

ARCHAEOLOGICAL EXCAVATION REPORT



PART LOT 5182 AND LOT 8630

DICK WARD DRIVE, NIGHTCLIFF

PREPARED FOR PLANIT CONSULTING



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1. INTRODUCTION

1.1 Scope of Works

Everick Heritage Consultants (the 'Consultant') was commissioned by Planit Consulting on behalf of the Gwalwa Daraniki Association ('GDA' and the 'Proponent') to undertake Archaeological investigations within the GDA Kulaluk Lease Area. The primary purpose of the archaeological investigation was to establish whether the Study Area contained Aboriginal Burials or other archaeological evidence relating to Aboriginal or Macassan occupation.

1.2 Location of Study Area and Description of Intended Works

The land subject to investigation is identified as part of Lot 5182 and Lot 8630, Dick Ward Drive, Nightcliff, NT (the 'Study Area': Figures 1 and 2). The Study Area is situated approximately 6.8 km northeast of Darwin CBD, NT (Figure 2). The Study Area measures approximately 160 m (N-S) x 160 m (E-W). A proposed Industrial Development concept plan indicates that up to a metre of general compacted fill will be laid across the site prior to construction, limiting disturbance of the current ground levels to:

- a) the removal of topsoil; and
- b) the construction of a trapezoidal drainage and future storm water infrastructure across the southern and western sections of the site, forming an 'L' bend.

It is anticipated that only the trapezoidal drainage, future storm water infrastructure and other services would be likely to destructively impact any subsurface archaeological values within the Study Area, although the presence of burials within the Study Area would have important Heritage implications.

1.3 Objectives of Investigation

The archaeological investigation was designed to meet the requirements of the Department of Land, Planning and Environment (DLPE) Heritage Branch and was drafted to determine:



- a) if the Study Area contains any subsurface human remains, being human internments relating to the traditional burial ground delineated with the location nominated by the Aboriginal Areas Protection Authority (AAPA)(Appendix A); and
- b) what, if any, impact the proposed Project will have on Aboriginal or Macassan Objects or Places.

The investigations were undertaken by Everick Directors Dr Richard Robins and Tim Robins, with the assistance of:

- a) Audi Shields
- b) Mark Faint
- c) Mark Hopkins

1.4 Report Authorship

This report was written by Senior Archaeologists / Directors Dr Richard Robins and Tim Robins and qualified Archaeologist Jordan Towers. Dr Richard Robins and Tim Robins conducted the archaeological excavations. Tim Robins has been involved in preliminary community consultation.



