8. HILL SLOPES EXCAVATION

8.1 Site Description

The Hill Slopes are approximately 5.9 hectares of hill face. The Hill Slopes inspected include the slopes on the main ridge crest, and the toe slope of the ridge which is southwest of the main ridge crest. These Hill Slopes have been extensively cleared for grazing and banana farming in the past, and have been identified as the areas in which an extensive cut and residential development will be undertaken. The Hill Slopes are covered in Eucalyptus forest and dense vegetation, and are surrounded below by the Lower Melaleuca Margins. The soils are predominantly podsolics that differ between environments. Toe slope soils have a silty clay loam 'A' horizon between 10-25 cm and a distinctive orange-clay 'B' horizon, while Hill Slope West soils have a sandy loam 'A' horizon between 0-10 cm and a distinctive orange-clay 'B' horizon.

Figure 25: Hill Slope view to the southwest

8.2 Excavation Approach

The pre-clearance vegetation at European contact would have been a wet-sclerophyll with no grass on a rocky ground cover. As the soil type was relatively uniform within each locality, slope and location became the prime variable within which to identify variation in the distribution of archaeological evidence. Evidence of change through time could not be obtained due to the soft shallow nature of the topsoils, and the impact of tree clearing resulting in significant soil disturbance.

The Hill Slope East was not excavated, due to results from Hill Slope West which indicated an almost complete lack of soil above the culturally sterile clay shale horizon. Additionally, a safe and suitable location for this test pit was difficult to find, due to a large cut that was made into the east side of the Hill Slope prior to excavations.

The remaining Test Excavation Strategy test pit locations were adhered to as much as possible, and were adapted when the situation was rendered too difficult. Due to dense vegetation and limited clearing methods, test pits were set up in locations that had the space required for excavating, rather than strictly in the locations previously laid out.

The questions asked of the archaeological evidence related more to spatial distribution of the archaeological evidence. The questions asked were basic ones designed to identify patterns in the archaeological record.
They were:

1. Is there a significant difference in the amount and nature of artefact distribution that is found at the Upper Ridge Crest in comparison to the Hill Slopes?

   Traditional Owners believe that the Upper Ridge Crest was culturally significant to their ancestors. If this was the case then there may be a correlation between the amount of cultural material found at the Upper Ridge Crest and the elevation it was found at. Under this model the peak of the Upper Ridge Crest would be the most likely to produce cultural material in comparison to lower elevations i.e. the Hill Slopes and Lower Melaleuca Margins.
2. Is there a pattern of distribution of artefacts across the Hill Slope that could be explained by erosion, particularly mass movement?

   The angle of the Hill Slope may have been too steep to collect artefacts, making it an unlikely resting place for Aboriginal objects. Additionally, the podsol soils of the Hill Slope (in which most of the artefacts

are found) are thin, highly disturbed and rest on a clay base. Because of this they are susceptible to erosion, particularly mass movement.

3. Is there a difference in the assemblages from those found at the Upper Ridge Crest and the Lower Melaleuca Margins?

Three localities were identified:

- Hill Slope West (3 test pits)
- Hill Slope East (1 test pit)
- Toe Slope (5 test pits)

Due to its challenging location and likely lack of material culture, Hill Slope East was not excavated.

Excavations in this zone were carried out on 18 and 19 April and 7 May 2013. An excavation strategy based on 50 x 50cm test pits was adopted, as per the Code of Practice. Test pits were placed 5 m apart where possible, none within less than 3 m of each other. All the test pits were located on podzolic soils characteristic of the ridges and slopes in that region. Test pits were placed with two aims that related to the initial questions. The first was to sample three different topographic areas – the toe slope and two sides of the Hill Slope. The second was to test the degree of intra-unit variability and whether there was a relationship between elevation of the slope and artefact density.

Each excavation unit (XU) was approximately 5 cm deep. The deposits were excavated through the upper loam to an average depth of 14 cm, and terminated in the upper units of the compact clays. The deposits were sieved through 5mm mesh sieves. All finds from each XU were to be recorded and placed in a labeled bag for further analysis. These bags were to be put into the test pit's designated storage cylinder for proper reburial.

8.3 Excavation Results

8.3.1 Surface Collection

No artefacts were found from surface collection.

8.3.2 Test Pits

Eight test pits were excavated across the Hill Slope and zero artefacts were recovered from them. A plan of the test pit locations is provided in Figure 26. Table 4 shows test pit dimensions and artefact distribution.

Table 4: Hill Slope test pit dimensions

Locality	*Test Pit*	*Test Pit depth (cm)*
Toe Slope	*1*	*0-19*
Toe Slope	*2*	*0-24*
Toe Slope	*3*	*0-19*
Toe Slope	*4*	*0-17*
Toe Slope	*5*	*0-18*
Hill Slope West	*1*	*0-5*
Hill Slope West	*2*	*0-9*
Hill Slope West	*3*	*0*

Figure 26: Test pit locations across the Hill Slope

Toe Slope

Test locations were placed on the toe slope of the main ridge, near the southern property boundary in Survey Unit E (Figure 2). The five test pits were dug facing the hill slope at a 120 degree angle from north. Test pits were excavated at a distance of at least 3 meters from each other, 5 meters where possible. The vegetation in this area was characterized as a dense eucalypt woodland forest with heavy canopy coverage (Figure 27). Ground cover was dense and was compiled with bracker fern, blechnum indicum, grass, and leaf litter. The soil in this area was generally clumpy and wet.

Figure 27: Toe Slope

Test pits 1-5 (TP1, TP2, TP3, TP4, TP5) These test pits were laid out in a square formation with on additional test pit to the west. Two potential pieces of ochre were recovered from these test pits at depths between 0-24 cm, however these later proved only to be natural clay. Materials found within these test pits included leaf litter, roots, quartz, charcoal, and clay.

Figure 28: Toe Slope TP 1 orange-clay 'B' Horizon

Hill Slope West

Test locations were placed on the west hill slope of the ridge. Three test pits were excavated at a 190 degree angle that followed the angle and direction of the slope. Test pits were at least 5 m apart. The depths of these test pits ranged between 0-9 cm. This environment was covered in eucalypt forest and acacia regrowth with moderate canopy coverage (Figure 29). The moderate to light ground cover included grasses, ferns, and leaf litter. The soil in this area was light and significantly drier than at the Toe Slope.

