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Sydney Metro – Western Sydney Airport

Appendix K
Archaeological Research Design

Sydney Metro – Western Sydney Airport

Archaeological Research Design

Report to Sydney Metro Authority

April 2021

artefact

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EXECUTIVE SUMMARY

The *Greater Sydney Region Plan*[1] sets the vision and strategy for Greater Sydney to become a global metropolis of three unique and connected cities: The Eastern Harbour City, the Central River City and the Western Parkland City. The Western Parkland City incorporates the future Western Sydney International and Aerotropolis. The Sydney Metro – Western Sydney Airport (the project) would be a new metro line constructed and operated by Sydney Metro to connect Western Sydney International and the Aerotropolis with the broader Sydney rail network.

The project is identified in the *Greater Sydney Region Plan* as a key element to delivering an integrated transport system for the Western Parkland City. The project would be located within the Penrith and Liverpool Local Government Areas (LGAs) and would involve the construction and operation of a new metro railway line around 23 kilometres in length between the T1 Western Line at St Marys in the north and the Aerotropolis in the south (the area to be called Bradfield). This would include a section of the alignment which passes through and provides access to Western Sydney International.

The Secretary's Environmental Assessment Requirements (SEARs) for the project were issued in July 2020 and the project has been declared as Critical State Significant Infrastructure (CSSI) (SSI-10051).

Artefact Heritage (Artefact) were engaged to prepare a non-Aboriginal heritage assessment for inclusion in the Environmental Impact Statement for the project. The Environmental Impact Statement[2], including the non-Aboriginal heritage assessment, were published for public exhibition on 21 October 2020.

The non-Aboriginal heritage assessment identified that potential significant non-Aboriginal archaeological resources occur within one of the proposed construction sites for the project, the St Marys construction site. The assessment did not identify any other potential significant non-Aboriginal archaeological resources which may be impacted by the project.

The non-Aboriginal heritage assessment recommended that a non-Aboriginal Archaeological Research Design (ARD) is prepared to outline the further archaeological investigations required for the project.

Sydney Metro have engaged Artefact Heritage to prepare the recommended non-Aboriginal ARD. This report provides a detailed assessment of predicted archaeological remains, a discussion of the significance of potential remains, and outlines the methodology for archaeological investigation of these resources.

[1] Greater Sydney Commission 2018. *Greater Sydney Region Plan*.
[2] Artefact Heritage, October 2020. *Sydney Metro – Western Sydney Airport Technical Paper: Non-Aboriginal Heritage.* Report prepared for Sydney Metro Authority.

Archaeological management

The construction footprint for the project has been divided into archaeological management zones based on archaeological potential. Significant non-Aboriginal archaeological remains have only been identified in one area of the project, the St Marys construction site.

Archaeological management zone mapping has been prepared according to the following colour code:

- **Red** (Zone 1): Potential impact to significant archaeology and archaeological investigation required. Prepare Archaeological Method Statement (AMS) once construction methodology and impacts are known.
- **Green** (Zone 2): Unlikely to contain significant archaeology. Construction to proceed with Unexpected Finds Procedure as nil-low potential for significant archaeological remains.

A summary of archaeological management measures for the St Marys construction site are provided in Table 1. No archaeological remains are predicted across the remainder of the construction footprint for the project and all remaining areas of the project are considered within the archaeological management Zone 2 (Unexpected Heritage Finds Procedure).

The archaeological management zones for the project are illustrated in Figure 1 to Figure 5.

Table 1: Archaeological management measures for the St Marys construction site

Phase	Activity and remains	Potential and significance	Management /mitigation	Zone
Phase 1 (1806 – 1862)	Evidence of early land grants, agricultural remains	Nil	Unexpected Heritage Finds Procedure.	2
Phase 2 (1863 - 1888)	First Railway Station – timber or brick footings, isolated artefact deposits	Nil to low, possible local	Unexpected Heritage Finds Procedure	2
	St Marys Goods Yard – brick, timber and concrete footings, isolated industrial or domestic artefact deposits	Low to moderate, possible local	Establish an exclusion zone around area of predicted archaeological remains (refer to Figure 1). If ground disturbing works are required within the St Marys Goods Yard they would be managed under Archaeological Method Statement.	1
	St Marys Goods Shed underfloor deposits – potentially stratified discarded domestic, workers and freight-related artefacts, including glass, ceramic, bone, paper or newspaper, as well as isolated industrial remnants.	Low to Moderate, possibly local	Establish an exclusion zone around area of predicted archaeological remains for all of Zone 1 (refer to Figure 1). If ground disturbing works are required within the St Marys Goods Shed they would be managed	1

Phase	Activity and remains	Potential and significance	Management /mitigation	Zone
			under Archaeological Method Statement.	
	Platform 1/2 building – brick footings	Low, possible local	Unexpected Heritage Finds Procedure	2
Phase 3 (1888 – 1945)	Commercial, industrial and residential remains – brick, timber or concrete footings, former yard surfaces, isolated artefact deposits	Low, nil	Unexpected Heritage Finds Procedure	2
Phase 4 (1945 – present)	Modern concrete footings, kerbs, road surfaces, utility services	Moderate, nil	Unexpected Heritage Finds Procedure	2

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Figure 1: St Marys construction site archaeological management zones

Figure 2: Claremont Meadows services facility construction site archaeological management zones

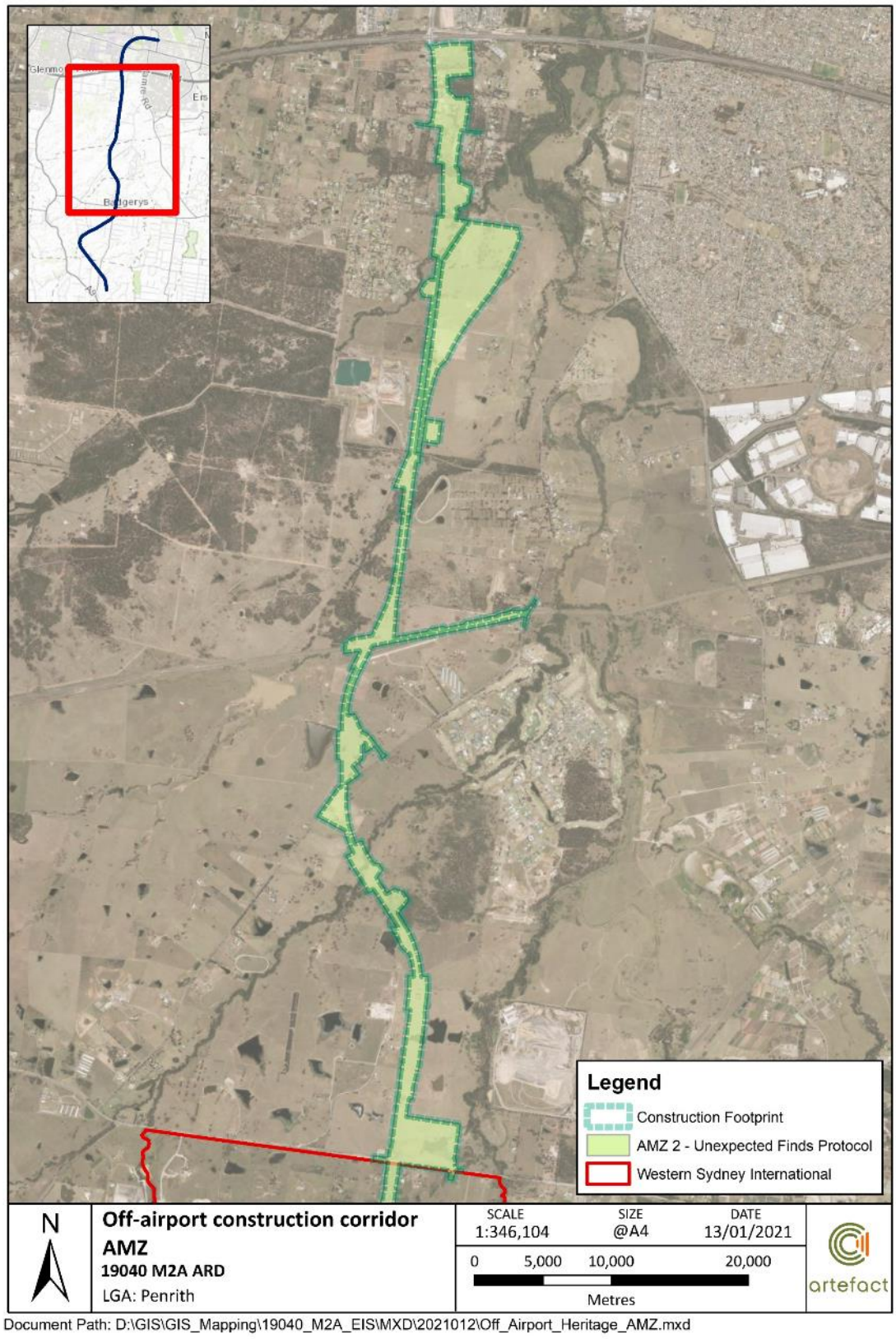

Figure 3: Off airport construction corridor archaeological management zones

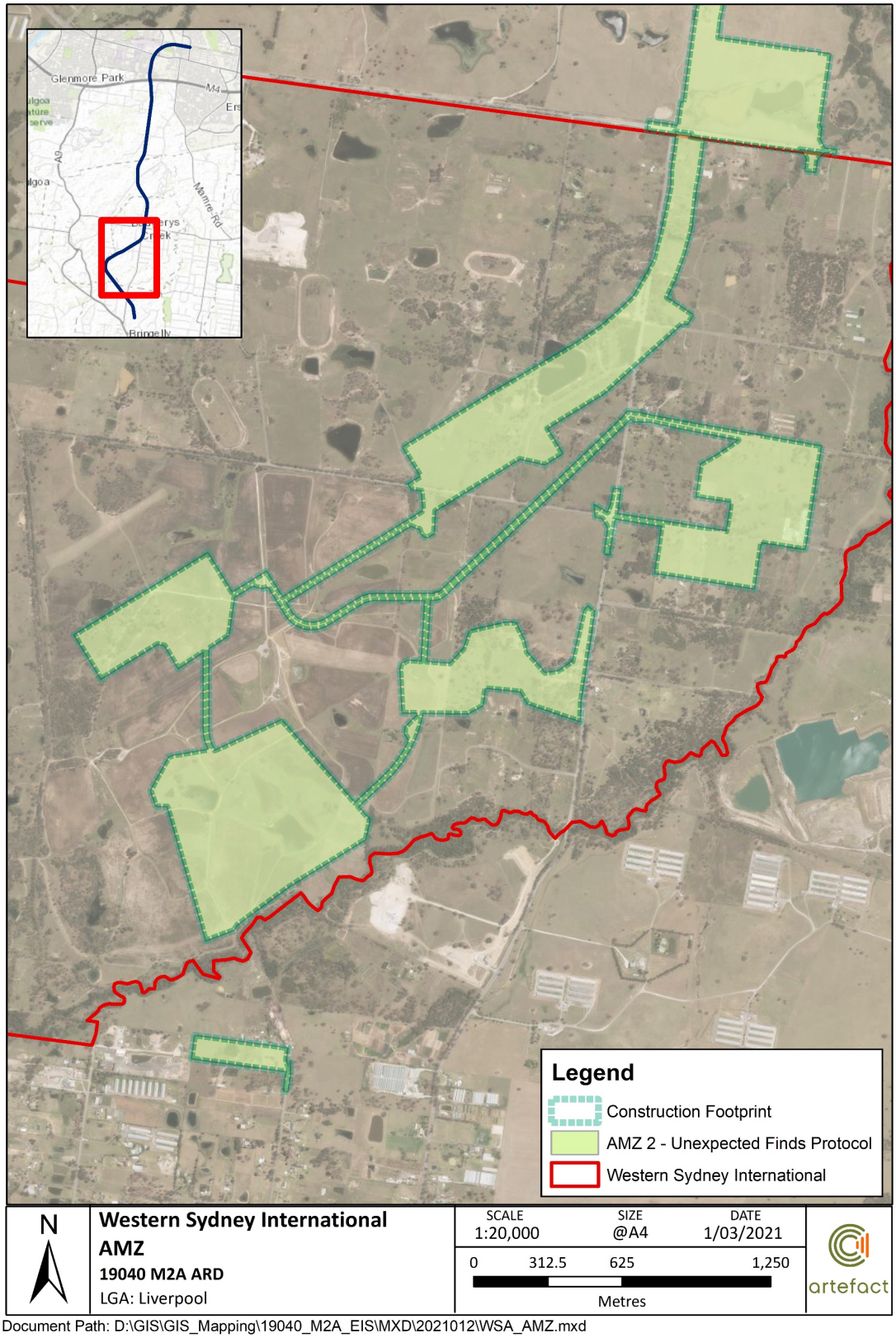

Figure 4: Western Sydney International archaeological management zones

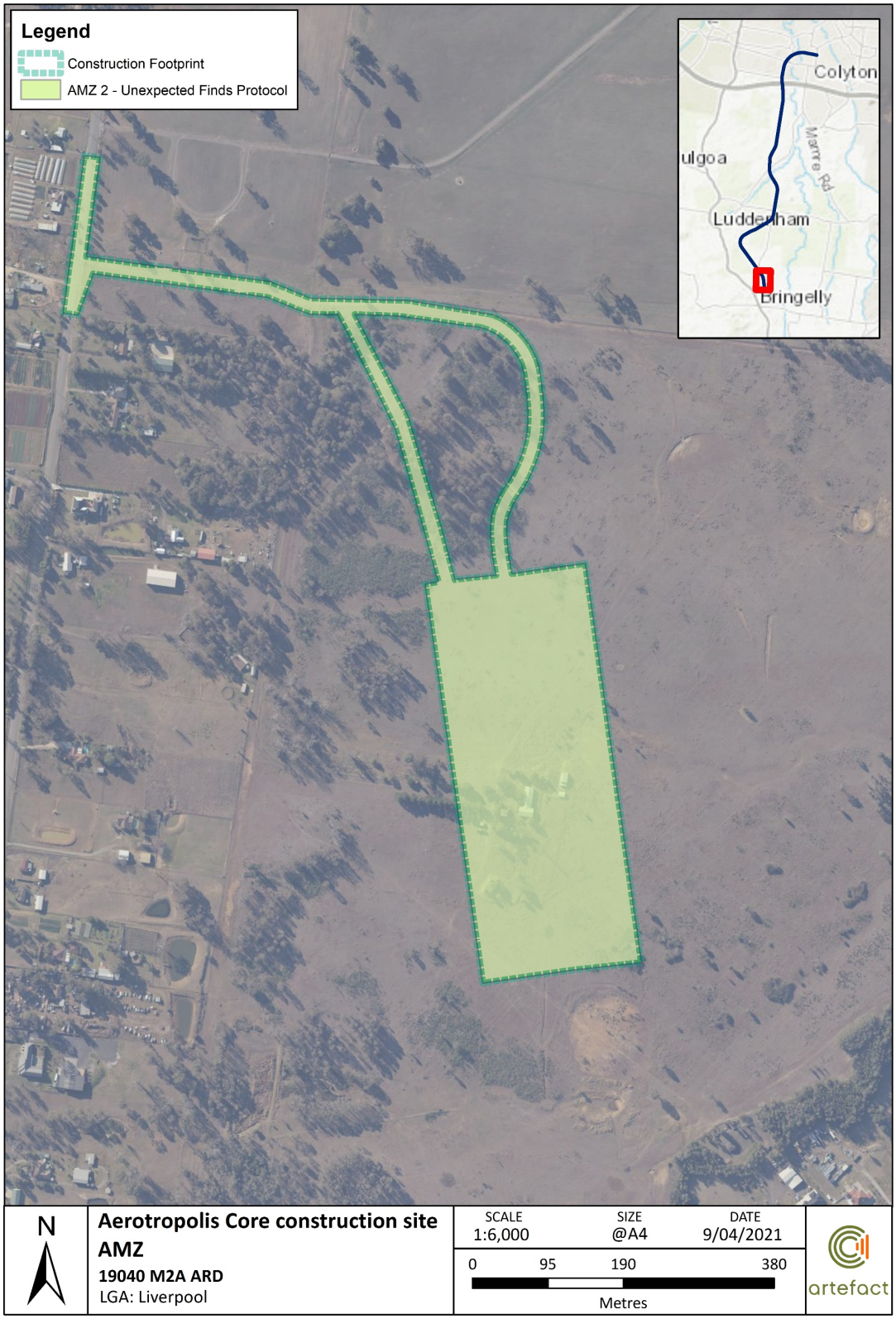

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Figure 5: Aerotropolis Core construction site archaeological management zones

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1.0 INTRODUCTION

1.1 Project overview

The *Greater Sydney Region Plan*[3] sets the vision and strategy for Greater Sydney to become a global metropolis of three unique and connected cities: The Eastern Harbour City, the Central River City and the Western Parkland City. The Western Parkland City incorporates the future Western Sydney International and Aerotropolis. The Sydney Metro – Western Sydney Airport (the project) would be a new metro line constructed and operated by Sydney Metro to connect Western Sydney International and the Aerotropolis with the broader Sydney rail network.

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1.2 Scope of this assessment

The ARD is a theoretical framework designed to support archaeological field investigations with the aim of extracting information regarding the development and function of the site, whilst also placing that information within the wider research context. Section 1.2.1 provides an outline of this assessment methodology.

A detailed ARD has been prepared for the St Marys construction site. An analysis of historical archival research and existing archaeological studies was undertaken to inform the archaeological

[3] Greater Sydney Commission 2018. *Greater Sydney Region Plan*.
[4] Artefact Heritage, October 2020. *Sydney Metro – Western Sydney Airport Technical Paper: Non-Aboriginal Heritage.* Report prepared for Sydney Metro Authority.

management and development of research questions for St Marys construction site. The remainder of the construction footprint, where no significant non-Aboriginal archaeological remains are predicted to occur, would be managed under the Sydney Metro Unexpected Heritage Finds Procedure. The archaeological management zones are defined in Section 4.3 of this report.

Ground disturbance works within the St Marys construction footprint, as identified in the Sydney Metro – Western Sydney Airport Environmental Impact Statement (EIS) (Sydney Metro 2020), would not result in impacts to the significant archaeological resources within the St Marys Goods Yard as identified in this ARD. Archaeological management measures for this area includes the establishment of an Exclusion Zone around the St Marys Goods Yard.

Once construction methodologies are finalised, the need for any ground disturbing works within the St Marys Goods Yard would be confirmed. Where ground disturbing works are required, impacts to significant archaeological resources would be assessed as part of work stage specific archaeological impact assessment. Where impacts to significant archaeological resources are identified, an archaeological work method statement would be prepared that sets out a work stage specific approach to archaeological management. This ARD includes methodologies for archaeological monitoring, testing and salvage which can be drawn upon and tailored to address work stage specific impacts and represent the minimum standard for archaeological management within the St Marys Goods Yard.

1.2.1 Outline of assessment methodology

The archaeological research design for the St Marys construction site has included the following steps:

- **Historical analysis:** additional primary archival research (review of maps, plans and other sources) has been undertaken in greater detail than was considered in the Environmental Impact Statement, to identify the location of former structures or features within the St Marys construction site
- **Literature review:** relevant existing archaeological studies and investigation reports were consulted to inform the archaeological potential and significance assessment
- **Archaeological assessment:** detailed archaeological assessment was undertaken based on the additional research and literature review
- **Archaeological management:** based on the potential for significant archaeological remains, and potential archaeological impact, an archaeological management strategy was developed for the St Marys construction site. General archaeological management and investigation methodologies, including research questions, have also been provided.

1.3 Authorship

This report was prepared by Jessica Horton (Heritage Consultant) and Duncan Jones (Principal) with management input and review provided by Sandra Wallace (Managing Director).

2.0 ST MARYS CONSTRUCTION SITE

2.1 Historical analysis

2.1.1 Development of St Marys

Early exploration

Exploration within the Nepean River region began soon after European settlement at Port Jackson in 1788. In 1789, Watkin Tench, a Marine Lieutenant, lead an exploration party west of Parramatta to the base of the Blue Mountains, where he was one of the first Europeans to encounter the Nepean River. Safe harbours and rivers that could be used as routes to explore inland were sought after in the early years of the colony.[5] The arable soils situated alongside rivers were crucial for agriculture, and as such, many settlements organically formed along major rivers.[6]

The Nepean region soon developed into an important agricultural centre. Early settlers in the Cumberland Plain included convicts, military officers and soldiers, missionaries and free settlers.[7] These settlers could be considered the founders of Australia's agricultural and pastoral industries and were responsible for supplying the colony with meat, grain, vegetables, fruit, and by the 1820s were also producing Australian wool and wine.[8]

Governor Macquarie had arrived in New South Wales in 1809, at a time when large areas of agricultural land had been destroyed by flooding.[9] In response, Macquarie founded towns and encouraged settlement in areas with arable soil suitable for agriculture. The Macquarie Towns included Castlereagh, just north of Penrith and situated on the eastern banks of the Nepean River, and Liverpool, located to the west of the Georges River. The construction footprint is encompassed between these two Macquarie Towns and the history of the region is still closely related to the initial agricultural settlements, estates, and small farms designated in the early 1800s. A plan of early land grants for the construction footprint is provided in Figure 6 and an early twentieth century plan of the major historic estates of the area is shown in Figure 7.

