



Douglas Partners

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Integrated Practical Solutions

Report on
Preliminary Site Investigation (Contamination)

Proposed Redevelopment
4-6 Popes Road, Woonona

Prepared for
Illawarra Retirement Trust

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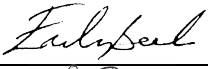
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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

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Report on Preliminary Site Investigation (Contamination)

Proposed Redevelopment

4-6 Popes Road, Woonona

1. Introduction

Douglas Partners Pty Ltd (DP) has been engaged by Illawarra Retirement Trust (IRT) to prepare this preliminary site investigation (contamination) (PSI) conducted for the proposed redevelopment of 4-6 Popes Road, Woonona (hereinafter referred to as 'the site'). The site is shown on Drawing 1, Appendix A.

The investigation was conducted in general accordance with DP's proposal 40439.06.P.001.Rev0 dated 1 June 2023.

The objective of the PSI is to assess the potential for contamination at the site based on past and present land uses and activities, and to comment on the need for further investigation and/or management with regard to the proposed development. It is understood that the report is to be used for planning purposes and may be used to support a Development Application (DA) submission.

The following key guidelines were consulted in the preparation of this report:

- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013); and
- NSW EPA *Guidelines for Consultants Reporting on Contaminated Land* (NSW EPA, 2020).

This report must be read in conjunction with all appendices including the notes provided in Appendix B.

2. Proposed Development

Based on the masterplan study provided by the client (refer to Appendix A), it is understood that the proposed redevelopment involves the demolition of the existing rectory and two aged care residential structures located at the site (Ribbonwood Lodge and Blueberry Ash Village) and the construction of various multi-storey aged care residences and associated ancillary structures. The existing structures identified as Flame Tree Lodge, Camelia Lodge and Blue Gum Sanctuary (church) will remain onsite. The proposed development will also involve the construction of a single-level basement for car parking across much of the central portion of the site. No development is proposed in the riparian zone associated with Collins Creek located in the southern portion of the site.

3. Scope of Works

The scope of works for the PSI comprised:

- Review of available site information, comprising published maps of acid sulfate soil (ASS) potential, geological and topographical maps / drawings and groundwater bores registered with WaterNSW;
- Review of previous DP reports, available historical and recent aerial photographs, public databases held under the *Contaminated Land Management Act 1997* and the *Protection of the Environment Operations Act 1997*, readily accessible Council Records and the Section 10.7 (2) and (5) planning certificate for the site;
- A preliminary site walkover to observe conditions / situations that may indicate a potential for contamination and identify environmental and human receptors; and
- Preparation of this PSI report detailing the findings of the desktop-based study and walkover.

4. Site Information

Site information is summarised below.

Site Address	4-6 Popes Road, Woonona (according to NSW Spatial Services, SIX Maps). The site is also identified as 2-8 Popes Road, Woonona.
Legal Description	Lot 71 Deposited Plan 1160947
Approximate Site Area	2.93 ha
Zoning	Zone R2 Low Density Residential (applies to most of the site) Zone E3 Productivity Support (applies to north eastern section of the site)
Local Council Area	Wollongong City Council (WCC)
Current Use	Retirement Lifestyle Village
Surrounding Uses	North – Low density residential, commercial (including liquor store and childcare centre) East – Vacant land, residential, Princes Highway, commercial (including Woonona Bulli RSL and various food outlets) South – Undeveloped vegetated area, Collins Creek and low density residential South West – Gahan's Park (including Collins Creek) West – Low density residential and commercial (including radiator repair store and beauty supply store)

The site boundary and layout are shown on Figure 2 overleaf.



Figure 2: Site Boundary (red line) and Layout

5. Environmental Setting

The environmental setting for the site is summarised below.

Regional Topography	The general topography of the surrounding area slopes down in an easterly direction towards the Tasman Sea, with steep east facing slopes located approximately 1 km to the west of the site associated with the Illawarra escarpment.
Site Topography	Most of the site slopes downwards generally in a southerly and south easterly direction towards Collins Creek with an approximate change in elevation of 10 m. The highest point of approximately 32 m relative to the Australian Height Datum (AHD) is located in the north western corner of the site. The lowest point is at approximately 22 m AHD located at the southern part of the site (at Collins Creek).
Soil Landscape	Reference to the Wollongong-Port Hacking 1:100 000 Soil Landscapes Sheet (Office of Environment and Heritage, 2019) indicates that the northern and eastern portions of the site are generally underlain by residual soils of the Gwynneville Soil Landscape which is described as comprising

	foot slopes of the Illawarra Escarpment and isolated rises of the Wollongong Plain. The central and southern portions of the site are underlain by Colluvial soils associated with the Illawarra Escarpment soil landscape described as comprising deep colluvial soils and red / brown podzolic soils occurring on midslopes and siliceous sands present along drainage lines.
Geology	Reference to NSW Seamless Geology Sheet (Department of Regional NSW, 2021) indicates that most of the site is underlain by Wilton Formation mudstone of Lopingian Age, typically comprising dark claystone and dark siltstone, interbedded with sandstone, bioturbation, sideritic concretions and plant fossils. Mapping also indicates that the southern and eastern portions of the site are underlain by Alluvial fan deposits of Quaternary Age, typically comprising fluvially-deposited quartz-lithic sand, silt, gravel and clay.
Acid Sulfate Soils	Reference to the NSW Acid Sulfate Soils Risk Map (Soil Conservation Service of New South Wales, 1995) indicates that the site is not located in or close to an area with known occurrences of acid sulfate soils.
Surface Water	Collins Creek crosses the south western portion of the site and flows in an easterly direction towards the Tasman Sea, located approximately 2 km east. A minor tributary of Collins Creek located adjacent to the eastern site boundary appears to terminate in the south eastern corner of the site (refer to Section 8.)
Groundwater	The NSW Groundwater boreholes database indicated that there are four registered groundwater bores within a 500 m radius of the site, none of which are within the site boundary. Details of the groundwater bores are summarised in Table 1 below.

Table 1: Summary of Available Information from Nearby Registered Groundwater Bores

Bore Identification, Authorised Purpose and Completion Year Status	Location Relative to Site	Final Depth (m)	Standing Water Level (m bgl)
GW113320 Monitoring bore 2005	25 m east	6.00	No data available.
GW113322 Monitoring bore 2005	50 m east	8.00	No data available.
GW113321 Monitoring bore 2005	58 m east	8.00	No data available.
GW113319 Monitoring bore 2005	73 m east	8.00	No data available.

Note: m bgl = metres below ground level

6. Previous Reports

DP has completed the following reports relevant to this PSI:

- DP, *Report on Site Investigation, Proposed Residential Care Facility, 448 Princes Highway, Woonona*, Project 40439, dated August 2005 (DP, 2005);
- DP, *Report on Combined Phase 1 and Phase 2 Contamination Assessment, Proposed Residential Development, 440 – 458 Princes Highway, Woonona*, Project 40439A, dated March 2006 (DP, 2006); and
- DP, *Report on Supplementary Contamination Assessment, Former Service Station Footprint, 448 Princes Highway, Woonona*, Project 40439.05, dated November 2012 (DP, 2012).

6.1 DP, 2005

DP (2005) was a combined geotechnical and preliminary contamination investigation conducted for a proposed residential care facility at the general location of the current Flame Tree Lodge. It is noted that, at the time of the assessment, the current Lot 71 / DP 1160947 had not been created and the area investigated comprised a number of smaller allotments. The investigation involved drilling of six bores (Bores 1 to 6) standpipe piezometer installation/monitoring (at Bore 3), laboratory testing, followed by analysis and reporting.

A Dangerous Goods Search of the Stored Chemical Information Database (SCID) held by the NSW WorkCover Authority (now SafeWork NSW) identified a licence (No. 35/000280) held for the former service station premises at the north eastern part of the site. Stored chemicals associated with the licence mainly related to underground storage tanks (USTs). The USTs listed on the records were as follows:

- 33,560 L UST for the storage of fuel;
- 20,000 L UST for the storage of fuel;
- 15,000 L UST for the storage of fuel;
- 15,000 L UST for the storage of fuel; and
- 2,500 L UST for the storage of kerosene.

A liquified petroleum gas (LPG) cylinder was also listed on the records. According to site plans, a 2,500 L UST was used for waste oil. A letter was provided indicating that six USTs had been removed from the site in 1991. No information regarding validation testing following their removal was provided. The results of this search are included as Appendix C.

Relatively uniform conditions were encountered at each of the boreholes, with the general succession of strata comprising topsoils and/or surficial fill to depths of 0.3 – 0.7 m overlying firm to stiff clays and silty clays with weathered sandstone encountered at depths of 8.6 - 10.2 m. The sandstone was generally of medium to high strength with the bores terminated at depths of 10.6 – 12.4 m.

