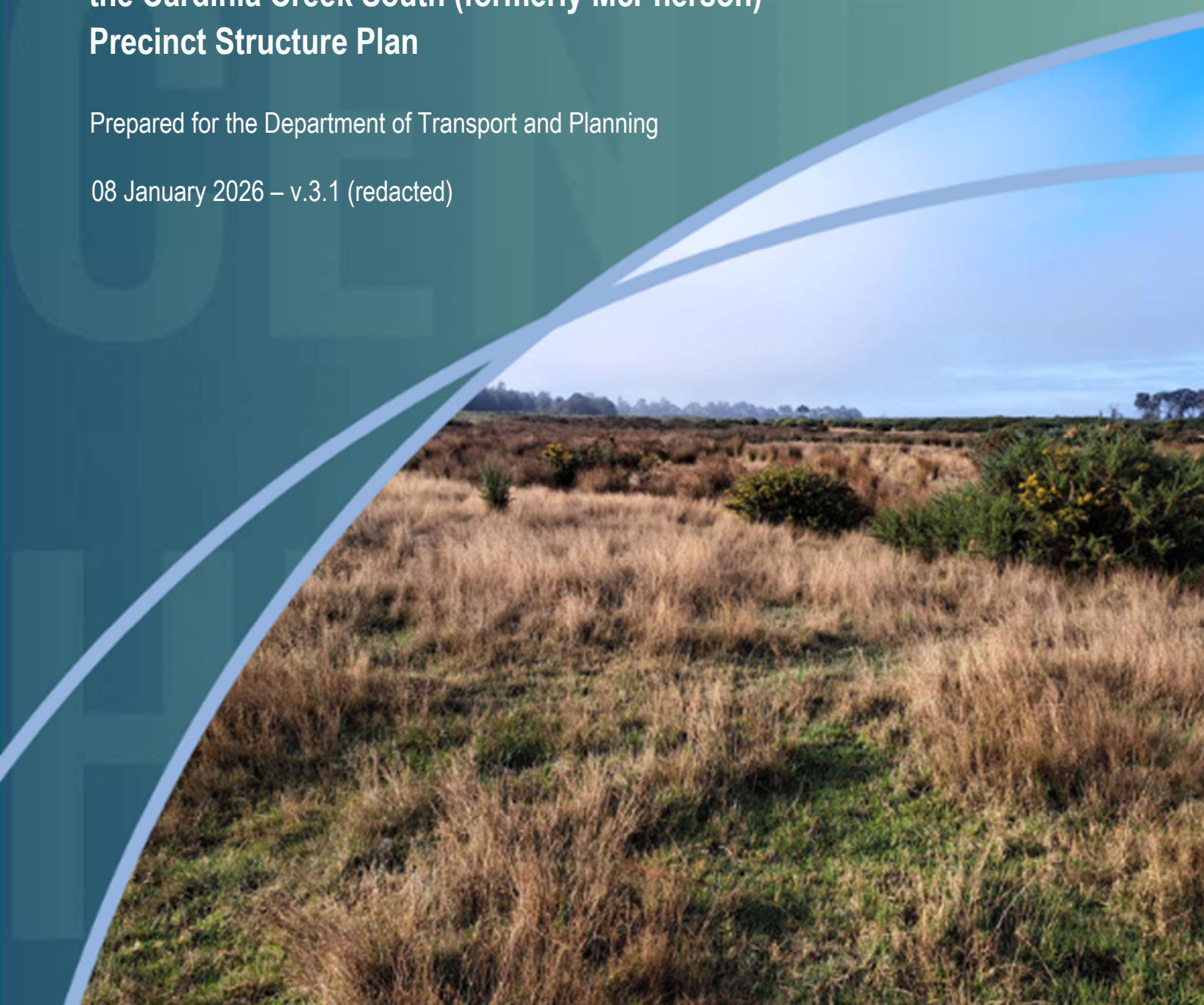
EXTENT
PEOPLE CENTRED HERITAGE

Cardinia Creek South (Part 2) Precinct Structure Plan

Aboriginal Cultural Heritage Assessment Addendum to the Cardinia Creek South (formerly McPherson) Precinct Structure Plan

Prepared for the Department of Transport and Planning

08 January 2026 – v.3.1 (redacted)



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Executive summary

> Over 1000 generations of our people have been here before us. Archaeological excavation within our Country has already demonstrated about 35,000 years' worth of occupation. These sites can show us how our ancestors interacted with their environment and how that interaction changed over time. We regard all evidence of our people's occupation as sacred … All of our Country is highly significant, every square inch, every rock, every leaf, every dune, every artefact.
>
> *Excerpt from statement of significance provided by the Bunurong Land Council Aboriginal Corporation (2024)*

This report is an addendum to the Aboriginal Cultural Heritage Assessment prepared in 2015 for the Cardinia Creek South (formerly McPherson) Precinct Structure Plan. The Victorian Planning Authority (VPA) is now preparing a Precinct Structure Plan for the Cardinia Creek South (Part 2) precinct and requires an update to the 2015 assessment.

