPROVED PLAN FOR LEASE PURPOSES FX49448
APPROVED PLAN FOR LEASE PURPOSES FX49710
APPROVED PLAN FOR LEASE PURPOSES FX49736
APPROVED PLAN FOR LEASE PURPOSES FX49972
APPROVED PLAN FOR LEASE PURPOSES FX50072
APPROVED PLAN FOR LEASE PURPOSES FX50354
APPROVED PLAN FOR LEASE PURPOSES FX50688
APPROVED PLAN FOR LEASE PURPOSES FX50853
APPROVED PLAN FOR LEASE PURPOSES FX51173
APPROVED PLAN FOR LEASE PURPOSES FX51207
APPROVED PLAN FOR LEASE PURPOSES FX51351
APPROVED PLAN FOR LEASE PURPOSES FX52160
APPROVED PLAN FOR LEASE PURPOSES FX52190
APPROVED PLAN FOR LEASE PURPOSES FX52214
APPROVED PLAN FOR LEASE PURPOSES FX52330
APPROVED PLAN FOR LEASE PURPOSES FX52438
APPROVED PLAN FOR LEASE PURPOSES FX52577
APPROVED PLAN FOR LEASE PURPOSES FX52707
APPROVED PLAN FOR LEASE PURPOSES FX52832
APPROVED PLAN FOR LEASE PURPOSES FX53583
APPROVED PLAN FOR LEASE PURPOSES FX53602

END OF TEXT.

LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

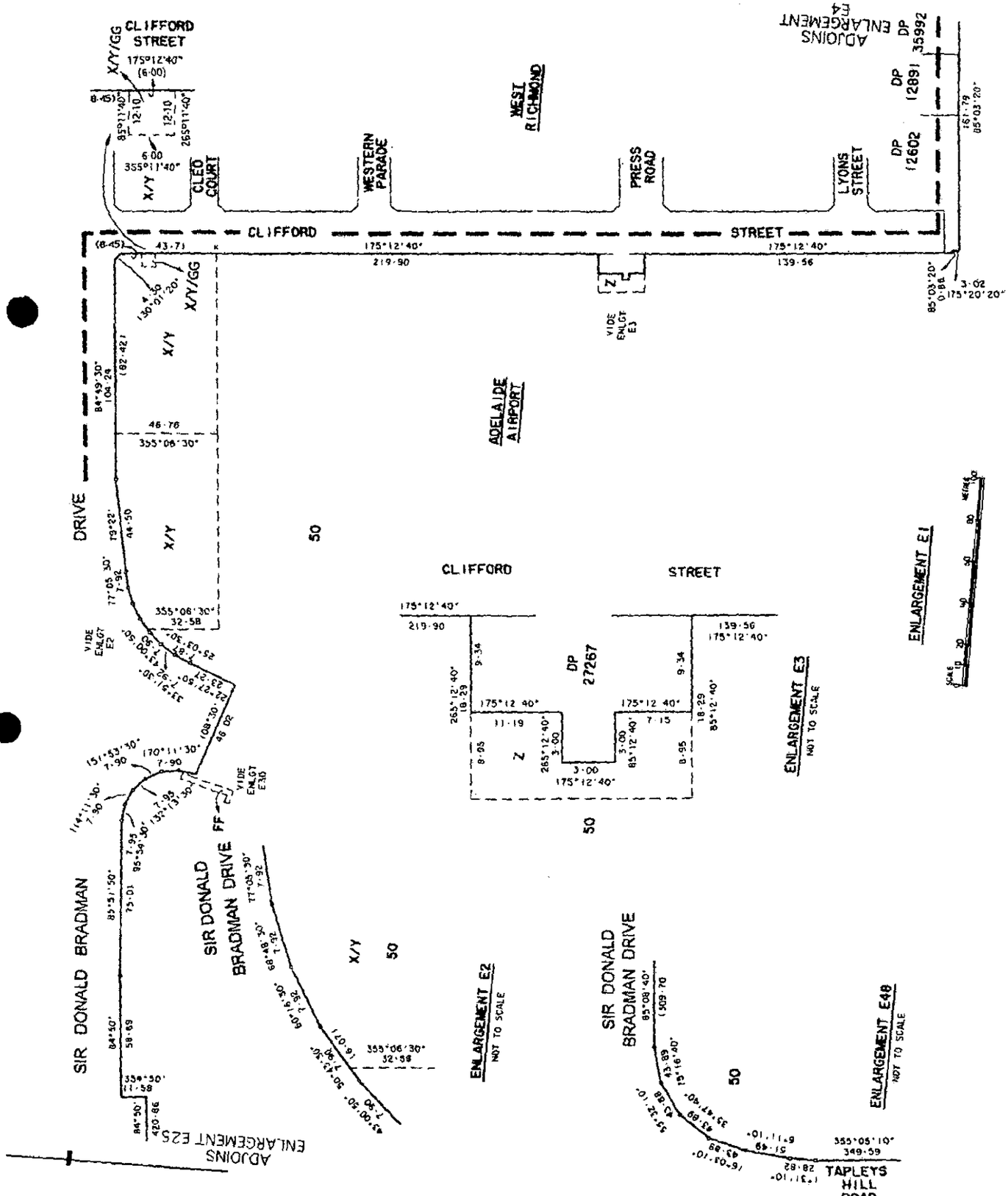
SEARCH DATE : 16/02/2010 TIME: 09:45:26



LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

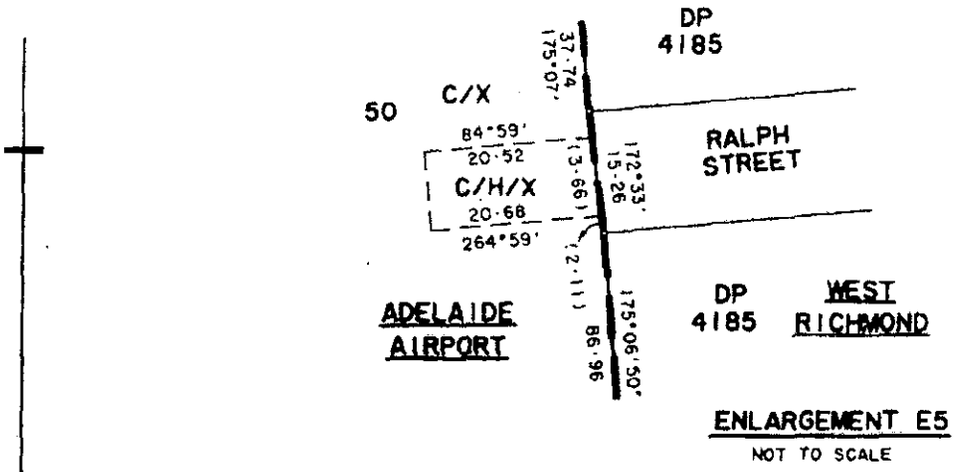
SEARCH DATE : 16/02/2010 TIME: 09:45:26

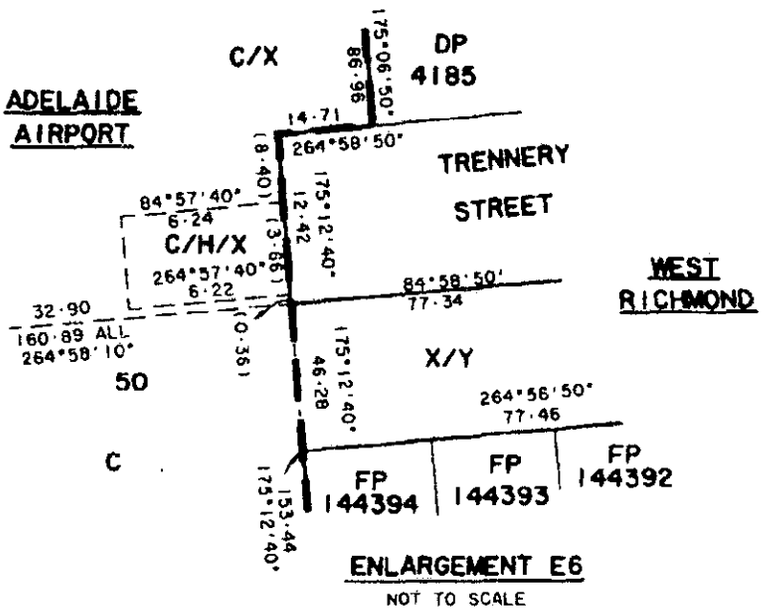


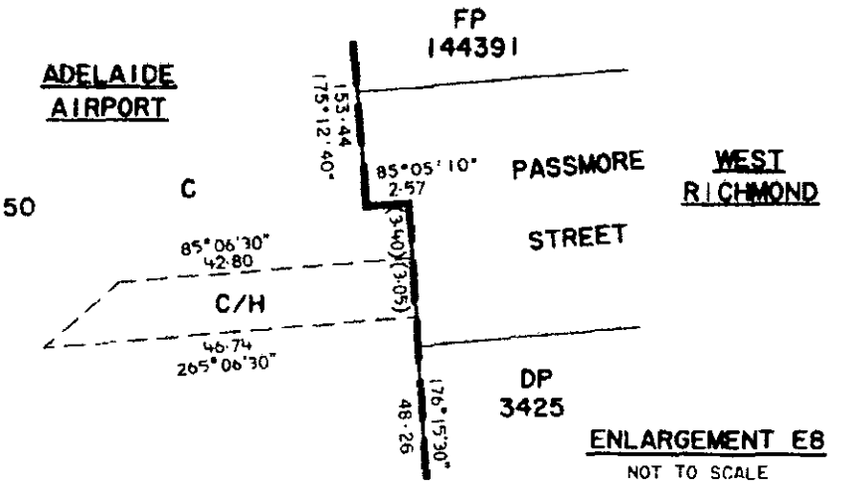
LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

SEARCH DATE : 16/02/2010 TIME: 09:45:26



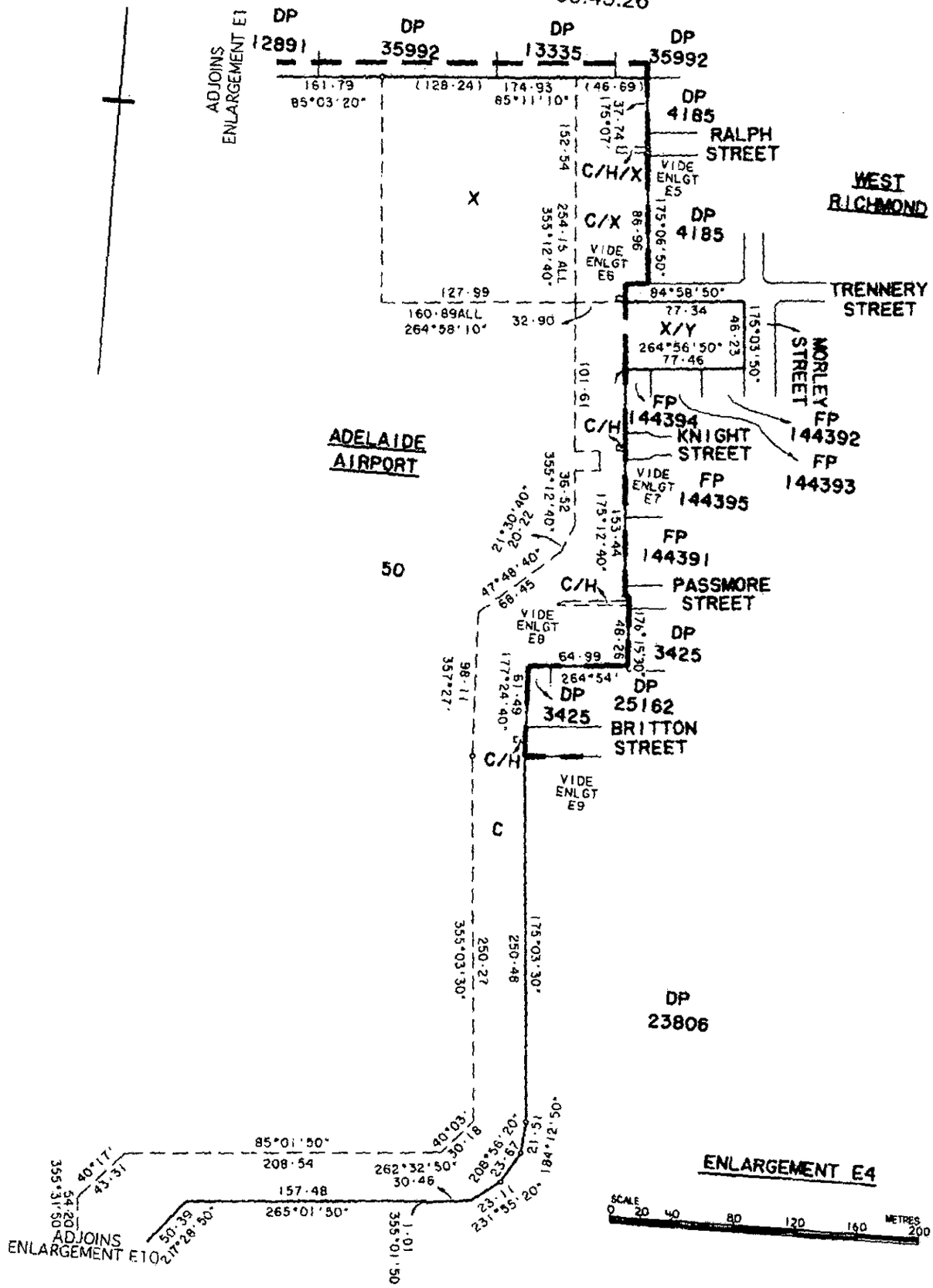




LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

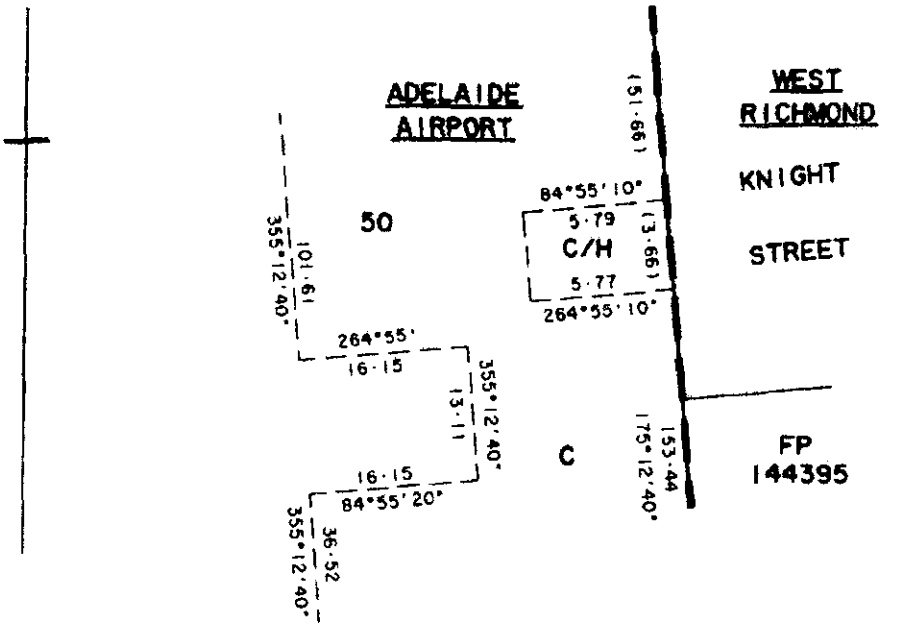
SEARCH DATE : 16/02/2010 TIME: 09:45:26



LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

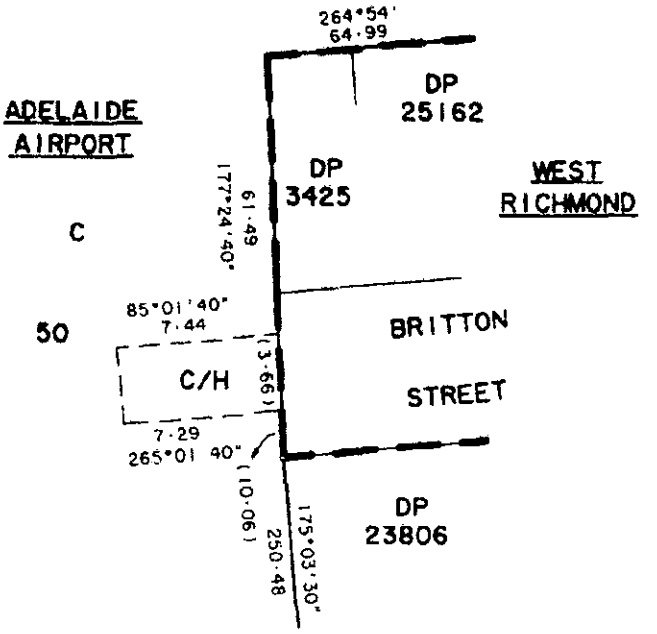
DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

