Statement of Heritage Impact

Burrah Park Industrial Development

1953-2109 Elizabeth Drive, Badgerys Creek

Penrith Local Government Area

Report to: Richmond Bridge Burra Park 2 Pty Ltd as trustee for Burra Park Prop Trust 1
UniSuper Limited as Trustee for UniSuper and UniSuper Management Pty Limited
ISPT Pty Limited as trustee for The Industry Superannuation Property Trust No.1
HB&B Property Pty Ltd

15 August 2024

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Aboriginal Cultural Heritage Assessment Report

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Cover: the study area 2020 Photo by NB

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Executive summary

This Statement of Heritage Impact has been prepared by Baker Archaeology to accompany a State Significant Development Application (SSDA) for a Concept and Stage 1 SSDA for a Warehouse and Logistics Estate at 1953-2109 Elizabeth Drive, Badgerys Creek. The site is legally described as Lot 1 in Deposited Plan 1306448.

The applicant, the trustee for Burra Park Prop Trust 1 is a joint venture entity, with ISPT Core Fund and UniSuper each holding an equal share. HB&B and ISPT have been appointed as the development team to oversee the project's delivery. By leveraging the expertise of both organizations, the venture is well-positioned to maximize Burrah Park's value to the community.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD - 70316465).

The report identifies remnant elements of the former F.D.McMaster Field Station which is of local significance due to historical interest as an important centre for CSIRO animal research from 1936 to c.1990 and being the only known example of a CSIRO rural research institute in the Penrith LGA.

This report concludes that construction of the proposed warehouse and distribution centre is suitable and warrants approval subject to the implementation of archival photographic recording of remaining heritage elements as mitigation of development impact.

1 Introduction

1.1 Project background

This report has been prepared to accompany an SSDA at 1953-2109 Elizabeth Drive, Badgerys Creek (SSD-70316465). The application seeks consent for a concept plan including future development lots and building footprints. The development also seeks consent for the Stage 1 works which will include bulk earthworks across the site, infrastructure delivery, road access/intersections, internal road construction, civil infrastructure and utilities, stormwater infrastructure works and the construction of three (3) warehouse buildings. The proposal is described further in section 1.3.

The applicant, the trustee for Burra Park Prop Trust 1 is a joint venture entity, with ISPT Core Fund and UniSuper each holding an equal share. HB&B and ISPT have been appointed as the development team to oversee the project's delivery. By leveraging the expertise of both organizations, the venture is well-positioned to maximize Burrah Park's value to the community.

Baker Archaeology was engaged by HB&B Property to prepare a Statement of Heritage Impact (SOHI) for the Burrah Park industrial development within the south western portion of the land known as 1953-2109 Elizabeth Drive, Badgerys Creek. Proposed development of a warehouse and logistics estate on the land would result in significant alteration of the landscape through major earthworks.

The SOHI is prepared in response to the NSW Planning Secretary's Environmental Assessment Requirements (SEARs) in regard to non-Aboriginal heritage, "an assessment of non-Aboriginal cultural heritage items and values of the site and surrounding area; − measures to avoid, reduce or mitigate impacts on non-Aboriginal heritage items".

This SOHI follows the Heritage NSW guideline *Guidelines for preparing a statement of heritage impact* (DPE 2023).

1.2 The study area

The study area comprises approximately 171.9 hectares of rural grazing land zoned enterprise ENT located within Lot 1 DP 1306448 known as 1953-2109 Elizabeth Drive, Badgerys Creek. The land is opposite the Western Sydney Airport within Penrith Local Government Area (LGA).

The study area is located within a former 343 hectare parcel of land originally forming the CSIRO McMaster Field Station which operated from 1937 until cessation of operations in the mid-1990s and its sale in 1997. The McMaster Field Station has been identified as a potential heritage item in the Aerotropolis Precinct Plan 2023 but not listed as a heritage item in the SE*PP (Western Parkland City) 2021*.

The green-fields site (Figure 1) formerly comprised part of CSIRO's F.D.McMaster Field Station which formed half of an 800-acre parcel of land purchased by the Commonwealth in 1936. The greater Lot 1 land was sold by the CSIRO to property developers in 1997 and has since been used mostly for grazing with other small enterprises by property lessees. The former CSIRO land is dissected by the M12 Motorway and Metro and as such comprises one allotment over three areas, being the southern, northern and northeast (Figure 1). The subdivision of these lots into three separate lots was approved by Penrith Council in 2023 and is currently being registered.

The land is bounded to the north and east by the M12 easement, to the south by Elizabeth Drive and to the west by Cosgroves and Oaky creeks. Access to the land is from Elizabeth Drive.

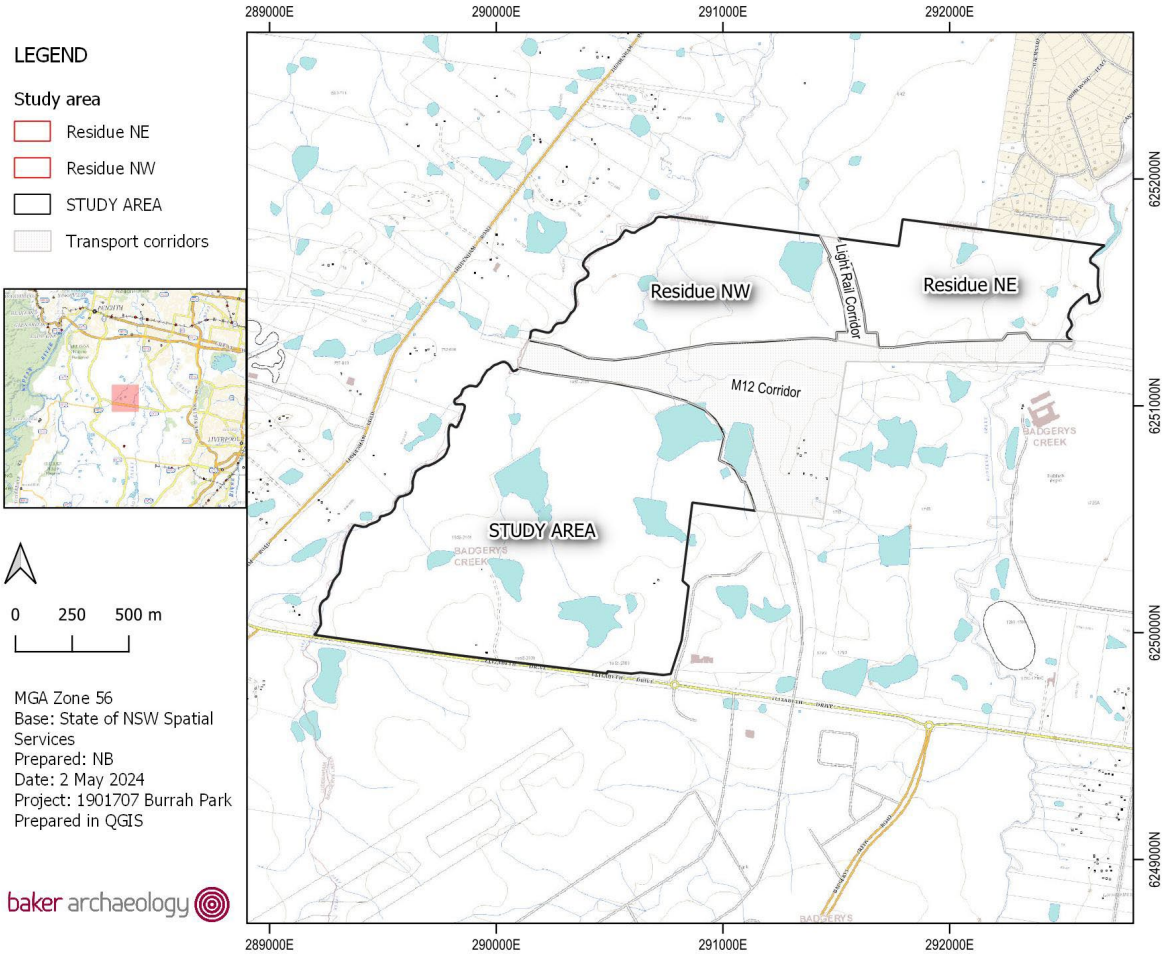

Figure 1. The Study Area

The key features of the land are summarised in the table below.

Table 1. Key features of Site and Locality

Descriptor	Site Detail
Land Configuration	The site is an irregular shaped allotment with an area of 280.49ha, comprising of three separate lots (currently being registered). The lot area is divided as follows (as per the subdivision plan): Lot 1 (southern) – 171.9ha (the Study Area) Lot 2 (northern) – 60.83ha Lot 3 (northeastern) – 47.76ha The site generally slopes from high points adjacent to Elizabeth Drive (RL 75) to low points in the northeast corner (RL 40). Topography is characterised by a central ridgeline running from the central portion of the southern boundary towards the northeast.
Surrounding Land Use	Surrounding land uses include: ▪ M12 Motorway and Metro (under construction) to the north and east with predominantly rural uses beyond ▪ Western Sydney Airport is under construction opposite the site on the southern side of Elizabeth Drive, ▪ Rural residential uses on the opposite side of Cosgroves Creek to the west.
Site Access and road network	The site is accessible from Elizabeth Drive, a State arterial road aligned in an east-west direction adjacent to the southern boundary.
Easements and Covenants	An easement for electricity purposes is located on the northern side of the site.
Services	The site has power and water available.
Acid Sulfate Soils	Not mapped.
Contamination	The site has the potential to be contaminated, due to the current agricultural land use. A Detailed Site Investigation will be submitted as part of the SSDA lodgement. As per previous Detailed Site Investigation prepared by Douglas Park, the site is appropriate for proposed development subject to remediation works undertaken.

Descriptor	Site Detail
Stormwater and Flooding	As indicated in the *Wianamatta (South) Creek Flood Study – Existing Conditions (Prepared by Advisian for Infrastructure NSW, November 2020)* the site is subject to 1:100 ARI (average recurrence interval) along the main creek lines of Cosgroves and Badgerys Creek.
Bushfire Prone Land	The site is classified as bushfire prone land. A bushfire report will be submitted with the SSDA.
Flora and Fauna	The site currently consists of cleared rural land with the occasional scattered Cumberland Plain Woodland, trees, weeds, and shrubs. Most of the site is certified under the Cumberland Plain Conservation Plan (CPCP)
Riparian Corridor	Cosgroves Creek and Oaky Creek run along the western part of the site, while Badgerys Creek runs along the eastern side. The proposed development is designed to generally avoid land zoned ENZ. The site contains multiple hydrolines and dams.
Aboriginal Heritage	Aboriginal objects have been identified along the Oakey Creek – Cosgroves Creek corridor along the entirety of the western study area boundary.
European Heritage	The site does not contain any State or locally significant heritage listed items. The site does form part of the former CSIRO McMaster Field Station which is identified as a potential heritage item under the Precinct Plan and has been assessed as of local significance in the SOHI. The site is adjacent to the McGarvie Smith Farm which is identified as a local Heritage Item under the *State Environmental Planning Policy (Precincts—Western Parkland City) 2021*.

1.3 The Proposal

The applicant, the trustee for Burra Park Prop Trust 1 is a joint venture entity, with ISPT Core Fund and UniSuper each holding an equal share. HB&B and ISPT have been appointed as the development team to oversee the project's delivery (Table 2, Figure 2).

Table 2. Proposed development

Key element	Proposal
Concept Plan	• Concept Masterplan for the Burrah Park comprising warehouse buildings, internal road network layout, building locations, GFA, car parking, concept landscaping, building heights, setbacks, signage strategy, public art strategy, design excellence strategy and Connection with Country framework. • Developable area 131.45 ha • Total approximate GFA 63 ha
Stage 1 – Site preparation works	• Demolition and removal of existing structures and vegetation • Heritage impact mitigation works • Construction of roads, access infrastructure, including a signalised intersection with Elizabeth Drive • Dam de-watering and de-commissioning. • Bulk earthworks, cut and fill, benching, battering and retaining walls, • Lead in infrastructure, utilities and servicing • Stormwater infrastructure including construction of Sydney Water basins and Water Sensitive Urban Design (WSUD) elements.
Stage 1 – Development	• Construction and fit out of 3 warehouse buildings and ancillary office space. • Stormwater management, fencing and landscaping. • Internal road network, active transport network, public domain and open space. • Subdivision, and • Estate and on lot signage. • Total approximate GFA 85,691sqm • Warehouse 1.1 26,860sqm GFA • Warehouse 1.2 31,443sqm GFA • Warehouse 3.1 27,561sqm GFA

Future stages of the Burrah Park development, including subsequent warehouse and industrial buildings for DHL, will be subject to separate detailed development applications.

