



artefact

11 April 2016

Nathan Cairney
Tactical Group
124 Walker Street,
North Sydney NSW, 2060

Dear Nathan,

Re: Minto Terminal – Preliminary Aboriginal Heritage Assessment

This letter report has been prepared by Artefact Heritage at your request in relation to the proposed development of 5 and 9 Culverston Road, Minto NSW (Figure 1). It outlines the results of a preliminary Aboriginal heritage assessment of the proposal area (hereafter referred to as the study area). This document will form part of the Environmental Impact Statement (EIS) for the project. This assessment includes recommendations as to whether further archaeological investigation may be required in relation to the current proposal.

This report was written by Alyce Haast (Archaeologist) with management input and review provided by Dr Sandra Wallace (Technical Director) and Josh Symons (Principal).

1.0 Legislative Context

The *National Parks & Wildlife Act 1974* (NPW Act), administered by the Office of Environment and Heritage (OEH) provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 90 of the Act.

The proposal is being assessed under Part 89C of the EP&A Act, which determines the identification of State Significant Development (SSD). Part 89J of the EP&A Act specifies that permits to impact Aboriginal objects under the NPW Act are not required for approved SSD. However, approval from the Minister of Planning and Environment is required and an EIS must be submitted.

2.0 The Study Area

The study area is located at 5 and 9 Culverston Road, Minto (Lot 3 in DP 817793 and Lot 400 in DP 87571). The site consists of an area of approximately 29.63 ha. The site is bound by Airds Road to the north and west, Rose Payton Drive to the south and the main Southern Railway to the east. The study area is located within the Campbelltown Local Government Area (LGA) and within the boundaries of Tharawal Local Aboriginal Land Council (TLALC).

The site has been historically developed for industry and is currently used for a vehicle storage and processing facility.