The construction footprint for the project is located within the parishes of Rooty Hill, Claremont, and Bringelly, which form the western portion of the County of Cumberland. The St Marys construction site is positioned in the northern portion of the construction footprint, within the parish of Rooty Hill.

[5] Karskens, G., 2009. *The Colony. A History of Early Sydney*, p. 20.
[6] Karskens, G., 2009. *The Colony. A History of Early Sydney*, p. 20.
[7] Karskens, G., 2009. *The Colony. A History of Early Sydney,* p. 101.
[8] Karskens, G., 2009. *The Colony. A History of Early Sydney,* p. 101.
[9] Parsons, G., 2010. 'Lachlan Macquarie and the Idea of Newcastle.' In *AQ: Australian Quarterly*, Vol. 82, No. 2 pp.38-40. Accessed online via JSTOR on 4/6/2019 at: www.jstor.org/stable/23215342

Figure 6. Detail of map of the County of Cumberland with the construction footprint in red, 1840. Location of St Marys construction site indicated in yellow. Source: National Library of Australia10

[10] Wells, William Henry, 1840. *A map of the County of Cumberland in the Colony of New South Wales / Compiled by W.H. Wells, Land Surveyor.* Accessed online 26/7/2019 via Trove/National Library of Australia at: http://nla.gov.au/nla.obj-229932091/view

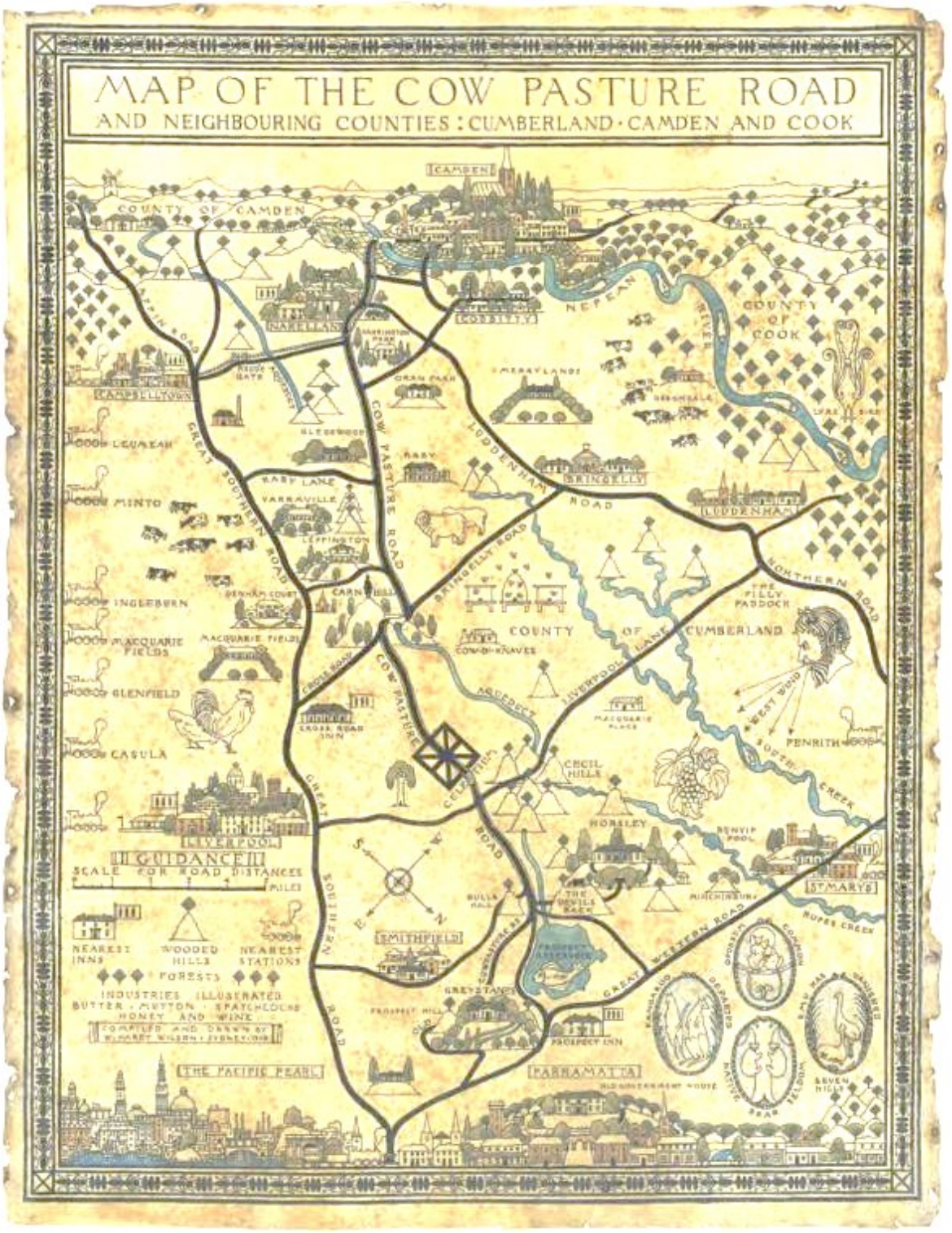


Figure 7. Map of the Cow Pasture Road and neighbouring counties, showing towns and estates, 1919. Source: National Library of Australia11

[11] Wilson, Hardy, 1919. *Map of the Cow Pasture Road and neighbouring counties: Cumberland, Camden and Cook / compiled and drawn by W. Hardy Wilson, Sydney, 1919.* National Library of Australia via Trove. Accessed online 4/11/2019 at: https://nla.gov.au/nla.obj-147888453/view

Early land grants and development

St Marys was initially named South Creek. The first land grants within the suburb occurred in 1806 (Figure 8). Settlement was concentrated around the creek for its alluvial soil.[12] The permanent water supply from South Creek enabled the land grants to be utilised as working holdings and an agricultural community developed. The location of the properties along the Great Western Highway ensured that they were conveniently situated.

In 1806, the children of Governor Philip Gidley King both received land grants at South Creek (now St Marys). Maria King received 280 acres and Philip Parker King received 650 acres. These grants were not settled and developed at this point as the King family returned to England, returning to the colony of NSW in the 1820s. Philip Parker King's mother, Anna King, returned to Australia in 1832 and renamed her property Dunheved (located immediately north of the construction footprint). Dunheved House was built on her property by Philip Parker King and was one of the largest estates in the colony. The estate was used for breeding cattle, sheep, pigs and horses and the land was used for orcharding and grain crops. Approximately 80 to 100 staff worked for the King family at Dunheved.

600 acres of land was granted to Mary Putland, daughter of Governor William Blight, in 1806. Maurice O'Connell received the adjoining grant, with the couple married in 1810. They combined their grants into the Frogmore Estate, owning the property until 1840. A house was built on the estate in c1830 by the O'Connell's which was likely single storey. While there was certainly a homestead on the site, the O'Connell family were usually absent for the property, primarily living in Woolloomooloo.[13]

In 1823, explorer and Survey General John Oxley was granted 600 acres within the St Marys area, now the present site of Oxley Park.[14] The grant extended from Queen Street east to Ropes Creek and from the Great Western Highway to the railway line. Oxley did not reside on the property or build a homestead, rather the property is thought to have been used as a cattle run.

Establishment of the town of St Marys

In 1837, the King family selected a location for a parish church. The church was named the St Mary Magdalene Anglican Church, presumably after the Church Philip and Harriet King had been married at in England. The foundation stones were laid in November 1837 and the completed church was consecrated in April 1840. In the late 1830s, the town of South Creek began to grow.

In 1841 the O'Connell's subdivided part of their land into thirty-five town allotments, and in the following year offered another 400 hectares (988 acres) for sale, which was referred to as the Village of St Marys.[15] While sale was slow, the small village of St Marys had been established.[16]

The first school and inn opened in 1839, and in the following year the Post Office opened. In the 1850s, tanning became a major industry in South Creek, and it developed further throughout the mid-1800s. By the 1850s, a small number of houses were built, in addition to butchers, ironmongers, and a grocer.[17] The town developed even more rapidly after the opening of St Marys Station in 1863.

[12] Penrith History, n.d. 'St Marys.'
[13] Western Sydney University, 2017. 'Werrington North', *University of Western Sydney*. Accessed online 21/6/2019 at: https://www.westernsydney.edu.au/uws25/25_year_history/places/werrington_north
[14] Penrith City Local History, n.d. 'Oxley Park'. Accessed online 8 January 2020, https://penrithhistory.com/oxley-park/
[15] Thorp, W., 1987. *St Marys Industrial Heritage Study,* p.9.
[16] Thorp, W., 1987. *St Marys Industrial Heritage Study*, p.9.
[17] Thorp, W., 1987. *St Marys Industrial Heritage Study*, p.9.

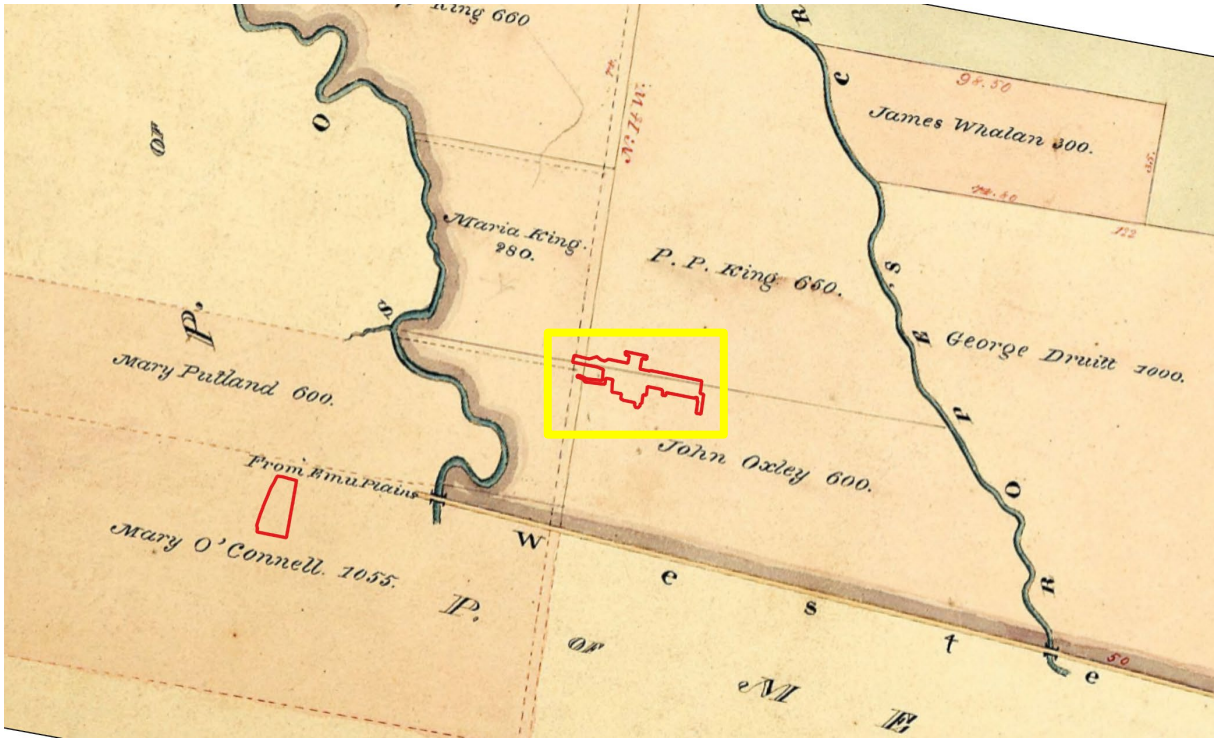


Figure 8. Map of the parish of Rooty Hill in 1835, with construction footprint in red, location of St Marys construction site shown in yellow. Source: Historical Land Records Viewer (Historical Land Records Viewer)

2.1.2 St Marys Station

South Creek Station

During the mid-1800s the development of a railway into the west was a considered a priority by the NSW Government in order to exploit the resources of the Bathurst and Western Plains. In 1848 the Sydney Railway Company announced proposals to establish a railway line to Bathurst. In 1855 the first railway line in New South Wales opened between Sydney and Granville, before being extended to Parramatta in 1860 and Penrith in 1863. Over the next four years, railway engineers sought to develop a solution to the geographical obstacle posed by the Blue Mountains.[18] The line was extended to Bowenfels, west of Lithgow, with the completion of the Great Zig Zag in 1869.

In 1863 South Creek Station opened as part of the Great Western Railway extension to Penrith, located at the northern extent of the construction footprint. The original station building was apparently a little further east than the replacement building added in 1888.[19] Tenders were let to construct an approach road in 1864 and again in 1874, suggesting an increase in local patronage. In May 1885, the station became officially known as St Marys Railway Station, signified by a name-change on the railway timetable.[20] In 1886 the Great Western Railway was duplicated, and a second platform was added at St Marys. The current heritage building on Platform 3 & 4 was constructed by John Ahearn and William King in 1888 (Figure 9). The building is a type 3 second class station constructed of brick, and originally included a central waiting room with two small wings on either end. Several heritage features of the building are still extant, including timber posts, exposed rafters, and decorative timber bargeboards.

[18] Croft & Associates, 1985., p. 40.
[19] 'Old St. Marys Station', *Nepean Times*, 23 December 1933, p. 7.
[20] 'Time-table and fares. Great Western and Richmond Lines', New South Wales Government Gazette, 29 May 1885, p. 3476.

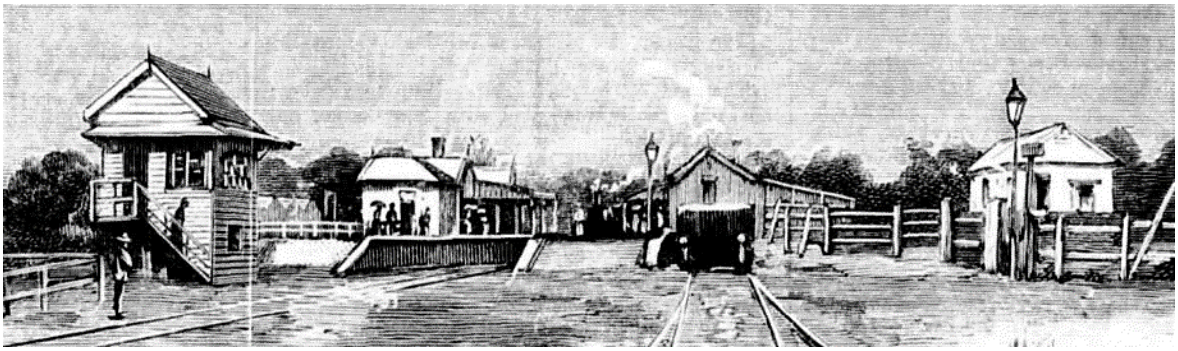


Figure 9. Sketch of St Marys Station, looking east, c.1890. Of note are the freight siding and switch points adjacent to the new southern platform, plus the post-and-rail fence separating the Goods Shed from the tracks. Gas lighting is evident but no coal or water storage is visible in this view. The original wooden signal box is prominent at left. Source: Sydney Mail[21]

Figure 10. Platform 3/4 Building at St Marys prior to renovation, 1984. Note the use of the unpaved area west of the Goods Shed for parking. Source: Penrith City Library[22]

The Goods Shed and Jib Crane Given its distance from the markets and docks of Sydney, St Marys developed rapidly in concert with the railways, as indicated by the line duplication in 1886. By 1890 the township boasted a population of 1000, plus a diverse range of primary and secondary industries. Timber-related enterprises included two coach and wagon works, plus three sawmills which supplied building materials across the Australian colonies. As early as 1868 local sawyers had supplied sleepers for the Government Railways, further entrenching the links between St Marys and the colony's expanding rail system.[23] Other local enterprises included the growing of grapes and cattle grazing, plus a butchery and seven tanneries, one with a large boot factory attached. By the early part

[21] 'Sketch of St Marys Railway Station,' *Sydney Mail*, 2 August 1890, p. 257.
[22] Penrith City Library, 1984. 'St Marys Railway Station.' *Penrith In Pictures*. Accessed online 24/7/2019 at: http://www.photosau.com.au/penrith/scripts/ExtSearch.asp?SearchTerm=003023
[23] 'St Marys', *Sydney Mail*, 2 August 1890, p. 251.

of the twentieth century, stock advertisements referred to the 'railway cattle saleyards' at St Marys, offering the possibility of trucking cattle via railway to their destination.

Soon after South Creek Station opened in 1863 the need for a goods shed was identified. In December of that year, the Member for West Sydney, Reverend John Dunmore Lang, asked in the Legislative Assembly 'Whether it is the intention of Government to erect a rough Goods Shed at the South Creek Station, to prevent goods passing to and fro by the Railway from being damaged, from exposure to the elements, as they are liable to be at present, from their being merely laid upon the ground and not under cover of any kind?'. The Member for Parramatta replied that 'No complaints have been received that goods are being damaged from exposure. A rough Goods Shed will, however, be erected, if found to be necessary'.[24] The necessity may not have been pressing, as in 1868 a delegation of farmers, graziers, and timber-cutters complained about the crowding of freight at South Creek Station.[25] Nevertheless, it appears that a primitive goods shed was thereafter built, based on complaints in the early 1880s about its primitive state and lack of security.[26] One of the early managers of this shed was Alex Guthrie, whose wife operated the crossing gates.[27]

Given that the station was upgraded in 1886, the current Goods Shed is likely to have been erected during that period to replace its rudimentary predecessor. It was constructed as a Subtype 2 brickwork Goods Shed and is the only remaining example of this type (Figure 13, Figure 14). A loading platform to the east of the building was added prior to 1943 (Figure 15), but heavy freight movements through the station appear to have diminished after this period. Sydney Trains plans show that in 1956 the Goods Shed was adapted to house a parcels office, with an internal office constructed in the south-eastern corner of the structure. Shelving was installed in the larger open area, and the location of the extant jib crane is marked on the plan (Figure 12). Photographs show that as late as the 1970s, the Goods Shed was located within the rail yard, fenced off from the public, and that the surrounding land on the east was used as a carpark (Figure 10). Based on aerial photographs, the loading platform to the east of the Goods Shed was removed between 1978 and 1986.

The jib crane (non-operational) dates to 1943 and is a type 1 jib crane manufactured by Frederick Gregory & Co. The crane has a five ton capacity and its official number is T 166.[28] It is uncertain if the crane is currently in its original location. 1943 aerial imagery does not show the crane in its current location, and it is appears that the crane was located closer to the Goods Shed than it currently is (Figure 11). Sydney Trains plans from 1956 describe the crane as in a "refixed position", and show an "existing foundation," possibly belonging to the crane in its earlier location (Figure 16). Plans for a new concrete foundation dating to the 1950s further show that the crane was relocated, however the purpose for the relocation is uncertain. It may have been moved to assist with assessing freight on the weighbridge which was also apparently installed in 1956.

