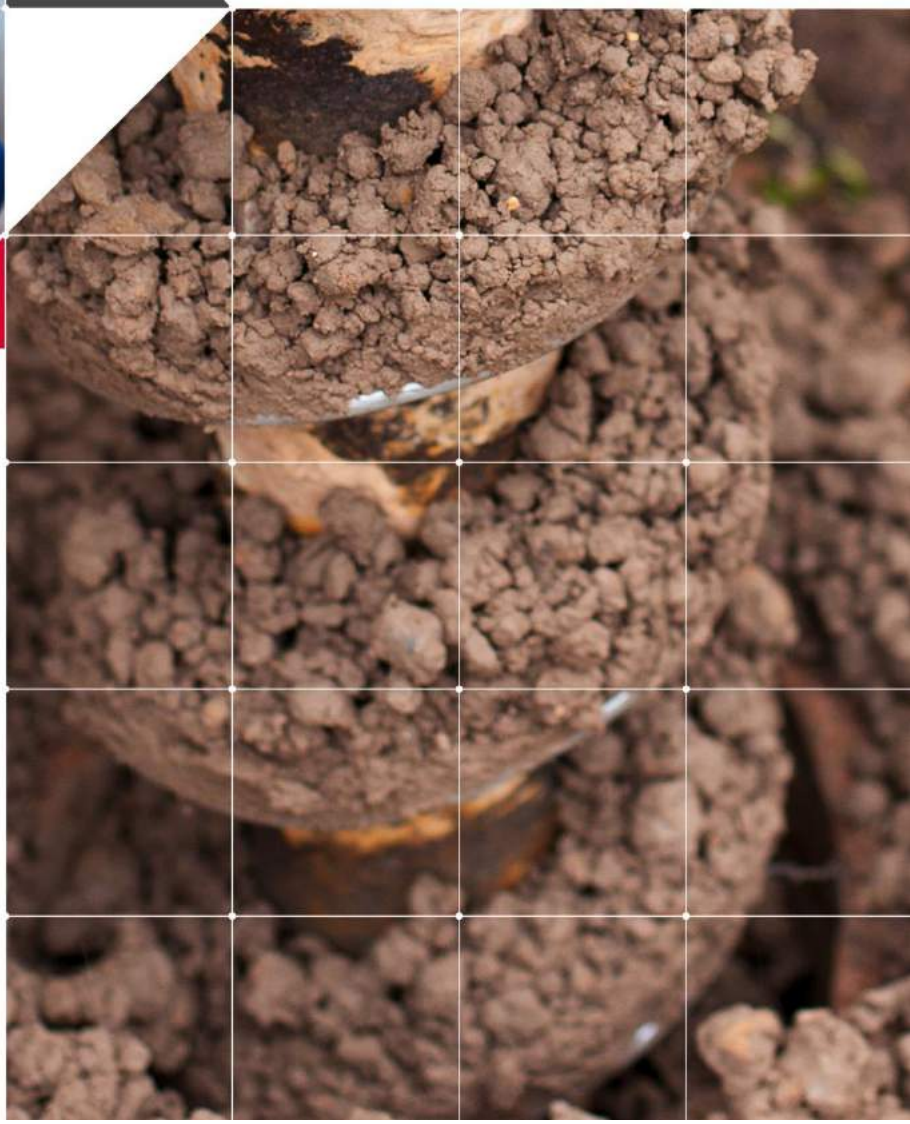
McMahon EARTH SCIENCE



PRELIMINARY SITE INVESTIGATION

77 OLD NARRANDERA ROAD & 9 RIVER ROAD GOBBAGOMBALIN NSW

JUNE 2019

REPORT NO. 5797

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Report type

Preliminary Site Investigation

Site address

77 Old Narrandera Road & 9 River Road Gobbagombalin NSW 2650

Report number

5797

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Executive summary

DM McMahon Pty Ltd (McMahon) conducted a Preliminary site Investigation (PSI) on approximately 60.8 hectares of land located at 77 Old Narrandera Road (Part Lot 3 DP 740219) and 9 River Road (Part Lot 51 DP 1106511), Gobbagombalin NSW, referred to as the site. The site (**Figure 2**) is currently agricultural/rural land in the northern extent of Wagga Wagga with agricultural and residential properties surrounding. The site is subject to a rezoning proposal to residential, the same as recently developed land to the north. The proposed future land use of the site will be residential, if the rezoning is successful.

The site incorporates five houses, numerous sheds and farming infrastructure. This PSI assesses the potential contamination risk to human health and/or the environment from historical and current potential contamination sources on the subject site and provides recommendations for further assessment and/or investigation.

Wagga Wagga City Council (WWCC) requested a PSI be carried out as part of the rezoning proposal, by reference to their policy document Contaminated Land Management Policy, WWCC (2017). This PSI assesses potential contamination risk to human health and/or the environment as a result of any previous or current contaminating activities on site and provides recommendations for site suitability and/or further assessment and/or investigation.

The scope and assessment objectives include the following:

- Research the historical use of the subject site and report on any matters that could pose risk to human health and/or the environment with reference to contamination;
- Conduct a site inspection and undertake enquiries to assess on and off site sources of potential contamination;
- Advise on the potential contamination risk and the need, or otherwise, for further investigation and/or assessment.

McMahon undertook site research and enquiries and found the historical land use as agricultural land since European settlement including broadacre farming, livestock grazing, and infrastructure built to support these activities.

A desktop investigation and a site inspection conducted on 31 May 2019 by McMahon consultants identified the following potential on site and off site contamination sources as follows:

1. **Fuel storage** – 5 x Above-ground Petroleum Storage System (APSS) varying from 1000L – 3000L with some surface staining nearby.
2. **Agricultural chemicals** – stored chemicals (<500L) and scattered empty containers
3. **Oil storage** – Stored (<1000L) and scattered empty containers with surface staining in some areas.
4. **Broadacre chemical application** – assumed application of herbicides and insecticides on arable land
5. **Livestock treatment activities** – stored chemicals (<100L), empty containers and sheep and cattle yards.
6. **Vehicle and engine works** – discarded oil filters (<10) in a fire pit and leaks from vehicles and machinery.
7. **Scrap and rubbish** – scattered stockpiles of fence posts, scrap metal, wire, corrugated iron, tyres, bricks, cement, timber, plastic, concrete, brick, etc.

All the identified contamination sources outlined above were noted to be of a point-source nature except for broadacre chemical application. Broadacre chemical application is a diffuse source of potential contamination based on widespread land application of these chemicals over cropping and pasture areas.

McMahon offer the following summary of the findings of the PSI:

- The data provided in this report is considered reliable to base the findings of the PSI on.
- The subject site in its current state has potential contamination sources including fuel storage, agricultural chemicals, oil storage, broadacre chemical application, livestock treatment activities, vehicle and engine works and scrap and rubbish. Soils on site have the potential to harbour contamination from these sources as observed from visual inspection.
- No quantitative information is available to determine the extent of potential contamination, as such further investigation and assessment as outlined below, is required to assist the preparation of detailed development plans prior to consent of civil works
- The site observations indicated that fuel and oil leakage was localised to storage areas, which can be readily remediated to an acceptable risk level for the most sensitive land use.
- The lack of quantitative contamination data is considered to not have preclude the rezoning of the subject site for residential purposes, however, will be necessary to assist in the preparation of detailed development plans prior to consent of civil works.
- The potential contamination sources, pathways and receptors have been identified along with the areas of concern, if unexpected findings occur in these areas then further assessment is recommended.

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1.0 Introduction

1.1 Background

At the request of Kyan Hyde of Salvestro Planning, a Preliminary Site Investigation (PSI) was carried out on the subject site at 77 Old Narrandera Road (Part Lot 3 DP 740219) and 9 River Road (Part Lot 51 DP 1106511), Gobbagombalin NSW. The site is currently agricultural/rural land in the northern extent of Wagga Wagga with agricultural and residential properties surrounding. The site is subject to a rezoning proposal to residential, the same as recently developed land to the north. The proposed future land use of the subject will be residential, if the rezoning proposal is successful. McMahon consultant Zach Bradley carried out a site inspection on 31 May 2019 with this report produced thereafter.

1.2 Scope of work

The scope of work included a desktop study, research, enquiries and site inspection of the subject site. The objective of this report, which dictates the scope of work, is to identify any past or present potentially contaminating activities and to provide a qualitative risk assessment of potential site contamination. This report aims to determine the subject site suitability or otherwise for rezoning, subdivision or development application (DA) approval regarding future development and the need for further investigation and/or assessment if required. Works were undertaken in accordance with the relevant guidelines, legislation and standards, namely:

- NSW OEH Contaminated sites Guidelines for Consultants Reporting on Contaminated sites (2011).
- State Environmental Planning Policy 55 – Remediation of Land (SEPP 55).
- National Environment Protection (Assessment of site Contamination) Measure (NEPM), (2013).

2.0 Site identification

Details of the subject site identification can be seen as follows, **Table 1**.

Table 1: *Site identification*

Identifier	Details
Address	77 Old Narrandera Road; and, 9 River Road
Real property description	Lot 3 DP 740219; and, Lot 51 DP 1106511
Centre co-ordinate	531201E 6117601N MGA GDA z55
Property size	Approximately 60.8ha
Owner	Multiple
Local Government Area	Wagga Wagga
Present use	Agricultural Land
Present zoning	RU1 – Primary Production
Proposed zoning	R1 – General Residential
Development Application Reference	Unknown

As follows are maps showing the location of the subject site in relation to the wider locale and the subject site lot boundary overlaid on a 2018 aerial photograph, **Figure 1** and **Figure 2**.

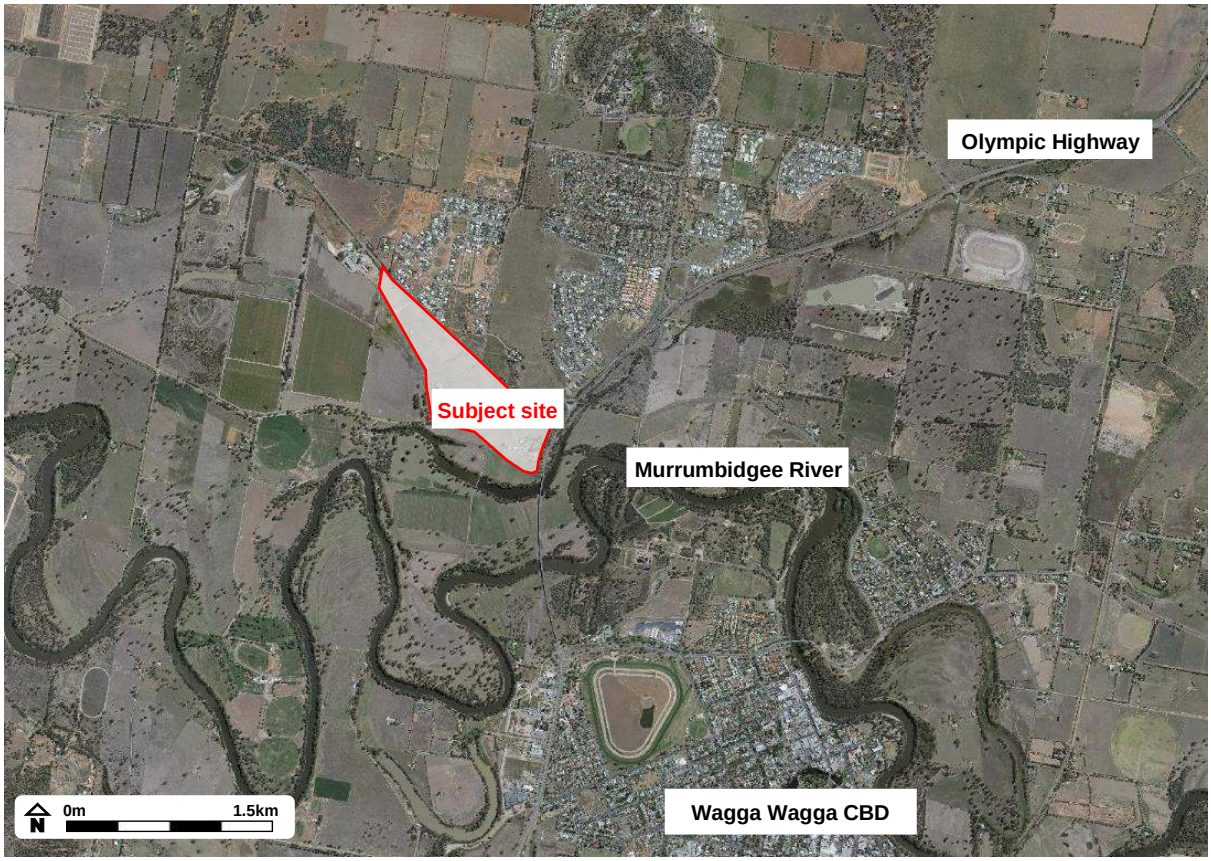

Figure 1: *Location of the subject site and wider locale*

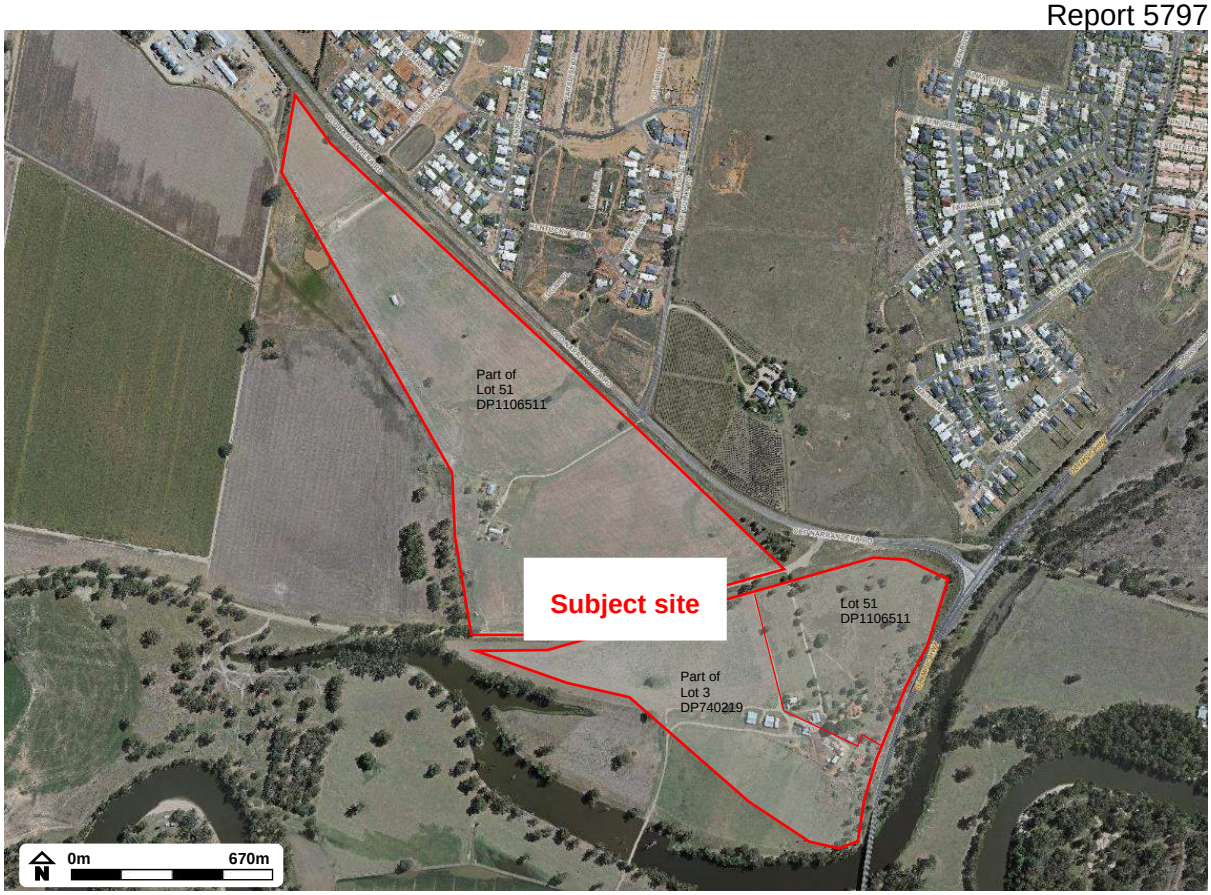

Figure 2: *Subject site map with lot numbers*

3.0 Site description

3.1 Zoning

The current zoning of the subject site is RU1 Primary Production. Nearby land uses of the relevant lots include R1, R5, RU1, E4 and SP2 (Olympic Highway), Wagga Wagga Local Environmental Plan (2012), **Figure 3**.

