



# **Douglas Partners**

*Geotechnics | Environment | Groundwater*

Report on  
Preliminary Site Investigation (Contamination)

Catherine Field Planning Proposal  
Charlesworth Close, Springfield Road, Camden Valley  
Way & Catherine Field Road, Catherine Field NSW

Prepared for  
Springfield Rd Pty Ltd

Project 208526.00  
April 2022

Integrated Practical Solutions



## Document History

### Document details

Project No.	208526.00	Document No.	R.001.Rev3
Document title	Report on Preliminary Site Investigation Catherine Field Planning Proposal		
Site address	Charlesworth Close, Springfield Road, Camden Valley Way & Catherine Field Road, Catherine Field NSW		
Report prepared for	Springfield Rd Pty Ltd		
File name	208526.00.R.001.Rev3		

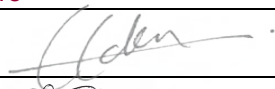

### Document status and review

Status	Prepared by	Reviewed by	Date issued
Revision 0	Ashika Jagdish	Glyn Eade	10 November 2021
Revision 1	Emily Eden	Glyn Eade	19 November 2021
Revision 2	Emily Eden	Glyn Eade	8 March 2022
Revision 3	Emily Eden	Glyn Eade	11 April 2022

### Distribution of copies

Status	Electronic	Paper	Issued to
Revision 0	1	0	Urbanco Group Pty Limited, Guy Evans
Revision 1	1	0	Urbanco Group Pty Limited, Guy Evans
Revision 2	1	0	Urbanco Group Pty Limited, Guy Evans
Revision 3	1	0	Urbanco Group Pty Limited, Guy Evans

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.

Signature	Date
Author 	11 April 2022
Reviewer 	11 April 2022



## Executive Summary

Douglas Partners Pty Ltd (DP) was commissioned by Springfield Rd Pty Ltd to complete a Preliminary Site Investigation for contamination (PSI) for Charlesworth Close, Springfield Road, Camden Valley Way & Catherine Field Road, Catherine Field NSW. It is understood that the site is proposed for rezoning to facilitate development for residential and associated urban development such as neighbourhood centres, schools, open space, and drainage land.

The objectives of the PSI are to identify any past or present potentially contaminating activities and to provide a preliminary assessment of site contamination.

A site walkover and a desktop review of site history information was undertaken to identify Potential Areas of Environmental Concern (PAEC) and contaminants of potential concern (CoPC) which may arise from previous land uses. The desktop investigation was limited to a review of aerial photographs, NSW EPA data base searches and listing of other potential site contamination issues based on DP's experience with sites of a similar nature and scale. Given that historical aerial photographs identified that the site and surrounds have been used for rural and residential purposes since the 1940s, a historical title search and SafeWork NSW Dangerous goods search were not considered to be warranted at this stage.

The results of the desktop study and site walkover identified PAEC namely in the form of imported fill and fill impacted with suspected asbestos, stored wastes, fuel storage, hazardous building materials in current and former buildings, and the presence of septic tanks and timber power poles. All PAEC identified are typical of sites in the general region.

Based on the results of the desktop study and site walkover, the likelihood for significant contamination constraints to development at the site is low and the site is considered suitable for the proposed rezoning from a contamination perspective.

An intrusive investigation of the identified PAEC should, however, be undertaken at the DA stage and be informed by the findings of this PSI. Based on the findings of the PSI, groundwater investigations are not considered to be required at this time.

Additionally, given the presence of suspected hazardous building materials in houses and sheds on site, DP recommends that a hazardous building materials (HAZMAT) survey is completed prior to the demolition of structures. Demolition of structures containing hazardous building materials should be carried out by a licenced asbestos removal contractor (if required).

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## **Report on Preliminary Site Investigation (Contamination)**

### **Catherine Field Planning Proposal**

#### **Charlesworth Close, Springfield Road, Camden Valley Way & Catherine Field Road, Catherine Field NSW**

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## **1. Introduction**

Douglas Partners Pty Ltd (DP) has been engaged by Springfield Rd Pty Ltd to complete this Preliminary Site Investigation (Contamination) (PSI) undertaken to inform rezoning of a parcel of land located between Springfield Road, Catherine Field, NSW (hereinafter referred to as 'the site'). The site layout is shown on Drawing 1, Appendix A.

The Catherine Field Planning Proposal (the Proposal) is a Proponent-led proposal that seeks to rezone approximately 104 hectares of land within the Catherine Field Precinct to enable urban development for new housing, open space and recreation, riparian protection, major roads and stormwater management. The site is located wholly within the Camden Local Government Area and is approximately 42 kilometres south-west of the Sydney CBD.

The draft Indicative Structure Plan delivers approximately 2080 dwellings and a population of around 5,800 people. There will be a range of housing types at varying densities throughout the site. The site is identified for low and medium density residential development with single dwellings on lots ranging in size up from 250 square metres and averaging around 350 square metres and attached and semi-attached housing, typical of recently developed urban growth areas in other parts of Sydney.

The Proposal will provide a range of social infrastructure, including open space, recreation and community facilities for the future community, and deliver road and utilities infrastructure to service the broader South West Growth Area.

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.

This report has been prepared at the same time as a salinity investigation also prepared by DP for the site, and for the same purpose. The findings of the salinity investigation have been reported under separate cover (reference 208526.R.002.Rev0).

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

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

- State Environmental Planning Policy No. 55 – *Remediation of Land* (SEPP 55);
- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [the 'NEPM']* (NEPC, 2013); and
- NSW EPA *Guidelines for Consultants Reporting on Contaminated Land* (NSW EPA, 2020).

## 2. Proposed Development

The site is proposed for rezoning to facilitate development for residential and associated urban development such as neighbourhood centres, schools, open space, and drainage land. Further information on the development will be defined as part of the planning process and is not available to inform rezoning.

## 3. Scope of Works

In completing the PSI the following scope of works were undertaken:

- A desktop investigation was undertaken to establish Potential Areas of Environmental Concern (PAEC) for the site using the following information:
  - o Local topographic, soil, geological, salinity and acid sulphate soils mapping;
  - o Available historical aerial photography for the site to identify land uses and changes in the land that may indicate the potential for contamination;
  - o Search of the NSW EPA contaminated land records to determine the existence of statutory notices current on any parts of the site or adjacent land, under the *Contaminated Land Management Act (1997)* and licences (if any) under the *Protection of the Environment Operations Act (1997)*;
  - o Search of the NSW Office of Water groundwater bore records for bores located within a 1 km radius of the site; and
  - o Review of readily available Council records.
- An initial ground truthing site walk over in accessible portions of the site (refer to Section 4) to confirm PAEC identified during the desktop review;
- Development of a preliminary conceptual site model (CSM); and
- Preparation of the PSI report, including commentary on the suitability of the site for development and any recommendations for future works with respect to contamination, if any.