Slightly different conditions were encountered in Bore 1, with the borehole log showing fill (silty sand, gravel and coalwash) to a depth of 1.8 m overlying the natural strata, in Bore 3 which was concrete surfaced, and Bore 4 which encountered a bitumen-surfaced pavement overlying sandy silt to 2.2 m

depth. Weathered coal was also encountered in Bores 4 and 5 at depths of 10.0 and 10.3 respectively overlying medium to high strength sandstone.

Groundwater was encountered during drilling at depths of 3.0 – 7.0 m. Monitoring of the well (Bore 3) some two weeks following completion of drilling indicated a depth to the standing water table of 4.4 m.

Bore 6 was drilled to a depth of 6 m bgl at the former service station. Soil samples and a groundwater “grab-sample” were collected from Bore 6. Soil samples were selected for laboratory analysis for: metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); total recoverable hydrocarbons (TRH); benzene, toluene, ethylbenzene and xylenes (BTEX); polycyclic aromatic hydrocarbons (PAH); organochlorine pesticides (OCP); and polychlorinated biphenyls (PCB). The groundwater sample was analysed for metals, TRH, BTEX and PAH.

The recorded contaminant concentrations for soil samples collected and tested from Bore 6 were below the adopted (NSW EPA, 1998) health-based investigation limits (HILs) for soils on “*residential sites with minimal access to soils*”, as well as the petroleum hydrocarbon and BTEX threshold concentrations for sensitive land use soils (NSW EPA, 1994).

Copper and zinc concentrations recorded in the groundwater ‘grab-sample’ slightly exceeded the adopted (ANZECC, 2000) *Trigger values for the protection of 95% of fresh water species*. DP (2005) considered that the exceedances were likely attributed to the background water quality in the urban area and therefore not considered to pose a risk to human health or the environment.

No indicators of potential acid sulfate soils (ASS) were recorded in the 30 samples (from Bores 1 to 5) which were subject to (preliminary) field screening tests conducted by DP.

Further intrusive investigation of the former service station area was recommended prior to residential development in that area.

6.2 DP, 2006

Concurrent geotechnical and contamination investigations were conducted for the proposed development of a residential (aged care) development at the site (i.e., the current Flame Tree Lodge). The contamination works for DP (2006) involved a combined Phase 1 and Phase 2 assessment, focusing on the area of the former service station. The investigation included a review of historical title deed information, aerial photographs, a site inspection, soil and groundwater sampling and analysis and reporting.

The review of historical title deeds indicated that various allotments comprised the investigation area and were mainly used for residential purposes by various landowners, except for two lots owned by the Wesleyan Methodist Church (Uniting Church) from 1907 and another lot owned by Amoco Australia Pty Ltd and Mobil Oil Australia Ltd between 1963 and 1991 (associated with former service station at the north east of the current site). Ownership of all of the allotments were transferred to the IRT during the period of 1972 to 2002.

Six bores (Bores 101 to 106) were drilled at the former service station area (with Bores 105 and 106 converted into down-gradient monitoring wells). Seven bores (Bores 107 to 113) mainly targeted areas

of potentially disturbed terrain within the vicinity of the proposed development (Flame Tree Lodge) envelope.

Variable subsurface conditions were encountered during field work. Fill generally described as sandy clay and sand fill was encountered in Bores 101, 102 and 105 to depths ranging from 0.8 m to 3.2 m. Fill described as yellow sand fill was encountered in Bores 102, 103, 104 and 105 to depths ranging from 0.3 m to 2.4 m and fill described as sandy clay with trace anthropogenic material was encountered in Bore 104 between depths of 1.9 m and 2.5 m. Carbonaceous shale fill (coalwash) was identified in Bores 108, 109, 110 and 113 to depths ranging from 1.5 m to 3.5 m. No fill was encountered in Bores 111 and 112. Fill was underlain by silty clay, sandy clay, gravelly sandy clay, silty clayey sand and silty sand. Free groundwater was observed at a depth of between 1.2 and 3.6 m in Bores 101, 102, 103 and 104. Groundwater was measured in Bore 105 at a depth of 1.76 m. No groundwater was encountered in Bore 106.

Selected soil samples were analysed for metals, TRH, BTEX, PAH, OCP, PCB and asbestos. Results for chemical analysis were compared to adopted NSW EPA (1998) health-based investigation levels for residential sites with minimal access to soils and provisional phytotoxicity based investigation levels; as well as the adopted NSW EPA (1994) threshold concentrations for sensitive land use soils. Exceedances of Phytotoxicity Based Investigation Levels (indicative of possible impacts on plants) were recorded in areas deemed not accessible by vegetation and were therefore not considered to be a cause of concern. Results for chemical analysis were otherwise within the adopted assessment criteria. Asbestos was not detected in analysed soil samples.

A groundwater sample from Bore 105 was analysed for metals, TRH, BTEX and PAH. Results were within the adopted trigger values from ANZECC (2000) and water pollution accepted limits from the *Airport (Environmental Protection) Regulations 1997* (for TRH) (NEPC, 1997).

The investigation considered that the proposed development area (i.e., for Flame Tree Lodge) was suitable for the proposed residential (aged care) development from a contaminated land perspective. Based on the site history review and site inspection it was also considered that the peripheral areas around the proposed development had a low potential for contamination, however further confirmatory testing was recommended should future development occur in the peripheral areas.

6.3 DP, 2012

In 2012, a supplementary contamination assessment was conducted in the footprint of the former service station by DP. The investigation comprised excavation of five test pits (Pits 201 to 205) and drilling of two boreholes / monitoring wells (Bores 206 and 207), soil and groundwater sampling and analysis, and reporting.

The test and drilling encountered generally uniform subsurface conditions comprising:

- Brown sandy gravelly clay fill to depths of between 0.3 and 1.0 m bgl in all locations. Black sandy clay fill was encountered in Pits 201 and 202 to a depth of 0.8 m bgl, brown and grey sandy clay fill was encountered in Bore 206 to a depth of 4.5 m bgl, and brown and orange sand fill was encountered in Pits 203 and 204 to depths of between 1.7 and 2.5 m bgl; and
- Grey brown and orange sandy clay in Pits 201, 202, 204 and 205 and Bore 207 to depths of between 2.6 and 4.0 m bgl.

A moderate hydrocarbon odour was detected in Pit 202 and Bore 206. All soil screening results using a handheld photoionization detector (PID) were <1 ppm.

Groundwater sampling was conducted from two previously installed wells, Bores 105 and 106, as well as Bores 206 and 207. Recorded groundwater levels ranged from between 0.75 and 1.3 m bgl. There was a recorded odour in Bore 206 (only). There were no separate phase hydrocarbons observed during the groundwater sampling.

A total of 21 soil samples were analysed for a combination of lead, TRH, BTEX, PAH, phenols and volatile organic compounds (VOC). Results were compared to:

- NSW DEC, 2006, *Contaminated Sites: Guidelines for the NSW Site Auditors Scheme 2nd Edition*, Health-based guidelines for residential with gardens and accessible soil including children's daycare centres, preschools, primary schools, townhouses, villas (Column 1) and Provisional phytotoxicity-based investigation levels for sandy loams (Column 5);
- NSW EPA (1994), Threshold concentrations for sensitive land uses;
- NEPC, 1999, *National Environmental Protection (Assessment of Site Contamination) Measure Schedule B(1) Guidelines on the Investigation Levels for Soil and Groundwater*, Background Ranges;
- Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council (ANZECC/NHMRC) 2000, *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*, Environmental Soil Quality Guidelines, Table 2 Column A Background.

Concentrations of TRH, BTEX, VOC and phenols in soil were reported below their respective laboratory practical quantitation limits in all samples submitted for analysis. Lead and PAH concentrations were within the adopted assessment criteria.

Four groundwater samples were analysed for TRH, BTEX, PAH, lead, phenols and VOC. Results were compared to:

- Trigger values from ANZECC (2000); and
- NHMRC, (2011) *National Water Quality Management Strategy*, Australian Drinking Water Guidelines 6, Table 10.5 Guideline values for physical and chemical characteristics, Health based.

All of the laboratory results for groundwater were below the adopted assessment criteria except for TRH in Bore 206. Silica gel clean-up was performed on this sample and the total petroleum hydrocarbons (TPH) result was still elevated but within the adopted assessment criteria. It is noted that TRH C₆-C₉, isopropylbenzene, n-propyl benzene, sec-butyl benzene, n-butyl benzene and total phenolics were detected in the water samples from Bore 206.

Based on the results of the investigation, it was concluded that the investigated area was suitable for the proposed residential land use. Given the nature of the past site uses, it was recommended that an unexpected finds protocol (UFP) be prepared and implemented for future development.