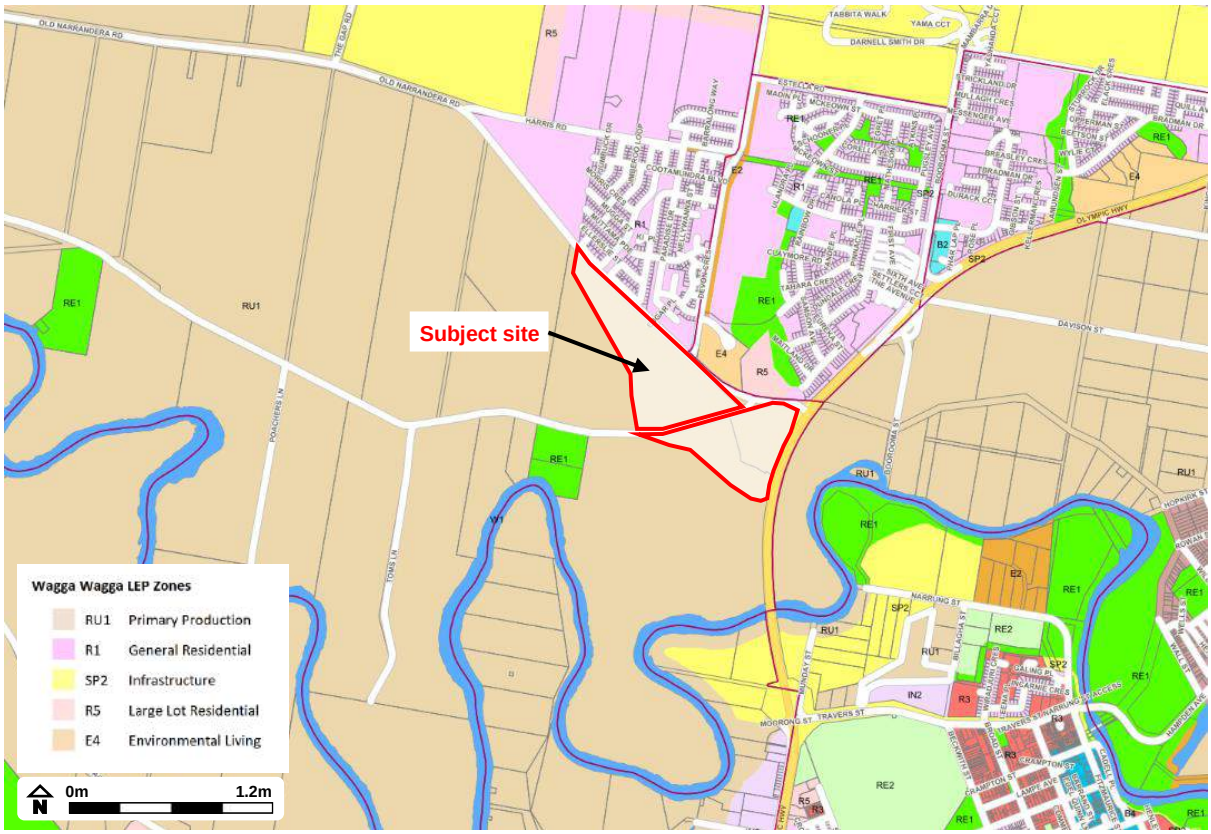

Figure 3: *Zoning map*

3.2 Land use and site history

The current and historical land use of the site is broad acre agriculture with winter cereal cropping, and sheep and cattle grazing.

The National Library of Australia: Trove Database and the Historical Land Records Viewer database was investigated for land use, ownership history, previous owner occupations and other notes of interest, **Table 2**. There are some gaps in the data due to the incomplete nature of historical documents, but the data demonstrates lot sizes are maintained throughout the ownership, which indicates congruency of land use. A copy of the historical records, where obtainable, can be seen in **Attachment B.**

Table 2: *Historical data*

Year	Data	Address	Owner (Occupation)	Notes/Details
1891	HLRV: Parish Map	**Lot 56**	Arthur Clout (Farmer)	158.5 acres
1891	HLRV: Parish Map	**Lot 57**	John Wells Sheppard (Share Farmer)	536.5 acres
1913	HLRV: Parish Map	**Lot 56**	Arthur Clout (Farmer)	158.5 acres
1913	HLRV: Parish Map	**Lot 57**	John Wells Sheppard (Share Farmer)	536.5 acres
1922	HLRV: Parish Map	**Lot 56**	Arthur Clout (Farmer)	158.5 acres
1922	HLRV: Parish Map	**Lot 57**	John Wells Sheppard (Share Farmer)	536.5 acres
1935	HLRV: Parish Map	**Lot 56 and 57**	The Commercial Bank of Australia Ltd.	-158.5 acres (56) and 536.5 acres (57)
1970	HLRV: Town Map	**Lot 56 and 57**	The Commercial Bank of Australia Ltd.	-158.5 acres (56) and 536.5 acres (57) -Dedication of land to be public road by WWCC, Gaz. 21.11.1997, Fol. 9417 (57)

Ownership details from 1970 to the current owners were not available at the time of reporting.

3.3 Review of aerial photographs

The subject site is currently an agricultural/rural property with five houses, numerous farm sheds and associated infrastructure. From research of council records, aerial photography and anecdotal evidence, the land has been used for agricultural/rural purposes from European settlement up until the 1980s or 1990s. The review of the available aerial photography supports the above, with agricultural land use maintained throughout with evidence of paddock sizes being maintained and agricultural infrastructure built. Aerial photographs can be seen in the **Attachment A** and a review of the available historical aerial photography is summarised as follows, **Table 3**.

Table 3: *Observations from historical aerial photography*

Year	Subject site	Surrounding land
1944	Structures exist on the “Gobbagumbalin” and “Gobbagumbalin East” properties at the following coordinates: -House 1 (531678E, 6117166N) -Stockyard shed (531643E, 6117169N) -Storage shed (531662E, 6117195N) -Medium colour shed (531660E, 6117212N) -Long shed A (531639E, 6117213N) -Garage shed (531688E, 6117163N) -Split shed (531670E, 6117167N) -Main house complex (531676E, 6117260N) -Stock shed C (531650E, 6117148N)	Surrounding land is predominately broad acre farmland. The Gobbagombalin Lagoon is 20 metres south of the subject site and the Murrumbidgee River is 600m to the south west. The Wagga Wagga township is across the Murrumbidgee and North Wagga Wagga is further west.
1971	The following structures have been built on the “Gobbagumbalin” and “Gobbagumbalin East” properties at the following coordinates: -South shed (531616E, 6117059N) -South pen shed A (531608E, 6117085N) -Medium colour shed (531660E, 6117212N) -South pen shed B (531592E, 6117090N)	Significant urban development has taken place in the Wagga Wagga and North Wagga Wagga townships.

	-Stock shed 1 (531610E, 6117150N) -Stock shed 2 (531619E, 6117152N) -Stock shed 3 (531555E, 6117160N) -Machinery shed 1 (531644E, 6117149N) -Shelter A (531672E, 6117149N) -House 2 (531680E, 6117191N) -Hay shed 1 (531468E, 6117237N) -Hay shed 2 (531505E, 6117232N) -Workshop shed (531600E, 6117243N) -Workshop shed (2) (531580E, 6117214N) -Demountable (531556E, 6117273N) Structures exist on the "Hawthorne' property at the following coordinates: -Hawthorne house (530946E, 6117689N) -Hawthorne garage (530959E, 6117664N) -Farm shed A (530958E, 6117608N) -Farm shed B (530928E, 6117618N) -Farm shed C (530970E, 6117651N) -Large farm shed (531000E, 6117679N) Skillion shed, Garage shed, split shed and Stock shed C have been removed. The main house complex and stockyard shed appears to have undergone renovative works.	
2007	South shed, South pen shed A, South pen shed B, Stock shed B, Stock shed C, House 2, Long shed B, farm shed B, farm shed C, Medium colour shed, Skillion A and Shelter A have been removed. The main house complex appears to have undergone significant renovations. House 1 appears to have been replace by a new house or undergone significant renovations. Numerous silos have been placed near the workshop shed A. Farm shed has been developed into Old dairy house (530959E, 6117608N) A number of water tanks can be seen across the subject site. Machinery shed 2 has been built next to Hay shed 2 at (531517E, 6117224N)	The new suburb of Estella has been built to the north, the Olympic Highway has been constructed on the eastern site boundary and the city of Wagga Wagga has undergone significant urban development.
2009	A small shelter has been built to the south of House 1 (531676E, 6117127N).	Further development has taken place to the south of Estella.
2012	No significant development has taken place on subject site.	Further development has taken place to the south of Estella.
2016	No significant development has taken place on subject site.	Further development has taken place to the south of Estella as well as the new suburb Estella Heights.
2018	No significant development has taken place on subject site	Further development of Estella Heights has taken place.

3.4 Development controls

EPA records

There are no notices or orders for the subject site and it is not declared to be significantly contaminated as defined by the CLM Act. There are two sites in Wagga Wagga that are reported under Part 5 section 60 of the CLM Act relating to two former gasworks sites located 2.5km south east and 4km south of the subject site. The search results can be seen in **Attachment C**.

Council records

Section 10.7 (2) planning certificates (previously Section 149) were requested from Council with results relevant to contamination on site and can be provided upon request. Key findings include the following statements relating to potential contamination on the land.

Council have insufficient information to identify significantly contaminated land within the meaning of the Contaminated Land Management Act 1997.

The site is not listed on Council's Register of potentially contaminated land. Property owners should conduct their own investigations to be satisfied that this property is not affected by land contamination.

The search identified that there are no critical habitat, conservation nor environment heritage areas on the land.

McMahon submitted to Council an Access to Council Information Informal Application Form on 10 April 2019 with a view to access any available records relating to any Council records relating to development or previous land use of the subject site. The results of the search were pending at the time of reporting with this report to be amended following the issuance of the findings.

SafeWork NSW records

A SafeWork NSW Hazardous Chemicals on Premises search was undertaken for the subject site. A search of the records held by SafeWork NSW has not located any records pertaining to the subject site.

3.5 Site condition

At the time of site inspection on 31 May 2019, pasture or early stage cereal crops covered most of the ground surface on site. Large and established eucalypts were scattered across the subject site with increased numbers around residences. Introduced trees and shrubs were evident around existing residencies as well as very large trees around the main house complex. Fencing varied in condition across the subject site with better conditions noted around residences.

3.6 Site improvements

There are multiple site improvements across the subject site including the following:

"Gobbagumbalin"

- Main house complex ~750m^2 (531676E, 6117260N)
- Workshop shed ~270m^2 (531600E, 6117243N)
- Storage shed ~120m^2 (531662E, 6117195N)
- Demountable ~150m^2 (531556E, 6117273N)
- Demountable garage ~38m^2 (531540E, 6117260N)

"Gobbagumbalin East"

- House (1) ~280m^2 (531678E, 6117166N)
- Hay shed 1 ~420m^2 (531468E, 6117237N)
- Hay shed 2 ~350m^2 (531505E, 6117232N)
- Workshop shed (2) ~250m^2 (531580E, 6117214N)
- Stockyard shed ~225m^2 (531643E, 6117169N)
- Machinery shed 1 ~130m^2 (531644E, 6117149N)

- Machinery shed 2 ~145m^2 (531517E, 6117224N)
- Chemical Storage ~30m^2 (531646E, 6117134N)
- Stock shed 1 ~20m^2 (531610E, 6117150N)
- Stock shed 2 ~15m^2 (531619E, 6117152N)
- Sheep and cattle yards

"Hawthorne"

- Hawthorne house ~275m^2 (530946E, 6117689N)
- Old dairy house ~230m^2 (530959E, 6117608N)
- Hawthorne garage ~110m^2 (530959E, 6117664N)
- Garden shed ~16m^2 (530941E, 6117593N)
- Large Farm shed ~170m^2 (531000E, 6117679N)

3.7 Environmental characteristics of the site and surrounds

A desktop review and investigation of the topography, hydrology, soil, lithology, geology and hydrogeology of the subject site has been undertaken and are as follows:

Topography

The WWCC online mapping platform indicates that the subject site resides at an elevation of approximately 180 - 204m AHD. The subject site landform pattern is described as rises and low hills upgradient of the Murrumbidgee River alluvial plain. The landform pattern has a low to very low relief with a gently to moderately inclined modal slope with fixed, erosional and widely spaced stream channels forming non-directional to convergent integrated tributary pattern. The geomorphological processes are continuously active, driven by precipitation agents to form an eroded mode of geomorphological activity across the subject site, **Figure 4**.

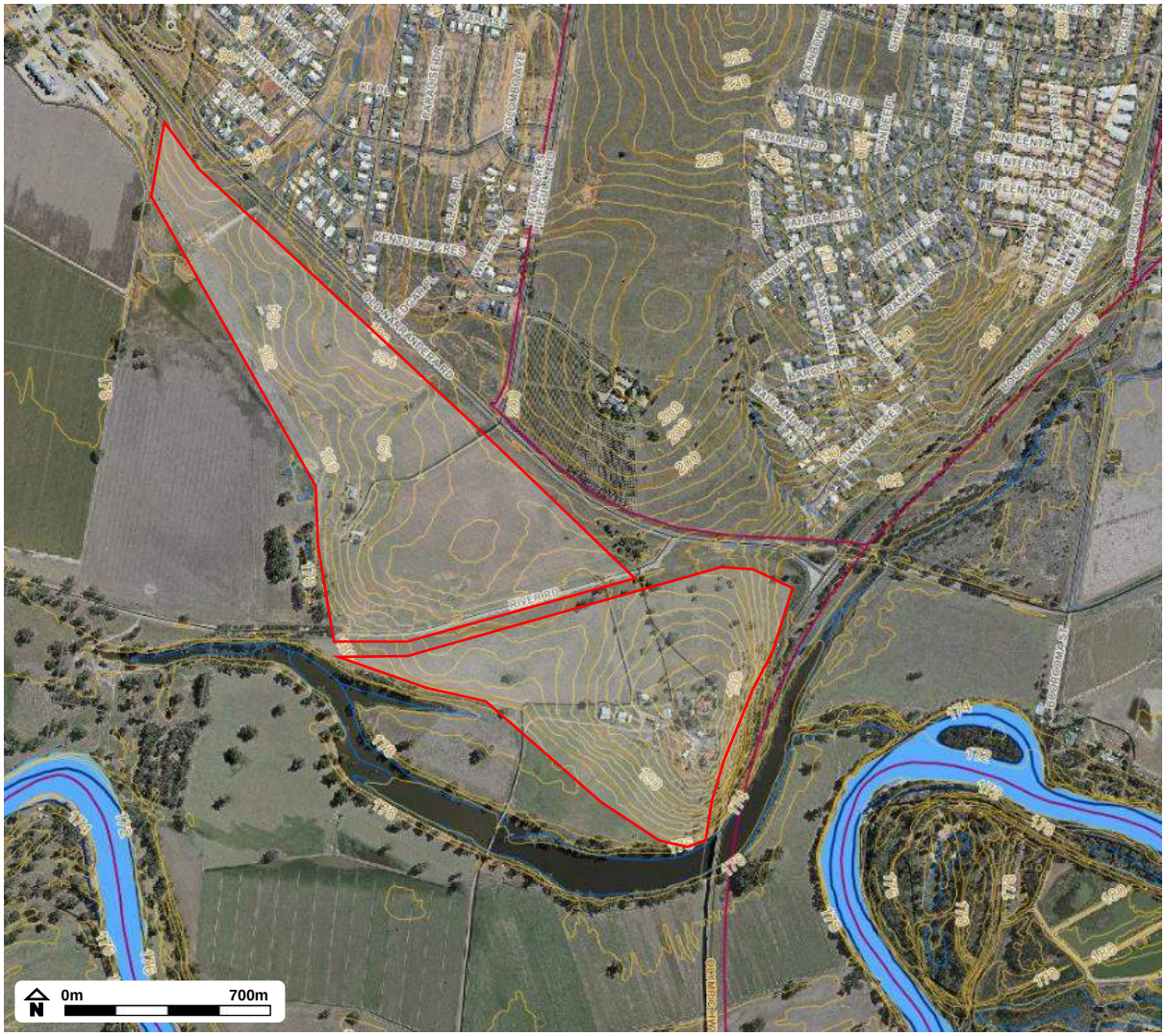

Figure 4: *Topographic map with subject site boundary*

Vegetation

At the time of site inspection, annual and perennial dry grass species occurred across most the ground surface as farm grazing land. Numerous plant community types exist on site due to the varied landscape with numerous tree species including Blakely's red gum, river red gum, white box, yellow box, black cypress pine box and white cypress pine. Grasses and shrubs were also varied from native and non-native pasture varieties across flatter farmland and more herbaceous tall plants along environmental corridors and boundaries.

