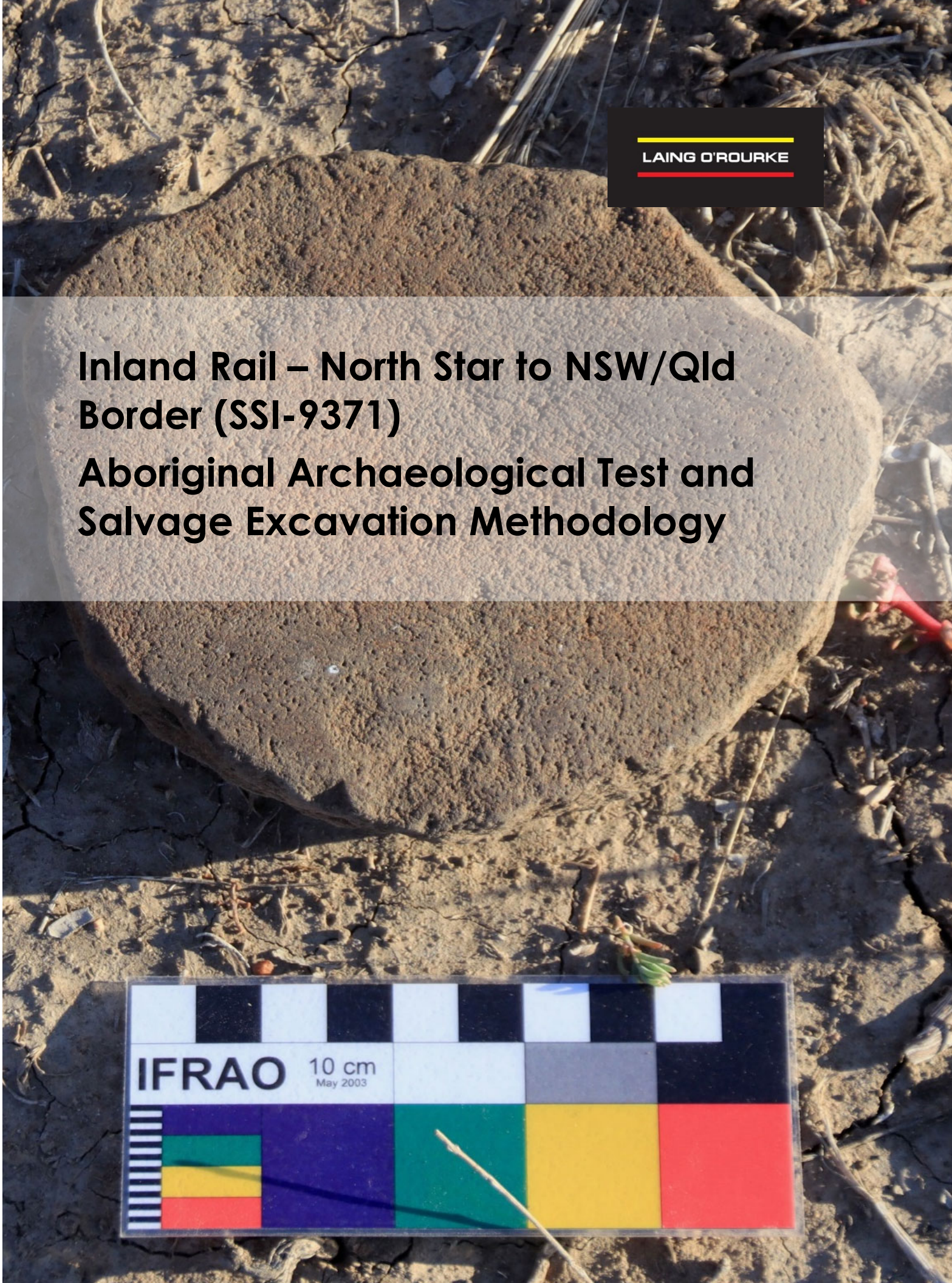

Inland Rail – North Star to NSW/Qld Border (SSI-9371)

Aboriginal Archaeological Test and Salvage Excavation Methodology

Document and revision history

Document details	
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ACKNOWLEDGEMENT OF COUNTRY

Laing O'Rourke acknowledges Aboriginal and Torres Strait Islander Peoples as the Traditional Custodians and First Nations Peoples of Australia.

We pay our respects to their ancestors and Elders, both past and present, and support those emerging. We thank them for enriching our nation with their cultural practices.