Figure 29: Hill Slope West

Test pits 1 and 2 (TP 1, TP 2) These test pits were located at the top and mid-slope. Test pits were characterized by a very shallow layer of soil, immediately followed by dense yellow-clay and clay shale. No artefacts were recovered. Materials found within these test pits included leaf litter, roots, and gravel, and clay.

Test pit 3 (TP 3) This test pit was located closest to the bottom of the slope, before the land becomes highly disturbed by modern day landscaping work. This test pit had only a light dusting of soil over a surface of hard clay shale. This test location was recorded, but not excavated due to lack of soil. No artefacts were recovered. Materials found within this test pit location included leaf litter.

Figure 30: HSW TP 2 clay shale layer

Figure 31: HSW TP 3 solid surface layer

8.3.3 Summary of Test Pit Soil Profiles

Soils were yellow and red podsols predominantly comprising brownish - black silty clay loam topsoil overlying an orange hardsetting clay with varying amounts of parent material. The podzolic soils of the Hill Slopes had a moderately deep silty clay loam 'A' horizon followed by a dense reddish-orange clay 'B' horizon at the Toe Slope. In contrast, the steeper Hill Slope West soils had a shallow sandy loam 'A' horizon and a hard orange clay and clay shale 'B' horizon. Some test pits had evidence of charcoal from burnt tree roots. Sediment samples were collected from all of the test pits with the exception of HSW TP 3, which was not excavated. A summary of the soil profile information is provided in Table 5.

Figure 32: TS TP 5 south wall

Figure 33: HSW TP 2 northeast wall

Table 5: Test Pit Dimensions and Soil Profile Summary

Locality	*Test Pit*	*Test Pit depth (cm)*	*pH*	*Soil Profile Summary*
Toe Slope	*1*	*0-19*		Very dark greyish brown (10YR 3/2) silty clay loam topsoil with medium organic content (roots and rootlets) and some quartz gravel overlying reddish hardsetting clay.
Toe Slope	*2*	*0-24*	*5*	Very dark greyish brown (10YR 3/2) silty clay loam topsoil with medium organic content (roots and rootlets) and some quartz gravel overlying reddish hardsetting clay.
Toe Slope	*3*	*0-19*		Very dark greyish brown (10YR 3/2) silty clay loam topsoil with medium organic content (roots and rootlets) and some quartz gravel and charcoal overlying reddish hardsetting clay.
Toe Slope	*4*	*0-17*		Very dark greyish brown (10YR 3/2) silty clay loam topsoil with medium organic content (roots and rootlets) and some quartz gravel overlying reddish hardsetting clay.
Toe Slope	*5*	*0-18*		Very dark greyish brown (10YR 3/2) silty clay loam topsoil with medium organic content (roots and rootlets) and some quartz gravel overlying yellowish hardsetting clay.
Hill Slope West	*1*	*0-5*		Very dark brown (10YR 3/3) sandy topsoil high in organic content with leaf litter overlying yellowish brown hard clay shale.
Hill Slope West	*2*	*0-9*	*4.5*	Brown (7.5YR 4/3 - 4/4) sandy topsoil high in organic content with leaf litter dull yellow orange hard clay shale.
Hill Slope West	*3*	*0*		Brown (7.5YR 4/3) sandy topsoil covering yellow orange hard clay shale.

8.3.4 Discussion

Test pits across the Hill Slope sampled two different topographic areas (the west slope and toe slope) to determine whether there was a relationship between landform and artefact density, and test the degree of intra-sample unit variability. All of the test pits were excavated to relatively shallow depths to a maximum depth of 24 cm, owing to the clay 'B' horizon.

There was a significant variation between soil profiles from the Toe Slope and from the Hill Slope West. Test pits on the Toe Slope had a much deeper 'A' horizon, and a silty, dark brown soil, followed by a wet clay 'B' horizon. In contrast, test pits on the Hill Slope West had a very shallow 'A' horizon that consisted of sandy soils, immediately followed by a dry clay, clay shale 'B' horizon. This is most likely a reflection of erosional forces in relation to the differences in slope at these two different localities. The Toe Slope had a more gradual slope, while the Hill Slope West had a significantly steeper slope that would have contributed to a higher rate of soil erosion. Given the nature of these soils, a steep slope is unlikely to retain a significant amount of soil above the clay 'B' horizon, hence the shallowness of the Hill Slope West test pits, and the exposure of clay shale in these locations. These erosional forces, combined with other processes suggested by aerial photographs and previous archaeological reports (such as clearing and grazing), would have caused significant ground disturbance in this zone.

Because none of these test pits contained artefacts, the excavations found no correlation between landform, test pit location, and artefact density. Furthermore, the fact that no artefacts were found demonstrates a lack of occupation and a lack of archaeological significance in this zone.

9. LOWER MELALEUCA MARGINS EXCAVATION

9.1 Site Description

The Lower Melaleuca Margins is approximately 4.8 of low-lying swampland. Parts have been extensively cleared for grazing in the past, and have been identified as the area in which residential development will be undertaken. The area is covered by Melaleuca shrubs and plants. It is located in Survey Unit A and C, and runs along the edge of Survey Unit C and D, immediately adjacent to the EPA wetlands. The soils are predominantly a silty clay loam 'A' horizon until hard clay soils or seepage from the swamp was reached at a depth of 10-30 cm.

Figure 34: Melaleuca Swamp with boulders

9.2 Excavation Approach

The pre-clearance vegetation would have been a combination of wet sclerophyll and melaleuca swamp forest at European contact. As the soil type was relatively uniform throughout, location became the prime variable within which to identify variation in the distribution of archaeological evidence. Evidence of change through time could not be obtained due to the significant soil disturbance that resulted from a large cutting made into the hill slope immediately behind the melaleuca swamp margins. This has most likely caused a mixing in the Billinugdel hill slope and Cobaki Swamp soil profiles.

Due to orders from the Tweed Shire Council, test pits in Survey Unit A were unable to be excavated, as there is subsurface infrastructure near this area.

The remaining Test Excavation Strategy test pit locations were adhered to as much as possible, and were adapted when the situation was rendered too difficult. Due to dense vegetation and limited clearing methods, only four test pits were able to be excavated, and test pits were set up in locations that had the space required rather than strictly in the locations laid out.

The questions asked of the archaeological evidence therefore related more to spatial distribution of the archaeological evidence. The questions asked were basic ones designed to identify patterns in the archaeological record.