Natural Resources Sensitivity

A search of the WWCC LEP (2010) found that the subject lots are in a natural resource sensitivity area for groundwater vulnerability along the southwestern subject site boundary and areas nearby to the Gobbagombalin lagoon. A small section of land nearby to the Gobbagombalin Lagoon is also identified as Riparian Land and waterways. Small maps areas of biodiversity occur around the homesteads and Olympic Highway border on the "Gobbagumbalin" and "Gobbagumbalin East" properties, as well as a small area of open paddock in the top north western corner of the subject site. No vulnerable land was identified on site from the WWCC natural resource sensitivity mapping (LEP 2010).

Hydrology

The subject site is part of the Murrumbidgee catchment under the *Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources 2012*. Surface water flows in all directions on site due to local crest formations, the majority of which flows towards the south and south west towards the Gobbagombalin Lagoon. One 1st order incipient ephemeral drainage line occurs on the subject site forming part of the widely spaced and non-directional/convergent tributary stream channel network. All surface water would eventually end up the Gobbagombalin Lagoon via surface flow or the Council stormwater system along the Olympic Highway or Old Narrandera Road. The lagoon periodically drains into the Murrumbidgee River (200m E, 600m S & 650m W) which flows west as a major tributary of the Murray River within the Murray–Darling basin.

There is limited run-on water to the subject site from neighbouring blocks owing to the local topography and Council stormwater system, **Figure 5**.

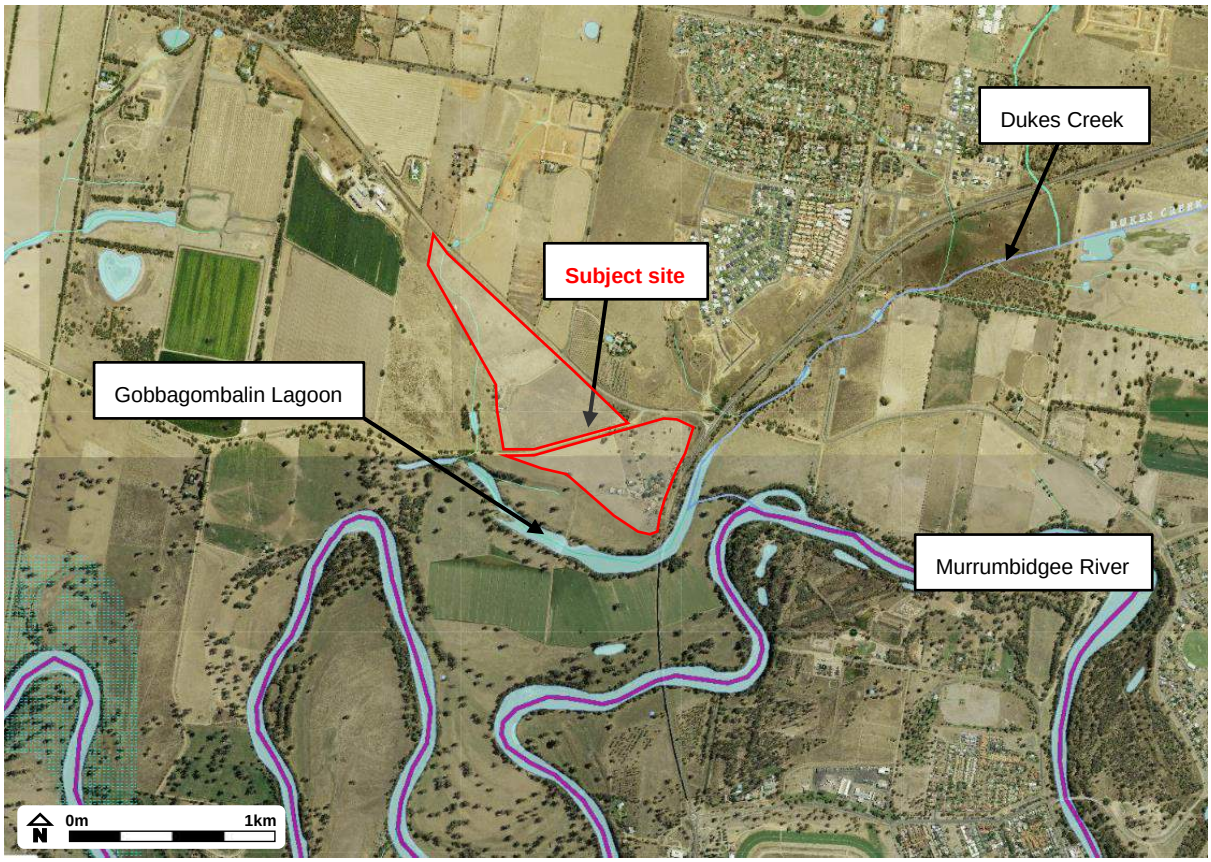

Figure 5: *Hydrology map*

Weather

The average rainfall for Wagga Wagga is approximately 526.8mm per annum, with the wettest months being October, June and July respectively. Annual mean evaporation for the region is 1716.3mm with mean daily evaporation ranges from 1.2mm in July to 9.2mm in June. Wagga Wagga is characterised by cold wet winters and hot dry summers with mean maximum temperatures ranging from 11.9ºC in July to 31.5 ºC in June and mean minimum temperatures ranging from 3.0ºC in July to 17.0ºC in February. Rainfall, temperature and evaporation data observed from Wagga Wagga Agricultural Institute site 73127 (www.bom.gov.au).

Soil & Landform

The subject site lies within the 3 mapping units **gl, cw** and **eb** from the NSW OEH Soil Landscapes of Wagga Wagga 1:100 000 Sheet (DLWC, 1997). The map unit **gl, cw** and **eb** is described as follows:

gl – Glenmornon (Vestigial landscape)

Landscape— ridges and crests of granite low hills. Local relief 30-100 m; slope gradients >15% (some >30%). Rock outcrop common. Extensively cleared tall woodland and open-forest.

Soils— shallow to moderately deep (40-100 cm) Mesotrophic Red Kandosols.

Limitations— steep slopes, common rock outcrop, high erosion hazard, high foundation hazard, strong acidity, low fertility (locally shallow and stony) soils.

cw – Currawarna (Aeolian landscape)

Landscape— small undulating rises and gently inclined benchs of windblown sands. Local relief mostly <15 m; slope gradients mostly

Soils— moderately deep (80 - 120 cm) Arenic Orthic Tenosols.

Limitations— moderate to high erosion hazard, foundation hazard (localised), moderate acidity, low fertility and low available water-holding capacity.

eb – East Bomen (Aeolian landscape)

Landscape— undulating rises of Silurian Wantabadgery Granodiorite. Local relief 15 - 40 m; slope gradients 3 - 10%. Broad crests and ridges, long waning slopes, and shallow drainage depressions. Almost completely cleared tall woodland.

Soils— shallow to moderately deep (40 - 150 cm) Eutrophic Red Dermosols on crests and ridges; deep (80 - 200 cm) Eutrophic Brown Dermosols on slopes; and moderately deep (80 – 150 cm) Eutrophic Brown Dermosols in drainage lines.

Limitations— moderate erosion hazard, moderately acid and locally shallow soil.

The soils on the subject site are typical of the East Bomen landscape underlain by Wantabadgery granodiorite and consisting of relatively deep dermosols with a moderate erosion hazard.

Geology & Regolith

The geology and regolith on the subject site include Silurian granites, mainly Wantabadgery Granodiorite and Burrandana Granite. Thick clay sequences, with significant windblown sands derived from the Murrumbidgee Floodplain.

The regolith on site is synonymous with the East Bomen soil landscape.

Hydrogeology

From the Geoscience Australia hydrogeology dataset, the groundwater beneath the subject site is within a semi-confined aquifer of deposited alluvium with relatively low localised infiltration rates of surface water, which is consistent with the characteristic of Lachlan Fold Belt aquifers. The primary recharge mechanism is surface infiltration from the highly fractured up-slope metasedimentary and volcanic geology with discharge and associated sub-laminar flow downslope of and underneath the subject site.

Groundwater in the broader underlying aquifer is likely to flow in a westerly direction, following the Murrumbidgee River valley. The hydraulic conductivity ranges up to around 50 metres per day at deeper depths through well sorted alluvium deposits of unconsolidated sand, silt, gravel and clays of the Cowra Formation. The aquifer body is underlain by bedrock acting as valley aquifer walls/floor and overlain by clays ranging in thickness from 5-15m. The Cowra Formation varies in thickness from 15 to 35m with the Lachlan Formation residing beneath, which has a thickness of up to 60 metres.

There are two registered groundwater bores on the subject site, and another bore within 500 meters of the site boundary, bore locations and details are recorded below, **Figure 6** and **Table 4**.

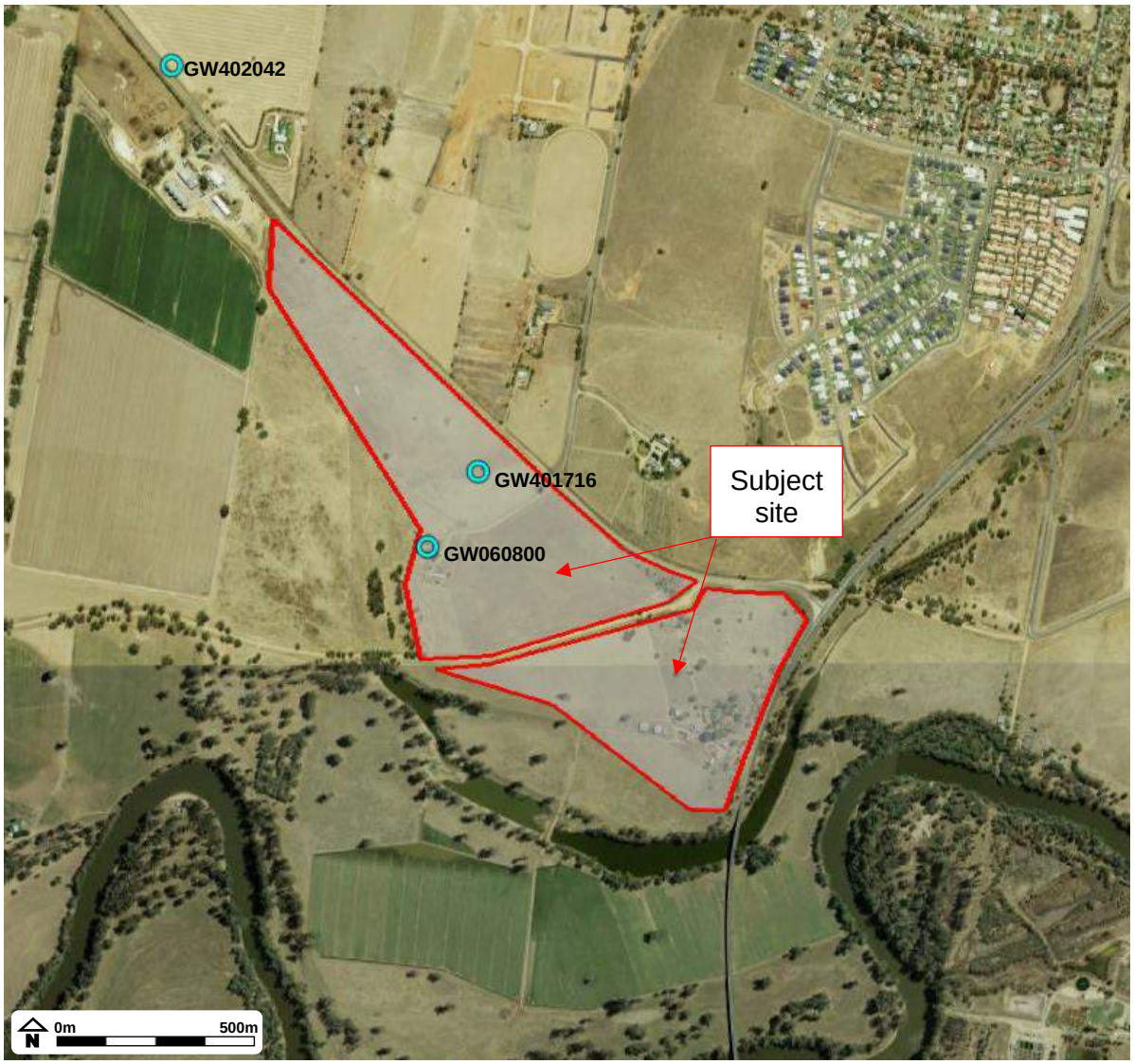

Figure 6: *Registered groundwater bores within a 500m radius of the subject site*

The details of the bore construction are shown as follows, **Table 4** (BOM, 2018).

Table 4: *Bore details*

Bore ID	Drilled depth (m)	Water bearing zone (m)	SWL (m)	Location compared to subject site	AHD	Purpose
GW401716	16	-	6.00	On site	191m	Stock/Domestic
GW060800	17	11.50-15.50	6.30	On site	184m	Stock/Domestic
GW402042	20	-	10.00	450m north west	188m	Stock/Domestic

Based on the above information, it is unlikely that groundwater would be encountered within the near surface and is expected to be at depths of at least 6m with lower permeability surface soils limiting the opportunity for infiltration and advection. The underlying aquifer is associated with the upper Cowra Formation on the lower parts of the site; however, with limited data and different landscapes and elevations across the subject site, groundwater depth is likely to be variable. Flow gradient in the mid Murrumbidgee alluvium on the lower lying areas of the site is likely to be in a general south westerly direction towards the river from the subject site, NSW DPI (2017), however this was not confirmed under this PSI.

3.8 Potential receptors and exposure pathways

Based on the potential future site use for residential and potential sources of contamination outlined in **Section 4**, potential receptors from contamination, if present, were considered to comprise of:

- Users of the subject site from vapour inhalation from potential volatile contaminants; and
- Shallow and intrusive contact from site users from:
  - Direct contact (dermal contact and ingestion) with potentially contaminated soil, dust and fibres; and
  - Vapour inhalation from potentially contaminated soil.
- Shallow and intrusive contact from maintenance and excavation by workers from:
  - Direct contact (dermal contact and ingestion) with potentially contaminated soil, dust and fibres; and vapour inhalation from potentially contaminated soil.
- Environmental parameters including nearby downstream aquatic ecosystems via:
  - Direct contact (dermal contact and ingestion) with contaminated soil, water and fibres.

3.9 Data gaps

During the desktop review of the subject site, there were some data gaps identified within the site history, previous reports and relevant information which include the following:

- Historical titles and ownership records, especially those preceding 1891 and post 1970
- Sewer network details
- Historical chemical storage uses and disposal documentation
- Details of chemical application and stock related chemical use
- Quantitative evidence of contaminant concentrations on the subject site

Data gaps were identified where information did not exist, was not available or had become misplaced over time as well as existing outside the clients recommended scope of work.