#### 4. Site Information

Site Address	Charlesworth Close, Springfield Road, Camden Valley Way & Catherine Field Road, Catherine Field NSW
Precinct	'Catherine Field Precinct' within the South West Growth Area
Legal Description	<p>Note: Lots below with names in brackets were located in accessible portions of the site. The remainder of the site was subject to a desktop study only.</p> <p>Lots 1331 and 1332 on Deposited Plan (D.P.) 826048</p> <p>Lots 1 and 2 on D.P. 861247</p> <p>Lot 131 on D.P. 27602</p> <p>Lots 1301 and 1302 on D.P. 736633</p> <p>Lots 119 to 129 on D.P. 27602</p> <p>Lot 20 on D.P. 1171869</p> <p>Lot 2 on D.P. 27602</p> <p>Lot 100 on D.P. 1149669</p> <p>Lots 1 to 5 on D.P. 203127</p> <p>Lots 30 and 31 on D.P. 1175280</p> <p>Lot 8 on D.P. 203127</p> <p>Lots 100 and 101 on D.P. 1173578</p> <p>Lots 1 to 4 on D.P. 215520</p> <p>Lots 4001 to 4003 on D.P. 1121133</p> <p>Lot 302 on D.P. 716446 ('Lot 302')</p> <p>Lots 10 and 11 on D.P. 618175 ('Lots 10 and 11')</p> <p>Lots 204 to 208 on D.P. 259147 ('Lot 204')</p> <p>Lot 101 on D.P. 547859</p> <p>Lots 301 and 302 on D.P. 709378</p> <p>Lots 2 to 4 on D.P. 518572 (of which Lots 3 and 4 were in accessible portion of the site)</p> <p>Charlesworth Close</p>
Area	105 ha
Zoning	RU4 Primary Production Small Lots
	R5 Large Lot Residential
Local Council Area	Camden Council
Current Use	Rural residential
Surrounding Uses	<p>North –Catherine Fields Road, Residential, Rural</p> <p>East –Camden Valley Way, Residential, Rural</p> <p>South –Springfield Road, Residential, Rural</p> <p>West – Residential, Rural</p>



The site layout is shown in Figure 1 below.



Figure 1: Site Layout (red – site boundary, blue – accessible portion of the site)

## 5. Environmental Setting

### 5.1 Topography

The surrounding regional topography shows gently undulating rises.

Regional topographic data indicates that the site topography ranges as follows:

- From 96 to 112 m relative to the Australian Height Datum (AHD) along the creek line in the centre of the site running from its low point in the north west to its high point in the south east.
- Between 90 and 130 m AHD across the remainder of the site, with the lowest elevation generally in the west/north west and the highest elevations in the west and the south west.



## 5.2 Site Geology and Soil Landscapes

Reference to the Geological Survey of NSW, Sydney (1985) *Wollongong – Port Hacking*, 1:100 000 Geological Sheet 9029-9129, 1<sup>st</sup> Edition indicates the site is underlain by Bringelly Shale (geological code 'Rwb') of the Wianamatta Group of Middle Triassic age. Bringelly Shale comprises of shale, carbonaceous claystone, laminite, lithic sandstone and rare coal.

Reference to the *Wollongong-Port Hacking 1: 100 000 Soils Landscape Sheet 9029*, 1990, indicates that the site is underlain by Blacktown soils (mapping unit bt), which is a residual soils group associated with gently undulating rises, broad rounded crests, and ridges with gently inclined slopes. The unit comprises of shallow to moderately deep (<100 cm) red and brown podzolic soils on crests, upper slopes and in well-drained areas. In areas of greater depth (150 – 300 cm), there are yellow podzolic soils and soloths on lower slopes and in areas of poor drainage (Sydney). Local relief is to 30 m, slopes are usually <5%. These soils are typically of low fertility, are moderately reactive, with high plasticity in the subsoil, and generally possess poor soil drainage.

## 5.3 Acid Sulphate Soils

Published acid sulphate soils risk mapping indicates that the site is classified as Cq (p4), ie. extremely low probability occurrence.

## 5.4 Surface Water and Groundwater

The site is traversed by two unnamed creek lines, both tributaries of and join Rileys Creek approximately 1.4 km north of the site. Rileys Creek is a tributary of South Creek which is located approximately 5.9 km north of the site. Several smaller dams are present throughout the site on individual lots which likely drain via surface and subsurface (groundwater) flow into the two creeks.

A search of the publicly available registered groundwater bore database indicated that there is one registered groundwater bores within a 1 km radius of the site. The bore (reference GW038092) is located approximately 900 m west of the site, recorded as type 'bore open through rock' for the purpose of exploration and was drilled to a total depth of 240 m bgl. The recorded standing water level was 29.2 m bgl and the bore yielded (at the time of installation) fresh water.

Based on the regional topography and the flow direction of nearby water courses, the anticipated flow direction of groundwater beneath the site is towards the north west. Given the local geology (i.e., Blacktown soils and underlying Wianamatta Shale), the groundwater in the low yield residual soils and underlying fractured rock beneath the site is anticipated to be of a generally low yield, saline and very low yield. Accordingly, there would be no significant potential beneficial uses of the groundwater.

## 6. Site History

### 6.1 Historical Aerial Photography

Historical aerial photographs from 1947, 1961, 1969, 1975, 1983, 1994 and 2002 (supplied by NSW Spatial Services) and from 2009, 2017 and 2021 (supplied by MetroMap) were reviewed to identify PAEC at the site. The aerial photographs are included as Drawings 1 to 10 in Appendix A. A summary of key features observed for the site and surrounding land is presented in Table 1.

**Table 1: Summary of Historical Aerial Photographs**

Year	Site	Surrounding Land Use
1947	The site appeared to be undeveloped open grass land/fields and sparsely covered with trees. Some of the fields in the northern portion of the site appear to have been maintained as the grass appearance differs across a well-defined (likely bordered by fences) area. The current creek lines in the central and northern portion of the site are visible; four small dams are also visible along the creek alignment. An unsealed road is visible along the central/northern portion of the site.	The general surrounding region appeared to be a combination of cleared land, fields, sparse tree cover and bushland. Multiple small dams were present in the general area. Camden Valley Way was visible to the east of the site.
1961 (aerial photograph covers the southern two thirds of the site)	The large dam currently present in the centre of the site is visible in this aerial photograph. Areas of exposed soil are visible on the north-western side of the dam. A man-made dam is visible in the eastern portion of the site. An unsealed road traverses the southern part of the site in a north west – south east direction. In the north-eastern area part of the site, parts of the land have been cleared and repurposed for agricultural use. A road which adjoins to Camden Valley way, residential dwellings and three artificial dams were also constructed in the north east portion of the site. A residential building has been constructed in the south west part of the site with a patch of land repurposed for crop cultivation.	There is little change evident to the surrounding land use.
1969	Several farm dams and rural residences have been constructed on individual lots since the previous aerial photograph.	Rural residential dwellings have been constructed on the northern, eastern, and southern areas from the site. Market gardens are visible on lots east of Camden Valley Way.