Figure 1: GDA Kulaluk Lease - Regional Locality

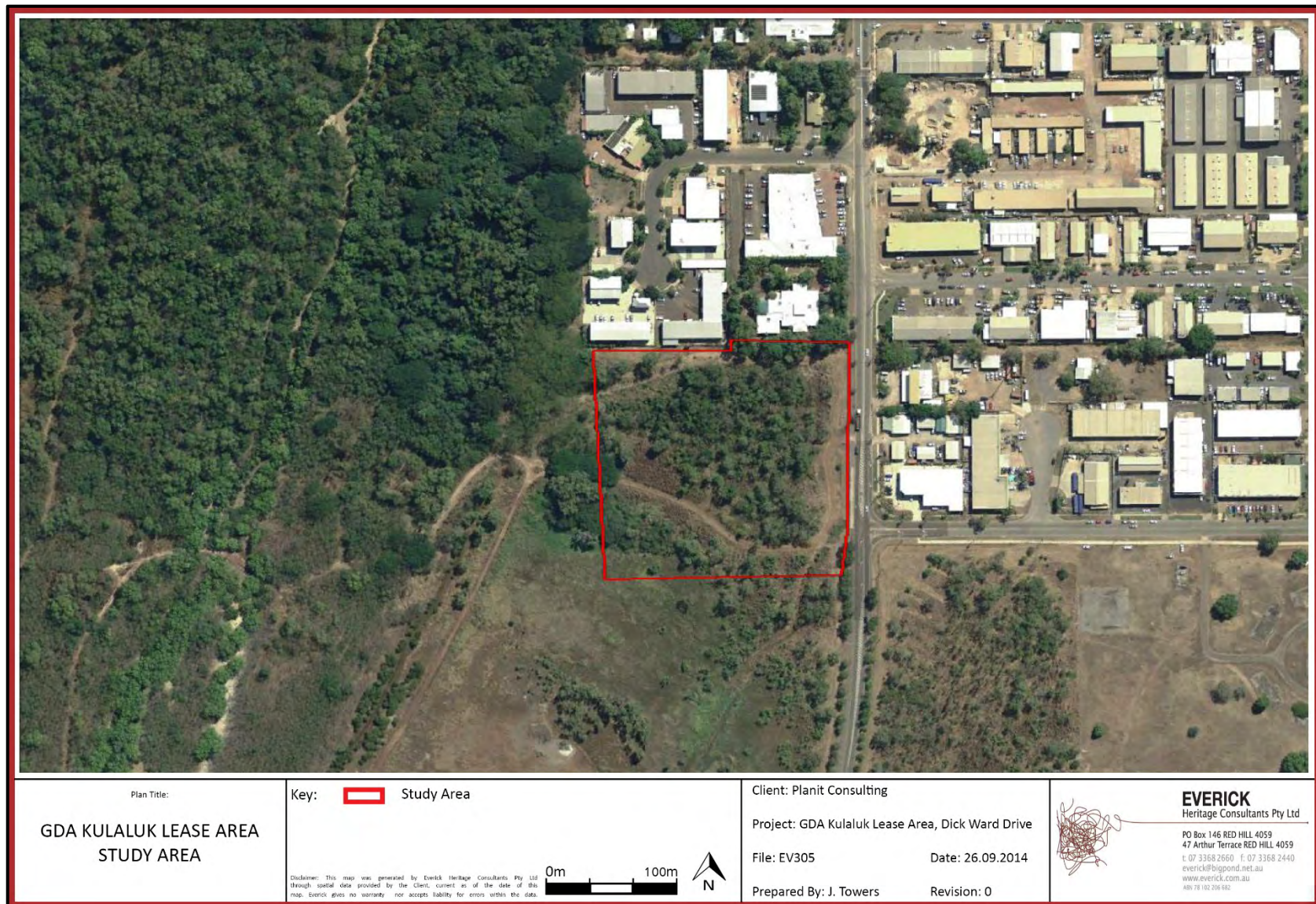


Figure 2: GDA Kulaluk Lease Study Area

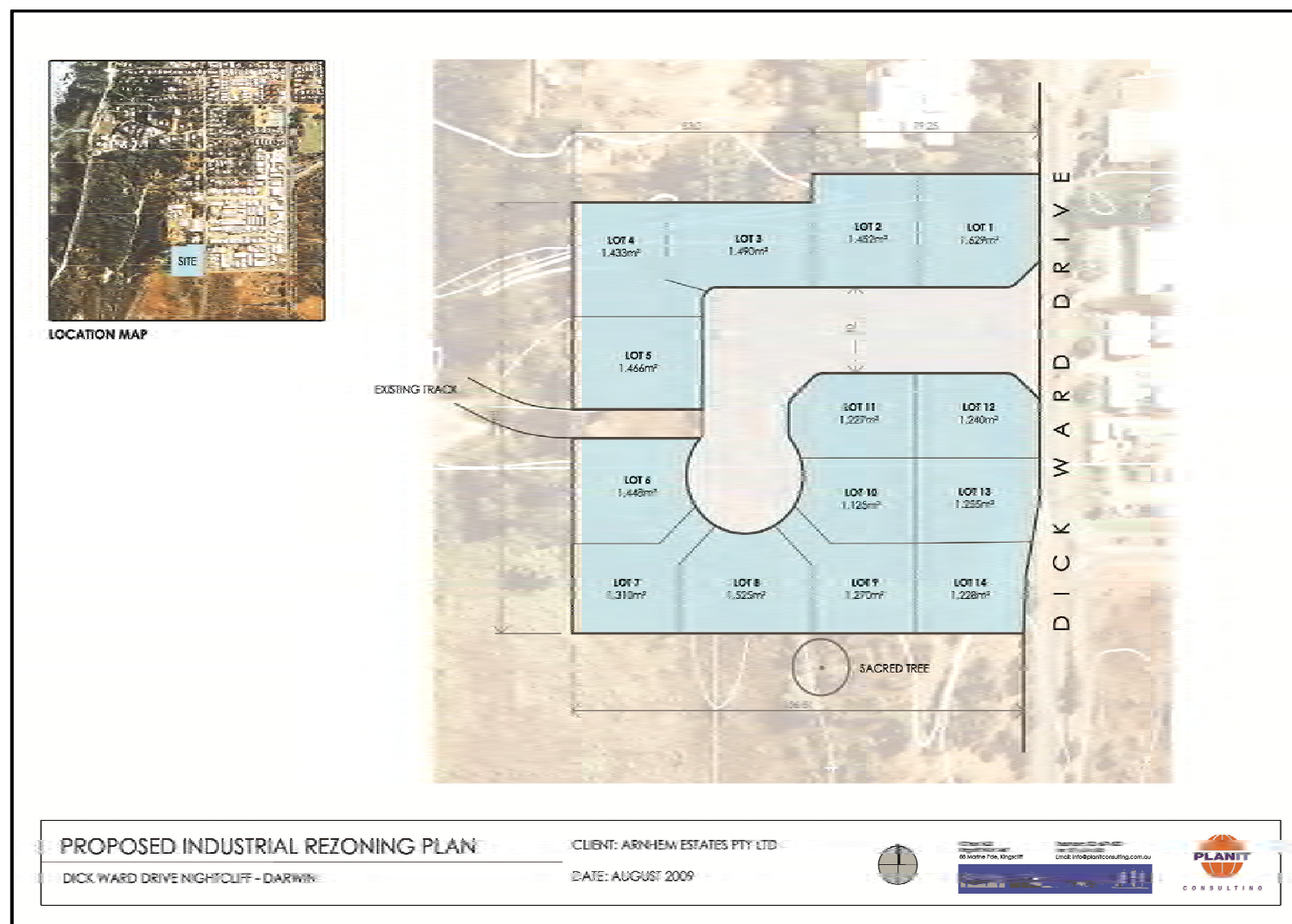


Figure 3: GDA Kulaluk Lease – Dick Ward Drive Industrial Estate Preliminary Concept Plan (Note: Plans may be subject to change following testing)

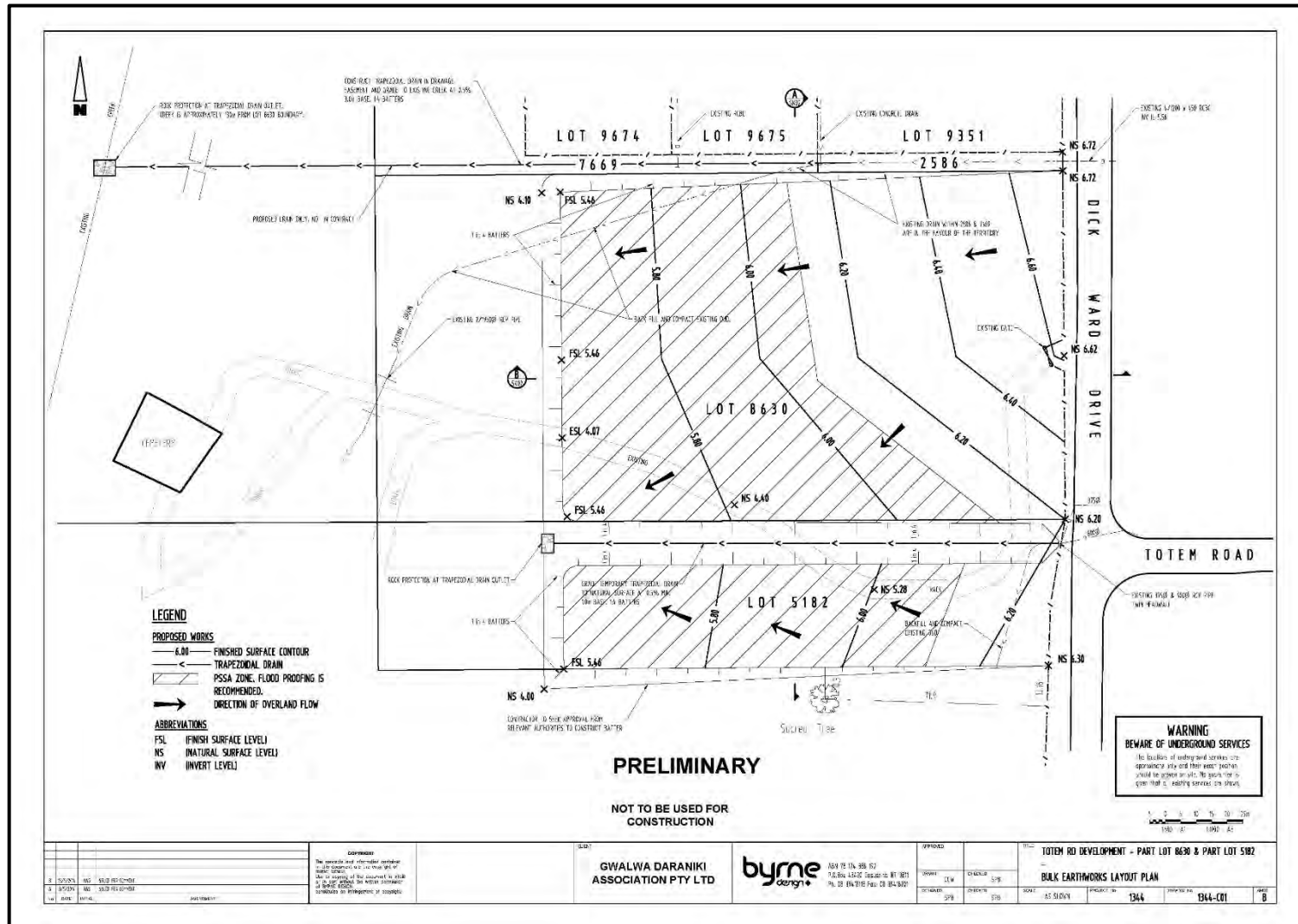


Figure 4: GDA Kulaluk Lease – Dick Ward Drive Industrial Estate Preliminary Concept Plan (Note: Plans may be subject to change following testing)