It is assessed that these data gaps do not significantly impact the findings of this report. Based on the above, the available data used for the collation of the site description is deemed suitable and reliable for the purposes of the PSI.

4.0 Site inspection

McMahon undertook a site inspection on 31 May 2019 as part of the PSI, with detail paid to the areas of interest identified from enquiries and research. From the site inspection and by reference to the SEPP 55 Guideline (1998) and NSW OEH (2011), the subject site has the following potential contamination risk from chemicals associated with the current and historical land use, **Figure 7**, **Figure 8** and **Table 5**. Site photographs can be seen in **Attachment E**.

The subject site as a whole is of concern due to broad scale application of agriculture-based chemicals. Further delineated areas of potential contamination include around the fuel tank onsite, as shown below, **Figures 7** and **Figure 8**.

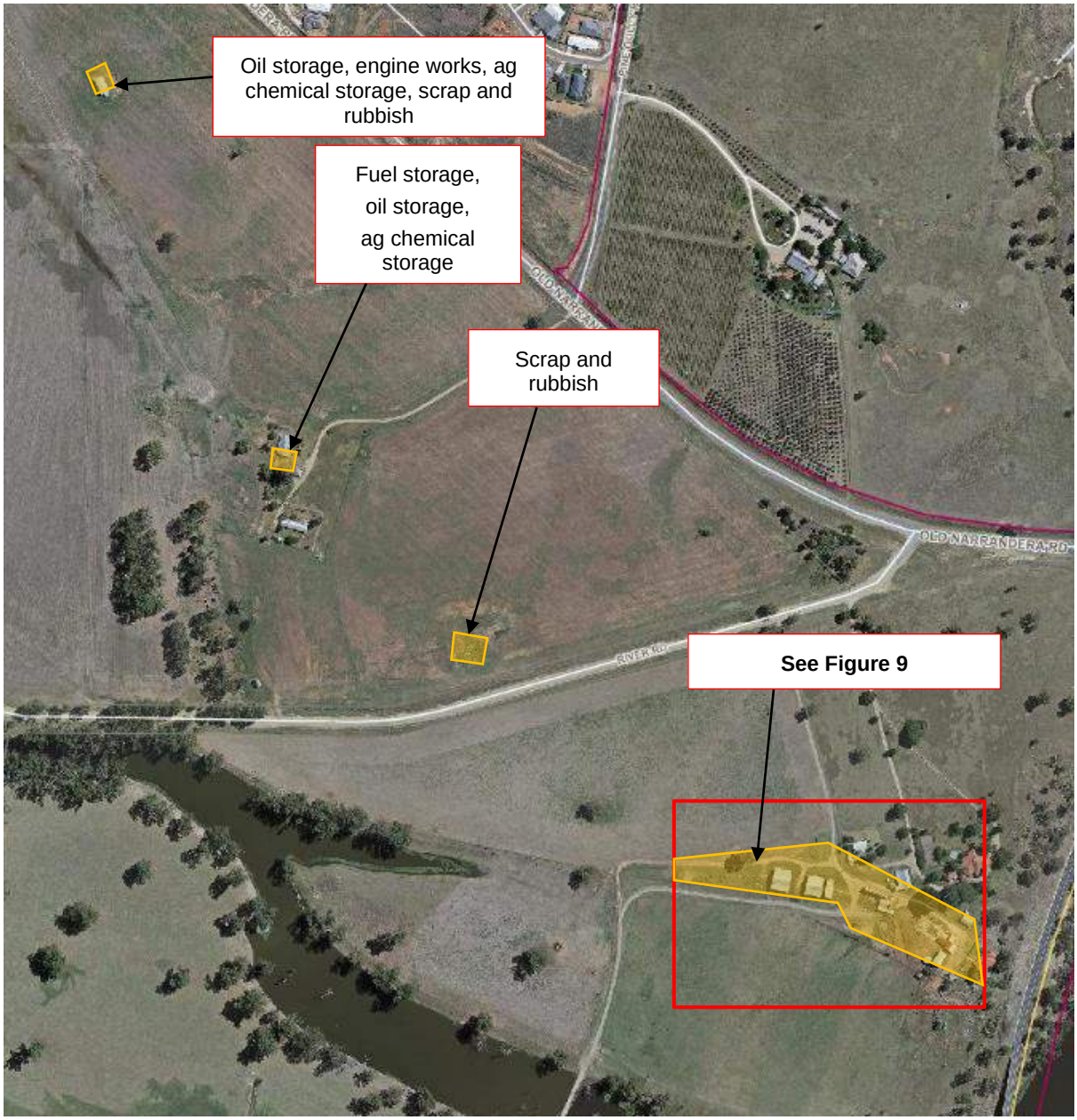

Figure 7: *Areas of concern*

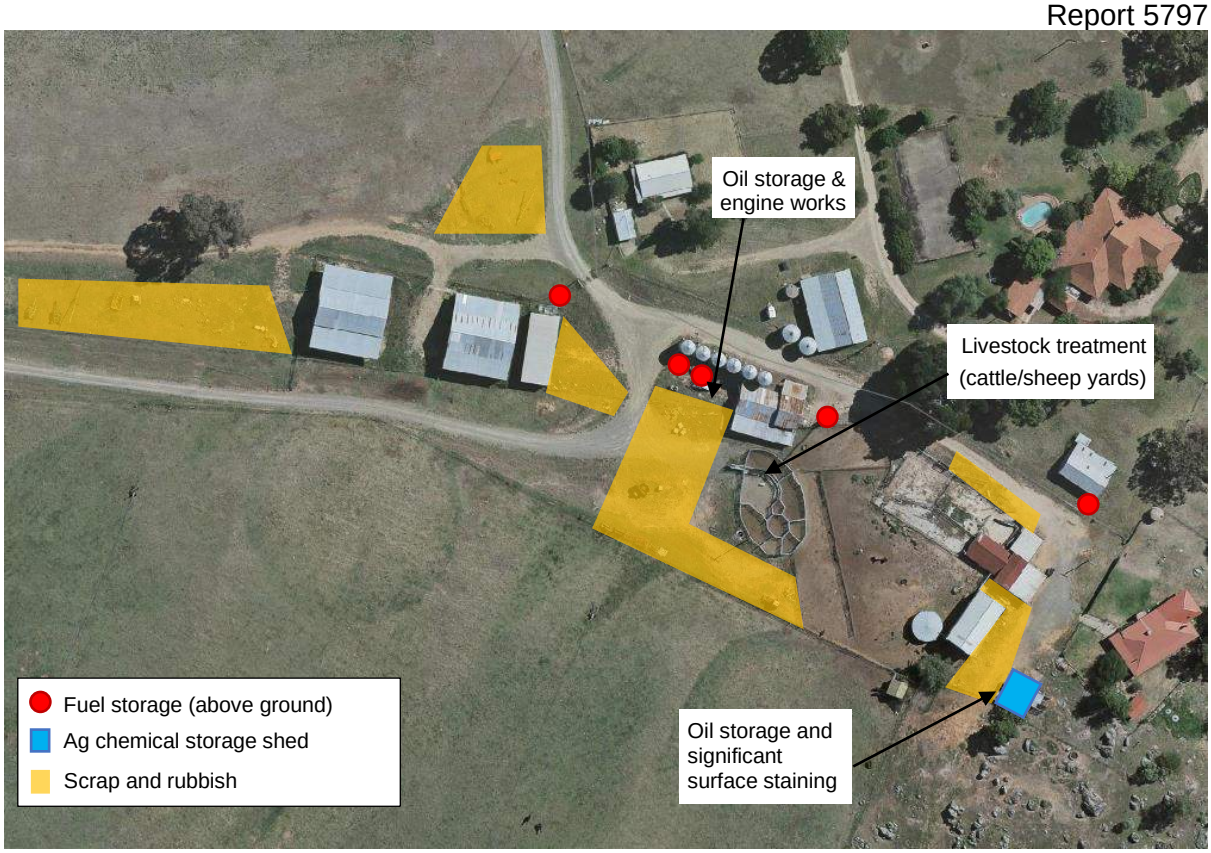

Figure 8: *Further areas of concern*

Table 5: *Contamination sources*

Industry	Type of potential contamination	Associated chemicals/contaminant
Fuel storage	Fuel, oils and metals	TPH, TRH, BTEXN, phenols, PCBs & Lead
Agricultural chemicals	Pesticides, Herbicides, Fungicides and Insecticides	Organochlorine (OC) and organophosphate (OP) pesticides
Oil storage	Fuel, oils and metals	TPH, TRH, BTEXN, phenols, PCBs & Lead
Broadacre chemical application	Pesticides, Herbicides, Fungicides and Insecticides	Organochlorine (OC) and organophosphate (OP) pesticides
Livestock treatment activities	Pesticides, Fungicides and Insecticides	Heavy metals and Organochlorine (OC) and organophosphate (OP) pesticides
Vehicle and engine works	Fuel, oils and metals	TPH, TRH, BTEXN, phenols, PCBs & Lead
Scrap and rubbish	Heavy metals, solvents, hazardous building materials, fuels and oils.	Metals, TPH, TRH, BTEXN, phenols & PCBs.

The primary mechanisms for point sources of potential contamination include fuel storage, agricultural chemicals, oil storage, livestock treatment activities, vehicle and engine works, and scrap and rubbish. The above contamination sources are considered to present top down distribution from spills and leakage. The diffuse source of contamination from broadacre chemical application would also be top down into underlying soils from direct land application.

4.1 Potentially affected media

The following potentially affected media have been considered as part of the initial Conceptual Site Model from the known and potential sources of contamination:

- Surface soils from the identified potential contamination sources and surface application of potential contaminants;
- Sub soils underneath the subject site, due to potential vertical and horizontal leaching of potential contaminants;
- Surface water down gradient of potentially contaminated areas from run off and interflow; and
- Groundwater contamination due to potential vertical migration of contaminants through the soil profile and regolith into underlying aquifers.

5.0 Initial Conceptual Site Model

The initial Conceptual Site Model has been developed in accordance with Section 4 of Schedule B2 of the NEPM (2013) and NSW OEH Guidelines for Consultants Reporting on Contaminated sites (2011).

Based on the findings of the subject site history, observations and environmental characteristics, it is concluded that there is risk of soil contamination from the identified areas of concern including:

- Fuel storage
- Agricultural chemicals
- Oil storage
- Broadacre chemical application
- Livestock treatment activities
- Vehicle and engine works
- Scrap and rubbish

The initial Conceptual Site Model in tabular format can be seen as follows, **Table 6**.

Table 6: *Initial Conceptual Site Model*

Known and Potential Contamination Sources	Impacted Media	Contaminant	Exposure pathway	Human & Ecological Receptors		Risk
				Current	*Future*	
Fuel storage	*Soil*	TPH, TRH, BTEXN, phenols, PCBs & lead	Dermal absorption Inhalation of vapours	Residents, employees	Residents, construction workers	Visible soil impacts, likely limited to surface soils, further investigation recommended.
	Surface waters		Ingestion (Drinking) Dermal absorption Bioaccumulation	Residents, Aquatic Ecosystems	Residents, construction workers, Aquatic Ecosystems	No surface water on subject site. Low risk to subject site users
	Groundwater		Ingestion (Drinking) Dermal absorption	Residents	Residents	Lack of pathways to groundwater from source on the subject site. Low risk.
	Vapour		Inhalation	Residents, employees	Residents, construction workers	Potential vapour risk if soils are found to harbour significant contamination.
Agricultural chemicals	*Soil*	Organochlorine (OC) and organophosphate (OP) pesticides	Dermal absorption Inhalation of vapours	Residents, employees	Residents, construction workers	Risk of contamination from spills and leaks, likely limited to surface soils. potential risk.
	Surface waters		Ingestion (Drinking) Dermal absorption Bioaccumulation	Residents, Aquatic Ecosystems	Residents, construction workers, Aquatic Ecosystems	No surface water on subject site. Low risk to subject site users
	Groundwater		Ingestion (Drinking) Dermal absorption	Residents	Residents	Lack of pathways to groundwater from source on the subject site. Low risk.
	Vapour		Inhalation	Residents, employees	Residents, construction workers	Potential vapour risk from solvents if soils are found to harbour significant contamination.
Oil storage	*Soil*	TPH, TRH, BTEXN, phenols, PCBs & Lead	Dermal absorption Inhalation of vapours	Residents, employees	Residents, construction workers	Visible soil impacts, likely limited to surface soils, further investigation recommended.
	Surface waters		Ingestion (Drinking) Dermal absorption Bioaccumulation	Residents, Aquatic Ecosystems	Residents, construction workers, Aquatic Ecosystems	No surface water on subject site. Low risk to subject site users
	Groundwater		Ingestion (Drinking) Dermal absorption	Residents	Residents	Lack of pathways to groundwater from source on the subject site. Low risk.
	Vapour		Inhalation	Residents, employees	Residents, construction workers	Potential vapour risk if soils are found to harbour significant contamination.
Broadacre chemical application	*Soil*	Organochlorine (OC) and organophosphate (OP) pesticides	Dermal absorption Inhalation of vapours	Residents, employees	Residents, construction workers	Low risk due to diffuse nature of application.

	Surface waters		Ingestion (Drinking) Dermal absorption Bioaccumulation	Residents, Aquatic Ecosystems	Residents, construction workers, Aquatic Ecosystems	No surface water on subject site. Low risk to subject site users
	Groundwater		Ingestion (Drinking) Dermal absorption	Residents	Residents	Low risk due to diffuse nature of application and unlikely migration of contaminants through soil profile into groundwater.
	Vapour		Inhalation	Residents, employees	Residents, construction workers	Low risk due to diffuse nature of application.
Livestock treatment activities	*Soil*	Heavy metals and Organochlorine (OC) and organophosphate (OP) pesticides	Dermal absorption Inhalation of vapours	Residents, employees	Residents, construction workers	Risk of contamination from spills and leaks. Low volumes and likely limited to surface soils if present. Low risk
	Surface waters		Ingestion (Drinking) Dermal absorption Bioaccumulation	Residents, Aquatic Ecosystems	Residents, construction workers, Aquatic Ecosystems	No surface water on subject site. Low risk to subject site users
	Groundwater		Ingestion (Drinking) Dermal absorption	Residents	Residents	Lack of pathways to groundwater from source on the subject site. Low risk.
	Vapour		Inhalation	Residents, employees	Residents, construction workers	Potential vapour risk if soils are found to harbour significant contamination.
Vehicle and engine works	*Soil*	TPH, TRH, BTEXN, phenols, PCBs & Lead	Dermal absorption Inhalation of vapours	Residents, employees	Residents, construction workers	Visible soil impacts, likely limited to surface soils, further investigation recommended.
	Surface waters		Ingestion (Drinking) Dermal absorption Bioaccumulation	Residents, Aquatic Ecosystems	Residents, construction workers, Aquatic Ecosystems	No surface water on subject site. Low risk to subject site users
	Groundwater		Ingestion (Drinking) Dermal absorption	Residents	Residents	Lack of pathways to groundwater from source on the subject site. Low risk.
	Vapour		Inhalation	Residents, employees	Residents, construction workers	Potential vapour risk if soils are found to harbour significant contamination.
Scrap and rubbish	*Soil*	Heavy metals, TPH, TRH, BTEXN, and Organochlorine (OC) and organophosphate (OP) pesticides	Dermal absorption Inhalation of vapours	Residents, employees	Residents, construction workers	Low risk of leaching of contaminants into soil profile.
	Surface waters		Ingestion (Drinking) Dermal absorption Bioaccumulation	Residents, Aquatic Ecosystems	Residents, construction workers, Aquatic Ecosystems	No surface water on subject site. Low risk to subject site users
	Groundwater		Ingestion (Drinking) Dermal absorption	Residents	Residents	Lack of pathways to groundwater from source on the subject site. Low risk.
	Vapour		Inhalation	Residents, employees	Residents, construction workers	Potential vapour risk if soils are found to harbour significant contamination.

6.0 Basis for assessment criteria

The following are to be adopted as per the Tier 1 Assessment Criteria as part of a future DSI. Residential criteria were chosen based on the proposed land rezoning application, which is from rural to general residential.