Year	Site	Surrounding Land Use
1975	Lots in the north, north east and east portions of the site appear to be used agricultural and market garden usage. Market gardens have also appeared in the south west portion of the site.	Catherine Fields Road and Springfield Road north and south of the site respectively appear to have been sealed.
1983	Although the available 1983 aerial image is of lower resolution, Charlesworth Close is visible in the south west/centre of the site. Residential dwellings were constructed in several lots across the site since the previous aerial photograph.	Additional rural residences are evident in the surrounding area, compared to the previous aerial photograph.
1994	Lots in the northern and eastern portions of the site appear to be occupied with a mixture of rural residences and/or market gardens.  Charlesworth Close and driveways in the centre of the site have been sealed.	The surrounding area has been subject to further rural residential development since the previous aerial photograph. Some lots appear to be used for market gardens and some appear to be used for pastoral purposes.
2002	Tree density and development of residential dwellings and two swimming pools has increased/occurred on lots along Charlesworth Close since the previous aerial photograph. Another structure was constructed on the middle eastern section of the lots along Charlesworth Close, where most of the previously surrounding domestic refuse now appear to be removed. Apart from the addition of a few residential dwellings, there appeared to be little change to the remainder of the site since the 1994 aerial photograph.	Apart from the addition of a few residential dwellings, there appeared to be little change to the site's surroundings since the 1994 aerial photograph.
2009	There appeared to have been little change to the site since the 2002 aerial photograph.	The majority of the surrounding areas appeared similar to the 2002 aerial photograph.
2017	There appeared to have been little change to the site since the 2009 aerial photograph.	The surrounding suburbs, especially further east, south and west (Gledswood Hills, Gregory Hills, Oran Park), have been subject to land clearing and residential development.

Year	Site	Surrounding Land Use
2021	There appeared to have been little change to the site since the 2017 aerial photograph.	Residential housing has significantly increased in the surrounding areas (Gledswood Hills, Gregory Hills, Oran Park), with continuing earthworks and construction works. Large areas of soil are exposed, particularly in the far western and south-western areas from the site boundary.

## 6.2 Public Registers and Planning Records

<p>EPA Notices available under Section 58 of the Contaminated Lands Management Act (CLM Act)</p> <p>Database searched 25/10/2021</p>	There were no records of notices for the site or adjacent sites.
<p>Sites notified to EPA under Section 60 of the CLM Act</p> <p>Database searched 25/10/2021</p>	The site and adjacent sites were not listed as a notified contaminated site <sup>1</sup> .
<p>Licences listed under Section 308 of the Protection of the Environment Operations Act 1997 (POEO Act)</p> <p>Database searched 25/10/2021</p>	<p>No records were available for the site. There was one record issued for sites within a 1 km radius of the site.</p> <ul style="list-style-type: none"> <li>The Rugby League Country Club Ltd – 810 Camden Valley Way, Catherine Field, NSW 2171 [located approximately 550 m south-east from site boundary] - POEO licence for Sewage Treatment Package Plant - Licence surrendered 16 June 2021.</li> </ul>

<sup>1</sup> <https://www.epa.nsw.gov.au/your-environment/contaminated-land/notified-and-regulated-contaminated-land/list-of-notified-sites>.

**Council Records**

A request was made on 20 October 2021 to Council for the release of any Council information of relevance to the site under the Government Information (Public Access) Act 2009 (GIPA), however a response was still pending at the time of reporting.

The results of these public register and planning record searches are provided in Appendix B.

### **6.3 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.

It is noted that land titles and Section 10.7 planning certificates have not been purchased or reviewed as part of this assessment on the basis that the desktop assessment undertaken in this report is adequate for the purpose and objectives of this report, ie., to provide a preliminary assessment of potential contamination constraints for rezoning purposes. A recommendation has been made in Section 9 to purchase and review land titles and planning certificates for future assessments for development approvals (DA) purposes.

### **6.4 Summary of Site History**

Information provided from the historical aerial photographs suggest that the site likely comprised vacant agricultural lands until 1961, where a large man-made dam was constructed in the central portion of the site. In 1969, the land was also being used for a mixture of rural residential and market gardens purposes. From 1975, the land use remained relatively unchanged, however, there have been some site feature changes such as the construction of additional houses, sheds, and roads. Within 1 km of the site, there were no records of EPA notices and no sites notified to the EPA. One license was issued under the POEO Act, 1997, to the Rugby League Country Club Ltd, approximately 550 m south-east from site boundary.

## **7. Site Walk Over**

A site walk over was undertaken by a DP Senior Environmental Scientist on 21 October 2021 on the accessible portion of the site (refer to Section 4). The general site topography was consistent with that described in Section 5.1. The site layout appears to have remained unchanged from the 2021 aerial

photograph. The following key site features pertinent to the PSI were observed (refer to photographs in Figures 2 to 9 further below).

- Septic tanks were present on all lots;
- Timber power poles were situated along the northern part of Charlesworth Close; connections into the lots appeared to be primarily using a metal pole located on each property. A disconnected timber power pole and transformer box was observed near the site entrance in Lot 204 (House No. 66).
- Most, if not all residences had rain tanks present on site which appeared to be primarily constructed of PVC.
- Lot 10/House No. 44:
  - o The north-eastern half of the large farm dam is included in this lot boundary.
  - o The residence appeared to be constructed with brick and possibly asbestos containing materials (ACM) eaves on the external portions. The surrounding ground cover comprised grass and bush cover. The septic system is located to the rear (south) of the residence.
- Lot 11/House No. 60:
  - o The south-eastern half of the large farm dam is included in the lot boundary. The ground surrounding the dam within Lot 11 was covered with grass; some patchy areas where grass cover was sparser was observed (Figure 2) and may indicate the presence of a change in the soil type (eg., fill).
  - o The septic tank system was visible on the south-eastern side of the main residence and appeared to comprise two tanks.
  - o An area of cut was present south-east of the main residence and was partially fenced with steel poles. The surface of the cut appeared to comprise silty clay with fragments of siltstone.
  - o A metal and chain link structure south-west of the house next to the dam was observed, likely used to house animals (potentially an aviary – Figure 3).
  - o Surface drainage on unconsolidated ground surrounding the house appeared to be managed using concrete pipes.
- Lot 204/House No. 66:
  - o The main driveway appeared to comprise concrete and basaltic concrete gravel.
  - o The grounds around the house were in use for animal grazing and the rearing of chickens. Frogs and carp were visible in a farm dam in the bush covered portion, south-east of the house. The dam appeared to be drained using PVC piping.
  - o A rusted disused train carriage was located next to the farm dam (Figure 4), which was placed here by the occupants of the lot.
  - o Minor anthropogenic non-soil debris was observed across the site, including metal, terracotta pipes, wood, wooden sump pallets. A steel and wood shelter were observed on an island in the dam which may be remnants of an old well. A rusted half-drum was also observed, possibly being an old barbeque (BBQ).
  - o Two stockpiles of wood and timber were present in the north-eastern portion of the site (Figure 5).