They were:

1. Is there a significant difference in the amount and nature of artefact distribution that is found at the Upper Ridge Crest in comparison to the Lower Melaleuca Margins?

   Traditional Owners believe that the top of the ridge at River Heights was culturally significant to their ancestors. If this were the case then there may be a correlation between the amount of cultural material found and where it was found, the Upper Ridge Crest being likely to produce the most cultural material and the Lower Melaleuca Margins being the least likely.
2. Is there a pattern of distribution of artefacts across the Lower Melaleuca Margins that could be explained by the fluctuation of water levels?

   The peaty soils of the Lower Melaleuca Margins are constantly disturbed due to the ebb and flow of water levels. Because of this they are frequently susceptible to movement.
3. Is there a difference in the assemblages from those found at the Upper Ridge Crest and the Hill Slope?

Three localities were identified:

- Lower Melaleuca Margins 1 - Survey Unit C east (4 test pits)
- Lower Melaleuca Margins 2 - Survey Unit A west (1 test pit)
- Lower Melaleuca Margins 3 - Survey Unit A central (1 test pit)

However, of these test pits, only those in Unit C were able to be excavated.

Excavations in this zone were carried out on 7 May 2013. An excavation strategy based on 50 x 50 cm squares was initially adopted. All the test pits were located on peaty loams characteristic of the Cobaki estuarine landscape in that region. Test pits were placed to test the degree of intra-unit variability and artefact distribution.

Each excavation unit (XU) was approximately 5 - 10 cm deep. The deposits were excavated through the upper peaty loam to an average depth of 19 cm, and terminated when hard clay soils or the water table was reached. The deposits were sieved through 5mm mesh sieves. All finds from each XU were to be recorded and placed in a labeled bag for further analysis. These bags were to be put into the test pit's designated storage cylinder for proper reburial.

9.3 Excavation Results

9.3.1 Surface Collection

No artefacts were found from surface collection.

9.3.2 Test Pits

Four test pits were excavated across the Lower Melaleuca Margins and zero artefacts were recovered from them. A plan of the test pit locations is provided in Figure 35. Table 6 shows test pit dimensions.

Table 6: Lower Melaleuca Margins test pit dimensions

Locality	*Test Pit*	*Test Pit depth (cm)*
LMM 1	***1***	*0-9*
LMM 1	***2***	*0-29*
LMM 1	***3***	*0-30*
LMM 1	***4***	*0-8*

Figure 35: Test pit locations across the Lower Melaleuca Margins

Lower Melaleuca Margins 1

Test locations were placed on the edge between the Hill Slopes, at the base of the hill, and the wetlands in Survey Unit D (Figure 2). This line of test pits ran along a dirt path at an approximate angle of 68 degrees. On one side of this path is the south Hill Slope of the main ridge, where a large cut has been made into the slope in order to create a level area for the existing path. The wall from this cut is shown in Figure 36, where the orange-clay 'B' horizon in the Hill Slopes soil is exposed.

Four test pits were dug facing the hill slope at a 120 degree angle. Test pits were excavated at a distance of approximately 20 meters. The vegetation in this area was characterized as a eucalypt woodland forest with wet sclerophyll and melaleuca scrub under a heavy canopy coverage (Figure 37). Ground cover was dense and was compiled with bracker fern, blechnum indicum, grass, and leaf litter. The soil in this area was generally clumpy and wet.

Figure 36: Cut made into the Hill Slope for path

Figure 37: Lower Melaleuca Margins

Test pits 1 and 4 (TP 1, TP 4) These locations were approximately .75 – 1 m above the water levels of the adjacent swamp. Both test pits hit an orange-yellow clay 'B' horizon less than 10 cm below the surface. Materials found within these test pits included charcoal, leaf litter, roots, quartz fragments, and clay.

Test pit 2 (TP 2) Test pit two was approximately 1 m above water-level. This test pit was characterized by a brownish black soil with some organic material that progressively became more compact until it reached a clay consistency at 29 cm depth. No artefacts were recovered. Materials found within this test pits included leaf litter, roots, quartz fragments and iron stone pebbles.

Test pit 3 (TP 3) Test pit three was at the same elevation as the water-level. This test pit was characterized by a similar brownish black soil with high organic material that progressively became more compacted. At 30 cm depth the soil became wet because of seepage from the swamp. At this point the test pit was closed. No artefacts were recovered. Materials found within this test pits included leaf litter, roots, and gravel, and clay.

Figure 38: LMM 1 TP 1 orange-clay 'B' Horizon

Figure 39: LMM 1 TP 2 dense compacted soil layer

Figure 40: LMM 1 TP 3 seepage of water into soil

9.3.3 Summary of Test Pit Soil Profiles

Soils were a silty clay loam comprising brownish - black silty loam topsoil overlying a dark compacted silty clay. The silty clay loam 'A' horizon of the Lower Melaleuca Margins was consistent across the six test pits. However, the 'B' horizon varied between a densely compacted clay soil and a very distinct orange clay layer. Some test pits had evidence of charcoal from burnt tree roots. Sediment samples were collected from all of the test pits. A summary of the soil profile information is provided in Table *7*.

Figure 41: LMM 1 TP 4 soil profile northwest wall

Figure 42: LMM1 TP 2 soil profile northwest wall

Table 7: Test Pit and Soil Profile Summary

Locality	*Test Pit*	*Test Pit depth (cm)*	*pH*	*Approx. Elevation*	*Soil Profile Summary*
LMM 1	*1*	*0-9*		.75 m above swamp level	**Dark brown (7.5 YR 3/2 - 3/3)6) silty clay loam topsoil high in organic content and rootlets, with some quartz fragments overlying yellowish brown hardsetting clay.**
LMM 1	*2*	*0-29*		1 m above swamp level	**Very dark brown - black (10YR 2.1 - 2.2) silty clay loam topsoil high in organic with shrub roots, quartz fragments, iron stone pebbles overlying yellowish brown compact clay soils.**
LMM 1	*3*	*0-30*		O m above swamp level	**Very dark brown (10YR 2.2) silty clay loam topsoil high in organic content with tree roots and some clay inclusions overlying seepage from the water table.**
LMM 1	*4*	*0-8*	**5.5**	1 m above swamp level	**Dark yellowish brown (10YR 3/4) silty clay loam topsoil high in organic content and charcoal with roots and rootlets, overlying yellowish brown hardsetting clay with iron pigment.**

9.3.4 Discussion

Test pits across the Lower Melaleuca Margins were placed to sample three different topographic areas (north of hill, west of hill, and south east of hill) to determine whether there was a relationship between landform and artefact density and test the degree of intra- sample unit variability. Although only one of these localities was able to be excavated, test pits in LMM 2 and LMM 3 were located in areas that have been heavily disturbed over the last 50 years, as attested to by the presence of subsurface infrastructure.

