

Appendix J Cultural Heritage Report





Moorebank Intermodal Terminal

Aboriginal Heritage Assessment - Addendum

Archaeological Subsurface Testing – MRSA2

Navin Officer Heritage Consultants Pty Ltd

September 2014

Background

Project

The Moorebank Intermodal Terminal (IMT) Project (the Project) involves the development of approximately 220 hectares (ha) of land at the Project site (refer to **Figure 1**) for the construction and operation of an IMT and associated infrastructure, facilities and warehousing. The Project includes a rail link connecting the Project site to the Southern Sydney Freight Line (SSFL) and road entry and exit points from Moorebank Avenue.

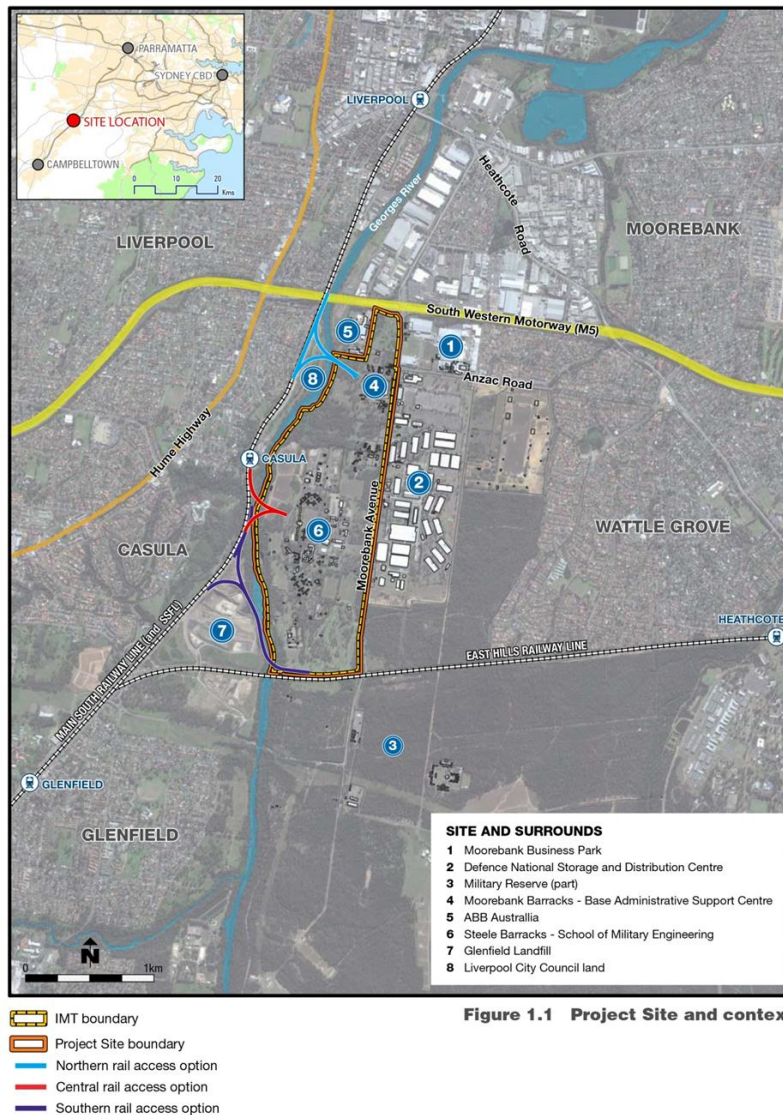


Figure 1.1 Project Site and context

Figure 1: Study area, Project site and context.



Navin Officer Heritage Consultants Pty Ltd (NOHC) was commissioned in 2010 by Parsons Brinckerhoff to undertake a cultural heritage assessment for the Moorebank Defence precinct on behalf of the Commonwealth Department of Finance (DoF) (formerly known as Department of Finance and Deregulation) s part of the Environmental Impact Statement (EIS) for the project.

The assessment has comprised a range of elements including a review of archival sources and existing information, direct physical inspection, archaeological survey and test excavations. The following summarises the results of the assessment to date:

Study Component	Results
Field survey (2010)	<ul style="list-style-type: none"> • Five artefact occurrences (MA1-MA5). • Three scarred trees of possible Aboriginal origin (MA6-MA8). • Three potential archaeological deposits (PADs) have been identified (MAPAD1, PAD1 and PAD2). • Three archaeologically sensitive landform types have been defined.
Field survey (2013)	One Potential Archaeological Deposit (PAD).
Field survey (2014)	<ul style="list-style-type: none"> • No surface evidence of Aboriginal occupation was observed within the central rail access option; however areas of potentially intact deposits were identified along the banks of the Georges River. • No surface evidence of Aboriginal occupation was observed within the southern rail access option, however it was noted that the potential exists for relatively intact deposits at depth that may contain archaeological evidence. • Survey of the southern rail access option was restricted to the eastern bank; the western bank being the Glenfield landfill, which displays low archaeological potential.
Excavation (2012)	<ul style="list-style-type: none"> • Fifty-nine (59) test pits were excavated across the Moorebank IMT study area. • Detailed geomorphological analysis was undertaken at select pits at MA5, MAPAD1 and PAD2. • 264 artefacts recovered from 26 pits.
Excavation (2013)	<ul style="list-style-type: none"> • Forty-five (45) test pits were excavated across MAPAD2 comprising 37 by-hand test pits and eight (8) mechanical pits. • Detailed geomorphological analysis was undertaken at Pits 28, 29, 30, 31, 36, 41 and 42. • Deposits excavated across MAPAD2 comprised three groups: <ul style="list-style-type: none"> – poorly sorted clayey gravels that have been introduced in some areas, most notably across the southern and northern extremities of the test area, as fill (Unit 3); – well sorted light grey or light brown clean sands with well-preserved bedding structures and minimal soil development (Unit 2); and – dark grey-brown silty sands with abundant charcoal (Unit 1). • 14 artefacts were recovered from 9 pits.



During inspection of the area of Moorebank Representative Sample Area 2 (MRSA2) in 2012 for the presence of underground services and potential pit locations, a number of aggressive snakes were encountered within the proposed transect. Discussions were held with the Registered Aboriginal Parties (RAPs) and advice was sought from an ecologist at Parsons Brinckerhoff. As a result of these discussions it was decided that the risks to, and potential impacts on safety and the environment were too high to warrant excavation at this time.