SEARCH DATE : 16/02/2010 TIME: 09:45:26



ENLARGEMENT E7

NOT TO SCALE



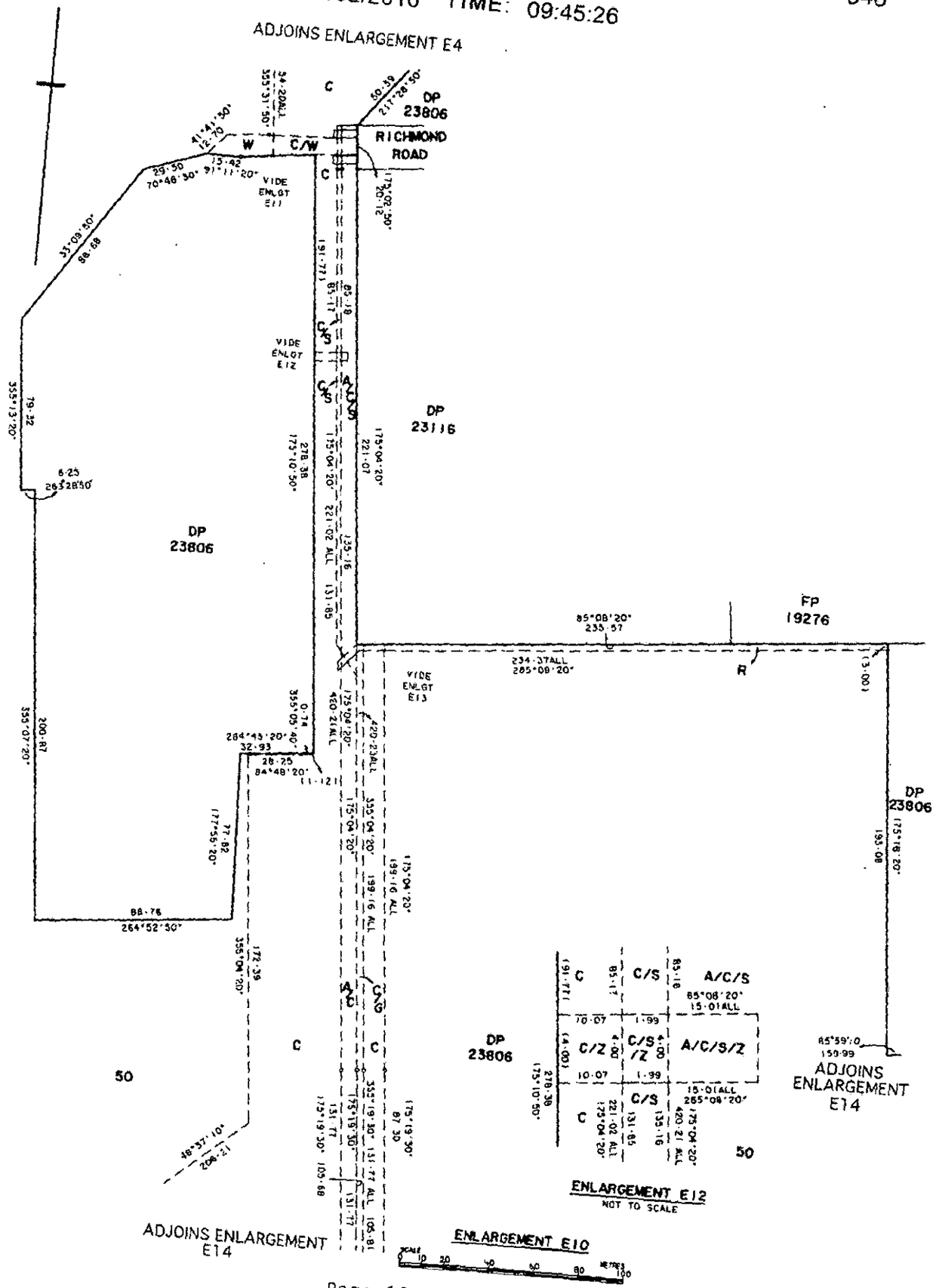
ENLARGEMENT E9

NOT TO SCALE

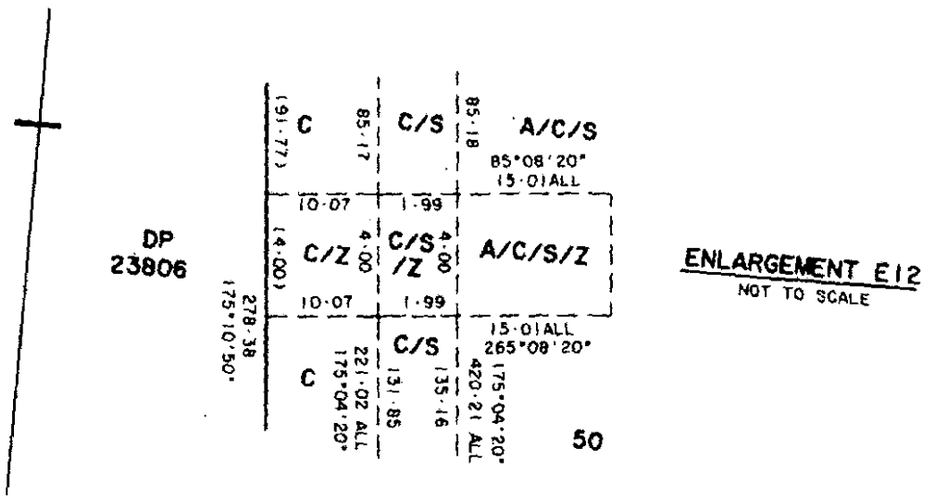
LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

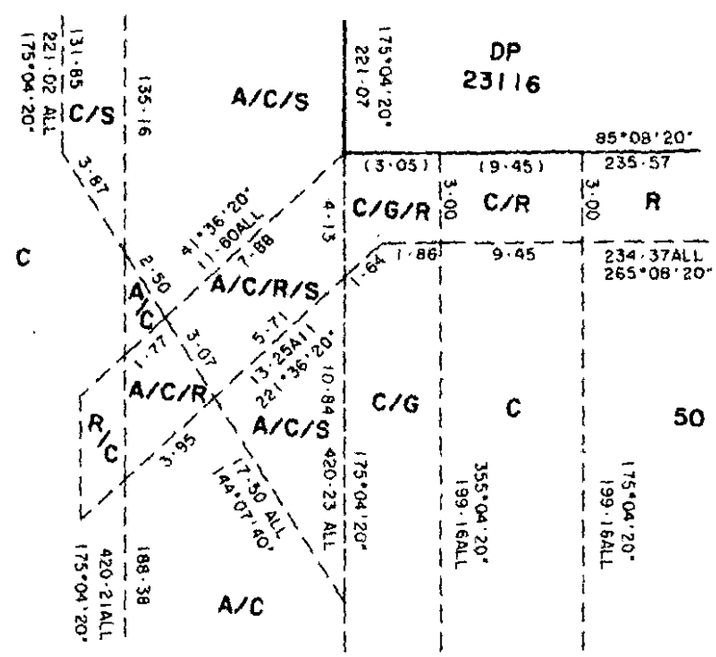
DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

SEARCH DATE : 16/02/2010 TIME: 09:45:26



LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA
DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548
SEARCH DATE : 16/02/2010 TIME: 09:45:26