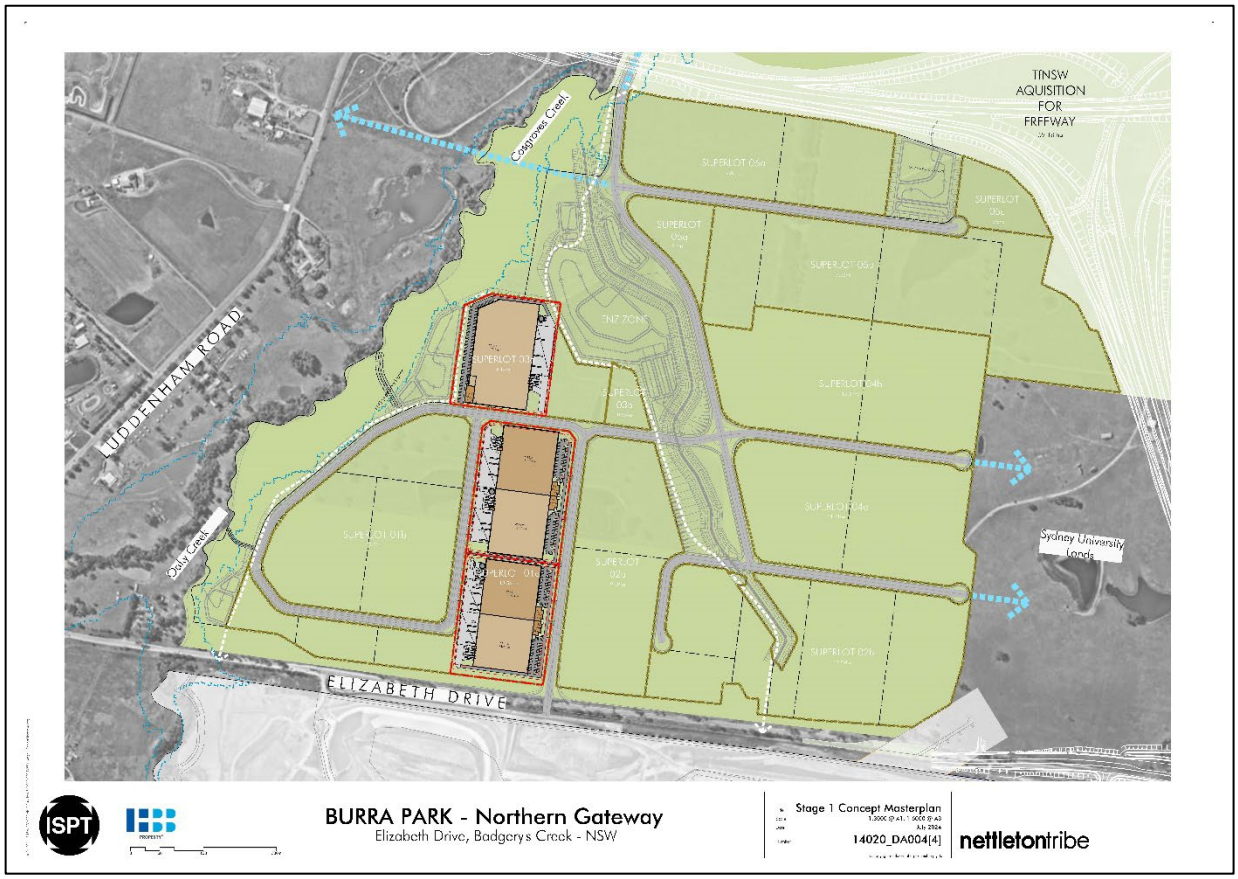

Figure 2. Stage 1 concept masterplan

Ref: 14020_DA004 - Stage 1 Concept Masterplan[4].pdf July 2024

1.4 Aims and methodology

This SOHI has been prepared to meet the SEARs requirement for "an assessment of non-Aboriginal cultural heritage items and values of the site and surrounding area [and] measures to avoid, reduce or mitigate impacts on non-Aboriginal heritage items". The following tasks were undertaken,

- Review of legislation and planning instruments relevant to the project
- Review of previous heritage assessment of the study area including historical heritage studies related to the M12 development (Jacobs, Extent 2020), an early precincts heritage study (Extent 2020) and a historical heritage study for the wider Lot 1 area (MTS Heritage 2020).
- Field inspection of the study area.

1.5 Report outline

This SOHI includes the following,

- Statutory context (Section 2)
- Site history (Section 3)

- Summary of the results of the previous detailed heritage survey and subsequent site inspection, including a description of heritage items within the study area (Section 4)
- Significance assessment of the study area (Section 5)
- Assessment of the potential impact of the development on the heritage significance of the study area (Section 6)
- Management recommendations (Section 7)

1.6 Authorship

This report has been prepared by Neville Baker BA Hons (Sydney) who is a heritage consultant of over 30 years' experience. The significant contribution by Fiona Leslie (MTS Heritage) in preparing the previous heritage assessments upon which this assessment is based is acknowledged.

2 Planning framework

2.1 Heritage Act 1977

The *Heritage Act 1977* provides for the protection of the environmental heritage of NSW. The Act establishes the State Heritage Register (SHR) which lists items of the environmental heritage confirmed to be of State significance. The Act also establishes the Heritage Council which advises the Minister for Environment and Heritage on heritage matters in NSW and makes recommendations for the listing of places and objects on the State Heritage Register. The Council makes decisions about the care and protection of heritage places and items that have been identified as being of State significance. This includes recommending the interim protection of potential heritage items so that an assessment of their significance can be made.

The Act distinguishes heritage items of State significance from heritage items of local significance, being those items of significance to an area. Heritage items of local significance are typically listed in planning instruments under the *Environmental Planning & Assessment Act 1979*, or in heritage registers maintained by NSW government agencies under section 170 of the Heritage Act.

Historical archaeological relics of State or local significance have protection under the Act with requirements for an excavation permit prior to disturbance.

2.2 Environmental Planning & Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* requires consideration of environmental factors in all stages of land use planning. The Act establishes the framework for cultural heritage values to be formally assessed in the land use and development consent process and requires that environmental impacts, including impacts on heritage items, are considered prior to land development. The Act also requires that local governments prepare planning instruments (such as Local Environmental Plans (LEPs) and Development Control Plans (DCPs), in accordance with the principles of the legislation to provide guidance on the level of environmental assessment required.

The study area is located within Penrith City Council. As such, heritage items of local and state heritage significance are listed under Schedule 5 of the *Penrith Local Environmental Plan 2010* and managed under the heritage conservation provisions of that LEP.

The project is declared to be State Significant Development (SSD) under the *State Environmental Planning Policy (State and Regional Development) 2011* (SEPP SRD). An environmental impact statement (EIS) is being prepared as part of the SSD application process. Impacts to heritage items and relics are addressed by the SSD approval conditions. Such conditions typically include the development of relevant heritage management documents which, once approved, are binding under the SSDA conditions.

This SOHI has been prepared as a contribution to the EIS.

2.3 State Environmental Planning Policy (Precincts – Western Parkland City) 2021

State Environmental Planning Policy (Precincts – Western Parkland City) 2021 defines allowable development within the Western Sydney Aerotropolis, overriding the Penrith Local Environmental Plan 2010. Section 4.26 of the SEPP deals with "Heritage Conservation", addressing both Indigenous and non-Indigenous heritage. Development consent must be obtained for heritage impacts, requiring prior assessment which may include heritage management documents. Non-Indigenous heritage places are listed and included in SEPP maps.

2.4 Western Sydney Aerotropolis Development Control Plan 2022

The *Western Sydney Aerotropolis Development Control Plan 2022* (DCP) establishes the detailed development controls for the Aerotropolis. Section 2.2.2 of the DCP addresses "Non-Aboriginal and European Heritage", setting out objectives and performance outcomes for historical heritage with the overall aim to ensure that the significant elements of the past are appropriately managed and respected by new development.

Table 3. Compliance with Western Sydney Aerotropolis Development Control Plan 2022

2.2.2 Non-Aboriginal and European Heritage			
Performance Outcome	**Benchmark Solution**	**Assessment**	**Consistent**
PO1 Inappropriate or unsympathetic alterations and additions of heritage items are removed, and significant missing details and building elements are reinstated.	**1.** Alterations and additions to existing heritage items do not dominate or detract from the original building in terms of scale, materials, siting, landscaping, and views. **2.** Any unsympathetic or inappropriate previous alterations or additions are removed.	The study area includes remnant structural elements of the mostly demolished McMaster Field Station, which conceptually has heritage values recognised in previous heritage studies but which has not been heritage listed. The remaining elements in the study area do not warrant conservation.	Yes
PO2 The impact of new development adjacent to or within the vicinity of a heritage item is minimised.	**1.** Development in the vicinity of a heritage item minimises the impact on the setting of the item by: a. Providing an adequate area around the building to allow interpretation of the heritage item; b. Retaining original or significant landscaping (including plantings with direct links or association with the heritage item); c. Protecting and allowing the interpretation of archaeological features; and d. Retaining and respecting significant views to and from the heritage item.	A core remnant of McMaster Field Station structures is located within the adjacent M12 Motorway corridor. The M12 remnant structural elements are being conserved and subject to an interpretation plan. The proposed development will not detract from the heritage values within the M12 conserved remnant. The remaining elements in the study area do not warrant conservation and will be archivally recorded before removal.	Yes

2.2.2 Non-Aboriginal and European Heritage			
Performance Outcome	**Benchmark Solution**	**Assessment**	**Consistent**
	2. Any new development in the vicinity of heritage items should be of a contemporary design that incorporates materials that do not overwhelm any adjacent heritage items. **3.** Open spaces should be planned around heritage items to ensure it maintains its prominent siting and encourage opportunity for active and passive interaction with the place. **4.** Highly activated urban areas in the vicinity of a heritage item must be carefully and respectfully sited, designed and landscaped to ensure that heritage values associated with the heritage item are protected.		
PO3 The subdivision of land on which a heritage building is located does not isolate the building from its setting or context, or adversely affect its amenity or privacy	**1.** Front and rear setbacks are adequate to ensure the retention of the existing landscape character of the heritage item or conservation area and important landscape features. **2.** Any significant historical pattern of subdivision and lot sizes is to be retained. **3.** Subdivision or site amalgamation involving heritage items or contributory buildings do not compromise the setting or curtilage of buildings on or adjoining the site.	Does not apply	Yes
PO4 Archaeological sites are conserved, and significant archaeological remains are protected and interpreted.	**1.** Any works that may impact a known, or potential, archaeological site must have an archaeological assessment undertaken to determine the archaeological significance of the site and appropriate management procedures.	No archaeological sites have been identified	Yes

2.5 Heritage registers search

2.5.1 World, National and Commonwealth Heritage Lists

A search of the Australian Heritage Database in July 2024 indicates that no items of World, National or Commonwealth heritage are listed within the study area. The neighbouring McGarvie Smith Farm was nominated for listing on the National Heritage List but is now ineligible.

2.5.2 State Heritage Register

A search of the SHR in July 2024 shows no State significant heritage items present within, directly adjacent to, or close to the study area.

2.5.3 Section 170 Registers

Transport for NSW directs the researcher to the NSW State Inventory for items on their Section 170 Register. No items explicitly referring to their Section 170 Register appear on the NSW State Inventory as of July 2024.

2.5.4 Penrith LEP 2010 Heritage Items

The *Penrith Local Environment Plan 2010* current as of July 2024 does not include heritage items in or adjoining the study area.

The Luddenham Road Alignment 300 metres west of Cosgroves Creek is listed on the LEP as item 843 (Figure 3).

Heritage places nearby that appear to be delisted from the LEP Schedule 5 Part 1 Heritage Items list but still appearing on LEP Heritage maps and on the NSW State Heritage Inventory (with reference to the Penrith LEP 2010) include the former McGarvie Smith Farm on adjacent land to the east and the Fleurs radio telescope site east of Badgerys Creek both impacted by M12 construction.

2.5.5 SEPP (Precincts – Western Parkland City) 2021

The list of heritage items in Schedule 11 of the *SEPP (Precincts – Western Parkland City) 2021* does not include any heritage items within the study area.