It was therefore recommended that a program of archaeological subsurface testing within MRSA2 should be undertaken when conditions dictated in order to inform the full scope of salvage excavations (**Figure 2**).

This report documents the results of the subsequent test excavation within MRSA2 in August 2014 and was commissioned by Parsons Brinckerhoff on behalf of the Moorebank Intermodal Company (MIC). This report is an addendum to Moorebank Intermodal Terminal; Aboriginal Heritage Assessment Navin Officer Heritage Consultants (NOHC) 2014 and is to be viewed as such.

In addition to MRSA2 it was recommended that additional test excavations occur within the western component of MA10. The Phase 2 Environmental Site Assessment (ESA) undertaken for the Project had identified elevated levels of TCE in groundwater samples in this area. Precaution testing was not undertaken at MA10 during the previous subsurface investigations or as part of this program.

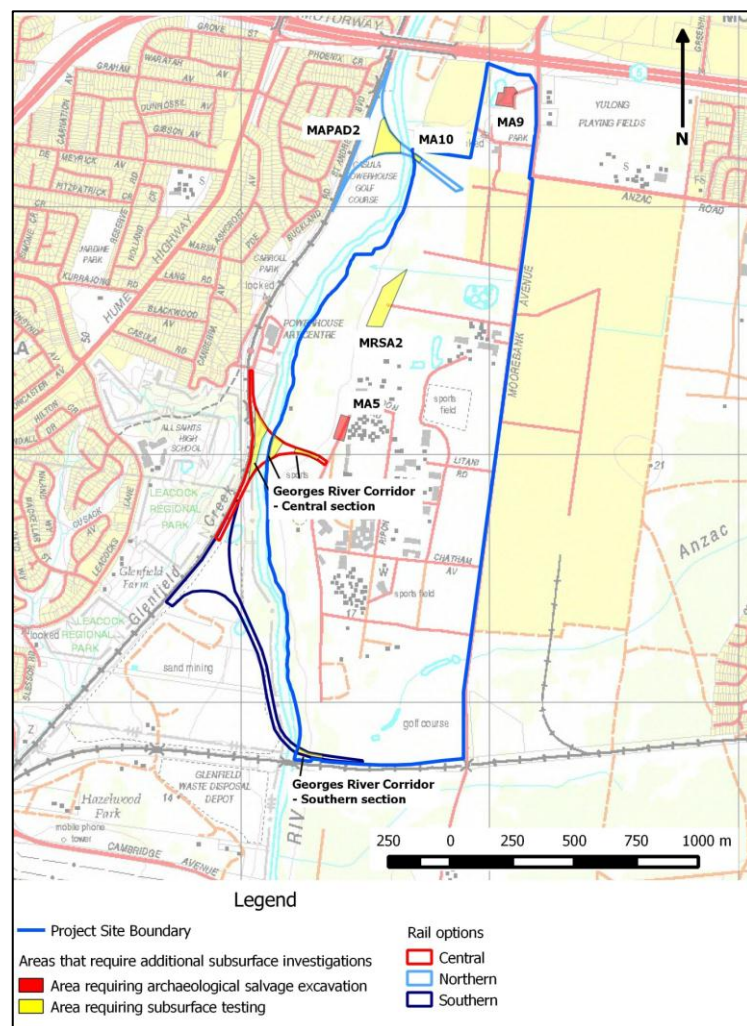


Figure 2: Areas that will require additional subsurface testing and/or archaeological salvage excavation.



Aboriginal Consultation

Representatives from all Registered Aboriginal Parties (RAPs) for the project were invited to participate in the testing program.

The following RAPs were present during the excavation program for MRSA2 between 21 and 23 August 2014:

- Timothy Wells (DACHA)
- Justine Coplin (DCAC)
- Jamie Workman (DLO)
- Abbi Whillock (TLALC)
- Sarrah Duncan (CBNTCAC)
- Jennifer Norfolk (TPL)
- Adam Sebe (DALI)

Throughout the field program, consultation was undertaken with the above representatives to discuss excavation progress and results in order to inform decisions regarding the final number of pits excavated at each test location.

NOHC Fieldwork Personnel

Test excavations were directed by Nicola Hayes, field assistants included Joanne Dibden, Harrison Pitts and Frances Wiig.

This report has been prepared by Nicola Hayes.

Test Excavation Methodology

The methodology for the subsurface testing program was developed in consultation with the NSW Department of Planning and Environment (DP&E), the NSW Office of Environment and Heritage (OEH) and RAPs. This was in keeping with the Secretary's Environmental Assessment Requirements (SEARs) (formerly known as Director General's Requirements) for the Moorebank IMT Project (SSD – 5066), which specified that, the research designs and methodologies for any physical archaeological works undertaken as part of initial heritage assessments should be reviewed by DP&E and the OEH.

The subsurface testing for MRSA2 followed the project methodology (*Appendix 2 NOHC 2014*).

The by-hand excavation methodology was employed for all test pits in MRSA2. No mechanical excavation was undertaken.

All lithic items were examined in detail by a lithic specialist Oliver Macgregor in the NOHC lab, using a low-power binocular microscope and incident illumination and/or hand lens. Descriptive recording of collected material is to a level concomitant with the stated aims of the investigation, and the number of artefacts/type of material recovered.

The primary aim of the analysis of the lithic items retrieved from the test locations was to assist in the assessment of the significance of the sites/deposits and to identify appropriate management strategies.

Current Test Excavation Results

A total of 7 test pits were completed at MRSA2 (**Figure 3**). A straight line transect was unable to be achieved due to weed cover and disturbance across the site.



Pit depths varied between 17 and 50cm depth. There was great variation in stratigraphy across the site primarily due to the amount and nature of disturbance. Fill material was present across the whole site. In pits 1, 2 and 5 the fill persisted to the natural clay and in pits 3, 4, 6 and 7 a layer of 10 to 30 cm of natural soil profile was extant under the fill. See Table 1 below for a detailed description of each pit.

A total of 34 artefacts were recovered during the testing program (Table 2). A majority came from pit 3 (N=23), there are also 9 in pit 2 and 2 in pit 6. Both the artefacts in pit 2 and pit 6 were located within obvious fill material.