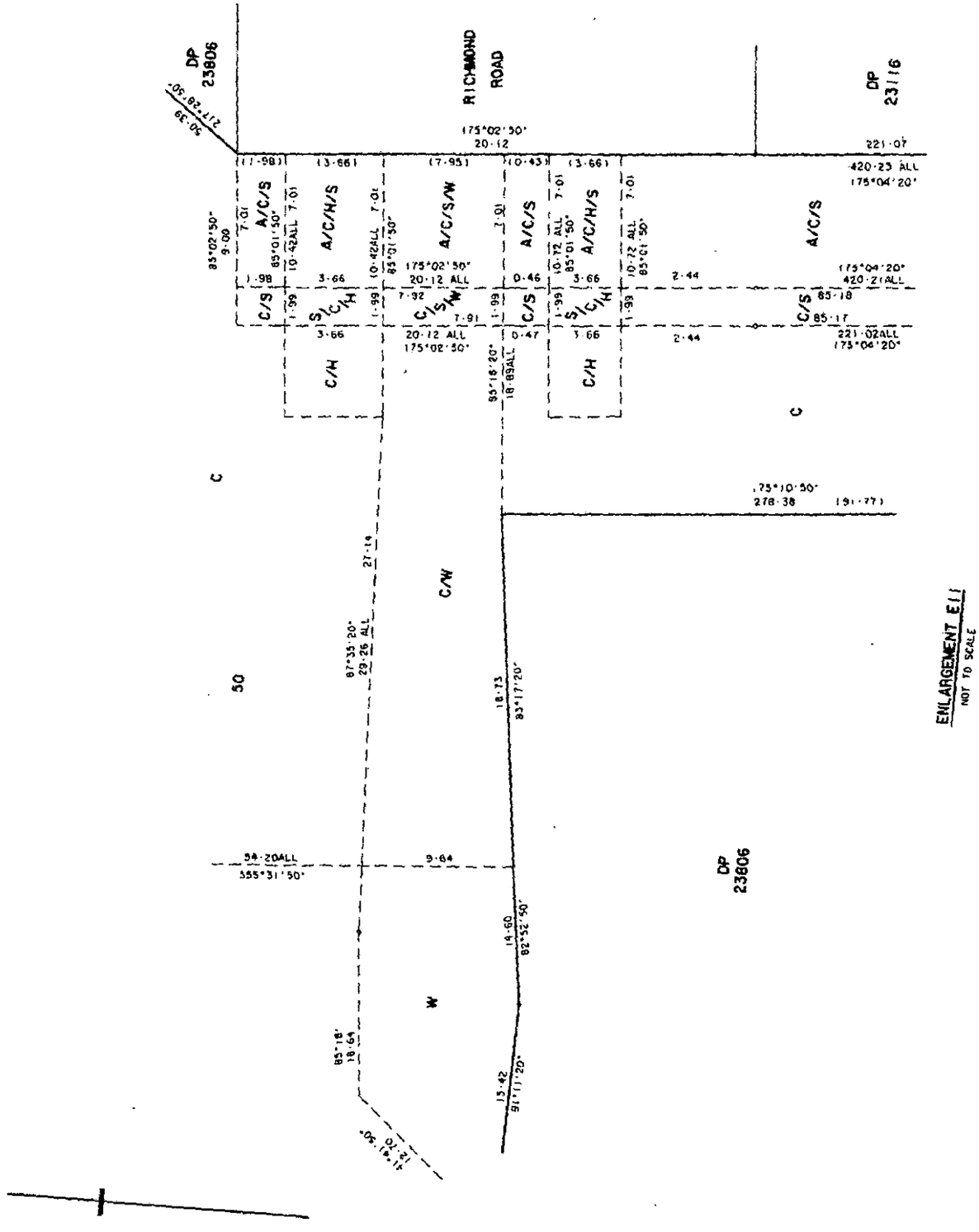




LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

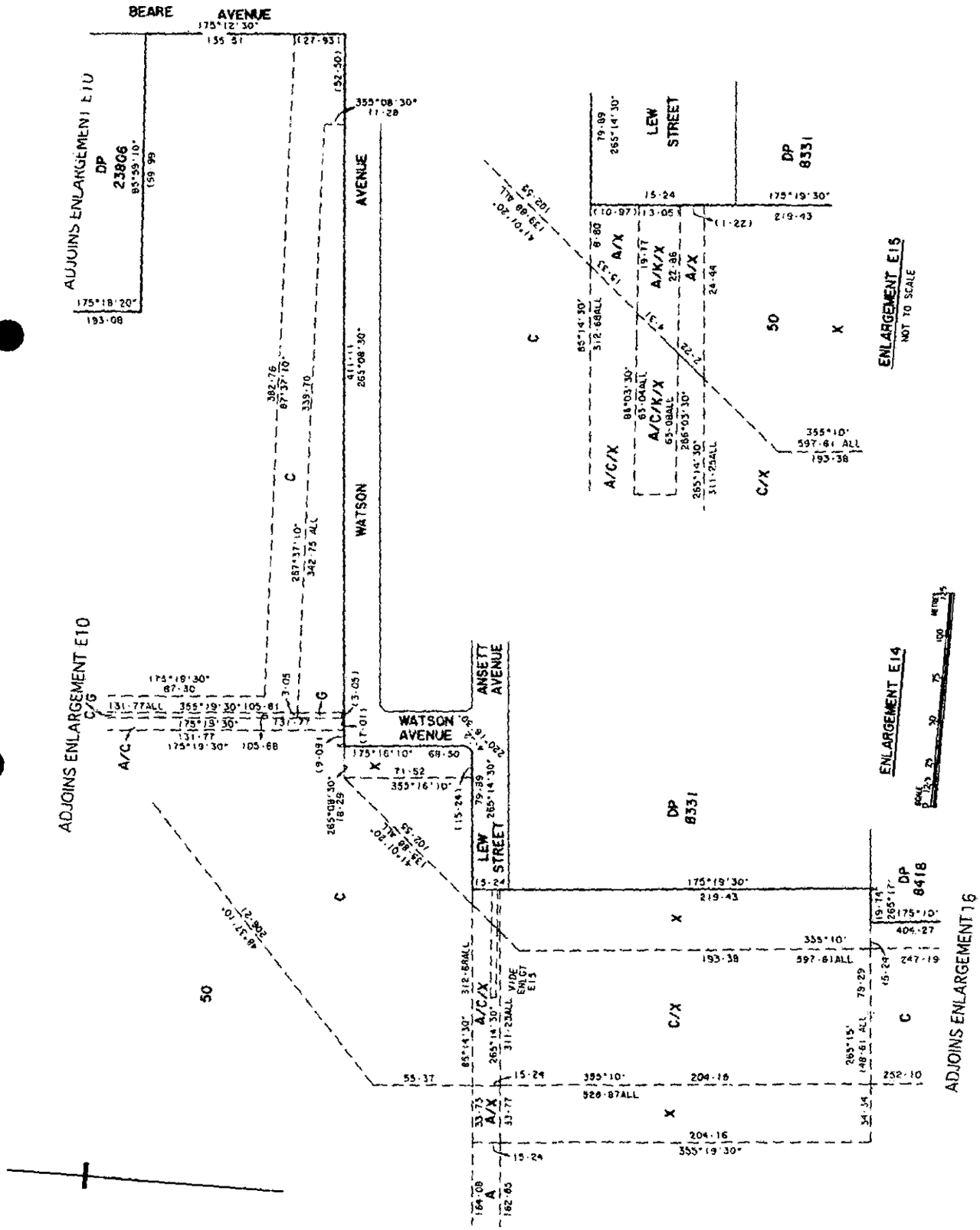
SEARCH DATE : 16/02/2010 TIME: 09:45:26



LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

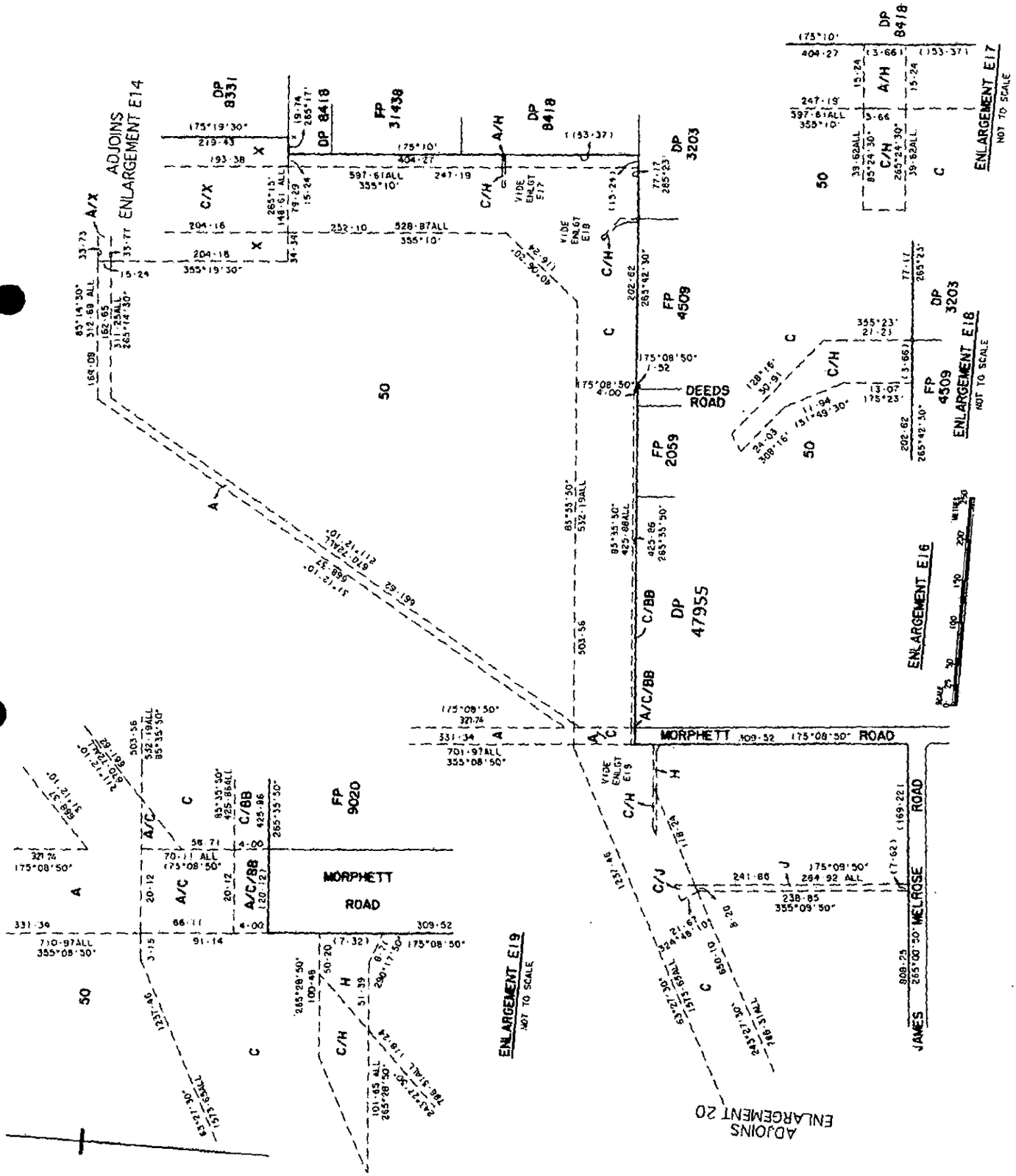
SEARCH DATE : 16/02/2010 TIME: 09:45:26



LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

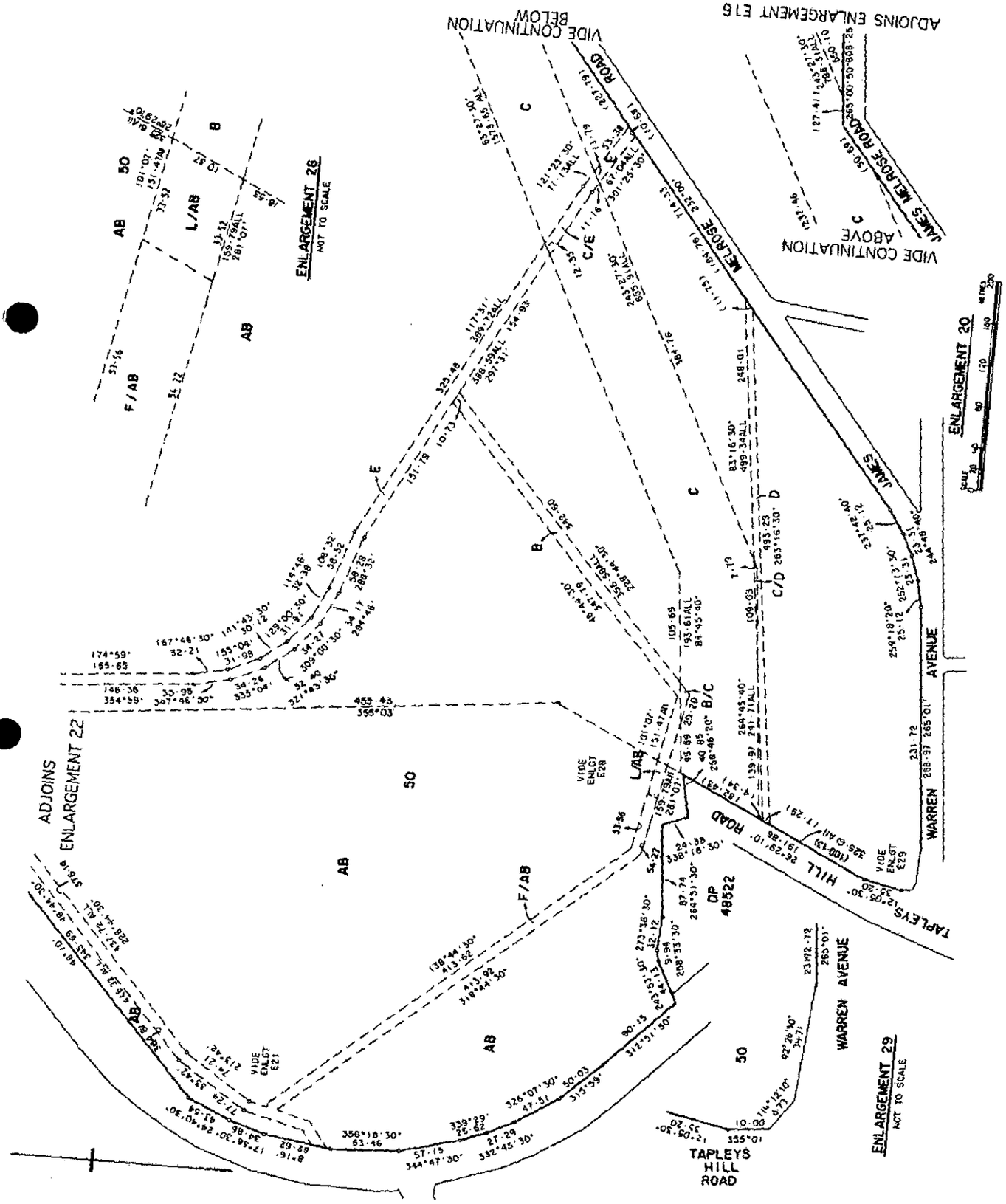
SEARCH DATE : 16/02/2010 TIME: 09:45:26



LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

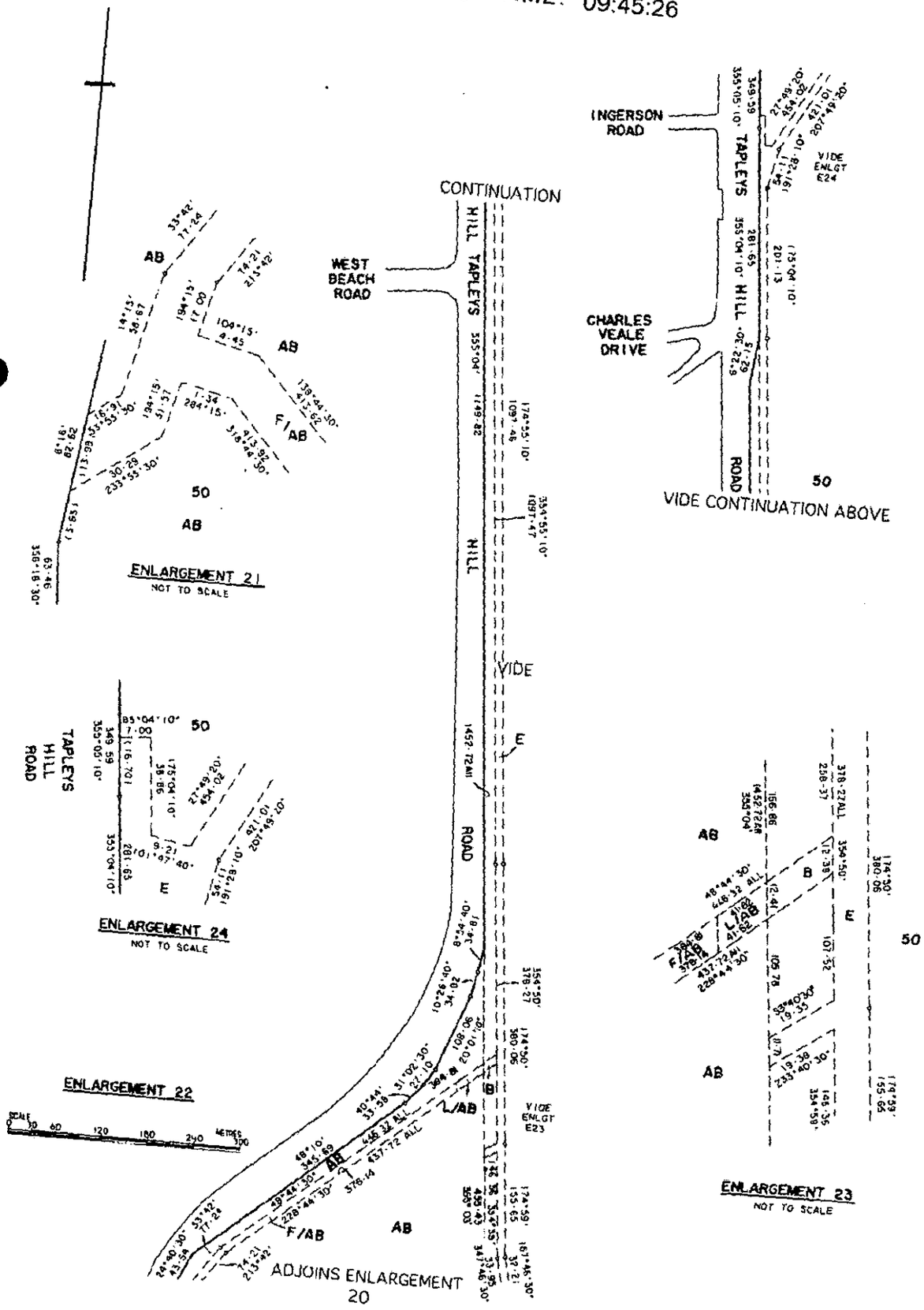
SEARCH DATE : 16/02/2010 TIME: 09:45:26



LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

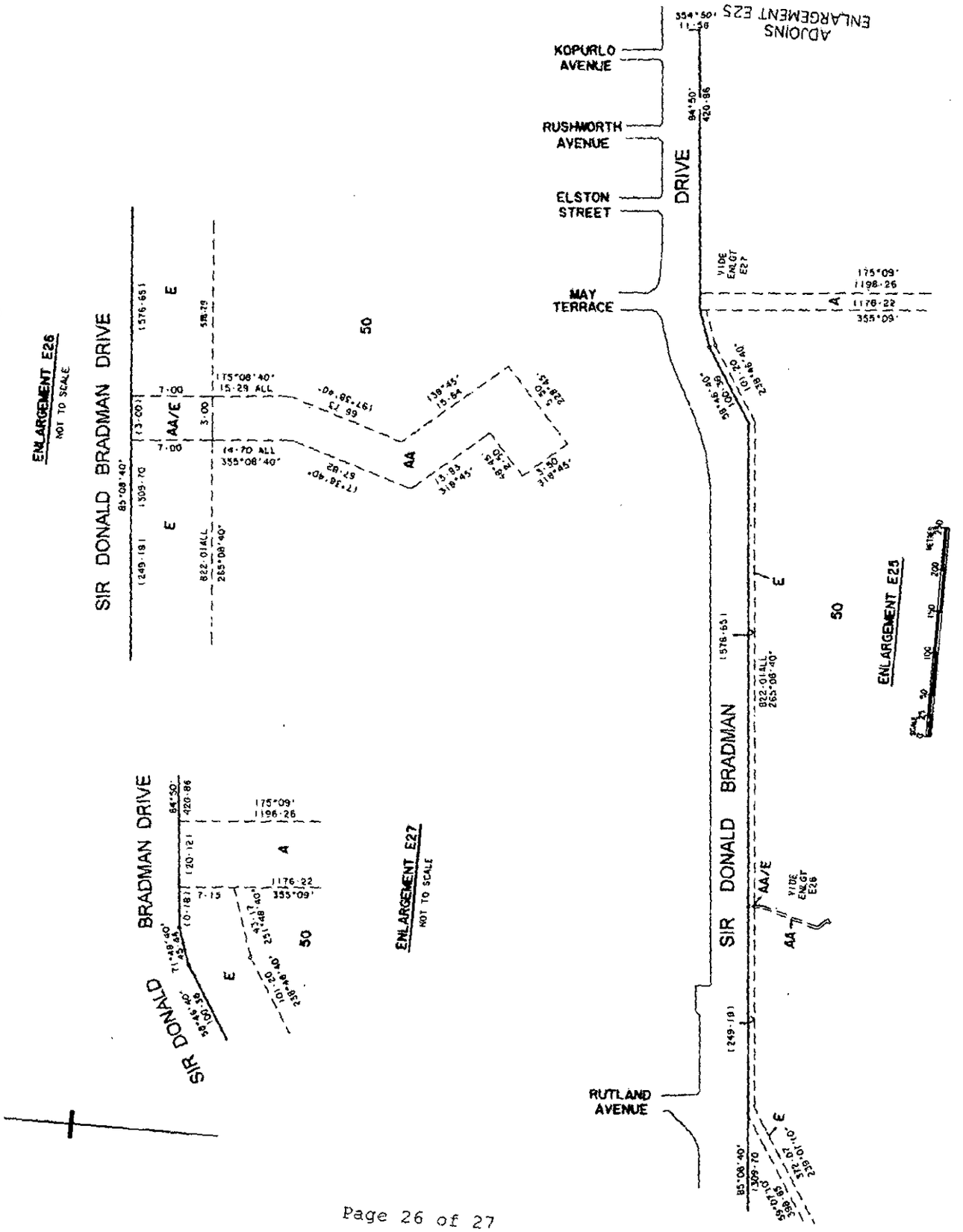
SEARCH DATE : 16/02/2010 TIME: 09:45:26



LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

SEARCH DATE : 16/02/2010 TIME: 09:45:26



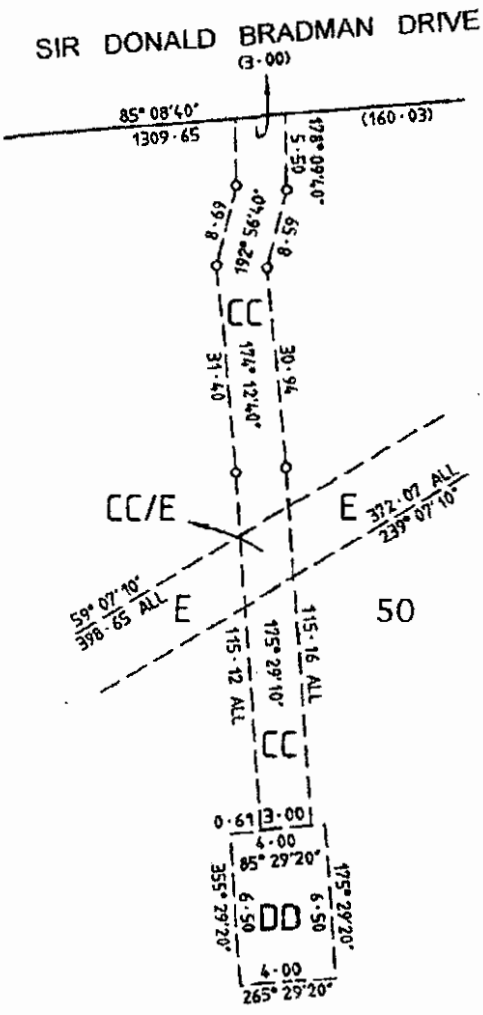
LANDS TITLES OFFICE ADELAIDE SOUTH AUSTRALIA

DIAGRAM FOR CERTIFICATE OF TITLE VOLUME 6038 FOLIO 548

SEARCH DATE : 16/02/2010 TIME: 09:45:26

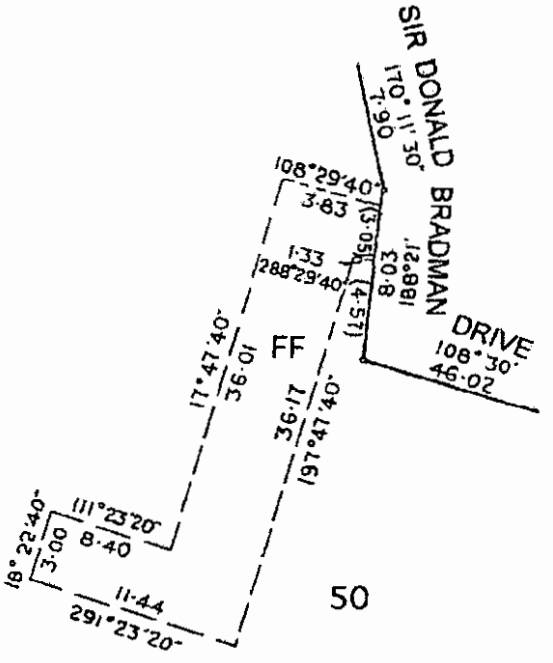
ENLARGEMENT E31

NOT TO SCALE



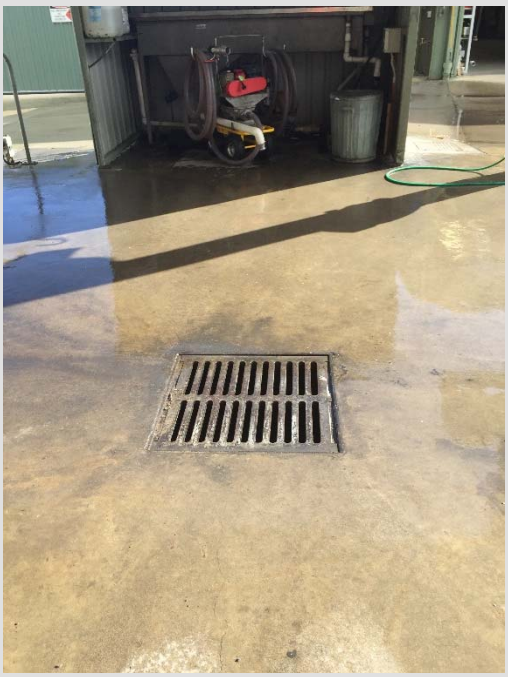
ENLARGEMENT E30

NOT TO SCALE



Appendix C – Site photographs

Item	Photograph	Details
1		**Date:** 6 June 2016 **Description:** Fire Station showing truck parking bay and hardstand containing stormwater drain Facing east
2		**Date:** 6 June 2016 **Description:** 15Kl AST formerly used for AFFF storage at rear of Fire station wash down bay Facing south east

Item	Photograph	Details
3		**Date:** 6 June 2016 **Description:** Fire station wash down bay which discharges to open ground via former sprinkler system Facing north
4		**Date:** 6 June 2016 **Description:** Discharge point for fire station wash down bay. Formerly a sprinkler system. Mobile aircraft used for training in background. Facing south-west

Item	Photograph	Details
5		**Date:** 6 June 2016 **Description:** Fire station hose rack in bund. Facing east
6		**Date:** 6 June 2016 **Description:** Fire station hose rack bund drain in foreground with diesel AST in bund in background. Facing south

Item	Photograph	Details
7		**Date:** 6 June 2016 **Description:** Surface water pooling south of fire station near wash down bay discharge point Facing south
8		**Date:** 6 June 2016 **Description:** Fire station drainage at front of the station. Drain discharges to nearby open drain. Facing south.

Item	Photograph	Details
9		**Date:** 6 June 2016 **Description:** Fire station drain with open ground in background where daily monitor testing occured. Facing north-west
10		**Date:** 6 June 2016 **Description:** Current fire training ground mock plane in bund. Facing east

Item	Photograph	Details
11		**Date:** 6 June 2016 **Description:** Current fire training ground separator system in bund. Facing north-west
12		**Date:** 6 June 2016 **Description:** Current fire training ground diesel AST and pump in bund. Facing north-west

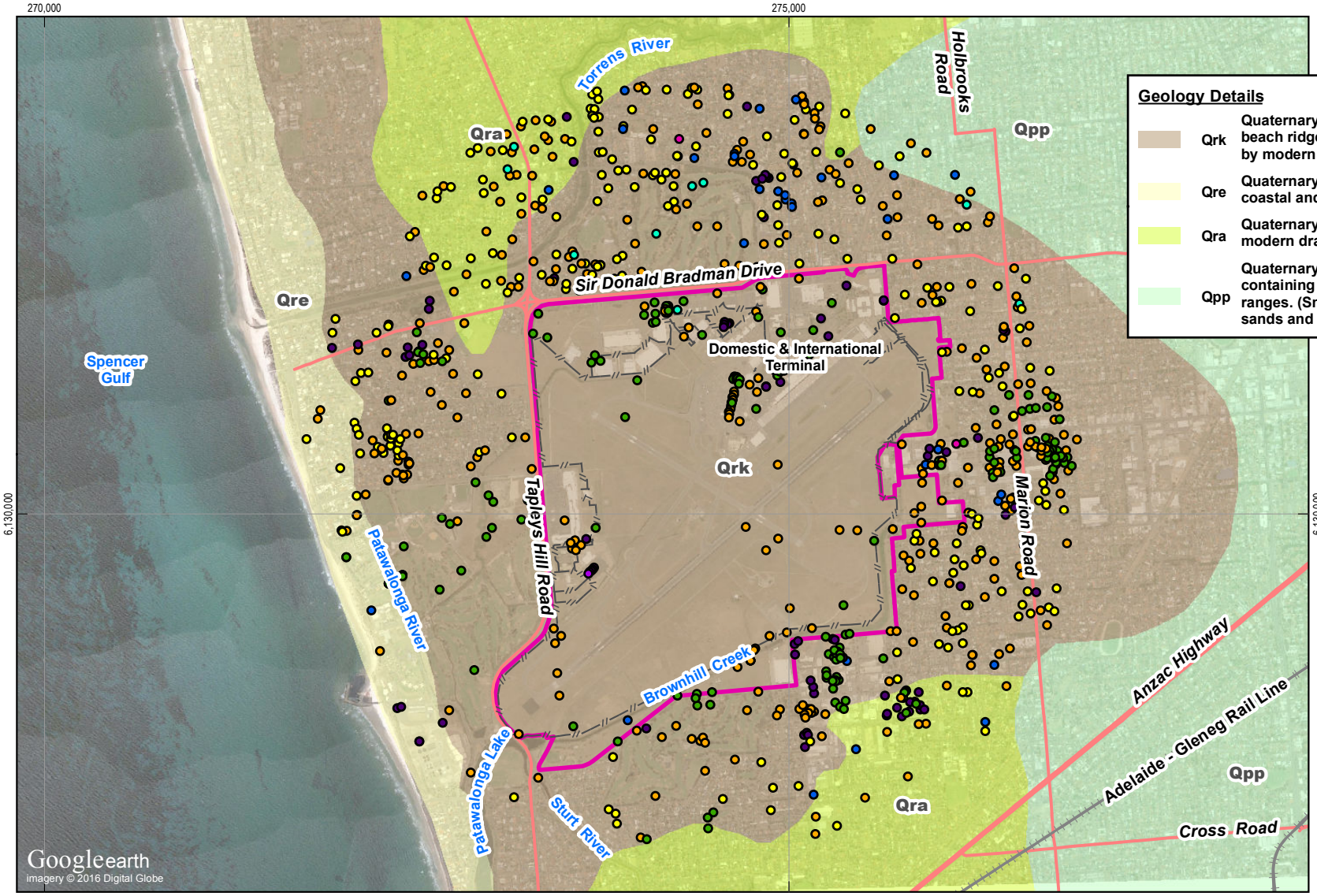
Item	Photograph	Details
13		**Date:** 6 June 2016 **Description:** Former fire training ground surface scrape stockpile containing concrete, bricks, metal posts and soil. Facing south-east
14		**Date:** 6 June 2016 **Description:** Surface water pooling at former fire training ground. Facing east

Item	Photograph	Details
15		**Date:** 6 June 2016 **Description:** Former fire training ground surface water pooling Facing north-east
16		**Date:** 6 June 2016 **Description:** Existing groundwater monitoring wells adjacent former fire training ground. Facing south

Item	Photograph	Details
17		**Date:** 6 June 2016 **Description:** Inside the old concrete water tank which contained old 205 L drums. Facing north
18		**Date:** 6 June 2016 **Description:** Landfill in south-east portion of the airport with groundwater monitoring well in the foreground. Facing south

Item	Photograph	Details
19		**Date:** 6 June 2016 **Description:** Open channel drain adjacent western site fence. Facing west
20		**Date:** 6 June 2016 **Description:** Open channel drain adjacent western site fence. Facing north

Appendix D – Geology and groundwater database search results



Geology Details

Qrk	Quaternary aged: St Kilda Formation: Light-grey shelly stranded beach ridge deposits and shelly silts and sands overlai in places by modern intertidal and swamp deposits.
Qre	Quaternary aged: Semaphore Sand; White quartz sand of the coastal and modern dunes.
Qra	Quaternary aged: Grey fluviatile silts, sands and gravels of modern drainage channels.
Qpp	Quaternary aged: Pooraka Formation; Pale red-brown sandy clay containing carbonate of the Loveday Soil. Gravel lenses near ranges. (Small outcrops of older calcrete and veneers of younger sands and soils are not differentiated).