7. Site History

7.1 Historical Aerial Photography

Several historical aerial photographs were obtained from public databases. Eight of the aerial photographs are included in Appendix E. A summary of key features observed for the site and surrounding land is presented in Table 2 below.

Table 2: Summary of Historical Aerial Photographs

Year	Site	Surrounding Land Use
1941	Multiple structures, likely residential dwellings and associate sheds were visible near the eastern and northern site boundaries. The western portion of the site appeared to comprise mainly undeveloped grassed land with one residential dwelling. A creek line (Collins Creek) and vegetated riparian zone was visible in the south of the site.	Popes Road and Princes Highway were visible adjacent to the northern and eastern boundaries of the site, respectively. A combination of possible residential and commercial structures were visible to the north, east and west of the site with undeveloped grassed land and Collins Creek visible to the south.
1961	A thin linear depression was visible across the northern portion of the site. A possible residential dwelling located in the south western corner of the site appeared to have been demolished since 1941. The site appeared to be otherwise relatively unchanged from the previous aerial photograph.	Structures to the east of the site, beyond Princes Highway, appeared to have been demolished and redeveloped into a large likely commercial structure.
1977	The linear depression across the northern portion of the site was no longer visible and appeared densely vegetated. An unpaved vehicular access track from Popes Road was visible in western portion of the site. A structure on a concrete hardstand with multiple vehicles was visible in the north eastern portion of the site (service station). A large residential structure (Blueberry Ash Village) was visible in the southern portion of the site. Possible sheds, equipment storage and a stockpile were visible in the western portion of the site.	Ongoing development of commercial structures and possible upgrades of the Princes Highway were visible to the east of the site. Multiple vehicles and a canopy (indicative of a possible mechanics / service station) appeared to have been present adjacent to the north east. A service station appeared to have been present on the opposite side of Princes Highway. The surrounding land use appeared to be otherwise relatively unchanged.
1986	Significant development since 1977 was visible including a paved driveway from Popes Road through the western portion of the site, hardstand carparks in the central and southern portions of the site	Ongoing development of commercial buildings, hardstand carparks and recreational lawns to the east of the site. Storage of multiple vehicles was visible in the land adjacent to the north east of the

Year	Site	Surrounding Land Use
	and construction of a residential structure (Ribbonwood Lodge) adjacent to the western site boundary. Some ground disturbance was visible in the riparian zone in the south western corner of the site.	site, possibly used as a scrap yard / mechanics.
1993	The structures along the northern boundary of the site and on the concrete hardstand (for the service station) in the north eastern corner of the site were absent.	A warehouse style building had been established to the north-east, adjacent to the site. A service station on the opposite side of Princes Highway appeared to have been removed and replaced by a commercial building. Further development of residential properties was visible adjacent to the western site boundary.
2001	Likely residential structures (Camelia Lodge) were visible in the northern portion of the site. The concrete hardstand area in the north-east was partially covered with grass vegetation. The site appeared to be relatively unchanged from the previous aerial photograph. Multiple sheds were visible in the centre of the site.	The building adjacent to the north-east has 'smash repairs' painted on the roof. Works on Collins Creek were visible adjacent to the south-west of the site.
2006	A residential structure in the south eastern portion of the site was no longer visible. Additional sheds were visible in the central portion of the site.	The 'smash repairs' building and the associated warehouse to the north east had been replaced by residential buildings. Construction of a roundabout was visible on High Road to the south east of the site.
2012	Demolition of multiple existing onsite structures and construction of a large residential building (Flame Tree Lodge) and hardstand carpark was visible in the central portion of the site. The concrete hardstand in the north eastern corner of the site appeared to be removed. The site appeared consistent with the current site configuration.	Possible commercial and residential structures have been established to the south east. The surrounding land use appeared relatively unchanged from the previous aerial photograph.
2022	The site appeared relatively unchanged from the previous photograph.	Some deep ground disturbance was visible to the north east of the site, beyond the Princes Highway.

7.2 Public Registers and Planning Records

A summary of search results for EPA registers is provided below.

EPA Notices available under Section 58 of the Contaminated Land Management Act (CLM Act)	There were no records of notices for the site or adjacent properties.
Sites notified to EPA under Section 60 of the CLM Act	The site and adjacent properties were not listed as a notified contaminated site.
Licences listed under Section 308 of the Protection of the Environment Operations Act 1997 (POEO Act)	There were no records issued to the site or adjacent properties.
Planning Certificate(s)	The Section 10.7 (2) and (5) Planning Certificate for the site, dated 16 May 2023 is included in Appendix F. The Certificate indicates that R2 Low Density Residential and E3 Productivity Support zoning applies to the site. There are no matters listed under the Contaminated Land Management Act 1997 which should be specified on the Certificate. The Section 10.7(5) Planning Certificate states that <i>“the land (or part of the land) may be contaminated”</i> due to previous uses, and recommends a qualified consultant be used to ascertain the degree of contamination, if any.
Council Records	A search of Council records for the site was requested on 24 May 2023. A review of the provided information indicated that there were no pertinent records for the site from a contaminated land perspective since the previous investigation (DP, 2006).

7.3 Site History Integrity Assessment

The information used to establish the history of the site was sourced from reputable and reliable reference documents, many of which were official records held by Government departments/agencies. The databases maintained by various Government agencies potentially can contain high quality information, but some of these do not contain any data.

In particular, aerial photographs can provide high quality information that is generally independent of memory or documentation. They are only available at intervals of several years, so some gaps exist in the information from this source. The observed site features are open to different interpretations and can be affected by the time of day and/or year at which they were taken, as well as specific events, such as flooding. Care has been taken to consider different possible interpretations of aerial photographs and to consider them in conjunction with other lines of evidence.

7.4 Summary of Site History

The site history information suggests that the site comprised multiple different allotments used for mainly residential purposes from as early as 1884. Historical aerials, historical title deeds and SafeWork (formerly WorkCover) license records indicate a service station operated in the north eastern corner of the site between circa 1963 and 1991. The license recorded the presence of five USTs for fuel storage, a UST for waste oil, and an LPG cylinder which were removed in 1991. Based on the aerial photographs, between 1977 and 2012 the demolition of various residential structures and redevelopment of multiple residential (aged care) structures has occurred on the site. A mechanics (smash repairs) with possible fuel storage was previously located on land adjacent to the north-east which is upgradient of the site. A service station was previously located on the opposite side of Princes Highway which is not upgradient of the site.

8. Site Walkover

A site walkover was undertaken by a DP environmental scientist on 30 June 2023. The general site topography was consistent with that described in Section 5. The site layout appears to have remained unchanged since the 2022 aerial photograph (refer to Section 7.1). The following key site features pertinent to the PSI were observed (refer to photographs in Appendix E), namely:

- The site was fenced along all boundaries with one point of vehicular access leading from Popes Road to the north. A main paved roadway was visible throughout the western portion of the site, leading to various site structures and carparks (refer to Photographs 1 and 2, Appendix E);
- Paved pathways, seating and landscaped gardens were observed throughout most of the site (refer to Photograph 8, Appendix E);
- Occupied residential structures (Camelia Lodge) were present in the northern most portion of the site, to the east of the main driveway (refer to Photograph 1, Appendix E);
- A hardstand car park for staff parking, deliveries and waste bin storage (general waste and recycling) was present in the north western corner of the site (refer to Photograph 3, Appendix E);
- A large residential / administration building (Ribbonwood Lodge) was visible adjacent to the western boundary of the site. Storage of cytotoxic waste bins and a flammable gas storage cupboard was visible on the western side of Ribbonwood Lodge (refer to Photographs 2 to 5, Appendix E);
- An adjoining laundry was visible on the northern side of Ribbonwood Lodge. A padlocked storage cage containing compressed oxygen cylinders with associated signage, was visible outside the laundry to the north (refer to Photographs 3 and 6, Appendix E);
- A main hardstand carpark was visible in the central portion of the site with residential buildings to the north (Flame Tree Lodge), east (Blue Gum Sanctuary) and to the south (Blueberry Ash Village) and a church and rectory to north east (refer to Photographs 7 to 9, Appendix E). The structures appeared to be comprised of mainly brick and metal sheeting and appeared to be in “good” condition. It is noted that secure fencing precluded a closer inspection of the building footprints;
- A stockpile of garden mulch was being stored on the surface of the hardstand in the south (refer to Photograph 9, Appendix E);

- A vacant grassed area with frontage on Princes Highway was present in the north eastern portion of the site, associated with the former service station (see Section 6, refer to Photographs 10 to 11, Appendix E). Surface gravels (possibly asphaltic) and patches of hardstand were visible on the site surface;
- Dense tree vegetation and a gully depression was visible to the east of the former service station area. Minor amounts of domestic waste were observed on the surface (refer to Photograph 12, Appendix E);
- Storage and recreational sheds, a shipping container and tree debris were present in the eastern portion of the site (refer to Photograph 14, Appendix E);
- A creek line (Collins Creek) and area of riparian vegetation was visible in the south western portion of the site. A tributary of Collins Creek was also visible adjacent to the south western site boundary which appeared to terminate in the south western corner of the site. Dumped building materials (including metal sheeting and timber) were visible in the vegetation directly south west of Blueberry Ash Village. Bricks were observed in a section of the creek line (refer to Photographs 15 and 19, Appendix E); and
- A grassed area was present in the southernmost portion of the site which appeared to be used for recreational purposes by local residents. A pen structure with tree debris on the site surface was visible, possibly associated with former equine activities (refer to Photograph 20, Appendix E).