All artefacts were unretouched flakes with one retouched flake. The materials utilised were Silcrete, Chert, FGS and Quartz.

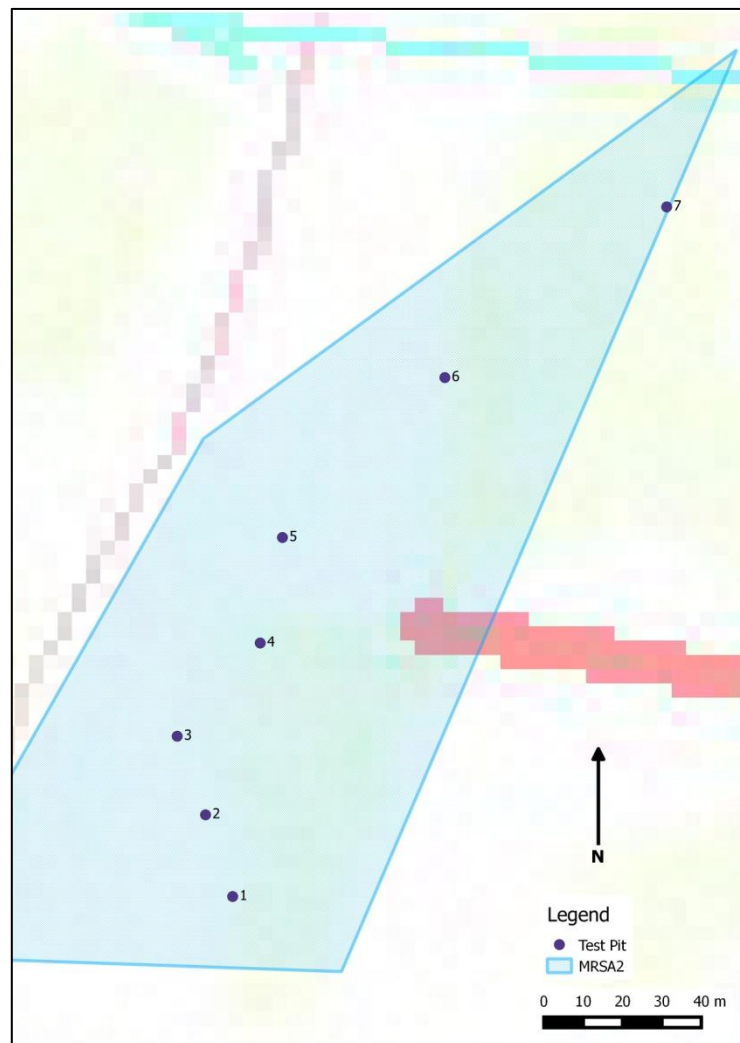





Figure 3: Location of test pits across MRS A2.




Table 1 Detailed Pit Descriptions


MRSA2 Pit 1 GDA 307539.6241535	Spit	Depth (cm)	Descriptions
	1	0-10	leaf litter onto yellow/brown silty sand some cobbles
	2	10-17	as above onto yellow clay uneven change
	1	0-10	leaf litter onto orange brown clayey fill quickly onto dark brown silty sand
	2	10-20	brown grey compact silty sand more grey lighter with depth
	3	20-30	as above some clay mixing
	4	30-40	as above, southern half onto yellow clay
	5	40-50	northern end a historically excavated pit with metal continues




MRSA2 Pit 3 GDA 307525.6241575	Spit	Depth (cm)	Descriptions
	1	0-10	rabbit diggings some grass onto brown silty sand
	2	10-20	brown grey compact silty sand more grey lighter with depth very compact
	3	20-30	as above
	4	30-40	as above quickly onto light grey brown silty sand
	5	40-45	quickly onto yellow brown clay

MRSA2 Pit 4 GDA 307546.6241599	Spit	Depth (cm)	Descriptions
	1	0-10	brown silty sandy fill onto yellow clay



MRSA2 Pit 5 GDA 307552.6241626	Spit	Depth (cm)	Descriptions
	1	0-10	thick grass onto gravelly fill onto yellow clay
		10-30	exploratory spits to 30 cm clay continues (not sieved)

MRSA2 Pit 6 GDA 307593.6241667	Spit	Depth (cm)	Descriptions
	1	0-10	thick grass onto grey brown silty sand, some European artefacts some clay mixing ants nest
	2	10-20	dry compact silty sand some clay mixing grades to yellow clay



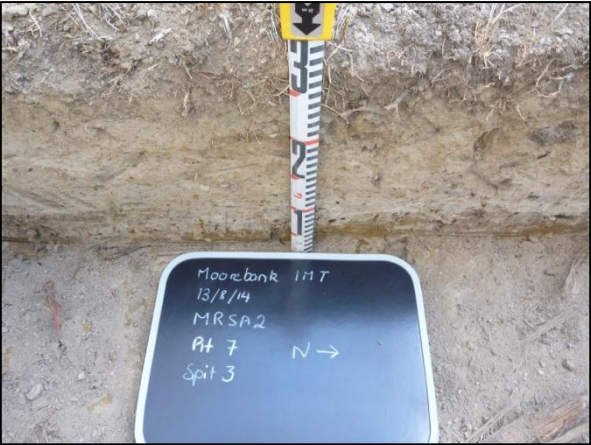
<p style="text-align: center;">MRSA2 Pit 7 GDA 307649.6241710</p>	<p style="text-align: center;">Spit</p>	<p style="text-align: center;">Depth (cm)</p>	<p style="text-align: center;">Descriptions</p>
	<p style="text-align: center;">1</p>	<p style="text-align: center;">0-10</p>	<p>thick grass onto grey brown silty sand, European artefacts noted</p>
	<p style="text-align: center;">2</p>	<p style="text-align: center;">10-20</p>	<p>as above</p>
	<p style="text-align: center;">3</p>	<p style="text-align: center;">20-30</p>	<p>as above onto yellow brown clay</p>
	<p>pit adjacent to concrete pad approximately 4 x 8m, and drainage ditch</p>		