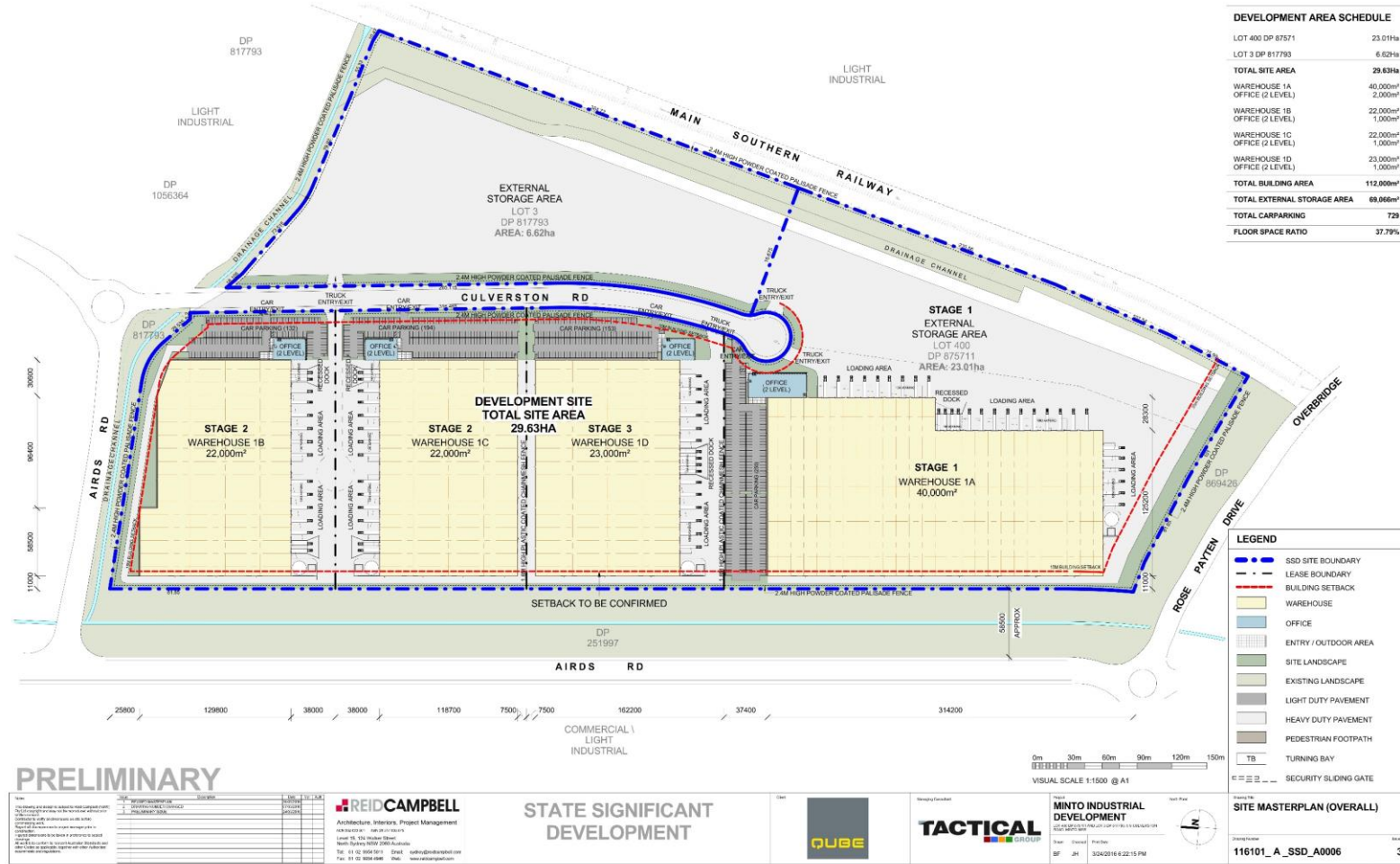
3.0 The Proposal

The proposal involves the development of the site into a warehouse logistics hub including the development of four warehouses, associated loading docks and carpark. Construction is expected to require bulk earthworks to establish building pads.

Figure 1: Location of the study area



Figure 2: Proposed development



4.0 Aboriginal Heritage Information System (AHIMS) Search

An extensive search of the Aboriginal Heritage Information System (AHIMS) database was undertaken on 23 February 2016 (Client ID: 209472).

An area of approximately 4.5 km (east-west) by five km (north-south) was included in the search. The AHIMS search provides archaeological context for the area and identifies whether any previously recorded Aboriginal sites are located within or near the study area. The parameters of the search were as follows:

GDA 1994 MGA 56	297841 – 302386 mE 6228537 – 6233538 mN
Buffer	0 m
Number of sites	7

A total of seven sites were identified by the extensive AHIMS search. The frequency of recorded site types is summarised in Table 1 below. The distribution of recorded sites within the AHIMS search area is shown in Figure 2 below.

The location of Aboriginal sites is considered culturally sensitive information. It is advised that the AHIMS data appearing on the heritage map for the proposal be removed from this report if it is to enter the public domain.