The "McGarvie Smith Farm" adjacent to the east is included as Item I1 and "The Fleurs Radio Telescope Site" nearby to the north east as Item I5 occur in the heritage list and map (Figure 3).

2.5.6 Western Sydney Aerotropolis Precinct Plan 2023

The *Western Sydney Aerotropolis Precinct Plan 2023* is subordinate to the *SEPP (Precincts – Western Parkland City) 2021*. The Plan provide Precinct-based requirements against which development applications are to be assessed.

The Plan does not include a schedule of heritage items but does include a map (Figure 4) of known listed heritage items and "potential heritage Items". The McMaster Field Station is identified on that map as a "potential heritage item". This SOHI meets Non-Aboriginal and European Heritage requirement NA3

requiring investigation of the significance of potential heritage items, and where investigations identify heritage values requiring preparation of a heritage management plan.

2.5.7 Summary of heritage listings

Table 4 below summarises heritage items listed on statutory heritage registers within and directly adjacent to the study area.

Table 4. Summary of heritage listings relevant to the study area

Heritage list	Heritage items within the study area	Heritage items directly adjacent to the study area
World heritage List	None	None
Commonwealth Heritage List	None	None
National Heritage List	None	None
NSW State Heritage Register	None	None
Penrith LEP 2010 (version 4 March 2024)	None	None
SEPP (Precincts - Western Parklands City) 2021	None	McGarvie Smith Farm

Figure 3. Heritage locations mentioned in text

3 Site characteristics and land-use history

3.1 Environment

The land comprises low hills on Wianamatta Shale geology rising to the east from Cosgroves Creek which is a major fourth order watercourse draining to the north east towards South Creek. The study area comprises gentle slopes in the western half rising to a low spur, which form a minor watershed between second order tributary catchments to Cosgroves Creek, and into the upper part of the adjacent local tributary catchment including a large farm dam. The land has been cleared for livestock grazing with rare remnant large trees.

3.2 History

3.2.1 Phases of land use

There are six historical phases of land use:

1. Aboriginal occupation (pre-1819 and possibly continuing through the contact/entanglement stage)
2. Early European settlement and land use, including Piper's Blackford Farm (1819 – 1873)
3. Intensive farming and consolidation by the Morrison family (1873 – 1914)
4. Norman Buffier's Bangaroo estate (1914 – 1937)
5. CSIRO McMaster Field Station (1937 – 1997)
6. Becklon Pty Ltd (Medich) landholding (1997 – 2021)
7. Robert Jones Development landholding (2021 – 2023)
8. Current landholding as of 2024 by the proponent

3.3 Historical chronology

31 August 1819	William Johnston, a free settler, was granted 500 acres of land on Elizabeth Drive (Portion 63). This included the southern portion of the current study area
15 December 1830	John Piper, an officer in the NSW Corps, was granted Portion 62 within which the study area is located
20 April 1831	William Johnston transferred Portion 63 to John Piper
28 May 1831	John Piper sold both Portion 62 and 63 to William Cox
26 July 1844	Following the death of William Cox the land was transferred to William's son Edward Cox
1859 – 1873	Following the death of Edward Cox, a lengthy settlement period took place. The trustees of the land were Christiana Macleod and Henry John Bantyne Macleod, James Charles Cox and Walter Lamb
25 November 1873	The land was transferred from the trustees to John Grant Morrison.

29 January 1914	Following the death of John Grant Morrison, the land was sold to Norman Daniel Buffier.
1914 – 1933	Norman Buffier purchased Portions 62, 63 followed by Portion 59 and 58. He developed a prominent dairy business on the property known as *Bangaroo.* He undertook extensive clearing of the land in 1915
1937 - 1997	Norman Buffier sold the land to the Commonwealth of Australia, which subsequently divided the land between the Council for Scientific and Industrial Research (CSIR - predecessor to CSIRO) and The University of Sydney. The F.D.McMaster Field Station was established named after a prominent pastoralist and philanthropist. The land was used for animal research.
31 January 1997	CSIRO sold the land to Becklon Pty Ltd who passively managed the land with marked deterioration of structural assets.
2021	The land was sold to Roberts Jones Development Pty Ltd
2024	The land was sold to the proponent.

3.4 Early European exploration (1789 to 1816

European exploration of the western lands along the Hawkesbury – Nepean River system began as early as 1789 when Governor Phillip led an expedition to search for arable land (Paul Davies Pty Ltd, 2007: 17). The discovery of rich alluvial soils along the Hawkesbury ‑ Nepean led to the establishment of farms at Emu Plains, Castlereagh and Agnes Banks (RPS, 2016: 20). The devastating cycles of drought (1798 ‑ 99, 1810 ‑ 11) and floods (1799 ‑ 1800, 1806, 1809 and 1811), caused considerable financial hardship and led to a search of more suitable land in neighbouring districts (Paul Davies Pty Ltd, 2007: 9).

The Badgerys Creek area was likely first traversed by Europeans in 1802 when botanist George Caley led a party through the Mulgoa Valley (Godden Mackay 1997:5 ‑ 1). During this expedition, Caley described Aboriginal huts, walking tracks and the effects of burning of land between Prospect, South Creek and Cowpastures (Caley 1802: 47). The use of fire had left the area like an “English Park…with large trees separated by a grassy understorey” (Keating 1996).

A number of private expeditions were likely conducted during the early nineteenth century to find arable land suitable for farming (Paul Davies Pty Ltd 2007:17). Badgerys Creek and surrounding land would have appealed to such explorers due to its access to Sydney and continuous supply of fresh water. Formal surveys of Castlereagh Road and surrounding farms were commissioned in 1803 and of Mulgoa Valley in 1809 (RPS, 2016: 20).

European settlement of Western Sydney in the early 1800s resulted in the displacement of Aboriginal people from their traditional lands. As a result, clashes occurred along the frontier. In 1816, retaliation by an Aboriginal tribe at Bringelly resulted in the death of four Europeans. However, many Aboriginal people died in similar clashes or from diseases introduced by the colony. Fighting in the area continued until a military detachment was established in Airds (Royal Australian Historical Society, 1920).

3.5 European settlement and land use (1816 to 1873)

The earliest land grants in the region were larger parcels than usual and were taken up by settlers who had the finances to manage large rural estates. The intention was for these large estates to produce surplus that would help sustain the colony. The grants in the study area were issued between 1800 and 1820 and were large parcels. Two well‐known estates were established directly east and south of the study area: Exeter Farm established by James Badgery in 1812 and Luddenham Estate by John Blaxland in 1813 (Australian Museum Consulting, 2014: 21). The houses of these estates were typically set back from the roads and situated on the top of hills to provide views, security and a position of authority (CRM, 2019: 27).

Communication in the area was established through the creation of early tracks and roads. As shown in early maps and surveys of the district, Elizabeth Drive was extant by 1825. The Drive was initially built as a corduroy road using logs as its base (Aurecon Australasia Pty Ltd, 2016: 21). The road was originally known as Orphan School Road, as it extended west from the Male Orphan School at Bonnyrigg and was established to provide access to the various land grants in the area. The name of the road was changed to Mulgoa Road and then to Elizabeth Drive in 1952 in honour of a visit by Queen Elizabeth II (Aurecon, 2016: 21).

The following subsections provide further details about early land owners and possible use of the study area during the early to late nineteenth century. Early portions are shown in Figure 3.1 below.

Figure 4. Parish Claremont, County Cumberland nd. The approximate location of the study area is circled red (Source: AO No 206).

3.5.1 William Lawson Johnston: 1819 to 1831 – Portion 63

The majority of the study area fronting Elizabeth Drive (Portion 63) was granted to William Johnston on 31 August 1819 (LTO PA 064895). Johnstone was a free settler who acquired land at Emu Plains in 1807, following the coup against Governor Bligh (CRM, 2019: 27). The land grant at Emu Plains, however, was cancelled by Governor Macquarie and, as compensation, Johnston was granted land at South Creek (RPS, 2016: 42).

Whilst it is unknown if Johnston occupied Portion 63, it seems unlikely. Various advertisements associated with him indicate that he focussed his activities in Windsor. It is possible that Portion 63 at Badgerys Creek was leased to tenants and put into production (CRM, 2019: 27). In the Muster of 1822, Portion 63 was recorded to include ten acres under crop and the remainder used to run 96 head of cattle. It is unclear from historical records if improvements to the land were made.

On 20 April 1831 Johnstone sold Portion 63 to John Piper, who also purchased Portion 62 directly north of Johnston's property. The sale of the property may have been in response to Johnston's death, as in August 1831 Elizabeth Johnston (wife of William Johnston) advertised for anyone having claims on the estate to make themselves known to her so the claims could be settled (Sydney Gazette 4 August 1831:02).

3.5.2 John Piper: 1830 to 1831 – Portion 62 and Blackford Farm

Portion 62, which includes the north west tip of the study area, was granted to John Piper on 15 December 1830. The following year Piper expanded his land holdings by purchasing the land directly south from William Johnston (Portion 63). Early Parish Maps indicate that the property was named 'Blackford Farm'.

John Piper is a well‐known figure in early Australian history, with Point Piper named after him. Piper was an Officer in the NSW Corps arriving in Sydney in 1792 (CRM, 2019: 28). After arriving in the Colony, Piper served two terms in Norfolk Island, the first for three years (1792 to 1795) and another for six years (1794 to 1800). During his second term on the Island, he met his wife Mary Ann, who was the daughter of a convict. In 1814, after arriving back in Sydney, Piper entered the civil service working for Customs and the water police (CRM, 2019: 28). Governor Macquarie, who was a close friend of Piper, made him a magistrate. Piper owned Vaucluse House, land at Point Piper, where he built Henrietta Villa, and substantial property throughout the colony. In 1827, after facing bankruptcy, Piper retired to one of his properties in Bathurst. Piper passed away in 1851 (Australian Dictionary of Biography: John Piper 1773 – 1851).

Given his many land holdings and quick sale of 'Blackford Farm', it is highly unlikely that many improvements were made. Piper sold the combined property (Portion 62 and 63) to Edward Cox in 1831.

3.5.3 The Cox family: 1831 to 1873

Edward Cox was the eldest son of Edward Cox of Fernhill, Mulgoa and grandson of William Cox, the great roadbuilder in the early colony. He was born in 1829 at Mulgoa (Australian Dictionary of Biography: Edward Cox 1829 – 1883). Records indicate that Edward Cox may have been overseas at the time of the sale of the property (CRM, 2019:29).

Edward Cox was a renowned stock breaker of merino sheep, horses and cattle and his primary residence was at 'Fernhill' in Mulgoa. Given the proximity of the land to 'Fernhill', it is likely that his land at Badgerys

Creek was used for grazing purposes only. No evidence of any improvements to the land have been found to date (CRM, 2019: 29). On 25 November 1873 the land was sold to James Morrison.

3.6 Intensive farming and consolidation (1873 to 1936)

The first phase of settlement and development in the Badgerys Creek area was characterised by land grants and the use of the land for grazing and growing wheat crops. The break up and sale of Blaxland's Luddenham estate directly south of the study area between 1859 to 1864 was the beginning of the next phase of historical development. Unlike properties to the south that were subdivided and sold as smaller parcels, land portions in the study area were consolidated and managed by the Morrison family during the late nineteenth and early twentieth century. In 1914 Morrison's farm and the property to the north were purchased, consolidated and managed by the Buffier family.

3.6.1 The Morrison family: 1873 – 1914

Very little is known about occupation of combined Portions 62 and 63 by the Morrison family during the 40 or so years that they owned the property, from 1873 to 1914. At this time the land was known by locals as 'Morrison's Paddock' (CRM, 2019: 20). The property was sold to Norman Buffier in 1914.

3.6.2 Norman Buffier: 1914 – 1936

The Buffier family were known for their involvement in the dairy business at Luddenham and St Marys. In 1945 the family business was described as "what is probably the biggest dairying business in New South Wales" (Buffiers of Bangaroo, *The Land* 13 July 1945: 03). The dairy business was run over three generations. The patriarch, Dan Buffier, settled in the district in c.1870 where he ran a small herd of milking cows. By the early twentieth century the family owned 4000 acres of land, including Portions 62 and 63 at Badgerys Creek.

Norman Buffier, son of Dan Buffier, purchased Portions 62 and 63 on 29 January 1914. A year later, the property was expanded to include Portion 59, originally granted to Samuel Laycock. The estate was run by Norman and his mother and sister and was called 'Bangaroo'. The property ran between 600 and 800 dairy cows, which were sold as stock to farmers across NSW (Buffiers of Bangaroo, The Land 13 July 1945: 03). At 'Bangaroo' calves were bred and kept there for a year before being sent to Lake Cargelligo for fattening (CRM, 2019: 30).