Test pits excavated in LMM 1 had a great degree of variation in soil profiles. These profiles gave a snapshot of the disturbance that this land has undergone overtime as well. Test pits 1 and 4 were both very shallow and had a clear clay 'B' horizon, while test pits 2 and 3 lacked the same distinctive clay. The clay found in test pits 1 and 4 is most likely the result of fill, used from the cut made into the hill slope to create the current dirt path. The clay horizon that this fill came from can be seen in the wall alongside the dirt path, and from this it can be assumed that the excess dirt was pushed away from the hill slope into the area that now borders the River Heights wetlands zone. The lack of a similar clay horizon in test pits 2 and 3 demonstrates that the soil in this area is varied and disturbed, and that the fill from the dirt pathway is not a uniform feature. When this data is

added to the image painted by historic aerials and previous archaeological and soil reports, there is little doubt that this area was highly disturbed through a combination of earthworks (cutting and filling), in addition to clearing and possibly banana farming.

Again, none of these test pits contained artefacts. Because of this, no correlation was found between landform, test pit location, and artefact density. Furthermore, the fact that no artefacts were found demonstrates a lack of occupation and a lack of archaeological significance in this zone in addition to the others.

10. DISCUSSION OF RESULTS

Excavations at River Heights revealed much about Aboriginal use of this area, or rather the lack thereof. While originally thought to have been a site that would have attracted Aboriginal peoples because of the ridge that runs through the Project Area and mapped soil profile, no archaeological evidence was found to support this. The Test Excavation Strategy was written based on the theory that this ridge may have attracted Aboriginal people for its aesthetic values or as a sacred pathway leading towards the bora ground to the east near Minjungbal Drive (AHIMS site 04-2-0014). If this were the case, then this ridge would have been frequented often before European settlement, leaving evidence of occupation in the form of Aboriginal objects.

This excavation strategy was carefully designed to uncover any Aboriginal objects remaining on the property, concentrating the most test pits in areas deemed the most likely to have been visited by Aboriginal peoples in the past (i.e. the Upper Ridge Crest). Therefore, the fact that absolutely no cultural material was recovered is telling of the fact that this Project Area saw minimal occupation before European settlement, and has since been significantly disturbed.

While artefacts cannot tell the story of this site, the soil content and profiles that were excavated paint a picture of a highly disturbed landscape that has been scraped and scarred over the years. Inconsistencies in soil profiles and content across the Upper Ridge Crest show that the land has been significantly reworked and severely disturbed, while shallow depths along the Hill Slope West show how erosion has depleted remnant soil on the slopes of the main ridge. Furthermore, test pits in the Lower Melaleuca Margins attest to European cutting of the land, most likely in relation to agriculture. All of this data complements the results of previous archaeological assessments, soil reports, and aerial photography, which demonstrate that the land at River Heights was cleared, most likely cropped or grazed, and used as a banana farm

11. ARCHAEOLOGICAL SIGNIFICANCE OF THE SUBJECT LANDS

11.1 Considerations

Given the results of the excavations detailed above, the assessment of archaeological (scientific) significance is a key aspect of the effects that the proposed development will have on cultural heritage. There are many considerations that go into evaluating a site or landscape's potential archaeological significance. Two important criteria, listed in the New South Wales Aboriginal Heritage Standards and Guidelines Kit (1997:88), are research potential (defined as the potential to elucidate past human behaviours) and educational potential. The primary considerations when evaluating a site's research potential are discussed below.

Rarity: This is related to how prevalent a particular site type is in a given region. Sites that are particularly scarce have the potential to contribute more to our knowledge of past behaviours relative to sites which are common place. For example, in the Tweed, coastal middens would have been common prior to European settlement. However, the impacts of sand mining and development have resulted in coastal middens becoming relatively rare, thus increasing their archaeological significance.

Antiquity: The value in a site's antiquity is closely linked to its rarity. As a general rule, the numbers of particularly old sites will reduce as time progresses. When sites of great antiquity are identified, they are of high archaeological significance.

Representativeness: A site's representativeness indicates whether a site is considered to represent a particular pattern of past human behaviour. It is important to identify sites that have high representative value and conserve them for future generations (Pearson and Sullivan 1995:148). Representativeness is assessed based on current research questions and technologies, and may change through time. It should be noted that a site's representativeness is also related to its cultural value, as distinct from its purely scientific value.

Complexity: A site may demonstrate a range of human behaviours and/or past climate and environmental changes (Pearson and Sullivan 1995:148).

Integrity: The stratigraphic integrity of a site relates to the subsequent disturbance of a site once it has entered the archaeological record. Disturbance may have been the result of impacts by humans (such as land clearing)

or natural causes (such as erosion or bioturbation from ants). It is generally the case that the greater a site's integrity, the greater its archaeological significance.

Connectedness: A site should not be viewed in isolation, as the human behaviours that were responsible for the creation of the site were invariably connected to other sites reflecting different behaviours nearby.

11.2 Limitations

With all scientific research, including the assessment of 'scientific significance', it is important to acknowledge the limitations of any conclusions that have been drawn in relation to the assessment of the Subject Lands.

The assessment of archaeological significance is a highly subjective activity, and depends much on the values of the researcher(s) involved. In this assessment, we have divided the Subject Lands into areas of 'High', 'Moderate – High', 'Moderate', 'Low – Moderate', 'Low' and 'No/Nil' archaeological significance. The values we have used are not precise. They exemplify arbitrary distinctions that are necessary for ease of demonstrating the values of the Subject Lands as a whole. These categories represent a relative continuum of significance, which is demonstrated by the diagram in Figure 43. The intention of Figure 43 is to show examples of the values used in this assessment. Of course, it is quite possible that even a single artefact may be of high archaeological significance, where it can be demonstrated that the artefact exhibits one or more of the criteria above.