9. Preliminary Conceptual Site Model

A conceptual site model (CSM) is a theoretical representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM provides the framework for identifying how the site may become contaminated and how potential receptors may be exposed to contamination either in the present or the future i.e., it enables an assessment of the potential source – pathway – receptor linkages (complete pathways).

Potential Sources (S)

Based on the current investigation, the following potential sources of contamination and associated contaminants of potential concern (CoPC) have been identified.

- S1: Fill of unknown origin. Fill is known to be present at the site (refer to Section 6).
 - o Various CoPC and may include metals (arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel, zinc), TRH, BTEX, PAH, PCB, OCP, phenols and asbestos.
- S2: Former service station in north eastern portion of the site.
 - o CoPC include TRH, BTEX, lead, PAH, (petroleum) VOC and phenols.
- S3: Hazardous building materials from previous and current structures.
 - o CoPC include asbestos, synthetic mineral fibres (SMF), lead (from lead paint) and PCB.
- S4: Groundwater impacted by the former off-site smash repairs (and possible service station) respectively located adjacent to and within the north-eastern portion of the site.
 - o CoPC include TRH, BTEX, lead, PAH, (petroleum) VOC and phenols.

It is noted that cytotoxic waste has not been listed as a potential source as waste management practices appear to be in place for this waste. Also, current chemical use at the site has not been included given that these appear to be only used in small quantities and appear to be appropriately kept.

Potential Receptors (R)

The following receptors have been identified:

- R1: Current users [residents, employees and visitors];
- R2: Future construction, demolition and maintenance workers;
- R3: End users [residents, employees and visitors]; and
- R4: Adjacent site users [residential and commercial].
- R5: Surface water [Collins Creek];
- R6: Groundwater; and
- R7: Terrestrial ecosystems; and
- R8: In-ground structures (including footings, basement walls).

Potential Pathways (P)

The following potential pathways in relation to the identified receptors have been identified:

- P1: Ingestion and dermal contact;
- P2: Inhalation of dust, and/or fibres and/or vapours;
- P3: Surface water run-off;
- P4: Lateral migration of groundwater providing base flow to water bodies;
- P5: Leaching of contaminants and vertical migration into groundwater;
- P6: Inhalation, ingestion and absorption; and
- P7: Contact with in-ground structures.

Summary of Potentially Complete Exposure Pathways

A 'source–pathway–receptor' approach has been used to assess the potential risks of harm being caused to human or environmental receptors from contamination sources on or in the vicinity of the site, via exposure pathways (potential complete pathways). The possible pathways between the above sources (S1 to S4) and receptors (R1 to R8) are provided in Table 3.

Table 3: Summary of Potentially Complete Exposure Pathways

Source	Transport Pathway	Receptor
S1: Fill of unknown origin S2: Former onsite service station	P1: Ingestion and dermal contact P2: Inhalation of dust and/or fibres and/or vapours	R1: Current users [residents, employees and visitors] R2: Future construction, demolition and maintenance workers R3: End users [residents, employees and visitors]
	P2: Inhalation of dust and/or fibres and/or vapours	R4: Adjacent site users [residential and commercial].
	P3: Surface water run-off P4: Lateral migration of groundwater providing base flow to water bodies	R5: Surface water
	P5: Leaching of contaminants and vertical migration into groundwater	R6: Groundwater
	P6: Inhalation, ingestion and absorption	R7: Terrestrial ecosystems
	P7: Contact with in-ground structures.	R8: In-ground structures
S3: Hazardous building materials	P1: Ingestion and dermal contact P2: Inhalation of dust and/or fibres	R1: Current users [residents, employees and visitors] R2: Construction and maintenance workers R3: End users [residents, employees and visitors]
	P2: Inhalation of dust and/or fibres	R4: Adjacent site users [residential and commercial].
	P3: Surface water run-off P4: Lateral migration of groundwater providing base flow to water bodies	R5: Surface water
	P5: Leaching of contaminants and vertical migration into groundwater	R6: Groundwater
	P6: Inhalation, ingestion and absorption	R7: Terrestrial ecosystems
S4: Groundwater impacted by former off-site smash repairs (and possible service station)	P1: Ingestion and dermal contact P2: Inhalation of vapours	R1: Current users [residents, employees and visitors] R2: Future construction, demolition and maintenance workers R3: End users [residents, employees and visitors]

10. Conclusions and Recommendations

Based on the findings of the PSI, it is considered that there is a low likelihood for gross widespread contamination at the site and a moderate potential for localised contamination to exist. It is noted that, as the investigations for DP (2005) and DP (2006) were conducted prior to the construction of Flame Tree Lodge, the results from these two investigations may not be representative of current site conditions.

Although gross contamination was not identified in previous investigations (see Section 6), for DP (2012), TRH, isopropylbenzene, n-propyl benzene, sec-butyl benzene, n-butyl benzene and total phenolics were identified in groundwater at the former service station located in the north-eastern portion of the site). As these results are more than 10 years old and contaminant concentrations have since likely changed (e.g., due to degradation or migration), it is recommended that further groundwater investigation be conducted across this part of the site. The groundwater investigation would also target potential contamination sourced from the former (offsite) adjacent smash repairs (which had a possible service station). A soil vapour assessment may be recommended if volatile contaminants are identified. Potential hydrocarbon odours in the soil may need to be managed during basement excavation and for the proposed construction.

It is recommended that an intrusive soil investigation of the site is conducted to target areas of fill, (i.e., adjacent to existing structures, creek line) and areas where former buildings have been demolished.

A hazardous building materials (HAZMAT) survey should be conducted on structures prior to their demolition (if not completed already).

Any soils requiring off-site disposal during the development are to be appropriately classified prior to removal from site, with reference made to NSW EPA (2014) for waste classification or current standard practice.

11. References

ANZECC. (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australia and New Zealand Environment and Conservation Council.

Department of Regional NSW. (2021). *New South Wales Seamless Geology dataset, Geological Survey of New South Wales*. Maitland.

DP. (2005). Report on Site Investigation, Proposed Residential Care Facility, 448 Princes Highway, Woonona, DP Project 40439.

DP. (2006). Report on Combined Phase 1 and Phase 2 Contamination Assessment, Proposed Residential Development, 440 - 458 Princes Highway, Woonona, Project 40439A.

NEPC. (1997). Airports (Environment Protection) Regulations.

NEPC. (1999). National Environment Protection (Assessment of Site Contamination) Measure Schedule B(1) Guidelines on the Investigation Levels for Soil and Groundwater, Background Ranges.

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]*. Australian Government Publishing Services Canberra: National Environment Protection Council.

NHMRC. (2011). *National Water Quality Management Strategy Australian Drinking Water Quality Guidelines* 6.

NSW DEC. (2006). *Contaminated Sites: Guidelines for the NSW Site Auditors Scheme* 2nd Edition.

NSW EPA. (1994). *Guidelines for Assessing Service Station Sites*. NSW Environment Protection Authority.

NSW EPA. (1998). *Contaminated Sites Guidelines for the NSW Site Auditor Scheme*.

NSW EPA. (2014). *Waste Classification Guidelines, Part 1: Classifying Waste*. NSW Environment Protection Authority.

NSW EPA. (2020). *Guidelines for Consultants Reporting on Contaminated Land*. Contaminated Land Guidelines: NSW Environment Protection Authority.

Office of Environment and Heritage. (2019). *Soil Landscapes of Central and Eastern NSW - v2*. Sydney: NSW Office of Environment and Heritage.