Table 2 Detailed Artefact Descriptions

ID	Site	Pit	Unit	Type	g	Material	Complete.	Initiation type	Platform type	Termination type	Cortex %	Dorsal scar direction	Length	Width	Thick.	Platform width	Platform thickness	Potlidding	Comments
67	MRSA 2	3	Spit 5	Unretouched flake	0.1	Silcrete	LCS right	Hertzian	Shattered	Step	0	Same	5.87	4.15	1.58			None	
68	MRSA 2	3	Spit 2	Unretouched flake	1.2	Silcrete	Complete	Hertzian	Multiple	Feather	0	Same	12.49	16.87	3.36	17.38	2.68	None	
69	MRSA 2	3	Spit 2	Unretouched flake	1.7	Silcrete	Complete	Hertzian	Multiple	Feather	0	Same	18.38	19.62	5	8.54	2.08	None	
70	MRSA 2	3	Spit 2	Unretouched flake	4.2	Silcrete	Complete	Hertzian	Focalised	Step	0	Same	23.08	19.3	5.8	3.82	1.41	None	
71	MRSA 2	3	Spit 3	Unretouched flake	0.1	Chert	Medial fragment	None	None	None	0	Indeterminate						Present	Heavily heat-fractured segment from medial flake section. No margins intact.
72	MRSA 2	3	Spit 3	Unretouched flake	0.1	Silcrete	Distal fragment	None	None	Hinge	0	Indeterminate	8	7.7	0.95			None	
73	MRSA 2	3	Spit 3	Unretouched flake	1.9	Silcrete	Medial fragment	None	None	None	10	Same	15.88	11.49	8.28			None	
74	MRSA 2	3	Spit 3	Unretouched flake	0.7	Silcrete	Complete	Bending	Multiple	Feather	0	Indeterminate	19.63	9.72	1.5	12.44	2.89	None	
75	MRSA 2	3	Spit 3	Retouched flake	1.3	Silcrete	Medial fragment	None	None	None	0	Same	17.44	14.38	3.56			None	Three retouch flake scars on distal end of right margin, truncated by distal break. Possible that the retouch caused the distal break.
76	MRSA 2	3	Spit 3	Unretouched flake	0.1	Silcrete	Distal fragment	None	None	Step	0	Same	6.71	5.23	0.95			None	
77	MRSA 2	3	Spit 3	Unretouched flake	0.2	Silcrete	Distal fragment	None	None	Feather	0	Indeterminate	5.85	10.01	3			None	
78	MRSA 2	3	Spit 3	Unretouched flake	0.1	Silcrete	Distal fragment	Hertzian	None	Hinge	0	Indeterminate	9.45	3.32	1.57			None	
79	MRSA 2	3	Spit 3	Unretouched flake	0.1	Silcrete	Complete	Hertzian	Single	Step	0	Same	7.84	4.41	1.73	2.17	1.7	None	
80	MRSA 2	3	Spit 3	Unretouched flake	0.1	Silcrete	Distal fragment	None	None	Feather	0	Indeterminate	5.67	7.93	0.72			None	
81	MRSA 2	3	Spit 3	Unretouched flake	0.1	Silcrete	Complete	Hertzian	Single	Feather	0	Same	5.23	4.6	0.99	3.78	1.21	None	
82	MRSA 2	3	Spit 4	Unretouched flake	3.2	Quartz, vein	Complete	Hertzian	Shattered	Feather	50	Same	15.77	18.63	11.07			None	
83	MRSA 2	3	Spit 4	Unretouched flake	10.2	Silcrete	Complete	Bending	Single	Feather	0	Same	30.4	29.27	8.17	26.17	5.15	None	
84	MRSA 2	3	Spit 4	Unretouched flake	1.9	Silcrete	Complete	Hertzian	Single	Step	0	Same	23.49	13.25	3.29	3.86	1.33	None	
85	MRSA 2	3	Spit 4	Unretouched flake	0.4	Silcrete	Complete	Hertzian	Multiple	Hinge	0	Same	9.67	13.39	2.6	10.32	1.33	None	
86	MRSA 2	3	Spit 4	Unretouched flake	0.6	Silcrete	Complete	Hertzian	Multiple	Feather	0	Same	10.71	13.71	3.03	13.16	2.92	None	
87	MRSA 2	3	Spit 4	Unretouched flake	0.1	Silcrete	Marginal fragment	Hertzian	None	Feather	0	Indeterminate	10.66	4.17	3.06			None	
88	MRSA 2	3	Spit 4	Unretouched flake	0.1	Silcrete	Distal fragment	None	None	Feather	0	Indeterminate	4.62	4.8	2.08			None	
89	MRSA 2	3	Spit 4	Unretouched flake	0.1	Silcrete	Distal fragment	None	None	Hinge	0	Indeterminate	4.69	6.44	1.2			None	
90	MRSA 2	2	Spit 2	Unretouched flake	0.3	Silcrete	Complete	Hertzian	Multiple	Feather	0	Same	15.67	7.49	1.41	7.12	0.81	None	
91	MRSA 2	2	Spit 2	Unretouched flake	0.1	FGS	Complete	Hertzian	Single	Step	0	Same	4.54	5.39	1.41	3.9	1.16	None	
92	MRSA 2	2	Spit 2	Unretouched flake	1	Silcrete	Complete	Hertzian	Single	Step	0	Same	16.21	13.22	4.45	5.53	1.46	None	



ID	Site	Pit	Unit	Type	g	Material	Complete.	Initiation type	Platform type	Termination type	Cortex %	Dorsal scar direction	Length	Width	Thick.	Platform width	Platform thickness	Potlidding	Comments
93	MRSA 2	2	Spit 2	Unretouched flake	0.1	Silcrete	LCS left	Hertzian	Single	Feather	0	Same	7.27	4.37	1.17	4.7	0.93	None	
94	MRSA 2	2	Spit 2	Unretouched flake	0.2	Silcrete	Margin missing	Hertzian	Shattered	Step	0	Same	11.57	6.42	2.97			None	
95	MRSA 2	2	Spit 2	Unretouched flake	1.8	Silcrete	Distal fragment	None	None	Feather	0	Indeterminate	13.39	18.27	5.22			None	
96	MRSA 2	3	Spit 1	Unretouched flake	3.4	Silcrete	Distal fragment	Hertzian	None	Feather	0	Same	16.91	13.32	4.94			None	
97	MRSA 2	2	Spit 3	Unretouched flake	0.1	Silcrete	Complete	Hertzian	Shattered	Hinge	0	Same	6.77	8.24	1.43			None	
98	MRSA 2	2	Spit 3	Unretouched flake	0.1	Silcrete	Distal fragment	Hertzian	None	Feather	0	Indeterminate	7.09	4.75	1.23			None	
99	MRSA 2	6	Spit 1	Unretouched flake	0.2	FGS	Distal fragment	Hertzian	None	Hinge	0	Same	11.32	7.25	1.1			None	
100	MRSA 2	6	Spit 1	Unretouched flake	1.7	Silcrete	Complete	Hertzian	Single	Step	10	Same	13.04	13.34	3.88	8.33	1.8	None	