2. ABORIGINAL COMMUNITY CONSULTATION & PARTICIPATION

The Aboriginal community are the primary determinants of the significance of their cultural heritage. Members of the Aboriginal community have been consulted, with regard to the presence of burials within the Study Area. Everick recognises that there is Traditional Owner knowledge associated with the region that will have to be treated in a confidential manner. Everick has sought advice from Aboriginal stakeholders as to the appropriate protocols to be adopted in regard to such knowledge.

Prior to commencing the archaeological testing, Everick provided the Heritage Branch with an Excavation Strategy detailing the proposed investigation methods (Robins *et al* 2014). This strategy was approved by the Heritage Branch and adopted by Everick. Advice was also sought from the Heritage Branch regarding appropriate knowledge holders who may wish to be consulted before, during and after the archaeological testing. It was recommended that Everick consult with nominated Knowledge Holders Donna Jackson and Helene Secretary. Everick undertook this consultation on 15- 17 September 2014.

As per the approved Excavation Strategy (Robins *et al* 2014) Everick established a consultation process with the Aboriginal community for the Project and invited members of the Aboriginal community to participate in the archaeological excavations. (Section 6).

3. ENVIRONMENT

The topography within which the Study area is located can generally be described as comprising gently undulating slopes to low hills and dunes with salt and mud flats as well as swampy depressions and billabongs (Fogarty *et al* 1984). Wood *et al* (1985) have provided geological and soil mapping for the Darwin region. This data does largely cater for macro land system descriptions and analyses rather than providing specific and detailed geological and soil data and as such was only used as a guide for the purposes of this assessment. Wood *et al* (1985) divide the Study Area into two distinct land systems being

- Littoral Coastal Plains Land System: consisting of tidal flats and plains with sand dunes and saline muds also present; and
- Krans Koolinpayah Surface Land System consisting of plateaus bordered by steep and dissected terrains with sandstone and shale of Cretaceous origin, some sedimentary rocks from the Lower Proterozoic and massive yellow earths (Wood *et al* 1985; EcOz 2011).



Fogarty et al (1984) completed a more intensive analysis of the geological and soil landscape of the Elizabeth, Darwin and Blackmore Rivers region in 1984. This study identified four land units within the Study Area:

Land Unit 2B1:

Fogarty et al (1984:20) describe this unit as gentle side slopes and low rolling hills, consisting of moderately deep very gravelly yellow massive earths; minor shallow lithosols being gradational; sandy loam surface to sandy clay loam or light clay at depth. Gravel inclusions of flaky siltstone were noted at 10-20% on the surface, increasing to 30-60% in subsoils. The soils are well drained and drain rapidly (Fogarty et al 1984:20). Vegetation was recorded to be open woodland to woodland with variable dominants largely being Eucalypt species (*E. miniata*, *E. tetradonta*, *E. foelscleana*, *E. tectifera*, *E. bleeseri*, *E. confertiflora*, *E. throphleum chlorostachys*). The unit also has scattered shrubs species consisting of Wild Mango (*Buchanania obovata*), Cocky Apple (*Planchonia careya*), Quinine (*Petalostigma quadriloculare*) and sand palm (*Livistona humilis*) with a medium to dense grass coverage with dominant species including dense seasonal Sorghum growth (*Sorghum plumosum*), broad leaf ribbon grass (*Chrysopogon latifolius*) and others (*Schizachyria fragile* and *Aristida browniana*) (Fogarty et al 1984:20).

Land Unit 4C:

This unit consists of gently undulating low slopes of deep mottled yellow massive earths - being Sandy loam or light sandy clay loam surface grading to light clay subsoil with minor ferruginous gravel inclusions (Fogarty et al 1984:29). The soils exhibit slow drainage, characterised by a high wet season water table and waterlogging, often with dry season seepage areas. Soils are hard set when dry and imperfectly drained (Fogarty et al 1984:29). The vegetation of this unit was described as open forest, minor woodland with large mixed species being predominantly Eucalyptus (*E. tetradonta*, *E. papuana*, *Ergthrophleum chlorostachys*, *E. polycarpa*, *E. miniata*). Shrub vegetation is dense and includes Pandanus (*Pandanus spiralis*), Silky Grevillea (*Grevillea pteridifolia*), Featherflower or Liandu (*Verticordia cunninghamii*). Grasses range from moderate to dense coverage with dominant species being Coelorhachis rottboelliioides, Sorghum (*Sorghum plumosum*), broad leaf ribbon grass (*Chrysopogon latifolius*), Perennial Tussock Grasses (*Heteropogon triticeus*, *Eriachne trisetia*) (Fogarty et al 1984:29).

Land Unit 8B:

Swamp depressions on upland surfaces with negligible slopes. Described as friable, apedal, mottled yellow duplex soils being organic loam surface over a light clay or sandy clay subsoil with no gravel inclusions noted. Prolonged seasonal inundation with ponding common (Fogarty et al 1984: 42). Vegetation was predominantly open to closed forest of Melaleuca spp. (Fogarty et al 1984: 42).



Land Unit 8C:

Billabongs with dry season fringes. No soils data have been recorded owing to areas being un-sampled due to perpetual flooding and inundation (Fogarty et al 1984: 43). Vegetation was limited though noted as Sedgeland-herbland being isolated to dryer areas (Fogarty et al 1984: 43).

For further details on the environmental context of the Study Area, refer to the ExOz (2011) Ecological Assessment.

4. PAST LAND USE HISTORY AND DISTURBANCE

The Study Area is located on the periphery of the Nightcliff urban precinct. Recent vegetation clearing can increase the chance of identifying previous ground disturbance from cultural activities (e.g. impressions left by ground burials), and archaeological sites and objects. The site was highly disturbed at the time of the investigation. The most recent disturbance had been caused by the recent clearing of the remnant monsoon forest that occurred on the eastern portion of the Study Area. The clearing of tree stumps had significantly disturbed the ground surface.



Figure 5: Laterite layer revealed by drains

Two deep drains had been excavated through the Study Area by Darwin Council as part of the construction of Dick Ward Drive, and as part of general drainage. One drain was located in the south – eastern side of the Study Area near its boundary with Dick Ward Drive; the other runs along the northern boundary of the Study Area (Figure 7). Both these drains encountered a laterite layer (locally referred to as coffee rock) within one metre of the surface (Figure 5). Exposure of this layer in the drains indicates its presence within at least the two thirds the Study Area. A small shallow drain was also identified near to the north of the formed road (Figure 7).