12. Limitations

Douglas Partners (DP) has prepared this report (or services) for this project at 4-6 Popes Road, Woonona in accordance with DP's proposal dated 1 June 2023 and acceptance received from Ashley Wark of The Project Co on behalf of the Illawarra Retirement Group dated 2 June 2023. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Illawarra Retirement Trust for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

The assessment of atypical safety hazards arising from this advice is restricted to the environmental components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

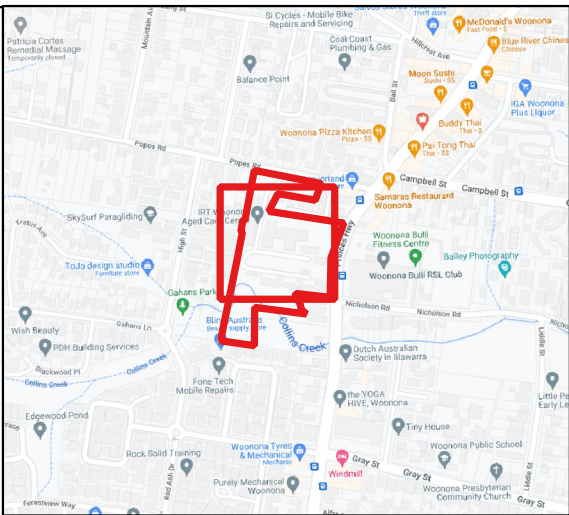
This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Douglas Partners Pty Ltd

Appendix A

Drawing 1
Master Plan

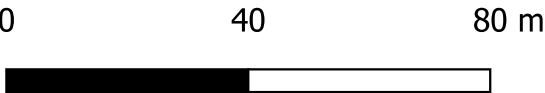


Locality Plan

NOTE:
1: Base drawing from Metromap.com (Dated 21/05/2022)

Legend

- Site Boundary
- Collins Creek

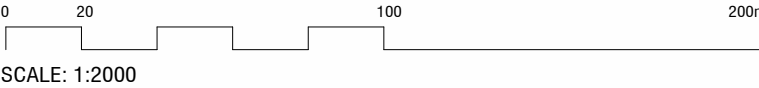




VIEW FROM POPES ROAD INTERSECTION



AERIAL LOOKING WEST



IRT WOONONA MASTERPLAN STUDY

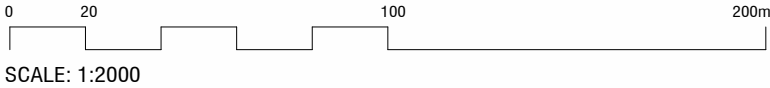
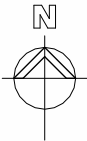
6-8 POPES ROAD, WOONONA, WOLLONGONG



Parking Schedule	
Location	Count
BASEMENT	172
GROUND FLOOR	32
TOTAL	204

LEGEND

- 1 BED
- 2 BED
- 3 BED
- CIRCULATION - LIFT & STAIR
- COMMERCIAL TENANCY
- ALLIED HEALTH
- CARE COMMUNITY SPACE
- CLUBHOUSE
- LAUNDRY & COOK FRESH
- WASTE



DRAWING	REV	DATE	SCALE	TITLE
SK105	4	12.05.2023	1 : 2000	BASEMENT PLAN - OPTION 4

GPO Box 1863 , Canberra City ACT 2601 T 02 6257 3222
Suite 1.01, Level 1, 10 Hobart Place, Canberra City ACT 2601
AMCARCHITECTURE.COM.AU

Appendix B

About this Report

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.



Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard AS 1726-1993, Geotechnical Site Investigations Code. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	20 - 63
Medium gravel	6 - 20
Fine gravel	2.36 - 6
Coarse sand	0.6 - 2.36
Medium sand	0.2 - 0.6
Fine sand	0.075 - 0.2

The proportions of secondary constituents of soils are described as:

Term	Proportion	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	20 - 35%	Sandy Clay
Slightly	12 - 20%	Slightly Sandy Clay
With some	5 - 12%	Clay with some sand
With a trace of	0 - 5%	Clay with a trace of sand

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	vs	<12
Soft	s	12 - 25
Firm	f	25 - 50
Stiff	st	50 - 100
Very stiff	vst	100 - 200
Hard	h	>200

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	SPT N value	CPT qc value (MPa)
Very loose	vl	<4	<2
Loose	l	4 - 10	2 - 5
Medium dense	md	10 - 30	5 - 15
Dense	d	30 - 50	15 - 25
Very dense	vd	>50	>25

Soil Descriptions

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Transported soils - formed somewhere else and transported by nature to the site; or
- Filling - moved by man.

Transported soils may be further subdivided into:

- Alluvium - river deposits
- Lacustrine - lake deposits
- Aeolian - wind deposits
- Littoral - beach deposits
- Estuarine - tidal river deposits
- Talus - scree or coarse colluvium
- Slopewash or Colluvium - transported downslope by gravity assisted by water. Often includes angular rock fragments and boulders.

Appendix C

WorkCover Results from Previous Report

Mobil Oil Australia Limited

(INCORPORATED IN VICTORIA) A.C.N. 004 052 984

53 BERRY STREET,
NORTH SYDNEY, N.S.W. 2060
TELEPHONE: 925 7555

P.O. BOX 1592, SYDNEY 2001
CABLE ADDRESS: MOBIL OIL
TELEX: AA 20408

August 8, 1991

Workcover Authority
Dangerous Goods Section
Locked Mail Bag 2
ROSEBERY NSW 2018



Dear Sir,

CANCELLATION OF LICENCE FOR THE KEEPING OF DANGEROUS GOODS

Please find attached letter of abandonment of tanks and fuel lines at 444 Princes Highway, Woonona. 1517

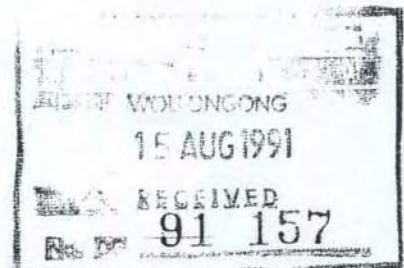
The licence number for this location is 35 unknown.

35-000280.9

W'song 21/6/91

Yours faithfully

RON BUTTREY



Zentrax Pty. Ltd.

531 Woodville Road,
Guildford, 2161
A.C.N. 003 595 177

P.O. Box 258
Guildford NSW 2161
Phone: (02) 892 1988
Pager: (02) 214 1111
No.: 24122
Fax: (02) 681 2688

7/5/91

THE REAL ESTATE OFFICER
MOBIL OIL AUST. LTD
53 BERRY STREET
NORTH SYDNEY 2060

RE : SERVICE STATION , PRINCESS HWY , WONOONA .

I here by certify that I have removed "SIX" underground fuel tanks formally located at the above Service Station premises , and that I have abandoned all of the underground fuel pipelines in accordance with the Regulations made under the Dangerous Goods Act.

Yours faithfully,



Licence number 35-000280

Inspector,

We are unable to contact this site. Could you please see if you can find it. If it is still in use for the storage of licensable quantities of dangerous goods please give the occupier the enclosed form and letter.

If you cannot find the site or if the site is not in use for storing d.goods please confirm in writing so we may cancel the licence.

Thank you

Licensing

Site: 444 Princes Hwy, WOONONA 2517

Inspection area: Wollongong

Tanks removed about 4 months ago.

Illawarra Retirement Trust presently own site,

Sam TANNOUS - neighbour

Michael PATRICK - Programme + Development Manager. 848911 or 018 424667

WorkCover Authority of N.S.W.
Locked Bag 2 Post Office
Rosebery NSW 2018

APPLICATION FOR RENEWAL OF
LICENCE FOR THE KEEPING OF DANGEROUS GOODS
UNDER AND SUBJECT TO THE PROVISIONS OF THE
DANGEROUS GOODS ACT, 1975
AND REGULATIONS THEREUNDER.

DETAILS OF CURRENT LICENCE WHICH EXPIRES ON 15/09/86

Summary of {
goods on site { Flammable Liquid

5 depot(s) on site (only details of first 6 listed)

DEPOT NO.	DEPOT TYPE	GOODS STORED IN DEPOT	QUANTITY KG/LITRES/NO.
1	U/G Tank	Flammable Liquid	30,000
2	U/G Tank	Flammable Liquid	20,000
3	U/G Tank	Flammable Liquid	10,000
4	U/G Tank	Flammable Liquid	10,000
5	U/G Tank	Flammable Liquid	2,000
6			

TO RENEW YOUR LICENCE

PLEASE CAREFULLY CHECK THE DETAILS SHOWN AND MAKE ANY
REQUIRED CORRECTIONS. THE SIGNED AND DATED NOTICE IS
THEN TO BE RETURNED, WITH PAYMENT (IF ANY), TO THE
DANGEROUS GOODS SECTION, AT THE ABOVE ADDRESS.

For enquiries Ph (02) 287 6252 Fax (02) 662 2834

(Signature)..... (Date).....