Excavation Analysis

Relatively undisturbed artefacts and archaeological deposit were recorded in test excavation at MRSA2 in pit 3 at 20 to 45cm depth. This area of archaeological potential has now been confirmed as archaeological deposits therefore the area surrounding pit 3 is designated MA14.

The testing with MRSA2 further supports the results from the 2012 excavation program which indicated that intact deposits do occur upon the Tertiary terrace edge. There is a large variation in richness and site integrity however pockets of deposit containing Aboriginal occupation do occur.

The areas of predicted archaeological sensitivity tested during the 2012 excavation program and reported on in NOHC 2014 are supported by this excavation program (**Figure 4**)

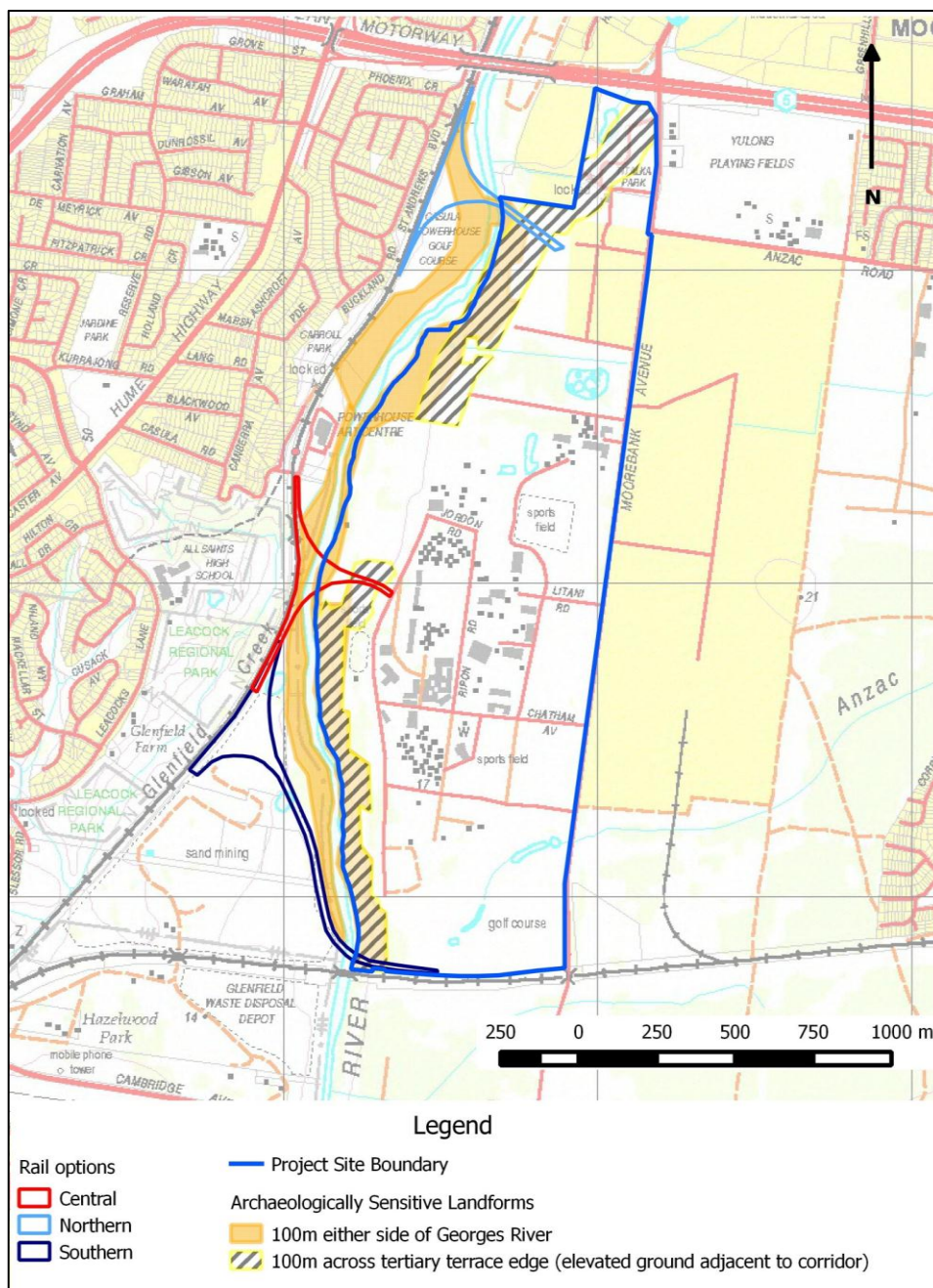


Figure 4: Predicted Aboriginal archaeological sensitivity following the subsurface testing program.



Significance Assessment

The testing program at MRSA2 (MA14) confirms the significance assessment of the Moorebank IMT study area outlined in NOHC 2014. The subsurface testing supports the conclusion of the Aboriginal Heritage Assessment that the areas of greatest Aboriginal significance and archaeological research value are the landforms within and immediately bordering the Georges River.

The Georges River Corridor and terraces meet the threshold for listing on the Commonwealth Heritage List.

MA14 – Significance Assessment

Recording ID: **MA14**

Analysis against Commonwealth Heritage significance criteria

Criterion (a): The place has significant heritage value because of the place's importance in the course, or pattern, of Australia's natural or cultural history

This item is assessed as not having significance against this criterion.

Criterion (b): The place has significant heritage value because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history

This item is assessed as not having significance against this criterion.

Criterion (c): The place has significant heritage value because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history

This item is assessed as having significance against this criterion as the item has an archaeological deposit that has the potential to yield information that will contribute to an understanding of Australia's cultural history.