6.1 Soil

NEPM (2013) Health Based Investigation Level (HILs A)

HILs are Tier 1 risk based generic assessment criteria used for the assessment of potential risks to human health from chronic exposure to contaminants in soil. They are intentionally conservative and based on a reasonable worst-case scenario for generic land use settings including Residential (HILs A/B), Open Space / Recreational (HILs C) and Commercial Industrial (HILs D).

- HILs A soil assessment criteria are adopted based on the future land use.

NEPM (2013) Management Limits for TPH fractions F1-F4 in soil (MLs)

Management limits are relevant for sites where spills and leaks of petroleum compounds may have occurred. They are applied after consideration of relevant ESLs and HSLs.

- Management limits A for Residential A sites are adopted based on the historical and proposed land use.

6.2 Soil vapour

NEPM (2013) Health Screening Levels (HSLs A)

HSLs are Tier 1 risk based generic assessment criteria used for the assessment of potential risks to human health from chronic inhalation exposure of petroleum vapours emanating off petroleum contaminated soils (Vapour Risk). They are intentionally conservative and based on a reasonable worst-case scenario for generic soil types, contamination depth and land use settings including Residential (HSLs A/B), Open Space / Recreational (HSLs C) and Commercial Industrial (HSLs D).

- HSLs A for Residential sites are adopted based on the proposed land use.

Field screening using a PID can also be undertaken with readings used as an odour threshold for an action level for immediate or short-term response.

- PID readings on sampled soil material can be compared to background levels in free air space to determine potential impacts. Readings with less than a ±10ppm difference compared to background levels would be considered negligible based on previous consultant experience and similar investigation findings.

6.3 Ecological

Ecological Screening Levels for urban residential and public open space sites were considered warranted based on the current and proposed use of the subject site as well as nearby off-site ecological receptors that include downgradient water drainages and catchments.

- ESLs urban residential and public open space sites are adopted based on the current and proposed land use.

NEPM (2013) Added Contaminant Limits (ACLs) and Ecological Investigation Levels (EILs)

Added Contaminant Limits (ACLs) are the added concentration of a contaminant above which further investigation and evaluation is required regarding the impact on ecological values. EILs

have been developed for selected metals and organic substances and are applicable for assessing risk to terrestrial ecosystems.

- ACL and EIL soil assessment criteria are adopted based on the future land use.

6.4 Groundwater

NEPM Groundwater Investigation Levels (GILs)

GILs are adopted from the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018*. They are not acceptance criteria, rather they are used to trigger further consideration of groundwater contamination when GILs are exceeded.

Fresh Water GILs should be considered based on the following:

- Two groundwater bores exist on the site and are expected to be used for stock and domestic purposes. If significant soil contamination is found in the area, then groundwater analysis should be considered.

NEPM Groundwater Health Screening Levels (GHSLs A)

GHSLs are Tier 1 risk based generic assessment criteria used for the assessment of potential risks to human health from chronic inhalation exposure to petroleum vapours emanating off petroleum contaminated groundwater (Vapour Risk). They are intentionally conservative and based on a reasonable worst-case scenario for generic soil types, contamination depth and land use settings including Residential (GHSLs A/B), Open Space / Recreational (GHSLs C) and Commercial Industrial (GHSLs D).

GHSLs should be considered based on the following:

- Two groundwater bores exist on the site and are expected to be used for stock and domestic purposes. If significant soil contamination is found in the area, then groundwater analysis should be considered.

6.5 Asbestos Containing Material (ACM) in soil assessment criteria

NEPM Asbestos Health Screening Levels (HSLs A)

If bonded ACM fragments, friable asbestos or asbestos fines in soil and/or fill are noted during further excavation, then health screening levels for asbestos are warranted due to the possibility of asbestos in fill material. If this screening level is applied the following criteria is to be adopted for residential sites, NEPM (2013).

Health Screening Levels for Asbestos in Soils

- 0.01% for bonded ACM fragments.
- 0.001% for friable asbestos and asbestos fines materials
- No visible asbestos material to be found in surface soils.

7.0 Conclusions and recommendations

The Preliminary Site Investigation has been undertaken in accordance with the relevant guidelines, legislation and standards, namely:

- NSW OEH Contaminated sites Guidelines for Consultants Reporting on Contaminated sites (2011);
- State Environmental Planning Policy 55 – Remediation of Land (SEPP 55); and
- National Environment Protection (Assessment of site Contamination) Measure (NEPM), (2013).

McMahon offer the following summary of the findings of the PSI:

- The data provided in this report is considered reliable to base the findings of the PSI on.
- The subject site in its current state has potential contamination sources including fuel storage, agricultural chemicals, oil storage, broadacre chemical application, livestock treatment activities, vehicle and engine works and scrap and rubbish. Soils on site have the potential to harbour contamination from these sources as observed from visual inspection.
- No quantitative information is available to determine the extent of potential contamination, as such further investigation and assessment as outlined below, is required to assist the preparation of detailed development plans prior to consent of civil works
- The site observations indicated that fuel and oil leakage was localised to storage areas, which can be readily remediated to an acceptable risk level for the most sensitive land use.
- The lack of quantitative contamination data is considered to not have preclude the rezoning of the subject site for residential purposes, however, will be necessary to assist in the preparation of detailed development plans prior to consent of civil works.
- The potential contamination sources, pathways and receptors have been identified along with the areas of concern, if unexpected findings occur in these areas then further assessment is recommended.

8.0 Disclaimer

The information contained in this report has been extracted from field and laboratory sources believed to be reliable and accurate. DM McMahon Pty Ltd nor the Certified site Contamination Specialist assume any responsibility for the misinterpretation of information supplied in this report. The accuracy and reliability of recommendations identified in this report need to be evaluated with due care according to individual circumstances. It should be noted that the recommendations and findings in this report are based solely upon the said site location and the ground level conditions at the time of testing. The results of the said investigations undertaken are an overall representation of the conditions encountered. The properties of the soil within the location may change due to variations in ground conditions outside of the tested area. The author has no control or liability over site variability that may warrant further investigation that may lead to significant design changes.

Temporal and spatial limitations to the CSM and recommendations of this report apply, if a change of land use is noted between the time of writing this report and the proposed development then further assessment may need to be carried out.

9.0 Notice of Copyright

10.0 References

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11.0 Attachments

Attachments proceeding this document:

Attachments	Details
A. Aerial photographs	6 pages
B. Historical information	11 pages
C. EPA search results	1 page
D. SafeWork search results	1 page
E. Site photographs	15 pages

McMahon EARTH SCIENCE

DOCUMENT ATTACHMENTS

REPORT 5797

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Wagga Wagga NSW 2650

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www.dmmcmahon.com.au

Attachment A : *Aerial photographs*


2018
Estella
Harris Rd
Pine Gully Rd
River Rd
Olympic Hwy
Boorooma St
Narrung
Image © 2019 DigitalGlobe


2016
Estella
Harris Rd
Pine Gully Rd
River Rd
Olympic Hwy
Boorooma St
Narrung
Image © 2019 DigitalGlobe


2012
Estella
Harris Rd
Old Narrandera Rd
Pine Gully Rd
Alma Crescent
Rainbow Dr
Olympic Hwy
River Rd
Boorooma St
Narrung
Image © 2019 DigitalGlobe


2009
Estella
Harris Rd
Old Narrandera Rd
Pine Gully Rd
Alma Crescent
Rainbow Dr
Olympic Hwy
River Rd
Boorooma St
Narrung
Image © 2019 DigitalGlobe


2007
Harris Rd
Old Narrandera Rd
Pine Gully Rd
Rainbow Dr
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Olympic Hwy
River Rd
Boorooma St
Image © 2019 DigitalGlobe
Image NASA


1971


1971


1971


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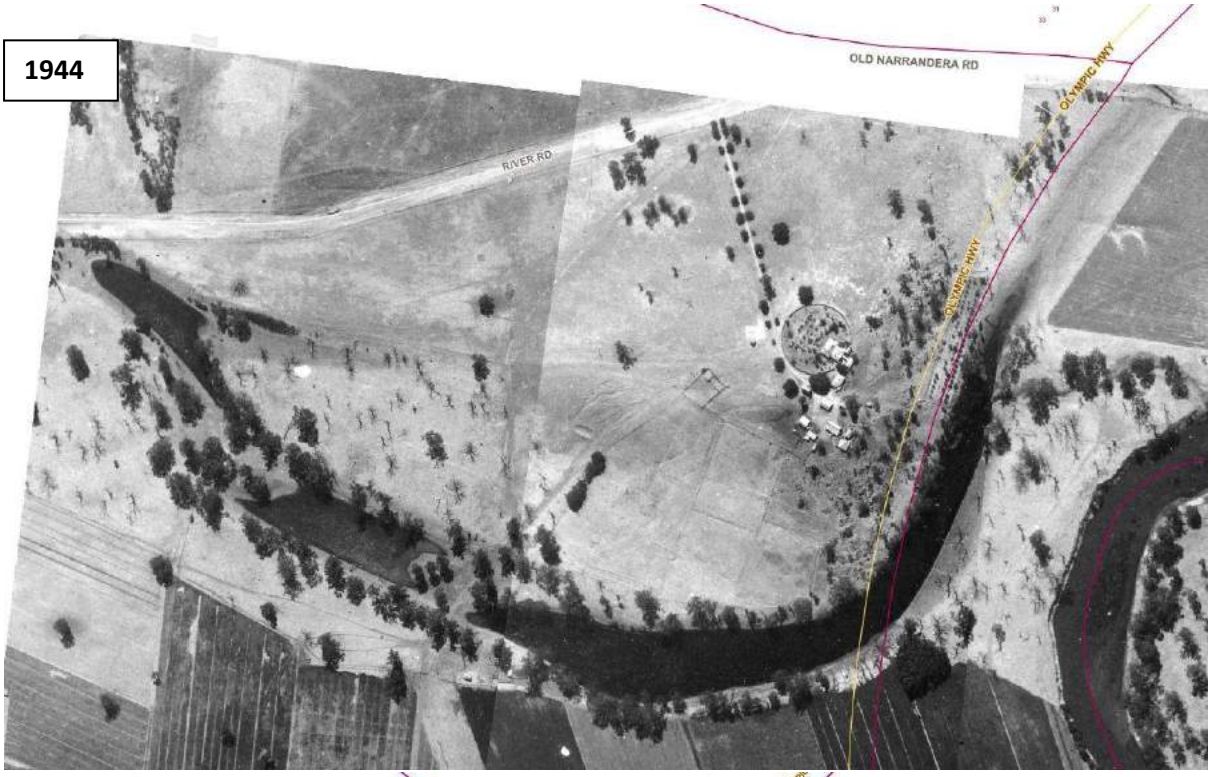
1944



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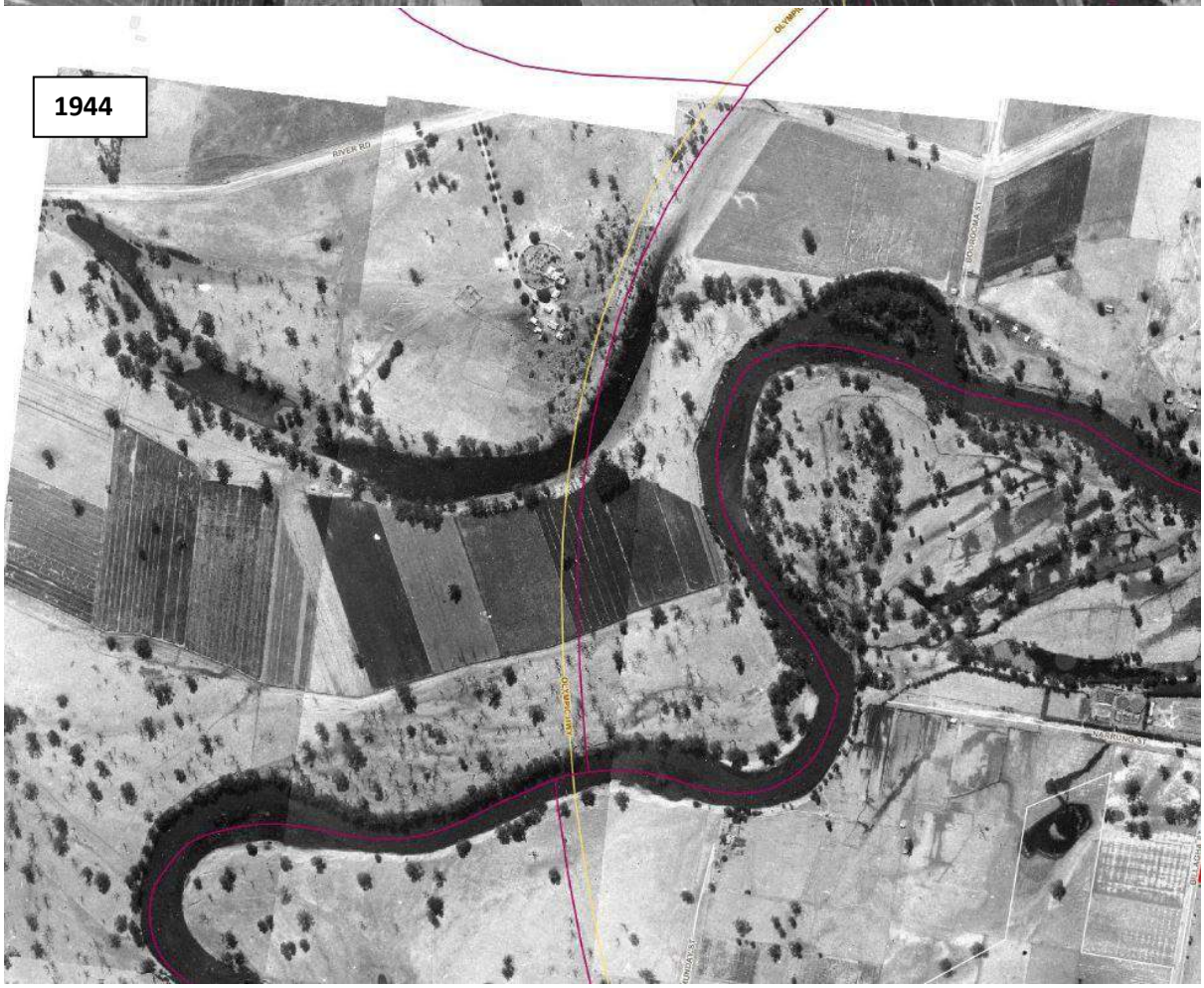