To prepare the property for grazing purposes, Norman advertised for tenders to fell timber on Bangaroo in 1915 (Nepean Times, 31 July 1915: 06). He advertised again in 1917 for the removal of timber on the property, with the exception of a few marked trees. The timber was said to include stringybark, ironbark and box trees (*Nepean Times*, 5 May 1917: 04). Evidently, the property at this time was largely cleared and likely consisted of grassland with the occasional tree. In 1929 Norman expanded Bangaroo to include Portion 58 (LRS PA 64895).

In 1936 the Buffier family sold a large portion of Bangaroo to the CSIRO for research purposes, keeping remaining land for their private use. Some of the animals from the property were used for research at the McMaster Field Station and McGarvie Smith farm (CRM, 2019: 30). The much smaller Bangaroo Estate and its contents were auctioned for sale in 1960 (*Nepean Times*, 16 June 1960: 05).

3.7 CSIRO McMasters Field Station (1937 to 1997)

The following subsections provide an historical context for the purchase and use of the study area by the CSIRO from 1933 to 1997. It includes information sourced directly from the CSIRO Archives and background information sourced from the University of Sydney Archives by CRM (2019:31 – 33).

3.7.1 Early Animal Research and Veterinary Science at the University of Sydney

Sydney University opened the first faulty of Veterinary Science in 1910 (CRM, 2019:31). This was the only research facility operating in NSW until 1923, when a Veterinary Research Station was established at Glenfield by the Advisory Council of Science and Industry (CRM, 2019: 31). This Advisory Council was the precursor to the Council of Scientific and Industrial Research (CSIR) formed in 1926, which was the precursor for the CSIRO which formed in 1949. In 1924, legislation was passed requiring all veterinarians to be accredited and registered practitioners. This highlighted the importance of having research facilities at the University of Sydney. In 1929, Sir Frederick Duncan McMaster gifted CSIR funds to construct the Division of Animal's Health first laboratory at the University. This marked the beginning of a new era in veterinary research in Australia. By 1930, following the closure of the veterinarian school in Melbourne, it became the only school in Australia (CRM, 2019:31).

In 1931 the McMaster Animal Health Laboratory was constructed on the grounds of Sydney University, signifying the close relationship between CSIR and the University of Sydney (CRM 2019: 31). This relationship was consolidated through the establishment of neighbouring field stations at Badgerys Creek: McMaster Field Station and McGarvie Smith Farm. The foundation of both field stations assisted with the increasing numbers of students enrolling in Veterinary Science at the University at this time, with numbers greatly exceeding the universities facilities (*The Australian Veterinary Journal* XI, 1935).

3.7.2 The Offer of land at Badgerys Creek

On 30 January 1936 the CSIR received a letter from Noman Buffier, which stated that: "I desire to place under offer to you that portion of my property 'Bangaroo' St Marys known as Morrisons Paddock consisting of 1239 acres with frontage to Mulgoa Road and bounded on the east by Badgerys Creek at £9.50 per acre. You have the option of taking the whole or a portion thereof being not less than 500 acres. In the event of a smaller area than the whole paddock being acquired in the first place I shall give you the right to acquire any further portion up to the total area of the paddock at any time during the next three years at the same price. It is stipulated that such portion of the paddock as may be acquired shall extend westward from the eastern boundary." (University of Sydney Archives, Box 105 G3/13 2143).

On 8 February 1936, one week later, the CSIR met with members of the University of Sydney to discuss the purchase of the property and joint use. Both parties agreed that the purpose of the property was desirable, however funding would firstly need to be sourced by both institutions. It was decided that 6 months would be required to source the funding and, during that time, representatives of both institutions (Sir Frederick Trout, Sir Frederick McMaster and Sir George Julius) would meet with Buffier, with the intention of influencing him to lower his price (University of Sydney Archives, Box 105 G3/13 2143).

3.7.3 Purchase and Settlement

On 8 May 1936 the CSIR accepted Norman Buffier's offer in writing, indicating that it wished to purchase 800 acres of land at Badgerys Creek with the intention that 400 acres would be used by the University of Sydney (University of Sydney Archives, Box 105 G3/13 2143). The CSIR also wrote to the University at this time, informing them that it had approved £74,000 for the purchase, however it was anxious that the University transfer their potion before the end of the financial year. One week later, CSIR was questioned about the sale by the Solicitor General. They were informed that the purchase of land must be made via the Department of the Interior and then transferred to CSIR (University of Sydney Archives, Box 105 G3/13 2143).

On 15 May 1936, the CSIR then received a letter from the Department of Interior regarding the sale. In this letter it was stated that:

"For some time the urgent need of a field station for CSIR's McMaster laboratory at Sydney has been apparent. The matter has now been submitted to Cabinet which has approved the purchase of 800 acres of the above property (Bangaroo). The necessary funds however, have been provided by the Government as an appropriation for the current financial year and unless the whole transaction is completed by June the purchase will lapse as the funding will no longer be available. The matter is an extremely urgent one." (Memo, Department of Interior to CSIRO, 15 May 1936 in University of Sydney Archives Box 105 G3/13 2143).

The purchase took place rapidly and Buffier was registered as selling his land, Lot 3 DP164242 to the Commonwealth of Australia on 26 June 1936 (PA 64895. NSW LRS). The transfer of the eastern half of Portions 62 and 63 from Commonwealth to University of Sydney for the adjacent McGarvie Smith Farm was formalised by Contract on 5 February 1937 (CRM, 2019: 32).

The supply of power to the property was an issue that was raised by CSIR, the University, Penrith City Council and Norman Buffier (CRM, 2019: 40). The capital expenditure of installing power was shared between the four parties. By September 1937 Council arranged for power to be supplied to the properties, to be used for living quarters, farm buildings, to pump dam water to the tanks, drinking water from the underground tank and run the milking machine and separator (CRM, 2019: 40).

3.7.4 Establishment of McMaster Field Station

The field station established by CSIR at Badgerys Creek was named after Sir Frederick Duncan McMaster, one of its most significant benefactors. McMaster was a grazier and sheep breeder who owned a significant pastoral empire, including his property 'Dalkieth'. McMaster was a founding member of the NSW State Advisor Committee to the CSIR and in 1929 gifted £20,000 to fund the Animal Health Laboratory at Sydney University.

Following the establishment of the Animal Health Laboratory, McMaster offered to lease his property at Hinchinbrook, near Liverpool, to the University to trial products and methods developed in the laboratory. This temporary field station was established but soon superseded by a permanent field station at Badgerys Creek in 1936 purchased from Buffier. The field station was named the 'F.D. McMaster Field Station' (Sir Frederick Duncan McMaster Biography: CSIROpedia online resource). The property was surveyed for its new purpose by August (University of Sydney Archives Box 105 G3/13 2143).

The McMaster Field Station occupied 400 acres of land on the western side of McGarvie Smith Farm (CRM, 2019:33). Between June 1936, when CSIR purchased the land from Buffier, to January 1937, when the

CSIR transferred 400 acres of land to the University, the CSIRO was permitted to commence work on the property. To that end the University was informed that "we are therefore immediately taking steps to put down dams and erect fencing on the 400 acres ultimately to be transferred from the University to the Council" (University of Sydney Archives Box 105 G3/13 2143). This essentially allowed the University to commencement improvements on the land prior to settlement, with both institutions possibly sharing contractors for the works (CRM, 2019: 35)

Of particular interest is that the design of buildings on both properties were considered a shared concern by the University and CSIR (CRM, 2019:35). In October 1936, the University wrote to the Government Architect to discuss the properties and the desired outcomes:

"It is the desire of the University and Council that the buildings to be erected on the two properties should be as far as possible uniform in design and as you already have in hand, the buildings on the university section I am writing to ask if you would consent to the preparations of plans and specifications of the buildings for the Council. I understand that the Council will proceed forthwith with the erection of a residence for the superintendent, a memorial cottage and a workman's cottage." (Correspondence VC University to Government Architect, University of Sydney Archives Box 105 G3/13 2143)

As reported in 1938, the property was modified significantly to suit the needs of the CSIR, with an extant building modified in recognition of Norman Buffier's contribution to the land:

"The property has about fourteen miles of fencing and has been subdivided into forty paddocks ranging from less than one acre to 120 acres in area. In this way special areas will be allocated for work on parasitology, fertility, pasturage and diseases of sheep.

The building constitutes a memorial to the late Mr Daniel Buffier who owned and developed the land on which it stands. It was erected by his family and equipped with a laboratory which will meet the needs of the station for many years. Funds made available by the Government, through the CSIR, supplemented by the Australian Wool Board assisted in the development of the property.

During the past nineteenth months a water supply has been provided, dams made, reticulation installed, dip, yards and fencing constructed in preparation for the real work of the station. Situated on a hill about eight miles south of St Marys facing the Mulgoa Road the building is small but neat commanding a view of the 1250 acres with which it is associated and the adjoining McGarvie Smith Animal Husbandry Farm. The property is bounded by creeks and dotted liberally with dams" (The Farmer and Settler, 7 July 1938:03).

3.7.5 Operation and Layout of the Field Station

A review of CSIRO Archive files indicates that McMaster Field Station occupied an area of approximately 344 hectares. The field station comprised two separate areas, occupied by two different CSIRO divisions, each of which conducted different types of research: The Division of Animal Production (DAP) and the Division of Animal Health (DAH). The DAP occupied approximately 202 hectares in the north east half of the property but sits predominately outside the study area (Site 228 - Badgerys Creek Site Plan, CSIRO Archives). The DAH, in contrast, occupied the vast majority of the study area and further details about this division are provided in the following subsection.

3.7.6 The Division of Animal Health (DAH)

The DAH occupied 142 hectares in the south western half of the property (Site 218 – Badgerys Creek Site Plan, CSIRO Archives). This area housed 24 buildings (see Table 3.2 and Figure 3.4). This included a brick laboratory built in 1966, the Buffier Memorial Laboratory, which was a weatherboard building constructed in 1938 and a four-bedroom weatherboard residence constructed in 1939. Other infrastructure included sheep yards, sheds, pump houses, sheep shelters, a farm machinery shed, chaff cutting building and a brick flammable liquid store. The majority of the buildings were constructed of corrugated iron. The 4-bedroom weatherboard residence was likely to have been built by Buffier and a laboratory added by CSIR following purchase of the property. Many of the other buildings in this part of the study area appear to have been constructed in the 1970s.

The DAH operated as a sheep farm, producing animals for experimental work undertaken at off-site locations. A plan of the DAH drawn in 1978 shows that paddocks were numbered with a unique identifier, starting with paddocks closest to the building complex labelled A and so forth (Figure 3.5). The plan suggests that, at the time, individual researchers were allocated specific paddocks to conduct their experiments and research.

Since the mid-1980s operations at the site slowed. In 1995 the site supported 600 head of sheep and some cattle on agistment. A contamination report prepared for the site in 1996 identified three chemical storage facilities (Building 6, Building 25 and an above-ground storage tank), one shower dip near the sheep yards and no areas of waste disposal (Dames and More, 8 October 1996 in CSIRO Archive File No 95.1132). An incinerator was noted within the main area of buildings. Mass burials of sheep carcases was documented to have occurred in three known locations, with trenches 10 m long, 3 m deep and 1 m wide excavated for that purpose.

A valuation report prepared by First Pacific Davies (FPD) on 30 July 1996 included a Schedule of Improvements (CSIRO Archive File No: 96/0167). The following buildings were crossed off the DAH building list, indicating they had been removed from the site by this time:

- Buffier Memorial Laboratory (Building 1A)
- Hayshed (Building 14)
- Glasshouse (Building 16)
- Covered Sale Yards (Building 17)
- Incinerator (Building 18)
- Sheep Shelters (Buildings 19 and 20)
- Chaff Cutting Building (Building 24).