- o Two large metal sheds were located in the north-eastern portion of the site, and a caravan (likely disused) was stored adjacent. Several small (1 litre) containers of fuel were observed on a concrete platform next to (south) of the easternmost shed (Figure 6); the concrete platform appeared to slope towards likely unconsolidated ground cover which was covered in dense grass at the time of inspection. Discarded electrical appliances and wooden pallets were also observed nearby. Immediately east of the easternmost shed, three loose possible asbestos containing materials (ACM) pipes were observed (Figure 7), their coating in poor condition.
- Lot 302/House No. 32:
  - o Lot 302 was in use to house horses in paddock areas. The lot perimeter and paddocks within the lot were fenced with chain link fencing.
  - o A large garden and scaffold was present to the rear (north) of the residence, the residence appeared to be primarily constructed with brick and cement tiles. External eaves were potentially constructed of ACM.
- Lot 4/House No. 58 Springfield Road:
  - o A number of rock stockpiles were observed adjacent to the access driveway and the south-eastern site boundary.
  - o The septic system for the house was located south of the main residence.
  - o Much of the garden area to the north, east and north-west of the house appeared to be used as a nursery (Figure 8). Storage of plant pots and other gardening related supplies was observed in this area of the site (Figure 9).
  - o Areas of storage of other materials were also observed in several areas across the site which could not be closely observed because of the amount of material present and because some areas were overgrown with grass.
  - o Two dilapidated structures and several vehicles and a boat were observed north-west of the main residence.
  - o The main driveway appeared to comprise concrete and basaltic concrete gravel.



**Figure 2: Patches of sparser grass cover near dam (Lot 11)**



**Figure 3: Metal and chain link shelter (likely aviary – Lot 11)**





**Figure 4: Train carriage near farm dam (Lot 204)**



**Figure 5: Stockpile of timber and wood (Lot 204)**



**Figure 6: Storage of fuel/oil containers on sloped concrete ground (Lot 204)**



**Figure 7: Three loose suspected ACM pipes (Lot 204)**



**Figure 8: Possible nursery land use surrounding residence (Lot 4)**



**Figure 9: Storage of materials at rear of residence**

There was no indication of fuel storage, fire pits, unhealthy vegetation or visual or olfactory indicators of possible contamination on the lots inspected as part of the walk over.



## 8. 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 ie., it enables an assessment of the potential source – pathway – receptor linkages (complete pathways).

### Potential Sources

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

- S1: Fill: Associated with potential levelling of drainage lines, demolition, and construction of former and current buildings and sheds on the site and potential burying of waste.
  - o CoPC may include, but not be limited to, metals/metalloids, total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), organochlorine pesticides (OCP), phenols and asbestos.
- S2: Chemical and fuel storage and surficial waste: Potential spills associated with the storage and potential spilling of chemicals/oils/fuels stored on site and the potential impacts from run-off of stored metal wastes. From the desktop study and site walkover, use of such chemicals and fuels is likely low in frequency and volume.
  - o CoPC include metals, TRH, BTEX, PAH, OCP and total phenols.
- S3: Former and current buildings and sheds: Hazardous building materials were observed in current structures on site and may be present from demolished structures on site.
  - o CoPC include asbestos, synthetic mineral fibres (SMF), lead (in paint), and PCB. Zinc and nickel (in metal construction materials) are also a noted potential contaminant with older sheds.
- S4: Transpiration pits and septic tanks: Potential contamination associated with potential asbestos-containing pipes used in transpiration and septic pits, potential nutrient overload from treated septic water and disposal area for wastes.
  - o CoPC include metals, TRH, BTEX, PAH, OCP, asbestos and nutrients.
- S5: Timber power poles: Potentially impacted soils surrounding poles from the leaching of timber treatment chemicals.
  - o CoPC include metals, TRH and PAH.
- S6: Market gardens – use of pesticides and herbicides.
  - o CoPC include metals, TRH, BTEX, OCP, organophosphorus pesticides (OPP).
- S7: Asbestos pipes from historical rural residential/pastoral land use – loose ACM pipes were observed on site and were commonly used for drainage for private residences in the region.
  - o CoPC include asbestos.
- S8: Former and current nursery and agricultural land use: Indicates residual soil and run-off contamination from potential use of chemical pesticides and metals.
  - o CoPC include metals, TRH, BTEX, PAH, OCP and phenols.

### Potential Receptors

The following potential human receptors have been identified:

- R1: Current users [residential];
- R2: Future construction and maintenance workers;
- R3: End users [likely residential]; and
- R4: Adjacent site users [residential].

The following potential environmental receptors have been identified:

- R5: Surface water [on-site dams and unnamed creeks];
- R6: Groundwater; and
- R7: Terrestrial ecosystems.

### Potential Pathways

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

- P1: Ingestion and dermal contact; and
- P2: Inhalation of dust and/or vapours.

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

- 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; and
- P6: Contact with terrestrial ecology.

### 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 S8) and receptors (R1 to R8) are provided in below Table 1.

**Table 1: Summary of Potentially Complete Exposure Pathways**

Source and COPC	Transport Pathway	Receptor	Risk Management Action
S1: Fill: may include, but not be limited to, metals/metalloids, TRH, BTEX, PAH, OCP and asbestos S2: Chemicals, fuel, and stored surface waste: metals, TRH, BTEX, PAH, OCP and phenols. S3: Former and current buildings: asbestos, SMF, lead (in paint), PCB, nickel, and zinc. S4: Transpiration pits and septic tanks: metals, TRH, BTEX, PAH, OCP, asbestos and nutrients. S5: Timber power poles: metals, TRH, and PAH S6: Market gardens: metals, TRH, BTEX, OCP, OPP S7: Asbestos pipes S8: Former and current nursery and agricultural land use: metals, TRH, BTEX, PAH, OCP and phenols.	P1: Ingestion and dermal contact P2: Inhalation of dust 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: Contact with terrestrial ecology	R1: Current users [residential] R2: Future construction and maintenance workers R3: End users [likely residential] R4: Adjacent site users [residential].	An intrusive soil investigation is recommended to inform DA in line with SEPP 55 to assess possible contamination across the site. The findings of the soil investigation would inform the requirement for a groundwater assessment.

## 9. Conclusions and Recommendations

This PSI was undertaken to assess the potential for contamination at the site based on past and present land uses and activities and to comment on the suitability of the site for the proposed rezoning and the need for further investigation (if any).

The results of the desktop study and site walkover identified PAEC namely in the form of imported fill and fill impacted with suspected asbestos, stored wastes, fuel storage, hazardous building materials in current and former buildings, market gardens, and the presence of septic tanks and timber power poles. All PAEC identified are typical of sites in the general region.

Based on the results of the desktop study and site walkover, the likelihood for significant contamination constraints to development at the site is low and the site is considered suitable for the proposed rezoning from a contamination perspective.

An intrusive investigation (Detailed Site Investigation – DSI) of the identified PAEC should, however, be undertaken at the DA stage and be informed by the findings of this PSI. The scope of the DSI should include inspection of the site, targeted investigations of PAEC as well as grid-based intrusive investigation of the remainder of the site with reference to NSW EPA endorsed guidelines. Based on the findings of the PSI, groundwater investigations are not considered to be required at this time.

If the DSI establishes contamination is present at the site that requires remediation or management for the proposed development, a Remediation Action Plan (RAP) is required to be prepared to inform remediation works.