Legend

- Site Boundary (Adelaide Airport)

Bore (Purpose)

- Domestic
- Drainage / Industrial
- General / Investigation / Unknown
- Geothermal
- Investigation
- Irrigation
- Monitoring / Observation
- Recharge
- Airport Security Fence
- Major Road
- Rail Line

1:40,000 (at A4)

0 500 1,000 1,500

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	A
Date	15 Jun 2016

Geology and Bores

Figure 2

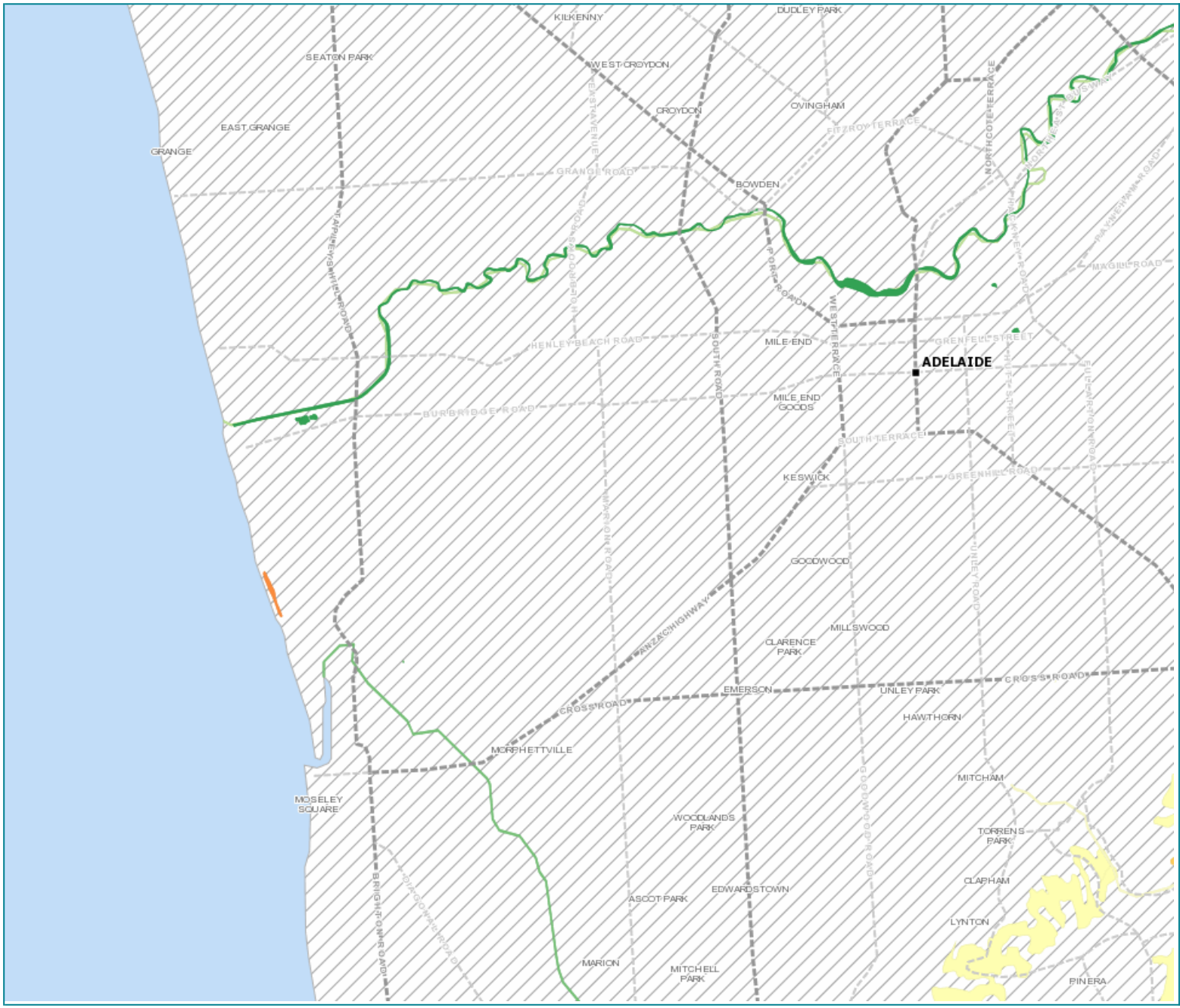
H:\Projects\31\34071\GIS\maps\31-34071-102_AdlGeology_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Google Earth: aerial imagery (Mar 2016, extracted Jun 2016); WaterConnect, SA Gov: bores (May2016); GA: scanned 100K Geological Mapping (2010); PSMA: road / rail (2016). Created : jvc

Australian Government
Bureau of Meteorology

Groundwater Dependent Ecosystem Map Report



N

GDE, Reliant on surface expression of groundwater (rivers, springs, wetlands)

- Identified in previous study: fieldwork
- Identified in previous study: desktop
- High potential for groundwater interaction
- Moderate potential for groundwater interaction
- Low potential for groundwater interaction

GDE, Reliant on subsurface groundwater (vegetation)

- Identified in previous study: fieldwork
- Identified in previous study: desktop
- High potential for groundwater interaction
- Moderate potential for groundwater interaction
- Low potential for groundwater interaction
- No Ecosystems analysed

GDE, Subterranean (Cave & Aquifers)

- Identified in previous study: fieldwork
- Identified in previous study: desktop
- No Ecosystems analysed

1:92,939

Metres 2,000 4,000 6,000

Data source - Data are assumed to be correct as supplied from Commonwealth, State and Territory data suppliers or referenced projects.

Date: 19 May, 2016

WaterConnect

Groundwater Data Report

Government of South Australia
Department of Environment, Water and Natural Resources

Circle Centre -34.944693,138.529444, Radius 2.630km

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-3921	16/02/1980	10.05	10.05	10.05	4	16/02/1980	0.3	16/02/1980	2312	10/02/1980	90542						
6628-7423			27.43	27.43					1744	14/04/1958							
6628-7426			34.14	34.14					1827	01/12/1936							
6628-7428	01/01/1967	2.44	7.62	7.62	3.66	22/10/1969	0.51	22/10/1969	1715	22/10/1969							
6628-7575					2.44	13/03/1936			1542	13/03/1936							
6628-7576	23/02/1970	114.91	131.67	131.67	13.72	23/02/1970	2.65	23/02/1970	849	26/11/1986							
6628-7577					1.83	16/03/1936			10224	16/03/1936							
6628-7578			4.27		3.05	04/02/1952			7893	04/02/1952							
6628-7579	14/04/1934	111.25	122.53	122.53	3.05	14/04/1934	6.32	14/04/1934									
6628-7580	01/01/1929		135.64	135.64	11.28	02/02/1970	10.1	02/02/1970	827	02/02/1970							
6628-7581		6.71	6.71	6.71	3.35	20/03/1972			2848	20/03/1972							
6628-7582	18/09/1961		5.49	5.49								UKN					
6628-7583	11/06/1932		140.82	140.82	0.46	11/06/1932	10.1	11/06/1932	786	29/06/1932							
6628-7584			143.26	143.26					800	26/02/1952							
6628-7585			27.43	27.43					1100	01/06/1959							
6628-7587	09/01/1914		121.01	121.01	8.53	09/01/1914			1559	09/01/1914							
6628-7588		152.4	158.5	158.5			3.79	01/01/1952	857	15/04/1952							
6628-7589			2.59	2.59	1.83	02/03/1961			4290	02/03/1961							
6628-7590			25.91	25.91			7.58	01/01/1936	2270	20/04/1936							
6628-7591	01/01/1945	115.82	128.02	128.02	12.19	06/11/1945	8.84	01/01/1948	771	26/02/1952							
6628-7592			128.02	128.02													
6628-7593	29/10/1945		145.69	0	10.51	29/06/1995	10	18/10/1949	732	13/11/1984	40410	ABD	ADE004	H	H	OBS	Tomw(T1)
6628-7594			4.27	4.27	2.74	08/11/1967	0.44	08/11/1967	2155	08/11/1967							
6628-7596	01/01/1931		198.12	198.12	6.1	01/01/1931	12.63	01/01/1946	729	26/02/1952							
6628-7597					3.66	02/01/1946	12.63	02/01/1946	1744	02/01/1946							
6628-7598	01/08/1934		20.12	20.12	3.66	23/08/1934			1887	23/08/1934							
6628-7601			6.1	0	1.22	26/09/1970	0.51	26/09/1970	4833	26/09/1970		BKF				GEN	
6628-7602			3.66	3.66					1955	24/10/1967							
6628-7603			3.05	3.05					1455	05/12/1967							
6628-7604			4.88	4.88					1670	16/03/1936							
6628-7605		10.06	10.06	10.06	0.91	12/09/2014	2.27	25/10/1971	2058	01/01/1979			ADE124	H	N	OBS	Qpah(Q1)
6628-7606									1295	26/10/1971							
6628-7607	14/05/1928	34.75	147.83	147.83	9.14	05/02/1951	5.68	05/02/1951	2115	07/01/1952		UKN					Tomw(T2)
6628-7608	24/10/1952		152.4	0	33.53	18/03/1970	7.58	01/01/1972	972	28/05/1996	165690	BKF				IRR	Tomw(T1)
6628-7609	06/10/1950		153.92	0	1.83	06/10/1950	22.73	06/10/1950	857	21/04/1955		BKF					
6628-7610		7.01	7.01	7.01	4.88	12/12/1967	0.25	12/12/1967	830	12/12/1967							
6628-7611									5840	01/11/1942							

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-7612	20/05/1972		16.8	16.8	1.2	20/05/1972	0.25	20/05/1972	13099	20/05/1972		UKN					
6628-7613			4.88	4.88	1.22	03/12/1959	1.01	03/12/1959	2974	03/12/1959							
6628-7614	21/11/1945	104.24	140.21	140.21	12.65	13/09/1949	12	13/09/1949	914	21/04/1955		ABD					
6628-7615		3.66	3.66	3.66	1.22	13/11/1968	2.53	13/11/1968	3170	13/11/1968							
6628-7616			8.23	8.23	2.74	13/12/1973	1.58	13/12/1973	344	13/12/1973							
6628-7617	01/01/1956	106.68	143.26	143.26	5.49	02/05/1956	15.16	02/05/1956	857	02/05/1956							
6628-7618							12.63	01/01/1952	957	03/03/1952							
6628-7619	05/02/1946	78.94	137.16	137.16	18.59	26/02/1952	15.79	26/02/1952	800	26/02/1952							
6628-7620		9.14	9.14	9.14	1.52	28/02/1969			2030	28/02/1969							
6628-7621	30/03/1967	3.91	30.48									UKN					
6628-7622			15.39	15.39								UKN					
6628-7623	12/04/1967	3.66	15.39									UKN					
6628-7624		4.88	9.14	9.14	2.13	05/02/1968	1.26	05/02/1968	6845	05/02/1968							
6628-7625	28/06/1968	48.3	128.02	128	8.53	04/03/2016			981	16/02/2006	90114		ADE037	C	H	OBS	Tomw(T1)
6628-7626			2.74	2.74	1.83	30/04/1970			827	30/04/1970							
6628-7631			7.62		5.18	16/01/1952	0.61	16/01/1952	2575	16/01/1952							
6628-7632			11.58	11.58	5.18	17/09/1951	0.51	17/09/1951	2030	17/09/1951							
6628-7633			17.37	17.37	3.66	23/10/1941			2845	23/10/1941							
6628-7634			12.19		3.66	22/03/1951			3146	22/03/1951							
6628-7635			3.66		3.05	16/03/1951			3603	16/03/1951							
6628-7636			3.35		3.05	14/04/1949			5777	14/04/1949							
6628-7637			12.19		3.05	07/06/1949			2387	07/06/1949							
6628-7638			4.27		2.29	14/04/1949			4215	14/04/1949							
6628-7639			4.27		2.29	14/04/1949			4490	14/04/1949							
6628-7647	01/01/1951	0.91	10.97	10.97	8.23	19/03/1952	1.26	19/03/1952	2230	19/03/1952							
6628-7648		7.62	7.62	7.62	6.1	23/12/1971	2.53	23/12/1971	408	23/12/1971							
6628-7649			10.67	10.67			12.63	01/01/1934	2598	13/08/1934							
6628-7650			14.02	14.02					3084	06/10/1934							
6628-7651			6.1	6.1					1804	07/02/1985							
6628-7652			9.45	9.45	7.32	18/08/1934			2084	18/08/1934							
6628-7653			9.45	9.45	7.32	18/08/1934			2144	18/08/1934							
6628-7654			9.14	9.14	3.66	27/07/1945			3055	27/07/1945							
6628-7655		3.66	12.8	12.8	3.05	26/10/1959	2.53	26/10/1959	1601	26/10/1959							
6628-7656	01/01/1948	213.36	213.36	213.36	12.19	17/03/1966	12.88	01/01/1972	931	29/09/1987							Tomw(T1)
6628-7657	08/03/1962		217.02	0	0	18/09/1987	12.63	16/03/1962	966	29/09/1987	19902	BKF					Tomw(T1)
6628-7658	18/11/1953		216.71	0	6.1	07/10/1965	12.63	07/10/1965	2818	23/05/1996	39403	ABD				IRR	Tomw(T1)
6628-7659	09/02/1928	160.99	174.35	174.35	6.4	26/08/1952	13.89	26/08/1952	1145	16/06/1953							
6628-7660	05/12/1949		258	198	13.16	04/03/2016	12.63	05/12/1949	708	27/07/1983	92514		ADE007	C	H	OBS	Tomw(T1)
6628-7661	29/10/1962	186	213.36	206	6.55	10/09/1982	12	12/07/1979	744	01/02/1972		RHB	ADE038	H	H	OBS	Tomw(T1)
6628-7662	19/04/1949	114.3	147.83	147.83	5.49	19/04/1949	17.68	19/04/1949	800	19/03/1958							
6628-7663	17/09/1962	194	213.97	0	2.06	27/09/2003			761	21/01/1983	64954	BKF	ADE009	H	H	OBS	Tomw(T1)
6628-7664	01/10/1962		213.36	213.36					813	01/01/1962							

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-7665	01/01/1934	116.74	140.21	140.21	0	13/07/1948	5.05	13/07/1948	813	13/07/1948							
6628-7666			7.01	7.01	1.22	24/03/1948	3.79	24/03/1948	1970	24/03/1948							
6628-7667	11/09/1934	155.25	161.54	161.54	0	11/09/1934	3.54	11/09/1934	742	11/09/1934							
6628-7668	27/07/1953		10.67	10.67	1.83	27/07/1953						UKN					
6628-7669	09/07/1953		10.67	10.67								UKN					
6628-7670	13/07/1953		10.67	10.67	1.22	13/07/1953						UKN					
6628-7671	14/07/1953		10.67	10.67	1.22	14/07/1953						UKN					
6628-7672	15/07/1953		10.67	10.67	1.22	15/07/1953						UKN					
6628-7673	16/07/1953		10.67	10.67	1.22	16/07/1953						UKN					
6628-7674	17/07/1953		10.67	10.67	1.22	17/07/1953						UKN					
6628-7675	20/07/1953		10.67	10.67	1.22	20/07/1953						UKN					
6628-7676	21/07/1953		10.67	10.67	1.22	21/07/1953						UKN					
6628-7677	22/07/1953		10.67	10.67	1.22	22/07/1953						UKN					
6628-7678	23/07/1953		10.67	10.67								UKN					
6628-7679	28/07/1953		10.67	10.67	1.83	28/07/1953						UKN					
6628-7680	29/07/1953		10.67	10.67	1.83	29/07/1953						UKN					
6628-7681	30/07/1953		10.67	10.67								UKN					
6628-7699	01/01/1967	121.92	147.83	147.83	18.29	26/10/1967	10.61	26/10/1967	1064	24/11/1967							
6628-7727			7.32	7.32					1955	23/09/1968							
6628-7728	01/01/1934	29.57	30.48	30.48	4.88	04/09/1934			2560	14/11/1934							
6628-7729			9.14	9.14	2.44	05/10/1965	1.26	05/10/1965	3250	05/10/1965							
6628-7730			9.45	9.45	2.13	28/03/1958			229	28/03/1958							
6628-7731	01/01/1949		5.49	5.49	3.05	22/01/1951	0.44	22/01/1951	1716	22/01/1951							
6628-7732									2770	26/08/1914							
6628-7733			9.75	9.75	4.27	11/12/1945			2541	11/12/1945							
6628-7734									2445	26/08/1914							
6628-7735			15.24	15.24	3.05	22/10/1946			4012	22/10/1946							
6628-7736	01/01/1945		72.24	72.24	9.14	26/07/1945	7.58	26/07/1945	1000	14/08/1945							
6628-7737	01/01/1914		9.14	9.14			22.73	01/01/1945	742	01/01/1951							
6628-7764	01/01/1932		117.35	117.35	0	20/09/1935	3.79	20/09/1935	757	27/02/1952							
6628-7765			4.88	4.88	2.13	27/11/1967			1830	27/11/1967							
6628-7766			8.53	8.53					2299	30/11/1944							
6628-7767			6.1	6.1	3.96	30/01/1968	0.3	30/01/1968	2615	30/01/1968							
6628-7768			16.76	16.76					2344								
6628-7769			9.14	9.14	3.05	25/05/1937			2156	25/05/1937							
6628-7770			6.1	6.1	2.13	06/01/1969			2485	06/01/1969							
6628-7772	01/03/1977	8.83	9	9	3	01/03/1977			2047	28/07/1977	1249						
6628-7773	01/01/1935		112.78	112.78	0	27/06/1935	15.16	27/06/1935	729	27/06/1935							
6628-7774			11.28	11.28	7.62	18/09/1934	0.63	18/09/1934	2584	18/09/1934							
6628-7781	01/07/1939		68.58	68.58					842	01/07/1939							
6628-7782	23/11/1945	122.22	144.78	144.78	11.58	23/10/1946	10.74	24/10/1949	813	24/10/1949							
6628-7783			9.14	9.14	4.57	06/04/1934	18.95	06/04/1934	1956	06/04/1934							