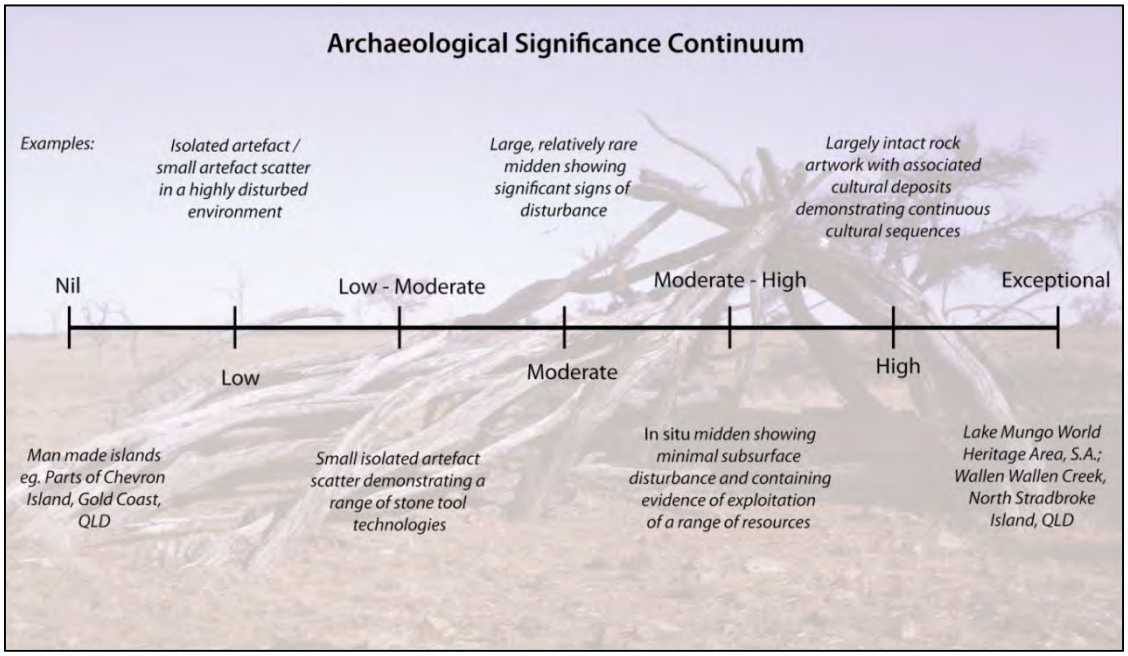

Figure 43: Archaeological Significance Continuum applied in this assessment

Categorising the Subject Lands into levels of archaeological significance does not mean that every part of each area can be ascribed the same level of significance. Rather, each category relates to the assessed significance of individual and related archaeological sites expected to be located within a given area. It also takes into account the prevalence of archaeological sites within a given area.

It should be acknowledged that it is quite possible that areas identified as being of lower archaeological significance may contain individual sites of higher significance. An example of this would be a highly significant find in the Lower Melaleuca Margins 1 testing location. However, Figure 43 demonstrates the general representation of archaeological significance of the Subject Lands as evaluated during this assessment.

While areas outside the Subject Lands were outside the scope of this study, some consideration must be given to them when assessing issues such as rarity, age and representativeness. Archaeological sites should not be viewed in isolation. They are part of a cultural landscape and can generally be compared to the sites around them to demonstrate patterns of occupation. There are many areas of archaeological significance surrounding the Subject Lands that can provide insights and perspective for the management of the sites within the Subject Lands.

11.3 Archaeological Significance of the Upper Ridge Crest

Initially identified as being of Low to Moderate archaeological sensitivity, the archaeological test excavations at the Upper Ridge Crest have revealed this to be an inflated assessment of the zone. Test pits were placed along the Upper Ridge Crest to determine if subsurface artefacts remained on the ridge crest after thousands of years of erosion and ground disturbance. Additionally, the test pit locations in this zone were selected to test if subsurface artefacts occurred in a greater capacity at the height of the ridge crest in comparison to lower elevations, and even more so the Hill Slopes and Lower Melaleuca Margins. However, no artefacts or features were found on the Upper Ridge Crest. This indicates that the Upper Ridge Crest has no evidence of occupation, and a Nil level of archaeological significance.

11.4 Archaeological Significance of the Hill Slopes

Initially identified as being of Low to Moderate archaeological sensitivity, the archaeological test excavations at the Hill Slopes have revealed this to be an accurate assessment of the zone. Test pits along the Hill Slopes were placed to determine if subsurface artefacts remained on the Hill Slopes after thousands of years of erosion and disturbance. In addition, test pit locations were chosen to see if artefacts occurred in a capacity that correlated with elevation or proximity to the Upper Ridge Crest. However, no artefacts or features were found on the Hill Slopes. This indicates that the Hill Slopes has a Nil level of archaeological significance, and no evidence of occupation. Furthermore, when combined with the fact that no artefacts were found on the Upper Ridge Crest, this data supports that there is no correlation between the ridge crest or elevation and the number of artefacts found.

11.5 Archaeological Significance of the Lower Melaleuca Margins

Initially identified as being of Low to Moderate archaeological sensitivity, the archaeological test excavations at the Hill Slopes have revealed this to be an inflated assessment of the zone. Test pits in the Lower Melaleuca Margins were placed to determine if subsurface artefacts remained in this lowland area after thousands of years of erosion, disturbance, and fluctuations in the water levels of the nearby swamp. In addition, test pit locations were chosen to see if artefacts occurred in a capacity that correlated with elevation or proximity to the Upper Ridge Crest, assuming that this area would have the lowest number of artefacts.

No artefacts were found in the Lower Melaleuca Margins. This indicates that this zone has a Nil level of archaeological significance. However, because no artefacts were found in any of the other zones, this data also supports that there is no correlation between the ridge crest or elevation and the number of artefacts found. Furthermore, this concludes that no zones in the Project Area demonstrated evidence of occupation or any archaeological significance.

12. RECOMMENDATIONS

12.1 Aboriginal Cultural Heritage

The following recommendations are cautionary in nature, and based upon the desktop review, the results of the field assessment and consultation with the Aboriginal Stakeholders and the Tweed Byron LALC.

Recommendation 1: Removal of AHIMS Site

The 'axes' collected from the monitoring of the Kirkwood Road extension and deposited within the Project Area do not fit the definition of an Aboriginal Object. There is no evidence to suggest these stones have been modified by humans, such that an archaeologist might identify them as artefacts.