Appendix C: Aboriginal Archaeological Test Excavation Methodology

Note that Luke Kirkwood and Dr Alan Williams (EMM Aboriginal Heritage Specialists) providing suitably qualified expertise in preparation of the Aboriginal Archaeological Test Excavation Methodology and Aboriginal Archaeological Salvage Excavation Methodology in accordance with MCoA E133 and E134. Luke Kirkwood has a Bachelor of Science/Arts degree with honours in Archaeology/Anthropology (BSc/A 2000 UQ). Alan Williams has three degrees, including a Doctor of Philosophy in Science specialising in Aboriginal archaeology, refer to Appendix I for copies of Curricula Vitae of these suitably qualified experts. Note also that Luke Kirkwood will manage and direct the Test Excavation and Salvage Excavation field work processes in collaboration with RAPs in accordance with this ACHMP. Note that Surface Salvage of "Isolated Artefact[s]" and "Artefact Scatter[s]" (refer to Appendix A) will be undertaken during Test Excavation works in consultation with the RAPs, with results documented in accordance with this ACHMP.

The following section outlines a standard excavation methodology that can be adopted in the case of additional required archaeological excavations and any unexpected finds procedures. This approach should be used as an initial guide with alternate methods considered by the heritage professional in consultation with the RAPs on a case-by-case basis and dependent on conditions on the ground (previously disturbed ground etc).

The sites listed in Table 8-2 were identified for test excavation in the EIS. Four of these sites are now no longer within the Project Disturbance Footprint and will no longer require test excavation.

Table 8-2- Aboriginal heritage sites requiring test excavation under Section 6.1.2.

AHIMS ID#	Site Name	Site Type	Number of Artefacts	Min Number of Proposed Test Pits
2-4-0046	BBS Toomelah LALC Mobbindry Ck1	Artefact Scatter	500+	78
2-4-0103	NS2B-19-AS1	Artefact Scatter	11	29
2-4-0117	NS2B-19-AS5	Artefact Scatter	500+	97
2-5-0088	NS2B-19-AS7	Artefact Scatter	65	47
2-4-0139*	NS2B-19-AS9	Artefact Scatter	168	-
2-4-0102*	NS2B-19-AS10	Artefact Scatter	13	-
2-4-0096	NS2B-19-AS16	Artefact Scatter	17	29
11-1-0055*	NS2B-19-AS21	Artefact Scatter	28	-
2-5-0089*	NS2B-19-AS22	Artefact Scatter	2	-
Total				**280**

* Sites now outside of the Project Disturbance Footprint

The specific methods below propose a two-stage approach, reflecting initially an investigative phase followed by subsequent conservation ex situ or archaeological salvage where certain thresholds are met.

Investigative phase

The following methods should be adopted to investigate the cultural materials at each test excavation location in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).

Excavation

1. A grid of 50 cm^2 test pits would be established at suitable spacing (10m in areas where surface artefact density and/or where test pits recover 10 artefacts/50 m^2 or more, and for all other areas 25-50 m spacing) to inform the identified cultural materials using a hand-held Differential GPS device (or equivalent).
2. All test pits would be dug manually using shovels, mattocks, trowels and other hand tools as required Excavation would be undertaken as 50 cm^2 units. Each square would be given an alpha-numeric label for identification purposes.
3. Additional test pits at a lesser spacing and/or the expansion of the initial test pit up to 3m^2 may be applied to further understand and characterise cultural materials were needed.
4. All excavation would be undertaken in 10 cm spits to culturally sterile depths or 1.5 m below current surface (the deepest depth that can be reached without shoring systems and/or benching). Should it be identified that cultural deposits may be present below 1.5 m this would be treated as a hold point for discussion with ARTC, RAPs and Heritage NSW on the requirement for further testing and may include discussion on a shoring/benching approach to test excavation and/or mechanical excavation.
5. All sediment would be placed in buckets, labelled according to its assigned test pit number and spit, and recorded and documented. All sediment would then be wet-sieved through a 5 mm wire aperture mesh, and any historic and/or Aboriginal cultural material recovered, labelled and bagged for subsequent analysis and curation.
6. Excavation procedures and protocols may be modified at the discretion of the Excavation Director, in consultation with the RAPs and proponent as the conditions in the field and nature of the excavations develop. This includes the movement/discontinuance of test pits to avoid existing obstacles, buried services and disturbances.

Field Documentation

1. All test pits would be documented using photographic records, written descriptions and scaled drawings.
2. Soil profiles would be recorded in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010), including scaled drawings, photographs, and written descriptions.
3. Soil samples may be collected for description, sedimentological and chronological analysis where such analysis is considered likely to contribute significant information.