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-7784			9.14	9.14	3.66	01/01/1934	18.95	01/01/1934	1959	01/01/1934							
6628-7785	01/01/1934	112.78	174.35	174.35	0	24/08/1935	11.37	01/01/1952	800	28/02/1952		UKN					
6628-7786			9.75	9.75	4.12	06/04/1934	5.05	06/04/1934	1570	06/04/1934							
6628-7787	01/01/1934		9.14	9.14	4.57	24/02/1934	5.05	24/02/1934	2101	14/03/1934							
6628-7788			17.07	17.07													
6628-7789																	
6628-7790			95.4	95.4	0		5.05										
6628-7791		118.87	141.73	141.73			15.16	01/01/1967	832	25/11/1986							
6628-7799	01/01/1914		73.15	73.15					828	01/01/1934							
6628-7800	27/02/1962		12.19	12.19													
6628-7801	01/01/1934	62.48	71.02	71.02	2.74	24/04/1934	8.84	24/04/1934	843	24/04/1934							
6628-7802	01/01/1914		70.1	70.1	2.44	13/12/1933	7.58	13/12/1933	799	13/12/1933							
6628-7803			7.62	7.62					814	25/01/2016							
6628-7806			78.03	78.03			8.84										
6628-7807			65.53	65.53	14.63	08/03/1954	10.1	08/03/1954	1085	08/03/1954							
6628-7808	01/01/1934	60.96	73.15	73.15	3.35	10/12/1934	17.68	10/12/1934	814	10/12/1934							
6628-7809	18/02/1963		4.27	4.27													
6628-7810	18/02/1963		2.44	2.44													
6628-7811	19/02/1963		6.25	6.25	3.05	19/02/1963											
6628-7812	18/02/1963		12.19	12.19													
6628-7813	18/02/1963		4.57	4.57													
6628-7814	19/05/1967	4.67	15.39	15.39								UKN					
6628-7815	15/05/1967	5.16	30.63	30.63								UKN					
6628-7816	06/12/1967	4.47	15.39	15.39								UKN					
6628-7817	31/05/1967	6.4	15.39	15.39								UKN					
6628-7818	25/05/1967	4.83	15.39	15.39								UKN					
6628-7819	10/11/1972		25	25	5	28/01/1973			1530	28/01/1973		BKF					
6628-7820	08/03/1973	73.34	76	76	3.25	23/11/1975	5.05	23/11/1975	1225	23/11/1975							
6628-7821		62.48	65.53	65.53	14.63	08/02/1954	10.1	08/02/1954	1085	08/02/1954							
6628-7822			7.62	7.62	4.27	08/12/1967			1900	08/12/1967							
6628-7823	01/01/1968	4.27	7.62	7.62	6.1	23/12/1971	2.53	23/12/1971	408	23/12/1971							
6628-7827	20/09/1978	15	15	15	6	20/09/1978	0.82	20/09/1978	2227	24/09/1978	4253						
6628-7828	14/08/1978	6.09	6.1	6.1	4.57	14/08/1978			1440	14/08/1978	2259					DRN	
6628-7829	01/09/1978	15	15	15	4.5	01/09/1978	0.75	01/09/1978	849	20/09/1978	4254						
6628-7832	17/05/1972		12.9	12.9	1.8	17/05/1972	0.25	17/05/1972	11133	17/05/1972							
6628-7833	11/04/1973		24.2	24.2	1.55	11/04/1973			35583	11/04/1973							
6628-7834	07/05/1973		12.6	12.6	0.65	07/05/1973			19722	07/05/1973							
6628-7835	17/04/1973		12.85	12.85	1.6	17/04/1973			25600	17/04/1973							
6628-7836	13/04/1973		12.55	12.55	1.4	13/04/1973			24580	13/04/1973							
6628-7837	01/01/1948		10.67	10.67	2.74	22/03/1948	1.89	22/03/1948	2127	01/01/1949							
6628-7838			12.8	12.8	1.83	03/12/1935	7.58	03/12/1935	1199	03/12/1935							
6628-7839	01/01/1933	82.3	90.53	90.53	0	13/12/1933			1212	26/06/1967							

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-7840	01/01/1934		9.14	9.14					1801	18/06/1934							
6628-7841			8.53	8.53			6.32										
6628-7842	01/01/1935	10.67	10.67	10.67	2.44	23/11/1953	3.79	23/11/1953	2387	23/11/1953							
6628-7845	15/12/1949	104.24	160.02	160.02	0	15/12/1949	6.32	15/12/1949	1055	17/12/1949		UKN					
6628-7846	03/04/1951	79.55	103.63	103.63	15.85	03/04/1951	6.32	03/04/1951	743	29/02/1960							Tomw(T1)
6628-7847	14/02/1927		115.82	92.96	0	14/02/1927	5.68	14/02/1927	1070	07/06/1957		PLG					
6628-7848	14/01/1930	150.57	170.69	170.69	0	14/01/1930	1.26	14/01/1930	1000	29/02/1960							Tomw(T2)
6628-7849	07/12/1956	72	114.6	79	0	07/12/1956	22.73	07/12/1956	1100	29/02/1960	132612						Tomw(T1)
6628-7851			2.44	2.44					1027	26/03/1974							
6628-7852	15/01/1968		153.31	0	0.01	21/09/1991			1077	17/12/1986	30785	BKF	ADE130	H	H		Tomw(T1)
6628-7853			2.44	2.44	0.61	05/02/1975			816	05/02/1975							
6628-8039					0	20/08/1976			827	20/08/1976							
6628-8040	12/03/1948		12.8	12.8													
6628-8041			13.11	13.11													
6628-8042			13.72	13.72													
6628-8043			12.19	12.19													
6628-8044	30/04/1951	66.14	91.44	91.44	14.33	30/04/1951	6.06	30/04/1951	1145	29/02/1960							Tomw(T1)
6628-8048	30/03/1946	103.81	140.51	140.51	7.92	06/06/1947	8.21	06/06/1947	843	05/03/1952							Tomw(T1)
6628-8049			4.72	4.72	4.62	08/11/1967	0	08/11/1967	2030	08/11/1967							
6628-8050			90	90			1.89	06/05/1949	1013	06/05/1949							
6628-8051									956	01/01/1914							
6628-8052	18/01/1946	90	103.63	94	8	04/03/2016	8.84	15/12/1948	865	25/08/1986	40413	RHB	ADE014	C	H	OBS	Tomw(T1)
6628-8053	05/11/1959		7.32	7.32	0.84	05/11/1959			11440	05/11/1959							
6628-8054		49.07	60.96	60.96	2.74	06/05/1949	0.63	06/05/1949	11738	06/05/1949							
6628-8055	01/01/1939		60.96	60.96	0.61	04/04/1946	3.79	04/04/1946	985	04/04/1946							
6628-8056	01/01/1951		1.28	1.28	1.23	31/12/1951			22880	01/02/1952							
6628-8072			13.41	13.41	9.14	12/02/1947			1613	12/02/1947							
6628-8073			69.19	69.19	3.96	13/12/1933			885	13/12/1933							
6628-8074					2.77	02/10/1969											
6628-8075	02/03/1977		8.53	8.53	2.74	05/03/2015	0	01/01/1900	1597	09/03/1988	1239		ADE120	C	N	OBS	Qpah(Q1)
6628-8076			6.71	6.71	2.44	07/12/1967	0.24	07/12/1967	2285	07/12/1967							
6628-8077			81.69	81.69	5.49	13/12/1933	7.58	13/12/1933	913	13/12/1933							
6628-8078			76.2	76.2	0.61	14/12/1933	2.53	14/12/1933	871	14/12/1933							
6628-8094		67	79.25	69	12.76	13/03/2014	2	06/11/1985	1670	11/11/1985	94200	RHB	ADE012	C	H	OBS	Tomw(T1)
6628-8095			84.12	84.12					829	21/08/1934							
6628-8096	01/08/1914		83.82	83.82					786	15/09/1914							
6628-8972	12/01/1979	15	15	15	3.3	11/01/1979			2256	01/01/1979	90047						
6628-10693	18/04/1979	7.31	7.31	7.31	3.65	18/04/1979	2.5	18/04/1979	2086	19/04/1979	5603	OPR				DOM	
6628-10994	27/02/1979	9.4	12.8	12.8	3.65	27/02/1979	0.75	27/02/1979	1384	27/02/1979	5412						
6628-10995	20/02/1979	6	15	15	1.49	04/02/2010	2.5	20/02/1979	2510	20/02/1979	4493		ADE123	H	N	OBS	Qpah(Q1)
6628-11161	15/11/1979	195	267	226	12.42	27/03/1998			960	13/12/1984	5782		ADE044	H	H	OBS	Tomw(T1)
6628-11505			103.63	103.63			8.84	01/01/1964									

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-11509	01/01/1979	3.5	3.5	3.5	1.5	01/01/1979			747	01/01/1979	6233						
6628-11547	22/12/1980		14.4		3	22/12/1980	0.25	22/12/1980	938	23/12/1980	7858	BKF					
6628-11549	15/04/1980	10.8	10.8	10.8	2.66	10/09/1984	0.9	15/04/1980	1945	15/04/1980	90678		ADE119	H	N	OBS	Qpah(Q1)
6628-11550	13/05/1980	10.97	10.97	10.97	2.43	13/05/1980	0.75	13/05/1980	1552	13/05/1980	7216						
6628-11586	06/02/1981	10.97	10.97	10.97	2.13	06/02/1981	6.82	06/02/1981	1923	13/02/1981	8085						
6628-11595	23/01/1979	14.32	14.32	14.32	5.48	23/01/1979	1.5	23/01/1979	2284	23/01/1979	3174						
6628-11597	18/11/1980		6.2	6.2	0.97	08/09/2010			1127	08/03/1988	7791		ADE125	C	H	OBS	Qpah(Q1)
6628-11748	01/01/1980								1945	08/02/1980	6699						
6628-11893			4						1951	06/01/1982		BKF					
6628-11918	04/01/1982	9.7	10.9	10.9	3.6	04/01/1982	1.5	04/01/1982			10101					DRN	
6628-11919	04/01/1982	9.1	9.1	9.1	3.6	04/01/1982	1.5	04/01/1982			9747					DRN	
6628-11941	16/05/1979	12	14	14	3	16/06/1986	0.75	16/05/1979			5612						
6628-11942	04/01/1979		7.32	7.32	3.66	04/01/1979	1	04/01/1979	761	19/03/1982	90037						
6628-11971	15/04/1982	10.9	10.9	10.9	2.7	15/04/1982	1.25	15/04/1982			10248					DRN	
6628-12035	30/08/1982		6	6	1.9	30/08/1982	0.6	30/08/1982	1692	30/08/1982	10817						
6628-12036	01/09/1982		6	6	2	01/09/1982	0.5	01/09/1982	1105	03/09/1982	10874	UKN					
6628-12037	13/05/1982		6	6	1.8	13/05/1982	1.25	13/05/1982	994	13/05/1982	10455						
6628-12054	15/11/1982	8.2	8.2	8.2	3.6	15/11/1982	1	15/11/1982	1845	15/11/1982	11065	OPR				DOM	
6628-12055	30/09/1982		5.1	5.1	1.8	30/09/1982	0.7	30/09/1982	1861	30/09/1982	11056						
6628-12056	03/09/1982		6	6	2	03/09/1982	1	03/09/1982	1149	03/09/1982	10873	OPR				DOM	
6628-12059	11/11/1982		6.6	6.6	3.3	11/11/1982	1.5	11/11/1982	22408	11/11/1982	11198	UKN					
6628-12062	24/09/1982		6	6	1.9	24/09/1982	0.8	24/09/1982	1687	24/09/1982	10948	OPR				DOM	
6628-12099	14/12/1982	7.3	7.3	7.3	2.1	14/12/1982	1.5	14/12/1982	1463	14/12/1982	11444	OPR				DOM	
6628-12100	16/01/1983	8.2	8.23	8.23					3137	16/01/1983	11777						
6628-12131	07/02/1982		6	6	2.1	07/02/1982	1.2	07/02/1982	1021	07/02/1982	11591	UKN					
6628-12151	12/02/1983	11.5	11.5	11.5	4	12/02/1983	0.5	12/02/1983	2143	01/01/1983	11967						
6628-12182	08/03/1983	9.1	9.1	9.1	3.04	08/03/1983	1.5	08/03/1983	2171	08/03/1983	12194						
6628-12251	14/02/1983	4.5	10.5	10.5	4.29	21/09/1991					92582	ABD	ADE144	H	N	INV	Qpah(Q1)
6628-12293	29/11/1982	10.9	10.9	10.9	2.1	29/11/1982	1	29/11/1982	1687	29/11/1982	11233						
6628-12295	23/03/1983	18.5	18.5	18.5	6	23/03/1983	0.9	23/03/1983	13701	23/03/1983	12769						
6628-12309	27/02/1983		40	40	3.2	27/02/1983			4530	13/03/1983	12048	BKF					
6628-12312	01/09/1982	5	15	15	3	01/09/1982	0.5	01/09/1982	2058	01/09/1982	10638						
6628-12313			7		5	17/06/1983	0.5	17/06/1983	1340	07/04/1983	11966						
6628-12335	01/01/1983		6	6							12863	OPR				DOM	
6628-12338	11/12/1980		9.6		3.13	16/06/1986	0.75	11/12/1980	3943	11/12/1980	91119						
6628-12359	15/05/1983		6	6	2	15/05/1983					12682	ABD					
6628-12363			7.3		1.5	02/06/1983	1	02/06/1983	2909	02/06/1983	12867						
6628-12373	15/07/1983	6	6	6	5	15/07/1983					12958						
6628-12452	25/08/1983	253.5	258	256.5	2.59	04/03/2016			813	19/03/1986	92514		ADE146	C	H	OBS	Tomw(T2)
6628-12471	25/07/1982	20	20	20	2	25/07/1982	1	25/07/1982	849	25/07/1982	92114	OPR				DOM	
6628-12478	23/02/1982	14.6	14.6	14.6	3	23/02/1982	2	01/01/1983			91876	OPR				DRN	
6628-12537	28/10/1983	6	8	8	2	28/10/1983			1479	01/11/1983	11689						

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-12799	17/02/1984	10.8	10.8	10.8	2.4	17/02/1984	1.6	17/02/1984	1754	17/02/1984	13947	OPR				DRN	
6628-12800	31/01/1984	11	11	11	4	31/01/1984	1.5	31/01/1984	2199	31/01/1984	12070	OPR				DOM	
6628-12822	01/03/1984	14	14	14			0.5	01/03/1984	1867	01/03/1984	14009	OPR				DOM	
6628-12829	02/03/1984	18	18	18			0.4	02/03/1984	1373	02/03/1984	14116	OPR				DOM	
6628-12830	20/03/1984		10	10							93458	BKF				OBS	
6628-12831	20/03/1984	4.5	7.5	7.5	0.42	20/03/1984			1266	22/03/1984	93458					OBS	
6628-12832	21/03/1984	6	9	9	6.38	27/03/1998			1345	22/03/1984	93459		ADE189	H	N	OBS	Qpah(Q1)
6628-12833	21/03/1984	2.5	6.75	6.75	0.92	21/03/1984			1440	22/03/1984	93460					OBS	
6628-12855	02/04/1984	18	18	18			0.6	02/04/1984	1828	03/02/1989	14327	OPR				DOM	
6628-12868	30/03/1984	24	24	24					10511	05/04/1984	14296	OPR				DRN	
6628-12908	01/01/1983		6	6	3	01/01/1983	0.5	01/01/1983			11779	OPR				DOM	
6628-12909	01/02/1983		6	6							11779						
6628-12956	01/10/1983	6	6	6							13514						
6628-12970	07/03/1984	4	4.2	4.2	2.25	07/03/1984			2290	05/03/1984	12435						
6628-12974	01/01/1984	2.2	4.7	4.7	2.2	01/01/1984					13505	OPR				DOM	
6628-12982	30/05/1984	8	8	8	2	30/05/1984					14559						
6628-12995	21/11/1983	13	13	13	2	21/11/1983	1.5	21/11/1983			13650	OPR				DOM	
6628-13040	10/09/1983	8	8	8	3	10/09/1983			1322	17/09/1984	12024	OPR				DOM	
6628-13056	15/10/1984		5	5	2	15/10/1984	0.25	15/10/1984	4085	15/10/1984	15281						
6628-13064	15/11/1978	9.5	9.5	9.5	3	15/11/1978	0.75	15/11/1978	13099	15/11/1978	4471	OPR				DOM	
6628-13081	14/09/1984	11	11	11	4	14/09/1984	1.5	14/09/1984	2132	14/09/1984	15280	OPR				DOM	
6628-13125	28/12/1984	30	30	30	6	28/12/1984	1	28/12/1984	1923	03/01/1985	93931	OPR				IRR	
6628-13192	14/09/1984	4.3	4.3	4.3	1.8	14/09/1984	1	14/09/1984	929	14/09/1984	15235	OPR				DOM	
6628-13228	04/03/1985	5.6	5.6	5.6	3.5	04/03/1985			2301	05/03/1985	14580						
6628-13232	28/12/1984	8	10	10	3.5	28/12/1984	1.26	28/12/1984			15383						
6628-13237	16/01/1985	9.1	9.1	9.1	3	16/01/1985	0.25	16/01/1985	2216	16/01/1985	15234	OPR				IRR	
6628-13273	10/03/1984	20	20	20			2.5	10/03/1984	2160	10/03/1985	16232	OPR				DOM	
6628-13286	28/02/1985	9.1	9.1	9.1	3	28/02/1985	1.5	28/02/1985	2347	28/02/1985	16256	OPR				DRN	
6628-13288	07/03/1985	6.1	6.1	6.1	2.5	07/03/1985	1.25	07/03/1985	1620	07/03/1985	16029	OPR				DOM	
6628-13293	10/04/1985	22	22	22	3	10/04/1985	1	10/04/1985	902	10/04/1985	16524	OPR				DOM	
6628-13311	06/05/1985		6	6	4	06/05/1985	0.5	06/05/1985	2126	09/05/1985	16313	OPR				DOM	
6628-13316	04/04/1985	5.18	5.18	5.18	2.1	04/04/1985	1	04/04/1985	1117	04/04/1985	16396	OPR				DOM	
6628-13392	13/10/1983		10	10					1239	13/10/1983	13169	BKF					
6628-13394	28/03/1985	8.5	8.5	8.5	2.1	28/03/1985	1				16349	OPR				DOM	
6628-13395	10/07/1985	11	11	11	3.7	10/07/1985	1.5		2143	10/07/1985	16839						
6628-13435	31/07/1985	5	5	5	1.8	31/07/1985	1		2273	31/07/1985	16615						
6628-13443	08/08/1985	9.1	9.14	9.14	1.83	04/09/1985	2.5		8400	04/09/1985	17172	OPR				DRN	
6628-13452	12/09/1985	13	13	13	4.5	12/09/1985	5		1620	12/09/1985	16837						
6628-13540	08/01/1986	10	14	14	2.1	16/01/1986	0.5	01/01/1985	2426	08/01/1986	17710	OPR				DOM	
6628-13563	20/12/1985	4.9	4.9	4.9	2.4	24/01/1986	0.5	20/12/1985	1205	20/12/1985	17481	OPR				DOM	
6628-13571	10/12/1985		12.2		4.12	16/06/1986	1.25	10/12/1985	1284	10/12/1985	17720						
6628-13591	03/02/1986	4	4	4	1.5	13/03/1986	1	03/02/1986	1177	03/02/1986	18043	OPR				DOM	