Criterion (d): The place has a significant heritage value because of the place's importance in demonstrating the principal characteristics of:

i) A class of Australia's natural or cultural places, or

A class of Australia's natural or cultural environments.

This item is assessed as having significance against this criterion as it is representative of the archaeological research potential that exists in undisturbed sections of tertiary terraces bordering the Georges River.

Criterion (e): The place has a significant heritage value because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.

This item is assessed as not having significance against this criterion.

Criterion (f): The place has significant heritage value because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period.

This item is assessed as not having significance against this criterion.



Criterion (g): The place has significant heritage value because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.

This item is assessed as having significance against this criterion as it displays a connection for the Aboriginal community to past cultural events.

Criterion (h): The place has significant heritage value because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history.

This item is assessed as not having significance against this criterion.

Criterion (i): The place has significant heritage value because of the place's importance as part of Indigenous tradition.

This item is assessed as having significance against this criterion for the connection it provides between the present Aboriginal community and Indigenous tradition.

Statement of heritage significance:

At this site deposit disturbance has been restricted to upper stratigraphic units and/or layers of fill. Below these levels disturbance is low. Consequently, the site is able to demonstrate its associated lifeways. MA14 is representative of the archaeological research potential that exists in undisturbed sections of tertiary terraces bordering the Georges River. As such this item could be considered relatively rare in a local and regional context. There is moderate to high archaeological significance at a local level, and moderate to high representative level at local level.

The item has significance to the Aboriginal community as a tangible connection to country and an example of past lifeways.

This site meets the threshold for listing on the Commonwealth Heritage List under criterion C and D, with potential for G and I.

Assessment of Impacts

The impact assessment undertaken in NOHC 2014 for MRSA2 (now MA14) is refined by the results of this assessment. MA14 will be wholly impacted by the northern, central and southern rail construction footprints (**Figures 5a to 5c**).

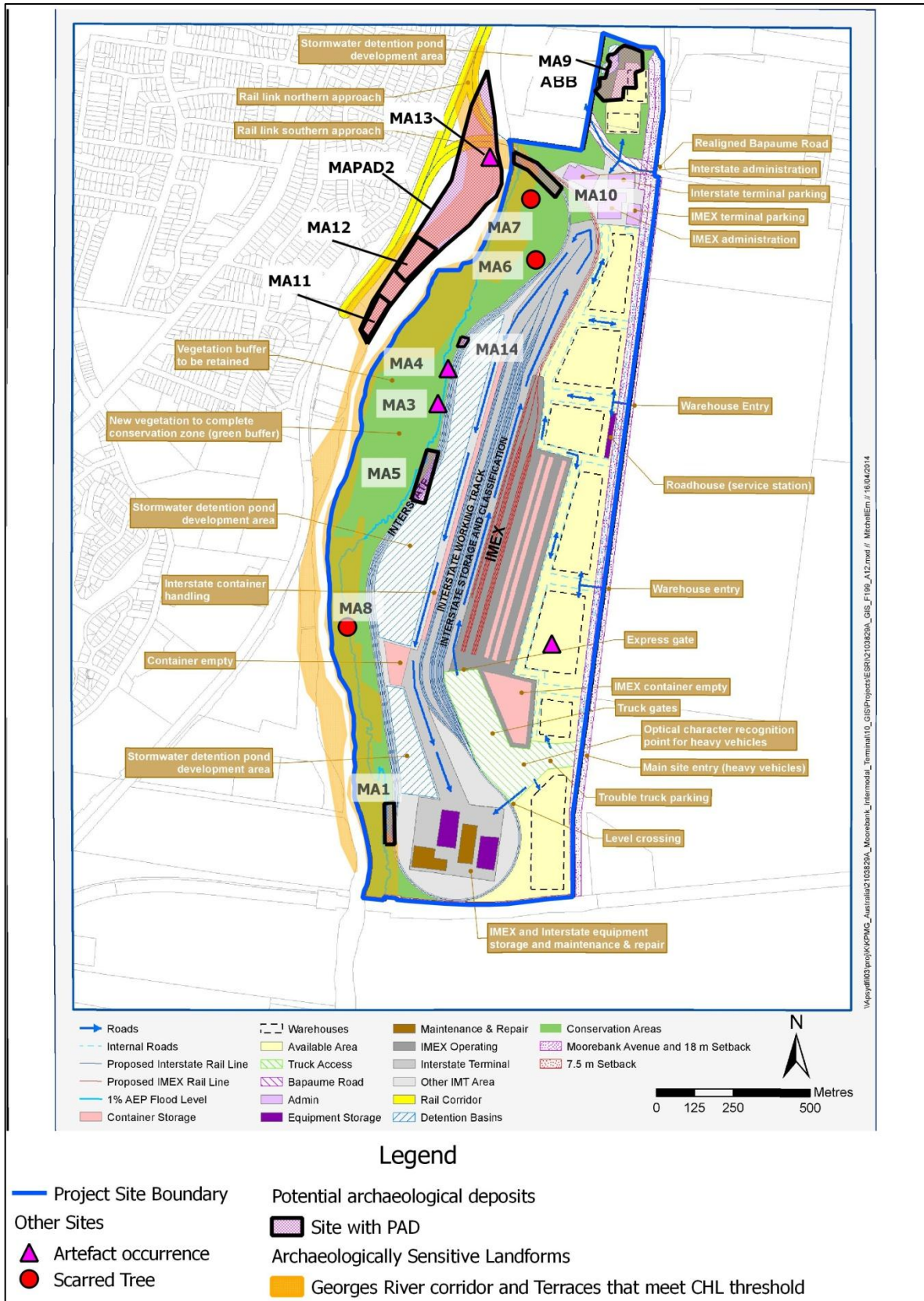


Figure 5a: Location of recorded Aboriginal sites relative to the Moorebank IMT proposed construction footprint and archaeologically sensitive landforms – northern rail access option.