ANIMAL HEALTH (IAPP)

Tenure: CSIRO Title
Assets Equity: CSIRO
Area of Site: 142Ha
Staff Numbers: 3
No. of Buildings 24

Bld No	Building	Gross Area in sq m	Construction	Levels	Year Built
1	Laboratory	238.00	Brick	1	1966
1A	Buffier Memorial Laboratory	150.00	Weatherboard	1	1938
2	Implement Shed/Workshop	100.00	Corr GI	1	1961
2A	4BR Residence	186.00	Weatherboard	1	1939
3	Sheep Yards	180.00	Corr GI	1	1957
4	Sheep Shed	27.87	AC Sheet	1	1960
5	Sheep/Shearing Shed	420.00	Corr GI	1	1963
5A	Sheep Shed	270.00	Corr GI	1	1980
6	Flammable Liquid Store	6.00	Brick	1	1961
8	Pump House	5.95	Corr GI	1	
9	Pump House	5.95	Corr GI	1	
10	Pump House	5.95	Corr GI	1	
11 *w*	House (Superintendant)	136.00	Brick Veneer	1	1966
12/12A	Small Animal Building	479.00	Brick	1	1975
13	Cold Room	6.00	Aluminium	1	1971
14	Hayshed	200.00	Corr GI	1	1971
15	Sheep Shed	90.00	Corr GI	1	1975
16	Glasshouse	85.00	Steel/Glass	1	1975
17	Covered Sale Yards	250.00	Corr GI	1	1969
18	Incinerator	60.00	Brick Veneer	1	1979
19	Sheep Shelter	90.00	Corr GI	1	1972
20	Sheep Shelter	90.00	Corr GI	1	1972
21	Farm Machinery Shed	110.00	Corr GI	1	1977
22	Storage Shed	110.00	Corr GI	1	1976
23	Water Storage/Pump House	18.00	Steel	1	1980
24	Chaff Cutting Building	72.00	Corr GI	1	1982
25	Flammable Liquids Store	30.00	Brick	1	
Total Area of Buildings:		3,661.72	sq m		

Figure 5. McMaster Field Station, Badgerys Creek NSW: Site No. 228: Animal Health
(Source: CSIRO Archives, Printed December 1995)

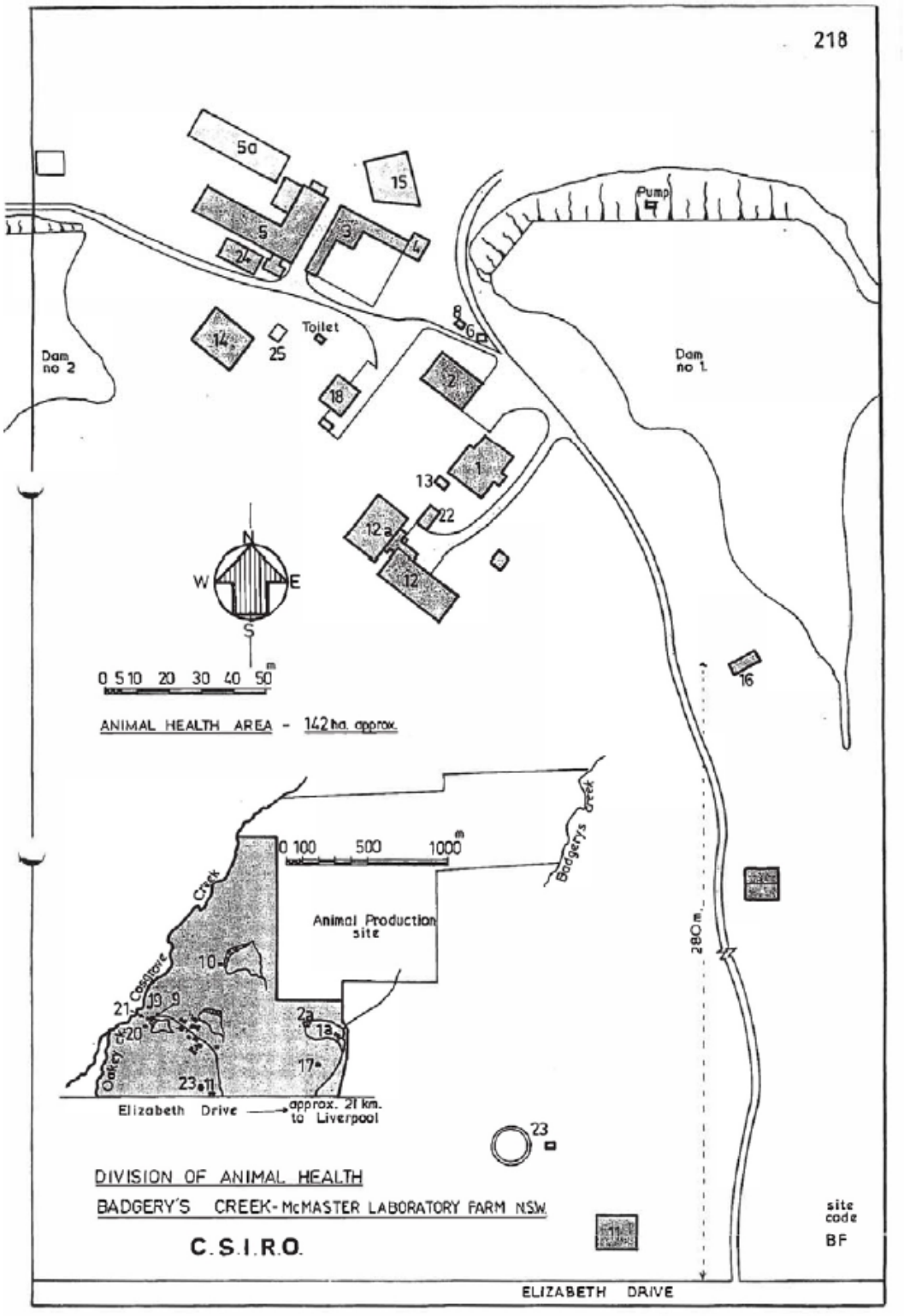

Figure 6. McMaster Field Station, CSIRO, Division of Animal Health

(Source: CSIRO Archives)

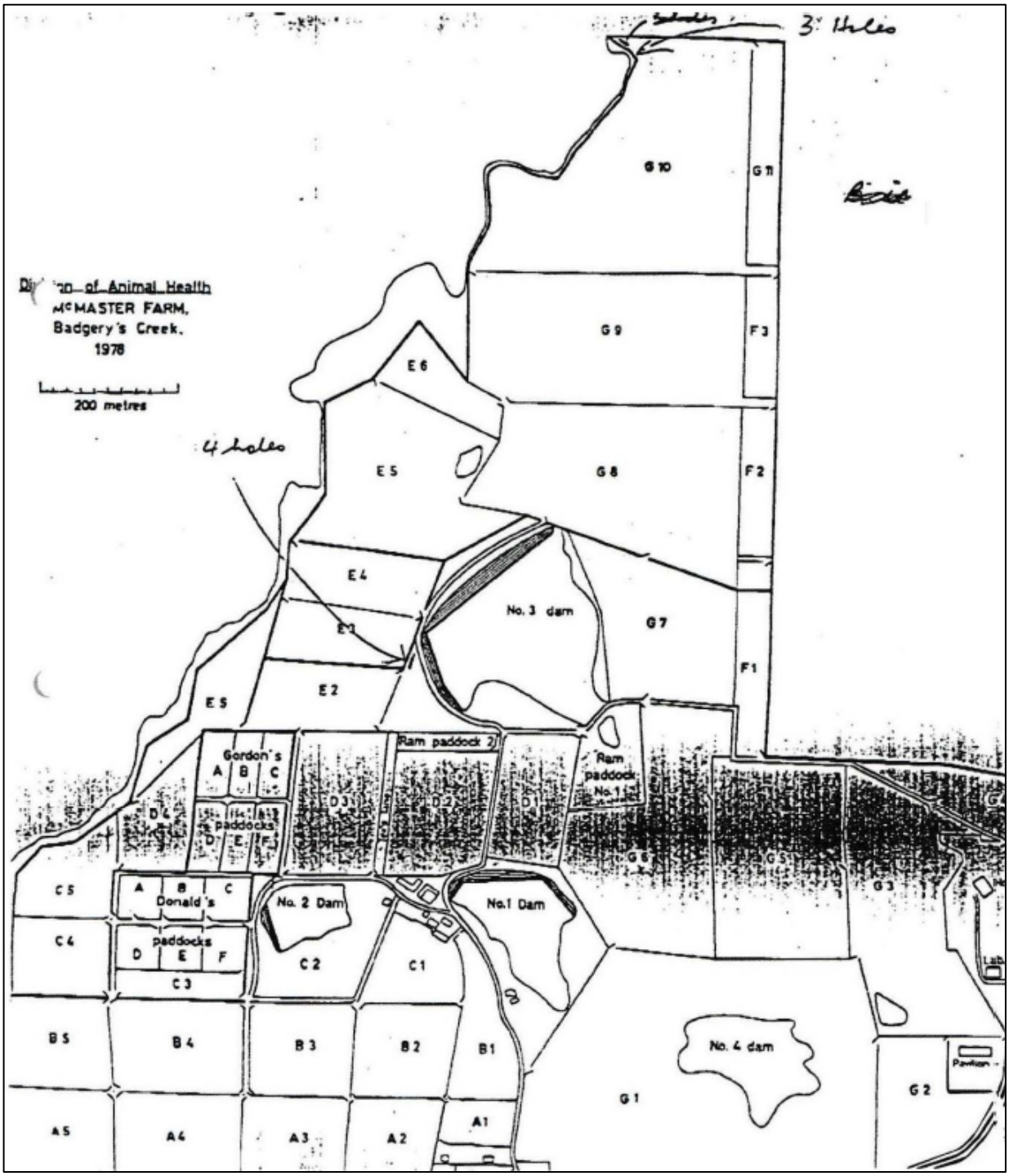

Figure 7. Division of Animal Health, McMaster Farm, Badgerys Creek, 1978

(Source: CSIRO Archives)

3.7.7 Research conducted at McMaster Field Station

A number of papers relating to research conducted at McMaster Field Station were published in various agricultural and parasitology journals in the 1970, 80s and 1990s. These provide some insight into the focus of the research conducted at the DAH and DAP.

Cattle Breeding and the development of the Australian Milking Zebu

In 1973 and 1974, R. H Hayman published articles in the *Australian Journal of Agricultural Research* about the crossbreeding of Bos indicus and Bos taurus dairy cattle in Australia. The purpose of the breeding program was to establish a new breed known (Australian Milking Zebu) that produced more milk in tropical areas of Australia, as Bos Taurus, the Jersey cow did not perform well in tropical conditions. The new breed would have the combined hardiness and resistance to parasites as Bos indicus but with the higher milking potential of Bos Taurus. The crossbreeding program was designed to take place over three stages. The first stage was carried out at the McMaster Field Station at Badgerys Creek from 1955 to 1970. This initial stage confirmed that Sahiwal of the Bos indicus were superior milk producers (Hayman, R. H, 1972, *Australian Journal of Agricultural Research* 23(4):519-932). One of the obstacles encountered was the discovery that a high proportion of crossbred females from both breeds failed to continue lactation after separation from their calves (Hayman, R. H, 1973, Australian Journal of Agricultural Research 24(3): 449-456). The second stage of the breeding program involved testing progeny of young bulls. Ten farms in the Lismore area were selected to assist with the testing, with a herd maintained at Badgerys Creek as the high-producing nucleus. Bulls were exposed to climatic stress, placed in controlled dry and wet bulb temperatures with various parameters tested, including daily food and water intake, sweating etc.

As outlined in a film about the Australian Milking Zubu published by the CSIRO on 1 June 1977, the research conducted by CSIRO resulted in a breed that has been exported to many countries, including Fiji and the Philippines (See: https://csiropedia.csiro.au/the-australian-milking-zebu-1977/). Some of the footage included in the film shows the initial crossbreeding program at McMaster Field Station, with a number of buildings and yards recognisable. As demonstrated by this film, the McMaster Field Station played a critical role in the development of this new breed of cattle.

Genetic resistance to Parasitic Diseases in Sheep

In 1981 R.G. Windon and J.K. Dineen from the CSIRO Division of Animal Health, McMaster Laboratory in Glebe published a paper in the *International Journal of Parasitology* (Volume 11, Issue 1: pp11-18). The paper describes the response of lambs to vaccination with irradiated *Trichostrongylus colubriformis* larvae. *T. colubriformis* nematodes are parasites of herbivorous mammals and have a worldwide distribution. The research concluded that the response of lambs to vaccination at an early age was genetically determined, and that the response was expressed when both sires and dams were selected and vaccinated.