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-13603	08/03/1986	13.18	13.82	13.82	5.18	08/03/1986	0.25	08/03/1986			17146	OPR				DRN	
6628-13607	01/12/1985		8		3.24	16/06/1986			1928	19/03/1986	16426						
6628-13621	28/03/1986	9.1	9.1	9.1	3	16/04/1986	1.2	28/03/1986	1984	24/03/1986	18156						
6628-13639	19/04/1986	4.8	4.8	4.8	2.7	04/05/1986	0.88	19/04/1986	1038	24/04/1986	18300						
6628-13726	24/07/1986	20	20	20	4	25/08/1986	0.75	24/07/1986			18645						
6628-13822	23/09/1986	12.2	12.2	12.2	7.9	02/12/1986	0.38	23/09/1986	910	02/12/1986	17449						
6628-13849	01/01/1987	10	10	10	0	20/01/1987	0.63	20/01/1987			19161						
6628-13864	19/01/1987	11	11	11	2.1	22/01/1987	1.25	19/01/1987	2194	22/01/1987	19178						
6628-13868	08/12/1986	6	8	8	4	05/02/1987	0.1	08/12/1986	1362	05/02/1987	19165						
6628-13909	23/02/1987	12	12	12	4.5	13/03/1987	1	23/02/1987	2008	13/03/1987	19438						
6628-13924	01/02/1976	11	11	11	4	02/04/1987	0.3	01/02/1987	2727	02/04/1987	19455						
6628-13957	13/04/1987	19	19	19	0	12/05/1987	0.84	12/05/1987	766	12/05/1987	19592						
6628-13965	15/03/1985		6	6	2.5	15/03/1985	1.25	15/03/1985	682	05/12/2007	140514						
6628-14026	05/11/1987	11	11	11	2	09/11/1987	0.5	05/11/1987	2852	10/11/1987	20027	OPR				DRN	
6628-14039	22/09/1987	9	9	9	2.4	17/11/1987	1	22/09/1987	3367	17/11/1987	19703						
6628-14041	25/09/1987	5.1	5.1	5.1	1.8	17/11/1987	1	25/09/1987	371	17/11/1987	20239						
6628-14045	03/10/1987	7	9	9	2.7	17/11/1987	1.2	03/10/1987	991	17/11/1987	20277						
6628-14099	26/02/1988	11	11	11	3	09/05/1988	0.95	26/02/1988	5181	09/05/1988	20822						
6628-14185	29/04/1988	14	14	14	4	29/04/1988	0.5	08/04/1988	1995	08/04/1988	20955						
6628-14193	04/06/1987	9.14	9.14	9.14	3.05	02/05/1988	0		1770	02/05/1988	19948	OPR				DRN	
6628-14214	20/05/1988	198	228	228	15.47	08/03/2016	6	20/05/1988	1034	26/02/2009	20948		ADE208	C	N		Tomw(T1)
6628-14229	05/06/1988	119	138	138	3.6	06/07/1988	20	05/06/1988	849	06/07/1988	94963	OPR				IND	Tomw(T1)
6628-14242	22/09/1987	9	9	9	2.4	11/03/1988	1	22/09/1987	2938	11/03/1988	20382	OPR				DOM	
6628-14278	03/03/1988	8.5	8.5	8.5	2	19/10/1988	40	03/03/1988	1216	19/10/1988	20912						
6628-14333	03/01/1989	11	11	11	4	03/01/1989	0.5	03/01/1989			20735	OPR				DOM	
6628-14395	05/04/1989	11.1	11.1	11.1	2.1	08/05/1989	1.2	05/04/1989	1479	08/05/1989	22576	OPR				DOM	
6628-14396	05/04/1989	12	12	12	2.1	08/05/1989	1.2	05/04/1989	1697	08/05/1989	22586	OPR				DOM	
6628-14502	05/07/1988	12	12	12	3	19/10/1988	0.5	05/07/1988	12163	19/10/1988	21458	OPR				DOM	
6628-14503	10/10/1988	12	12	12	6	19/10/1988	0.2	10/10/1988	2909	19/10/1988	21795	OPR				DOM	
6628-14508	21/01/1989	10.6	10.6	10.6	3.5	06/02/1989	1.2	21/01/1989	3885	06/02/1989	22017	OPR				DOM	
6628-14513	07/05/1980		10	10								ABD				INV	
6628-14525	17/06/1980		14.5	14.5								ABD				INV	
6628-14526	19/06/1980		6.6	6.6								ABD				INV	
6628-14542	21/12/1981		10	10								ABD				INV	
6628-14635	01/01/1987	3	5.5	5.5	5.3	01/01/1987	0.01	01/01/1987			23280	OPR				IRR	
6628-14769	01/05/1989	10.5	10.5	10.5	4	08/05/1989			1901	08/05/1989	22708	OPR				DOM	
6628-14965	23/09/1989	9.7	9.7	9.7	2.4	16/10/1989	1	23/09/1989	2227	16/10/1989	22872	OPR				DOM	
6628-14971		11.2	11.2	11.2	4.1	20/10/1989	1.2		1133	20/10/1989	23361	OPR				DOM	
6628-15120	15/11/1989	12	12	12	2.3	28/11/1989	2.1	15/11/1989	2426	28/11/1989	23263	OPR				DOM	
6628-15121	14/10/1989	8	8	8	2.4	20/11/1989	1.2	14/10/1989	2354	20/11/1989	23291	OPR				DOM	
6628-15141	04/12/1989	6	6	6	3	25/01/1990	0.2	04/12/1989	6692	25/01/1990	23457	OPR				DOM	
6628-15158	16/08/1989		2.5	2.5	2.35	16/08/1989										INV	

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-15159	16/08/1989		1.5	1.5												INV	
6628-15160	16/08/1989		1.5	1.5												INV	
6628-15161	16/08/1989		1.5	1.5												INV	
6628-15162	16/08/1989		0.3	0.3												INV	
6628-15163	16/08/1989		1.5	1.5												INV	
6628-15164	16/08/1989		2.5	2.5												INV	
6628-15165	16/08/1989		2.5	2.5												INV	
6628-15204	28/01/1990	10	10	10	6	06/02/1990			1968	06/02/1990	23772	OPR				DOM	
6628-15209	04/02/1990	5.5	5.5	5.5	3	28/02/1990	0.3	04/02/1990	766	28/02/1990	22906						
6628-15234	02/03/1990	10.5	10.5	10.5	2.8	04/04/1990	1.2	02/03/1990	1078	04/04/1990	24002					DRN	
6628-15241	20/04/1990	3.6	6	6	2.4	20/04/1990					24097	OPR				DOM	
6628-15262	18/04/1990	14	14	14	7	16/05/1990			1912	18/09/1990	24161	OPR				DOM	
6628-15323	02/07/1990	201	228	228	5.8	02/07/1990	7	02/07/1990	983	17/07/1990	24452	OPR				IND	Tomw(T1)
6628-15384	17/10/1990	12	12	12	0	12/11/1990			1984	12/11/1990	24656	OPR				DOM	
6628-15386	17/10/1990	11	11	11	4	12/11/1990			1351	12/11/1990	24759	OPR				DOM	
6628-15392	15/09/1990	12	12	12	2.1	12/11/1990	1.5	15/09/1990	3023	12/11/1990	24760	OPR				DOM	
6628-15401	19/12/1990	8.5	9	9	4	19/12/1990					25064	OPR				DOM	
6628-15402	08/01/1991	10	10	10	4	08/01/1990					25059	OPR				DOM	
6628-15440	04/12/1990	9.6	9.6	9.6	2.4	04/12/1990	1.25	04/12/1990	3539	04/12/1990	24850	OPR				IRR	
6628-15503	15/03/1991	10.5	10.5	10.5	5.2	03/04/1991	1	15/03/1991	2063	03/04/1991	25391	OPR				DOM	
6628-15506	04/04/1991		10.2	0	4.3	04/04/1991	1.5	04/04/1991	1664	19/04/1991	28849	ABD				DOM	
6628-15525	20/04/1991	10.3	10.3	10.3	4	20/04/1991					25418	OPR				DOM	
6628-15556	24/01/1991	179.7	215	211	6.7	24/01/1991	10	24/01/1991	1050	25/02/2005	25171	OPR				OBS	Tomw(T1)
6628-15605	26/08/1991	9.8	9.8	9.8	4	26/08/1991					25721	OPR				DOM	
6628-15608	07/09/1991	5.8	5.8	5.8	2.1	20/09/1991	1	07/09/1991	4783	20/09/1991	26061	OPR				DOM	
6628-15609	04/09/1991	9	9	9	2.4	20/09/1991	1	04/09/1991	1428	20/09/1991	26056	OPR				DOM	
6628-15610	21/08/1991	10.5	10.5	10.5	3.6	23/09/1991	1.5	21/08/1991	1878	23/09/1991	25360	OPR				DOM	
6628-15631	20/09/1991	9	9		3				1010	20/09/1991	26152	OPR				DOM	
6628-15632	20/09/1991	9	9	9	3.5	20/09/1991	1	20/09/1991	933	20/09/1991	25312	OPR				DOM	
6628-15633	27/09/1991	5.7	5.7	5.7	1.8	27/09/1991	1	27/09/1991	600	27/09/1991	25516	OPR				DOM	
6628-15714	04/11/1991	11	11	11	4	04/11/1991	1	04/11/1991	1100	04/11/1991	26355	OPR				DOM	
6628-15715	01/11/1991	12	12	12	4	01/11/1991	2.5	01/11/1991	1799	01/11/1991	26209	OPR				DOM	
6628-15738	21/11/1991	12	12	12	4	21/11/1991	1.2	21/11/1991	2375	21/11/1991	26454	OPR				DOM	
6628-15794	10/12/1991	12	12	12	4	10/12/1991	1.2	10/12/1991	2008	10/12/1991	26317	OPR				DOM	
6628-15795	19/11/1991		7.6	7.6	1.8	19/11/1991	1.18	19/11/1991	1754	19/11/1991	26208	OPR				DOM	
6628-15796	13/11/1991	8	8	8	4	13/11/1991	1.1	13/11/1991	3910	13/11/1991	25394	OPR				DOM	
6628-15803	10/12/1991	14	14	14	7.5	10/12/1991			821	10/12/1991	26602	OPR				DOM	
6628-15822	01/11/1991	10	10	10	4	01/11/1991	1.5	01/11/1991	2058	01/11/1991	95873					DRN	
6628-15825	16/12/1991	5.3	5.3	5.3	2.8	21/01/1992	1	16/12/1991	1105	21/01/1992	26308	OPR				DOM	Qpah(Q1)
6628-15826	29/11/1991	15	15	15	4	21/01/1992	1	29/11/1991	1519	29/11/1992	26762	OPR				DOM	
6628-15857	14/01/1992	15	15	15	4.5	20/01/1992			2432	20/01/1992	26767	OPR				DOM	
6628-15872	24/01/1992		7.6	7.6	1.8	31/01/1992	1.2	24/01/1992	1692	31/01/1992	26644	OPR				DOM	

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-15901	07/02/1992	12	12	12	2	12/02/1992			3007	12/02/1992	26915	OPR				DOM	
6628-15916	04/02/1992	11	11	11	3.5	03/03/1992	1.1	04/02/1992	3201	03/03/1992	26997	OPR				DOM	
6628-15917	20/01/1992		5	5	3.5	04/03/1992			912	04/03/1992	26714	OPR				DOM	
6628-15918	04/02/1992	6.5	7	7	2	02/03/1992	0.8	04/02/1992	1256	02/03/1992	26958	OPR				DOM	
6628-15920	15/02/1992	6.5	6.5	6.5	2.5	02/03/1992	0.8	15/02/1992	3696	02/03/1992	27036	OPR				DOM	Qpah(Q1)
6628-15924	22/02/1992	12	12	12	3	09/03/1992			5946	09/03/1992	27035	OPR				DOM	
6628-15928	04/12/1991		5.7	5.7	4.3	04/12/1991	0.9	04/12/1991	2990	04/12/1991	26482	OPR				DOM	
6628-15943	14/03/1992	6	6	6	3	14/03/1992	1	14/03/1992	3511	14/03/1992	27304	OPR				DOM	
6628-15944	06/03/1992	6.8	6.8	6.8	1.8	24/03/1992			1484	24/03/1992	27131	OPR				DOM	
6628-15955	06/02/1992		18	18	6	24/03/1992	0.4	06/02/1992	1144	24/03/1992	26960	BKF					
6628-15956	09/03/1992		12	12	9	24/03/1992	0.2	09/03/1992	1144	24/03/1992	26960	BKF					
6628-15962	20/12/1991	4	4.5	4.5	4	02/01/1992			1682	02/01/1992	25631	OPR				DOM	
6628-16017	27/02/1992		5	5	3	03/07/1992			750	03/07/1992	27173	OPR				DOM	
6628-16018	27/02/1992		5	5	3	03/07/1992			1979	03/07/1992	27121	OPR				DOM	
6628-16019	22/02/1992		4.5	4.5	3	02/07/1992			506	02/07/1992	26861	OPR				DOM	
6628-16020	18/01/1992		5	5	3	03/07/1992			882	03/07/1992	26791	OPR				DOM	
6628-16021	18/01/1992		5	5	3	03/07/1992			906	03/07/1992	26792	OPR				DOM	
6628-16022	18/01/1992		5	5	3	03/07/1992			832	03/07/1992	26793	OPR				DOM	
6628-16024	13/01/1992		5	5	3	03/07/1992			368	03/07/1992	26693	OPR				DOM	
6628-16050	07/05/1992	15.4	15.4	15.4	5	14/05/1992	1.2	07/05/1992	4309	14/05/1992	27508	OPR				DOM	
6628-16079	09/02/1992	7	10	10	0						26645	OPR				DOM	
6628-16081	27/02/1992		5	5	3	03/07/1992			761	03/07/1992	27170	OPR				DOM	
6628-16170	26/10/1992	15.2	15.2	15.2	5	29/10/1992	1.5	26/10/1992	2194	29/10/1992	28422	OPR				DOM	
6628-16180	19/09/1992	15	15	15	2.7	02/10/1992			3576	02/10/1992	28173	OPR				DOM	
6628-16239		12	12		4	25/02/1993	2.5	24/01/1993	1681	25/02/1993	28861					DOM	
6628-16330	15/04/1993	24	24	24					1172	03/05/1993	29440					DOM	
6628-16331	21/04/1993	15	18	15					2204	03/05/1993	29471					DOM	
6628-16342	07/11/1992	11	11.5	11.5	11	10/11/1992			2688	10/11/1992	28344					DOM	
6628-16345	14/02/1993		7.6	7.6			0.77	14/02/1993	2165	17/03/1993	28689					DOM	
6628-16452	29/08/1993		5.5	5.5			0.9	29/08/1993	763	07/09/1993	29975					DOM	
6628-16509	20/10/1993	12	12	12			1.2	20/10/1993	2154	15/12/1993	30339					DOM	
6628-16524	21/12/1993	21	21	21					1698	21/12/1993	30733					DOM	
6628-16554	28/01/1994	10	10	10					1061	31/01/1994	30780					DOM	
6628-16598	11/03/1994	15	15	15					2267	30/03/1994	31280					DOM	
6628-16599	02/04/1994	12	15	15					2075	07/04/1994	31316					DOM	
6628-16600	01/03/1994	6	6	6	3.6	01/03/1994			1759	01/03/1994	31125					DOM	
6628-16616	12/04/1994	20	20	20	4.6	12/04/1994			1945	05/04/1994	31455					DOM	
6628-16620	29/05/1994	24	24	24					2284	08/06/1994	31636					DOM	
6628-16674	07/04/1994	14	14	14					947	07/04/1994	31456					DRN	
6628-16675	14/02/1990	10.66	10.66	10.66	9.14	14/02/1990	0.3	14/02/1990			23791					DOM	
6628-16701	17/10/1994	16.5	16.5	16.5					1362	17/10/1994	32712					DOM	
6628-16702	17/08/1994	12	12	12			0.5	17/08/1994			32359					DRN	