[24] 'Wednesday, 30 December, 1863', *Votes and Proceedings of the Legislative Assembly*, 1863–64, Vol. I, p. 835.
[25] 'Railways. (Petition—graziers, farmers, etc., Blacktown, Rooty Hill, And South Creek)', *Votes and Proceedings of the Legislative Assembly*, 1867–68, Vol. III, p. 959.
[26] Extent, 'St Marys Railway Goods Shed. Options Report for Sydney Metro', 2019, pp. 7–8.
[27] 'Old St. Marys Station', *Nepean Times*, 23 December 1933, p. 7.
[28] NSW Office of Environment and Heritage, 2008. 'St Marys Railway Station Group'. Accessed online 18/6/2019 at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4801036

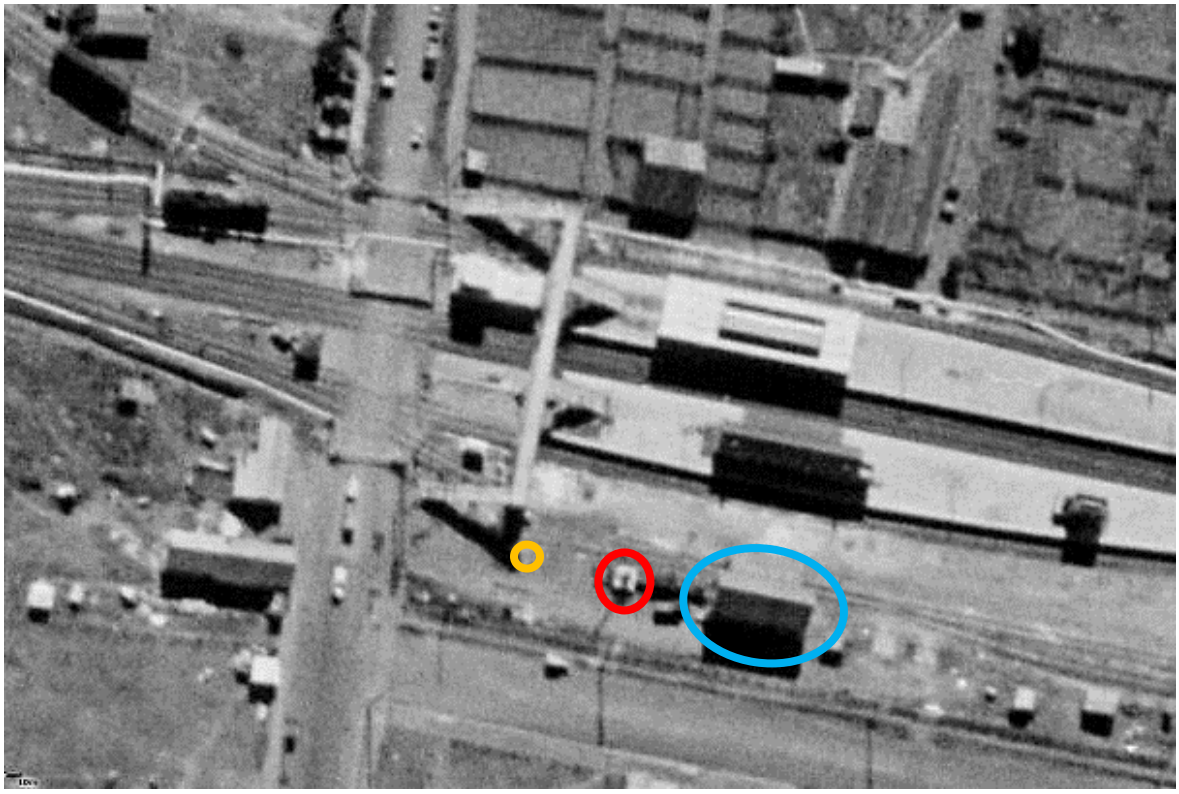


Figure 11. Detail of St Marys Station, showing Goods Shed (blue), Jib Crane (red) and approximate current location of jib crane (yellow), 1943. Source: SixMaps

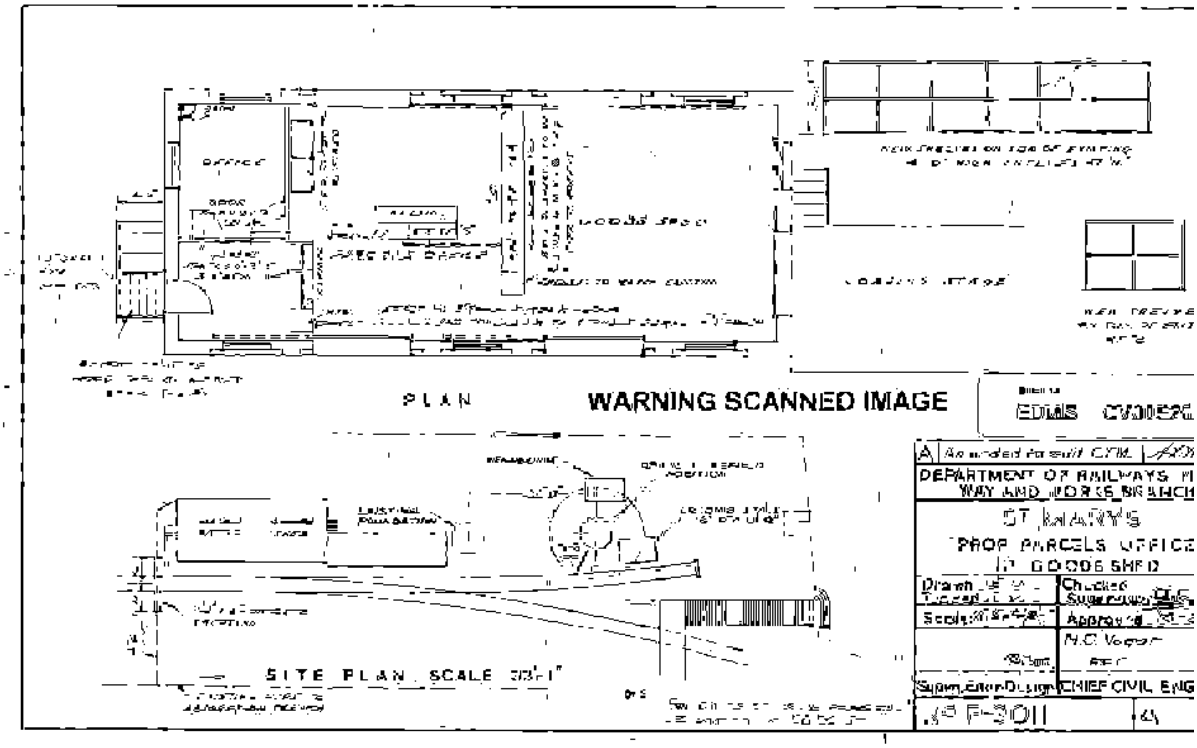


Figure 12. Sydney Trains Plan of St Marys Goods Shed, 1956. Note the repositioned jib crane location and its proximity to the weighbridge. Source: Sydney Trains Plan Room29

[29] Sydney Trains, Department of Railways NSW Way and Works Branch. *St Marys Prop. Parcels Office in Goods Shed.* Batch 14: EDMS CV0052524

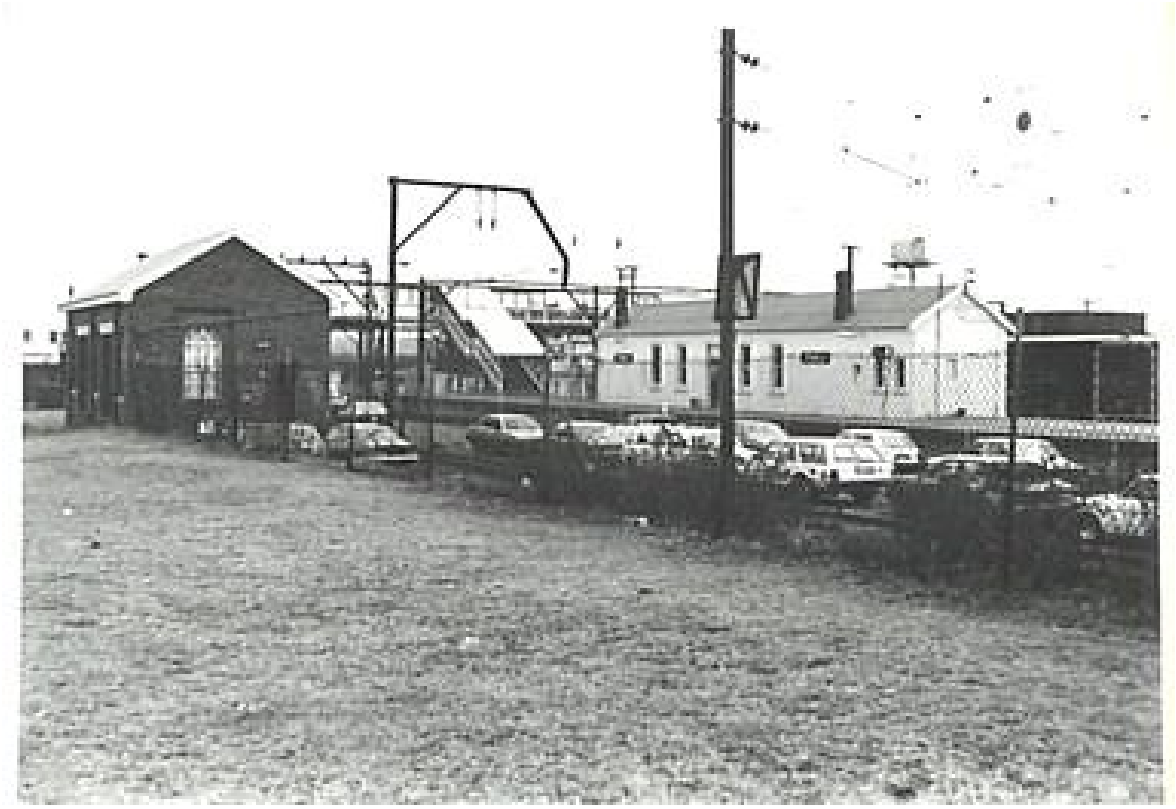


Figure 13. St Marys Railway Station, with the Goods Shed at left, 1986. Source: Penrith City Library. Soon after this photograph was taken the area in the foreground was incorporated into the new bus interchange which opened in the early 1990s.[30]

Figure 14. St Marys Railway Station with Goods Shed visible in mid-shot, 1970. Source: Penrith City Library31

[30] Penrith City Library, 1986. 'St Marys Railway Station, Station Street & Queen Street, St Marys.' Accessed online 25/6/2019 at: http://www.photosau.com.au/penrith/scripts/ExtSearch.asp?SearchTerm=SM005

[31] Penrith City Library, 1970. 'St Marys Railway Station.' Accessed online 25/6/2019 at: http://www.photosau.com.au/penrith/scripts/ExtSearch.asp?SearchTerm=003028

Figure 15. The Goods Shed at St Marys Station looking east, illustrating the loading siding and adjacent platform in 1970. Source: Penrith City Library32

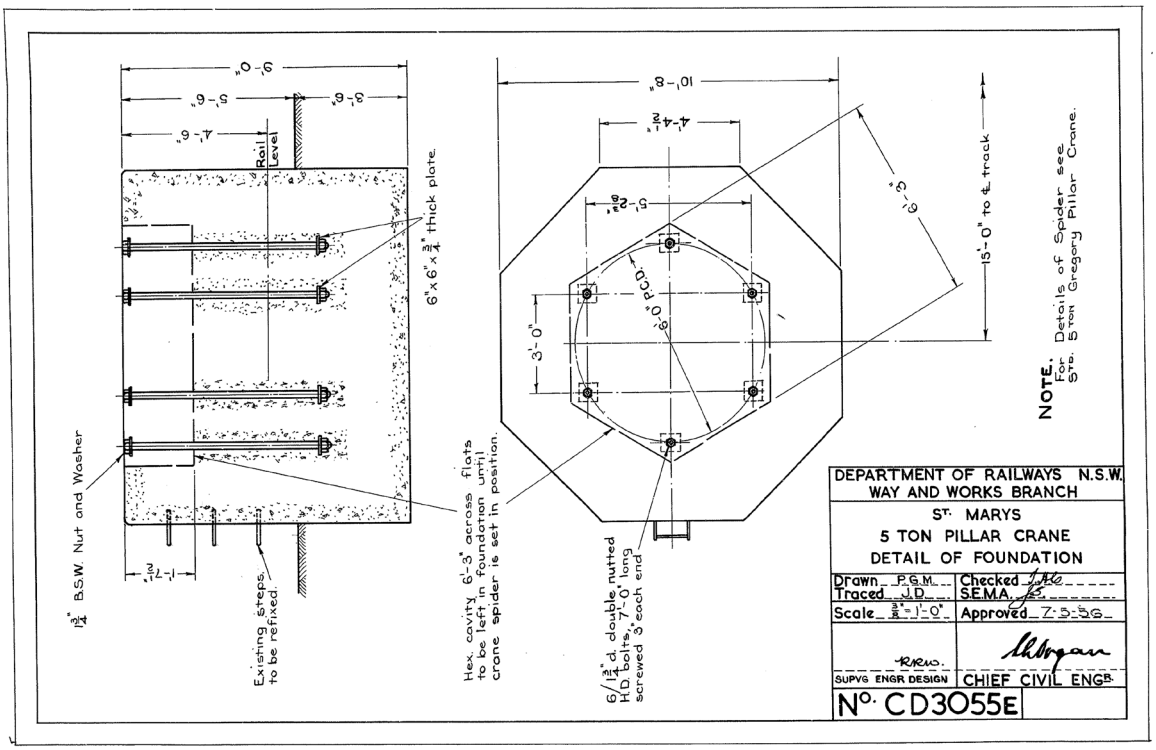


Figure 16. Sydney Trains plan showing St Marys Pillar Crane foundation, 1956. Source: Sydney Trains Plan Room33

St Marys Station in the twentieth century

Archival evidence suggests that the goods siding at the station was realigned in the early 1930s. After the outbreak of World War II in 1939, several changes were made to St Marys station. The Platform 1

[32] Penrith City Library, 1970. 'St Marys Railway Station.' *Penrith In Pictures.* Accessed online 24/7/2019 at: http://www.photosau.com.au/penrith/scripts/ExtSearch.asp?SearchTerm=003029

[33] Sydney Trains, Department of Railways NSW Way and Works Branch, 1956. *St Marys 5 Ton Pillar Crane Detail of Foundation.* EDMS CV0379531.

& 2 building was constructed, as was a footbridge and a new brick signal box to replace the original timber structure. The signal box was erected in 1942 and provided signal and track control over both the main line and the Ropes Creek branch line, servicing the munitions factories at Dunheved and Ropes Creek (Figure 17). Both of St Marys platforms were made into island platforms.

After a survey in 1941, the goods line to Ropes Creek was also opened in stages through 1942–43. The Ropes Creek line sought to increase the track capacity between Lidcombe and St Marys during World War II, in order to transport goods from the American ammunition and general store at Ropes Creek. A small branch originating just to past the signal box also serviced the newly built factory complex to the immediate northwest of the station.

The line through St Marys Station was electrified in 1956, with an electrical substation erected to the northeast of Platform 1 at this time.[34] In 1978 the Great Western Railway at St Marys was quadrupled. After the creation of a train and bus interchange to the east of the Goods Shed in the early 1990s, the footbridge was upgraded in the mid-1990s, with a canopy added (Figure 18). The Platform 1 & 2 canopies were replaced in 1995, and additional canopies were constructed in 2001.

Figure 17. St Marys Station, 1945. This photograph illustrates the non-standard signal box, a precursor to post-war S-type signal boxes.[35]

[34] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p. 24.
[35] State Rail Authority, 1945. 'St Marys Railway Station'. *State Archives and Records [NRS-17420-2-51-[SAMS1]-23].* Accessed online 8 January 2020, https://search.records.nsw.gov.au/primo-explore/fulldisplay?docid=ADLIB_RNSW113609877&vid=61SRA&search_scope=Everything&tab=default_tab&lang=en_US&context=L

Figure 18. The St Marys Station signal box looking east in 2005, illustrating the upgraded and covered pedestrian bridge.[36]

Figure 19. Electric locomotive at St Marys Station at the time the line was first electrified in 1956. Note the temporary structures visible between Platform 4 and the Goods Shed, which may have been associated with installing the electrification infrastructure. These and many other small structures are apparent in the 1956 aerial photograph, suggesting a work camp. Just visible at the rear of the locomotive is a brick structure on the platform, likely an out-of-shed built in 1888.[37]

[36] 'St Marys Station', NSWRail.net. Accessed online 11 January 2021, https://www.nswrail.net/locations/photo.php?name=NSW:St+Marys:2, accessed 11 January 2021.
[37] State Rail Authority, 1956. 'Electric Locomotive at St Marys'. *State Archives and Records [NRS-21573-2-5-PR2390].* Accessed online 8 January 2020, https://search.records.nsw.gov.au/primo-

Figure 20. Vintage train at Platform 3 on St Marys Station, 1963. Note the electrical substation at the top centre of the image (circled).[38]

2.1.3 Modernisation

Dunheved explosives factory and post-war manufacturing

In 1941, the land that had formed the King family's Dunheved Estate was resumed by the Australian Government for defence purposes.[39] At the time the property was owned by Frederick Pye, who was compensated at a rate of 7 pounds and 10 shillings per acre.[40] Remnant features on the site, including a brick cottage, observatory, timber shed, a workshop, kitchen, wells, the barn and coach-house were dilapidated[41] and as part of the resumption works the estate buildings were demolished in 1946.[42] While St Marys and much of greater Penrith had enjoyed industrial success throughout the early twentieth century, the industries had slowed in the interwar years (1918–39).[43]

explore/fulldisplay?docid=ADLIB_RNSW114886212&vid=61SRA&search_scope=Everything&tab=default_tab&lang=en_US&context=L

[38] State Rail Authority, 1963. 'Vintage train Central to Springwood, general view at St Marys.' *State Archives and Records [NRS-21573-2-10-PR5042].* Accessed online 8 January 2020, https://search.records.nsw.gov.au/permalink/f/1ebnd1l/ADLIB_RNSW114925547

[39] NSW Office of Environment and Heritage, 2008. 'Explosives Storehouse'. Accessed online 18/6/2019 at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2260869

[40] NSW Office of Environment and Heritage, 2008. 'Explosives Storehouse'.

[41] Casey & Lowe, 1994. *Historical Archaeological Survey St Marys Munitions Factory,* p.12..

[42] Penrith City Library, 1986. 'Site of Dunheved House, Between South Creek and Links Road, Dunheved.' Accessed online 18/6/2019 at: http://www.photosau.com.au/penrith/scripts/ExtSearch.asp?SearchTerm=SM001

[43] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p.23.

On the resumed land, which now totalled 1500 hectares, several munitions factories were constructed. Alongside Mulwala and Villawood, St Marys became one of the key NSW sites for explosives manufacturing in contributing to the national war effort. A large munitions depot was constructed just north of St Marys Railway Station and a branch railway – the Ropes Creek line – was constructed to take workers between St Marys Railway Station and the factories (Figure 21). The local development of this branch line considerably increased the strategic importance and traffic movements through St Marys Station, which likely contributed to its upgrade in the early 1940s.

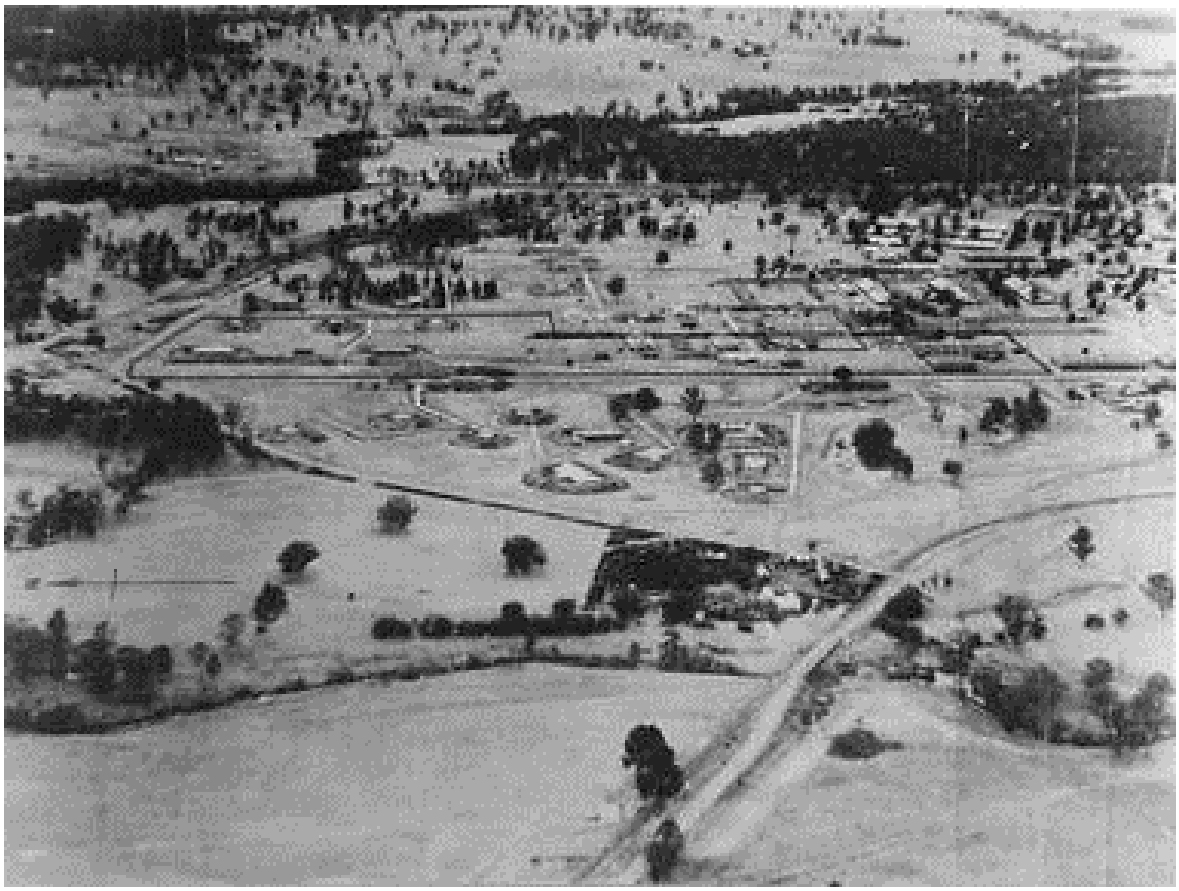


Figure 21. Aerial photograph of the St Marys Munitions Factories, looking east, 1944. Note the dispersed nature of the facilities, designed to minimise the possibility of an explosive blast damaging or igniting nearby buildings. One result of this distribution was a reliance on internal rail networks to facilitate movement of materials around the complex. Source: Penrith City Library[44]

The Ropes Creek line was 5.6 kilometres long, opening to Dunheved on 1 March 1942 and Ropes Creek on 29 June 1942.[45] To house the staff, duration cottages – intended to only last the duration of the war – were built to the east of the munitions factories and south of the main railway line. These 'cabin cottages' were managed by the Commonwealth War Workers Housing Trust for the Munitions Housing Scheme. Although they provided necessary accommodation for factory workers, they were known colloquially as 'dog kennels' owing to their rudimentary construction. At peak production, over 3000 workers were employed at the Dunheved Explosives and Filling Factory, working over three

[44] Penrith City Library, 1944. 'Aerial photograph, St Marys Munitions Factory.' Accessed online 25/6/2019 at: http://www.photosau.com.au/penrith/scripts/ExtSearch.asp?SearchTerm=002999
[45] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p.24.

shifts.[46] By the end of the war in 1945, the complex extended to 900 buildings encompassing 120,000 square metres of floor space.