Optically Stimulated Luminescence (OSL) samples would be taken in areas where Aboriginal objects are found, and generally try to bracket the deposit (to provide a maximum and minimum age). Material for radiocarbon analysis may also be undertaken opportunistically if archaeological features containing charcoal or other dateable material are evident.

4. Reduced levels of the top and bottom of the test pit would be documented using a dumpy level against a known elevation. Other levels may be taken as required.

At the completion of the investigative test pits, consideration of the below thresholds should be considered as to whether further excavations are required.

Thresholds for further excavation

The initiation of salvage excavation would only be undertaken in areas where the thresholds outlined below are met. The location of salvage excavations would be determined at the completion of the investigative test pits and at those locations where the greatest potential for answering the research questions is identified. Given some ≥300 test pits are proposed, it is considered unlikely that all locations where thresholds are met may be progressed to salvage excavations.

The thresholds for expansion would include:

1. Stone artefact densities greater than 15/m^2 and therefore indicative of past occupation based on our broader understanding of the region.
2. Where evidence of multiple phases of past activity is identified through changing raw material types and/or distinct technological attributes at different depths within the soil profile.
3. Where dense concentrations of cultural materials are discovered at significant depths that may indicate extreme age.
4. Where rare or unique stone artefacts and/or other archaeological material is recovered.
5. Where unique and/or rare archaeological features (e.g. hearths, cooking pits, etc) are identified.
6. Other conditions that are considered by the Excavation Director to inform the research questions and/or broader aims of the project.

Once a decision is reached on the completion of the test excavation or the continuation of the salvage program at each archaeological site, a short report will be provided to all RAPs outlining the threshold process and the decision for further salvage or completion of works. RAPs will have five business days to provide comment on this decision. Once the test excavation program at each registered Aboriginal heritage site is considered complete, an Aboriginal Site Impact Recording (ASIR) Form will be completed and submitted to HeritageNSW.