LICENSEE OR REGISTERED HOLDER

FITNESS R
AMOCO WOONANA
444" PRINCES HWY"
WOONONA 2517

PREMISES TO BE LICENSED OR REGISTERED IF NOT AS ABOVE

444" PRINCES HWY"
WOONONA 2517

Arrears Payable
\$ 300.00

35/000280
LICENCE/REG. No.

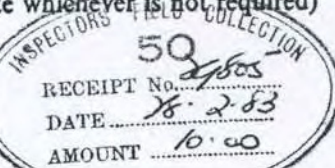
15/09/1991
Next EXPIRY DATE

APPLICATION FOR LICENCE (or AMENDMENT or TRANSFER of LICENCE) FOR THE KEEPING OF DANGEROUS GOODS

Application is hereby made for—
 *a licence (or amendment of the licence) for the keeping of dangerous goods in, or on the premises described below.
 *the transfer of the licence

(*delete whichever is not required)

FEE: \$10.00 per Depot



Name of Applicant in full (see over)	Surname	Given Names
Trading name or occupier's name (if any)	AMOCO AUSTRALIA LTD.	
Postal address	444 PRINCES HWY, WOONONA.	
Telephone number of applicant	STD Code	Number
Address of the premises in or on which the depot or depots are situated (including street number, if any)	042	84-4692.
Nature of premises (see over)	SERVICE STATION.	

PLEASE ATTACH SITE PLAN

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (see over)	Storage capacity	Dangerous goods	
			Product being stored	C & C Office use only
1	UNDERGROUND TANK.	33,560	M/S	
2	"	20,000	M/S	
3	"	15,000	M/S	
4	"	15,000	M/S	
5	"	1500	HEAD SPACE	
6				
7				
8				
9				
10				
11				
12				

Name of company supplying flammable liquid (if any) Amoco

Have premises previously been licensed? Yes.

If known, state name of previous occupier Mr. HAZZI.

Licence No. 35000280-9.

Signature of applicant

Date

25-2-83

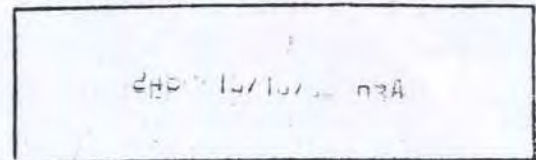
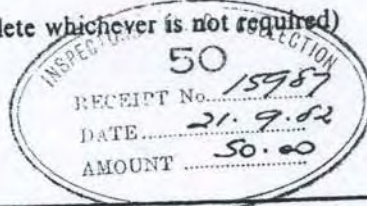
DANGEROUS GOODS ACT, 1975

APPLICATION FOR LICENCE (or AMENDMENT or TRANSFER of LICENCE) FOR THE KEEPING OF DANGEROUS GOODS

Application is hereby made for ~~a licence (or amendment of the licence)~~ for the keeping of dangerous goods in or on the premises described below. ~~the transfer of the licence~~

(*delete whichever is not required)

FEE: \$10.00 per Depot

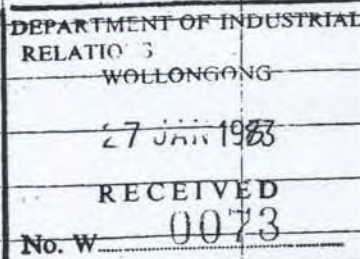


Name of Applicant in full (see over)	Surname <u>KAZZI</u> Given Names <u>PAUL</u>
Trading name or occupier's name (if any)	<u>NOONONA Auto Repairs</u>
Postal address	<u>444 PRINCES HIGHWAY NOONONA</u> Postcode <u>2517</u>
Telephone number of applicant	STD Code <u>042</u> Number <u>844692</u>
Address of the premises in or on which the depot or depots are situated (including street number, if any)	<u>444 PRINCES HIGHWAY, NOONONA</u> Postcode <u>2517</u>
Nature of premises (see over)	<u>S/SN</u>

PLEASE ATTACH SITE PLAN

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (see over)	Storage capacity	Dangerous goods <u>DD005020</u>	
			Product being stored	C & C Office use only
1	<u>UNDERGROUND TANK</u>	<u>33,560 L</u>	<u>m/s</u>	<u>2 020 34</u>
2	<u>/</u>	<u>20,000 L</u>	<u>m/s.</u>	<u>2 020 24</u>
3	<u>✓</u>	<u>15,000 L</u>	<u>m/s</u>	<u>2 020 14</u>
4	<u>✓</u>	<u>15,000 L</u>	<u>m/s</u>	<u>2 020 14</u>
5	<u>✓</u>	<u>2500</u>	<u>HEROSOL</u>	<u>2 020 2</u>
6				
7				
8				
9				
10				
11				
12				



Name of company supplying flammable liquid (if any)

Amoco

Have premises previously been licensed?

yes.

If known, state name of previous occupier

RAIN SUCCESSION P/LLicence No. 35000280

Signature of applicant

P. Kazi

Date

21.9.82

APPLICATION FOR LICENCE (or AMENDMENT or TRANSFER of LICENCE) FOR THE KEEPING OF DANGEROUS GOODS

Application is hereby made for the premises described below.

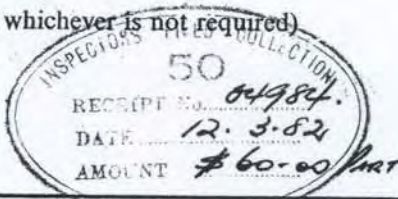
*a licence (or amendment of the licence)
*the transfer of the licence

for the keeping of dangerous goods in or on the

*delete whichever is not required)

FEE: \$10.00 per Depot

13



Name of Applicant in full (see over)	YAIN SUCCESSION NO 3 P/L.	
Trading name or occupier's name (if any)	WIA WESTERN DISCOUNT PETROL 8/04/82 D3A	
Postal address	P.O. box 59, FAIRY MEADOW	Postcode 259
Telephone number of applicant	STD Code 042	Number 844 637
Address of the premises in or on which the depot or depots are situated (including street number, if any)	AMOCO SERVICE STATION - 444 "PRINCES HWAY", WOODHONA. Postcode 2517	
Nature of premises (see over)	SERVICE STATION.	

PLEASE ATTACH SITE PLAN

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (see over)	Storage capacity	Dangerous goods	
			Product being stored	C & C Office use only
1	UNDERGROUND TANK	33,560 L	m/s	2 020 34
2	✓	20,000 L	m/s	2 020 24
3	✓	15,000 L	m/s	2 020 14
4	✓	15,000 L	m/s	2 020 14
5	✓	2500 L	m/o	2 020 23
6	DECAT OPERATOR	198 kg	ALG	7 120 42
7				
8				
9				
10				
11				
12				

Name of company supplying flammable liquid (if any) Amoco

Have premises previously been licensed? Yes

If known, state name of previous occupier R. J. Young Licence No. 35002509

Signature of applicant Keeper Date 12.3.82

For external explosives magazine(s), please fill in side 2.

FOR OFFICE USE ONLY

APPLICATION FOR LICENCE (or AMENDMENT or TRANSFER of LICENCE) FOR THE KEEPING OF DANGEROUS GOODS *Attach to file 117*

Application is hereby made for ~~the transfer of the licence~~ ^{*a licence (or amendment of the licence)} for the keeping of dangerous goods in or on the premises described below.

(*delete whichever is not required)

FEE: \$10.00 per Depot

60-00

41228
22.5.81.
\$60.00 p.r.

2000 10/00/1

Name of Applicant in full (see over)	Surname <u>YOUNG</u> Given Names <u>RICHARD J</u>
Trading name or occupier's name (if any)	<u>T/A KLEVEN DISCOUNT PETROL</u>
Postal address	<u>444 PRINCES HWY WOODNOLA.</u> Postcode <u>2500</u>
Telephone number of applicant	STD Code _____ Number <u>844612</u>
Address of the premises in or on which the depot or depots are situated (including street number, if any)	<u>444 PRINCES HWY</u> <u>WOODNOLA.</u> Postcode <u>2500</u>
Nature of premises (see over)	<u>SERVICE STATION.</u>

PLEASE ATTACH SITE PLAN

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time. *DD 006.120.1*

Depot number	Type of depot (see over)	Storage capacity	Dangerous goods	
			Product being stored	C & C Office use only
1	<u>UNDERGROUND TANK.</u>	<u>33,560 L</u>	<u>M/S</u>	<u>2 020 34</u>
2	<u>✓</u>	<u>20,000 L</u>	<u>M/S</u>	<u>2 020 24</u>
3	<u>✓</u>	<u>15,000 L</u>	<u>M/S.</u>	<u>2 020 24</u>
4	<u>✓</u>	<u>15,000 L</u>	<u>M/L.</u>	<u>2 020 24</u>
5	<u>✓</u>	<u>2500 L</u>	<u>M/O.</u>	<u>2 020 33</u>
6	<u>DECATS CYLINDER</u>	<u>198 L</u>	<u>L.P.G.</u>	<u>7 100 42</u>
7				
8				
9				
10				
11				
12				

Name of company supplying flammable liquid (if any)

AMOCO

Have premises previously been licensed?