There is no evidence for any stone arrangements on the Project Area. The likelihood of stone arrangements surviving the extensive European impacts that have occurred over at least the last 100 years is considered extremely unlikely. There is no ethnographic evidence for stone arrangements having occurred within the Project Area.

It is therefore recommended that AHIMS Site #04-2-0184 is removed from the AHIMS register. An AHIP may be required as a legal technicality, although this would appear unwarranted as there is no heritage to which the AHIP might apply.

Recommendation 2: Aboriginal Human Remains

It is recommended that if human remains are located at any stage during earthworks within the Project Area, all works must halt in the immediate area to prevent any further impacts to the remains. The Site should be cordoned off and the remains themselves should be left untouched. The nearest police station, the Tweed Local Aboriginal Land Council and the OEH Regional Office, Coffs Harbour are to be notified as soon as possible. If the remains are found to be of Aboriginal origin and the police do not wish to investigate the Site for criminal activities, the Aboriginal community and the OEH should be consulted as to how the remains should be dealt with. Work may only resume after agreement is reached between all notified parties, provided it is in accordance with all parties' statutory obligations.

It is also recommended that in all dealings with Aboriginal human remains, the Proponent should use respectful language, bearing in mind that they are the remains of Aboriginal people rather than scientific specimens.

Recommendation 3: Aboriginal Cultural Material

It is recommended that if it is suspected that Aboriginal material has been uncovered as a result of development activities within the Project Area:

(e) work in the surrounding area is to stop immediately;

(f) a temporary fence is to be erected around the site, with a buffer zone of at least 10 metres around the known edge of the site;

(g) an appropriately qualified archaeological consultant is to be engaged to identify the material; and

(h) if the material is found to be of Aboriginal origin, the Aboriginal community is to be consulted in a manner as outlined in the OEH guidelines: *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (2010).

Recommendation 4: Notifying the OEH

It is recommended that if Aboriginal cultural materials are uncovered as a result of development activities within the Project Area, they are to be registered as Sites in the Aboriginal Heritage Information Management System ('AHIMS') managed by the OEH. Any management outcomes for the site will be included in the information provided to the AHIMS.

Recommendation 5: Conservation Principles

It is recommended that all effort must be taken to avoid any impacts on Aboriginal Cultural Heritage values at all stages during the development works. If impacts are unavoidable, mitigation measures should be negotiated between the Proponent, OEH and the Aboriginal Community.

12.2 Historic Cultural Heritage

With no historical evidence located within the Project Area by the field assessment or the desktop research, no further actions or recommendations regarding Historic Cultural Heritage are warranted for the Project Area.

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APPENDIX A: COMMUNITY CONSULTATION

The River Heights Community Consultation File exists as a standalone document containing all correspondence with the Aboriginal Community regarding this project. This consultation file is therefore published separate from this report due to confidentiality reasons. This Excavation Report must be viewed in conjunction with the River Heights Community Consultation File to be considered complete.