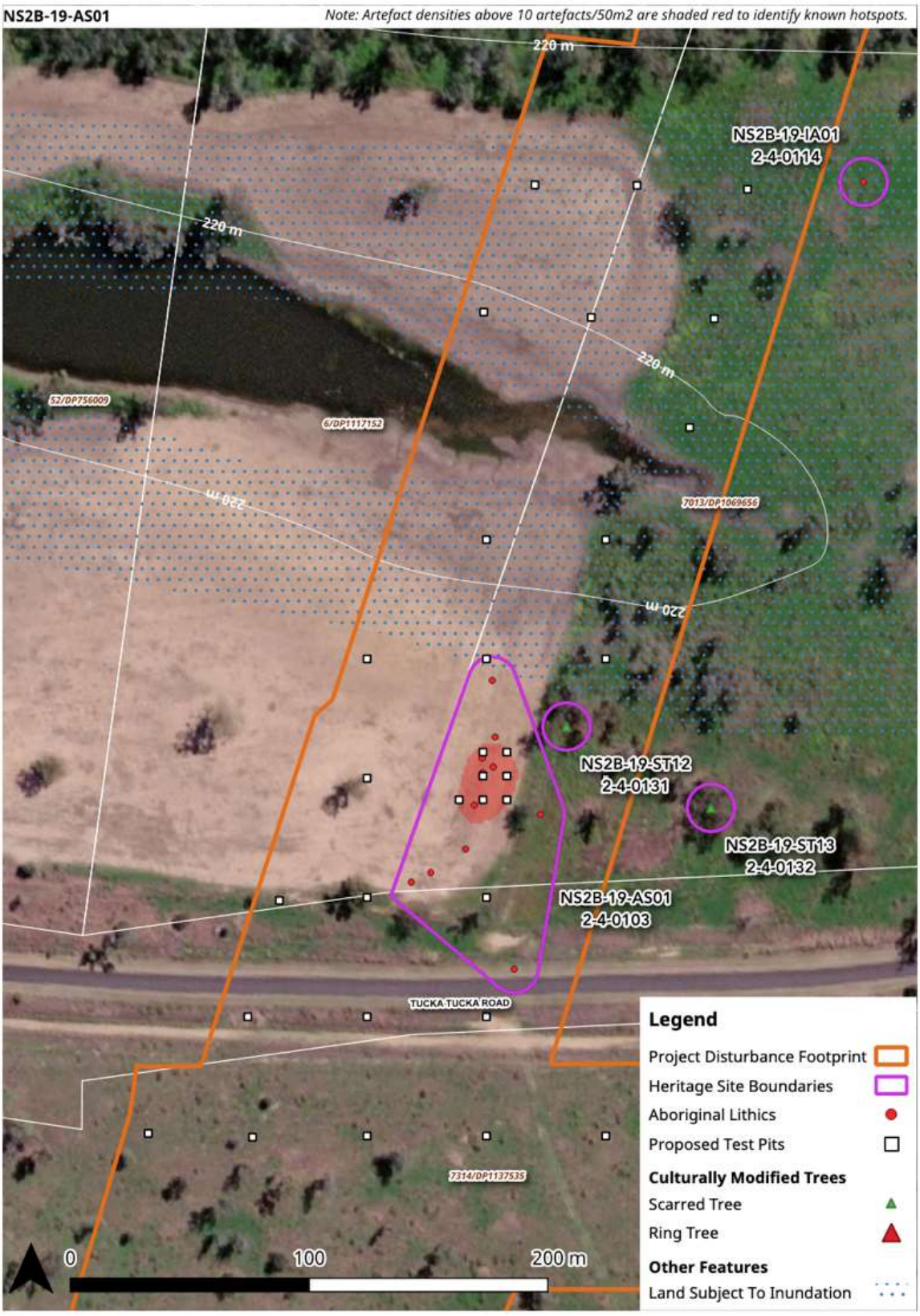

Figure C-1 - Proposed test pits (white squares) for AHIMS #2-4-0103 (NS2B-19-AS1) within development corridor