Yes.

If known, state name of previous occupier

F.G. + F.M. NOTTONLicence No. 250002809

Signature of applicant

R. Young

Date

22.5.81

For external explosives magazine(s), please fill in side 2.

DANGEROUS GOODS ACT, 1975

APPLICATION FOR LICENCE (or AMENDMENT or TRANSFER of LICENCE) FOR THE KEEPING OF DANGEROUS GOODS

Application is hereby made for ~~the transfer of the licence~~ *a licence (or amendment of the licence) for the keeping of dangerous goods in or on the premises described below.

(*delete whichever is not required)

FEE: \$10.00 per Depot

DATA ENTRY
16 MAY 1980
FOUR

REGISTRARS FIELD OFFICE
19609
17.1.80
10.00

~~38~~ D67910 0001----

Name of Applicant (see over) 16 MAY 1980 Surname NOTTON Given Names FRANK GEORGE FELICITY NYNN

Trading name or occupier's name (if any) NOONONA SERVICE CENTRE

Postal address 444 PRINCES HIGHWAY NOONONA Postcode 2517

Telephone number of applicant STD Code 042 Number 844692
6247 21/05/80 GNR

Address of the premises in or on which the depot or depots are situated (including street number, if any) 444 PRINCES HIGHWAY
NOONONA Postcode 2517

Nature of premises (see over) SERVICE STATION

PLEASE ATTACH SITE PLAN

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time. DD 050-020 1

Depot number	Type of depot (see over)	Storage capacity	Dangerous goods	
			Product being stored	C & C Office use only
1	<u>U/B Tank.</u>	<u>33,500</u>	<u>m/s</u>	<u>2.020.34</u>
2	<u>✓</u>	<u>20,000</u>	<u>m/s</u>	<u>2.020.24</u>
3	<u>✓</u>	<u>15,000</u>	<u>m/s</u>	<u>2.020.24</u>
4	<u>✓</u>	<u>15,000</u>	<u>m/s</u>	<u>2.020.24</u>
5	<u>✓</u>	<u>2500</u>	<u>KEROSENE</u>	<u>2.020.33</u>
6				
7				
8				
9				
10				
11				
12				

Name of company supplying flammable liquid (if any) AMOCO

Have premises previously been licensed? Yes

If known, state name of previous occupier AMENDMENT ONLY Licence No. 0180.

Signature of applicant [Signature] Date 17.1.80

For external explosives magazine(s), please fill in side 2.

FOR OFFICE USE ONLY

FG: WOTTON

Amoco Australia Limited
PO Box 949
NORTH SYDNEY NSW 2060

DEPARTMENT OF INDUSTRIAL RELATIONS & TECHNOLOGY WOLLONGONG
28 NOV 1979 38 RECEIVED 001508 No. W

HAC:DB EX
MV:VW

411

ATTENTION: Mr. K.A. Smith

16 October 1979

Dear Sir

Please find herewith approved plans for the
installation of underground storage tanks at the
following sites:

Amoco Service Station
cnr. Burton Street and Burwood Road
CONCORD
1 x 33560 litre underground Class 3.1 storage tank

280

Amoco Service Station
Princes Highway
WOONONA
1 x 33560 litre underground Class 3.1 storage tank

Amoco Service Station
cnr. Lambton and Australia Streets
BROADMEADOW
1 x 33560 litre underground Class 3.1 storage tank

Amoco Service Station
George Street
SOUTH WINDSOR
1 x 21040 litre underground Class 3.1 storage tank.

These plans are approved subject to full compliance
with the AS 1940-1976 Flammable and Combustible
Liquid Code.