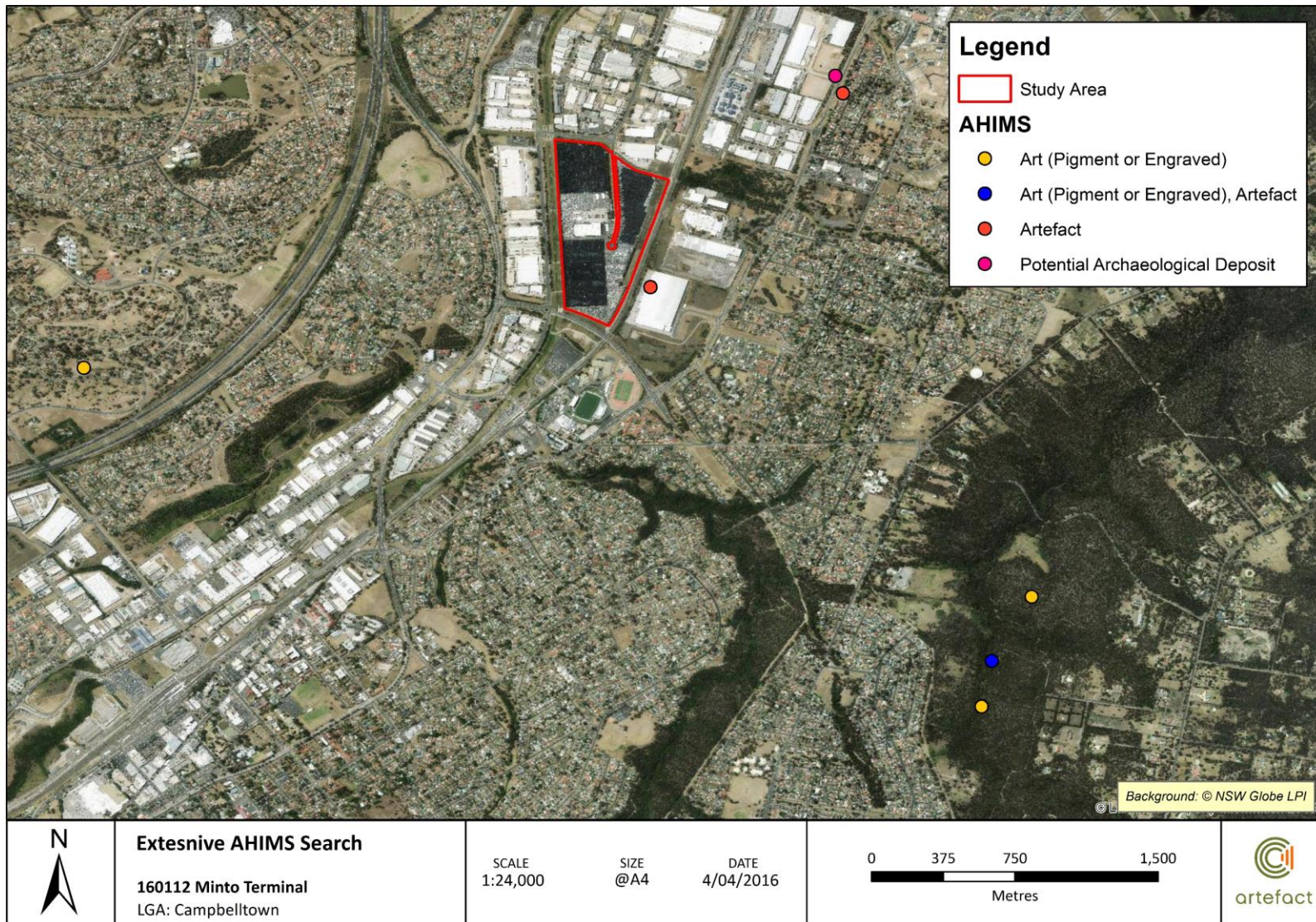
Table 1: Frequency of site features in AHIMS search results

Site Feature	Frequency	Percentage
Artefact	2	28.6%
Artefact, Art (Pigment or Engraved)	1	14.3%
Art (Pigment or Engraved)	3	42.8%
Potential Archaeological Deposit (PAD)	1	14.3%

The predominant site feature located within the AHIMS search area is art (n=4, 57.1%). The art sites recorded within the area predominantly located towards Peter Meadows creek located approximately two kilometres east of the current study area.

The closest site to the study area is Pembroke Road IF1 (45-5-4470), which is located 90 metres from the eastern boundary of the study area (Figure 2). Pembroke Road IF1 consists of an isolated find consisting of a silcrete flake located within a vehicle track. The isolated find was considered to be a redeposited artefact that was not indicative of further archaeological potential within that study area.

Figure 3: AHIMS extensive search results



5.0 Background

5.1 Environmental context

The study area is located within the Cumberland Plain, which is part of the Sydney Basin. The underlying geology of the study area is Bringelly shale, which forms part of the Wianamatta Group, consisting of shale, carbonaceous claystone, claystone, laminate, fine to medium grained lithic sandstone, rare coal, and tuff (Clark and Jones 1991) which has been overlain by alluvial deposits.