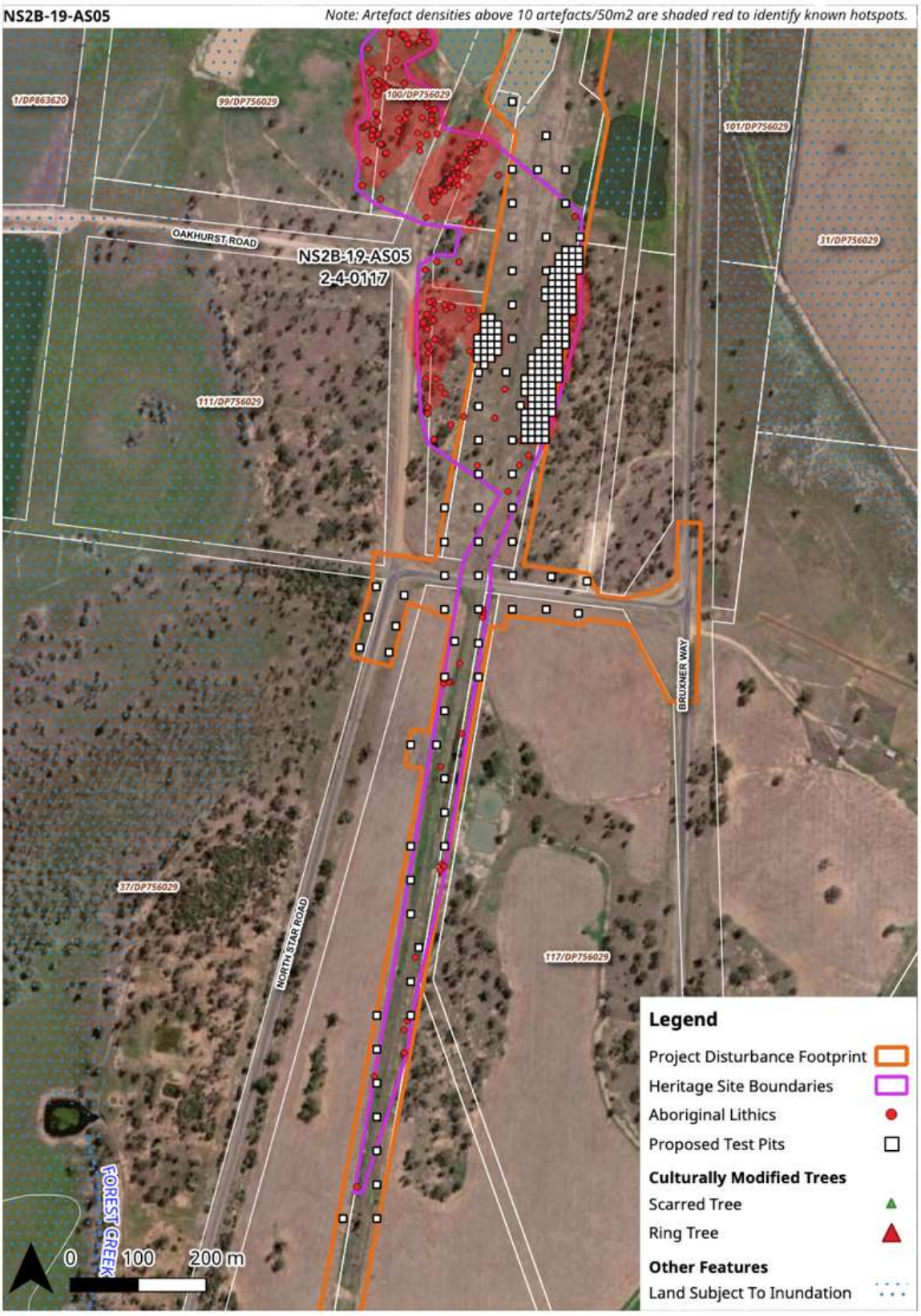

Figure C-2 - Proposed test pits (white squares) for AHIMS #2-4-0117 (NS2B-19-AS5) within development corridor

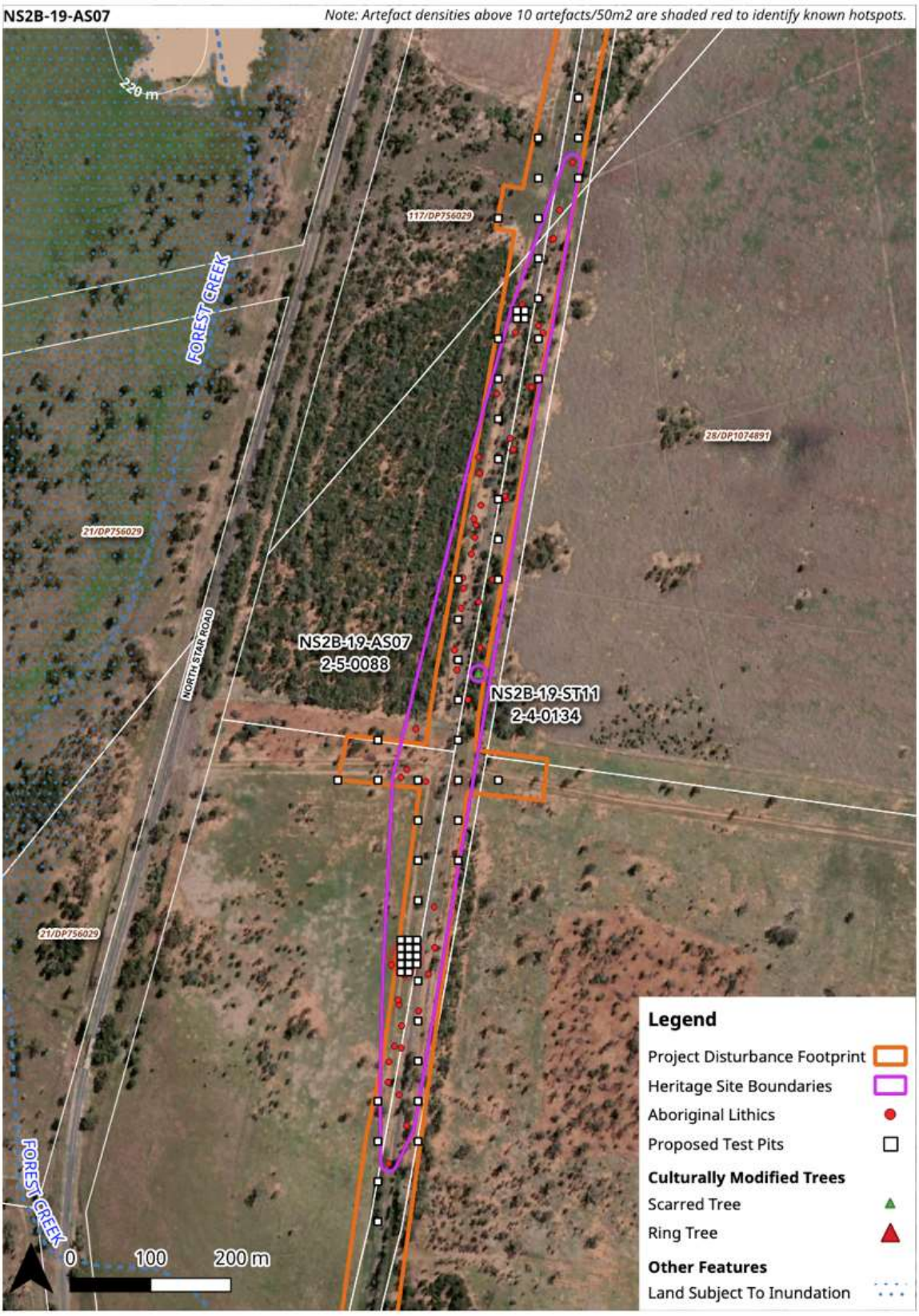

Figure C-3 - Proposed test pits (white squares) for AHIMS #2-4-0088 (NS2B-19-AS7) within development corridor