During construction of Dick Ward Drive, a twenty metre area parallel with the eastern boundary was cleared for gravel extraction. A formed gravel road has been constructed running from the intersection of Dick Ward Way and Totem Road through the southern part of the site. The entrance was later moved 60 m to the north and the access road adjusted accordingly. Several other tracks were formed during the process of tree clearing.

Prior to tree clearing, a large amount of domestic and building rubbish had been spread throughout the site. Much of this has been recently mounded on the southern side of the site (Figure 6).



Figure 6: Soil pile with domestic and construction rubbish

During wet periods vehicles had disturbed and churned a low lying area on the southern boundary to the west of, but outside, the Registered Sacred Site (Figure 6).

This is a highly disturbed site. Significant areas have been disturbed up to one metre in depth. Other areas have had the topsoil churned and turned over. Despite this disturbance, no evidence of bones, graves or other cultural material being recorded or reported. Inspection of the disturbed areas during this assessment did not reveal, with the exception of a stone flake, any Aboriginal or Macassan cultural material or human remains.

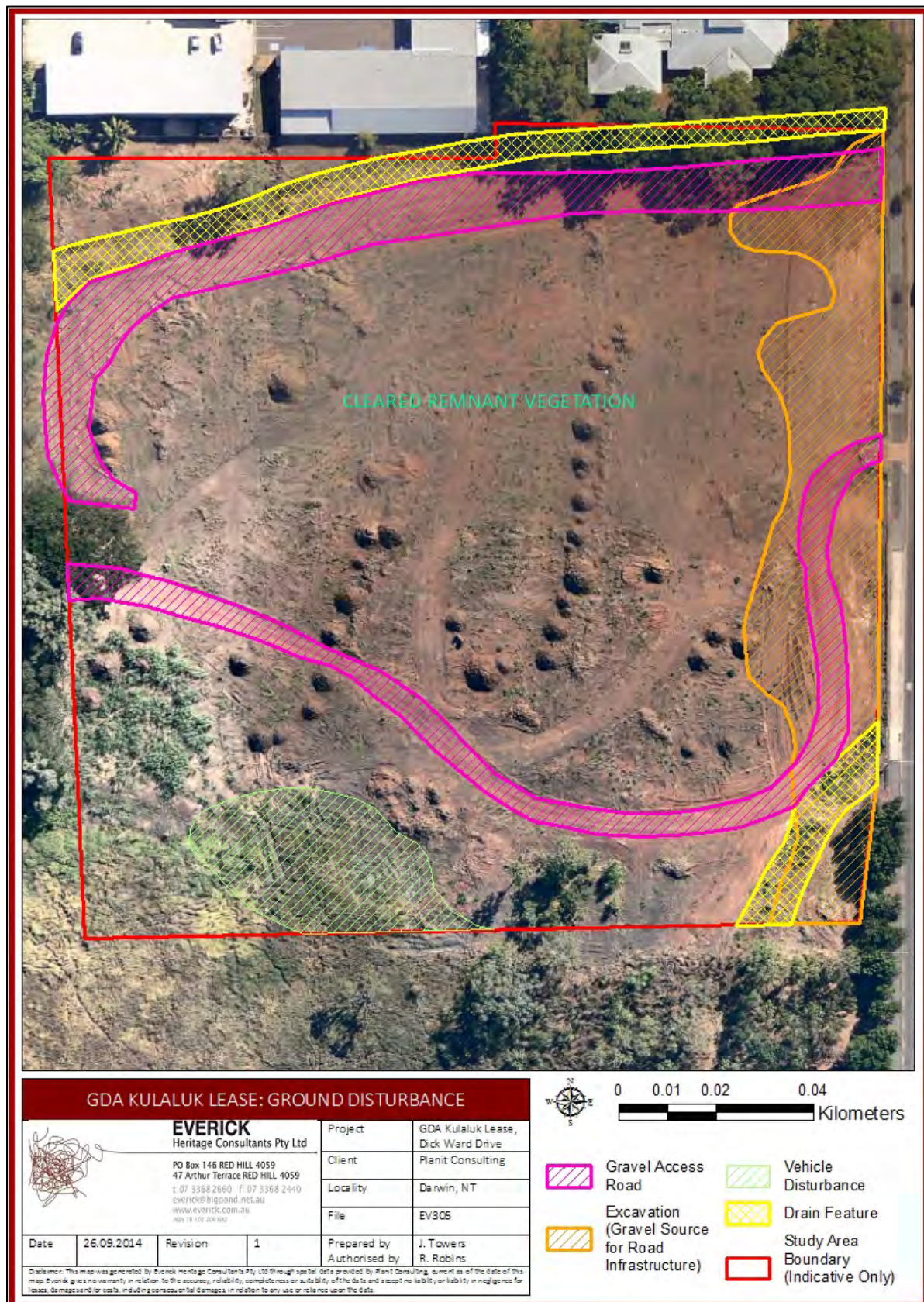


Figure 7: GDA Kulaluk Lease – Ground Disturbance



5. ARCHAEOLOGICAL EXCAVATIONS

5.1 Excavation Rationale & Nearby Research

The AAPA have advised of the potential location of an Aboriginal or Macassan Place as defined in section 6(2) of the *Heritage Act* (2014) within the immediate vicinity of the Study Area (Appendix A). This registered place is described as having a 'strong likelihood' to contain traditional burials of up to 200 individuals, believed to span from prehistoric to post contact period (AAPA 2014).

Figure 8 illustrates the reported location of the Burial ground as originally published in a consultancy report by Henderson (1983) for the then Aboriginal Sacred Sites Protection Authority. Figure 9 was developed from Henderson's (1983) image (Figure 8) in a consultancy report relating to the Kulaluk Lease Area. Figure 9 illustrates that the assumed location of the burial place does not fall within the Study Area Boundary. This should not be considered proof that burials will not be located within the Study Area. It instead provides the basis for the exploratory archaeological testing which has been designed to:

- a) establish if the Study Area contains any subsurface human remains, being human internments relating to the traditional burial ground delineated with the Aboriginal Areas Protection Authority (AAPA); and
- b) what, if any, impact the proposed Project will have on Aboriginal or Macassan Objects or Places.

The discrepancy in these plans and subsequent information provided to AAPA by local Knowledge Holders demonstrates the difficulty in conclusively determining boundaries based on oral evidence. It is the Consultants experience that not infrequently boundaries change through the generations and over time. It is therefore advisable in such circumstances that caution is exhibited.

The archaeological testing program was therefore implemented as a cautionary approach to heritage management. The results of the excavations are to be used as the basis for identifying appropriate further management strategies for the Project. Further mitigating strategies may include induction of contractors on how to identify cultural material and the implementation of a finds procedure.