Even before the conclusion of the war, the Commonwealth Government laid plans to repurpose its munitions plants to provide state-of-the-art facilities for diverse Australian industries. This was part of a wider drive to decentralise major manufacturing away from the capital cities, and to capitalise on the enormous wartime investment in building associated infrastructure and facilities. At St Marys the process commenced in 1946, and within two years 89 manufacturing firms had established premises within the former munitions complex. By 1950 private firms were renting 97 buildings in the complex, with over 2500 employees working for companies including the rubber giant Dunlop, toy company Wyn Products and major confectioners Macrobertsons. Taking advantage of the 37 kilometres of railways that serviced the former wartime site, A E Goodwin manufactured rolling stock for the state's network at St Marys (Figure 22). With the extensive factory and rail complex termed an 'industrial estate', from 1946 'town planners set about making St Marys [sic] Australia's first satellite industrial township – a show-place of industrial activity' (Figure 23).[47]

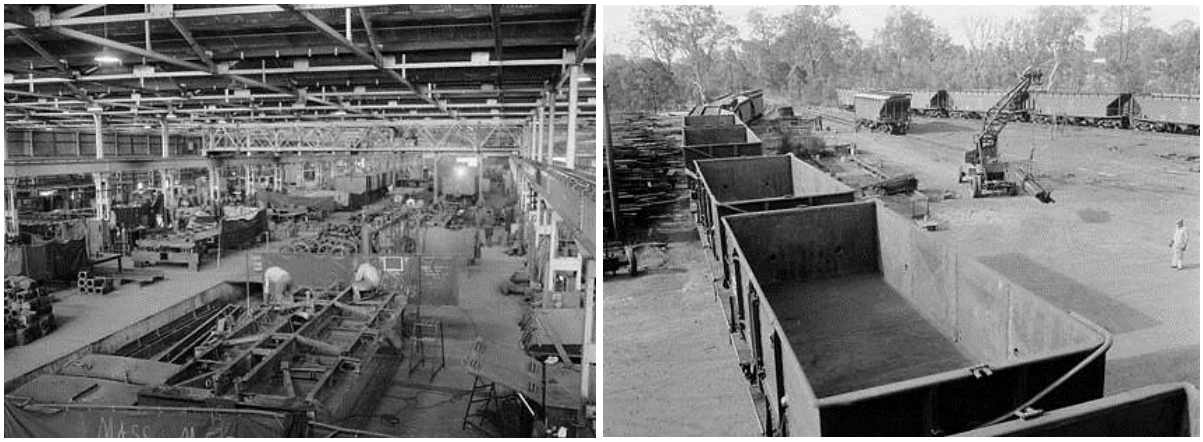


Figure 22. Manufacturers A E Goodwin produced diverse rolling stock at St Marys in the post-war decades, as shown in these 1953 photographs.[48]

Figure 23. The banner for this newspaper supplement from 1950 illustrates the centrality of the railways to the post-war industrial character of St Marys. Note the jib crane at left and the focus on business-to-business transport.[49]

With workers, raw materials and manufactured goods all connected by the railways, this local growth was intended to create a regional boom centred on St Marys and Penrith. Australian Defence Industries took a renewed interest in the site during the Cold War, with a new filling factory being constructed at St Marys adjacent to the World War II factory. This factory was opened in December 1957 by Prime Minister Robert Menzies and intended to increase munitions productions.[50] The town benefited from the industrial presence and new community services, stores, and housing was

[46] Penrith City Council Library, 1944. 'Aerial Photograph, St Marys Munitions Factory.' Accessed online 18/6/2019 at: http://www.photosau.com.au/penrith/scripts/ExtSearch.asp?SearchTerm=002999; NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p.23.
[47] D.P. Mellor, *The Role of Science and Industry. Australia in the War of 1939-1945*. Canberra: Australian War Memorial, 1958, p. 695.
[48] National Archives of Australia, Series A1200, Control L16173 and L16175.
[49] 'Factories hum in bushland', *Daily Telegraph*, 29 August 1950, p.15.
[50] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact,* p.26.

constructed for factory workers and managers, resulting in rapid growth (Figure 24).[51] In Thorp's words "the development of the factory completely changed the character of the town from a quiet rural backwater to a thriving industrial centre".[52]

Figure 24. The thriving post-war local economy is illustrated by the queue of vehicles, cyclists and pedestrians at the St Marys railway station level crossing, with the A E Goodwin factory in the background, 1953.[53]

Queen Street and Post-War development

Throughout its history, Queen Street has previously been known as Dickson Lane, Mamre Road, Windsor Road, and Station Street. The name was changed to Queen Street in 1897, in celebration of Queen Victoria's Diamond Jubilee. In the late 1890s, the street was rural, with frequent newspaper reports of cows and other animals wandering in the streets after escaping from nearby farms (Figure 25). Queen Street was the original commercial centre of St Marys and led from the Great Western Highway to the Railway Station. Development was concentrated at the southern end of Queen Street until World War II, focused at St Marys Corner, which was the intersection of Queen Street and the Great Western Highway.

Queen Street originally extended north of the railway line, accessed by a level crossing for vehicles prior to the road closure in the mid-1900s. On the northern side of St Marys Station and east of Queen Street, the Inglis Cattle Sale Yards and the Shane's Park Hotel were present and faced the railway line. Further east there were several houses with yards facing the railway line.

[51] Thorp, W., 1987. 'Appendix D: Historical Archaeological Component.' In *Heritage study of the City of Penrith. Prepared of behalf of Penrith City Council by Fox & Associates*, p. 76. Accessed online 24/7/2019 at: http://heritagensw.intersearch.com.au/heritagenswjspui/retrieve/2ef159db-ce3d-4f3b-8db9-4cac02bbfcd6/000019605%20-%20HERI.pdf
[52] Thorp, W. 1987. St Marys Industrial Heritage
[53] National Archives of Australia, Series A1200 Control L13416.

Aerial imagery from 1943 shows that the rail corridor was not crossed with a bridge, but rather with a boom barrier rail crossing which replaced the earlier gates (Figure 31 and also visible in Figure 24). The same imagery shows that much of Queen Street was still undeveloped, with extensive areas of grass and several residential properties along the eastern side of the street. Several residential properties and associated yard structures are pictured along Phillip Street, and a large area of land to the east of East Lane is still uncleared bushland with several tracks or creeks evident. The Inglis Cattle Yards and Dunheved branch line rail are also evident in the imagery on the northern side of the railway.

Figure 25. Queen Street, St Marys, n.d. Source: Penrith City Library[54]

Decline of industry in St Marys

At the end of the Second World War in August 1945, the production of munitions slowed. Buildings on the site were leased or sold to private industrial firms.[55] The 'down' line of the Ropes Creek branch railway line – the western track that ran towards the factories – was removed in the late 1940s due to a severe rail shortage in Sydney. However, the line was relaid in 1956 after the new factories were constructed.[56] The line was electrified in the following year. In 1986, the line was officially closed and storage sidings were removed, however the line itself was not removed. The first kilometre has continued to be used as a storage siding.[57]

[54] Penrith City Library, n.d. 'Queen Street, St Marys.' Accessed online 25/6/2019 at: http://www.photosau.com.au/penrith/scripts/ExtSearch.asp?SearchTerm=AE00073
[55] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p.23.
[56] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p.24.
[57] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p.26.

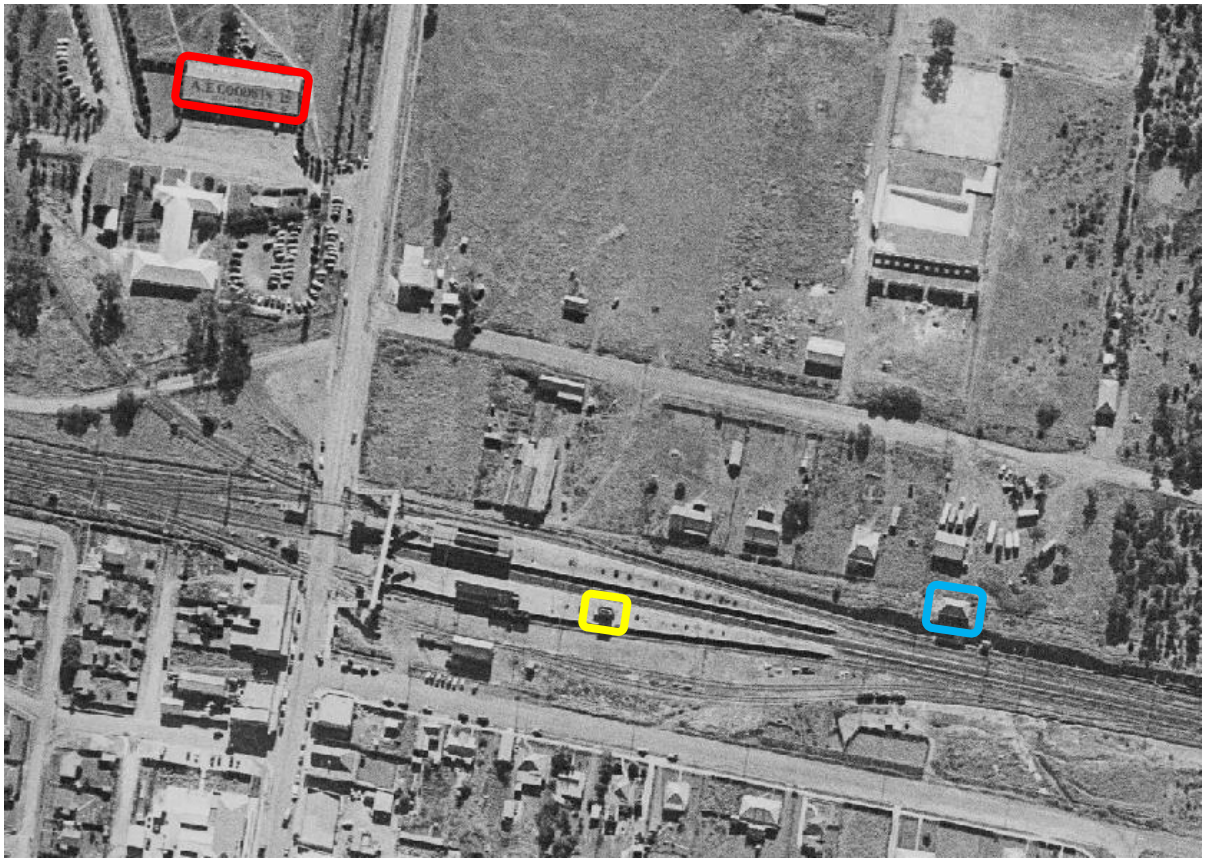


Figure 26. This 1956 aerial photo illustrates the proximity of A E Goodwin's factory to the immediate northwest of St Marys Railway station (boxed in red). Also present are the electrical substation added to the northeast of platform 1 in the mid-1950s (blue box) and the brick structure on Platform 3/4 that was removed by 1970 (yellow box).[58]

By the end of World War II, much of St Marys early industry had closed, including tanneries, saw-mills and cattle yards. With the sale of the munitions factory to industrial firms, the Dunheved Industrial Estate began to develop. While the munitions factories had closed, many of the workers stayed in St Marys to work in the new industries that had developed, leading to an increase in the population of the town.[59]

After the closure of the Ropes Creek branch line in 1986, the area was purchased by the State Rail Authority as a train maintenance and storage facility for the Tangara trains.[60] Early earthworks occurred, however the project never eventuated. In 1999 the area was later used as a fill site for material excavated from the Northside Sewerage Tunnel Project.[61] In 2001 the site was acquired by FreightCorp and then by Pacific National in 2002.[62] The northern part of the area includes the Wianamatta Regional Park, which was created in 2008.

[58] Penrith,1970, Historical Imagery, image 1910_12_020.
[59] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p.26.
[60] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p.26.
[61] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p.26.
[62] NGH Environmental, 2019. *St Marys Freight Hub Statement of Heritage Impact*, p.26.

2.2 Previous archaeological studies

This section provides an overview of relevant archaeological studies within proximity to the St Marys construction site. A comparison of these studies and the St Marys construction site can provide information regarding the types of archaeological remains seen within the local area, their significance and intactness. An understanding of remains, their significance and intactness can provide information, particularly informing the NSW Heritage significance criteria, to advise the archaeological management of the St Marys construction site.

2.2.1 St Marys Freight Hub[63]

In 2019 NGH Environmental prepared a Statement of Heritage Impact and Historic Archaeology Assessment for the St Marys Freight Hub precinct. The study area is located to the northwest the St Marys construction site. The findings of the report stated that archaeological potential in the area associated with the storage sidings and Ropes Creek branch line was low, and that significant archaeology was not likely to be impacted by the proposed works.

Discussion

The St Marys Freight Hub Statement of Heritage Impact provides an insight into the types of archaeological remains commonly found within a railway siding and their significance, informing on potential remains likely to be witnessed within the St Marys construction site. The report found that such remains may include railway sleepers, metal work, metal gauges and miscellaneous items. These remains were assessed as being unlikely to reach the threshold for local significance under the NSW Heritage significance criteria.

The report outlined a number of previous ground disturbance activities, including ground levelling and service installation, which was likely to have impacted these potential archaeological remains. Similar impacts are likely to have occurred within the St Marys construction site.

2.2.2 St Marys Commuter Carpark[64]

In 2012 AMAC prepared an archaeological report for excavations at the site of the St Marys Commuter Carpark on Harris Street. The area investigated was located partially within the construction footprint as seen in Figure 27 below and Figure 28.

The archaeological excavations located the remains of two brick-lined wells, several postholes, an oven or fireplace, and several in situ building footings and wall foundations associated with the former Shane's Park Hotel. The footings were constructed of river pebbles with clay packing and lime mortar.[65] Artefacts found included a ceramic dolls arm, domestic ceramic fragments, and glass fragments. The well, approximately 2.5 metres in diameter, was not entered for safety reasons and was backfilled without demolition or further excavation.

[63] NGH Environmental, April 2019. *Statement of Heritage Impact and Historic Archaeology Assessment St Marys Freight Hub.*
[64] AMAC, February 2012. *Final Archaeological Report St Marys Commuter Carpark Harris St St Marys NSW.* Report for Transport Projects Division of Transport for NSW.
[65] AMAC, February 2012.*Final Archaeological Report St Marys Commuter Carpark Harris St St Marys,* p. 73.

It was recommended that the preserved well, which is outside the Sydney Metro construction footprint (location shown in Figure 28 and illustrated in Figure 29), required additional future archaeological investigation if it were to be disturbed.[66] The remnant wells are protected below the current bottom floor of the carpark.

Discussion

The St Marys Commuter Carpark archaeological report provides an insight into the types of undocumented subsurface remains and historic fills present within the St Marys area, and potentially the St Marys construction site. This may include structural footings and artefactual remains.

Archaeological remains uncovered were largely associated with the former Shane Park Hotel and deemed to reach the threshold for local significance under the NSW Heritage significance criteria. However, no relics associated with the St Marys station complex or railway line were uncovered during excavations.

During archaeological investigations evidence of previous disturbance was encountered including a large number of services (water, sewerage and electric). These services were largely undocumented which may inform the kinds of undocumented subsurface disturbances within the St Marys construction site.

The report provided recommendations guiding future works informing the monitoring and removal of *in situ* archaeological remains.

Figure 27: AMAC investigation area, partially within the construction footprint

[66] AMAC, February 2012. *Final Archaeological Report St Marys Commuter Carpark Harris St St Marys,* p. 147.

Figure 28: Overlay of test excavation trenches and archaeological features excavated by AMAC for St Marys commuter carpark works. Red shading indicates project construction footprint, with red arrow indicating location of the wells in basement of carpark. (Adapted from AMAC 2012: Figure 4.1).

Figure 29: Photo of southern-most well in St Marys commuter carpark, north aspect. (Source: AMAC 2012 Figure 5.30).

2.2.3 Dunheved Precinct, St Marys[67]

In 2005 Casey and Lowe prepared a Heritage Assessment with archaeological impact assessment for the Dunheved Precinct in St Marys. The study area was located approximately 1 kilometre north of the St Marys construction site. The report found that there was limited potential for archaeological relics associated with the Dunheved Homestead, however that the built remains of the Dunheved Homestead reached the threshold of state significance.

Discussion

The Dunheved Precinct heritage assessment provides information regarding archaeological remains from one of the earliest European homesteads established within the wider St Marys area. This may include subsurface structural remains of homesteads, workers accommodation, various outbuildings and other structures associated with the operation of homesteads. In addition to features such as cesspits, ovens, rubbish pits and postholes. Land use summary

For this assessment, the historical development of the St Marys construction site has been divided into the following historical phases of activity:

- Phase 1 (1806-1862) Early land grants. The St Marys construction site was part of the land grants original given to John Oxley, Philip Parker King, Mary Putland and Maria King.
- Phase 2 (1863-1888) The Western Railway. The area was rural farming land until the development of the railway and the construction of St Marys Station, which included the construction of the railway line, St Marys Station, the Goods Shed and Goods Yard, and several twentieth century structures and modifications.
- Phase 3 (1888 - 1942) Subdivision and construction of surrounding buildings. Following the construction of the railway station, the King family sold much of the land surrounding the train line. This led to the construction of Shane's Park Hotel and Inglis cattle yards on the northern side of the station, commercial buildings and housing on the southern side of the train line.
- Phase 4 (1942 - present) Modern redevelopment of St Marys. Demolition of some buildings surrounding the train line, construction of new commercial buildings, carparks, and road upgrades.

2.3 Previous ground disturbance

The development of the existing St Marys Station within the construction site, including upgrades to railway infrastructure and the refurbishment of public areas such as the plaza on the southern side of the railway line are likely to have resulted in moderate ground disturbance. Land within the railway corridor is likely to be heavily ground disturbed, due to the scale of infrastructure upgrades within the corridor, which may affect the survivability of archaeological remains in this area.

Localised ground disturbance is also likely due to the installation of utility services within the St Marys construction site, as well as road and carpark construction and resurfacing during the twentieth century.

It is expected that moderate ground disturbance would have occurred in the location of the modern and post-war warehouses on Harris Street to the north of the railway line. The demolition of earlier

[67] Casey and Lowe, March 2005. *Heritage Assessment Dunheved Precincts St Marys Development St Marys, N.S.W.* Report for Jo McDonald Cultural Heritage Management on behalf of Maryland Development Company.

buildings in the area, and any surface clearance for the construction of the extant warehousing is likely to have resulted in minor to moderate ground disturbance. However, nearby archaeological excavations, including the St Marys Commuter Carpark excavation (as outlined in Section 2.2), have uncovered evidence of former structures despite subsequent construction and demolition phases.[68]

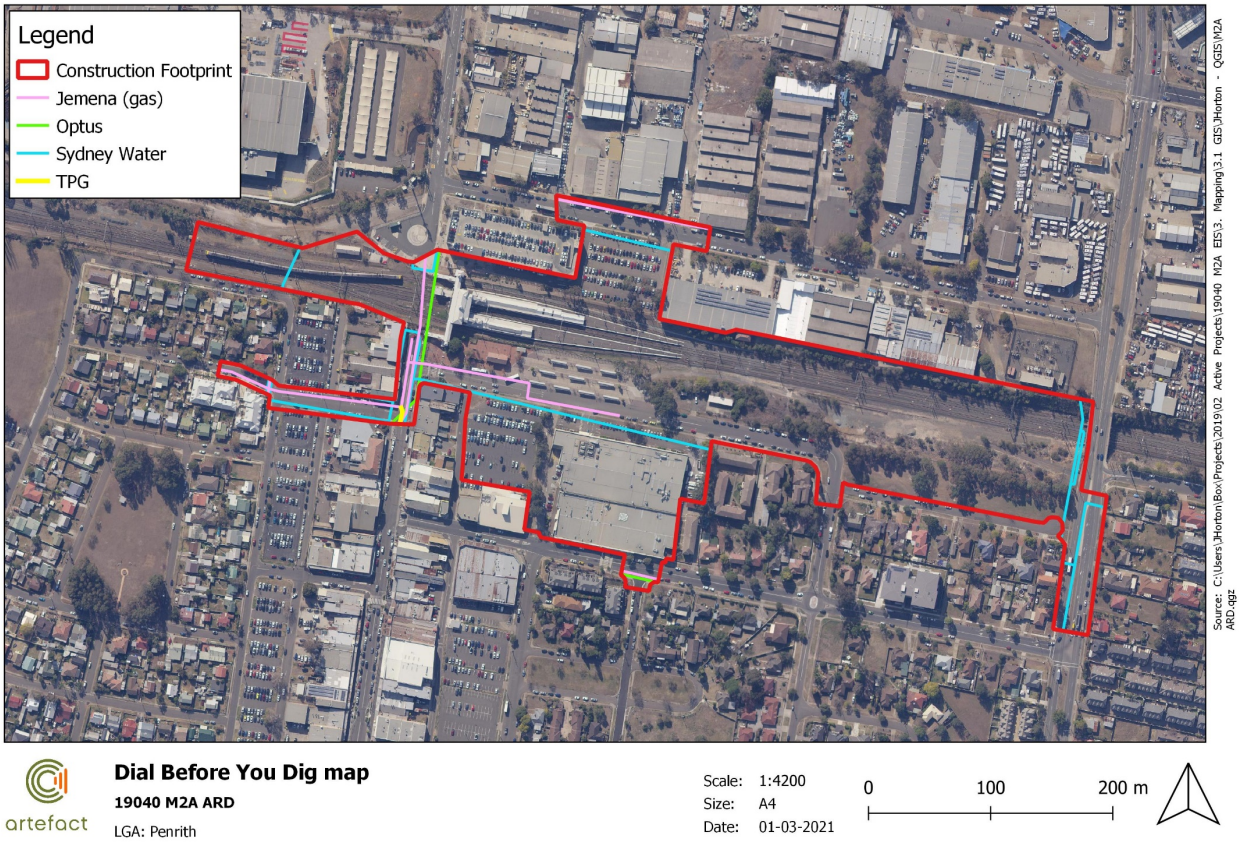


Figure 30: Dial Before You Dig map showing areas of potential ground disturbance from services.