APPENDIX B: HISTORICAL AERIAL PHOTOGRAPHY & PARISH MAPS

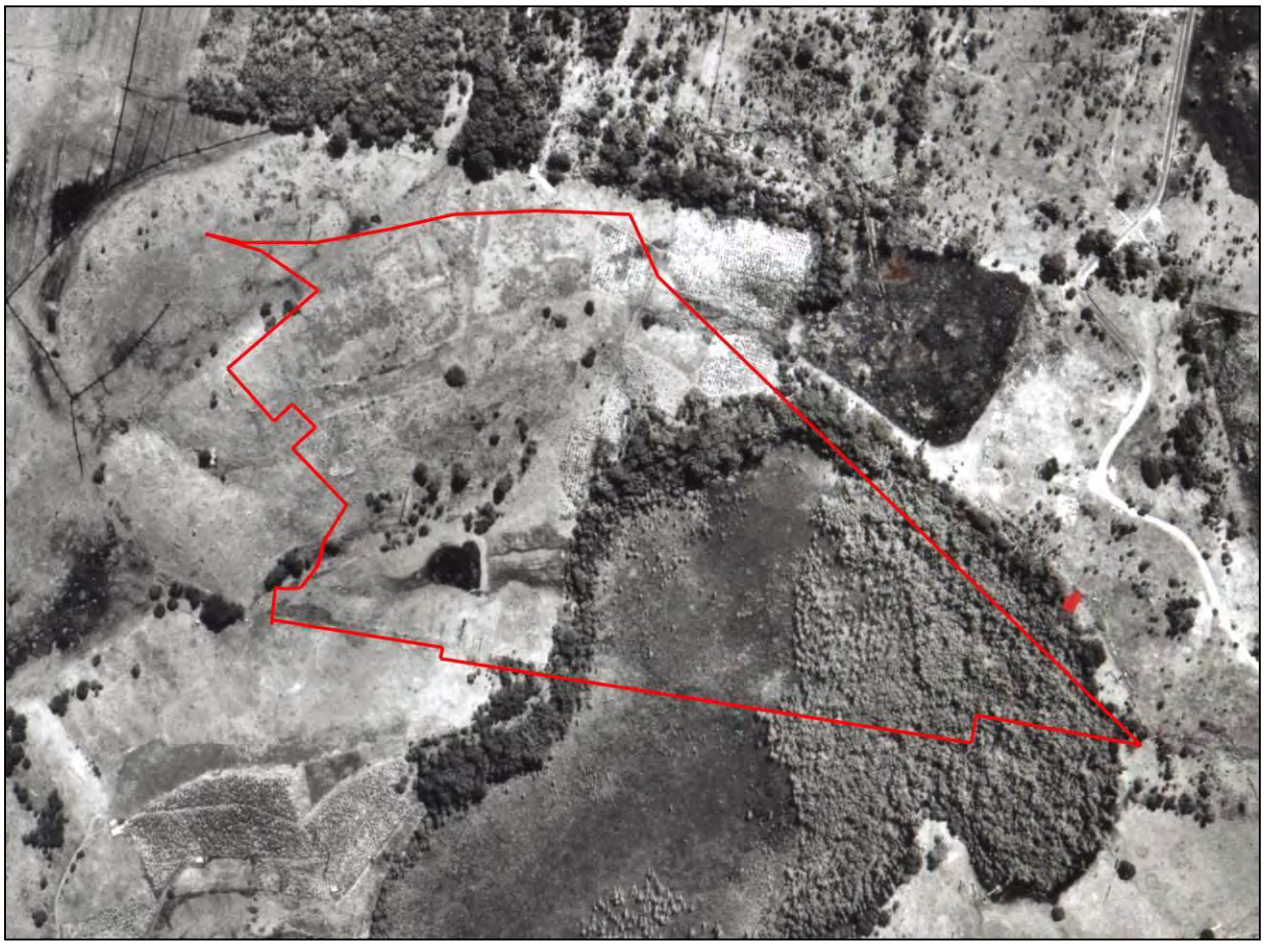

Figure 44: 1962 Aerial photograph of the Project Area

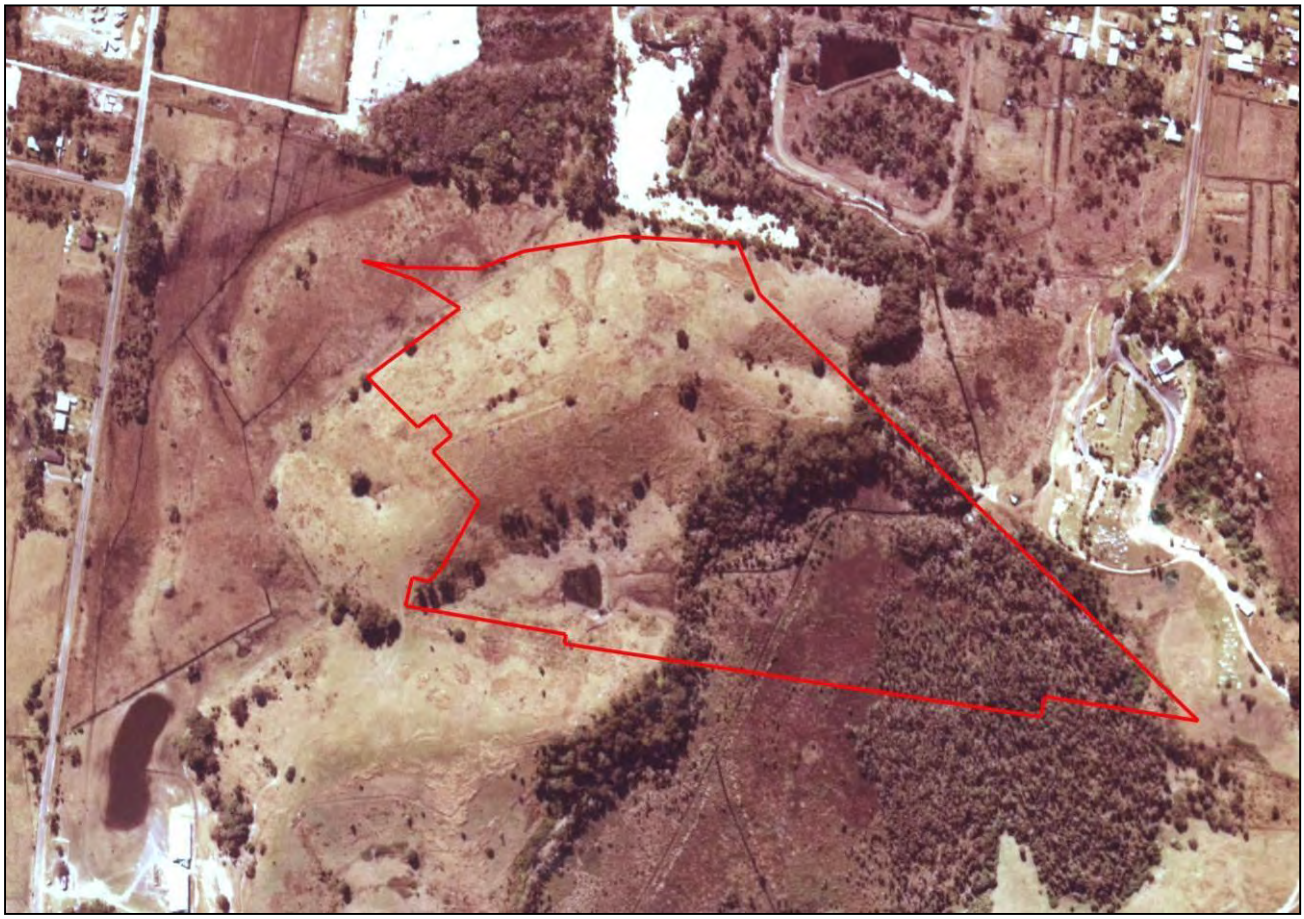

Figure 45: 1976 Aerial photograph of the Project Area