Attachment B : *Historical information*

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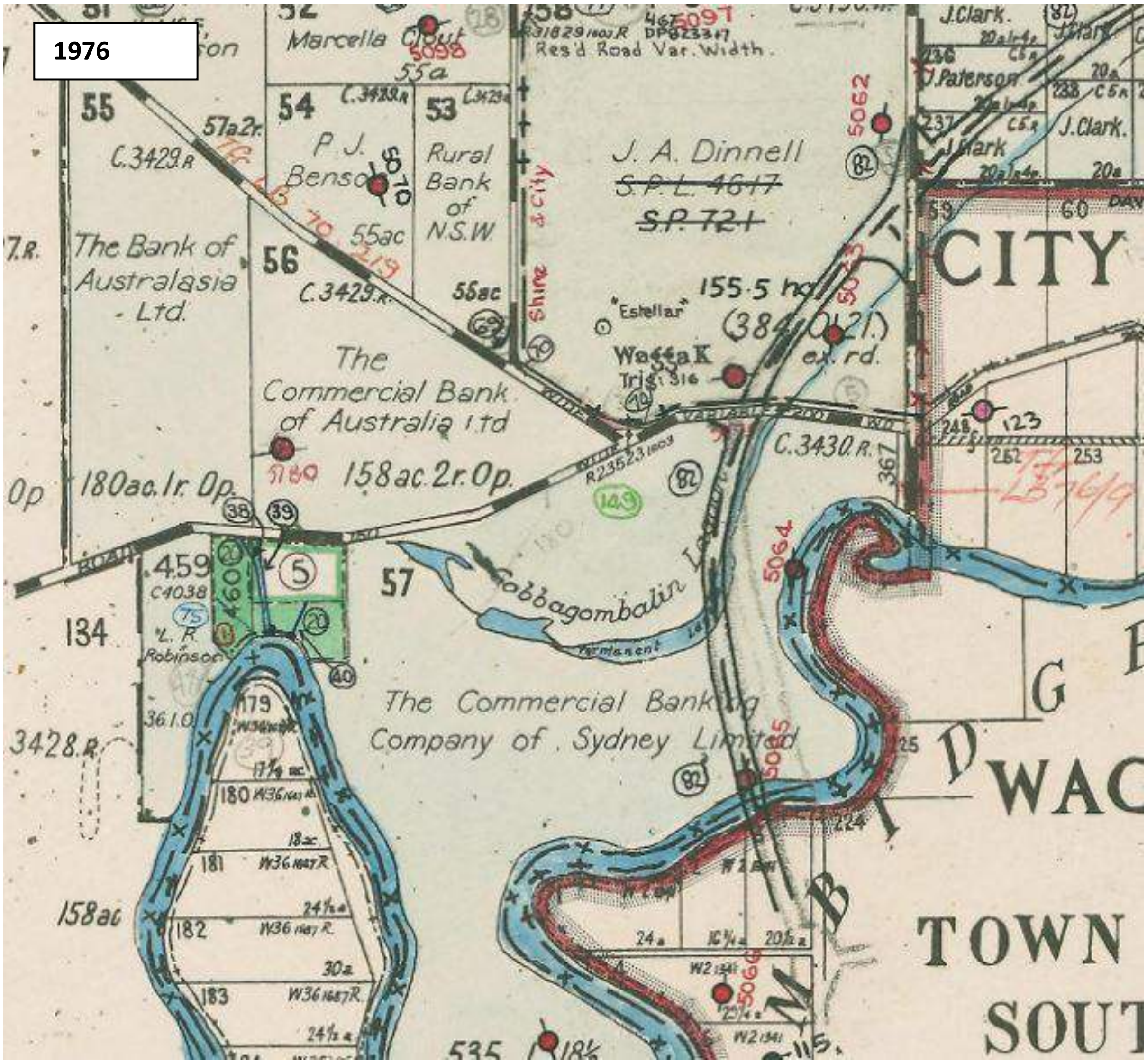