Two soil types are found within the study area, The Blacktown and South Creek soil landscapes.

The Blacktown soils are shallow (<100 cm) hard setting mottled red and brown podzolic soils on crests and yellow podzolic soils on lower slopes and along drainage lines (Bannerman & Hazelton 1990). The Blacktown soil landscape is generally associated with gently undulating rises.

The South Creek soil landscape is found within flood plains, valleys and drainage depressions within the Cumberland Plain. The soil profiles of the South Creek soil landscape generally comprise an A1 horizon of brown sandy loam with an A2 horizon of more compact bleached clay loam with gravels. This is underlain by a yellow to brown clay B horizon with high gravel content. These soils are often deep overlying bedrock or relict soils (eSpade 2016).

The study area would once have been covered by open Cumberland Plain Woodland, which is typical of the Wianamatta Group shale geology. Tree species would have included Forest Red Gum (*E. tereticornis*), and Grey Box (*E. moluccana*). Honey Myrtle (*Melaleuca decora*) and Prickly Leaf Paperbark (*Melaleuca nodosa*) (Benson and Howell 1990).

While the current course of Bow Bowing Creek has been heavily channelled, the original path of the creek runs directly through the study area as illustrated in Figure 4. The creek would have been a third order tributary. The creekline had been diverted into the current channels by 1978 however remnants of the creek are visible in the later 1978 aerial (Figure 5). Additional waterways include Myrtle Creek 2.5 km east of the study area and the Georges River four kilometres east of the study area.

Figure 4: 1944 Aerial image showing original creek alignment

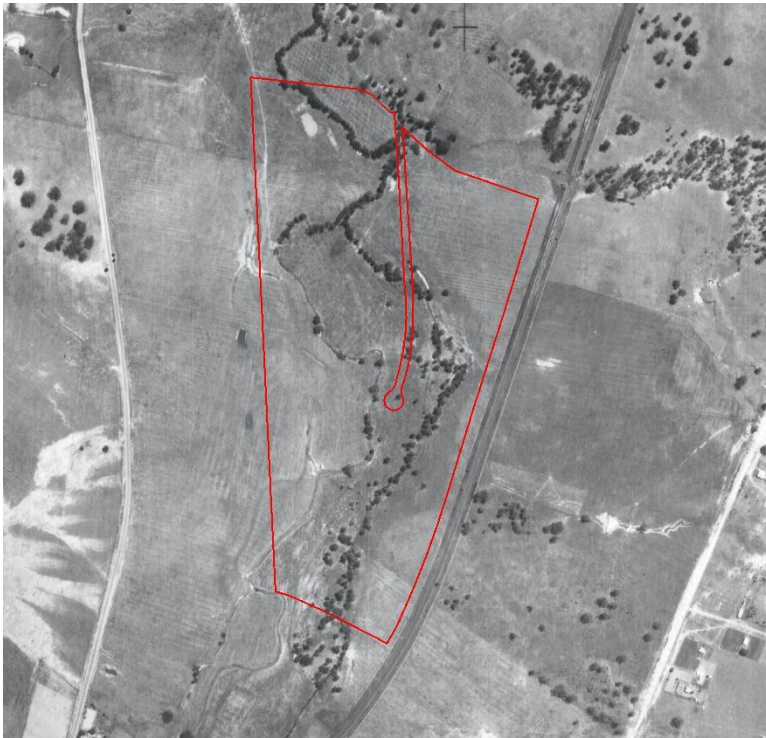


Figure 5: 1978 aerial image showing remnant evidence of creek line following channel development



5.2 Historical background

European exploration to the west of Sydney Cove began soon after initial colonisation, as it was found that the sandstone soils of coastal Sydney were unsuited for cultivation (Austral 2011:17). With its rich shale and alluvial soils, the discovery of the Cumberland Plain provided much needed land which was far better suited to agricultural pursuits (Karskens 2010:20). Settlement at first focused on the well-watered areas around the Hawkesbury and Georges rivers, but soon began to spread further west and south.