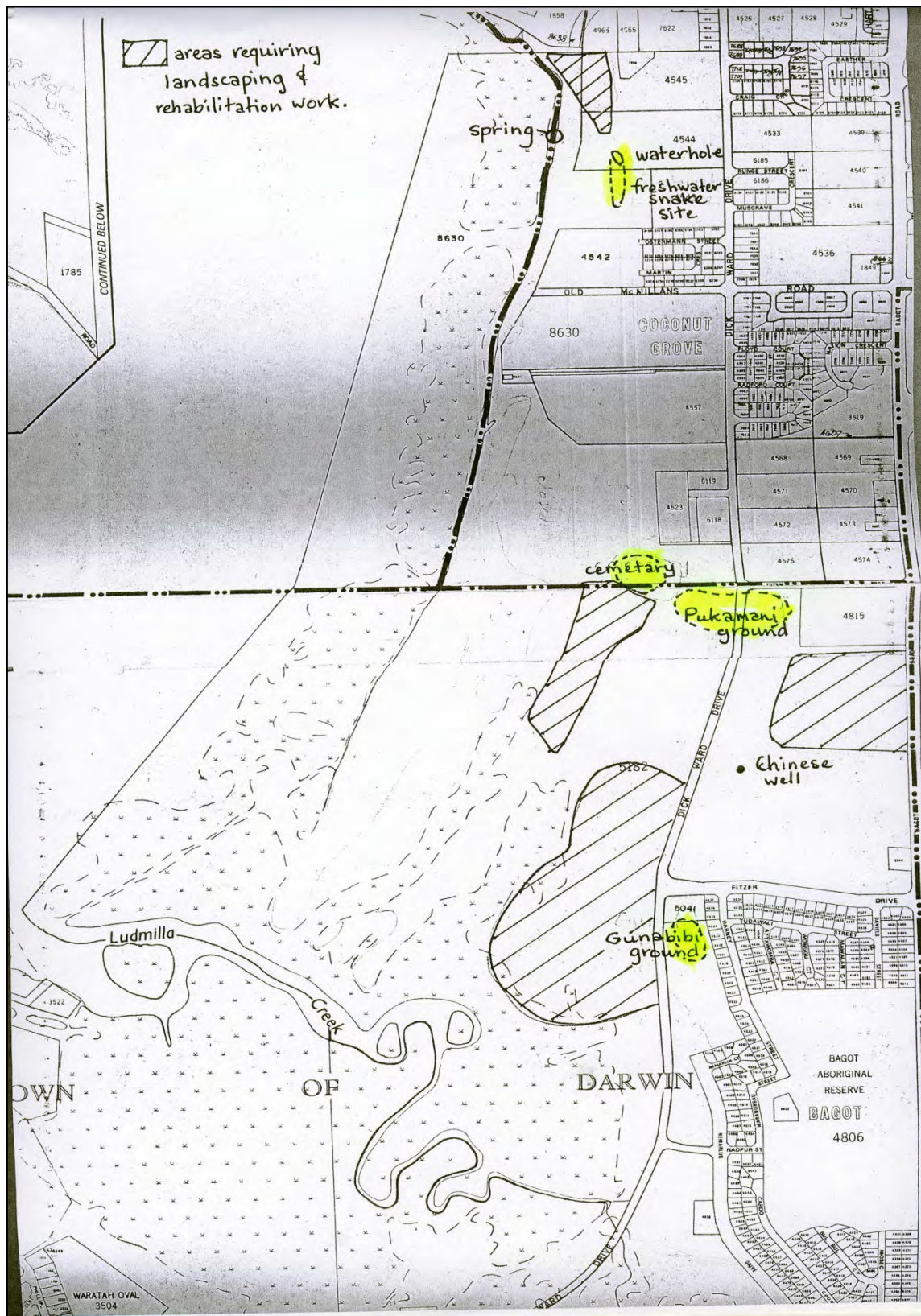
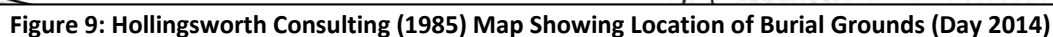


Figure 8: Henderson's (1983) Map Showing Location of Burial Grounds (Day 2014)





An archaeological testing program would generally be informed by nearby archaeological studies. However, there have been no nearby archaeological studies of relevance to this project with which to provide a comparative review.

Given the geological and landscape setting of the Study Area, there is low potential for *in situ* sites of high archaeological significance to be located within this area due to the extensively disturbed context of the surface through clearing activities. The opportunity to obtain materials for dating was expected to be limited and would only be undertaken in the event of encountering archaeologically significant *in situ* archaeological materials within undisturbed contexts. Test excavations were undertaken to confirm these assumptions and develop appropriate mitigation strategies where required. The most efficient method to test the assumptions above was to excavate a series of trenches in order to sample the spread of cultural material that might have been used by Aboriginal people in the past.

5.2 Excavation Questions

Having conducted a preliminary review of the existing Aboriginal or Macassan Place that reportedly exists within close proximity to the Study Area, in consultation with the Northern Territory Heritage Branch and the AAPA the following primary and secondary excavation questions have been developed to guide the proposed test excavations.

5.2.1 Primary Research Questions

Question 1: Are there human burials located within the Study Area?

The primary purpose of conducting test excavations referred to in this document is to determine if there are burials associated with the reported AAPA registered Aboriginal Place located within the Study Area. It must be noted that should burials or other Aboriginal cultural heritage be located during test excavations a cessation of works will immediately come into effect in the immediate area in which the find is located. Further consultation will then be conducted with the Heritage Branch and the Aboriginal Community to determine appropriate future uses for the Study Area.

Question 2: Where are the human burials/other Aboriginal cultural heritage located within the Disturbance Area?



Establishing preliminary boundaries of where any subsurface Aboriginal burials exist within current known disturbance area will assist in guiding the design of any services to avoid unnecessary harm to such remains.

5.2.2 *Secondary Research Questions*

Question 1: What is the density and variability of artefacts across the Disturbance Area?

The density of artefactual material can assist in interpreting how the land was used. Also, if the area has a high density of artefactual material, recommendations will need to be formulated to ensure that as many artefacts as possible are recovered from the disturbance area prior to further construction activity.

Question 2: What are the types and quantities of artefactual materials located within the Disturbance Area?

The type of artefactual material can tell us much about the past use of the land by Aboriginal people. For example, where the artefactual material originated from can tell us about movement and trade. The technology used to make artefacts can give us an indication about the age and the distribution of knowledge amongst the region's Aboriginal groups. The type of shells tells us about the local diet.

Question 3: What are the taphonomic / depositional factors?

Taphonomy is the assessment of what happened to an object between when it came to be buried and when it was found. For example, was it affected by erosion, weathering or the activities of animals on the site? This is important, because it adds to the context of the find, helping to assess its significance and its value in adding to the story of past occupation and land use/disturbance history.

Question 5: What is the significance of the material we have identified through our excavations?