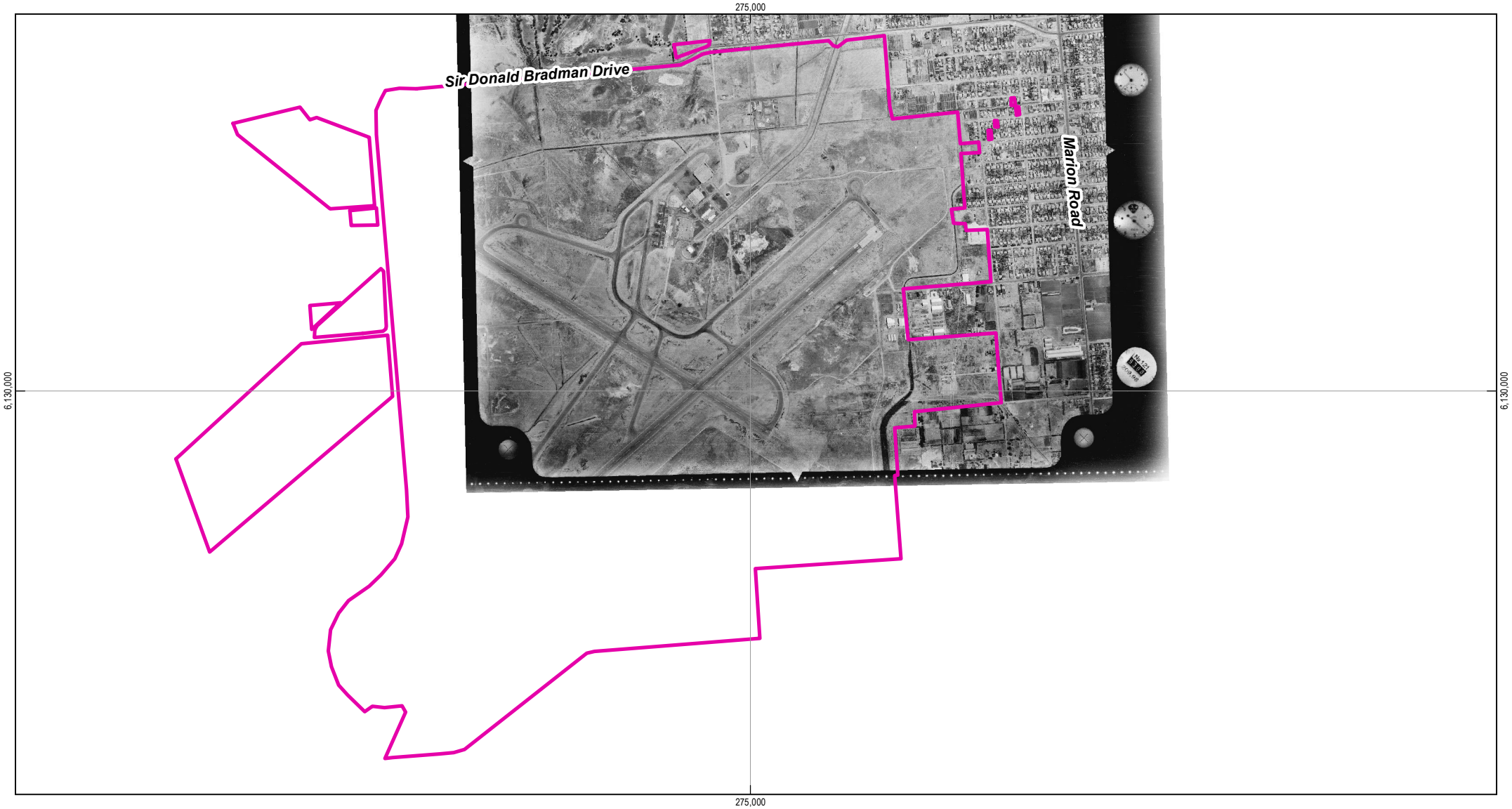
Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-16722	01/11/1994	16	16	16					2437	01/11/1994	32809					DOM	
6628-16732	18/11/1992		6	6					407	18/11/1992	28541					DOM	
6628-16747	20/05/1994		6.6	6.6			0.9	20/05/1994	1962	20/05/1994	31860					DOM	
6628-16748	03/08/1994	12	12	12			4	03/08/1994	927	03/08/1994	32241					DOM	
6628-16783	25/10/1994	16.5	16.5	16.5					8899	25/10/1994	32773					DOM	
6628-16828	04/11/1994		12	12	6	04/11/1994			2364	04/11/1994	32819					DOM	
6628-16883	04/01/1995	7.8	7.8	7.8					3145	04/01/1995	33590					DOM	
6628-16903	08/11/1994	16.5	16.5	16.5			0.5	08/11/1994	1116	08/11/1994	32827					DOM	
6628-16921	27/11/1994	20	20	20			1	27/11/1994	1703	27/11/1994	31611					DOM	
6628-16922	09/01/1995		6.5	0	3.3	09/01/1995					33202	ABD				DOM	
6628-16924	07/01/1995	23.5	23.5	23.5					1429	07/01/1995	32707					DOM	
6628-16934	11/02/1995	12	12	12					1979	11/02/1995	33497					DOM	
6628-16956	31/01/1995	10	10	10			1.8	31/01/1995	3937	31/01/1995	33703					DOM	
6628-16958	09/02/1995	20	20	20					3747	09/02/1995	33822					DOM	
6628-16978	10/02/1995	6	6	6			1.5	10/02/1995	523	10/02/1995	33699					DOM	
6628-17002	03/08/1993		12.05	12.05								UKN					
6628-17015	23/02/1994		13.2	13.2								UKN					
6628-17020			10.89	10.89													
6628-17021	24/02/1994		6.4	6.4								UKN					
6628-17022			6.7	6.7													
6628-17023			8.97	8.97													
6628-17024			8.62	8.62													
6628-17025			3.74	3.74													
6628-17026			4.13	4.13													
6628-17089	27/02/1995	20.5	20.5	20.5					2323	27/02/1995	34090					DOM	
6628-17100	29/11/1994		6	6	4	29/11/1994			2989	29/11/1994	33011					DOM	
6628-17102	10/02/1995	6	6	6			0.75	10/02/1995	1906	10/02/1995	33172					DOM	
6628-17103	18/12/1994		6	6	4	18/12/1994			1083	18/12/1994	33415					DOM	
6628-17104	16/02/1995		7	6	4	16/02/1995			854	16/02/1995	34011					DOM	
6628-17133	02/03/1995		8.2	8.2			0.43	02/03/1995	1642	02/03/1995	34246						
6628-17160	28/02/1995	16	16	16					2397	28/02/1995	34327					DOM	
6628-17186	20/03/1995	16.5	16.5	16.5					1850	20/03/1995	34328					DOM	
6628-17187	28/03/1995	18.5	18.5	18.5			2	28/03/1995	1957	29/03/1995	34599					DOM	
6628-17188	29/03/1995	18.5	18.5	18.5			2	29/03/1995	1968	29/03/1995	34639					DOM	
6628-17189	03/05/1994		6	6								UKN					
6628-17190	02/05/1994		10.2	10.2								UKN					
6628-17191	28/04/1994		12	12								UKN					
6628-17192	03/05/1994		5.4	5.4								UKN					
6628-17207	17/11/1994		9.1	9.1								UKN					
6628-17214	17/11/1994		4	4								UKN					
6628-17215	17/11/1994		4	4								UKN					
6628-17264	17/05/1995	16	16	16			2	17/05/1995	4053	17/05/1995	34780					DOM	

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-17331	07/09/1995	16.5	16.5	16.5	4.6	07/09/1995	1	07/09/1995	2426	25/08/2001	35303					DOM	
6628-17332	21/07/1995	9.5	9.5	9.5			1.25	21/07/1995	2245	21/07/1995	35387					DOM	
6628-17360	19/07/1995	7	7	0			0.35	19/07/1995	17296	19/07/1995	34606	ABD				DOM	
6628-17392	27/09/1995	24	24	24			0.5	27/09/1995	495	27/09/1995	35832					DOM	
6628-17410	19/10/1995	16	16	16			2	19/10/1995	2510	19/10/1995	35900					DOM	
6628-17411	11/11/1995	14	14	14			1	11/11/1995	1496	11/11/1995	35750					DOM	
6628-17472	15/11/1995	12.5	12.5	12.5			2	15/11/1995			36176					DOM	
6628-17546	27/10/1995	18	18	18			0.5	27/10/1995	2835	27/10/1995	35958					DOM	
6628-17623	17/01/1996	12	12	12			2	17/01/1996	2132	17/01/1996	36604					DOM	
6628-17644	02/02/1996	14	14	14					2704	02/02/1996	36946					DOM	
6628-17653	23/01/1996	20	20	20					1804	23/01/1996	34813					DOM	
6628-17654	24/01/1996	12	12	12			0.5	24/01/1996	2103	24/01/1996	34956					DOM	
6628-17777	13/02/1996	18	18	18			2	13/02/1996	2210	13/02/1996	36985					DOM	
6628-17794	22/02/1996		7.2	0			0.15	22/02/1996			36974	ABD				DOM	
6628-17796	21/02/1996	18	18	18			1.5	21/02/1996	2664	21/02/1996	37020					DOM	
6628-17812	27/02/1996	14	14	14			0.25	27/02/1996	4905	27/02/1996	36772					DOM	
6628-17833	29/02/1996	10	10	10			1.25	29/02/1996	1979	29/02/1996	37210					DOM	
6628-17834	04/03/1996	12	12	12			1	04/03/1996	1110	04/03/1996	37239					DOM	
6628-17852	01/10/1995	12	12	12			1	01/10/1995	2295	01/10/1995	34968					DOM	
6628-17869	28/07/1995		5.1	5.1	3.1	28/07/1995			1099	28/07/1995	34623					DOM	
6628-17870	10/01/1996		5.1	5.1	3.1	10/01/1996			1005	10/01/1996	36205					DOM	
6628-17880	14/04/1996	9	9	9	5	14/04/1996					37554					DOM	
6628-17969	06/09/1996	12	12	12			1	06/09/1996	7924	06/09/1996	38470					DOM	
6628-18013	31/12/1957		2.44	2.44								UKN					
6628-18014	31/12/1957		2.31	2.31								UKN					
6628-18015	31/12/1957		2.26	2.26								UKN					
6628-18016	31/12/1957		3.04	3.04								UKN					
6628-18017	31/12/1957		2.74	2.74								UKN					
6628-18018	31/12/1957		2.67	2.67								UKN					
6628-18065	31/10/1995	4	4	4					2030	08/11/1995	37542					OBS	
6628-18066	31/10/1995	4	4	4					2653	08/11/1995	37542					OBS	
6628-18067	31/10/1995	4	4	4					2199	08/11/1995	37542					OBS	
6628-18093	06/11/1996	11	11	11			1.25	06/11/1996	8402	06/11/1996	38221					DOM	
6628-18106	06/12/1996	12	12	12	4	06/12/1996	0.2	06/12/1996	1928	06/12/1996	39425					DOM	
6628-18109	17/11/1996	3	8.3	8.3	4.1	17/11/1996			1396	17/11/1996	36921					DOM	
6628-18141	06/01/1997	9.6	9.6	9.6	5.6	06/01/1997	0.13	06/01/1997			39458	OPR				DOM	
6628-18157	02/01/1997	18	18	18	4.9	02/01/1997	2	02/01/1997	2613		39631					DOM	
6628-18181	17/05/1995	10	10	10			0.75	17/05/1995			35170					DRN	
6628-18225	28/01/1997	14	14	14	6.8	28/01/1997			827	28/01/1997	39676					DOM	
6628-18284	04/11/1996	15	15	15	4	04/11/1996	12	04/11/1996	3804	11/11/2013	38928					DOM	
6628-18434	14/03/1997	15	15	15	6.6	14/03/1997			938	14/03/1997	37492					DOM	
6628-18448	25/03/1997	15	15	15	5.8	25/03/1997			1143	25/03/1997	40648					DOM	

Unit No	Date	Cased To (m)	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	Yield (L/sec)	Yield Date	TDS (mg/L)	TDS Date	Permit No	Status	Obs No	SWL Status	Salinity Status	Purpose	Aquifer
6628-18478	17/04/1997	14	17	17	4.8	17/04/1997	1.5	17/04/1997	1877		40567					DOM	

500 records

Appendix E – Historical aerial photographs



1:25,000 (at A4)

0 200 400 600 800

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Legend

Site Boundary (Adelaide Airport)

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	A
Date	20 Feb 2017

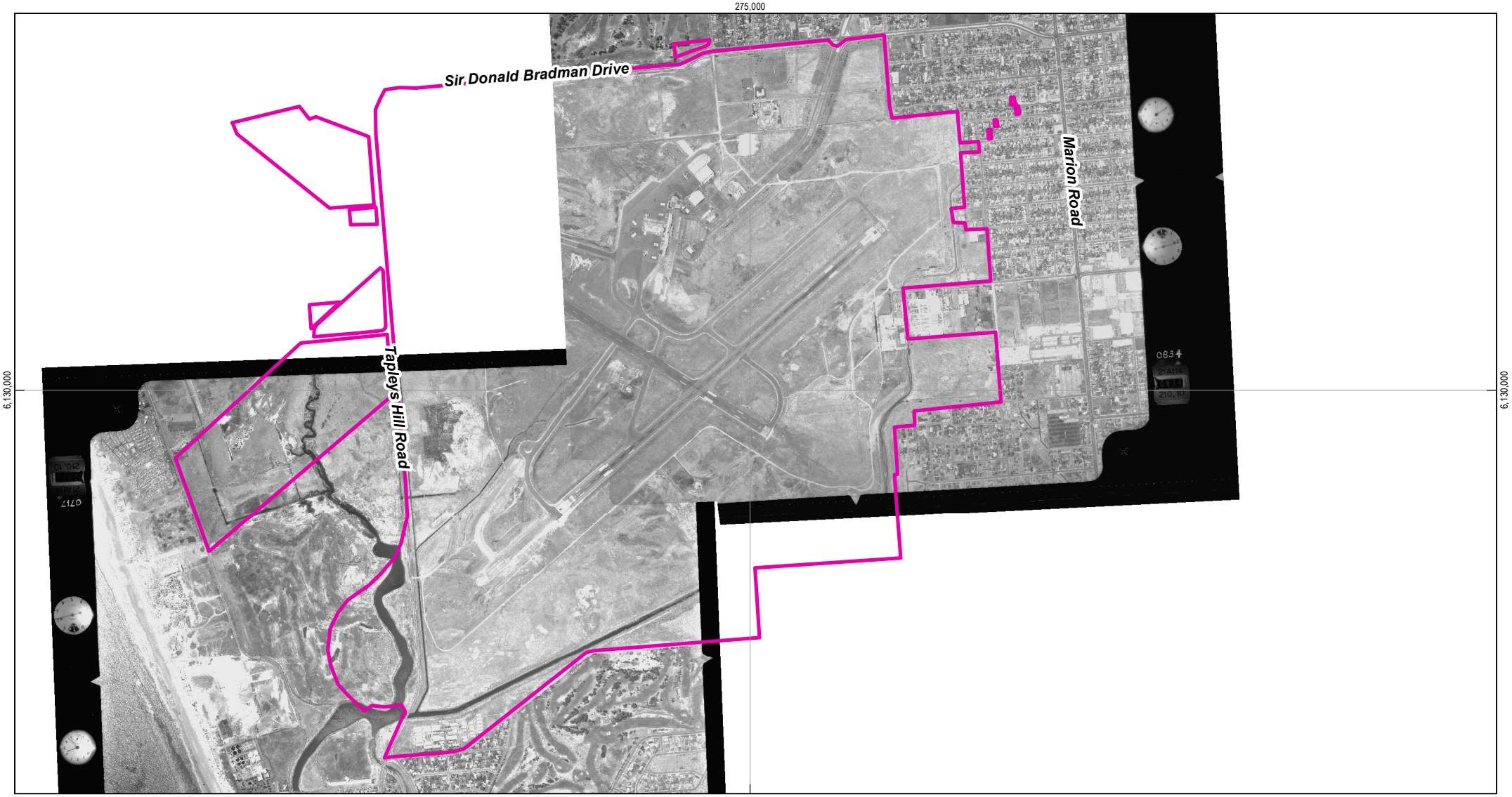
1959 Historical Aerial Photograph

Figure A

G:\31\34071\GIS\GIS Brisbane by jvc\maps\31-34071-111_Adl1959Aerial_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Mapland: aerial photograph (1959). Created : jvc



1:25,000 (at A4)

0 200 400 600 800

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Legend

Site Boundary (Adelaide Airport)

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	A
Date	20 Feb 2017

1969 Historical Aerial Photograph

Figure B

G:\31\34071\GIS\GIS Brisbane by jvc\maps\31-34071-112_Adl1969Aerial_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Mapland: aerial photograph (1969). Created : jvc

1:25,000 (at A4)

0 200 400 600 800

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Legend

Site Boundary
(Adelaide Airport)

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	A
Date	20 Feb 2017

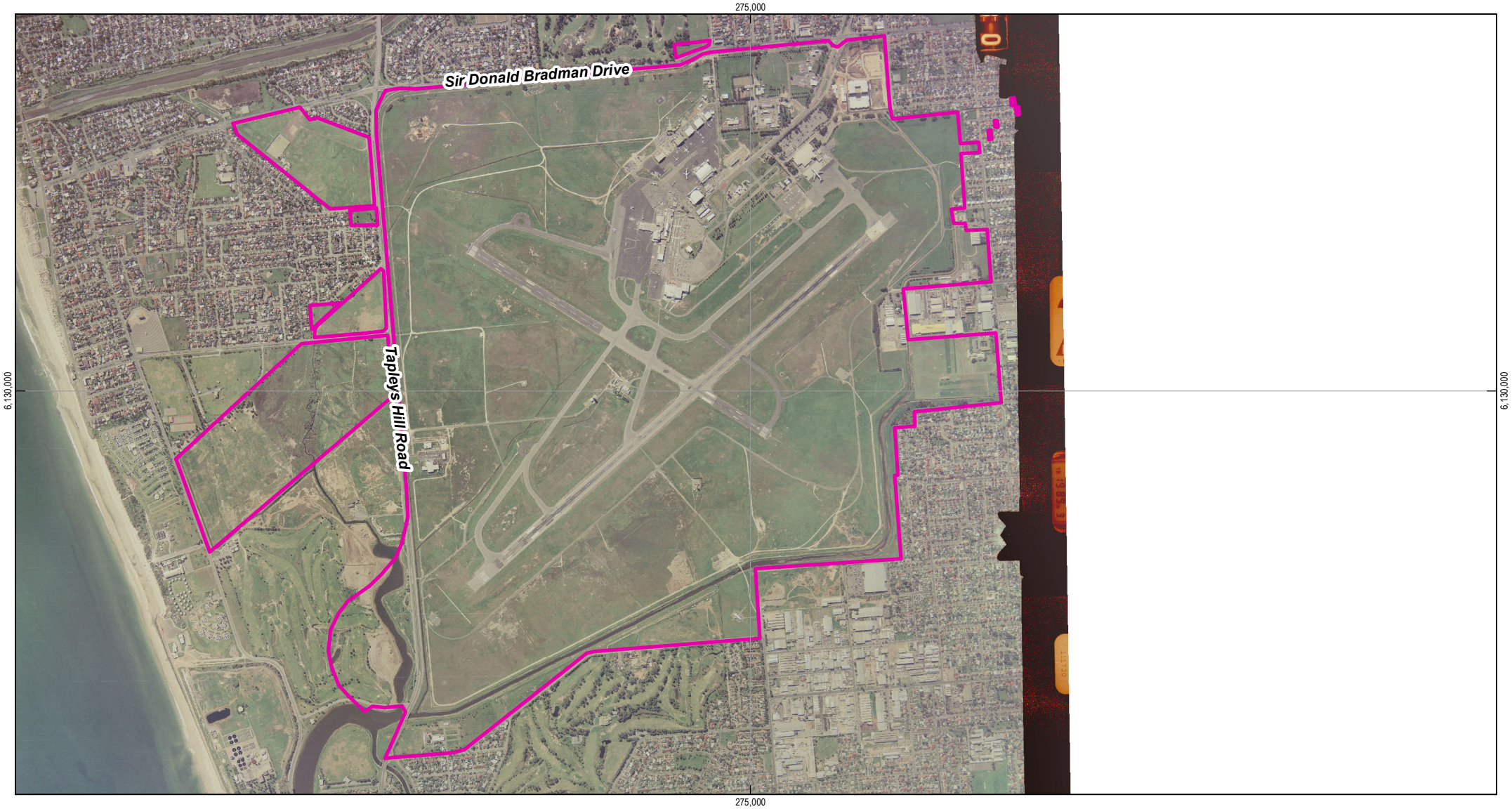
1979 Historical Aerial Photograph

Figure C

G:\31\34071\GIS\GIS Brisbane by jvc\maps\31-34071-113_Adl1979Aerial_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Mapland: aerial photograph (1979). Created : jvc



1:25,000 (at A4)

0 200 400 600 800

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Legend

Site Boundary
(Adelaide Airport)

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	A
Date	20 Feb 2017

1989 Historical Aerial Photograph

Figure D

G:\31\34071\GIS\GIS Brisbane by jvc\maps\31-34071-114_Adl1989Aerial_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Mapland: aerial photograph (1989). Created : jvc

1:25,000 (at A4)

0 200 400 600 800

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Legend

Site Boundary (Adelaide Airport)

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	A
Date	20 Feb 2017

1999 Historical Aerial Photograph

Figure E

G:\31\34071\GIS\GIS Brisbane by jvc\maps\31-34071-115_Adl1999Aerial_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Mapland: aerial photograph (1999). Created : jvc