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J. A. Dinnell
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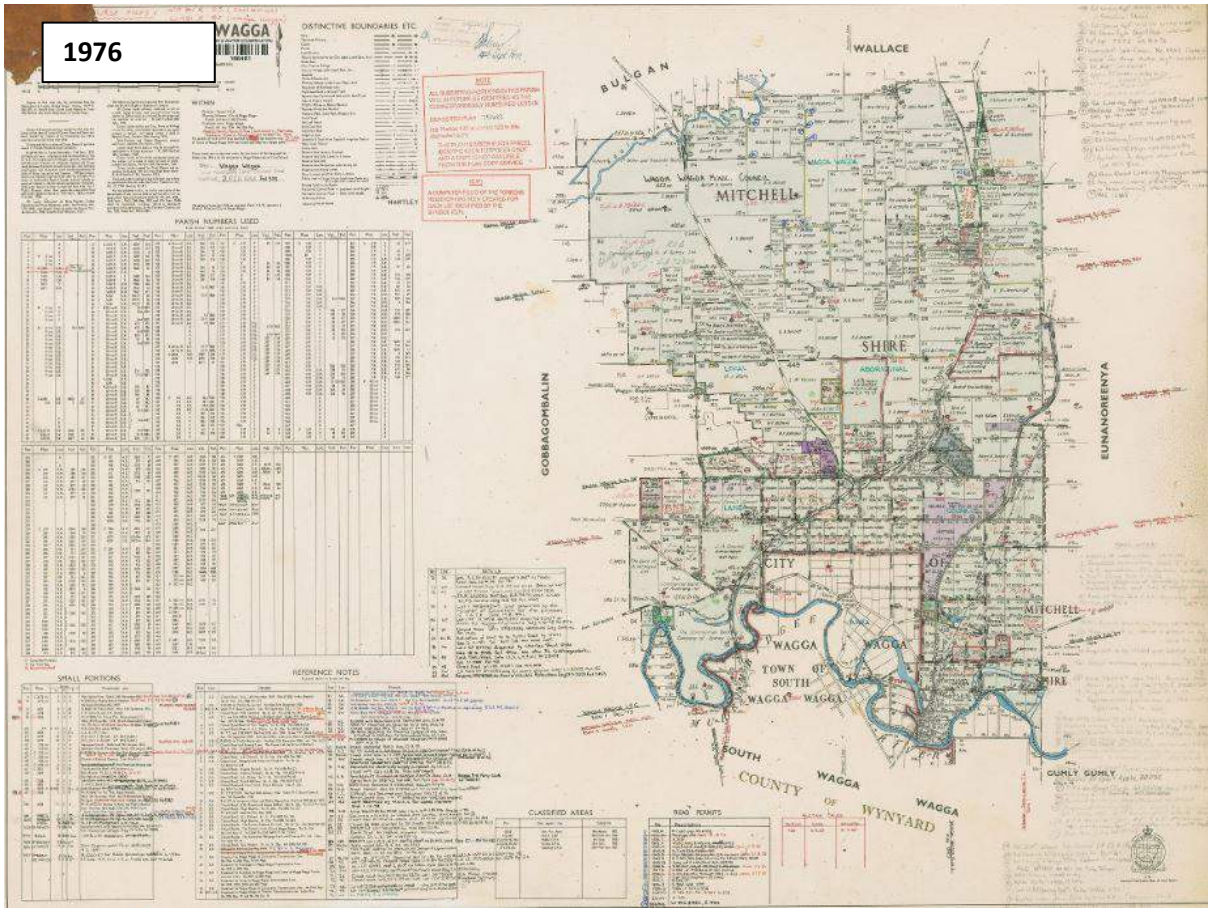
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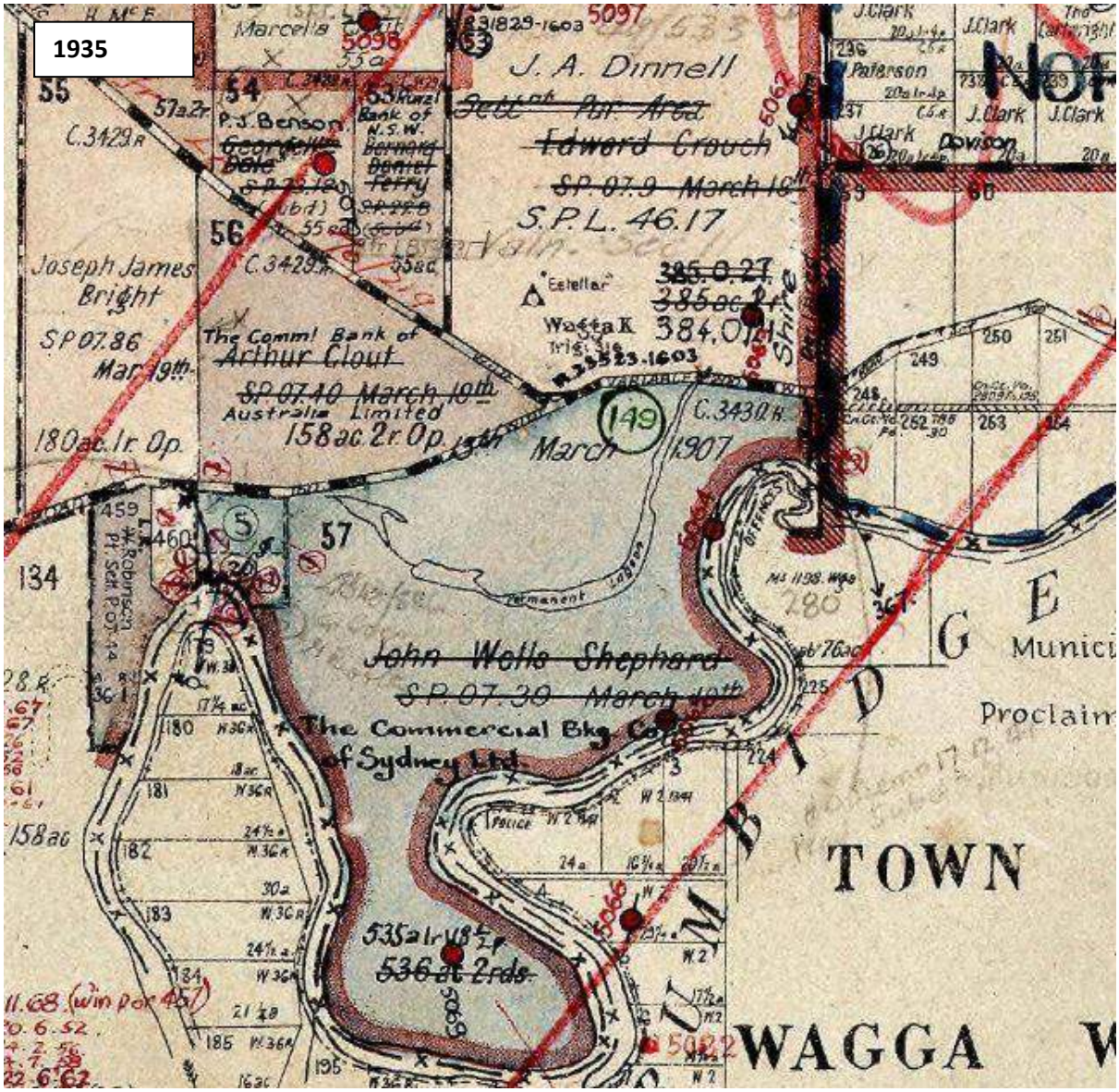
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Arthur Clout
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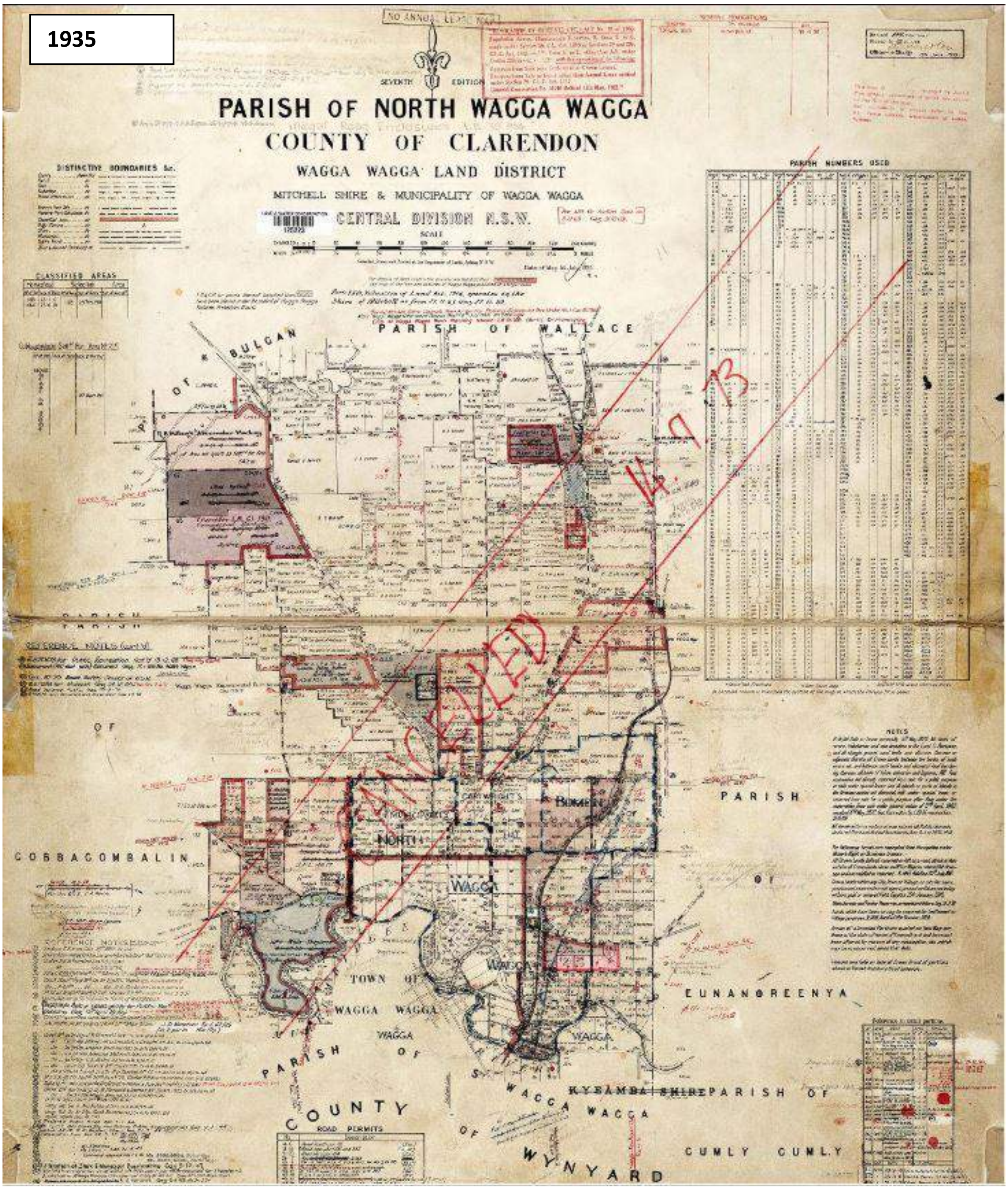
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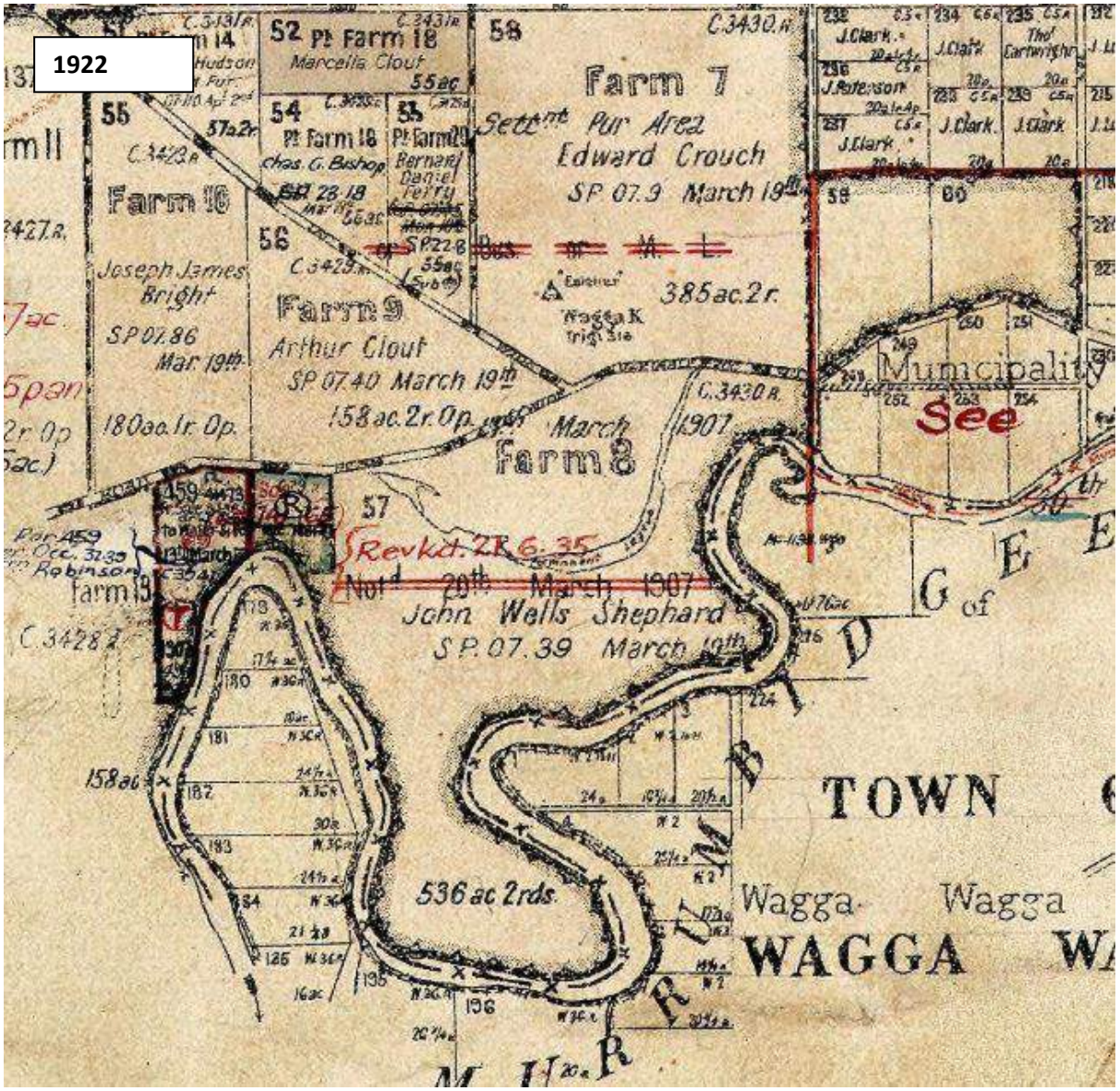
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Arthur Clout
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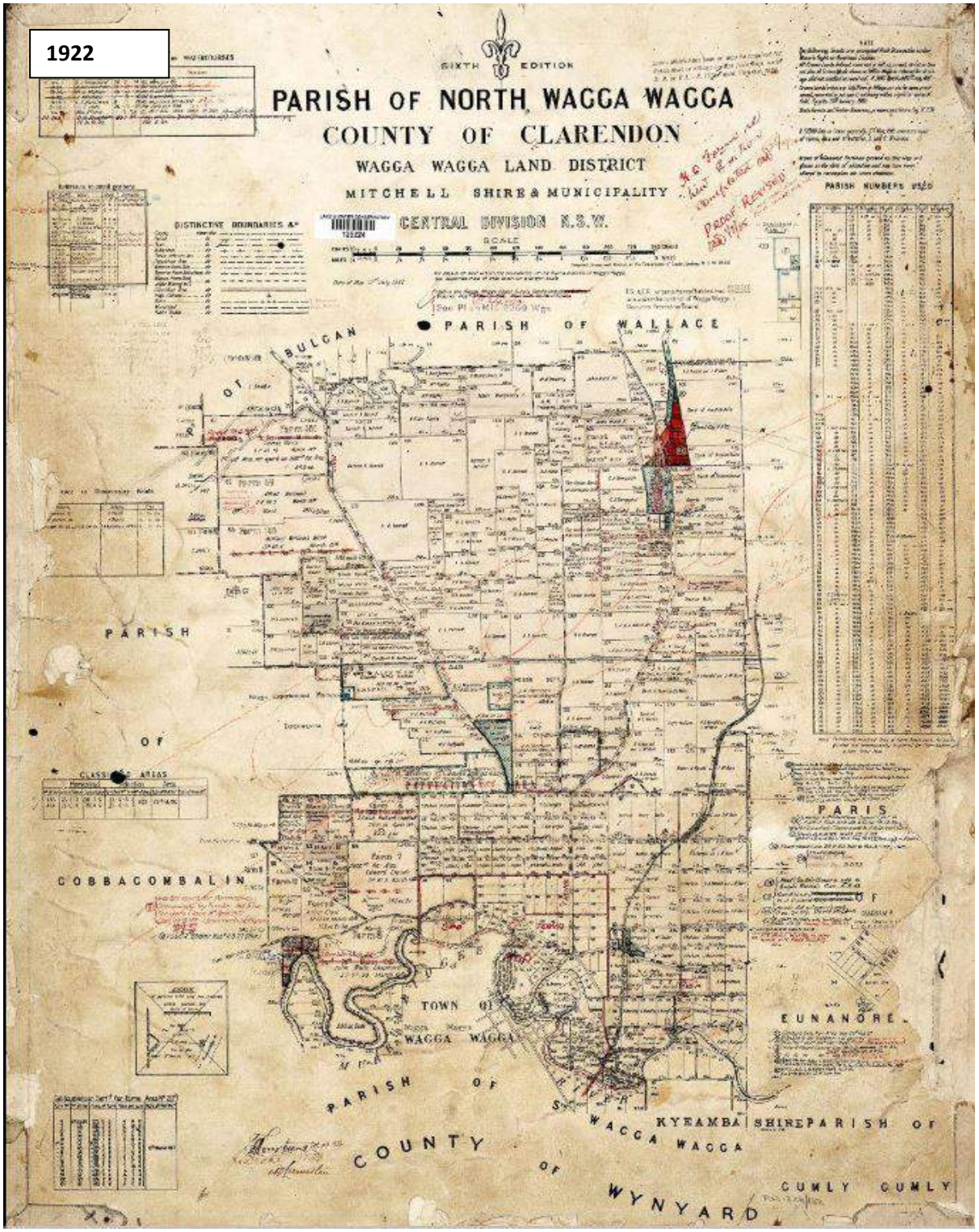
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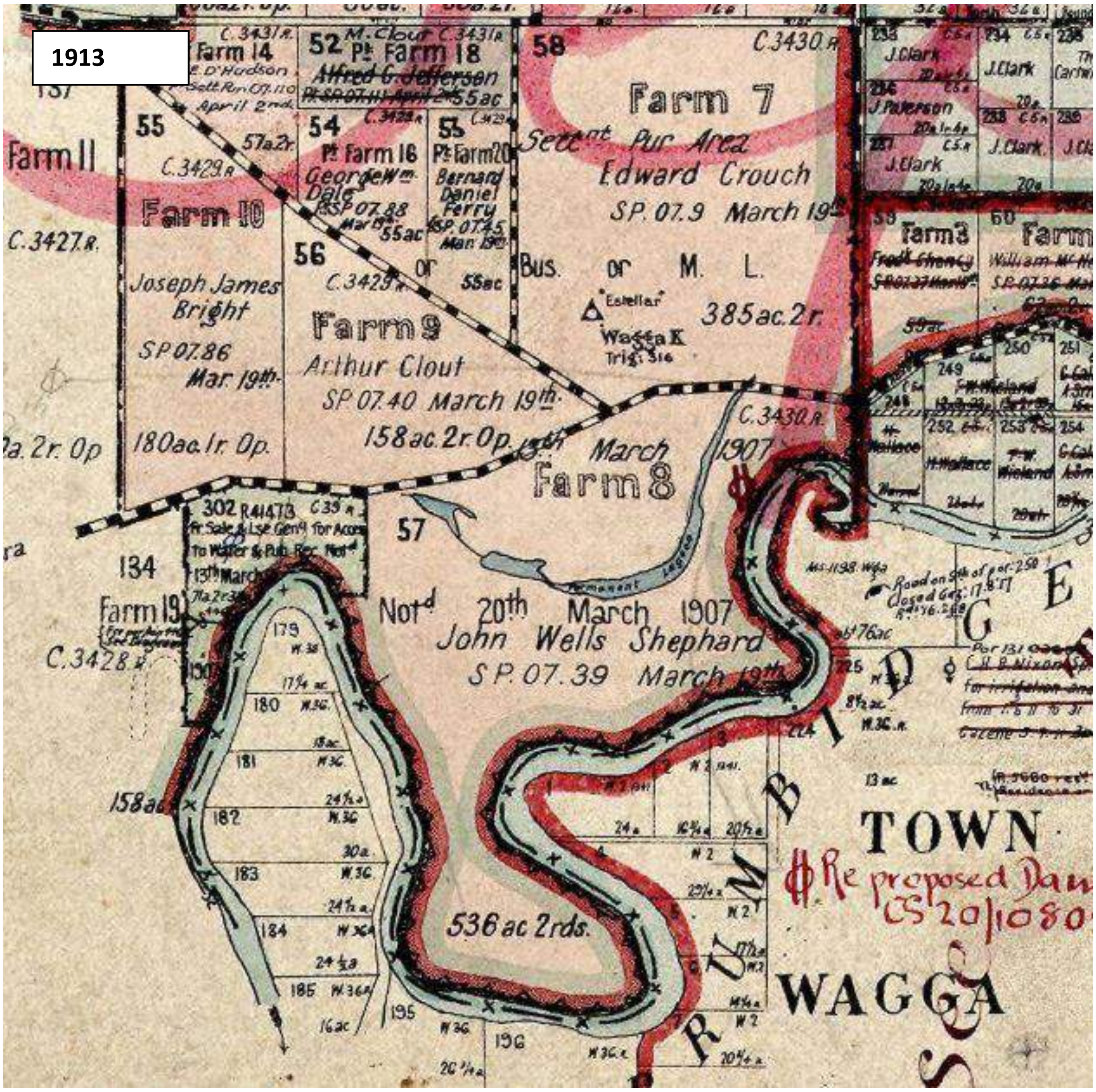
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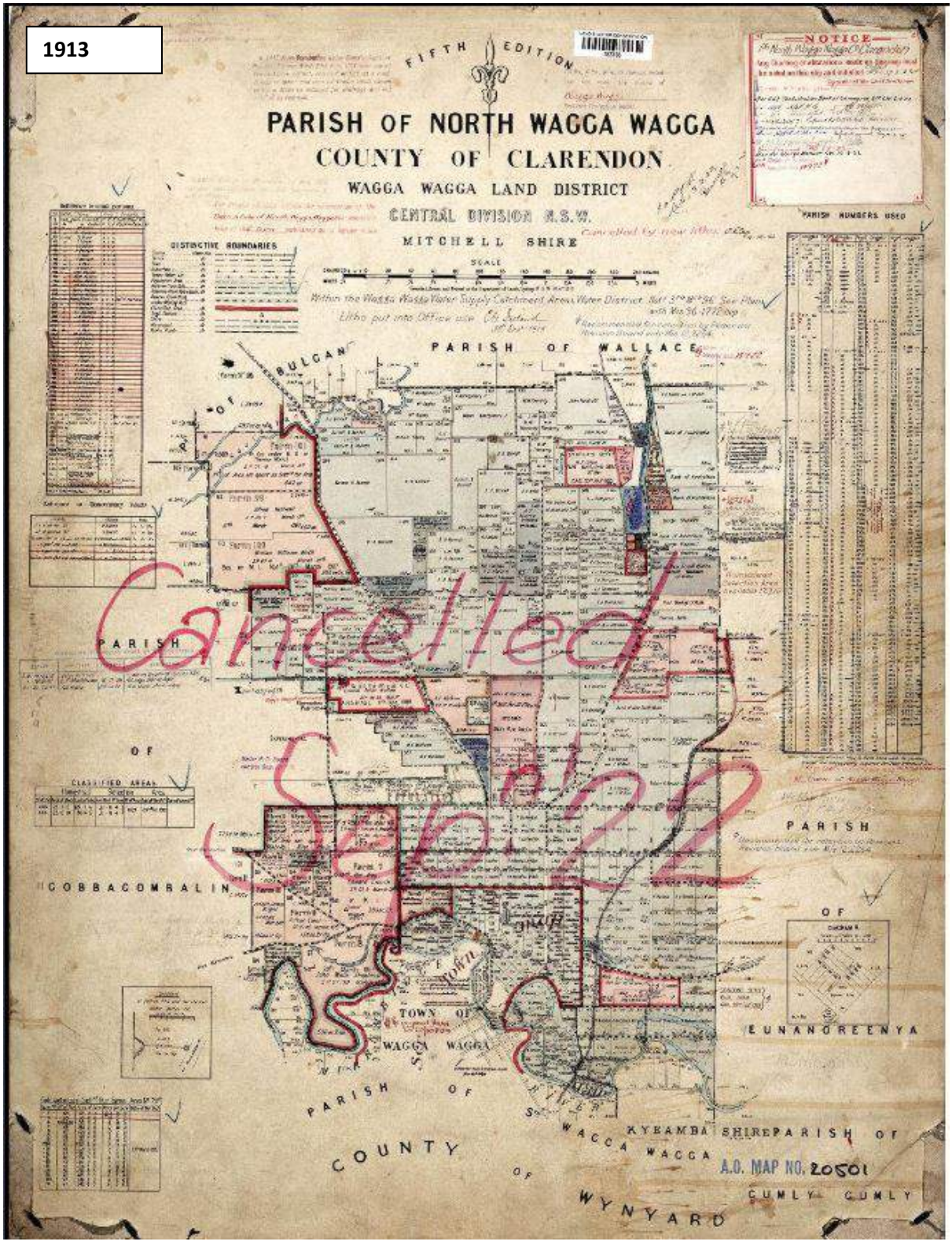
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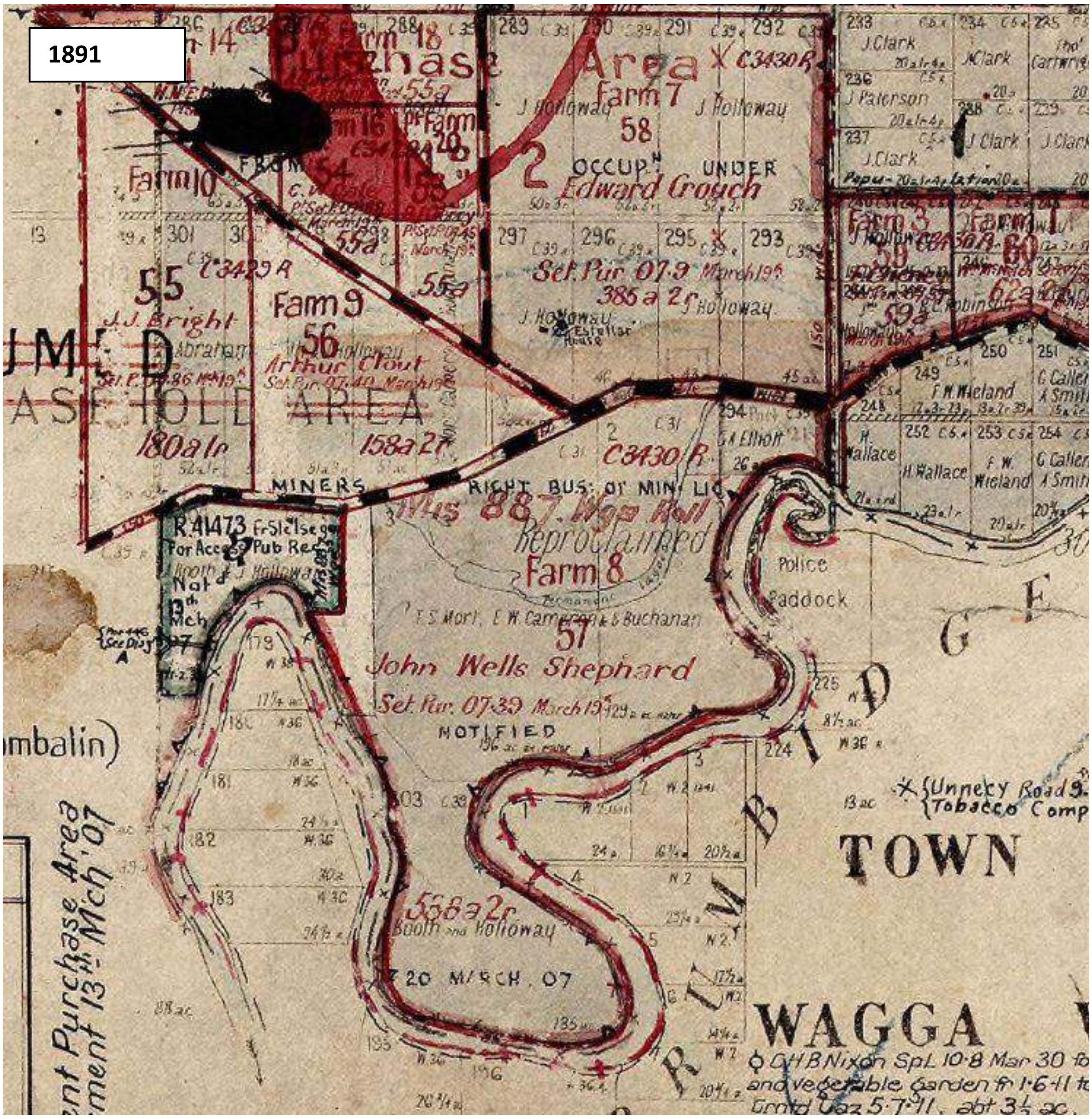
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Arthur Clout
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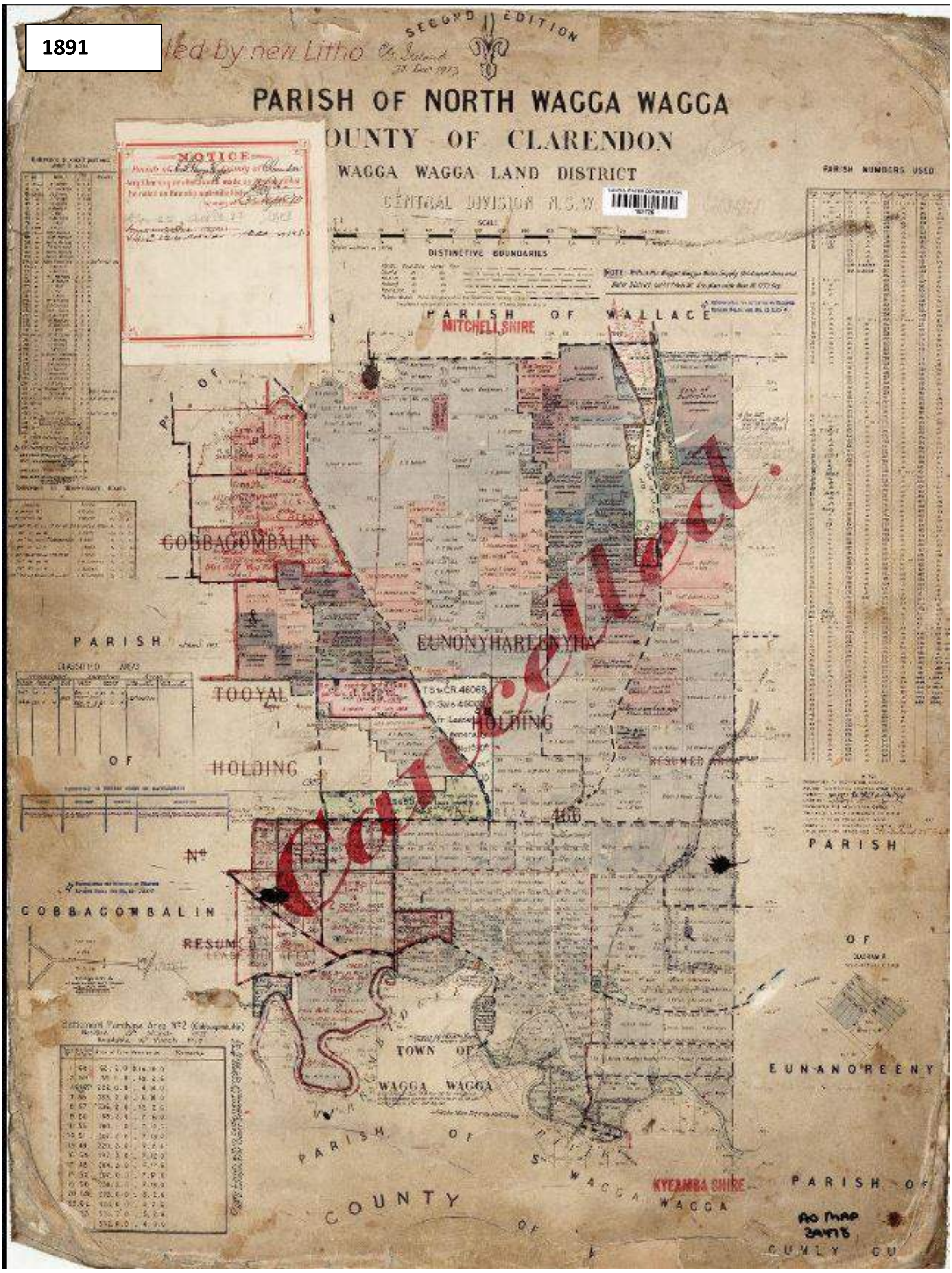
J.J. Bright
LEASEHOLD AREA
180a 1r
158a 2r
MINERS RIGHT BUS: OR MIN: LIC
C3430 R.
Reproclaimed
Farm 8
57
John Wells Shephard
Set. Pur. 07.39 March 19
NOTIFIED
538a 2r
Booth and Holloway
20 MARCH. 07
Police Paddock
J. Clark
F.W. Wieland
H. Wallace
TOWN
WAGGA
RUMBIDGEE
(Gumbalin)
R.41473
Unnecky Road
Tobacco Comp
G.H.B. Nixon