Early incentive for European exploration in the Camden and Campbelltown districts was the presence of a herd of wild cattle descended from two bulls and four cows that had escaped the first settlement in Sydney in 1788 (Wrigley 2001). Thirteen years later, Governor Hunter explored the region personally after learning of the cattle from other colonists, and named the district the Cowpastures (Mylrea 2002:6). The southern limit of the Cowpastures was Stonequarry creek at Picton extending beyond Narellan to the north, though its northern boundary was never formally defined (Atkinson 1988:8-9).

Following extensive flooding of the plains along the Hawkesbury River, the Minto area was opened in 1809 by officers of the NSW Corps, who had deposed Governor William Bligh the previous year, so as to increase the agricultural productivity of the struggling colony (Campbelltown City Council 1998:7-8; Dictionary of Sydney 2008). In an attempt to avoid retribution from London by currying favour, when they opened the new farming district they named it after the Earl of Minto, Gilbert Elliot Murray, who was then Viceroy of India (1807-1814) and also the nearest high-ranking British official (Campbelltown City Council 2016). The original Minto lands were much more extensive, stretching from the north of Appin to Denham Court. By the end of 1809, 34 grants had been given to settlers there, primarily along Bunbury Curran Creek. The attempt to gain favour failed however and several officers of the NSW Corps were sent back to England to face court martial. The new Governor, Lachlan Macquarie, somewhat altered the location, however he kept the Minto name and made most of the grants official (Liston, 1988:7-8).

Campbelltown was linked to Sydney by rail in 1858 (Birmingham et al 1979:115; Rosen 1995:74). In 1874, Campbellfield's railway station was opened along the Main Southern Railway, connecting the local primary producers of wool, grapes, fruit and dairying with their markets (Bozier 2011). This resulted in the commencement of a period of subdivision, which was followed by the land boom of the 1880s which further propelled development in the area. In order to use the railway station to push the site's potential and attract attention the platform was renamed Minto in 1882 (Dictionary of Sydney 2008). The newly subdivided residential lots nearest the station formed the nucleus of what was to be Minto village. The village continued to grow from there, and was connected to water supply in 1935 with electricity following two years later. By the 1850s the village was home to approximately 500 people.

Despite the subdivision of many of the larger estates by the late nineteenth century, the area continued to remain primarily an agricultural community.

The second half of the twentieth century however saw continued suburbanisation of the village. In 1969, a large area of land on the east side of Minto was sold to the NSW Housing Commission who planned to provide cheap housing (Campbelltown City Council 2016). The 1970s saw the construction of over 1,000 houses in Minto, along with sewage works, rail electrification, the construction of the Liverpool-Minto freeway, and the establishment of a large industrial estate (Dictionary of Sydney 2008). These expansions greatly opened up the district, resulted in the influx of a larger population, and transitioned Minto from a village to a Sydney suburb.

5.3 Archaeological Context

Traditional Aboriginal tribal boundaries within Australia have been reconstructed, primarily, based on surviving linguistic evidence and are therefore only approximations. Social interaction, tribal boundaries and linguistic evidence may not always correlate and it is likely boundaries and interaction levels varied and fluctuated over time. The language group spoken on the Cumberland Plain is known as Darug (Dharruk – alternative spelling). This term was used for the first time in 1900 by Matthews & Everitt (Mathews & Everitt 1900:265). The Darug language group is thought to have extended from Appin in the south to the Hawkesbury River, west of the Georges River, Parramatta, the Lane Cove River and to Berowra Creek (Attenbrow 2010:34). This area was home to a number of different clan groups throughout the Cumberland Plain.