In 1991, Windon published another paper, although by this time he was based at the CSIRO Division of Animal Health in Armidale. The paper explored resistance mechanisms in the *Trichostrongylus* flock (Proceedings of Research Planning Workshop held at ILCA Addis Adaba, Ethiopia). The paper describes a selection and assortative mating program which commenced at McMaster Field station in 1975. As part of this program, a population of highly heterogenous medium wool Peppin Merinos were maintained at the field station, but later relocated to the Pastoral Research Laboratory in Armidale. The population was

used to assess individual responsiveness to vaccination in parent generation animals at an early age. Five of the most resistant and five of the most susceptible rams were chosen as foundation sires and various breeding lines developed for each and remained closed. The lambs were vaccinated at 8 and we weeks of age with irradiated *T. colubriformis* larvae. The development of infections was then recorded by assessing factors such as failure of establishment, arrested or delayed development, reduced egg production by females, expulsion by males. As outlined in Windon's earlier paper, the research demonstrated that the resistiveness of sheep to *T. colubriformis* infection can be hereditary, although further research was recommended.

3.7.8 Closure and Sale of McMaster Field Station

Following the restructuring of its Animal Production and Processing Division in the 1990s and the CSIRO Board's policy to rationalise sites and consolidate their holdings, CSIRO decided it no longer needed its Badgerys Creek property. McMaster Field Station was first offered for sale in 1994 (CSIRO Archives File No. 96/1991). Following advice from the Federal Government over the potential impact of the second Sydney airport being considered at Badgerys Creek at the time, CSIRO withdrew the land from sale (Internal Memo dated 7 September 2009; CSIRO Archives File No. 96/1991). This would allow further evaluations of options for the new airport site to be considered and ensure CSIRO was aware of all potential constraints.

In June 1996 the property was placed on the market again. Valuations conducted in 1994 and in 1996 suggested no fluctuations in the value of the land (CSIRO Archives File No. 96/1991). Ministerial approval for the sale was received by CSIRO on 19 September 1996.

The property was sold to Mr Ron Medich, of Becklon Pty Ltd on 31 January 1997. Internal correspondence between CSIRO's Estate Manager and the Program Manager of the DAP at McMaster Field Station indicates that prior to the settlement a number of the buildings had been removed and others partly demolished. It was requested that the DAP level the areas affected and tidy up the site at the expense of the DAP (Letter from Michael Turner to Peter Steele, dated 14 January 1997; CSIRO Archives File No. 96/1991).

3.8 Historical Aerial Imagery – Division of Animal Health: 1947 – 1991

3.8.1 Main Building Complex

The following series of historical aerial photographs show the development of the former DAH main building complex from 1947 to 1994 (Figures 6 - 13). It is apparent from these photos that only small yards and sheds were present in 1947 and, only after the nearby dams were constructed c1961 that the main building complex developed. It is also apparent that the complex had fully evolved by c1978 the large building complex was still standing in 1994 and the majority of buildings were removed after this date, presumably after CSIRO sold the property. Aerial images are sourced from Lotsearch Aerials 2020 and Google Earth Pro where indicated.

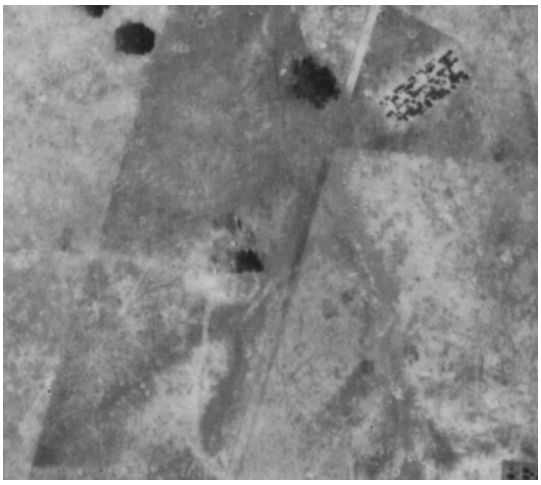

Figure 8. 1947 aerial DAH small yard and shed

Figure 9. 1955 aerial showing new dam construction

Figure 10. 1961 aerial DAH building complex

Figure 11. 1970 aerial DAH building complex

Figure 12. 1978 aerial DAH building complex

Figure 13. 1994 aerial DAH building complex

Figure 14. 2013 aerial DAH building complex dilapidation

Google Earth Pro

Figure 15. 2024 aerial DAH building complex dilapidation

Google Earth Pro

3.8.2 Buffier's Memorial Laboratory and Residence

Aerial imagery confirms that Buffier's Memorial Laboratory and the nearby 4-bedroom residence near the entrance to McMaster Field Station was present by 1947 and remained standing until 1994. Extensive gardens appear to have been added to the residence in 1961 but were in decline by 1980. The roofs of both buildings appear to have been replaced between 1991 and 1994. Only the northern building remains in 2024.

Figure 16. 1947 aerial Buffier memorial Laboratory & residence

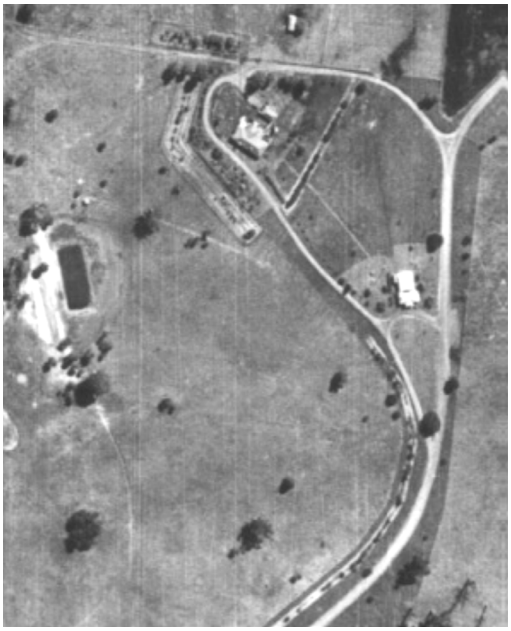

Figure 17. 1955 aerial Buffier memorial Laboratory & residence

Figure 18. 1965 aerial Buffier memorial Laboratory & residence

Figure 19. 1994 aerial Buffier memorial Laboratory & residence

Figure 20. 2002 aerial residence only

Google Earth Pro

Figure 21. 2024 aerial current condition

Google Earth Pro

4 Field survey

The study area comprises most of the former CSIRO Division of Animal Health (DAH) and approximately 15% of the Division of Animal Production (DAP). Extant structures relating to the DAP and main McMasters Field Station operations occur outside the study area and within the M12 transport corridor and have been the subject of historical heritage assessment and interpretation planning (Extent 2020). No DAP structures occur within the study area.

Pedestrian survey across the study area was conducted by Neville Baker in February 2020 in the company of Historical heritage consultant Fiona Leslie, in July 2021 during archaeological work along Cosgroves Creek, in December 2022 and May 2024 for the present SOHI. All parts of the study area were systematically surveyed, with attention paid to the extant structures. The land was observed to comprise open cleared land with part of a prominent ridgetop tree avenue and farm dams. Parts of the land were highly disturbed as evident in piles of dumped spoil extending onto the former DAH complex. Observed structures and features were compared to the CSIRO DAH building plan (Figure 6). Comparison of aerial photography confirms that many structural elements present in 1991 at the height of DAH operations (Figure 22) have since been removed (Figure 23).

Only seven of the original 24 structures relating to the DAH remain (Figure 5, Figure 6, Figure 22, Figure 23). Associated features include the extensive derelict chain link fences demarcating former DAH sheep paddocks, a series of dams and several cultivated tree avenues.

The area occupied by the eastern complex of sheds by a large dam (Dam No.1 in Figure 6) was later utilised by a riding school and many structures were demolished. Extant structures with CSIRO numbers 2, 6 and 14 are essentially metal-clad storage sheds and open metal-clad shelters.

A former caretakers house and associated shed and water tank close to Elizabeth Drive is still in use. A 1930s weatherboard house occupied until approximately 2021 is currently derelict.

A ridgetop tree avenue planted between 1955 and 1961 on the low spur watershed between minor second-order tributaries of Cosgroves Creek was identified as a prominent landscape feature by Leslie. Construction of the M12 has removed 11% of the original 715 metre long feature. The feature is the most prominent of the multitude of cultivated tree avenue plantings across the DAH land. A 1978 CSIRO paddock plan (Figure 7) identifies a series of yards along the tree avenue suggesting that the trees served as shelter and processing area for sheep stocked on the DAH land.

The biodiversity report for the wider landholding describes the prominent tree avenue as “not…remnant vegetation” consisting, “primarily of planted vegetation including *Corymbia maculata* (Spotted Gum), *Eucalyptus moluccana* (Grey Box), and *Eucalyptus crebra* (Narrow-leaved Ironbark). Trees included mature windrow trees and juvenile plantings. The understorey in these areas is predominantly exotic and has been extensively grazed.”. Regarding fauna habitats the report states, “Canopy provides foraging and perching habitat for bird and bat species. There is very little midstorey for small birds to forage and groundcover lacks habitat features such as large logs or rocks as sheltering habitat for fauna.”

Figure 22. 1991 Air photo showing DAH buildings intact

Figure 23. 2024 Air photo showing DAH buildings mostly demolished

5 Significance assessment

5.1 Overview

The study area forms approximately half of the original 343 hectare CSIRO McMaster Field Station. An overview of the heritage values pertaining to the larger McMaster Field Station land (which extends outside the study area) provides a context for identifying the cultural significance of the study area.

5.2 Comparative analysis

Experimental and training field stations and were established in rural areas in the earlier part of the 20th century government to improve agricultural production. Three NSW sites have been compared in the HHA: the NSW Department of Agriculture's Grantham Poultry Research Station at Seven Hills, the Sheep Biology Laboratory at Prospect and the adjacent McGarvie Smith Farm.

The Grantham Poultry Research Station at Seven Hills is located 20 kilometres to the north east. It is listed on the State Heritage Register and currently conserved within the Grantham Heritage Park.

The former Prospect site had been subject to heritage assessment resulting but with buildings in poor condition was sold by the CSIRO to Stockland who developed residential housing. The site was not heritage listed.

The Prospect site was acquired by the Commonwealth in 1946 for research purposes. In the early 1950s the site was established and research on sheep began. Initial research conducted at the Prospect site focussed on understanding wool biology, reproductive physiology and ruminant biology and physiology. The aim of the research was the examine the fundamental biology of sheep so procedures could be developed to enhance wool production through improved nutrition (Perumal Murphy Wu, 2000: 14).

Over the 50 or so years of CSIRO ownership over 40 buildings and sheds were constructed at Prospect with various modifications, extensions and refurbishment made over time (Conybeare Morrison, 2005: 66). The buildings included brick and centre laboratories, prefabricated offices and minor buildings and sheds largely concentrated in the north‐west portion of the site. An analysis of individual buildings by Perumal Murphy Wu indicated that they did not have cultural significance as individual examples of a particular type. They also did not effectively demonstrate the importance of research processes that took place within them. The buildings were found to have been adapted for individual experiments, as CSIRO's research program evolved. Despite this, the buildings were found to be significant as the place where historically significant research programs were conducted. It was also found that the site would likely hold social significant to individuals that had worked there (Perumal Murphy Wu, 2000: 11).

The Statement of Significance prepared by Perumal Murphy Wu for the Prospect site was as follows,

> The site of the CSIRO Division of Animal Production at Prospect has importance for its association with scientific agricultural research programmes which have had a significant role in the agricultural development of Australia in the Post‐War period, particularly for the sheep and wool industry (Criterion A4).
>
> The site has importance for the social value of its associations with CSIRO staff who have worked at the research facility (Criterion G).
>
> The site has a. special association with CSIRO scientists who have carried out work of importance to Australia's cultural history (Criterion H) (Perumal Murphy Wu, 2000: 12)

Based on the architectural assessment, demolition of the building complex was permitted. Preparation of an interpretation plan to display the history of CSIRO's occupation and use of the site, however, was recommended.

McGarvie Smith Farm is adjacent to the study area within the University of Sydney's land. It is listed as an item of local significance on the State Environmental Planning Policy (Western Sydney Aerotropolis) 2020. The site was subject to heritage assessment by Wendy Thorp (CRM) in 2019. In summary she found that,

> The site of the McGarvie Smith Farm is an evolved cultural landscape that has been shaped and modified by Europeans since the earliest years of the nineteenth century. It has developed from a large rural estate, through smaller subsistence and commercial farms of various sizes including the present farm, a research facility. McGarvie Smith Farm is part of a much larger rural landscape and the farm preserves a substantial portion of the older pattern of settlement…
>
> The farm is also important for its relationship with the CSIR. This relationship, including that with the CSIRO, is important as an example of the longstanding close working relationships between the university and this organisation and the values accrued to both through shared objectives. The farm also has particular associations with the McGarvie Smith Institute, the University of Sydney and its students and teachers of the Veterinary Science department…
>
> The McGarvie Smith Farm and its work is of State Significance (CRM 2019: 122-129).