2.4 Assessment of archaeological potential

2.4.1 Grades of archaeological potential

This report provides an assessment of the archaeological potential of the St Marys construction site based on the steps outlined in Section 1.2.1. As the remainder of the construction footprint for the project has been assessed as having no predicted significant non-Aboriginal archaeological remains, these gradings of potential have been developed to guide the proposed archaeological management methodology for the project.

Archaeological potential refers to the likelihood that an area contains physical remains associated with an earlier phase of occupation, activity, or development of that area, and are the primary basis of the management measures provided in this document. The assessment is presented using the following grades of archaeological potential:

- **Nil:** No evidence of historical development or use, or where substantial previous impacts would have removed all archaeological potential.

[68] AMAC, February 2012. *Final Archaeological Report St Marys Commuter Carpark Harris St St Marys NSW.* Report for Transport Projects Division of Transport for NSW.

- **Nil-Low:** Low intensity historical activity, such as grazing, with little to no archaeological 'signature' expected, or where substantial previous impacts, such as considerable bulk excavation and other earthwork activities such as grading would have largely removed archaeological potential.
- **Low:** Research indicates little historical development, or where there have been substantial previous impacts, disturbance and truncation in locations where some archaeological remains such as deep subsurface features may survive.
- **Low-Moderate:** Evidence of some historical development with known previous impacts, remains and deep subsurface features are likely to survive with some known disturbance and truncation.
- **Moderate:** Analysis demonstrates known substantial historical development with some previous impacts, but it is likely that archaeological remains survive with some localised truncation and disturbance.
- **High:** Evidence of multiple phases of historical development and structures with minimal or localised later development impacts, and it is likely the archaeological resource would be largely intact.

2.4.2 Archaeological significance

The assessment of historical archaeological sites requires a specialised framework in order to consider the range of values associated with each site. This significance assessment has taken into account two documents issued by the former NSW Heritage Branch (now Heritage NSW): *Assessing Significance for Historical Archaeological Sites and 'Relics'* and *Archaeological Assessment Guidelines*.[69] In NSW the heritage system comprises three steps:

- Investigate significance;
- Assess significance; and
- Manage significance.

The *NSW Heritage Manual*[70] outlined in Table 2, discusses the NSW heritage management system and provides guidelines for each part of the process. These guidelines incorporate key aspects of cultural heritage value identified in the *Burra Charter*.[71]

Table 2: NSW Heritage Criteria

Criterion	Description
Criterion A – Historical significance	An item is important in the course, or patter, of NSW's cultural or natural history (or the local area)
Criterion B – Associative significance	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 – Aesthetic significance	An item is important in demonstrating aesthetic characteristics and / or a high degree of creative or technical achievement in NSW (or the local area)

[69] NSW Heritage Branch 2009; NSW Heritage Office 1996: 25 – 27
[70] Heritage manual
[71] Australia ICOMOS 2013

Criterion	Description
Criterion D – Social significance	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 – Technical or research significance	An item has potential to yield information that will contribute to an understanding of NSW's cultural natural history (or the local area)
Criterion F – Rarity significance	An item possesses uncommon, rare or endangered aspects of NSW cultural or natural history (or the local area)
Criterion G – Representativeness significance	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 most widely used framework for evaluating archaeological significance is the schema developed by Bickford and Sullivan.[72] It comprises three key questions:

- *Can the site contribute knowledge that no other resource can?*
- *Can the site contribute knowledge that no other site can?*
- *Is this knowledge relevant to general questions about human history or other substantive questions relating to Australian history, or does it contribute to other major research questions?*

The emphasis in these three questions is on the need for archaeological research to add to the knowledge of the past in a significant way. Archaeological research and investigation should avoid duplicating known information or information readily available from other sources such as documentary records or oral history.

2.4.3 Assessment of archaeological potential

Phase 1 (1806-1862): Early land grants

The St Marys construction site is located within four original land grants dating from 1806 to the early 1820s. These include the land grants of John Oxley (600 acres); Philip Parker King (650 acres); Maria King (280 acres); and Mary Putland (600 acres).

Within the construction site, it can be expected that land clearance would have occurred, in addition to the establishment of formal timber post and rail fences along the property boundaries. Historical sources state that Kirkham, located in Camden, was the primary estate of John Oxley's. There is no historical or cartographic documentation to suggest that Oxley ever built on his St Marys land grant or utilised it for any agricultural or pastoral endeavours.

There is no historical documentation to suggest that any homestead or estate was built on Phillip Parker King's land grant. The Dunheved homestead was constructed by Philip Parker King on Maria King's land grant. The location of the homestead is known to have been located to the north of the St Marys construction site, and associated outbuildings, including agricultural structures and accommodation for up to 100 staff would have been located in close proximity to the main

[72] Anne Bickford and Sharon Sullivan, 'Assessing the Research Significance of Historic Sites', in *Site Surveys and Significance in Australian Archaeology*, ed. Sharon Sullivan and Sandra Bowdler (Canberra: Research School of Pacific Studies, ANU, Canberra, 1984), 19–26.

homestead. Therefore, it is unlikely that any structures associated with Dunheved Estate would have been located within the St Marys construction site.

Written documentation, including a letter from Phillip Parker King to Governor Brisbane, dated to 1822, states that the property had large numbers of cattle, horses, sheep, and pigs, and that extensive land clearance had occurred. This attests that the property was a working farm from its origins, and that activity associated with land clearance and grazing would likely have occurred within the St Marys construction site. However, subsequent industrial activity within the St Marys construction site associated with the development of the Western Railway Line, St Marys Station, and the Dunheved industrial branch line would have disturbed archaeological evidence associated with land clearance or timber boundary fencing.

Due to the industrial development of St Marys during the late nineteenth and early twentieth centuries, the lack of any known structures associated with early land grands within the St Marys construction site, and the relatively ephemeral archaeological remains predicted (such as evidence of land clearing or intact buried soils), there is a **nil** potential for archaeological remains associated with Phase 1 to be present within the St Marys construction site.

Phase 2 (1863-1888): St Marys Railway Station

First St Marys Station

The construction of St Marys Railway Station commenced in 1862 and was originally named South Creek Station, with this station expanded for the duplication of the line in the 1880s. Prior to the duplication of the line, South Creek Station was not a major station and was instead a smaller train stop used for distributing goods to the northern portion of St Marys at a time when little urban development had occurred in this area.

Original station buildings would have included timber retaining wall platforms, timber or brick station buildings and signal sheds. It is likely that support and ancillary structures, including water tanks, and/or lamp rooms may have been present. The precise location of former 1862 to 1885 structures are not known, but the main station building is suggested to have been 'situated a little to the Sydney side' (further east) of the subsequent 1888 structure. [73]

Duplication of the line in the 1880s, as well as the significant expansion and change to the station precinct during the Second World War involved widespread excavation and construction within the station precinct. Archaeological remains related to this phase would likely consist of remnant buried structural footings of brick, rail beam or timber. Remains from this period, if conserved, are likely to be heavily truncated or disturbed and unlikely to demonstrate a good degree of preservation or potential for responding to research questions. The potential for identifying archaeological remains relating to the 1862 – 1885 South Creek Station are considered to be **nil to low**.

The Goods Yard

The first Goods Shed was likely erected in the late 1860s, although its location is not clearly established. The extant Goods Shed and Goods Yard were constructed in the 1880s at the southern side of the railway corridor. Potential archaeological remains associated with the Good Yard may include remnant railway tracks associated with the Goods Yard and siding. Other remains which may be preserved include footings or portions of former loading ramps, signalling or point control equipment, footings of former sheds or yard buildings, as well as possible artefactual remains of discarded freight, railyard equipment or rubbish from railyard workers (bottles, ceramic, bone).

[73] 'Old St. Marys Station', *Nepean Times*, 23 December 1933, p. 7. Accessed online 25 February 2021, http://nla.gov.au/nla.news-article101327927

Several ancillary buildings are evident in 1943 aerial imagery of St Marys Railway Station and appear to be sheds or storage locations in the rail yard, likely constructed of timber or brick. Potential remains associated with these structures may include stone, brick, or cement foundations. Artefacts associated with these former buildings (rail equipment, workers discarded rubbish or tools) may also be present.

A 1956 plan of the Goods Yard and Goods Shed show several structures likely dating to the 1950s development of the station. A structure adjoined to the western end of the Goods Shed, featuring stairs abutting the south-western exterior Goods Shed wall appears to be a loading bank, associated with the Goods Yard railway tracks on the northern side of the Goods Shed and on the southern side of the main railway corridor. Historic photographs of the Goods Shed show the original ground surface at grade with the railway corridor, however the ground surface around the goods shed has now been raised for the construction of the plaza, while work to construct the bus interchange has involved the lowering of the surrounding ground surface. While the raising of the ground level near the Goods Shed may have involved some ground disturbance, it is considered likely that imported fill materials may have been laid which could result in protecting or capping any below-ground archaeological resources.

The Goods Shed had a butt-boarded timber floor, which was caulked and covered using asphalt in 1956. While it is likely that modern rubbish has accumulated below the Goods Shed, it possible that earlier phases of discarded rubbish associated with the operation of the Goods Shed in the late nineteenth and twentieth centuries may be buried below the existing ground surface, sealed *in situ* by the 1956 asphalt surface. More recent damage to the floorboards of the Goods Shed has allowed further modern rubbish to accrue in the underfloor space. Accumulated rubbish was observed to be light-weight modern discards (plastic bottles, aluminium cans) and are not considered likely to have disturbed deposits located below them.

A photograph from 1970 shows that the ground level was originally lower than current, and also shows that the loading bank was still extant at the time, accessible through the western door of the Goods Shed, and that it was constructed of timber (Figure 31). Furthermore, the 1943 foundations of the jib crane are located immediately to the west of the loading bank structure. The Goods Yard track continued west, to the south of the extant footbridge, where a buffer stop – likely constructed of timber sleepers – was located. At the southern side of the current jib crane location was a weighbridge, and a loading stage, measuring 12 feet (3.65 metres) by 8 feet (2.4 metres) was located at the northern side of the crane. These structures are not evident in the 1943 aerial imagery, suggesting they were constructed in the 1950s.

A comparison of the St Marys Freight Hub report as outlined in Section 2.2.1 and the St Marys construction site provides an insight into the types of remains associated with rail infrastructure which may be present within the construction site, including rail infrastructure (such as rail, point rodding and timber sleepers). However, the active presence of the former Goods Yard in this location may have more robust and informative archaeological resources present with discrete deposits relating to former freight and loading equipment, discarded goods, and deposits associated with workers who formerly worked at the site in the late 19th and early 20th centuries.

Archaeological remains related to the St Marys Goods Yard would consist of former concrete, brick and timber foundations, rail, ballast and sleepers, and isolated artefact deposits of former freight goods or worker's rubbish (glass, ceramic, bone). The archaeological potential assessment has identified a number of events which may have disturbed intact remains associated with the Goods Shed, including intact underfloor deposits. As such, there is **low to moderate** potential for intact archaeological remains associated with the St Marys Goods Yard to be present.

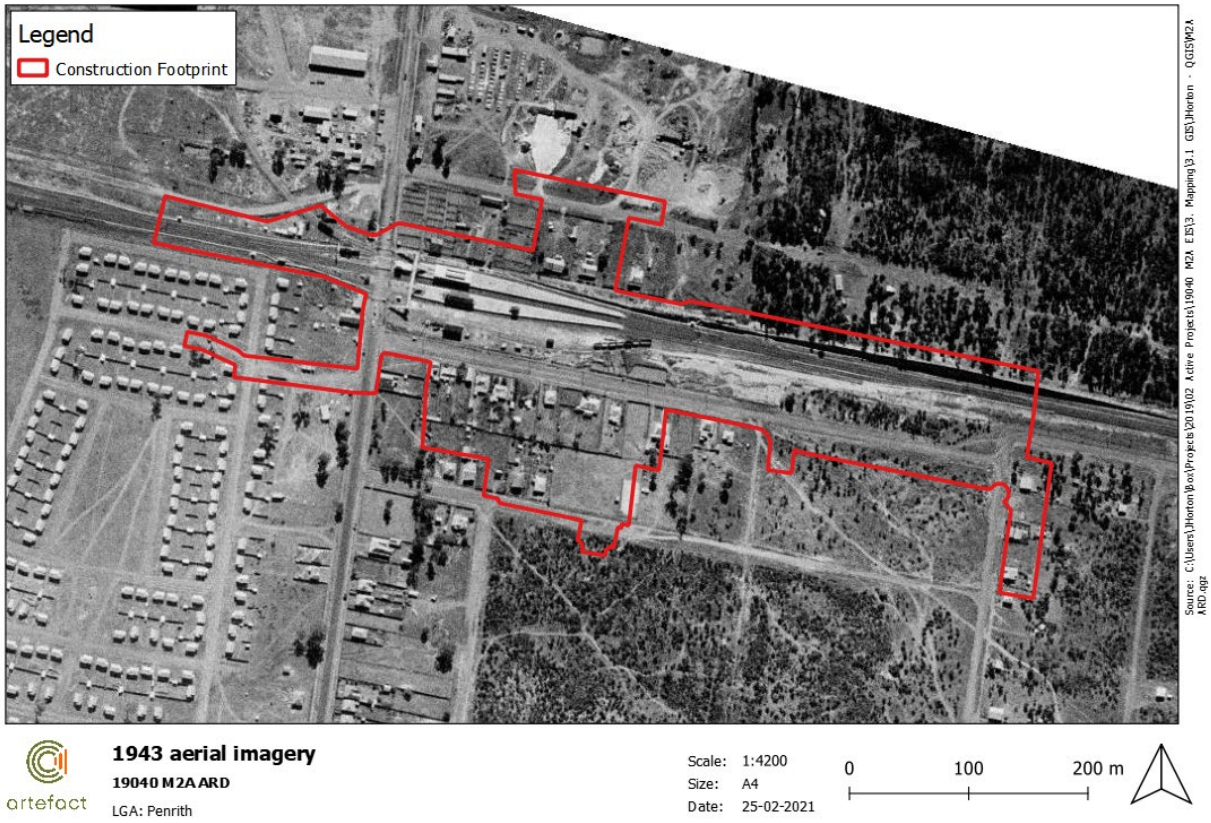


Figure 31. 1943 Aerial Imagery of St Marys Railway Station, with Goods Yard structures highlighted in red. Source: SixMaps

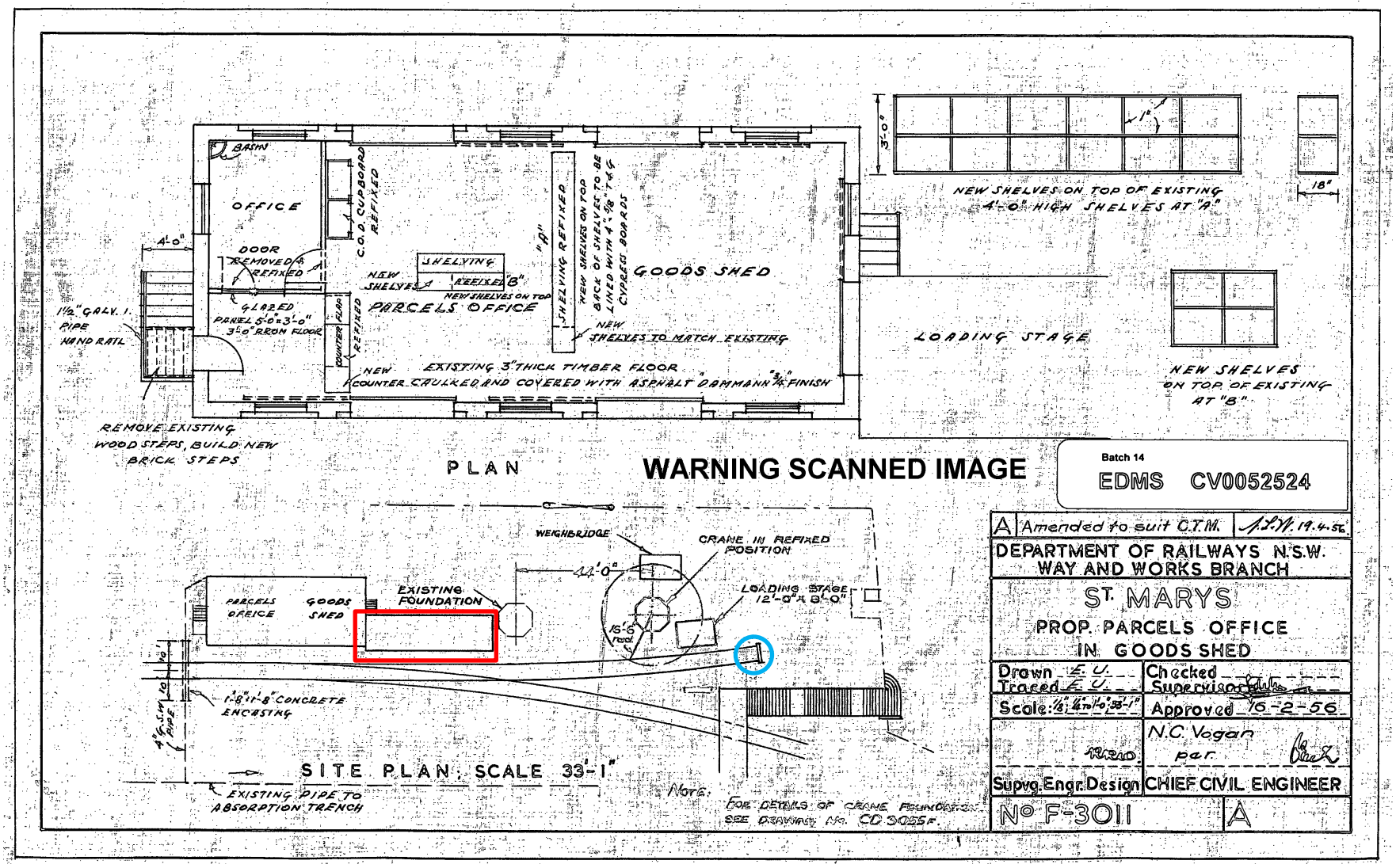


Figure 32. Sydney Trains Plan of St Marys Goods Yard/Shed precinct, 1956. Buffer stop circled in blue and loading bank highlighted in red. Source: Sydney Trains Plan Room

Figure 33. The Goods Shed at St Marys Station (looking east), 1970. Source: Penrith City Library[74]

Former 1888 Platform Structures

St Marys Railway Station previously featured a platform building on Platform 1/2 which dated to 1942. The SHR listing for the St Marys Railway Station Group states that there is no evidence of the 1942 brick station building and that there is therefore low archaeological potential for remains of the building.

The 1943 aerial imagery shows an out-of-shed towards the eastern end of platform 3/4, which would most likely date to the 1880s when the platform 3/4 building was constructed. The out-of-shed may have been constructed of weatherboard timber with a corrugated metal roof, as seen at Katoomba Railway Station on the Main Western Railway Line.[75] However, based on later photographs it appears to have been built in brick, as seen at Hazelbrook[76] and Glenbrook[77] Stations, also on the Main Western Line. This structure is visible in 1956 aerial imagery but absent by 1970. Platform regrading works may have resulted in the partial or complete truncation of any remains associated with the structure, likely limited to footings or foundations.

There is **low** archaeological potential for early to mid-twentieth century platform structures, likely limited to structural remains of former footings below the current platform.