1:25,000 (at A4)

0 200 400 600 800

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Legend

Site Boundary (Adelaide Airport)

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	A
Date	20 Feb 2017

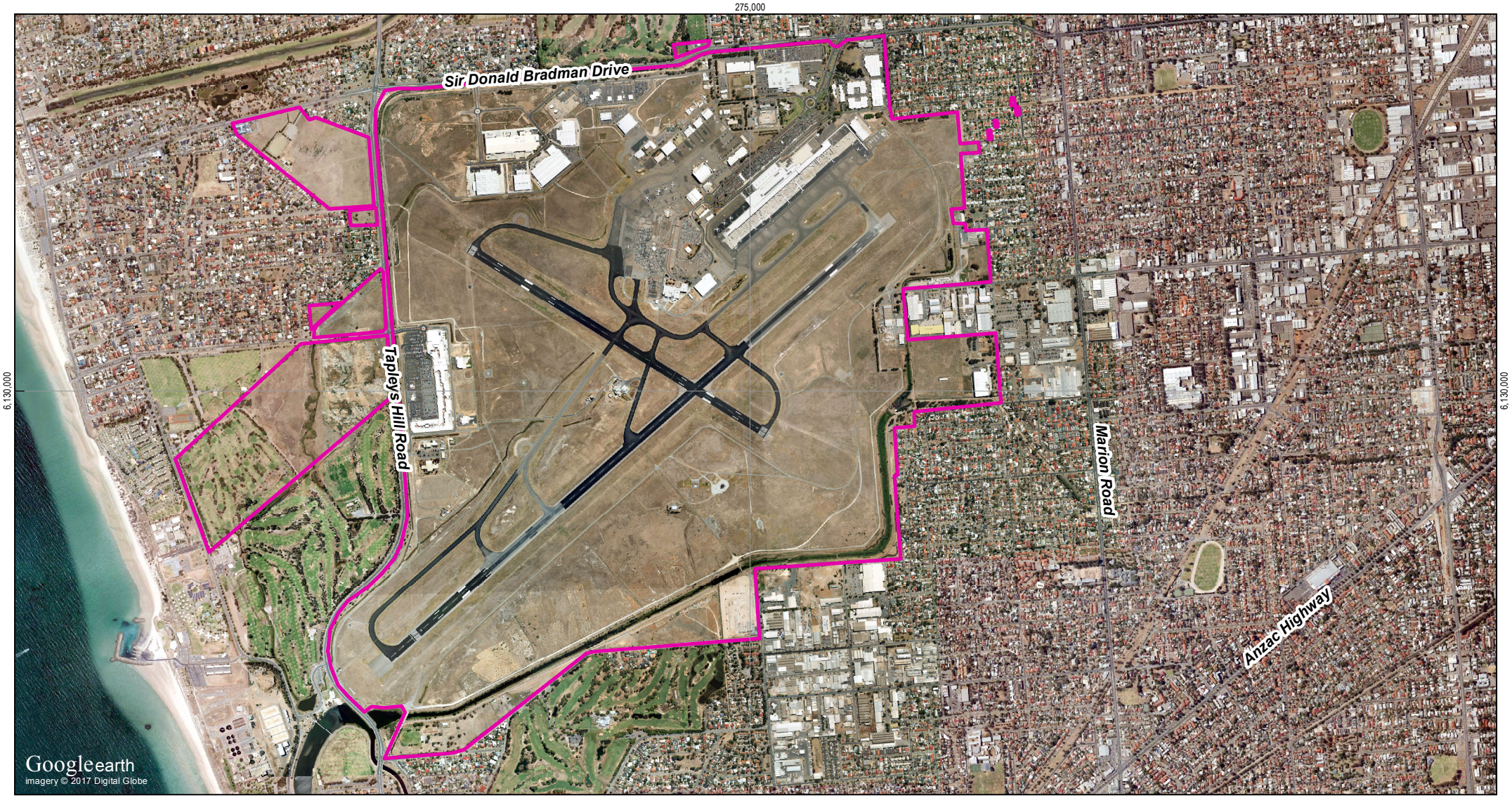
2001 Historical Aerial Imagery

Figure F

G:\31\34071\GIS\Import\GIS Folder Brisbane\34071\GIS Brisbane by jvc\maps\31-34071-118_Adl2001Aerial_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Google Earth: aerial imagery (2001, extracted Jun 2016). Created : jvc



1:25,000 (at A4)

0 200 400 600 800

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Legend

Site Boundary (Adelaide Airport)

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	A
Date	20 Feb 2017

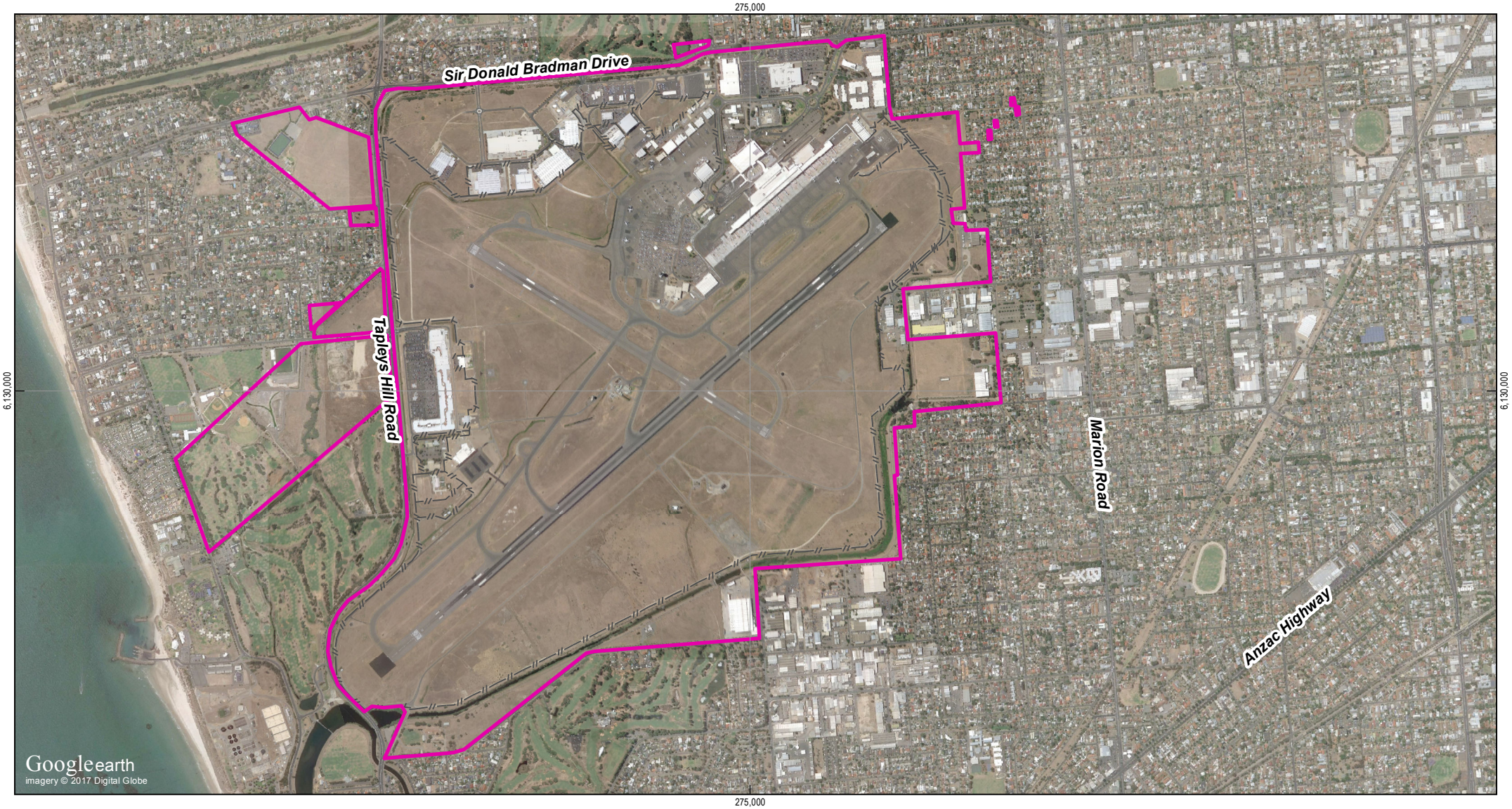
2010 Historical Aerial Imagery

Figure G

G:\31\34071\GIS\GIS Brisbane by jvc\maps\31-34071-116_Adl2010Aerial_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Google Earth: aerial imagery (Feb 2010, extracted Jun 2016). Created : jvc



1:25,000 (at A4)

0 200 400 600 800

metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

N

Legend

Site Boundary (Adelaide Airport)

Airport Security Fence

Airservices Australia Pty Ltd
Adelaide Airport
Preliminary Site Investigation

Job Number	31-34071
Revision	A
Date	20 Feb 2017

2016 Historical Aerial Imagery

Figure H

G:\31\34071\GIS\GIS Brisbane by jvc\maps\31-34071-117_Adl2016Aerial_revA.mxd

145 Ann Street Brisbane QLD 4000 T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data source: Google Earth: aerial imagery (Jan 2016, extracted Jun 2016). Created : jvc

Appendix F – Interview transcripts

Interview with Adelaide ARFF – 6 June 2016

[redacted] –Adelaide Airport Limited

[redacted] – Airservices Australia

[redacted] - GHD

1 – Are you aware of any PFAS investigations and testing that have been undertaken across the wider Airport?

Previous reports have been provided as background information for this investigation. AAL have been conducting their own investigations into PFAS soil and groundwater contamination, focused initially on the boundary locations as that's where their liability rests.

Mostly using existing monitoring wells to assess north westerly groundwater flow direction. Former fire training ground has a number of wells and current training ground has two wells. Reported concentrations below LOR or below CRC Care/GHD guidelines. Elevated concentrations were reported in the open drain adjacent and down gradient from the fire station. Question around whether shallow groundwater (can be 1-1.5mbgs) is interacting with surface water or are elevated concentrations representative of surface water. Next round AAL intend to include two additional surface water samples around the fire station to assess up gradient versus down gradient concentrations and hope this will aid in delineation.

Soil was not sampled as part of the investigation.

Former landfill sits upgradient of fire training grounds and had eleven wells across it and soil bore data but wanted a further upgradient well installed to provide further understanding, not just of PFAS but also of surface water/groundwater interaction. Landfill comprises sand then a peaty layer. Understood to be natural "fill" or reworked natural. Not a uniform soil profile across the site. Surface scrape identified building rubble below the "fill" indicating previous development had occurred. AAL want a greater understanding of what the landfill actually contains.

Brownhill Creek and Keswick Creek meet at detention basin and are lined prior to converging, after which they are unlined. Stormwater samples have been collected from numerous locations and concentrations generally match trends with the landfill concentrations in that they decrease from upgradient to down gradient. This suggests that there may be some interaction between stormwater and groundwater.

There is usually water in the channel although sometimes the flow is minimal.

AAL analyse for 20 analytes.

2. Is there an incident log that detailed where actual fires and fuel spills have been attended that require the use of firefighting foams.

There is a spill log for airport incidents that can be keyword searched for specific contaminants. AAL issued a questionnaire to airport tenants asking what chemicals were utilised.

3. If there is not an inventory, can you recall any fires or fuel spills at the airport? Dates?

NA

4. Is there an inventory of AFFF storage within the airport?

NA

5. Are you aware of any AFFF use outside of the Airport but within the general vicinity?

NA

6. Is there any AFFF still stored within the Airport? If so, where and for what purpose?

Hangars have small containers of about 20L that is used via a venturi system (not a deluge system) when they use the firehose. No bulk storage.

800L of AFFF in AST at Mobil JOSF

7. Has training involving AFFF (e.g extinguishers, AEP exercises) been undertaken in areas outside the current fire station and/or training ground?

Not aware of any.

8. What is the age of the current fire station and fire training ground? What was the previous use of these sites?

NA

9. When AFFF was used in training, how often and for how long did this occur?

NA

10. When AFFF was used in training, what volumes were used and what was the methodology for wash down of waste and equipment?

Current training ground is bunded and waste goes into a separator that then discharges via a trade waste agreement to sewer. As head lesee AAL has some responsibility to monitor the discharge but ultimately it falls back to the tenants to maintain the licence.

11. How widely was the AFFF dispersed aerially? Photos?

NA

12. Was wash down of the fire fighting equipment restricted to the fire training areas?

NA

13. Where did the wash down water end up? Do any drains discharge off-site and, if so where?

NA

14. Has there been any significant bulk earth works (relevant to AFFF use) on the site that resulted in soil being relocated from one area of the airport to another?

AAL aren't aware as to what happened to the soil from the old training ground when it was moved. Craig confirmed that the top 300 mm was scraped and the material is currently stockpiled at that location. Only hydrocarbons were considered as PCA so the stockpile was left to attenuate.

15. What was the origin of the stockpiles located to the south of the fire training area? How long have they been there? Were they placed on lined surfaces and have they always been uncovered?

NA

16. How were spent drums or excess product disposed of?

NA

17. Does groundwater 'daylight' in areas of the site?

NA

18. What was the location of the ARFF sites?

NA

19. Is stormwater harvested within the Airport and if so, for what purposes and where?

SA Water has an ASR site that is not used in a significant way by the airport. AAL made enquiries to SA Water about potential contamination risks and they had not assessed for PFAS, but considered risk was low.

20. Is groundwater abstracted within the Airport and if so, for what purposes and where?

Airport receives treated water from the Glenelg treatment works and understanding is that the process can sometimes increase concentrations. Airport has its own filtration system but based on this, the airport has monitoring wells dedicated to irrigation areas to assess suitability of recycled water. Water quality is suitable for dual reticulation and is tertiary treated. No other contaminants of concern identified.

21. How does the airport address 83A notifications?

No requirement to report so no 83A's have been submitted. Data is generally shared with the SA EPA.

Interview with Adelaide ARFF – 6 June 2016

[redacted] – Fire Station Manager

[redacted] – Fire Station Environmental Manager

[redacted] – Airservices Australia

[redacted] - GHD

1 – Are you aware of any PFAS investigations and testing that have been undertaken across the wider Airport?

- AAL have conducted multiple soil/water tests around the LMU, Fire Station precinct and throughout the aerodrome. Not known if tests have included PFAS

2. Is there an incident log that detailed where actual fires and fuel spills have been attended that require the use of firefighting foams.

- Not easy to access and/or the information is not likely to have been recorded. ORS incident report no. 17 details AFFF use on Bay 8 on 10/08/1997.

3. If there is not an inventory, can you recall any fires or fuel spills at the airport? Dates?

As above.

4. Is there an inventory of AFFF storage within the airport?

Unable to access stock records prior to Station Reserve Stock Management system introduced in February 2010.

5. Are you aware of any AFFF use outside of the Airport but within the general vicinity?

Brighton Road Caltex service station tanker fire 28/08/1993

6. Is there any AFFF still stored within the Airport? If so, where and for what purpose?

No stock stored, but bulk foam tank, plumbing and fittings are still on site.

7. Has training involving AFFF (e.g extinguishers, AEP exercises) been undertaken in areas outside the current fire station and/or training ground?

At old training areas including the Dump adjacent RWY30 threshold, Old Receiver Building area adjacent Burbridge Business Park, transmitter building complex at Netley, old LMU area, AEP outside of Morphett Road Gate 10 near old MET Bureau, Old concrete water tank, AEP held at the ERP area

8. What is the age of the current fire station and fire training ground? What was the previous use of these sites?

Current fire station constructed in the 1950s. New LMU training ground constructed in the early 2000s.

9. When AFFF was used in training, how often and for how long did this occur?

Minimum 3 x week. 3% and 6% AFFF used. Solberg foam used since 2011.

10. When AFFF was used in training, what volumes were used and what was the methodology for wash down of waste and equipment?

Quantities varied. (Note during discussions they recollected that typically a 500L volume of AFFF was taken to training (usually a 1:2 ratio AFFF to water) but may not have all been used. Hoses and equipment flushed out with vehicle tank water at the training location and/or mains water at the fire station. Entire foam tank contents have been accidently dumped on occasions.

11. How widely was the AFFF dispersed aerially? Photos?

Many locations throughout the airport, mainly during training but also during some operational incidents.

12. Was wash down of the fire fighting equipment restricted to the fire training areas?

No. At old training sites and at the fire station also.

13. Where did the wash down water end up? Do any drawings discharge off-site and, if so where?

Discharged to stormwater drains and/or to the environment. Drains flow into the Patawolonga River which now also discharges through the Barcoo Outlet. In earlier times the river flowed out through the Glenelg lock into the St Vincent Gulf. Since the construction of the LMU training ground the waste water was processed through an oil/water plate separator and discharged to sewer @ 30000 litres per hour. This water was processed at the Glenelg treatment works where it was discharged into St Vincent Gulf, then a pipeline was built to supply Virginia market gardeners. Later another pipeline was constructed that supplies water to the airport for Terminal toilets and irrigation and for Adelaide city parklands, Botanic Gardens etc.

14. Has there been any significant bulk earth works (relevant to AFFF use) on the site that resulted in soil being relocated from one area of the airport to another?

Patawolonga basin was dredged and the soil kept off-site to dry. It has since been disposed. Levee banks outside of perimeter fence adjacent RWY30 area constructed from Patawolonga River soil and now landscaped.

15. What was the origin of the stockpiles located to the south of the fire training area? How long have they been there? Were they placed on lined surfaces and have they always been uncovered?

Earthworks from excavations at Butler Boulevarde Burbridge Business Park, Terminal 1 excavations during building construction. Some off-airport material but mostly from on-airport sources. Not placed onto lined surfaces and always uncovered.

16. How were spent drums or excess product disposed of?

Often given to staff to use, sometimes cut in half and used for training fires, some crushed and disposed into waste bin or collected by scrap metal contractor [redacted]

17. Does groundwater 'daylight' in areas of the site?

No known areas on the aerodrome where groundwater rises to the surface.

18. What was the location of the ARFF sites?

Current site, current LMU and old LMU areas.

19. Is stormwater harvested within the Airport and if so, for what purposes and where?

Collected into settlement ponds along Taxiway Tango, cleaned of debris via racks, empties into the Patawolonga River and discharged via the Barcoo Outlet and/or Glenelg Lock into St Vincent Gulf.

20. Is groundwater abstracted within the Airport and if so, for what purposes and where?

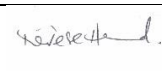
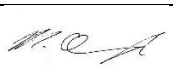
No known abstraction of water from the aerodrome. SA Water has constructed a pumping station near Brownhill Creek in the Glenelg North area.

GHD

180 Lonsdale Street
Melbourne, Victoria 3000
T: (03) 8687 8000 F: (03) 8687 8111 E: melmail@ghd.com.au

N:\AU\Melbourne\Projects\31\34071\WP\251712.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Rev 0						01/07/2016
Rev 1						11/10/2016
DRAFT						11/11/2016
DRAFT A						22/02/2017
0	B Roman B Ng	T Hammond		M Clough		22/01/2018

www.ghd.com