Thorp found that, despite its state heritage values, the remaining fabric was poor condition reducing its ability to demonstrate that significance. Thorp recommended updating the existing heritage listing, archival recording and preparation of an Interpretation Plan be prepared to identify themes and stories that could be incorporated into the new development.

A review of relevant Heritage registers and studies suggests that research stations typically comprise mostly dilapidated remnants of original structures. While conservation presents a challenge, it has been successfully achieved at Grantham Heritage Park in Sydney's western suburbs near the present study area.

5.3 Historical themes

A thematic assessment of the greater McMaster Field Station is set out in Table 5.

Table 5. National, State and Local Historical Themes relevant to the study area

National Theme	NSW Theme	Local Theme	Relevance to the Study Area
Tracing the natural evolution of Australia	Environment – naturally evolved	There are two aspects to this theme: (1) Features occurring naturally in the physical environment which have significance independent of human intervention (2) Features occurring naturally in the physical environment which have	The landscape of the McMaster Field Station preserves many elements that relate to the pre-settlement environment. There are no features of significance which sets the land apart from the region. The selection of the land was opportunistic following the offer to the NSW government by Buffier to sell the land for research purposes.

National Theme	NSW Theme	Local Theme	Relevance to the Study Area
		shaped or influenced human life and cultures.	
Developing local, regional and national economies	Agriculture	Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes, can include aquaculture	The McMaster Field Station was an important centre for experimental research conducted by CSIRO. Research included cattle breeding programs that were critical for the development of a new breed of cattle in Australia - the Australian Milking Zebu. The success of this research led to the export of this breed to tropics countries, including Fiji and the Philippines. Research on the genetic resistance to parasitic disease in sheep was also conducted at the station.
Developing local, regional and national economies	Environment - cultural landscape	Activities associated with the interactions between humans, human societies and the shaping of their physical surroundings	The landscape of the study area is the result of European intervention since the early nineteenth century when the land was first cleared, to the twentieth century when large dams were created for irrigation to support the CSIRO enterprise. The extant buildings and landscape features on the site reflect to a limited extent its history of occupation and use by CSIRO.
Developing local, regional and national economies	Pastoralism	Activities associated with the breeding, raising, processing and distribution of livestock for human use	The McMaster Field Station supported the breeding and grazing of sheep and cattle for research purposes by the CSIRO.
Developing local, regional and national economies	Science	Activities associated with systematic observations, experiments and processes for the explanation of observable phenomena	The experiments and breeding programs that were conducted at McMaster Field Station were innovative and resulted in the establishment of a new breed of dairy cattle in Australia, designed to withstand the tropical conditions of Queensland and produce high quality milk.
Building settlements, towns and cities	Land tenure	Activities and processes for identifying forms of ownership and occupancy of land and water, both Aboriginal and non-Aboriginal	McMaster Field Station housed two separate divisions of the CSIRO: the DAP and the DAH. Both areas were separated by a large avenue of trees, planted early in its CSIRO ownership, and contained separate paddocks defined by extensive fencing. The boundaries of the station reflect original land portions that reflect early European settlement pattern.

National Theme	NSW Theme	Local Theme	Relevance to the Study Area
Building settlements, towns and cities	Accommodation	Activities associated with the provision of accommodation, and particular types of accommodation – does not include architectural styles – use the theme of Creative Endeavour for such activities.	McMaster Field Station included a number of residences for staff who lived on the station. This included Superintendent Residences for both the DAP and DAH established in the 1940s and later residences for CSIRO staff. One of the earliest residences may have been built by Norman Buffier, a previous land owner and repurposed by CSIRO as staff residence.

5.4 Significance assessment criteria

The following assessment of heritage significance for the study area has been prepared with reference to *Assessing Heritage Significance* (Department of Planning & Environment 2023) and *Assessing Significance for Historical Archaeological Sites and 'Relics'* (NSW Heritage Branch, Department of Planning, 2009). Both guidelines incorporate the five aspects of cultural heritage value identified by the *Burra Charter: The Australian ICOMOS Charter for Places of Cultural Significance 2013* (Burra Charter) into a framework currently accepted by Heritage NSW (i.e. historic, associative, aesthetic, social, technical / research, rarity and representative values). The following specific criteria specified in the *Heritage Act 1977* are used to assess heritage significance:

Criterion (a) *an item is important in the course, or pattern, of NSW's cultural or natural history (or the local area);*

Criterion (b) *an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the local area);*

Criterion (c) *an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);*

Criterion (d) *an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (or the local area);*

Criterion (e) *an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the local area);*

Criterion (f) *an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the local area); and*

Criterion (g) *an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments (or the local area).*

5.5 Significance assessment of the study area

Criterion (a) - an item is important in the course, or pattern, of NSW's cultural or natural history (or the local area)

The study area was first used by European settlers from the early nineteenth century onwards. The land was contained within two large land portions granted to William Johnstone and John Piper in 1819 and 1830 who grazed cattle and grew wheat. By the mid‐nineteenth century, the property was consolidated and managed the Morrison family. Then, in 1914, the farm was added to a larger property, owned and managed by the Buffier family. Buffier's property, known as 'Bangaroo', ran between 600 and 800 dairy cows, with calves bred on the property before being sent to Lake Cargelligo for fattening. It is possible that the former Buffier residence, a single‐storey timber house, has survived within the study area near Elizabeth Drive.

The early large portions reflect typical settlement patterns of the time. Consolidation of the land during the early twentieth century, however, deviates from the pattern of subdivision into smaller land parcels seen in surrounding estates. This consolidation and on-going agricultural use ultimately led to its offer to the Commonwealth for research purposes. In 1937 the land was transferred to the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the F.D McMaster Field Station was established. The experimental farm was named in honour of Sir Frederick Duncan McMaster, a benefactor to CSIRO who funded the first Division of Animal Health laboratory at the University of Sydney. The station was divided into two portions: the north east portion occupied by the Division of Animal Production (DAP) and the south west by the Division of Animal Health (DAH). The large extant dams established early on the property ensured good water supply and a large avenue of trees were planted on the boundary of the two divisions. Two building complexes evolved, one for each division. The DAH complex operated as a sheep farm, producing animals for experimental work undertaken at off-site locations. The complex included sheep sheds and sheep yards, a small-animal building, a brick laboratory and various sheds. Only a few of the structures survive, including a hayshed, implement shed, a flammable liquids store, a four-bedroom weatherboard residence and a later Superintendent's house. Research activities at McMaster Field Station slowed in the 1980s and, following its closure in 1997, the property was sold to Becklon Pty Ltd.

The physical fabric of McMaster Field Station has deteriorated and many of the original buildings have been lost. The coherence of the cultural landscape formed through construction of dams and fenced paddock and the configuration of the two divisions no longer remains legible due to the construction of the M12 Motorway and light rail corridor. Some of the surviving DAH structural elements reflect their former use. The loss of most original structures and the dilapidated condition of most surviving elements compromise the ability of remaining fabric to represent their function with DAH operations. There is a conceptual heritage value under this criterion at the local level, however it is not embodied in the remaining fabric.

Criterion (b) ‐ an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the local area)

The former CSIRO McMaster Field Station is associated with Sir Frederick Duncan McMaster, a pastoralist who funded the construction of the first Division of Animal Health laboratory at the University of Sydney. His name remains associated with the CSIRO Chiswick Field Station near Armidale, wherein the F.D.McMaster laboratory facilities are located. The association of the McMaster Field Station with F.D.McMaster is not exclusive and does not give rise to elevated heritage value. The study area is not considered to be significant under this criterion.

Criterion (c) – an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area)

The South Creek Heritage Study identified several cultural heritage landscapes of significance, including the McMaster Field Station Scenic Landscape, which was recognised for its pastoral landscape with lake-like water bodies, native vegetation and a backdrop of green hills. The large dams constructed by the CSIR early in the history of the field station are evocative landmarks, providing a scenic rural setting for the remains of the DAH complex.

Unlike the DAP complex, very little of the DAH complex survives and what is left has little aesthetic value. The individual buildings themselves have limited technical value and give how few of the original buildings area left, they are unable to demonstrate the range of rural practices previously conducted by the DAH. The study area is not considered to be significant under this criterion.

Criterion (d) – an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (or the local area)

The former CSIRO McMaster Field Station has no confirmed special association with a community or cultural group. The study area is not considered to be significant under this criterion.

Criterion (e) – an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the local area)

No potential historical archaeological sites were identified within the study area. As such, the study area is not considered to be significant under this criterion.

Criterion (f) – an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the local area)

CSIRO's former field stations are increasingly rare following divestment in the late 20th century. Very few of the early to mid-twentieth century experimental research stations established by CSIRO have survived. The most similar NSW example at Prospect has largely been redeveloped for residential and employment purposes with all of the buildings removed. In light of the diminished cultural resource, there is an imperative for conservation of a representative place. This imperative has been met by the conservation of a cluster of McMaster Research Station structures within the Transport for NSW land immediately to the east of the study area including active interpretation measures (Extent 2020). The study area is not considered to be significant under this criterion.

Criterion (g) – an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments (or the local area).

The study area contains few surviving features associated with its use as part of the CSIRO McMaster Field Station. Those that remain are scattered and lack coherence as part of a functioning animal research and husbandry farm. The varying stages of dilapidation also limit the interpretive value of the structures. The study area is not considered to be significant under this criterion.

5.6 Statement of significance

5.6.1 Prior assessment

Assignations of State significance in recent assessments all defer wholly or in part to a M12 Route selection study heritage assessment by Aurecon 2016 which assessed McMaster Field Station as of "State and/or national significance" with the significance statement, "…The potential archaeology and intactness of this landscape rates it as moderately significant at a local or State level. The contribution by this farm to the national arena may be of significance at a national level". The statement does not meet current nor previous heritage assessment guidelines. Furthermore, no historical archaeological evidence has been identified on the land relating to McMaster Field Station.

5.6.2 Current assessment

The former CSIRO McMaster Field Station was associated with valuable research into the development of new cattle breeds and treatment of sheep conditions from 1936 to its closure in the mid-1990s and eventual sale in 1997. The landscape has been recognised as having aesthetic value, being a rural landscape without the blight of modern transmission lines, notwithstanding the presence of local power supply lines across the property. The study area comprises approximately half of the original McMaster Field Station; the remainder being mostly lost to the M12 Motorway and light rail corridor construction. The study area comprises a large part of the original Division of Animal Health which undertook research into sheep husbandry.

A small proportion of the original structures making up the DAH remains. The significant loss of many of the McMaster Field Station DAH structures and disconnection of those remaining diminishes associative coherence, interpretative value and therefore the overall historical heritage value of the study area. Due to the compromised cultural landscape the study area, although once assessed as of State significance in the M12 EIS heritage investigation, is significant at a local level.

The succinct statement of significance at a local level provided by Paul Davies in 2007 best applies, "The former McMaster Field Station is of historical interest as an important centre for CSIRO animal research from 1936 to c.1990 and is the only known example of a CSIRO rural research institute in the Penrith LGA."

6 Impact assessment

6.1 Development concept and Stage 1 development

The proponent proposes development of a concept plan and Stage 1 development for an industrial warehouse and logistics estate. As Stage 1 of the proposal includes development that has an estimated development cost of more than $30 million, the proposed development is State Significant Development (SSD) pursuant to Section 29 of Schedule 1 of *State Environmental Planning Policy (Planning Systems)* 2021 (Planning Systems SEPP) which applies to development in the Western Sydney Aerotropolis.

The development comprises a Concept SSDA for the site including the proposed future development lots and building footprints. The development also seeks consent for the Stage 1 works which will include bulk earthworks across the site, infrastructure delivery, road access/intersections, internal road construction, civil infrastructure and utilities, stormwater infrastructure works and the construction of three warehouse buildings.

The development proposal has been described above at section 1.3 and in Figure 2.

6.2 Potential impacts

The planned development will result in bulk earthworks which will alter the local topography for the purpose of constructing large level warehouse and logistics facilities. This will result in the removal of all former DAH structures, dams and tree corridors. The structural DAH heritage elements that will be removed are of little heritage significance. The impacts will be mitigated by archival recording prior to removal.