Before we can come to any conclusions as to how a site should be managed, we need to first ascertain the significance of the archaeological material. When developing a picture of the significance of artefacts, we generally look to three types. The first is its archaeological (scientific) significance. We ascertain this by looking at the information we have collected. The second is cultural significance. We hope to ascertain this through consultation with the Aboriginal community.



The information we receive in this regard will be included in our reports, providing the foundation for future management recommendations. The third type is educational significance. This is the value these sites and artefacts have in providing an educational tool for both the Aboriginal community and the broader community as a whole.

5.3 Project Personnel

Archaeological excavations were conducted by Dr Richard Robins and Tim Robins.

5.4 Methods

As per the Excavation Strategy submitted to the Heritage Branch (Robins et al 2014), a series of eleven (11) trenches and two (2) additional pits were excavated by an 8 tonne excavator with a 1.2 m batter bucket. Trenches measured between 10-20 m in length and 1.2 m in width, while the pits measured 2 m in length by 1.2 m in width.

Trenches were excavated in 10 cm intervals (called 'spits' or 'excavation units (XUs)) in order to understand the stratigraphy of the Study Area. In practice this precision was difficult to maintain due to the hardness of the soils. Excavation of trenches ceased when sediments proved too hard to excavate, either when a laterite layer or massive clays were encountered. A photographic record was made of each trench and of an indicative profile within each trench. Notes were made of each profile, and a sediment sample was taken from selected profiles for reference purposes. Each trench was mapped with use of a DGPS to sub-metre accuracy.

The selection of the trench site was predicated on the plan Everick submitted to AAPA (Robins 2014). The structure of the investigation was predicated on the supposition that if burials were located, they would most likely be located in the south-western quadrant of the Study Area. The strategy was tempered by the results of excavations as they proceeded. Some latitude was allowed for in the plan depending upon on-site conditions. As excavations proceeded it became clear that burials were unlikely to be found in the shallow, compact laterite soils that covered most of the eastern and northern parts of the Study Area. In parts of the southwestern portion of the block some shallow sands were found and the excavation plan was modified slightly to accommodate more intense investigation of these deposits.



Figure 10: GDA Kulaluk Lease - Excavation Trench Locations & AAPA Data



6. Excavation Results

6.1 Surface Inspection

Prior to commencing excavation, the ground surface of the Study Area was inspected to determine whether any cultural material was located on the surface. One silcrete retouched flake was noted and recorded in the vicinity of Trench 10. This artefact was left where it had been located. As an isolated artefact in a highly disturbed environment, the flake has been assessed as being of low archaeological significance. It is not considered indicative of further, more significant, archaeological deposits. Rather, it is more likely part of a 'background scatter' of artefacts ubiquitous to the broader landscape.

6.2 Trench Descriptions

Trench 1

Trench 1 was 20 m long and laid out in an east-west direction down a gentle western slope (Figure 11). It was the eastern-most trench placed to identify potential burials. The trench depth varied from approximately 15 cm to 60 cm due to the presence of impermeable laterite. Soils graduated from an organic rich A Horizon to gravelly yellow clays. No cultural material or feature was identified in the trench. No cultural material or human remains was found in the deposit.



Figure 11: Trench 1 looking east



Figure 12: Profile of eastern end of Trench 1



Trench 2

Trench 2 was 20 m long. It was laid in line with Trench 1, 33 m to the west (Figure 10 & Figure 13). This trench was located on a slight change of slope and was on the margin of the former remnant Monsoon Rainforest. Trench 2 attained a maximum depth of 1 m before the compact clay prevented any further excavation. The surface sediments were organic rich loams, graduating to compact yellow clays at 20-30 cm, then to mottled red clays to a depth of a metre (Figure 14). No cultural material or feature was identified in the trench. No cultural material or human remains were found in the deposit.



Figure 13: Trench 2 looking east.



Figure 14: Eastern end of Trench 2



Trench 3

Trench 3 was 20 m long. It was located in line with Trenches 1 and 2, 20 m to the west of the western end of Trench 2 (Figure 10). This trench was located on slightly lower, more level land than the previous two trenches (Figure 15). The upper surface comprised a 40 cm shelly sand lying uncomfortably over a thin (3-5 cm) layer of black clay, that graduated to a mottled red clay (Figure 16). Excavation ceased due to the hardness of the clay. No cultural material or feature was identified in the trench. No cultural material or human remains was found in the deposit.



Figure 15: Trench 3 looking east



Figure 16: Section of Trench 3 showing a shelly sand overlying black and mottled red clays



Trench 4

Trench 4 was a north- south facing trench that extended at right angles from Trench 3 (Figure 10). It ran parallel to, and approximately 13 m from the western boundary (Figure 17). At the southern end it had a profile similar to that of Trench 3. However, in places the red mottled clay varied in thickness, in some places to within 20 cm of the surface. The depth of sand diminished towards the northern end of the trench. The black clay was not identified in the northern half of the trench. No cultural materials or features were identified in the trench. No cultural material or human remains were found in the deposit.



Figure 17: Trench 4 looking north showing shelly sands overlying black and mottled red clays.



Trench 5

Trench 5 was a north-south oriented trench located 13 m in from the western boundary (Figure 10), and in line with Trench 4. It was excavated to a depth of 70 cm (Figure 18). A sandy grey loam extended from the surface to a depth of about 25 cm. Beneath this was a compact mottled yellow graduating to red clay. No cultural materials or features were identified in the trench. No cultural material or human remains were found in the deposit.



Figure 18: Trench 5 looking north showing shallow sands overlying yellow clays



Trench 6

Trench 6 was a 20 m long, north-south oriented trench located in line with Trenches 4 and 5 (Figure 10). It was located 18 m to the south of the junction of Trenches 3 and 4. It terminated at the southern boundary. It was excavated to a depth of 60 cm. The upper 10 cm was a grey loam, beneath which was compact, mottled red clay (Figure 19 & Figure 20). No cultural materials or features were identified in the trench. No cultural material or human remains were found in the deposit.



Figure 19: Trench 6 looking south



Figure 20: Trench 6 Profile



Trench 7

Trench 7 was a 12 m long trench that ran along the southern boundary of the Study Area, at right angles to Trench 6 (Figure 10). It was excavated to a depth of 70 cm. The upper 10 cm was a grey loam, beneath which was compact, mottled red clay (Figure 21 & Figure 22). No cultural materials or features were identified in the trench. No cultural material or human remains were found in the deposit



Figure 21: Trench 7 looking west



Figure 22: Profile of Trench 7



Trench 8

Trench 8 ran 20 m in a north-south direction, commencing 3 m north of the southern boundary, 20 m east of Trench 6 (Figure 10). It was excavated to a depth of 70 cm. The upper 10 cm was a grey loam, beneath which was compact, mottled red clay. No cultural materials or features were identified in the trench. No cultural material or human remains were found in the deposit.