Depending on the project programme requirements, the DSI and RAP can either be undertaken for the whole site or in a staged manner.

Additionally, given the presence of suspected hazardous building materials in houses and sheds on site, DP recommends that a hazardous building materials (HAZMAT) survey is completed prior to the demolition of structures. Demolition of structures containing hazardous building materials should be carried out by a licenced asbestos removal contractor (if required).

## 10. References

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

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

## 11. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report (or services) for this project at Charlesworth Close, Springfield Road, Camden Valley Way & Catherine Field Road in Catherine Field NSW in accordance with DP's proposal dated 30 August 2021 and acceptance received from Guy Evans. The work was carried out under DP's Conditions of Engagement (or contract). This report is provided for the exclusive use of Springfield Rd Pty Ltd 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.



DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

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.

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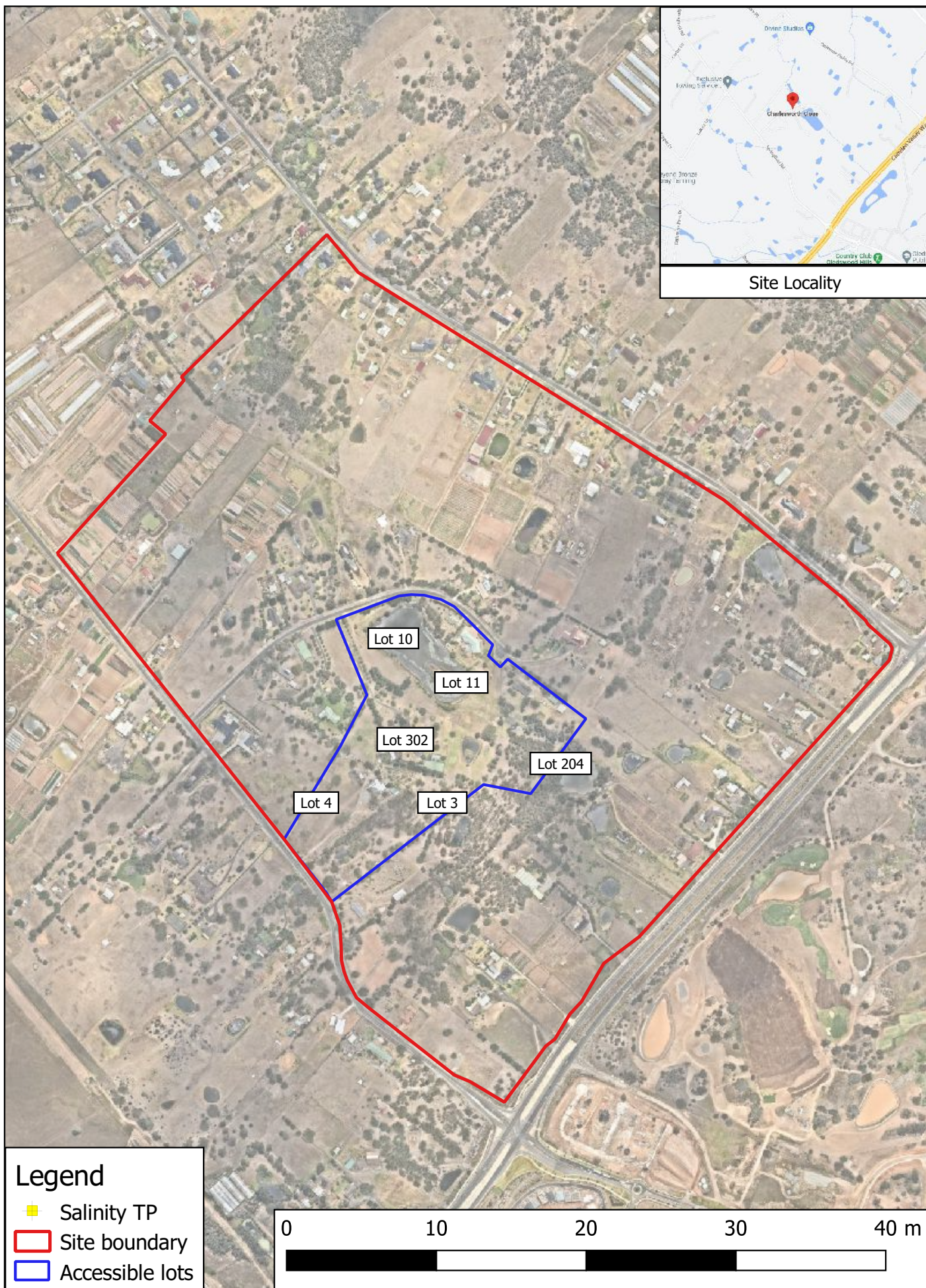
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## Appendix A

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Drawings





## Legend

- Salinity TP
- Site boundary
- Accessible lots

0 10 20 30 40 m



TITLE: Site Layout and Locality  
Catherine Field, NSW



CLIENT: Urbanco Group Pty Limited

PROJECT #: 208526.00

DRAWING No: 1

OFFICE: Macarthur

DRAWN BY: EME

DATE: 8 March 2022

SCALE: As Shown

REVISION: 2





**Douglas Partners**  
Geotechnics | Environment | Groundwater

**TITLE: Historical Aerial Image - 1947**  
**Preliminary Site Investigation (Contamination)**  
**Land East of Springfield Road, Catherine Field, NSW**



MGA

CLIENT: Urbanco Group Pty Limited

PROJECT No.: 208526.00

SCALE: As shown

DRAWING No:

2

OFFICE: Macarthur

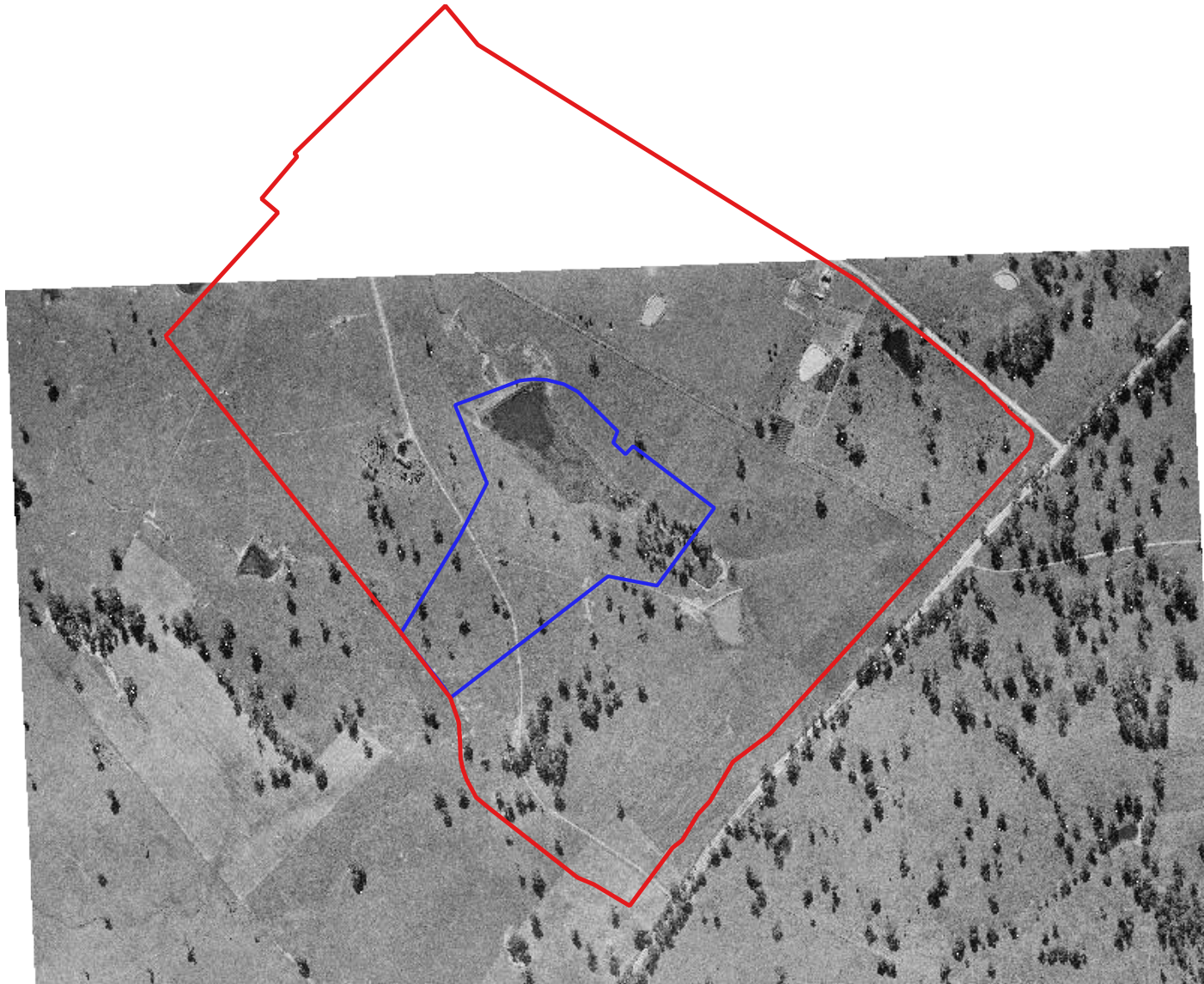
DRAWN BY: EME

DATE: 18 November 2021

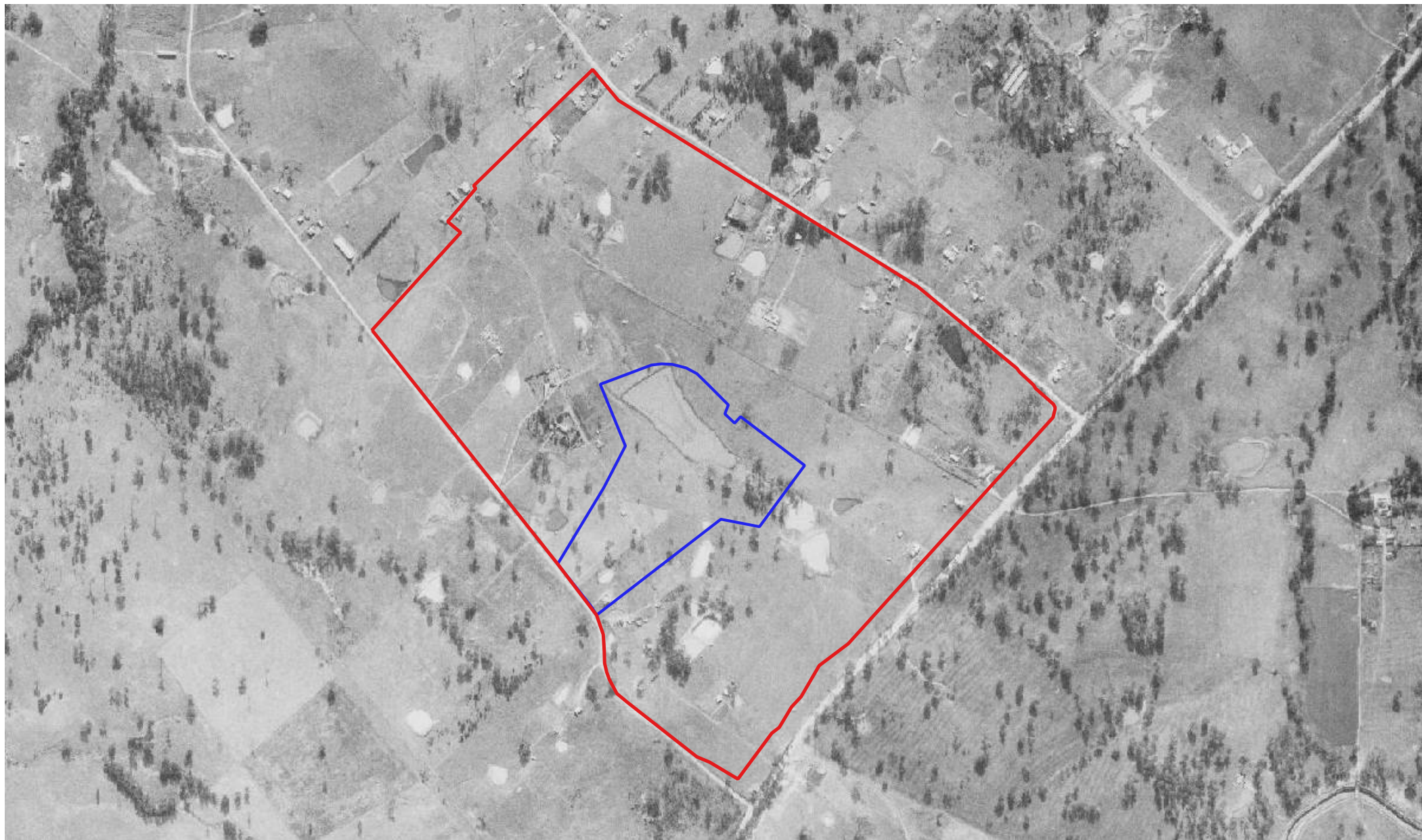
REVISION:

1









<b>TITLE: Historical Aerial Image - 1969</b> <b>Preliminary Site Investigation (Contamination)</b> <b>Land East of Springfield Road, Catherine Field, NSW</b>			
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CLIENT: Urbanco Group Pty Limited	PROJECT No.: 208526.00	SCALE: As shown	DRAWING No: 4
OFFICE: Macarthur	DRAWN BY: EME	DATE: 18 November 2021	REVISION: 1





**Douglas Partners**  
Geotechnics | Environment | Groundwater

**TITLE: Historical Aerial Image - 1975**  
**Preliminary Site Investigation (Contamination)**  
**Land East of Springfield Road, Catherine Field, NSW**