Aboriginal people have lived in the Sydney region for up to 30,000 years, as indicated by radiocarbon dating undertaken in Parramatta (Jo McDonald CHM 2005:87-94). Evidence of Aboriginal occupation has been found dated to 50-60,000 BP at Lake Mungo in NSW so it is likely that Aboriginal people have lived in the Sydney region for even longer than indicated by the oldest recorded dates known at present. The archaeological material record provides evidence of this long occupation, but also provides evidence of a dynamic culture that has changed through time.

The existing archaeological record is limited to certain materials and objects that were able to withstand degradation and decay. As a result, the most common type of Aboriginal objects remaining in the archaeological record are stone artefacts. Over 4000 Aboriginal sites are registered across the Cumberland Plain on the OEH AHIMS database.

Previous Archaeological Assessments

The Cumberland Plain has been subject to a number of archaeological investigations over recent decades. Through the information gathered by these studies predictive models have been developed and tested. Given the large number of reports available only those within the southern Cumberland Plain are discussed here.

Smith 1989, Liverpool Release Areas: archaeological site survey and planning study

Smith found that generally the location of sites and site densities in the Liverpool area appeared to reflect the distribution and abundance of water. The absence of known stone sources within the Liverpool region suggests that stone was being transported over some distance to reach that area. This was reflected in the relatively small size of the artefacts and the low frequency of cortex. Using the results of the Liverpool assessment and building on previous predictive models the following predictive statements were proposed:

- Artefact scatters and isolated artefacts will be the most common site types recorded.
- Scarred trees are likely to occur where mature native vegetation has not been cleared.
- Sites will be concentrated primarily around creek lines followed by crests of hills with less sites located along hill slopes.
- Sites are likely to occur in higher frequencies at the confluence of two creek lines.
- Sites will generally be identified within 50 m to 100 m of water sources.
- The densities of artefact scatters will be related to the distance of the site from water sources.
- Silcrete will be the dominant raw material present.

Given the poor visibility of the assessment area Smith considered it likely that many more sites than those identified would occur within the study area.

Mary Dallas 1999 Preliminary Archaeological Assessment of the Department of Defence Land at Ingleburn, NSW

Mary Dallas conducted an Aboriginal archaeological assessment of the Department of Defence Land at Ingleburn three kilometres north east of the study area. The assessment identified ten new Aboriginal sites consisting of artefact scatters and isolated sites. Half of the artefact scatters were found in disturbed contexts on dirt tracks with no associated archaeological deposits whilst the other half were found to have associated potential archaeological deposits (PAD). Sites were found to generally occur on well-drained level or low gradient ground adjacent to main drainage lines.

Dominic Steele Consulting Archaeology 2004 Aboriginal Archaeological Heritage Impact Scoping Study, Keylink Industrial Centre, Pembroke Road Minto, NSW

Dominic Steele conducted an Aboriginal heritage impact scoping study of the Keylink industrial centre located directly east of the current study area. The study area is located on an area of Blacktown soil of which was heavily disturbed. A single isolated artefact was located within the assessment area on exposed clay subsoil (AHIMS Site 52-2-2978, see Section 4.3). It was not considered to represent an in situ deposit. The assessment suggested that the accumulated impacts associated with land clearance, construction and occupation had destroyed or disturbed much of the evidence of Aboriginal occupation within the region.

Navin Officer 2005 Minto Renewal project

Navin Officer was engaged to complete a cultural heritage assessment of the Minto housing precinct located approximately two kilometres north east of the current study area. Prior to this study there were no known Aboriginal sites within the 160 ha survey area. While no sites were located as part of the survey however the survey acknowledged the potential for undisturbed artefactual material to be located below the plough zone in some areas within the precinct. In addition, the study highlighted sensitive landscapes within the 'built up' industrial zone which included remnant vegetation and land surfaces as well as well drained elevated land adjacent to water sources.