Figure 23: Trench 8 looking south



Figure 24: Profile of Trench 8



Trench 9

Trench 9 was a 15 m long extension of Trench 8 (Figure 10). It joined the eastern end of Trench 3 and was excavated to a maximum depth of 1 m. This trench reflected the transition from the loam over mottled red clays to shelly sands overlying black clays. However, the hardness of the clays was more variable than in Trenches 6-8. In places the clays were only 10 cm below the surface, although in other places it was up to 50 cm deep (Figure 25). No cultural materials or features were identified in the trench. No cultural material or human remains were found in the deposit.



Figure 25: Trench 9 looking north



Trench 10

Trench 10 was a 20 m east-west oriented trench that ran parallel to Trench 3 (Figure 10). In this instance the excavation was restricted to the shelly sands, as it was felt that these had the highest likelihood of containing cultural material. The trench was excavated to a depth of 50 cm. No cultural materials or features were identified in the trench. No cultural material or human remains were found in the deposit.



Figure 26: Trench 10 looking east



Trench 11

Trench 11 was a 20 m long east-west oriented trench, located roughly in the centre of the block, approximately 70 m south of the northern boundary and 70 m west of the eastern boundary (Figure 10). It was excavated to a maximum depth of 40 cm although due to the proximity of the laterite to the surface, in places the trench could only be excavated to a depth of 15 cm. The soils were gravelly loam on the surface graduating to hard gravelly red clays. No cultural materials or features were identified in the trench. No cultural material or human remains were found in the deposit.



Figure 27: Trench 11 illustrating the shallow soil above the uneven laterite bedrock



Figure 28: Profile of Trench 11 showing hard lateritic soils close to the surface



Pit 1

Pit 1 was located 22 m west of Trench 4, and 92 m north of the southern boundary on a gentle west facing slope (Figure 10). The pit was 2.0 x 1.2 m and approximately 15 cm deep. It was excavated to determine if the hard lateritic clays encountered in Trench 11 extended into the area between Trench 11 and Trench 4. The Pit exposed hard lateritic clays to a depth of 15 cm, before excavation had to cease. No cultural material was found during excavation, and there was no evidence of disturbance of the soils by prior excavation.



Figure 29: Pit 1



Figure 30: Profile of Pit 1



Pit 2

Pit 2 was located 40 metres east of the western boundary, and 80 m north of the southern boundary on a gentle south-west facing slope (Figure 10). The pit was 2.0 m x 1.2 m and approximately 50 cm deep. It was excavated to determine if the hard lateritic soils encountered in Trench 11 extended into the area between Trench 11 and Trench 3. The Pit exposed hard lateritic clays to a depth of 50 cm, before excavation had to cease. No cultural material was found during excavation, and there was no evidence of disturbance of the soils by prior excavation.



Figure 31: Pit 2 excavation



Figure 32: Profile of Pit 2



7. SUMMARY & DISCUSSION

The AAPA had identified an area within the Study Area that has been identified as an area that could contain up to 200 human burials (Appendix A). The identification of the area containing human remains is uncertain and at least two different areas, both outside the Study Area (Figure 8 & Figure 9) have been identified as containing the burials. However, the AAPA has, on the advice of some traditional owner groups, extended to the potential burial area into Lot 5182 and Lot 8630, in order to ensure that the possibility that burials exist in this area is appropriately considered, prior to any development activity taking place. There are no records of actual burials or human remains being found in the Study Area.

This investigation was undertaken to determine the possibility that the burial area extended into the Study Area. In view of the vagueness of the information relating to the location of the burials, it was decided to adopt robust investigative techniques to sample the soils of the Study Area, concentrating on the area identified by AAPA as the area most likely to contain remains (Figure 10). The aim of the investigation was to examine the maximum amount of subsurface area possible to:

1. Identify human remains.
2. Assess the likelihood of finding human remains by identifying and characterising places where human remains might occur.
3. Identify other cultural material relating to Aboriginal or Macassan occupation.

To do this, this investigation:

1. Undertook a surface inspection to identify if any traces of human remains or cultural material could be found on the surface of the Study Area. This evidence could include not only human remains themselves, but also grave mounds and depressions and soil stains, burial goods and burial paraphernalia. None were found. One chert flake was recorded, and left where it was found.
2. Assessed disturbance to the land and the likelihood that traces of burials and cultural material may have been destroyed or uncovered. This assessment identified a range of disturbance carried out over the last 30 odd years both inside and outside the AAPA identified area. This disturbance included the construction of roads and drains that impacted the northern, south-eastern, and southern parts on the Study Area. Some gravel quarrying has been undertaken in the eastern margin. The land has been extensively cleared of trees. Other parts of the land have



been used to dump domestic and building rubbish, and which has later been pushed into a pile. Other parts of the land have been impacted by vehicles during the wet, and extensive ground disturbance has been caused by these activities. No burials or human remains have been identified as a result of these activities.

3. Undertook the excavation of 11 trenches and two pits to identify burials or human remains and other cultural material and to assess whether suitable conditions for burials to occur and to be preserved. These trenches were concentrated within the area identified by the AAPA (Figure 10 and Appendix A). On the basis of the results the Study Area can be divided into four areas (Figure 33), based on soil characteristics and disturbance. They are:

- Area 1: This area comprised the bulk of the Study Area and included the Northern, Eastern and parts of the western and southern boundaries. This was land with a gentle westerly slope, and much of it was recently under remnant Tropical Monsoon rainforest. Soils were shallow, varying in depth from over a metre to 15 cm. They were generally characterised by a thin organic rich surface sediment, beneath which was a compact yellow graduating to a red mottled gravelly clay on a hard laterite surface (Trenches 1, 2, 5 and 11 and Pits 1 and 2). The hardness and shallow nature of these soils make it unlikely that burials would or could be undertaken in these conditions. No evidence for human remains, burials, or the evidence of burials, such as impressions or soil staining, was identified.
- Area 2: This area is on the southern side of the Study Area, immediately to the west of the area identified as a sacred site. This land is in a minor east west trending drainage depression. Part of the land has been used to push collected rubbish into a pile. The remainder of the land has been heavily disturbed by heavy vehicles during the wet, and the clay soil is extensively churned up. Inspection of the area did not reveal evidence of burials or other cultural material. No trenches were dug in this area due to its highly disturbed nature. It is considered unlikely that burials will be found in this area.
- Area 3: This area lies immediately to the west of Area 2. It is also in the relatively low lying drainage area. It has a surface covering of shelly sand similar to that found on the ridges further to the west. Excavation of four trenches (Trenches 3, 4, 9, and 10) indicate that the shelly sand was up to 50 cm thick (although mostly less), and overlay a thin layer of black clay, which overlay a hard, mottled red clay. The presence of shelly sand indicated that this area may possibly contain burials as the sand provides a soft surface to excavate. However, the sands layer is thin, and any burial would probably have to be excavated into the hard clays below. As the lowest part of the site, this is an area that would be subject to storm surge inundation, and saturation from runoff during the Wet Season, thus reducing the



survivability of any human remains. Nevertheless, because of the sand, this area was intensively excavated, with four trenches. No evidence for burials was revealed. One stone artefact, a retouched stone flake was found on the surface in this area.