MGA

CLIENT: Urbanco Group Pty Limited

PROJECT No.: 208526.00

SCALE: As shown

DRAWING No: 5

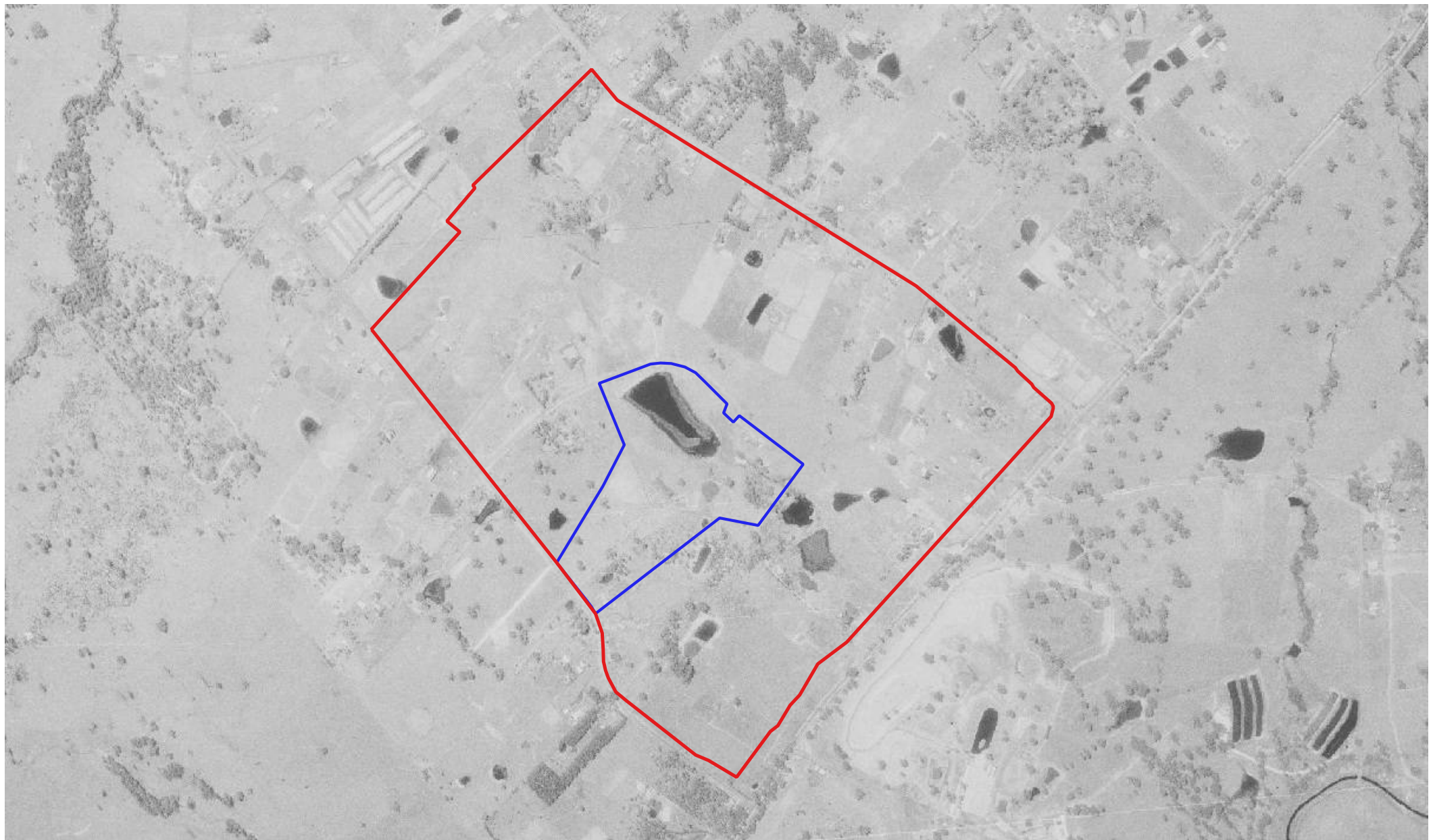
OFFICE: Macarthur

DRAWN BY: EME

DATE: 18 November 2021

REVISION: 1





**Douglas Partners**  
Geotechnics | Environment | Groundwater

**TITLE: Historical Aerial Image - 1983**  
**Preliminary Site Investigation (Contamination)**  
**Land East of Springfield Road, Catherine Field, NSW**