Phase 3 (1888 - 1942): Subdivision, Industrial and Residential Development

The Inglis Cattle Yards were established by William Inglis in 1901, and were located on Harris Street, in the location of the extent multi-storey commuter carpark. The Shane's Park Hotel, located immediately east of the cattle yards on Harris Street, was established by 1877, and was excavated by

[74] Penrith City Library, 1970. 'St Marys Railway Station.' *Penrith In Pictures.* Accessed online 24/7/2019 at: http://www.photosau.com.au/penrith/scripts/ExtSearch.asp?SearchTerm=003029
[75] NSW Office of Environment and Heritage, 2009. 'Katoomba Railway Station Group and Yard.' *NSW Office of Environment and Heritage.* Accessed online 4/11/2019 at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4801008
[76] NSW Office of Environment and Heritage, 2009. 'Hazelbrook Railway Station Group.' *NSW Office of Environment & Heritage.* Accessed online 4/11/2019 at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4801914
[77] NSW Office of Environment and Heritage, 2005. 'Glenbrook Railway Station Group.' *NSW Office of Environment & Heritage.* Accessed online 4/11/2019 at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4801053

AMAC in 2011–12.[78] Remains associated with the Inglis Cattle Yards and the Shane's Park Hotel have been recorded and removed through archaeological excavation prior to the construction of the multi-storey commuter carpark on Harris Street. Remains included deposits of a well or cistern. The second well is located on Forrester Road at the base of the roundabout and was not removed or excavated further during works. This feature, however, is located outside of the construction footprint. There is therefore **nil** potential for archaeological remains within that part of the construction footprint that is the commuter carpark associated with the Inglis Cattle Yards or earlier buildings, including the Shane's Park Hotel.

Subdivision plans of the area dating to the early 1920s show five built structures on Station Street, located between Queen Street and Lethbridge Street, however these are unlabelled, and it is uncertain if they are residential or commercial structures. The 1943 aerial imagery shows approximately 12 separate residential lots with housing facing Station Street, and four residences on Phillip Street facing south. As with the housing on Phillip Street, these residences include several outbuildings of various sizes, which may include outhouse, sheds, or agricultural structures. At the corner of Phillip Street and Queen Street is a park or reserve, with dirt tracks connecting the two streets. In addition, aerial images from 1943 for the northern portion of Queen Street in 1943 show the presence of two commercial / light industrial buildings; these buildings were likely cattle yards or storage warehouses.

Archaeological remains relating to late nineteenth and early twentieth century commercial and residential structures could include brick and concrete footings, evidence of former services or drainage, industrial and yard deposits as well as isolated domestic artefact deposits. Tongue-and-groove timber flooring was used in this period and the presence of artefact-bearing underfloor deposits is unlikely. Excavations at the Shanes Park Hotel to the north of the construction site identified former privies, wells and cesspits.[79] While archaeological remains related to these items are often deeper than other artefactual remains, widespread ground disturbance along Phillip Street for the construction of the current St Marys Station Plaza shopping mall, including basement carparks, is considered to have entirely removed remains of this type.

Overall, the potential for the recovery of archaeological remains relating to this phase is considered **low**.

[78] AMAC, February 2012. *Final Archaeological Report St Marys Commuter Carpark Harris St St Marys NSW.* Report for Transport Projects Division of Transport for NSW.
[79] AMAC, February 2012. *Final Archaeological Report St Marys Commuter Carpark Harris St St Marys NSW.* Report for Transport Projects Division of Transport for NSW.

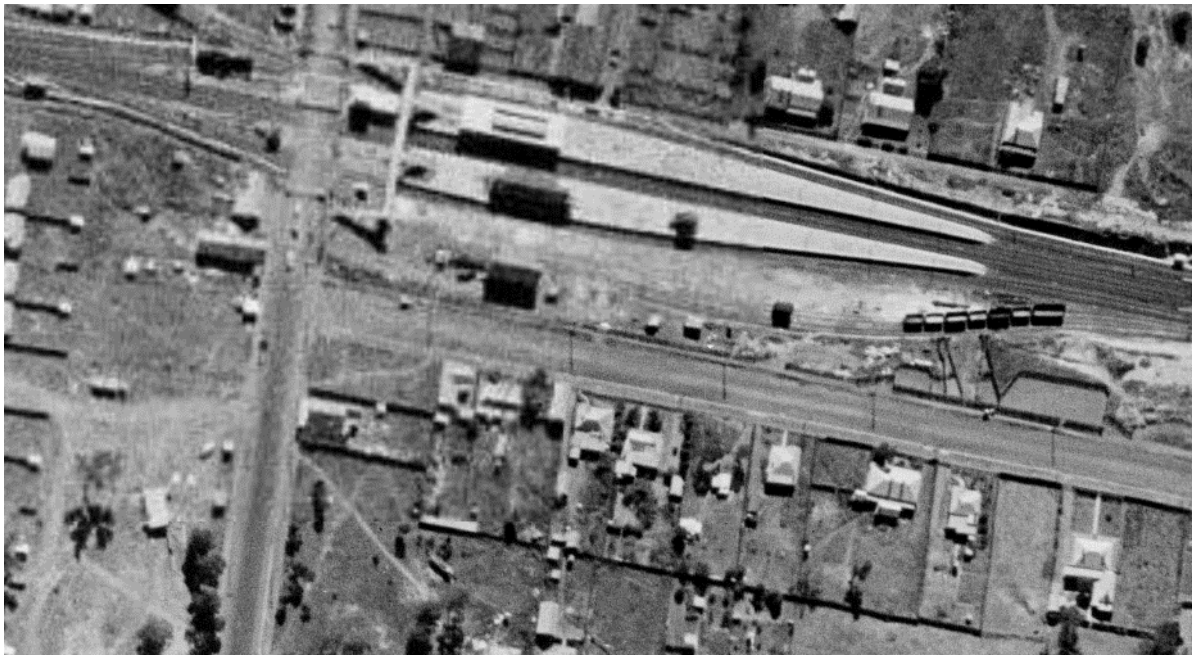


Figure 34. Residential properties on Station Street (north), Queen Street and Phillip Street (south) in 1943. Source: SixMaps

Phase 4 (1942 - present) Modern Development

Archaeological remains from the post-war period would consist of brick or concrete footings, utility services and former road and kerbing remains. The potential for archaeological remains associated with this phase to be present in the St Marys construction site is considered to be **moderate**. Remains dating from this phase would not be considered archaeologically significant.

2.5 Assessment of archaeological significance

2.5.1 Historic themes

Historical themes relevant to St Marys construction site are summarised in Table 3 below.

Table 3: Historic themes for archaeological resources in St Marys construction site

Australian Theme	NSW Theme	Discussion
3. Developing local, regional and national economies	Transport	Archaeological remains relating to the First Railway Station, St Marys Goods Yard and the Platform 1/2 building are likely to be present, potentially providing evidence of activities associated with moving people and goods from one place to another, including the systems which facilitate such movements.
4. Building settlements, towns and cities	Towns, suburbs and villages	Archaeological remains relating to the First Railway Station, St Marys Goods Yard and the Platform 1/2 building are likely to be present, potentially providing evidence of activities associated with creating, planning and managing urban functions, landscapes and lifestyles in towns, suburbs and villages.

Australian Theme	NSW Theme	Discussion
5. Working	Labour	The St Marys construction site has been frequented by innumerable rail industry workers from point of establishment. Archaeological remains relating to their use of the site may provide information regarding labour practices and activities of that time.

2.5.2 Archaeological significance assessment

The following assessment of significance for archaeological remains is provided for remains predicted to be present within the St Marys construction site only. Only those phases of land use for which archaeological remains have been predicted are included in this discussion of archaeological significance.

Phase 2 (1863 - 1888): St Marys Railway Station

First St Marys Station

Archaeological remains relating to the first St Marys Station (South Creek Station) are likely to be heavily truncated or disturbed as a result of extensive ground disturbance at the site since the first station was removed and the current station constructed in the 1880s. While these remains could be related to the earliest public NSW railway network, truncated or *ex situ* remains are not likely to provide detailed information which could respond to research questions about the former railway station, nor be demonstrative of the technical and historical aspects of the use of the rail network in St Marys from this time. In addition, renovations within the railway corridor would likely have intermixed stratigraphic relationships with later development, and material remains may not be archaeologically distinguishable between phases.

Due to the high degree of disturbance within the rail corridor, remains associated with the first St Marys Station may reach the threshold for local significance if isolated robust and intact deposits are identified.

St Marys Goods Yard

Archaeological remains associated with the former St Marys Goods Yard are likely to include former concrete, brick and timber foundations, as well as buried rail, ballast and sleepers. There is a moderate potential for these remains to be present. Archaeological materials related to these remains may have some demonstrative value if they are identified intact and *in situ*, however as structural remains they may not respond to research questions associated with interrogating the past use of the rail yard or the goods distribution network that operated in St Marys during this time.

Isolated artefact deposits may be identified within the rail corridor; however, these would be likely to be remnant rubbish deposits and may not be able to be associated with any specific domestic, commercial, or industrial use. Underfloor deposits associated with the use and operation of the Goods Shed, if intact, may provide valuable research information on the operation of the Goods Shed and the lifeways of the workers who used the building and yard. Rail beams, sleepers and ballast are also considered ubiquitous from the rail network and would not be considered significant remains.

Substantial intact remains related to the former footings of Goods Yard structures, and isolated artefact deposits, may reach the threshold for local significance.

Former 1888 platform structures

Former footings to the original 1888 platform structure which was demolished in the 1990s to install new canopies would likely be brick remains sub-platform. Excavation works to install the canopies would have likely removed all but the deepest building foundations in this location. Remains relating to the former platform building would be demonstrative of the original construction of the building and may be used as a comparative example for analysing the platform 3/4 building.

Archaeological remains relating to the former platform 1/2 building may reach the threshold for local significance.

Phase 3 (1888 - 1942): Subdivision, Industrial and Residential Development

Archaeological remains relating to late nineteenth and early twentieth century industrial and residential development at St Marys Station has been assessed as low potential. Remains associated with late nineteenth century cattle industries or goods storage facilities may provide information on commercial and industrial practices in this period in what was a largely rural area. Archaeological remains relating to these industries are unlikely to respond to research questions associated with the understanding the development of St Marys and the relationship of the place with developing commercial networks within Sydney.

Archaeological remains associated with this phase would not reach the threshold for local significance.

Phase 4 (1942 - present): Modern Development

Archaeological remains related to post-Second World War development would be considered to be materially ubiquitous and unlikely to respond to historic or archaeological research questions. Buried remains from this period would not reach the threshold for local significance.

2.5.3 Summary of archaeological potential and significance at St Marys station

A summary of archaeological potential and significance at St Marys Station is provided in Table 4 below. The location of areas of significance archaeological potential at St Marys Station is provided in Figure 35.

Table 4. Summary of archaeological potential and significance at St Marys station

Phase	Activity and remains	Potential	Significance
Phase 1 (1806 – 1862)	Evidence of early land grants, agricultural remains	Nil	Nil
	First Railway Station – timber or brick footings, isolated artefact deposits	Nil to low	Possible local
	St Marys Goods Yard – brick, timber and concrete footings, isolated industrial or domestic artefact deposits.	Low to Moderate	Local
Phase 2 (1863 - 1888)	St Marys Goods Shed underfloor deposits – potentially stratified discarded domestic, workers and freight-related artefacts, including glass, ceramic, bone, paper or newspaper, as well as isolated industrial remnants.	Low to Moderate	Local
	Platform 1/2 building – brick footings	Low	Possible local

Phase	Activity and remains	Potential	Significance
Phase 3 (1888 – 1942)	Commercial, industrial and residential remains – brick, timber or concrete footings, former yard surfaces, isolated artefact deposits.	Low	Nil
Phase 4 (1942 – present)	Modern concrete footings, kerbs, road surfaces, utility services	Moderate	Nil

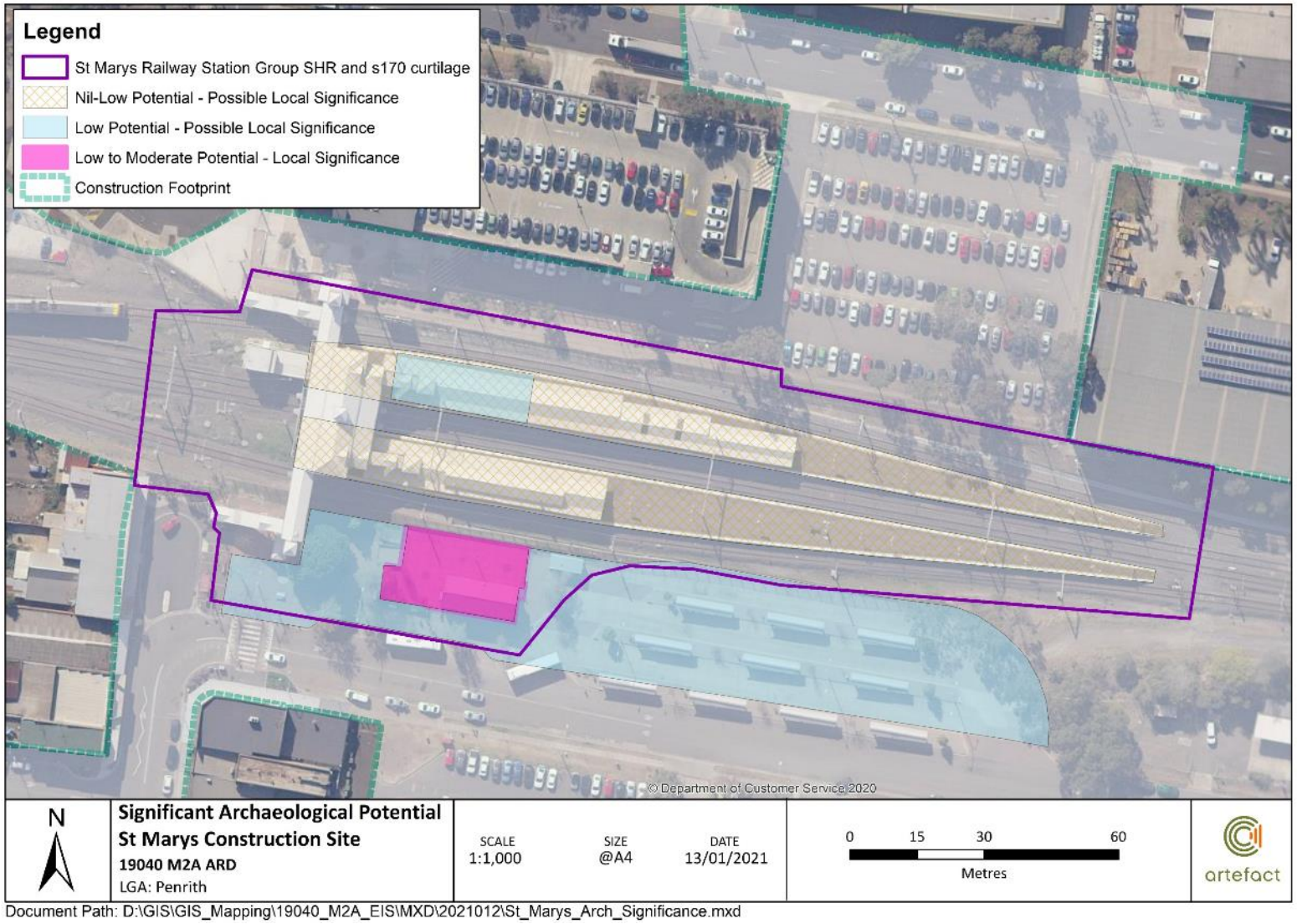


Figure 35. Significant archaeological potential at St Marys Station

2.6 Archaeological impact assessment

2.6.1 Proposed works

Construction of the proposed St Marys Station would consist of an underground cut-and-cover station with platforms located below the existing surface level. The station would provide an island platform in an east-west orientation located to the south and parallel to the existing Sydney Trains suburban T1 Western Line. The station box would be located to the east of the existing State significant Goods Shed, which would be retained as part of the project.

Ground disturbance for the project may occur throughout the whole of the construction site at St Marys Station, with deep excavation for the station box in the vicinity of the existing bus interchange, as well as excavation at the eastern ends of platforms 1/2 and 3/4 for lifts, stairs and the new aerial concourse.

The indicative construction site layout for St Marys is shown in Figure 36, whilst the indicative location of key features of the Project is shown in Figure 37 and a cross-section of the station box and aerial concourse shown in Figure 38.

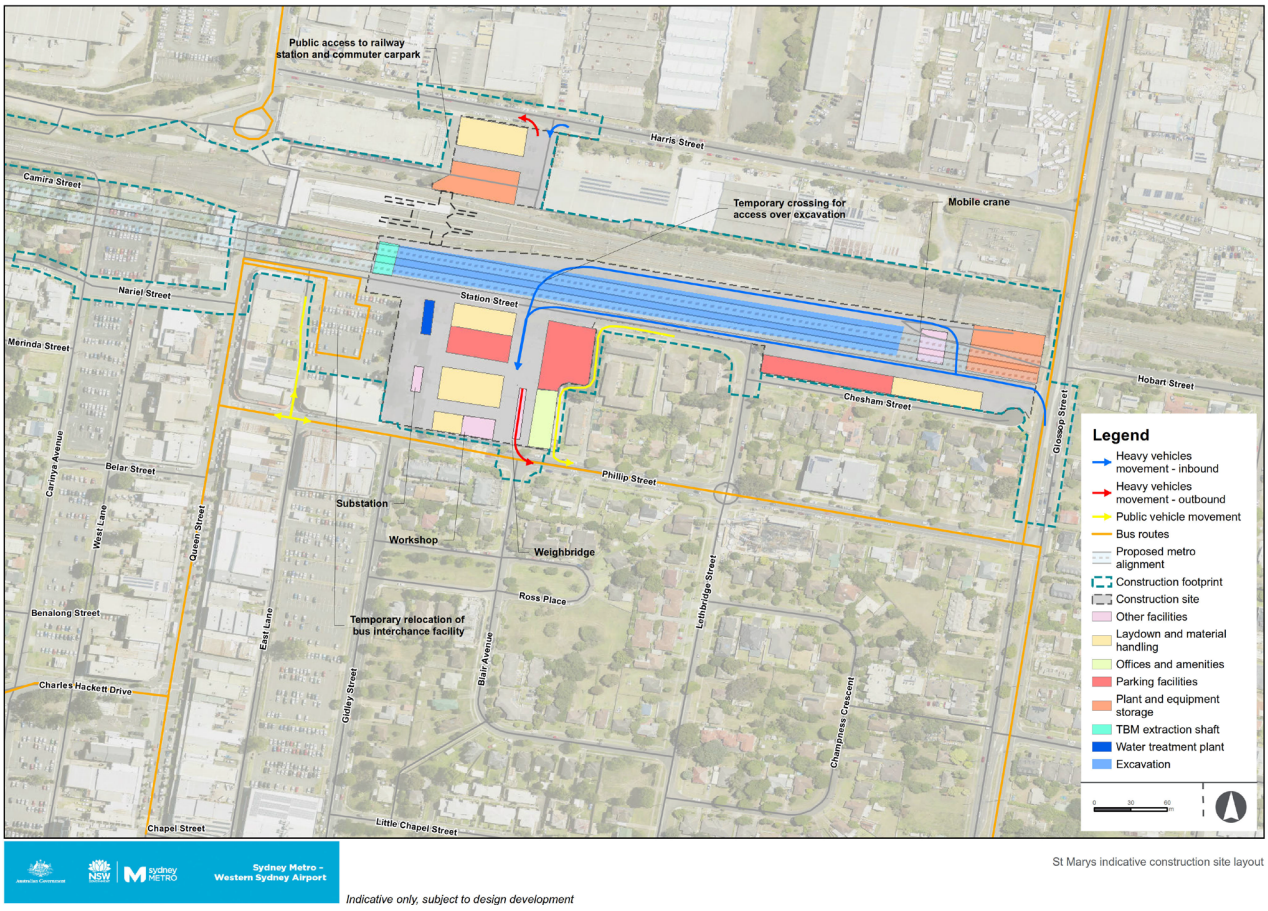


Figure 36. St Marys construction site indicative layout

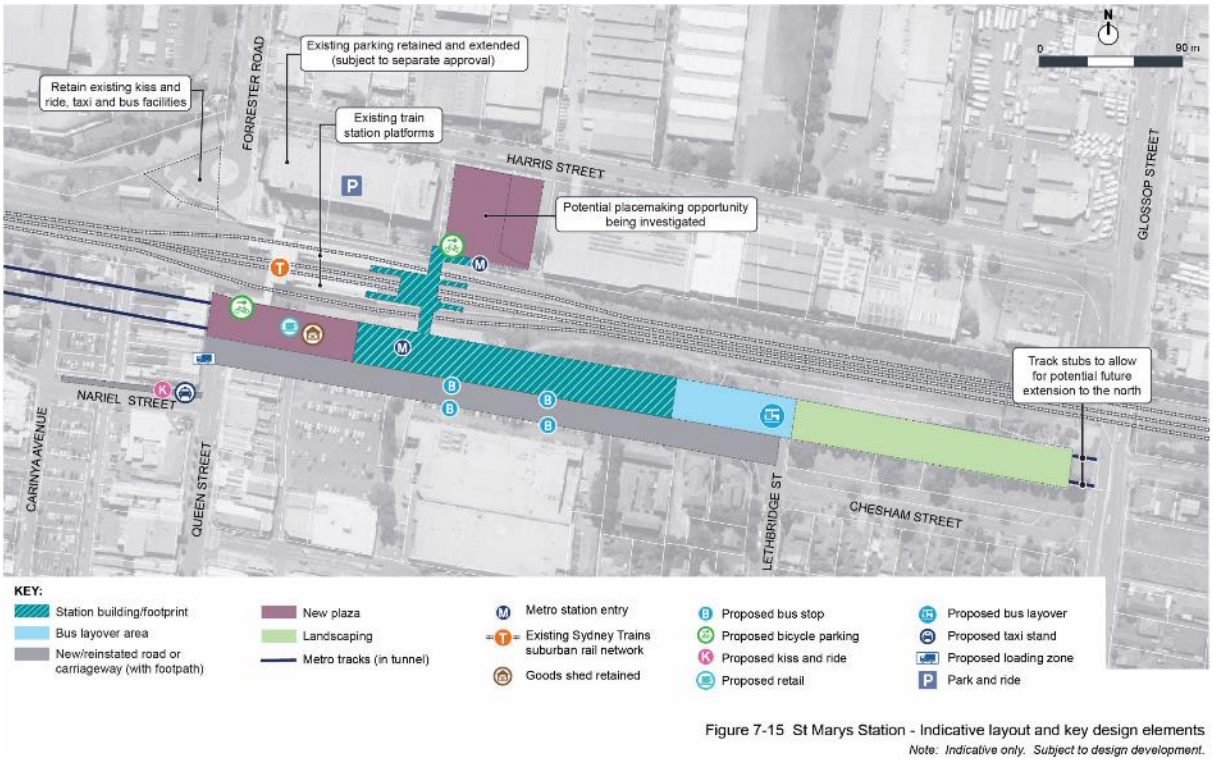


Figure 37. Indicative layout and key design elements for St Marys Station

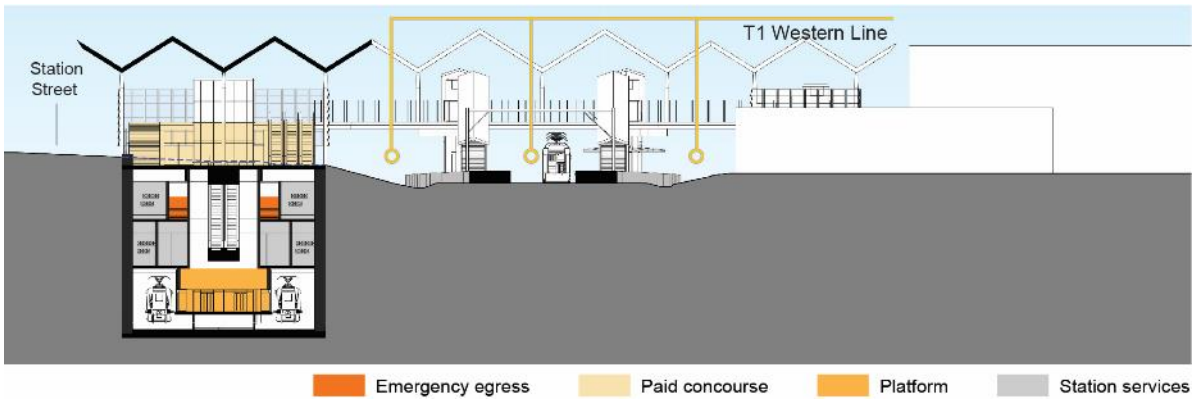


Figure 38. Cross section of St Marys station box and aerial concourse (facing west), showing depth of excavation for the station box.