Artefact 2015 Macarthur Memorial Park, Varroville

Artefact Heritage conducted an Aboriginal Archaeological survey of the proposed Macarthur Memorial Park located 3.3 km north west of the current study area. The survey identified 17 previously unrecorded artefact scatters within the study area as well as identifying 11 sites recorded by Artefact at the site during a prior inspection. The artefact scatters were all located within exposures on low lying crest landforms as well as on ridgeline and escarpment landforms within the eastern portion of the study area. Silcrete was the dominant raw material recorded with some quartz artefacts also identified. Artefacts consisted of complete flakes, broken flakes and cores. Artefact identified the ridgeline and escarpment landforms as containing high archaeological sensitivity and the lower crests as containing moderate archaeological sensitivity.

6.0 Results Geotechnical Survey

A preliminary geotechnical assessment was conducted by Golder Associates (Golder) between 15 February and 17 February 2016. The geotechnical investigation for the project included drilling eight boreholes and four hand auger pits. The assessment identified a general soil profile consisting of a thin surface layer of topsoil or hardstone pavement, underlain by a fill layer, with alluvial deposits identified underneath up to 8 m in depth where drilling ceased. The investigation also identified groundwater at depths between 3.2-6.3 m below the ground surface.

Table 2: Soil profile identified by preliminary geotechnical assessment (Golder 2016)

Unit	Description
1A	Topsoil. The topsoil was only observed on the fringes of the site, generally associated with the surrounding garden areas. The topsoil generally consisted of clays and silts, and extended to depths between 0.1 m and 0.4 m depths below ground surface, with an average thickness of 200 mm. The topsoil was generally underlain by Fill (i.e. soil Unit 1C described below).
1B	Hardstand Pavement. An asphalt or concrete hardstand covers the majority of the site. The asphalt pavement surface measured approximately 30 mm thick. It was observed to be generally dark grey, poorly bound and was underlain by a thin layer of sub-base gravelly sand. It extended to depths of 0.4 m and 0.2 m below the ground surface.
1C	Fill. Two soil stockpile orientated north-south, parallel to Culverston Road were observed during the investigation. Existing fill material was encountered at all borehole locations and generally consisted of medium plasticity silty clay, clay and sandy clay with some angular gravel. It was generally found immediately beneath the topsoil/asphalt pavement or at existing ground surface level and extended to depths between 1.6 m and 4.4 m below the ground surface.
2	Alluvium. The alluvial material encountered generally comprises high plasticity grey and brown clay and was found beneath the Unit 1C fill. The alluvium was located at depths as shallow as 1.6 m, but generally began at about 3 m and continued to greater than 8 m depth below ground surface.

7.0 Results of Site Visit

An inspection of the study area was conducted on foot by Alyce Haast (Archaeologist) and Jayden Van Beek (Archaeologist) on 24 January 2016. A representative from TLALC was unavailable for the survey.

Survey was limited to visual inspection from public areas of the property given the lack of exposures located within the compound (Plate 1). The study area was inspected on foot to determine whether there are Aboriginal objects on the surface or if there are likely to be intact subsurface archaeological deposits within the study area.

The study area is located on an artificially terraced landform surrounded by formalised drainage canals along the northern and western extent of the property (Plate 2).

The entire internal portion of the study area has been developed for industrial purposes with bitumen coating the surface, with the exception of thin stretches vegetation which runs along the fence line. Seven shed structures are located in the middle of the study area (west side), with shade cloth covering cover large portions of the remainder of the site.

There is evidence of earth movement along the internal fence line close to the north-west portion of Culverston Road with a grassed mound area likely the result of earlier levelling works (Plate 3).

Ground surface visibility was generally inhibited due to dense grasses, overgrown weeds and moderately thick vegetation around the perimeter of the site. Exposures were generally limited to stretches of ground at the base of the boundary fence and several erosion scours (Plate 4). During survey evidence of several underground services were noted as well as the presence of animal burrows (Plate 5). Most of the internal area has been developed with very little natural surface remaining.

Disturbance was evident throughout the study area. These disturbances consist of earthworks and bituminised surface areas associated with the construction of the industrial facilities located on the site as well as the development of the channel. While the area surrounding the channel is clearly heavily modified it is not clear from survey the extent of disturbance below the bitumen layer.