1891



SECOND EDITION
PARISH OF NORTH WAGGA WAGGA
COUNTY OF CLARENDON
WAGGA WAGGA LAND DISTRICT
CENTRAL DIVISION N.S.W.
NOTICE
DISTINCTIVE BOUNDARIES
PARISH NUMBERS USED
PARISH OF WALLACE
MITCHELL SHIRE
COBBAGOMBALIN
PARISH
TOOYAL
OF
HOLDING
EUNONYHARENYHA
HOLDING
RESUMED
Cancelled
PARISH
OF
EUNANOREENY
COBBAGOMBALIN
RESUMED
TOWN OF
WAGGA WAGGA
PARISH OF
WAGGA WAGGA
KYEAMBA SHIRE
PARISH OF
COUNTY
OF
AO MAP
34478

The ballot having been held, John Wells Sheppard proved successful. His application was accordingly confirmed. The question of value and ownership of improvements were postponed Mr. Shephard is a member of the firm of Shephard Brothers, who have been share-farming about Brucedale on an extensive scale, and there can hardly be a doubt that he will make an admirable settler.

Obituary.

DEATH OF AN OLD WAGGA RESIDENT.

On Saturday morning, at 7.30, the death of Mr. George Clout, senr., aged 78 years took place, at his son's residence (Mr. Arthur Clout), North Wagga. Deceased, who had been in a delicate state of health for some time past, was confined to his bed on Wednesday last, and died peacefully in the presence of his family. Deceased was born in Kent, England, and came to Australia in 1838, taking up his residence in Camden, where he married on 26th December, 1849, Miss Jane Leonard, of Windsor. He resided there until 1865, when he came to the Wagga district, and took up farming pursuits, which he carried on until about nine years ago. Since then he has resided at North Wagga. Deceased leaves a

Attachment C : *EPA search results*

Contaminated land

+ Management of contaminated land
+ Consultants and site auditor scheme
+ Underground petroleum storage systems
Guidelines under the CLM Act
NEPM amendment
+ Further guidance
– Record of notices
About the record
Search the record
Search tips
Disclaimer
List of NSW contaminated sites notified to EPA
Frequently asked questions
Forms
+ Other contamination issues
+ Contaminated Land Management Program

Home Contaminated land Record of notices

Search results

Your search for: Suburb: GOBBAGOMBALIN

Search Again Refine Search

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.

Search TIP

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

... more search tips

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.POEO public register

29 May 2019

Legislation and compliance

NSW EPA

Your environment Reporting and incidents Licensing and regulation Working together

Environment protection licences

+ Licensing under the POEO Act
Guide to licensing
eConnect EPA
Licence forms
Licence fees
+ Risk-based licensing
+ Load-based licensing
+ Emissions trading
– POEO Public Register
Terms of use: POEO public register
Search for licences, applications and notices
Search for penalty notices
Search for prosecutions and civil proceedings
Enforceable undertakings
Exemptions and approvals
Licensing FAQs
List of licences
Unlicensed premises still regulated by the EPA

Home Environment protection licences POEO Public Register Search for licences, applications and notices

Search results

Your search for: **General Search** with the following criteria

Suburb - Gobbagombalin

returned 0 result

Search Again

Attachment D : *SafeWork search results*

NSW GOVERNMENT | SafeWork NSW

Locked Bag 2906, Lisarow NSW 2252
Customer Experience 13 10 50
ABN 81 913 830 179 | www.safework.nsw.gov.au

Our Ref: D19/133856

6 June 2019

DM McMahon Pty Ltd
Mr David McMahon
PO Box 6118
WAGGA WAGGA NSW 2650

Dear Mr McMahon

RE SITE: 77 Old Narrandera Rd and 9 River Rd,

Gobbagombalin NSW 2650

I refer to your site search request received by SafeWork NSW on 5 June 2019 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above-mentioned premises.

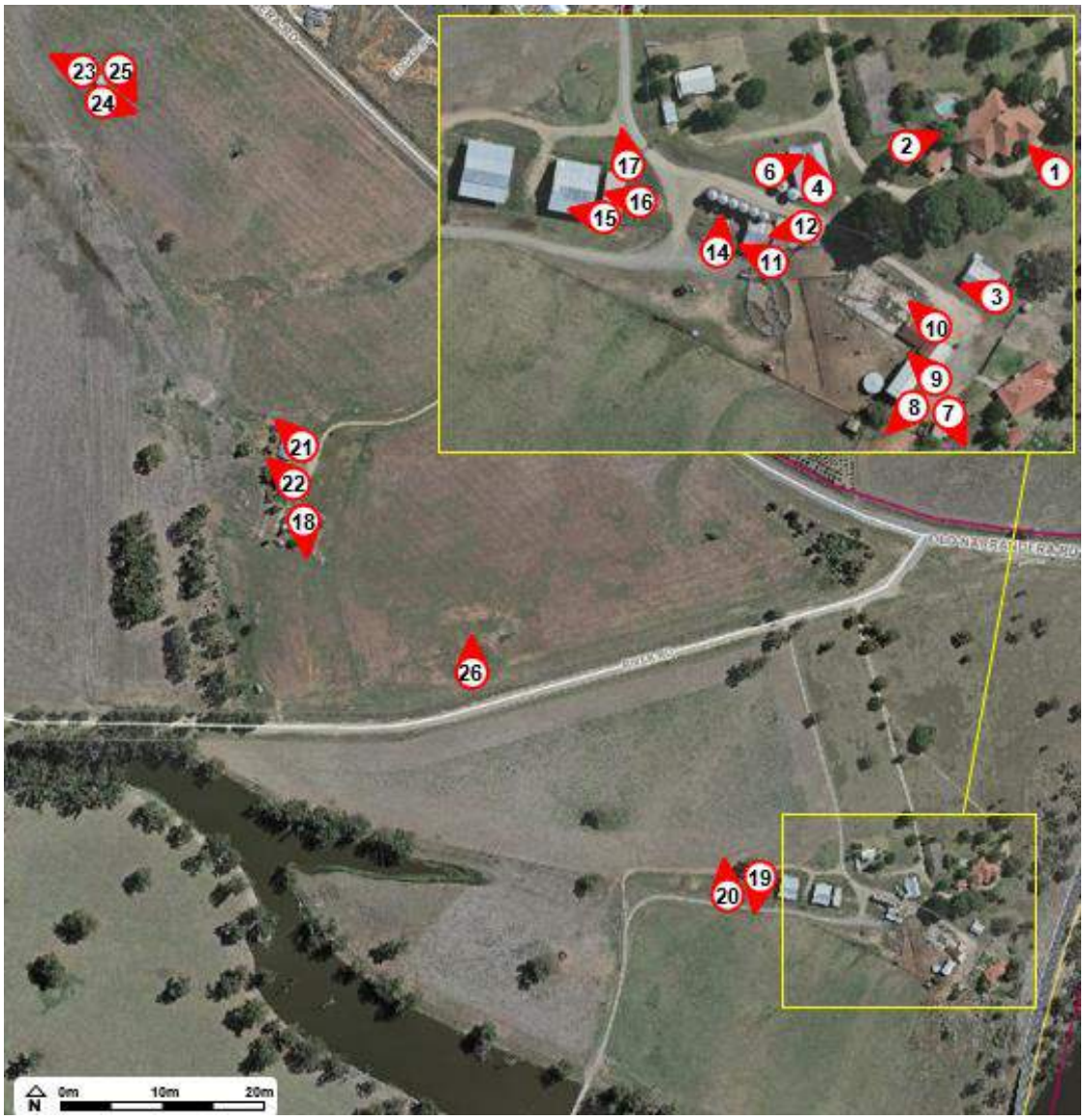
For further information or if you have any questions, please call us on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely

Customer Service Officer
Customer Experience - Operations
SafeWork NSW

Attachment E : *Site photographs*

Subject site photograph locations and camera lens direction



Photograph 1 shows the main house complex on the subject site, built from brick and timber framing atop a timber floor and clad with a ceramic tile roof.

Photograph 1

Photograph 2 shows the extent of the main house complex from a south western perspective with no suspect materials noticed.

Photograph 2

Photograph 3 shows the existing above ground diesel storage tank, some localised surface staining was noted on the ground surface under one of the legs.

Photograph 3

Photograph 4 shows stored chemicals within the workshop shed, chlorpyrifos is labelled on the box.

Photograph 4

Photograph 5 shows stored vehicles on a sealed concrete surface within the existing workshop shed.

Photograph 5

Photograph 6 shows stored material such as steel and wire out the rear of the existing workshop shed.

Photograph 6

Photograph 7 shows the internal chemical drums and containers within the existing chemical storage shed. Localized staining of the concrete pad was noted during the inspection.

Photograph 7

Photograph 8 shows stained ground surfaces around oil and spray drum storage adjacent to the chemical storage shed.

Photograph 8

Photograph 9 shows machinery storage in one of the farm sheds on the subject site, the shed floor was hardstand with no evidence of significant oil staining from machinery. A small area of waste material can be seen on the right of the photograph.

Photograph 9

Photograph 10 shows large oil drums and stored items adjacent the stock yards, containers were observed in a good condition on a concrete surface.

Photograph 10

Photograph 11 shows one of the farm workshop sheds on the subject site with stored materials and waste in the background. Some livestock related chemical drums ca also be seen in the foreground.

Photograph 11

Photograph 12 shows the northern entry to one of the workshops on the subject site, fuel storage and stored materials can be seen within.

Photograph 12

Photograph 13 shows more of the stored fuels and oils stored within one of the onsite workshop sheds.

Photograph 13

Photograph 14 shows the rear area behind the workshop shed. An old fire with oil drums and filters can be seen in the foreground, a vehicle with an IBC container can be seen in the centre with two Above ground fuel storage tanks seen in the background.

Photograph 14

Photograph 15 shows more stored materials in one of the farm sheds including fertiliser and some spray drums. Farm machinery was also evident in the shed with some surface staining noted.

Photograph 15

Photograph 16 shows a pile of used spray drums in one of the farm sheds.

Photograph 16

Photograph 17 shows another above ground fuel tank welded to a steel frame for transport, no staining was noted on the soil surface around the fuel tank.

Photograph 17

Photograph 18 shows the former dairy residence, built from brick and timber framing and topped with a corrugated iron roof. No suspected ACM material was noted throughout.

Photograph 18

Photograph 19 shows more stored scrap and rubbish materials on the subject site with contents including steel, vehicle parts and old farm equipment.

Photograph 19

Photograph 4 shows an old spray rig container stored on site and some old farming equipment in the background. No obvious staining or deleterious material was noted in the area.

Photograph 20

Photograph 21 shows the last residence property on the subject site built from timber flooring framing and cladding with a corrugated iron roof.

Photograph 21

Photograph 22 shows some stored materials such as fuels and oils in the “Hawthorne” property garage.

Photograph 22

Photograph 23 shows some stored spray and chemical drums in the large farm shed on the “Hawthorne” property.

Photograph 23

Photograph 24 shows more empty spray drums in the large farm shed on the “Hawthorne” property.

Photograph 24

Photograph 25 shows a small tractor in the large farm shed on the “Hawthorne” property. Some staining of soils beneath the tractor was noted as a result of a leaking engine.

Photograph 25

Photograph 26 shows an old rubbish and scrap storage pit towards the centre of the subject site. Materials noted within included metal, brick, tile, concrete, timber, rock and old appliances.

Photograph 26