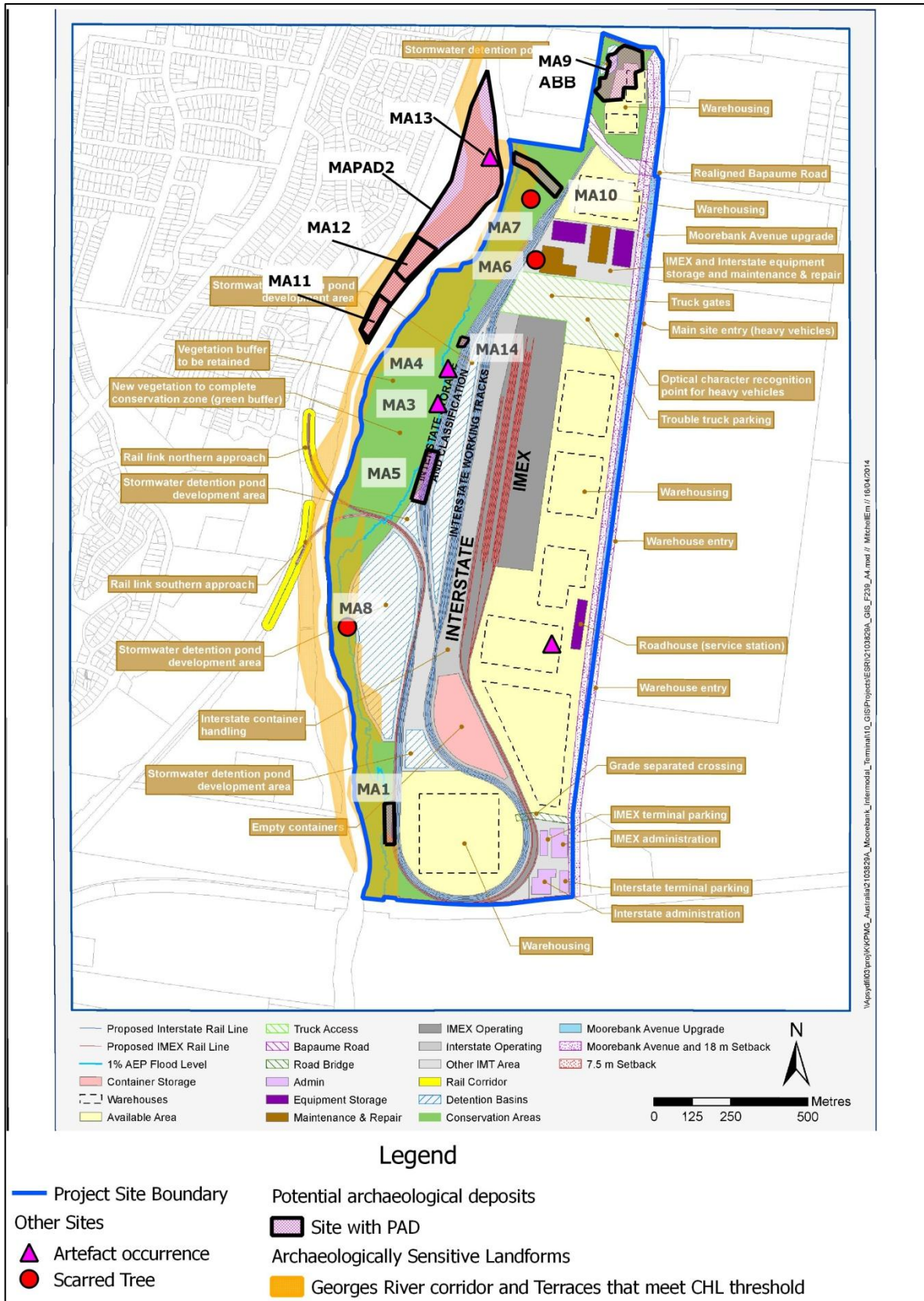


Figure 5b: Location of recorded Aboriginal sites relative to the Moorebank IMT proposed construction footprint and archaeologically sensitive landforms – central rail access option.