Figure 46: 1987 Aerial photograph of the Project Area

Figure 47: 1995 Aerial photograph of the Project Area

Figure 48: Historic Parish Map 1894

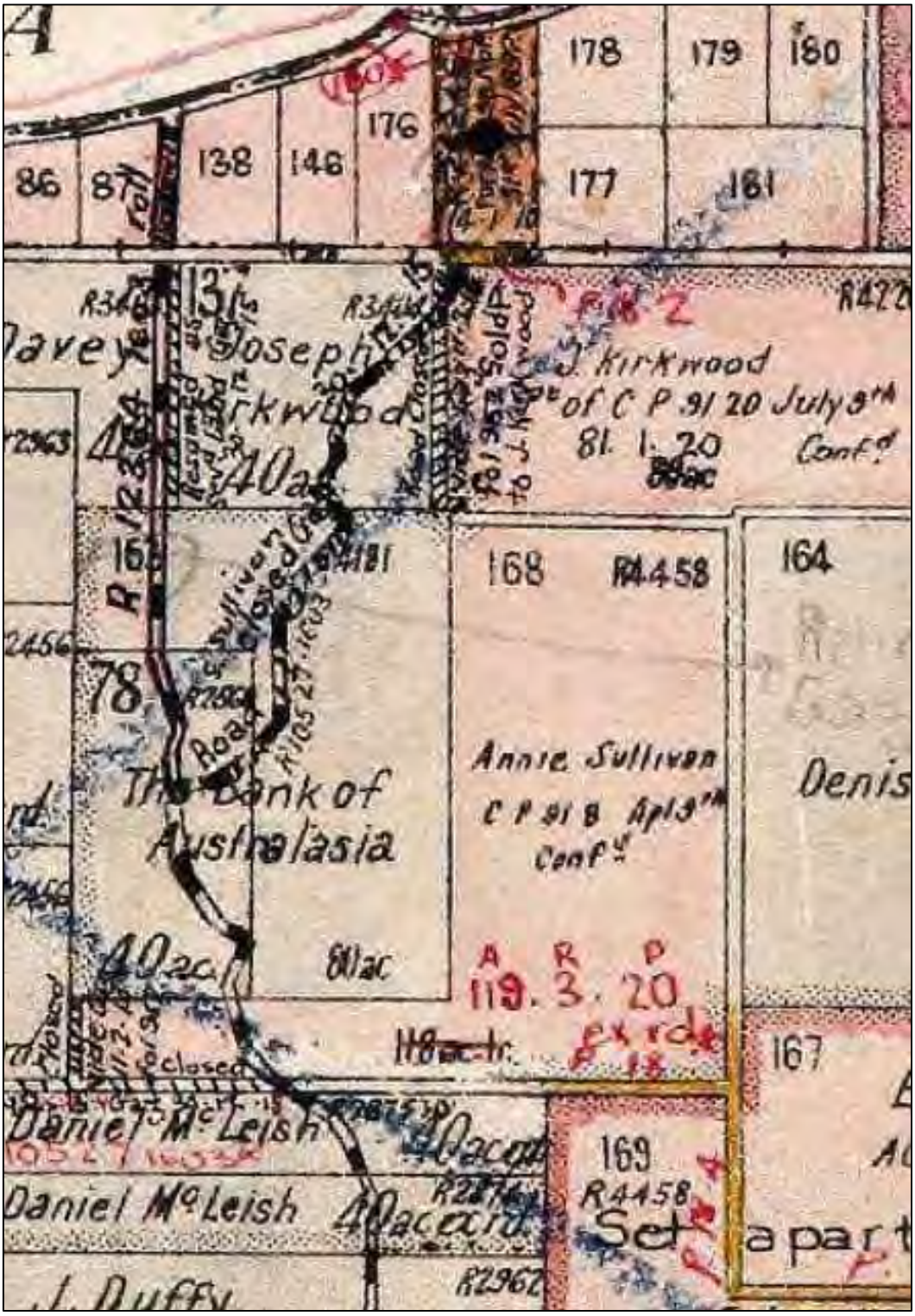

Figure 49: Historic Parish Map 1913

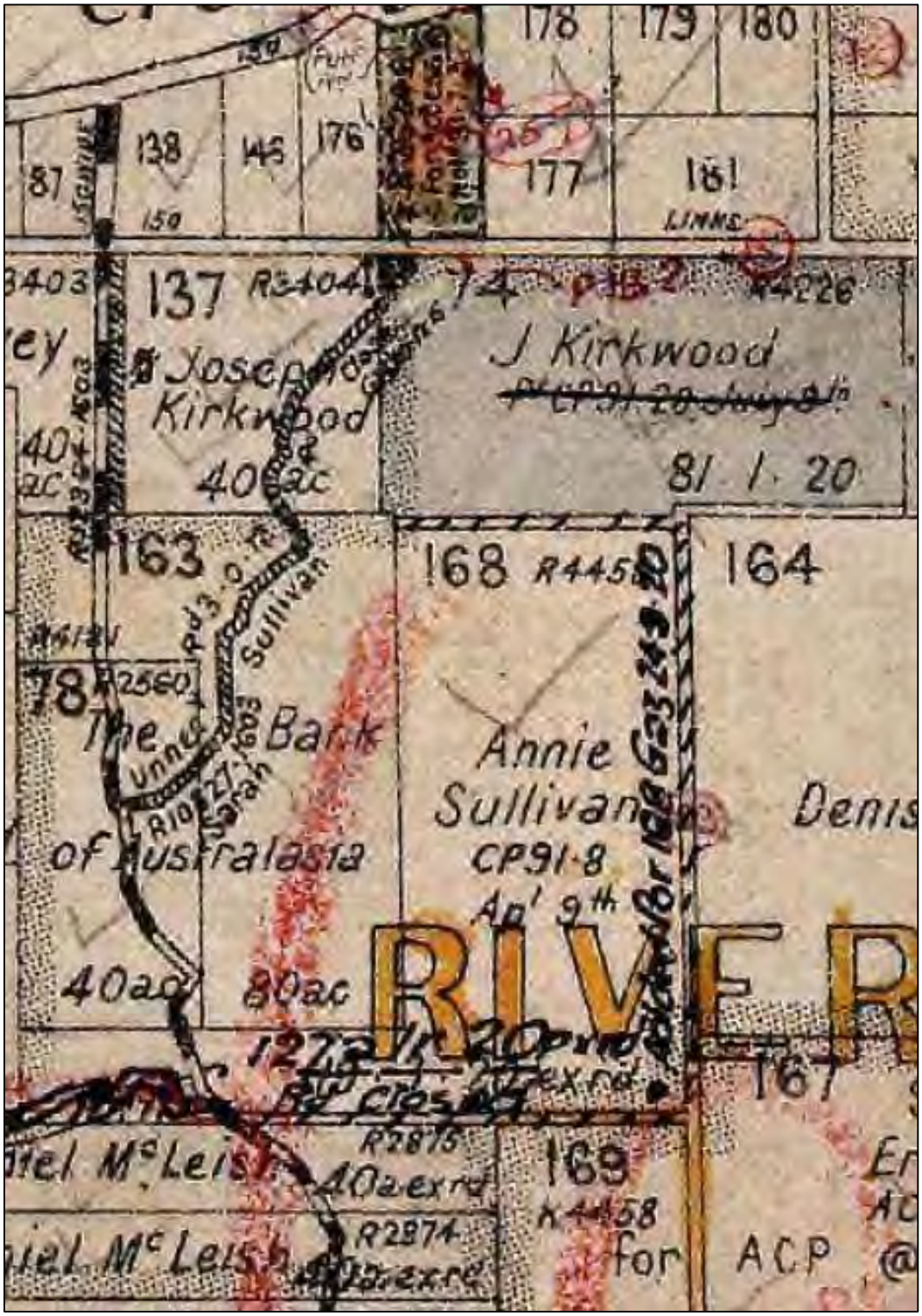

Figure 50: Historic Parish Map 1918