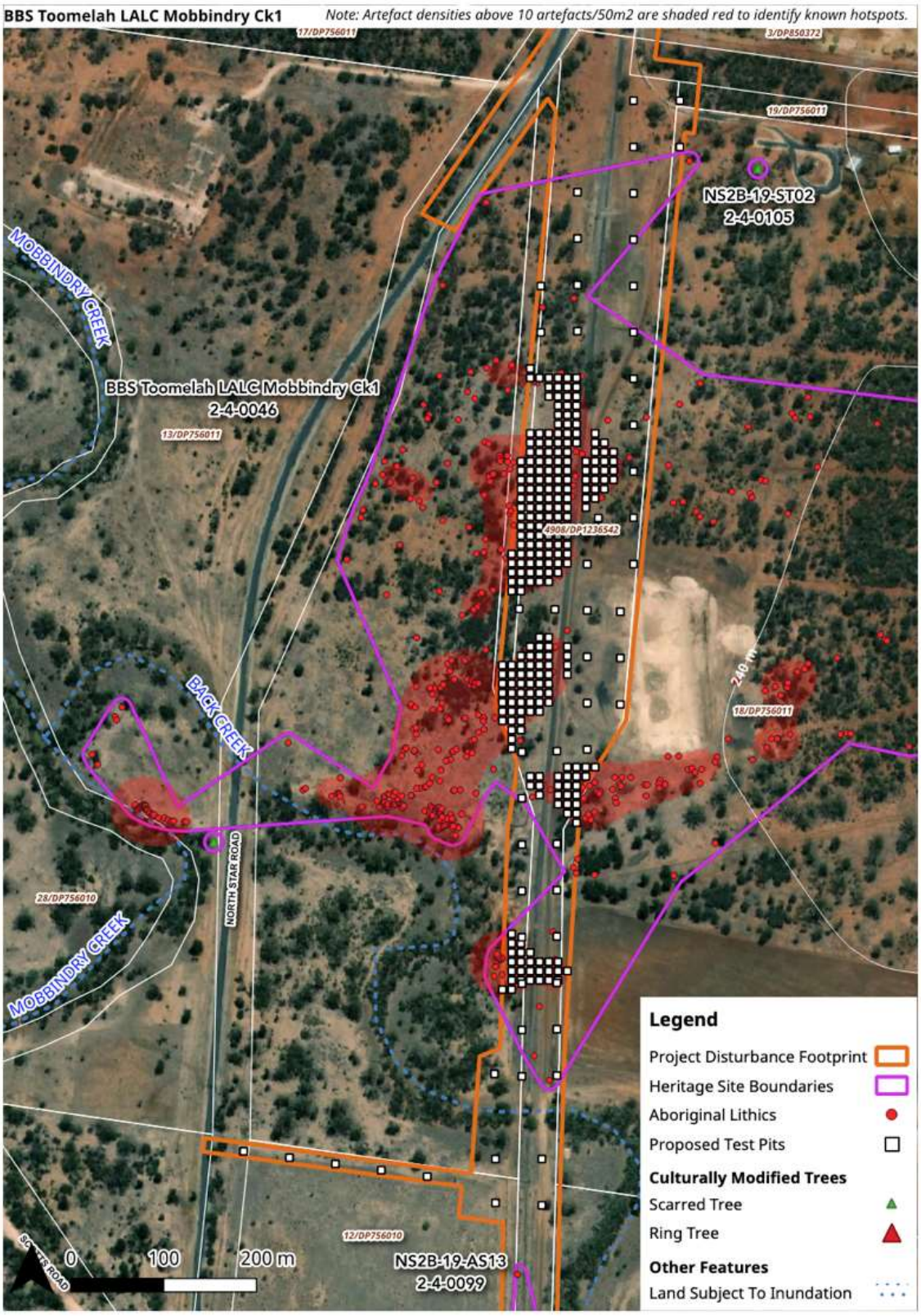

Figure C-4 - Proposed test pits (white squares) for AHIMS #2-4-0046 (BBS Toomelah LALC Mobbindry Ck1) within development corridor