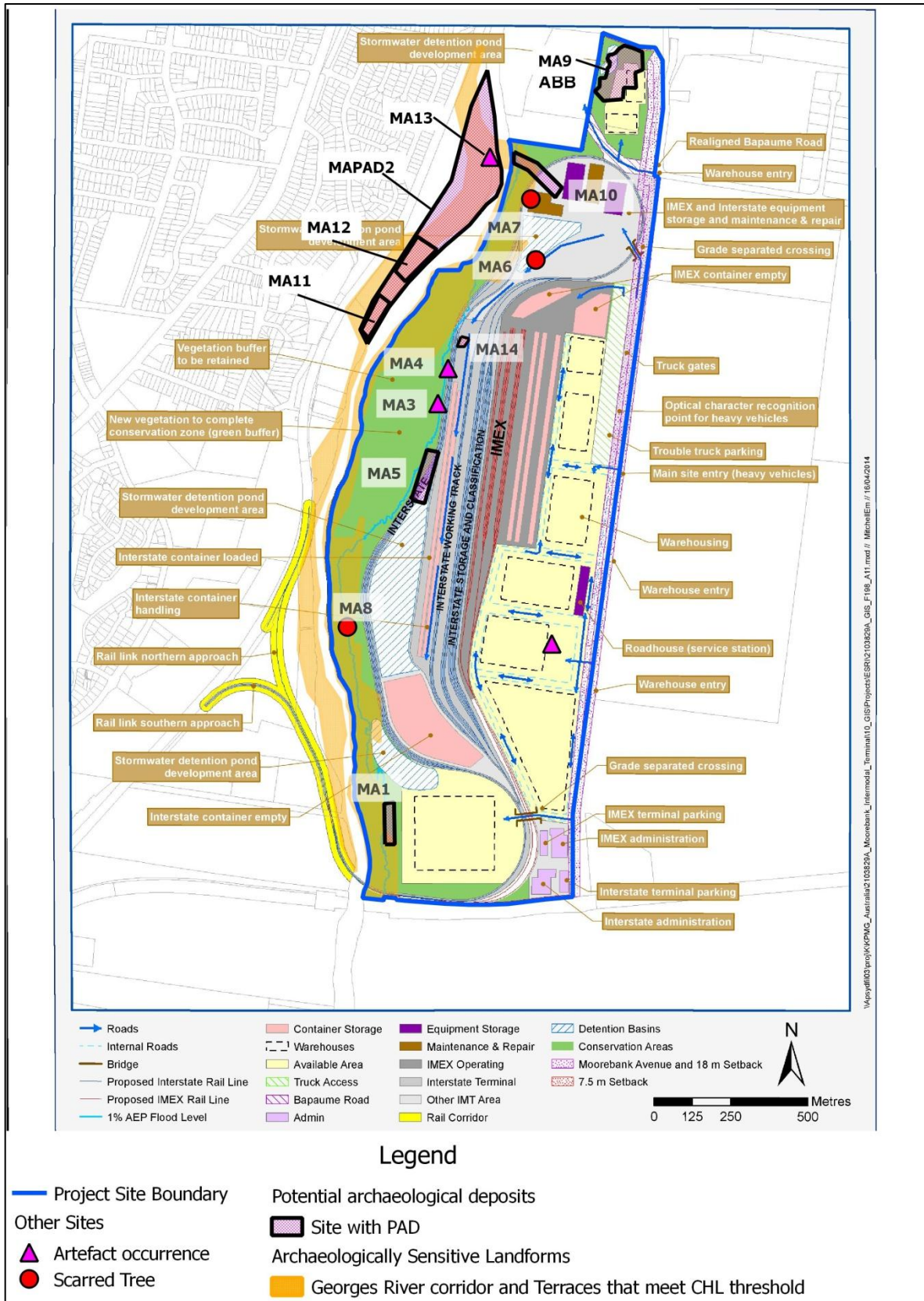


Figure 5c: Location of recorded Aboriginal sites relative to the Moorebank IMT proposed construction footprint and archaeologically sensitive landforms – southern rail access option.



Recommendations

MA14 contains archaeological deposits of moderate to high archaeological/scientific significance. This site will be directly impacted by the Project. An archaeological salvage program would mitigate the impact from the construction footprint. **Figure 6** updates **Figure 2** and shows the portion of this site that would warrant salvage excavation.

No impacts should occur at this location without the prior conduct of archaeological salvage:

- Consideration should be given to combine archaeological and geomorphological mitigation measures as outlined in NOHC 2014 at Appendix 3.
- Consideration should be given to conserving the site *in situ*, within open space reserves, or an extension of the proposed vegetation buffer zone/conservation area along the Georges River.

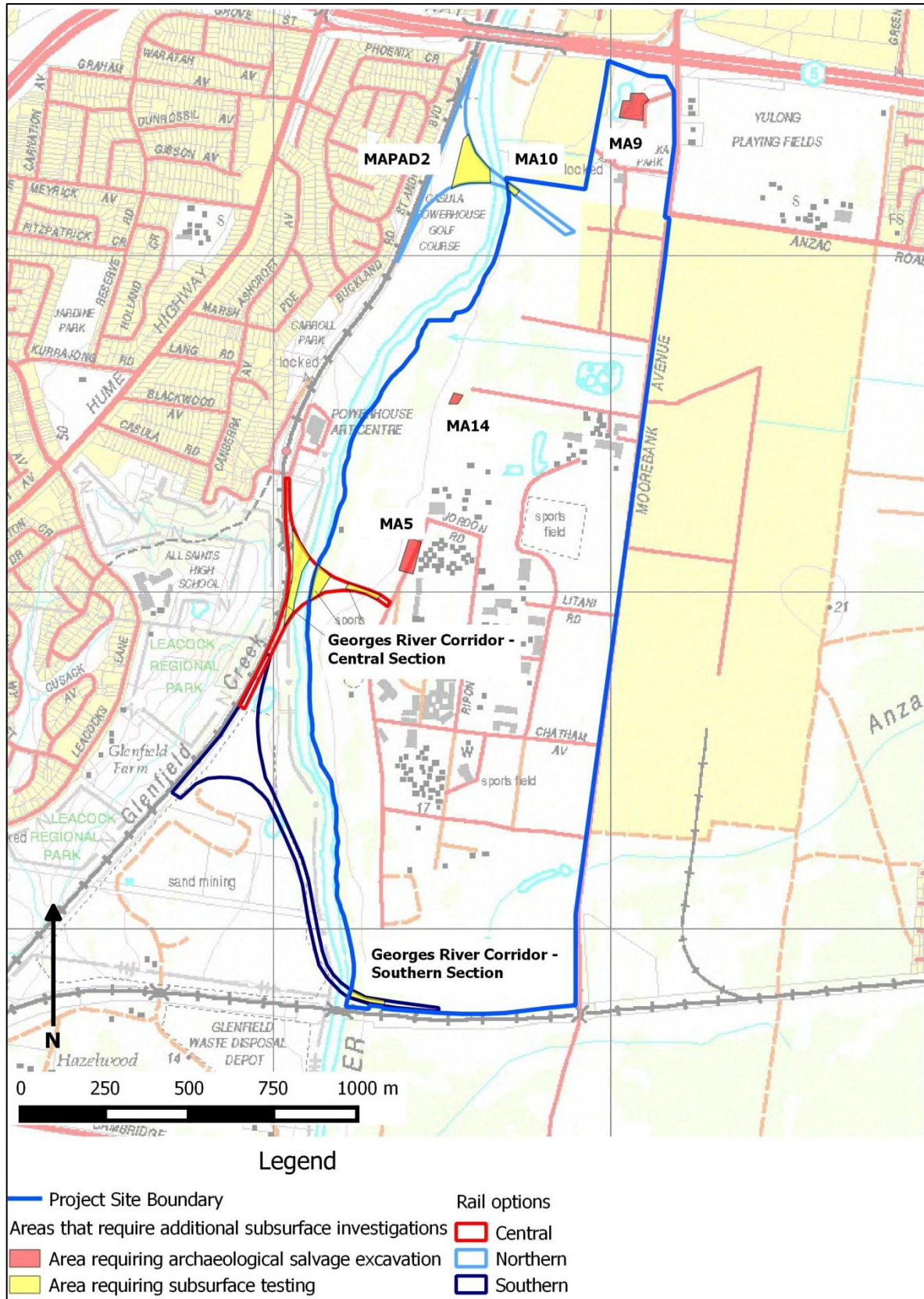


Figure 6: Areas that will require additional subsurface testing and/or archaeological salvage excavation after the current testing program.



References

Navin Officer Heritage Consultants 2014 Moorebank Intermodal Terminal; Aboriginal Heritage Assessment. Report to Parsons Brinckerhoff.