2.6.2 Potential archaeological impacts

Proposed works at the St Marys construction site would involve excavation in areas with the potential for locally significant archaeological remains including the s=station box, which would impact remains associated with the St Marys Goods Yard.

While previous excavation and station precinct redevelopment works are likely to have removed shallow remains associated with the former Goods Yard at St Marys, deeper remains may be preserved including undocumented subsurface features (i.e., services and footings).

Former late nineteenth and early twentieth century commercial, industrial, and residential remains associated with the historical phase 3 (1888 - 1942) of the St Marys construction site, if revealed, would not meet the threshold for local significance. Construction works for the development of the

concourse-to-platform stairs and lifts may impact archaeological remains associated with the first St Marys Station and the former platform 1/2 1888 station building, if surviving.

Excavation would take place within areas identified as having low to moderate potential for locally significant archaeological remains. As such, the project may result in **moderate** impacts to significant archaeological remains within the St Marys construction site.

2.7 Archaeological management

2.7.1 Overview of archaeological management

Archaeological management measures for St Marys construction site are described in Table 5.

The St Marys construction site has been divided into archaeological management zones based on archaeological potential and project's construction impacts. These zones have then been applied to the entirety of the construction footprint for the project and are outlined in Section 4.0.

Table 5: Summary of archaeological potential and recommended archaeological management for the St Marys construction site.

Phase	Activity and remains	Potential	Significance	Mitigation
Phase 1 (1806 – 1862)	Evidence of early land grants, agricultural remains	Nil	Nil	Unexpected Heritage Finds Procedure
Phase 2 (1863 - 1888)	First Railway Station – timber or brick footings, isolated artefact deposits	Nil to low	Possible local	Unexpected Heritage Finds Procedure
	St Marys Goods Yard – brick, timber and concrete footings, isolated industrial or domestic artefact deposits. Possible underfloor deposits below the extant Goods Shed.	Low to Moderate	Local	Establish an exclusion zone around area of predicted archaeological remains for all of Zone 1 (refer to Figure 39). If ground disturbing works are required within the St Marys Goods Yard they would be managed under Archaeological Method Statement.
	St Marys Goods Shed underfloor deposits – potentially stratified discarded domestic, workers and freight-related artefacts, including glass, ceramic, bone, paper or newspaper, as well as isolated industrial remnants.	Low to Moderate	Local	Establish an exclusion zone around area of predicted archaeological remains for all of Zone 1 (refer to Figure 39). If ground disturbing works are required within the St Marys Goods Shed they would be managed under Archaeological Method Statement.
	Platform 1/2 building – brick footings	Low	Possible local	Unexpected Heritage Finds Procedure
Phase 3 (1888 – 1942)	Commercial, industrial and residential remains – brick, timber or concrete footings, former yard surfaces, isolated artefact deposits	Low	Nil	Unexpected Heritage Finds Procedure

Phase	Activity and remains	Potential	Significance	Mitigation
Phase 4 (1942 – present)	Modern concrete footings, kerbs, road surfaces, utility services	Moderate	Nil	Unexpected Heritage Finds Procedure

Once construction methodologies are finalised, the need for any ground disturbing works within the St Marys Goods Yard would be confirmed. Where ground disturbing works are required, impacts to significant archaeological resources would be assessed as part of work stage specific archaeological impact assessment. Where impacts to significant archaeological resources are identified, an archaeological work method statement would be prepared that sets out a work stage specific approach to archaeological management. This ARD includes methodologies for archaeological monitoring, testing and salvage which can be drawn upon and tailored to address work stage specific impacts and represent the minimum standard for archaeological management within the St Marys Goods Yard.

The remainder of the construction footprint (outside of the St Marys construction footprint) for the project would be managed under the Sydney Metro Unexpected Heritage Finds Procedure (see Figure 40 to Figure 44).

2.7.2 Research questions

Archaeological resources relating to the former St Marys Goods Yard, if intact, may be of local archaeological significance.

General research questions have been developed to guide archaeological investigations at the St Marys construction site, with specific research questions provided for potential remains associated with the use and operation of earlier phases of St Marys Railway Station.

General research questions

- What is the integrity of the remains? Have they been truncated or dispersed by later demolition and construction work within the St Marys construction site?
- Are significant artefactual remains present within the St Marys construction site? Or is the archaeological resource restricted to former rail infrastructure and structural remains?
- What physical evidence of former activities can be identified within the site?
- What contexts, phases, and activity areas are evident in revealed archaeological remains?
- What natural and cultural taphonomic processes have contributed to the formation of the archaeological site and its associated deposits / features?

First Railway Station and Platform 1/2

- Are archaeological remains related to the First Railway Station and Platform 1/2 identifiable?
- Can discrete stages of the development of rail infrastructure be identified at the St Marys construction site? Or are infrastructural changes difficult to archaeologically discern between historical phases?
- Can archaeological remains provide evidence of specific working and labour practices at the site? Are the working activities of railway workers and patrons identifiable from material remains?

- Is there artefactual evidence of the conditions in which the railway employees worked?
- Do structural and archaeological remains provide us with new data not present in archival records on the layout, operation and history of St Marys Station over time?

St Marys Goods Yard

- Are there archaeological remains related to the St Marys Goods Yard?
- Are there rubbish or discard deposits which would provide information on the type and nature of freight that was being transported through the St Marys Goods Yard in the late nineteenth and early twentieth centuries?
- Do structural and artefactual remains at of the former Goods Yard at St Marys station demonstrate the economic development of the town of St Marys as the growth of a commercial centre?

3.0 ARCHAEOLOGICAL METHODOLOGY

The following section details the archaeological methodologies proposed for this project.

3.1 Heritage induction

Archaeological heritage would be included in the general project induction for all personnel. At a minimum, this process would include an overview of the project obligations and archaeological management zones (Figure 39), the role of the archaeological team, and the project unexpected finds procedure including typical potential archaeological remains encountered in railway contexts.

3.2 Exclusion zones

An area of predicted significant archaeological resources has been identified both within and near to the St Marys station Goods Shed. The area where these remains are predicted would not be impacted by project as identified in the EIS (Sydney Metro, 2020).

To prevent inadvertent impacts to significant archaeological resources in this area, an exclusion zone is proposed to be established during construction works. This would involve the installation of protective fencing around the outer perimeter of the identified area of predicted archaeological remains. The extent of this exclusion zone is shown in Figure 39. Machine plant would not be permitted within the exclusion area.

3.3 Work-stage specific archaeological method statements

Ground disturbance works within the St Marys construction footprint, as identified in the EIS (Sydney Metro 2020), would not result in impacts to the significant archaeological resources within the St Marys Goods Yard as identified in this ARD. Archaeological management measures for this area includes the establishment of an Exclusion Zone around the St Marys Goods Yard.

Once construction methodologies are finalised, the need for any ground disturbing works within the St Marys Goods Yard would be confirmed. Where ground disturbing works are required, impacts to significant archaeological resources would be assessed as part of work stage specific archaeological impact assessment. This would be completed prior to or concurrent with the work stage specific archaeological method statement (AMS).

Where impacts to significant archaeological resources are identified, an AMS would be prepared that sets out a work stage specific approach to archaeological management. This ARD includes methodologies for archaeological monitoring, testing and salvage which can be drawn upon and tailored to address work stage specific impacts and represent the minimum standard for archaeological management within the St Marys Goods Yard.

An AMS is a brief document intended to adapt the archaeological investigation methodology provided in this ARD for the specific context of the proposed package of works.

An AMS would be prepared prior to construction works that have the potential to impact archaeological resources, as identified in this document. Staged construction programs may require more than one AMS to be prepared for each site. An AMS would include all archaeological management requirements, including Aboriginal archaeological controls and its relationship to historical archaeology where relevant.

Detailed site-specific AMS requirements are provided in the archaeological management section in search site chapter of this report. Regarding historical archaeology, the AMS generally includes the following steps:

- Review of geotechnical data, and detailed service surveys as it becomes available which was not available during the development of this ARD
- Review of detailed design, scope of works, construction program and methodology
- Reassessment of potential for impacts to significant archaeological resources based on work methodology
- Review of contamination reports and archaeological mitigation requirements during any remediation program
- Confirm appropriate archaeological investigation methodology to mitigate impacts from the works
- Provide environmental sampling and sieving strategies where appropriate
- Outline opportunities to provide information regarding the archaeological investigations to the public.

AMS methodologies should be prepared for early investigation works and enabling works activities in areas of identified significant archaeological potential, which is restricted to the area of low to moderate potential for archaeological remains of the former St Marys Goods Yard. This area of archaeological potential has been identified as an area where monitoring or test excavation should be conducted, which would be contingent on the scope of works undertaken for a specific work stage. The criteria for enacting different archaeological management methods in this area is discussed in Section 3.5.

Archaeological results from any phase of works should be incorporated into the preparation of future AMS' for later works, including updating the potential and significance of predicted archaeological remains within the construction footprint. Re-assessment of the potential and significance of archaeological remains may result in updates to the management methodology for specific project areas.

An AMS would be prepared in accordance with the general archaeological methodologies outlined in Sections 3.4 to 3.21 of this report.

3.4 Research questions

Archaeological investigations would be undertaken within a research framework. The research framework is based on the ability of the archaeology to contribute to our knowledge and the potential significance of the archaeological resource. Research questions have been developed for the St Marys construction site where the construction activities have potential to impact significant archaeological remains and archaeological investigation is required.

The research questions are included in Section 2.7.2 of this report. Additional research questions can be developed if needed in response to depending on further archaeological research archaeological, geotechnical or other works carried out during the early and enabling works phase.

3.5 Archaeological investigation

Archaeological investigation refers to active archaeological involvement in the construction program. It is undertaken to manage and mitigate archaeological impacts. For the St Marys construction site it refers to:

- Archaeological monitoring and recording
- Archaeological test excavation
- Archaeological salvage excavation

3.5.1 Excavation director

Archaeological investigations would be managed by suitably qualified Primary and Secondary Excavation Directors with experience in the historical and industrial archaeology in Sydney. Archaeological investigations at the St Marys construction site would be directed by an Excavation Director who has demonstrated ability in meeting the NSW Heritage Council criteria for locally significant archaeological sites.

3.5.2 Specialists

Archaeological investigation teams would include a number of specialists in addition to experienced field archaeologists. These include artefact specialists with experience in historical archaeological assemblages, a qualified surveyor and archaeological illustrator, a historian for any additional archival research, an expert in environmental data collection (such as pollen analysis), a geomorphologist, among other specialists as required.

3.6 Archaeological monitoring and testing management methodology

The archaeological management methodology for the area of low to moderate potential at St Marys station would be managed under a combined monitoring or testing program. During the preparation of an AMS for a specific work stage, the Excavation Director would determine whether a monitoring or test excavation program is necessary.

A monitoring program would be suitable for works which involve limited ground disturbance within an area of archaeological potential, such as investigative geotechnical works, service location potholing, or widespread shallow ground disturbance such as the removal of the existing wearing surface.

A program of archaeological testing would be suitable for works which involve a greater degree of ground disturbance, or as a pre-emptive archaeological program in advance of bulk earth removal. Construction works involving any linear trenching (such as new service conduit installation) would also be suitable for conducting archaeological test excavation in conjunction with the works.

3.7 Archaeological monitoring methodology

Archaeological monitoring is where a suitably qualified and experienced archaeologist is in attendance and supervising construction excavation work with the potential to expose or impact archaeological remains. Monitoring is generally undertaken where there is lower potential for significant archaeological remains and/or where minor excavation work is in an area of archaeological sensitivity.

If archaeological remains are identified during archaeological monitoring, they would be recorded and assessed to determine if further investigation is required. Localised stoppages in the construction work would be required to facilitate this process. Works would not recommence until the monitoring archaeologist has completed the recording and is satisfied that further investigation is not required.

If significant archaeological remains are identified which are constrained to the area of ground disturbing works, archaeological salvage of a small area of remains would be conducted by the attendant archaeologist.

Should significant remains be identified which likely extend beyond the area of the work-stage specific ground disturbing works, detailed recording and protection of remains would be conducted prior to backfilling, and further testing or salvage archaeological investigation of the resource would be undertaken.

3.8 Archaeological test excavation methodology

Archaeological testing would involve the excavation of linear trenches in areas of predicted significant archaeological potential, to identify any archaeological remains and understand their subsurface context. Excavation would be conducted with a small machine excavator under the direction of the archaeological team, in thin vertical layers to remove overburden and modern fill materials. Once potential archaeological remains are identified, manual excavation with hand tools would be conducted.

Test excavation would cease once culturally sterile materials had been encountered. All archaeological remains would be recorded in accordance with the recording strategy (Section 3.10) and artefactual remains collected in accordance with the collection and cataloguing strategy (Section 3.12).

Should test excavation identify significant and intact remains which extend beyond the area of testing, salvage excavation could be conducted immediately or remains could be protected and the test trench backfilled for salvage excavation at a later time.

3.9 Archaeological salvage excavation

Archaeological salvage excavation would be conducted should significant remains be identified during archaeological monitoring or test excavation. Archaeological salvage aims to identify, expose and record the whole of an archaeological resource.

Salvage excavation would be conducted with both machine and manual excavation, with machine excavation to remove modern fills and overburden and manual excavation with hand tools for exposing and recording potentially significant archaeological remains. Excavation would continue until the whole of the significant archaeological resource had been identified. All archaeological remains would be recorded in accordance with the recording strategy (Section 3.10) and artefactual remains collected in accordance with the collection and cataloguing strategy (Section 3.12).

As salvage excavation would occur following archaeological monitoring or testing, a detailed program of investigation would be included in the AMS for the salvage excavation, based on the results of previous investigative work. This may include additional research or new research questions in response to the specific and known archaeological resource which was identified.

3.10 Archaeological recording

The archaeological archival recording would be undertaken in accordance with best practice and Heritage NSW guidelines. The level of recording detail would be in accordance with the significance of the archaeological remains. State significant remains require more detailed recording, in particular, photographic, survey and photogrammetry.

The recording methodology includes the following:

- A site datum would be established and RLs would be taken at the top and bottom of all significant archaeological features
- A standard context recording system would be employed. The locations, dimensions in plan and characteristics of all archaeological features and deposits would be recorded on a sequentially numbered register
- Significant archaeological structural remains, deposits and features would be recorded on context sheets
- Photographic recording of all phases of the work on site would be undertaken
- Digital photography, in RAW format, using photographic scales and photo boards where appropriate. A photographic record of all phases of the work on site would be undertaken
- Detailed survey and/or measured drawings would be prepared, including the location of remains within the overall site
- Significant artefacts would be collected by context for later analysis in accordance with a discard policy outlined in the AMS
- Building material, soil and pollen samples would be collected for further analysis (as appropriate)
- Registers of contexts, photos, samples and drawings would be kept.

3.11 Underfloor deposits

Underfloor deposits may be present below the extant goods shed at St Marys Station. While modern rubbish has accumulated, it is possible that material from earlier phases of the operation of the goods shed may be present below modern infill. Underfloor deposits may provide particularly useful archaeological information in the context of storage and industrial spaces.

Should significant underfloor deposits be identified would be excavated in a grid system, either 50 centimetre or one metre depending on extent of deposit. Excavation would be by context if stratigraphic layers are identifiable. If the deposit is homogenised, excavation would proceed in five or 10 centimetre spits. Excavated material would be dry sieved if possible.

3.12 Artefact collection and cataloguing

Artefacts are likely to be uncovered during excavations and are an integral part of archaeological investigations and datasets. The archaeological team would include an artefact specialist to advise the excavation team on artefact retention strategies.

Artefacts from significant and *in situ* contexts would be collected and recorded (by context). Retrieval of artefacts should focus on those where analysis would contribute to research agendas or would be

representative of the site. These items may warrant archiving or consideration for interpretative displays or similar heritage interpretation.

Retention of all artefacts from archaeological investigations in urban contexts is neither possible nor expected in current historical archaeological practice. Large amounts of fill and disturbed material is common on urban sites. Whilst these layers can provide important archaeological information regarding site formation and phasing, the material often contains artefacts of unknown provenance and limited research value. Potentially significant deposits such as occupation-related material within former structures could contain numerous artefacts of varying levels of significance or value.

Structural material in particular, such as brick, timber and concrete, would be sample collected for diagnostic pieces depending on their significance and research value. Remnants of former railways such as sleepers and rail would not be collected during works, but would be recorded in detail during the program of archaeological works.

Should diagnostic or significant artefacts be present within the fill layers (out-of-context), a sample would be retained to inform the research agenda, consideration in interpretation and as part of the archaeological record.

Retained artefacts would be cleaned, processed, catalogued, and analysed by an archaeologist experienced in historical artefact assemblages. Artefact analysis would include production of a database in accordance with best practice archaeological data recording. The resulting information would be included in the final excavation report.

Artefacts recovered from the archaeological investigations would be the property of Sydney Metro and would be securely stored by them or a nominated repository following completion of post-excavation analysis.

3.13 Unexpected heritage finds procedure

Unexpected archaeological finds would be managed under the Sydney Metro Unexpected Heritage Finds Procedure.

3.14 Management of Aboriginal objects

If Aboriginal objects are located during archaeological monitoring and salvage, works would cease, and the find would not be impacted. Aboriginal archaeological remains would be managed under conditions outlined in the project Aboriginal Cultural Heritage Management Plan.

3.15 Management of archaeological ‘relics’

If substantial remains likely to be considered State significant are identified and which aren’t identified here, excavations would cease and Heritage NSW, Department of Premier and Cabinet (DPC) would be notified.

The exposed remains would be surveyed, recorded, protected and left *in situ*, waiting advice from Heritage NSW, DPC. It is noted that additional assessment and approvals may be required to remove State significant archaeological remains.

3.16 Human skeletal remains

Human skeletal remains would be managed in accordance with the Sydney Metro Unexpected Heritage Finds Procedure and the Sydney Metro Exhumation Policy.

If human skeletal remains are identified, and determined to be historical, any archaeological investigation would be undertaken in accordance with the *Skeletal Remains: Guidelines for Management of Human Skeletal Remains*.[80]

3.17 Contaminated material

Due to potential for contaminants to remain within the project site, archaeological excavation would also be undertaken in accordance with the specified WH&S protocols established for the site, prior to the commencement of works on site. Should the discovery of contaminants on site likely result in the potential harm to archaeological staff, there may be a requirement to deviate from the proposed archaeological methodology, in order to ensure the health and safety of onsite staff. This response may include the use of protective clothing, face masks, and specified gloves, additional washing protocols, through to the need to cease hand excavation on site.