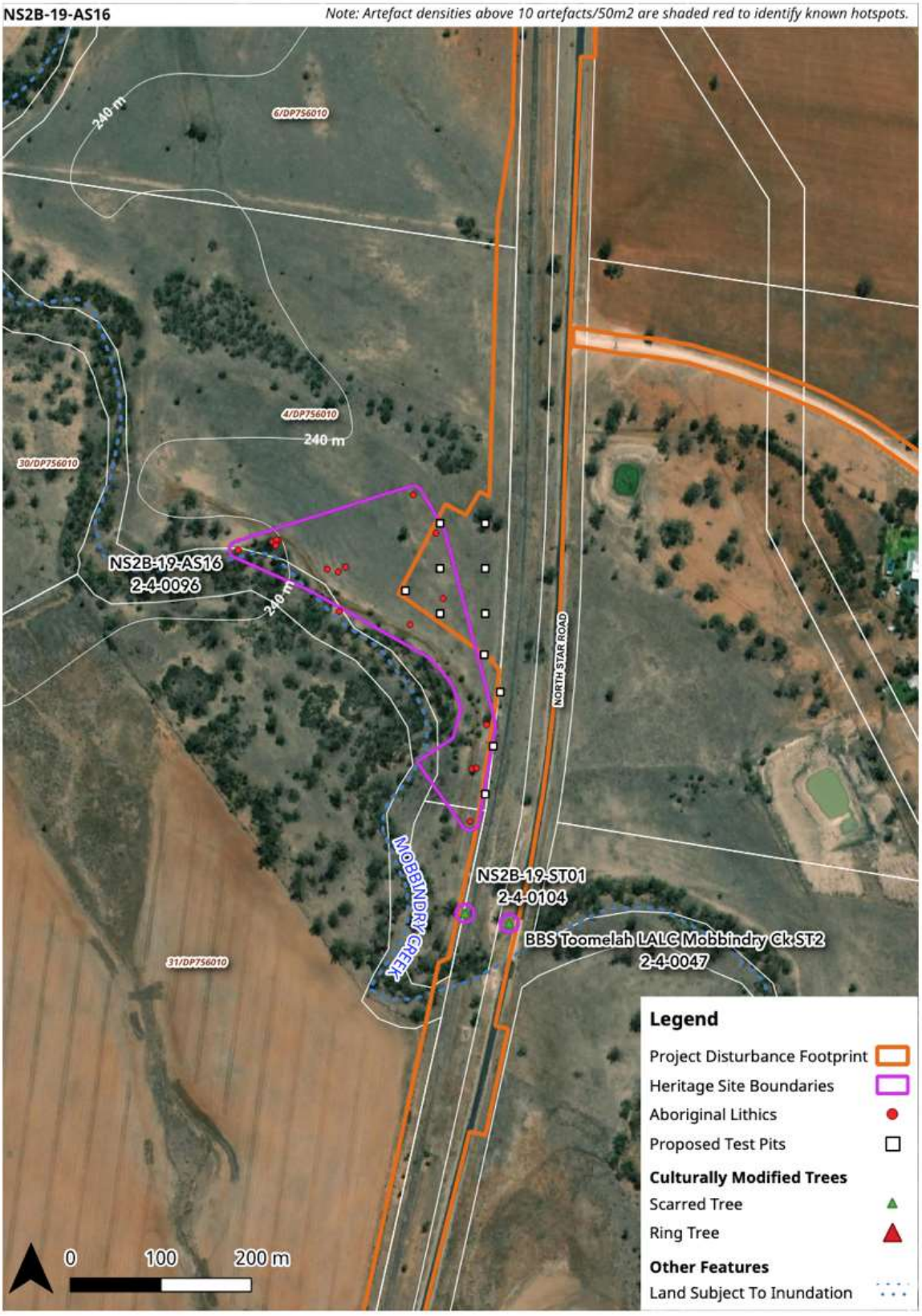

Figure C-5 - Proposed test pits [white squares] for AHIMS #2-4-0096 (NS2B-19-AS16) within development corridor

Appendix D: Aboriginal Archaeological Salvage Methodology

Note that Luke Kirkwood and Dr Alan Williams (EMM Aboriginal Heritage Specialists) providing suitably qualified expertise in preparation of the Aboriginal Archaeological Test Excavation Methodology and Aboriginal Archaeological Salvage Excavation Methodology in accordance with MCoA E133 and E134. Luke Kirkwood has a Bachelor of Science/Arts degree with honours in Archaeology/Anthropology (BSc/A 2000 UQ). Alan Williams has three degrees, including a Doctor of Philosophy in Science specialising in Aboriginal archaeology, refer to Appendix I for copies of Curricula Vitae of these suitably qualified experts. Note also that Luke Kirkwood will manage and direct the Test Excavation and Salvage Excavation field work processes in collaboration with RAPs in accordance with this ACHMP.