Yours faithfully

R/S 1/12/79

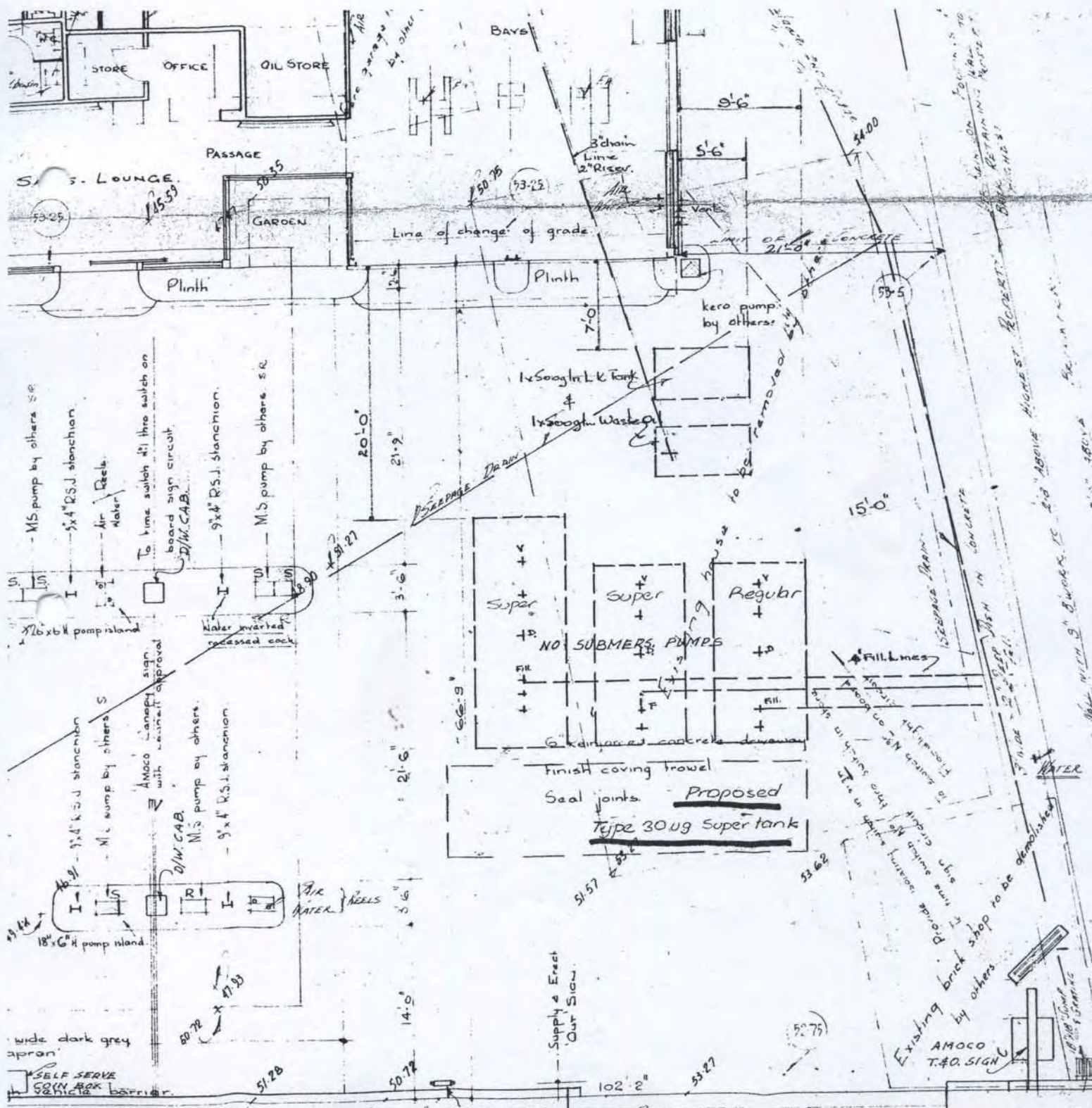
H A CONROY
Special Duties Officer

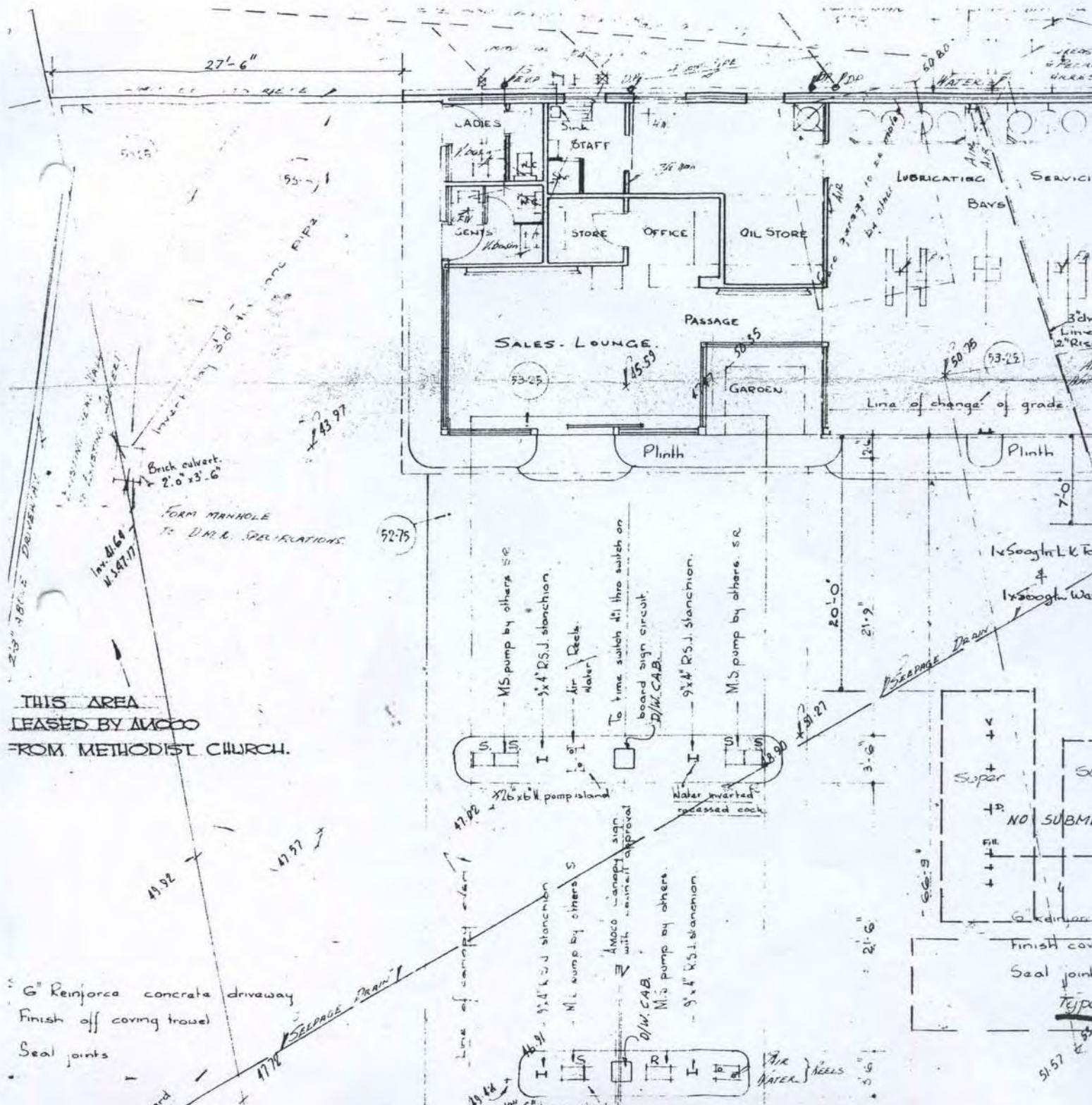
Encls





A2 CO





Appendix D

Historical Aerial Photographs













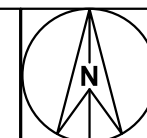
Legend

 Site Boundary

0 25 50 75 100 m





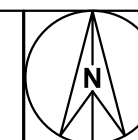
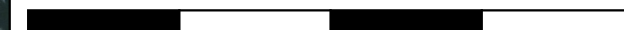




Legend

 Site Boundary

0 25 50 75 100 m



Appendix E

Site Photographs



Photo 1: General view of northernmost residential properties (Camelia Lodge) and driveway entry, looking east.



Photo 2: View of driveway in western portion of the site and administration / residential structure (Ribbonwood Lodge), looking south.



Photo 3: View of northern hardstand carpark, general waste bins and laundry in north western portion of the site, looking south west.



Photo 4: View of flammable liquid storage cupboard adjacent to western boundary of the site.

	CLIENT: Illawarra Retirement Trust		Site Photographs 1 to 4 Preliminary Site Investigation (Contamination) 4 - 6 Popes Road, Woonona	PROJECT No: 40439.06
	OFFICE: Wollongong	Prepared By: EB		PLATE No: 1
	SCALE: NTS	DATE: 3 Jul 2023		REVISION: 0



Photo 5: View of cytotoxic waste bin storage adjacent to western boundary of the site.



Photo 6: View of padlocked storage locker containing compressed oxygen in front of laundry in north western corner of the site, looking west.



Photo 7: General view of gardens and residential building (Flame Tree Lodge), looking north east.



Photo 8: View of main hardstand carpark and residential building (Blueberry Ash Village), looking west.



Photo 9: View of main hardstand carpark and mulch stockpile, looking west. General view of the main hardstand carpark in centre of the site and Blueberry Ash Village.



Photo 10: Photo of disturbed grass area with surface gravels and hardstand patches associated with former service station, looking north east.



Photo 11: Exposed hardstand and gravels in north eastern portion of the site, looking south.



Photo 12: View of vegetated creek line to the east of the former service station area, looking east.



Photo 13: View of pathway adjacent to Blue Gum Sanctuary and the church, looking north.



Photo 14: Storage container and tree debris storage area located east of main carpark, looking west.



Photo 15: Dumped building materials (i.e. corrugated metal sheeting, scrap metal, wire fencing) visible in tree vegetation along western boundary located south west of Blueberry Ash Village.



Photo 16: View of Collins Creek from Blueberry Ash Village, looking south east.

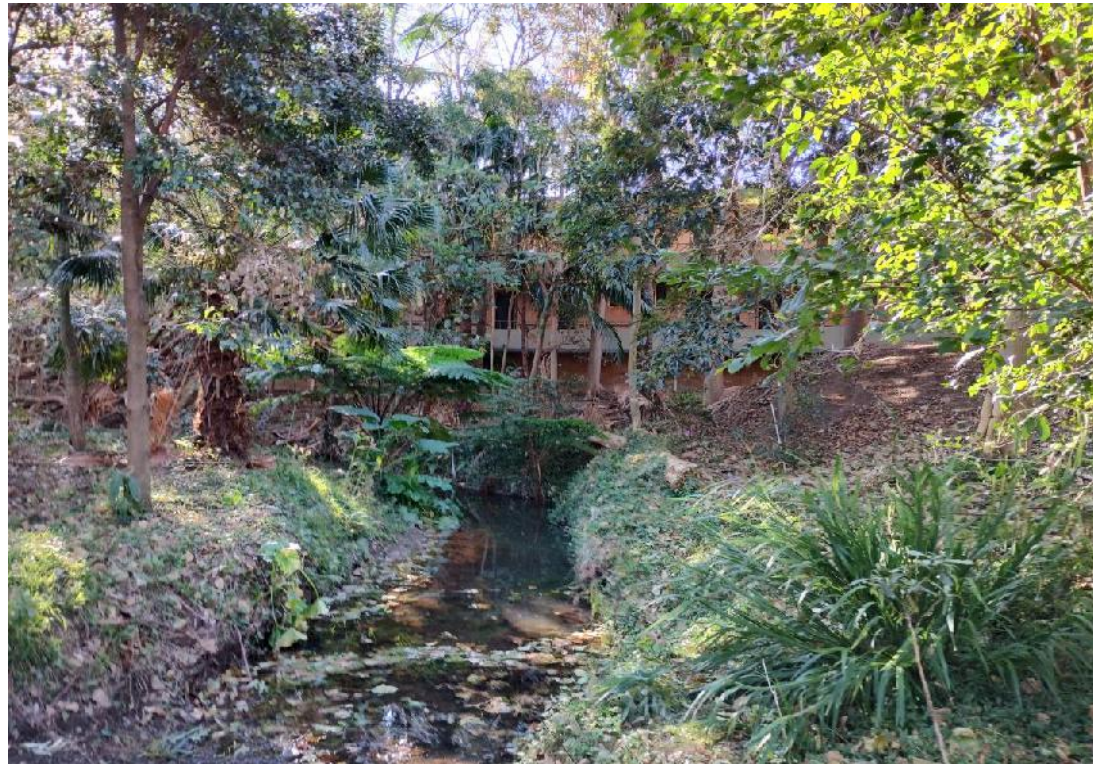


Photo 17: General view of creekline to the south of Bluberry Ash Village, looking north west.



Photo 18: General view of south face of Blueberry Ash Village and former brick battering, looking north.



Photo 19: General view of bricks located in creekline bank.



Photo 20: General view of former pen struecture in south western corner of the site, looking