Should the requirement to employ mechanical excavation rather than hand excavation arise, archival photographic recording of archaeological material would be conducted from a safe distance (as specified in the WH&S requirements of the remediation specialists).

3.18 In situ conservation

In situ conservation is considered the most appropriate approach for intact State significant archaeological resources. If avoidance or conservation in situ is not feasible, then appropriate archaeological investigation would be undertaken, including detailed salvage and recording in accordance with this document and the AMS.

State significant archaeological resources are not expected within the St Marys construction site. Should unexpected State significant archaeological resources be identified at the St Marys construction site, opportunities for *in situ* conservation should be explored and consultation with Heritage NSW should be conducted.

3.19 Preliminary results reporting

Interim or preliminary archaeological findings reports would be prepared within one week of the completion of any archaeological investigation. These reports would outline the main archaeological findings, which would be archaeologically mapped; post-excavation and analysis requirements and would also include any further archaeological investigation requirements for a particular site or future construction task. The preliminary results report would also identify whether the findings should be considered for public interpretation.

3.20 Post-excavation analysis and reporting

Following the completion of on-site archaeological works, post-excavation analysis of the findings would be undertaken within six months of the completion of the archaeological investigation. This includes artefact analysis, environmental and building material sample analysis, stratigraphic reporting and production of Harris Matrices, production of detailed site survey plans, illustrations and interpretative drawings, generation of catalogues, data records and site registers.

A final excavation report detailing the archaeological program and results would be prepared in accordance with the standard conditions of archaeological permits issued under the Heritage Act. It would include the results of the archaeological excavation and analysis, additional historical

[80] Heritage Council of NSW, 1998

information if needed, photographs, illustrations and plans, catalogue and analysis of artefacts, and also respond to the research questions. The report would also include a reassessment of archaeological significance based on the investigation results. Opportunities for archaeological interpretation would also be included in the final report.

3.21 Public interpretation

There is potential for significant archaeological remains within the project site, particularly within the St Marys construction site, which could be of local significance. There is opportunity to interpret the archaeology and engage the public with the significance and stories of Sydney's past.

Significant findings from the archaeological investigation program would be included in heritage interpretation for the project and opportunities to include material on public display in the station could be considered. Preliminary results reporting and final reporting would identify significant findings as specific artefact material which should be considered as part of heritage interpretation.

There may also be opportunity for public engagement such as open days or media releases during archaeological investigations. Information regarding archaeological remains could be provided to the public. This could include hoarding signage, pamphlets, media releases, information on the project website, social media and blog content during the excavation process.

Interpretation should build on existing interpretation and should seek to further develop understanding of the archaeological resource and history of the area.

4.0 ARCHAEOLOGICAL MANAGEMENT SUMMARY

4.1 Introduction

The St Marys construction site has been divided into archaeological management zones based on archaeological potential and current construction impacts. These zones have then been applied to the entirety of the construction footprint for the project. Significant non-Aboriginal archaeological remains have only been identified in one area of the project – the St Marys construction site. Archaeological management zone mapping has been prepared according to the following colour code:

- **Red** (Zone 1): Potential impact to significant archaeology and archaeological investigation required. Prepare AMS once construction methodology and impacts are known.
- **Green** (Zone 2): Unlikely to contain significant archaeology. Construction to proceed with Unexpected Finds Procedure as nil-low potential for significant archaeological remains.

4.2 St Marys construction site archaeological management

A summary of archaeological management measures for the St Marys construction site is provided in Table 6 and the locations of these areas are shown in Figure 39. The locations of archaeological management zones for the project are illustrated in Figure 40 to Figure 44.

Table 6: Archaeological management measures for the St Marys construction site

Phase	Activity and remains	Potential and significance	Mitigation	Zone
Phase 1 (1806 – 1862)	Evidence of early land grants, agricultural remains	Nil	Unexpected Finds Procedure	2
Phase 2 (1863 - 1888)	First Railway Station – timber or brick footings, isolated artefact deposits	Nil to low, possible local	Unexpected Finds Procedure	2
	St Marys Goods Yard – brick, timber and concrete footings, isolated industrial or domestic artefact deposits	Low to Moderate, local	Establish an exclusion zone around area of predicted archaeological remains for all of Zone 1 (refer to Figure 39). If ground disturbing works are required within the St Marys Goods Yard they would be managed under Archaeological Method Statement.	1
	St Marys Goods Shed underfloor deposits – potentially stratified discarded domestic, workers and freight-related artefacts, including glass, ceramic, bone, paper or newspaper, as well as	Low to Moderate, possibly local	Establish an exclusion zone around area of predicted archaeological remains for all of Zone 1 (refer to Figure 39). If ground	1

Phase	Activity and remains	Potential and significance	Mitigation	Zone
	isolated industrial remnants.		disturbing works are required within the St Marys Goods Shed they would be managed under Archaeological Method Statement.	
	Platform 1/2 building – brick footings	Low, possible local	Unexpected Finds Procedure	2
Phase 3 (1888 – 1945)	Commercial, industrial and residential remains – brick, timber or concrete footings, former yard surfaces, isolated artefact deposits	Low, nil	Unexpected Finds Procedure	2
Phase 4 (1945 – present)	Modern concrete footings, kerbs, road surfaces, utility services	Moderate, nil	Unexpected Finds Procedure	2

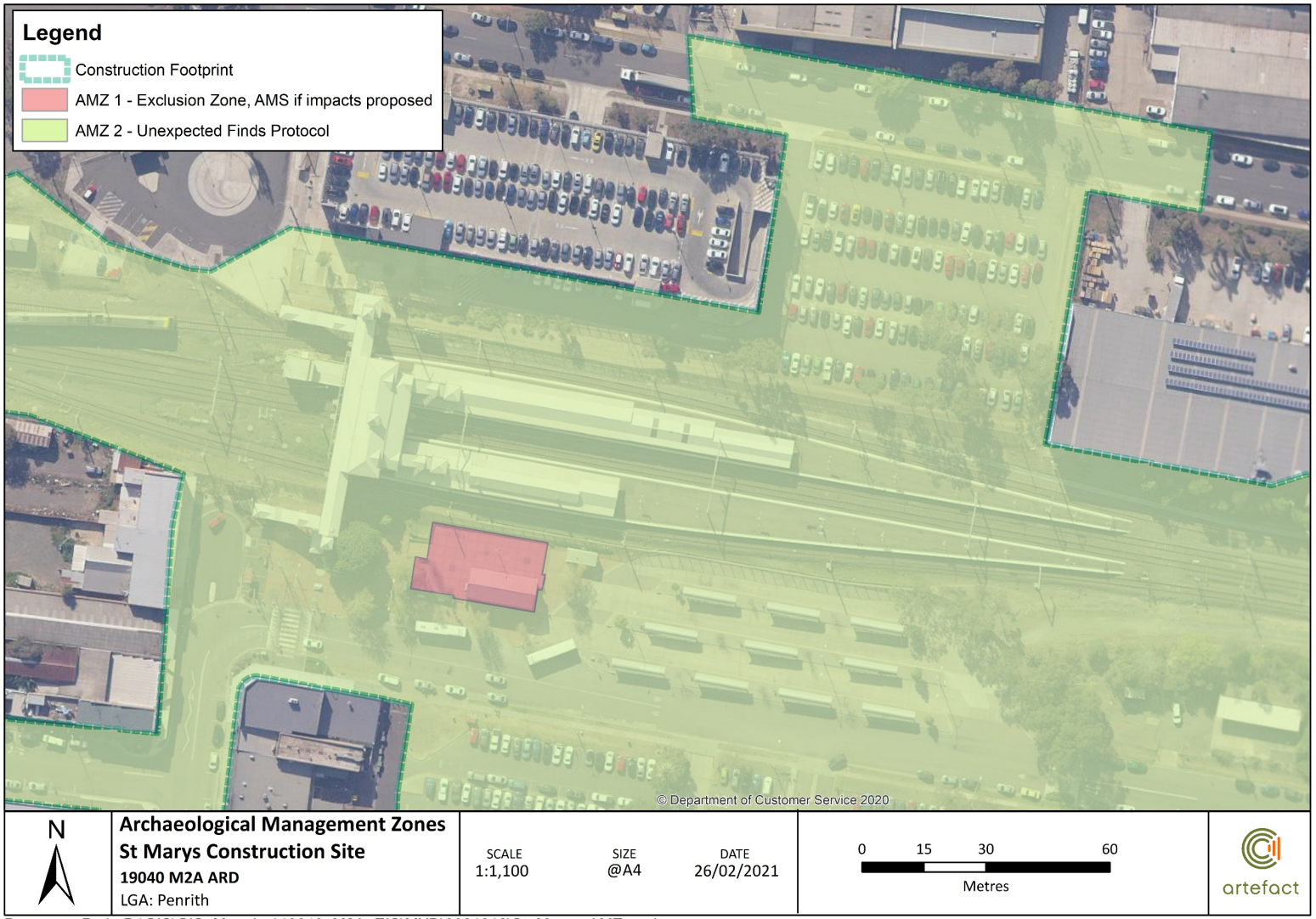


Figure 39: Archaeological management zones at St Marys station

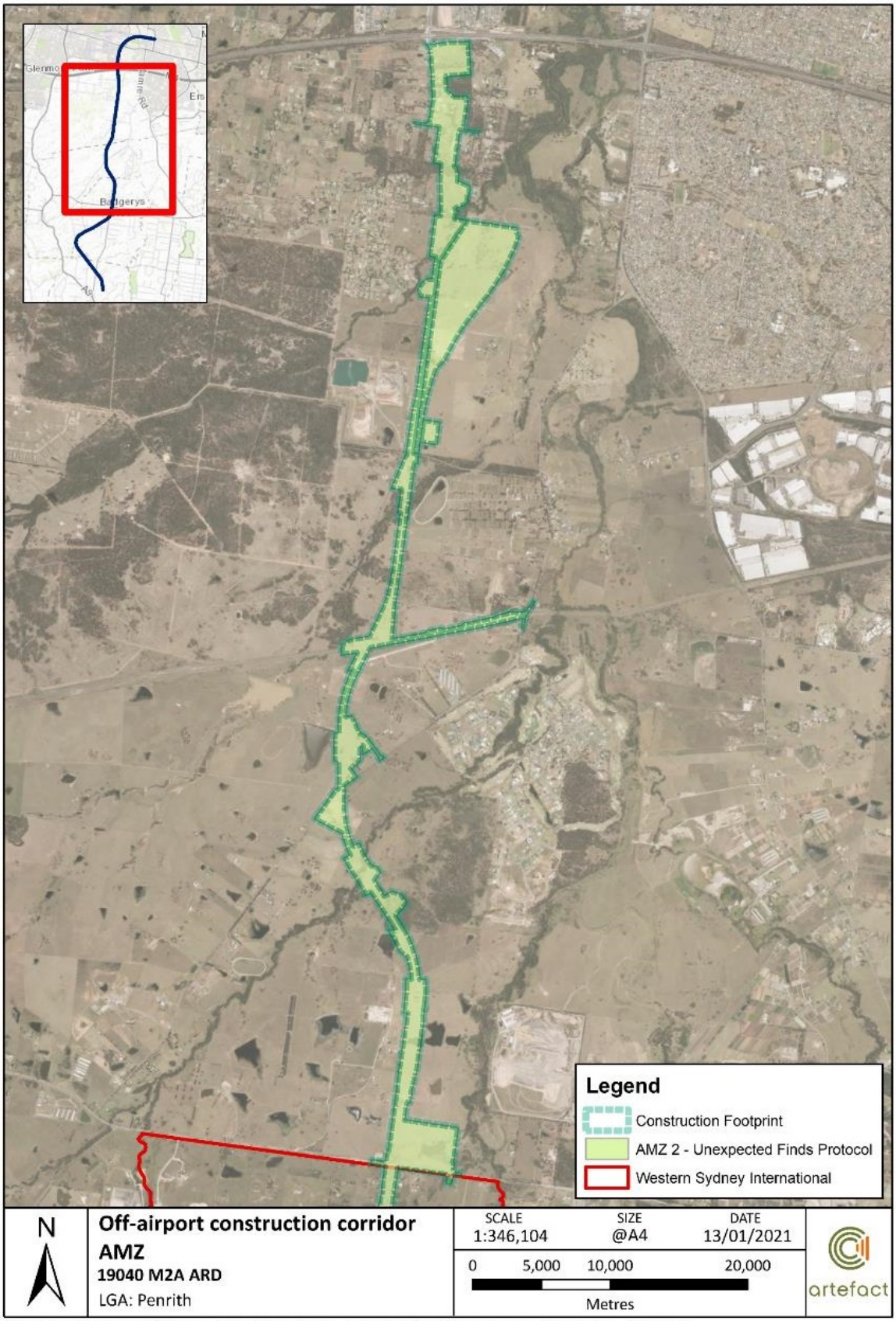
4.3 Construction footprint archaeological management zones

Archaeological management zones described in sections 4.1and 4.2 are illustrated in Figure 40 to Figure 44.

Figure 40: St Marys construction site archaeological management zones

Document Path: D:\GIS\GIS_Mapping\19040_M2A_EIS\MXD\2021012\ClaremontMeadows_AMZ.mxd

Figure 41: Claremont Meadows services facility construction site archaeological management zones



Document Path: D:\GIS\GIS_Mapping\19040_M2A_EIS\MXD\2021012\Off_Airport_Heritage_AMZ.mxd

Figure 42: Off airport construction corridor archaeological management zones

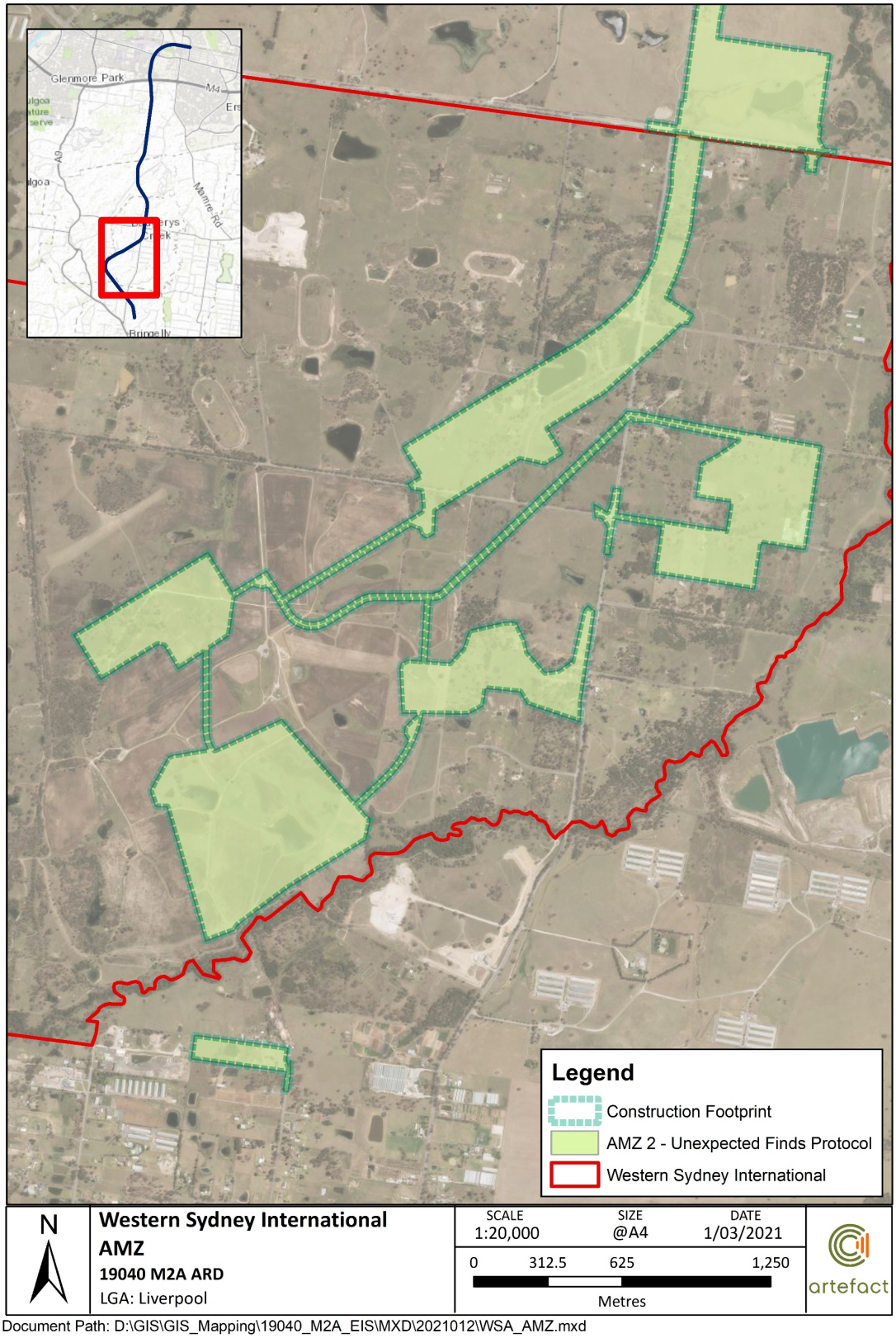


Figure 43: Western Sydney International archaeological management zones

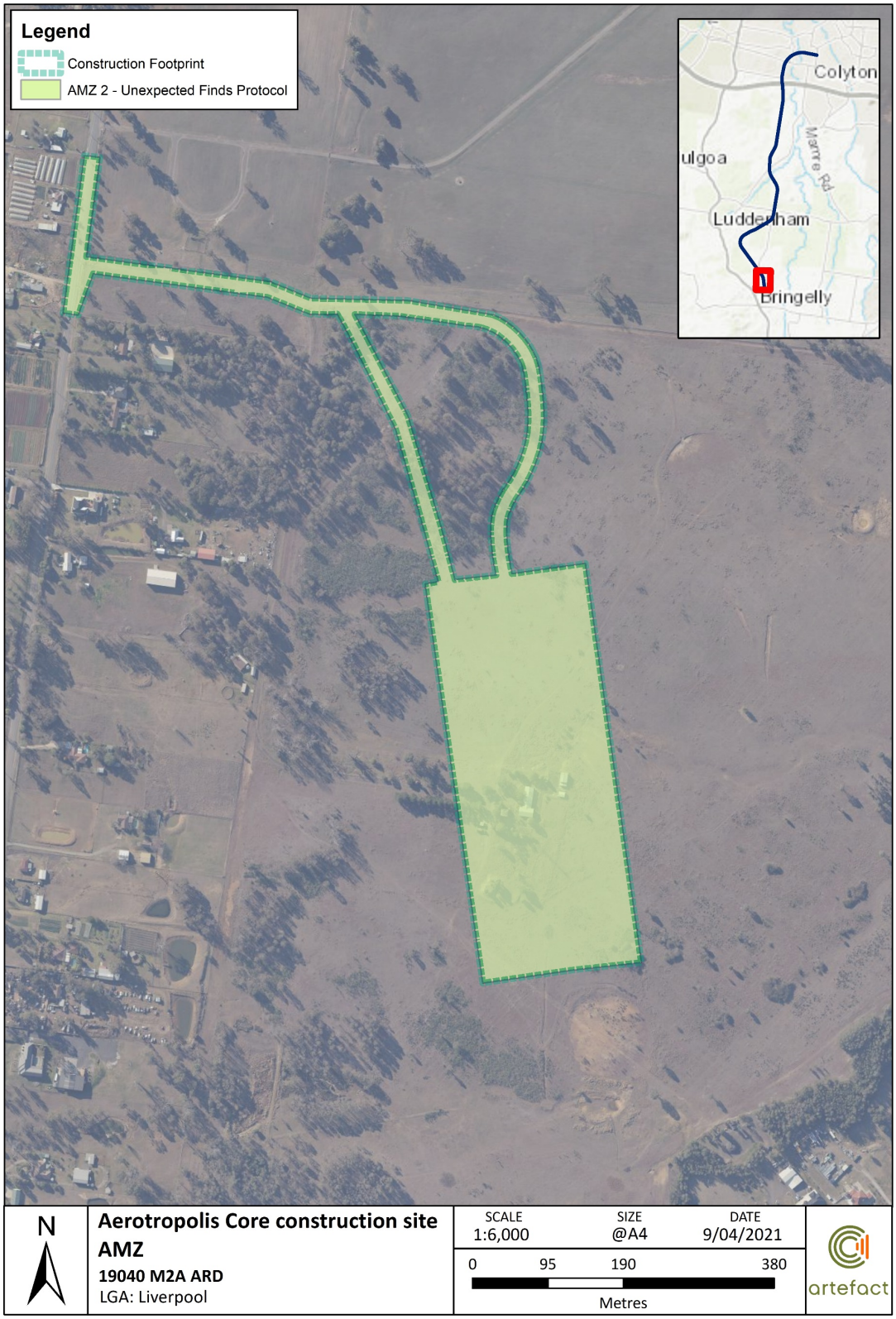


Figure 44: Aerotropolis Core construction site archaeological management zones

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