Following test excavations, an open area salvage excavation program will be undertaken where suitable thresholds are met (Appendix C), and in locations where the research aims and objectives are considered most likely to be achieved.

Research questions

A key component of the salvage methodology is seeking to answer specific questions regarding the salvaged sites that can enlighten the archaeological heritage of the investigation area. As the archaeological record in this part of Australia is poorly understood, it is thus critical that initial standard questions be asked which can inform more detailed analysis. Such research questions include:

1. What is the spatial and stratigraphic patterns of cultural materials within the investigation area? Can inter and/or intra-site past Aboriginal activities be determined through excavation in these areas?
2. What is the age, composition, technological attributes, and significance of cultural materials within the areas of the proposed activity?
3. What are the environmental characteristics associated with the distribution of Aboriginal cultural heritage within the area? Can the formative processes of the stratigraphic profile provide information on the nature and/or survivability of the archaeological resources? Are there other key factors in the distribution and extent of the material culture within the area?
4. What are the cultural, social and public values associated with the cultural materials in the area? Does the excavations support or require modification of the significance and values previously assigned to Aboriginal sites, places and/or locales within the project area?
5. How should the cultural materials be conserved and managed in future?

Additionally specific research questions that can be asked include:

1. Is the silcrete identified within the artefact sites related to the natural silcrete outcrops to the south of North Star?
2. What is the relationship between the AHIMS artefact scatter site 2-4-0046 and the carved trees at 2-4-0003?
3. Can spatial patterning detect preference for well-drained soil versus 'black soil'?

4. Can the dimensions of the identified cultural scars be used to determine use?

Methodology

These excavations are proposed to consist of contiguous open area salvage excavation using higher resolution recovery techniques. Given the size of the proposed impacts, it is considered that each open area excavation would be generally a maximum of 25 m^2 (5 x 5 m), and up to four locations would be applied across the proposed activities where thresholds are initially met (see Appendix C).

Where salvage excavation is considered necessary to extend beyond 25 m^2 at four locations to answer the research questions and/or recover significant cultural materials, this would be treated as a hold point for discussion with ARTC, RAPs and Heritage NSW on the requirement for further excavation.

The size, extent and location of open area excavations would be developed based on thresholds identified during test excavation and in discussion with LOR, ARTC, and the RAPs outlined in Appendix C.

The following open area excavation methodology will be employed:

Excavation

1. Establishment of open area excavations using a hand-held Differential GPS device (or equivalent).
2. All test pits would be dug manually using shovels, mattocks, trowels and other hand tools as required. Excavation would be undertaken as 1m^2. Each square would be given an alpha-numeric label for identification purposes.
3. All excavation would be undertaken in 5 cm spits to culturally sterile depths or 1.5 m below current surface (the deepest depth that can be reached without shoring systems and/or benching).
4. All sediment would be placed in buckets, labelled according to its assigned test pit number and spit, and recorded and documented. All sediment would then be wet-sieved through a 5 mm wire aperture mesh, and any historic and/or Aboriginal cultural material recovered, labelled and bagged for subsequent analysis and curation.
5. All open area pits will be backfilled. ARTC and the Construction Contractor will be responsible for arranging and undertaking the backfilling of test and open area pits.

Field Documentation

1. All excavations would be documented using photographic records, written descriptions and scaled drawings.
2. Soil profiles would be recorded in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010), including scaled drawings, photographs, and written descriptions.
3. Soil samples would be collected for description, sedimentological and chronological analysis where such analysis is considered likely to contribute significant information. Optically Stimulated Luminescence (OSL) samples would be taken in areas where Aboriginal objects are found, and generally try to bracket the deposit (to provide a maximum and minimum age). Material for radiocarbon analysis may also be

undertaken opportunistically if archaeological features containing charcoal or other dateable material are evident.

4. Reduced levels of the top and bottom of the test pit, and at the top of each fourth spit would be documented using a dumpy level against a known elevation. Other levels may be taken as required.
5. We highlight that excavation procedures and protocols may be modified at the discretion of the Excavation Director, in consultation with Heritage NSW, the RAPs and Water Infrastructure NSW as the conditions in the field and nature of the excavations develop. This includes the movement/discontinuance of test pits to avoid existing obstacles, buried services and disturbances.
6. Upon completion of the salvage program at each archaeological site, a short report will be provided to all RAPs outlining the preliminary findings and that rationale for finalisation of the salvage program. RAPs will have five business days to provide comment on this decision. Once the salvage program is considered complete, an Aboriginal Site Impact Recording (ASIR) Form will be completed for each registered Aboriginal heritage site and submitted to HeritageNSW.