MGA

CLIENT: Urbanco Group Pty Limited

PROJECT No.: 208526.00

SCALE: As shown

DRAWING No: 6

OFFICE: Macarthur

DRAWN BY: EME

DATE: 18 November 2021

REVISION: 1





CLIENT: Urbanco Group Pty Limited

PROJECT No.: 208526.00

SCALE: As shown

DRAWING No: 7

OFFICE: Macarthur

DRAWN BY: EME

DATE: 18 November 2021

REVISION: 1





CLIENT: Urbanco Group Pty Limited

PROJECT No.: 208526.00

SCALE: As shown

DRAWING No: 8

OFFICE: Macarthur

DRAWN BY: EME

DATE: 18 November 2021

REVISION: 1





CLIENT: Urbanco Group Pty Limited

PROJECT No.: 208526.00

SCALE: As shown

DRAWING No: 9

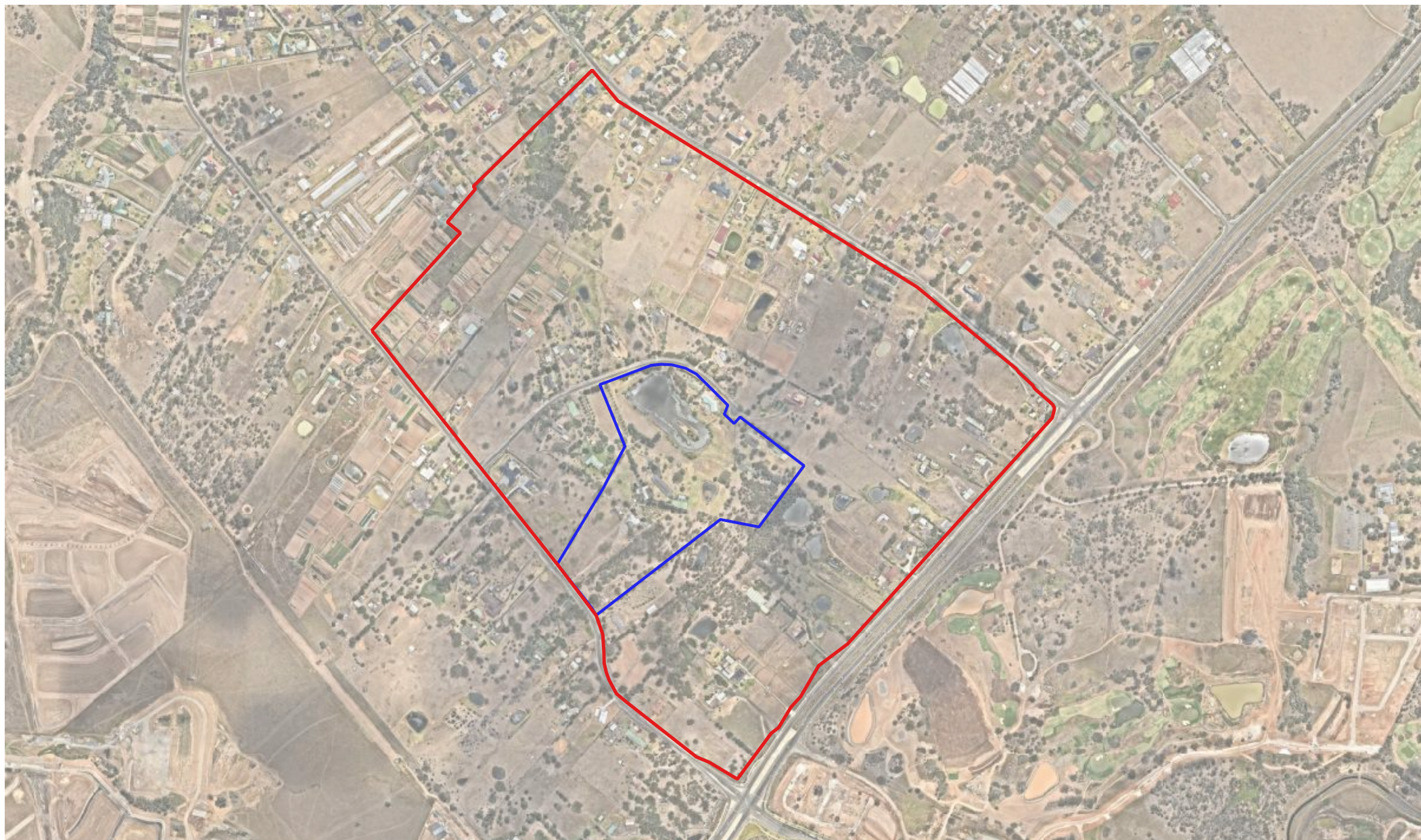
OFFICE: Macarthur

DRAWN BY: EME

DATE: 18 November 2021

REVISION: 1





**Douglas Partners**  
Geotechnics | Environment | Groundwater

**TITLE: Historical Aerial Image - 2017**  
**Preliminary Site Investigation (Contamination)**  
**Land East of Springfield Road, Catherine Field, NSW**



MGA

CLIENT: Urbanco Group Pty Limited

PROJECT No.: 208526.00

SCALE: As shown

DRAWING No: 10

OFFICE: Macarthur

DRAWN BY: EME

DATE: 18 November 2021

REVISION: 1



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## Appendix B

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### Public Registers Search Results

## Public registers

+ POEO Public Register

– Contaminated land record of notices

About the record of notices

List of notified sites

Tips for searching

Disclaimer

Dangerous goods licences

Pesticide licences

Radiation licences

[Home](#) [Public registers](#) [Contaminated land record of notices](#)

## Search results

Your search for: LGA: CAMDEN COUNCIL

did not find any records in our database.

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the [planning process](#).

More information about particular sites may be available from:

- The [POEO public register](#)
- The appropriate planning authority: for example, on a planning certificate issued by the local council under [section 149 of the Environmental Planning and Assessment Act](#).

See [What's in the record and What's not in the record](#).

If you want to know whether a specific site has been the subject of notices issued by the EPA under the CLM Act, we suggest that you search by Local Government Area only and carefully review the sites that are listed.

This public record provides information about sites regulated by the EPA under the Contaminated Land Management Act 1997, including sites currently and previously regulated under the Environmentally Hazardous Chemicals Act 1985. Your inquiry using the above search criteria has not matched any record of current or former regulation. You should consider searching again using different criteria. The fact that a site does not appear on the record does not necessarily mean that it is not affected by contamination. The site may have been notified to the EPA but not yet assessed, or contamination may be present but the site is not yet being regulated by the EPA. Further information about particular sites may be available from the appropriate planning authority, for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act. In addition the EPA may be regulating contamination at the site through a licence under the Protection of the Environment Operations Act 1997. You may wish to search the [POEO public register](#)

Search Again

Refine Search

### Search TIP

To search for a specific site, search by LGA (local government area) and carefully review all sites listed.

... [more search tips](#)

[Home](#) [Public registers](#) [POEO Public Register](#) [Licences, applications and notices search](#)

Licence summary

Search Again

Return to Previous Page

Summary Licence No: 1617

[View this licence](#) (PDF document 118 kb)

Licence holder:

Premises:

Administrative fee:

Licence status:

Activity type:

Licence review:

Pollution incident management plan:

THE RUGBY LEAGUE COUNTRY CLUB LTD

Trading as: CAMDEN VALLEY GOLF RESORT

THE RUGBY LEAGUE COUNTRY CLUB LTD

810 CAMDEN VALLEY WAY, CATHERINE FIELD, NSW, 2171

LGA: CAMDEN

Catchment: Hawkesbury

\$565.00

Surrendered

Sewage treatment processing by small plants

Complete date 18 Jun 2013

Complete date 18 Jun 2008

Complete date 18 Jun 2003

Due date 18 Jun 2018

No

Applications

Number	Application type	Current status	Date received
<a href="#">1525367</a>	s.80 Surrender of a Licence	Issued	03 May 2013

Notices

Number	Issue date	Notice type
<a href="#">1525367</a>	02 Oct 2014	s.80 Surrender of a Licence

Annual Returns

Start date	End date	Date received	Non-compliance	LBL data
01-Apr-2014	02-Oct-2014			<a href="#">Complete annual return via eConnect</a>
01-Apr-2013	31-Mar-2014	23-Sep-2014	No	Not available
01-Apr-2012	31-Mar-2013	23-Sep-2014	No	Not available
01-Apr-2011	31-Mar-2012	23-Sep-2014	No	Not available
01-Apr-2010	31-Mar-2011	01-Jun-2011	No	Not available
01-Apr-2009	31-Mar-2010	31-May-2010	No	Not available
01-Apr-2008	31-Mar-2009	27-May-2009	No	Not available
01-Apr-2007	31-Mar-2008	05-May-2008	No	Not available
01-Apr-2006	31-Mar-2007	31-May-2007	No	Not available
01-Apr-2005	31-Mar-2006	05-Sep-2006	<a href="#">yes</a>	Not available
01-Apr-2004	31-Mar-2005	09-May-2005	No	Not available
01-Apr-2003	31-Mar-2004	28-May-2004	No	Not available
01-Apr-2002	31-Mar-2003	12-May-2003	<a href="#">yes</a>	Not available
01-Apr-2001	31-Mar-2002	15-May-2002	No	Not available
01-Apr-2000	31-Mar-2001	31-Jul-2001	<a href="#">yes</a>	Not available

For business and industry ^

For local government ^

Contact us

131 555 (tel:131555)

Online (<https://yoursay.epa.nsw.gov.au/epa-website-feedback>)

[info@epa.nsw.gov.au](mailto:info@epa.nsw.gov.au) (mailto:[info@epa.nsw.gov.au](mailto:info@epa.nsw.gov.au))

EPA Office Locations (<https://www.epa.nsw.gov.au/about-us/contact-us/locations>)

Accessibility (<https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/help-index>)