- Area 4: This area lies in the south-western corner of the Study Area (Figure x). Three trenches (6, 7, and 8) were excavated in this area. The soils are different to those in Area 3. A thin loam covers hard mottled red clay, with increasing hardness and stoniness with depth. Laterite outcrops in parts of the trenches.

The results of this assessment, both through surface inspection and excavation, indicate that it is highly unlikely that human remains will be found in the Study Area. No evidence exists on the surface. Extensive surface disturbance, while it may disturb burials, may also reveal them. No human remains or evidence of burials was found on the surface. The excavation of 11 trenches and two pits, most within the area identified by AAPA as being a potential burial ground, did not reveal any burials or human remains. The trenching revealed that the soils over most of the Study Area are very hard and shallow and that laterite occurs at a shallow depth (less than a metre) over much of the site. Such ground conditions are not suitable for burials. In areas where the laterite was deeper, the soils were generally hard, compact and at times gravelly clays that were difficult to excavate. No evidence of burials was found, but mechanical excavation indicates that any excavation of these soils are difficult, and that they are unlikely to have been used for burials.

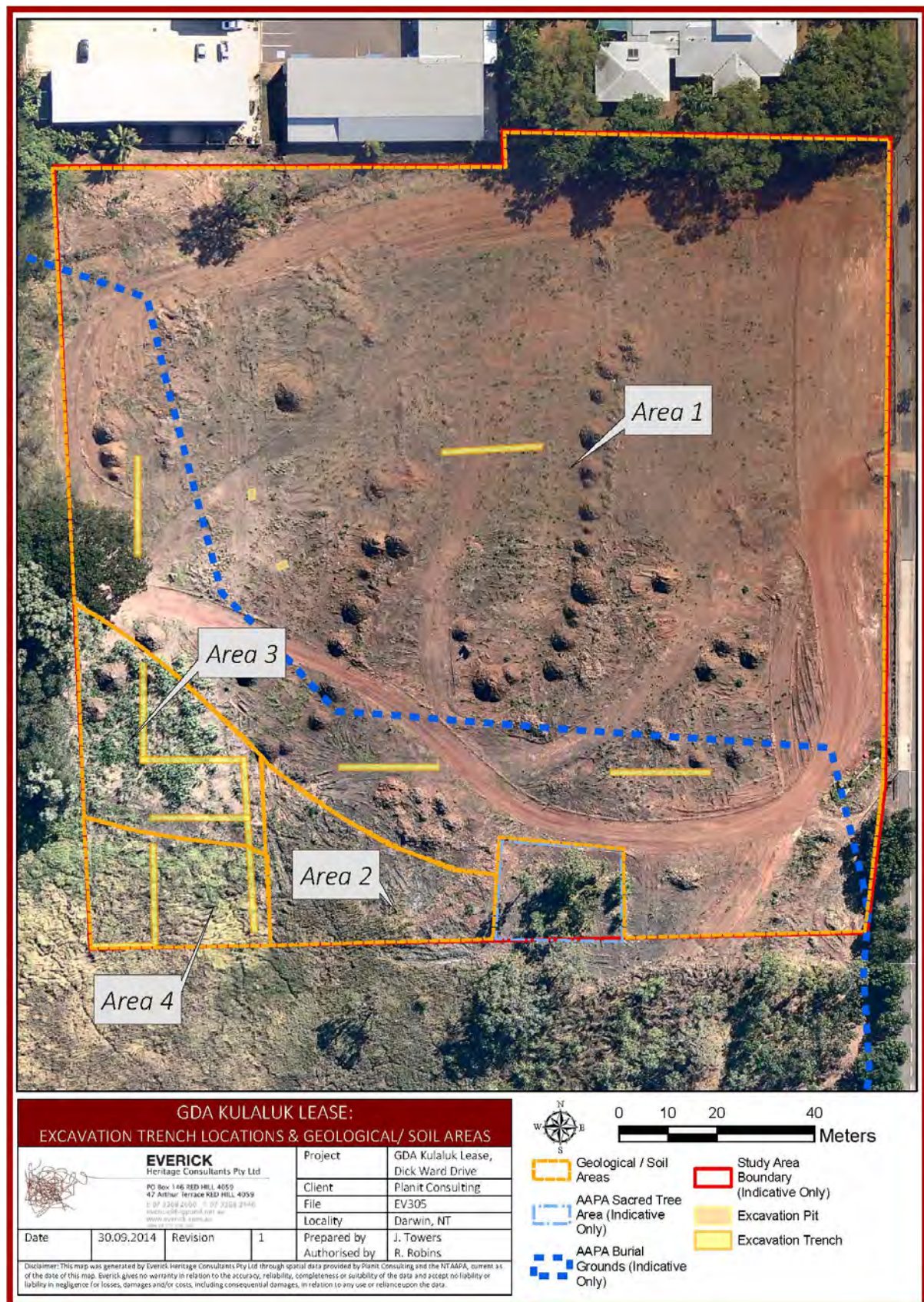


Figure 33: Excavation Trench Locations & Geological / Soil Areas



8. CONCLUSIONS AND RECOMMENDATIONS

Whilst the potential for Aboriginal burials cannot be ruled out entirely, there is sufficient evidence to demonstrate that the chance of burials being located within the Study Area is extremely low. The potential use of Ground Penetrating Radar (GPR) was considered as a future investigative strategy. However, the excavations demonstrate that compositing of subsurface soils means GPR is unlikely to be successful. In particular, the undulating, shallow bedrock, with large numbers of ironstone cobbles dispersed through the upper stratigraphy, means accurate identification of burials would be highly unlikely.

It is considered reasonable that the Project proceed without further assessment or testing, subject to the following cautionary recommendations:

1. It is recommended that any contractors or staff undertaking future subsurface ground disturbance of soils at or below the current ground level should receive a cultural heritage induction. The inductions should cover, as a minimum:
 - a. Information on how to identify Aboriginal objects;
 - b. Information on the low potential for subsurface burials to be located within parts of the Study Area.
 - c. Stop Work procedures in the event that a suspected Aboriginal object or burial is identified during construction works.
2. As a cautious approach, it is recommended that any subsurface ground disturbance of soils at or below the current ground level and within the area identified by AAPA as containing potential burials (Appendix A) should be monitored by Traditional Owner representatives.
3. If any human remains or Aboriginal objects are uncovered during the course of construction, work is to cease immediately, the area fenced off, and the Heritage Branch advised immediately.
4. It is recommended that, prior to filling the site, an Application to Carry out Work on an Aboriginal place or Object is lodged with the Heritage Branch, covering the Aboriginal Object identified in Section 6.1 of this report. It is of note that this isolated object is in a disturbed environment and is considered of low archaeological significance (see Section 6.1).



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APPENDIX A: ABORIGINAL AREAS PROTECTION AUTHORITY CERTIFICATE 5