The north-east and east boundary of the study area could not be accessed due to the proximity of McBarron Creek and the Main Southern Railway along those respective fence lines (Plate 6). A desktop assessment however suggests that similar features area present along these boundaries.

Plate 1: View of gardens and hard stand facility from Culverston Road



Plate 2: View of drainage canal to north and west of study area



Plate 3: Mound feature located west of Culverston Road



Plate 4: View of exposures along fence line



Plate 5: Animal burrows located on the western boundary of the property



Plate 6: View of rail line from closest access point



8.0 Assessment of Archaeological Potential

Archaeological potential is closely related to the levels of ground disturbance. However, other factors are also taken into account when assessing archaeological potential, such as whether artefacts were located on the surface, and whether the area is within a sensitive landform unit according to the predictive statements.

This due diligence assessment has identified that large portions of the study area has been subject to past ground disturbance. The Code of Practice defines disturbed land:

Sec 7.5 (4) For the purposes of this clause, land is disturbed if it is has been the subject of human activity that has changed the lands surface, being changes that remain clear and observable.

This includes disturbed land via:

- (a) soil ploughing*
- (b) construction of rural infrastructure*
- (d) clearing of vegetation,*
- (e) construction of buildings and the erection of other structures,*

(f) construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure),

The boundary of the study area has been heavily impacted by earthworks relating to the development of the canals which significantly reduces the archaeological potential of this portion of the study area. Given the bitumen coverage, survey was unable to determine whether this original landscape has been heavily disturbed by the development of the current facility

The original course of Bow Bowling Creek runs through the study area below the current hardstand facility. The OEH code of practice identifies landforms within 200 m of watercourses as potentially sensitive. Historical aerials from 1947 and 1978 indicate that some historical disturbance has occurred including land clearance and ploughing.

It is assumed that the construction of the hardstand above the original creek line may have involved significant earth movement similar to that recorded within the adjacent Keylink industrial project (Dominic Steele 2004). This earth movement in addition to historic disturbances noted within aerial photography suggest that the original landform may be highly disturbed.

The preliminary geotechnical survey revealed alluvial deposits at a depth of between 1.6-4.4 m below the surface level. Based on the variation in depth of the alluvium it is clear that substantial infilling of the site has occurred during previous development. It is unclear how substantially the alluvial layer was disturbed during this process. While the alluvial layer may represent intact deposits, consultation with the proponent has confirmed that construction will not impact this level.

With the extent of disturbance to the buried alluvium layer during the infilling process unknown, the buried alluvium represents a layer of archaeological sensitivity. However, it is understood from the constructability information passed on by Tactical Group that the buried alluvium will not be impacted by construction works as part of the proposal. Construction works will involve further filling above the existing ground level and then construction of warehouses above that level.

9.0 Conclusions and Recommendations

It was found that:

- There are no registered Aboriginal sites located within the study area.
- No new Aboriginal objects or sites were identified within the study area during the site inspection.
- A buried creek line is located underneath the bitumen surface of the current development.
- Survey of adjacent properties have revealed high levels of disturbance associated with the industrialisation of the area.
- The proposed works will involve depth excavation.

Geotechnical investigations at the site have identified buried alluvium between 1.6 – 4.4 m below the current ground surface. The extent of ground surface associated with the buried alluvium from ground preparation works prior to filling, such as at the adjacent Keylink site, is unknown. However, it is understood that construction activities will not impact the buried alluvium.

It is recommended that no Aboriginal heritage constraints are placed on the proposed development and that works can proceed with caution.

If unforeseen Aboriginal objects are uncovered during construction the unexpected find protocol should be followed. Work should cease in the area, and an archaeologist, OEH, and TLALC should

be informed. If human remains are found, work should cease, the site should be secured and the NSW Police should be notified. Further investigation and approvals may be required.

If changes are made to the project that may result in impacts to areas not covered by this assessment, further archaeological assessment may be required. This includes further assessment of the buried alluvium if changes to the proposal will result in impact to that layer.

Kind Regards,



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