Table 6 answers the relevant questions proposed by *Guidelines for preparing a statement of heritage impact* (Department of Planning & Environment 2023) Table 1.

Table 6. Heritage impacts – responses to SOHI 2023 guidelines

Relevant SOHI Guideline Questions	Response	SOHI section
If the document is not written by a heritage professional, has the advice of a heritage professional been obtained and were their recommendations implemented into the proposed work? If not, why?	• N/A. The document has been prepared by a heritage professional.	1.6
The heritage item		
Is the location of the proposed works clearly identified?	• The location of the study area and detail of the proposed works is shown in Figure 1 and Figure 2	1.2
Significance assessment		
Is the significance of the heritage item well documented and understood?	• A detailed history of the McMaster Research Station is provided, the original precincts and elements therein described, and the present	3

Relevant SOHI Guideline Questions	Response	SOHI section
	condition documented. This research, together with comparative analysis inform the significance assessment.	
Have all criteria of the heritage item's significance been considered?	• All criteria have been addressed.	5.5
Proposed works		
Is there enough information available about the proposed works to determine how they may impact the heritage item and its significance?	• Detailed civil plans show that the proposed development will result in bulk earthworks which will alter the local topography for the purpose of constructing large level warehouse and logistics facilities. This will result in the removal of all former DAH structures, dams and tree corridors.	1.3
Will the proposed works be the best conservation solution for the heritage item?	• The landscape elements and relict built elements of the former DAH within McMaster Research Station are not amenable to, nor does their heritage significance warrant, heritage conservation. They will be removed.	5.5
Will the works promote the ongoing use and upkeep of the item?	• No	6.1
Heritage impact assessment		
Do the proposed works include removal of unsympathetic alterations and additions? How does this benefit or impact the heritage item and its significance?	• All elements of the former DAH within the McMaster Research Station will be removed. The cultural landscape of the former McMaster Research Station has been irrevocably compromised by the construction of the M12 Motorway and light rail. The proposed development will result in a loss of the remaining elements of the DAH and some impact on the heritage significance of the McMaster Research Station heritage item.	6.1
Do the proposed works affect the setting of the heritage item, including views and vistas to and from the heritage item and/or a cultural landscape in which it is sited? Can the impacts be avoided and/or mitigated?	• Yes. The proposed development will result in a significant alteration of the cultural landscape. The impacts cannot be avoided. The impacts can be mitigated by archival photography.	6.1
Are the proposed works part of a broader scope of works?	• Yes. The proposed development is an early stage in development of the remaining land owned by the proponent. At a larger scale, the works are one	1.3

Relevant SOHI Guideline Questions	Response	SOHI section
	small part of the Western Sydney Aerotropolis planned by NSW Government.	
Does this proposal relate to any previous or future works? If so, what cumulative impact (positive and/or adverse) will these works have on the heritage significance of the item?	• The proposed development is an early stage in development of the remaining land owned by the proponent. At a larger scale, the works are one small part of the Aerotropolis planned by NSW Government. The heritage significance of the McMaster Research Station has been irrevocably compromised by the construction of the M12 Motorway and light rail. The proposed development will result in a loss of the remaining elements of the DAH and some impact on the heritage significance of the McMaster Research Station heritage item.	1.3
Are the proposed works to a heritage item that is also significant for its Aboriginal cultural heritage values? If so, have experts in Aboriginal cultural heritage been consulted?	• The McMaster Field Station as a formerly working entity does not have Aboriginal cultural heritage values. Such values have been identified along Oaky and Cosgroves Creeks as documented in an Aboriginal Cultural Heritage Assessment Report for this EIS. The local Aboriginal community and an expert in Aboriginal archaeological heritage has been consulted for this SOHI.	5.5
Has the applicant checked if any other approvals or a separate process to evaluate the potential for impacts is required?	• The proposed works are subject to SSDA and *Western Sydney Aerotropolis Development Control Plan 2022*.	2
Do the proposed works trigger a change of use classification under the National construction code that may result in prescriptive building requirements? If so, have options that avoid impact on the heritage values been investigated?	• No	N/A
If the proposed works are to a local heritage item, are the requirements of the development control plans or any local design guidelines that may apply to the site considered?	• The requirements of the *Western Sydney Aerotropolis Development Control Plan 2022* have been considered.	2
Will the proposed works result in adverse heritage impact? If so, how will this be avoided, minimised or mitigated?	• The proposed development will result in the loss of the relict DAH elements within the former McMaster Research Station site. Archival recording will mitigate against the loss.	6.1

7 Conclusions and Recommendations

7.1 Conclusions

The study area forms part of the former CSIRO McMaster Field Station which operated from 1936 and was sold in 1997. This field station was first recognised "as an important centre for animal research" in the Penrith Heritage Study (Paul Davies, 2007). The heritage value of its landscape was also recognised in the 1990 South Creek Heritage Study.

A heritage assessment prepared by Jacobs in 2019 for the M12 Motorway concluded that the McMaster Field Station was of State heritage significance but this did not lead to formal SHR listing. The portion of the McMaster Field Station assessed by Jacobs has been severely altered with conservation of a cluster of McMaster Research Station buildings within the Transport for NSW M12 corridor.

A Historical Heritage Assessment prepared by MTS Heritage in 2020 provides further details on the former layout, surviving elements and the range and type of research activities that took place at McMaster Field Station. It identified research and breeding programs that were conducted at the station, which led to significant research outcomes. These activities were at the time of assessment demonstrated through surviving built and landscape elements. The results of that assessment concluded that the former McMaster Field Station is of State heritage significance for its historical heritage value, associations and rarity. Many of the heritage elements and landscape aesthetic have since been removed by the M12 Motorway and Metro construction.

The heritage values of the McMaster Research Station are not embodied in any one physical element or structure but pertain to the whole cultural landscape and structures thereon formed in the course of McMaster Field Station operations until 1997. After 1997 the former CSIRO property was effectively in "caretaker mode" with structures gradually demolished or deteriorate through neglect. The heritage values thus have been gradually but increasingly compromised through structural and landscape deterioration compounded by the destructive M12 Motorway and light rail construction since 2022.

The study area is contained within the former DAH. In this portion of the former McMaster Field Station land, very few of the original built heritage elements have survived. Only seven or the original 24 buildings are still standing. Four of the six dams have survived and a portion of the Avenue of Trees. The proposed development would remove all of these elements.

7.2 Mitigation measures

None of the heritage elements identified in this SOHI warrant conservation. Archival recording is warranted prior to removal.

A photographic archival record of the former CSIRO McMaster Field Station site, including all of its built and landscape elements, should be prepared by a suitably qualified heritage consultant prior to the Stage 1 development. This record should be prepared in accordance with the NSW Heritage Council's *Photographic Recording of Heritage Items Using Film or Digital Capture* (NSW Heritage Council, 2006).

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Appendix A – Inventory of Heritage elements within the study area

Item number	NGH2	***Item type***	Shed & tank
MGA map coordinates	289910E 6249945		
Construction year	1980		
Construction type	Brick and concrete		
Former function	Water storage/ pump house		
Archaeological potential	Nil	*Heritage significance*	Local
Historical notes	CSIRO Building 23, former DAH. The shed and tank likely supplied water to the nearby Superintendent's House		
			
Recommendation	Photographic archival recording by a suitably qualified heritage consultant prior to removal.		

Item number	NGH3	***Item type***	Residence
MGA map coordinates	289960E 6249910N		
Construction year	1966		
Construction type	Brick veneer		
Former function	Residence (also current function)		
Archaeological potential	Nil	*Heritage significance*	Local
Historical notes	CSIRO Building 11 of the former DAH. Presumably occupied by the former Superintendent of the CSIRO DAH		
			
Recommendation	Photographic archival recording by a suitably qualified heritage consultant prior to removal.		

Item number	NGH4	***Item type***	Shed
MGA map coordinates	289931E 6250081N		
Construction year	Unknown		
Construction type	Corrugated iron		
Former function	Machinery shed ?		
Archaeological potential	Nil	*Heritage significance*	Local
Historical notes	Former DAH. No CSIRO building number assigned.		
			
Recommendation	Photographic archival recording by a suitably qualified heritage consultant prior to removal.		

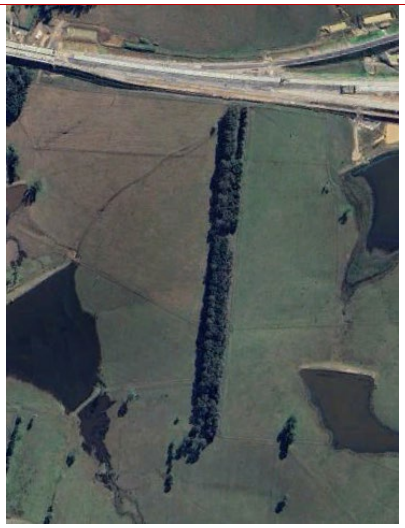
Item number	NGH5	***Item type***	Residence
MGA map coordinates	290694E 6250220N		
Construction year	1939 (Likely earlier)		
Construction type	Weatherboard		
Former function	4-bedroom residence		
Archaeological potential	Low	*Heritage significance*	Local
Historical notes	CSIRO Building 2A of the former DAH. Likely to be the former residence of Norman Buffier, who purchased Portions 62 and 63 in the early twentieth century and ran 'Bangaroo' with his mother and sister. The property ran between 600 and 800 dairy cows, with calves bred on the property.		
 			
Recommendation	Photographic archival recording by a suitably qualified heritage consultant prior to removal.		

Item number	NGH6	***Item type***	Former building remains
MGA map coordinates	290796E 6250112N		
Construction year	1938		
Construction type	Weatherboard		
Former function	Former Buffier Memorial Laboratory		
Archaeological potential	Structural remains only. Low potential for archaeological deposits.	*Heritage significance*	Local
Historical notes	CSIRO Building 1A, Buffier Memorial Laboratory, former DAH. Footage showing this former building was included in a CSIRO film published in 1946 - see https://csiropedia.csiro.au/research-facilities-c-s-r-1946/ 		
 			
Recommendation	Photographic archival recording by a suitably qualified heritage consultant prior to removal.		

Item number	NGH30	*Item type*	Shed
MGA map coordinates	289855E 6250320N		
Construction year	1971		
Construction type	Aluminium Sheet over metal framework		
Former function	Hayshed		
Archaeological potential	Nil	*Heritage significance*	Local
Historical notes	CSIRO Building 14, Former DAH		
			
Recommendation	Photographic archival recording by a suitably qualified heritage consultant prior to removal.		

Item number	**NGH31**	***Item type***	**Shed**
MGA map coordinates	289936E 6250278N		
Construction year	1961		
Construction type	Timber and corrugated iron		
Former function	Implement shed and workshop		
Archaeological potential	Nil	*Heritage significance*	Local
Historical notes	CSIRO Building 2, Former DAH		
			
Recommendation	Photographic archival recording by a suitably qualified heritage consultant prior to removal.		

Item number	**NGH32**	***Item type***	**Shed**
MGA map coordinates	289951E 6250296N		
Construction year	1961		
Construction type	Timber and corrugated iron		
Former function	Flammable Liquids Store?		
Archaeological potential	Nil	*Heritage significance*	Local
Historical notes	CSIRO Building 6, former DAH		
			
Recommendation	Photographic archival recording by a suitably qualified heritage consultant prior to removal.		

Item number	**NGH33**	***Item type***	**Avenue of trees**
MGA map coordinates	290462E 6250776N		
Construction year	1955-1961		
Description	Originally 750m long x 40m wide. Northern 50 m removed by M12 Motorway construction. Native trees but not local species		
Former function	Windbreak/ animal shade. Along low ridge boundary between DAP & DAH		
Archaeological potential	N/A	*Heritage significance*	Local
Historical notes	Historical imagery indicates that the trees were planted between 1955 and 1961. Has been considered a landmark feature within the study area.		
 			
Recommendation	Photographic archival recording by a suitably qualified heritage consultant prior to removal.		

Item number	**NGH34**	***Item type***	**Dams (x8)**
MGA map coordinates	Various		
Construction year	1947-1955		
Description	Farm dams of various size		
Former function	Water capture & storage for irrigation across former DAH & DAP		
Archaeological potential	N/A	*Heritage significance*	Local
Historical notes	Historical imagery indicates that the dams were constructed by 1955.		
			
Recommendation	Photographic archival recording by a suitably qualified heritage consultant prior to removal.		