Since 2015, several Cultural Heritage Management Plans (CHMPs) and associated archaeological salvages have been completed, covering most of the Part 2 precinct. This addendum reviews available reports from these programs. It provides information on newly registered Aboriginal Cultural Heritage Places, refined areas of archaeological sensitivity and any cultural heritage management conditions in place. Updated landform and historical disturbance mapping is presented, along with additional historical research relating to Aboriginal occupation and use of the precinct. It also provides detailed information relating to a newly registered Aboriginal Historical Place ('Barnibyrnong'). The above addenda are consolidated to provide an update to the 2015 archaeological sensitivity model. Areas of very high to very low archaeological sensitivity are mapped.

The Bunurong Land Council Aboriginal Corporation (BLCAC) has recently been appointed as the Registered Aboriginal Party for the precinct. The VPA has met with BLCAC to ensure Bunurong cultural values are included in PSP development. Meeting notes are included in this report.

Recommendations from the 2015 assessment are reviewed and are considered generally appropriate. In general, avoidance of harm to Aboriginal cultural heritage values should be central to PSP design, and impact to areas with the highest cultural heritage sensitivity has the highest risk of harming these values.

Four additional recommendations are made regarding PSP design, based on whether a CHMP has been approved for that part of the precinct. For areas with approved CHMPs, PSP design should align with approved cultural heritage management conditions, including the designation of open space. Specific recommendations are made for areas of harm minimisation where CHMPs are in preparation. In other areas, it is recommended that the updated archaeological sensitivity modelling be used to guide PSP design. A final recommendation is to ensure local council policies are aligned with the incorporation and management of registered Aboriginal Places in open spaces and other public areas.

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Abbreviations

Abbreviation	Meaning
ACHA	Aboriginal Cultural Heritage Assessment
AHPZ	Aboriginal Heritage Protection Zone
BLCAC	Bunurong Land Council Aboriginal Corporation
BP	Before Present
CCC	Casey City Council
CHMP	Cultural Heritage Management Plan
DEM	Digital Elevation Model
DTP	Department of Transport and Planning
HO	Heritage Overlay
LDAD	Low Density Artefact Distribution
LGM	Last Glacial Maximum
LiDAR	Light Detection and Ranging
MSA	Melbourne Strategic Assessment
MTP	Machine Test Pit
OSL	Optically Stimulated Luminescence
PAD	Potential Archaeological Deposit
PSP	Precinct Structure Plan
RAP	Registered Aboriginal Party
RSTP	Radial Shovel Test Pit
STP	Shovel Test Pit
TP	Test Pit
VAHR	Victorian Aboriginal Heritage Register
VPA	Victorian Planning Authority

1. Introduction

1.1 Background

The Victorian Department of Transport and Planning (DTP) engaged Extent Heritage Pty Ltd to prepare an addendum report ('the addendum') to the Aboriginal Cultural Heritage Assessment (ACHA) for the Cardinia Creek South (formerly McPherson) Precinct Structure Plan (PSP) 1055 (Sutton et al. 2015, hereafter referred to as the '2015 ACHA').

The Cardinia Creek South (formerly McPherson) PSP was approved by the Minister for Planning in December 2018 and was gazetted in January 2019 under Amendment C221 to the Casey Planning Scheme. Due to uncertainty of the location of the regional park at the time, a 104-hectare area was excluded from the parent PSP, being the Cardinia Creek South (Part 2) precinct ('the precinct'; Figure 1). An indicative future urban structure for Cardinia Creek South (Part 2) was included as Appendix G of the Cardinia Creek South PSP (Figure 2).

The Clyde Regional Park has since been confirmed south of the precinct, and the Victorian Planning Authority (VPA, now part of DTP) will now prepare a further amendment to the Casey Planning Scheme for the Cardinia Creek South (Part 2) precinct. As part of this amendment, the DTP has requested an addendum to the 2015 ACHA for the original precinct.

1.2 The study area

The area of land to which this ACHA addendum relates is the Cardinia Creek South (Part 2) precinct (Figure 3). The precinct is bounded to the south by the McCormacks Road reserve, to the west by 75 McCormacks Road, to the east by Cardinia Creek and to the north by parts of 70S Smiths Lane. The precinct currently comprises the following properties:

- 95 McCormacks Road, Clyde North (2\PS438755)
- 125 McCormacks Road, Clyde North (4\PS438756)
- Part of 70S Smiths Lane, Clyde North (H\PS921349)
- Parcel 1\TP911802
- Part of parcel 2009\PP2462

1.3 Scope and structure

This addendum provides an update to the 2015 ACHA to provide information relating to both the confirmed and expected nature, extent and significance of Aboriginal cultural heritage within the precinct. It is prepared with reference to the *Precinct Structure Planning Guidelines: New Communities in Victoria* (VPA 2021) and with their stated aim of building cultural significance into the foundations of PSP design. This addendum is structured to mirror the relevant sections of the 2015 ACHA to allow ease of cross-reference, and provides updates to the original desktop assessment, predictive modelling, mapping and recommendations.

Additionally, the Bunurong Land Council Aboriginal Corporation (BLCAC) was appointed as the registered Aboriginal party (RAP) for the area on 1 July 2021. The Aboriginal Heritage Act 2006 (Vic) recognises RAPs as the primary guardians, keepers and knowledge holders of Aboriginal Cultural Heritage. This addendum therefore provides BLCAC with an additional opportunity to comment on the cultural values of the precinct to better inform PSP design.

1.4 Heritage Advisor and authorship

Stevie Skitmore (BSocSci UQ, MDevPrac UQ, MArchSci ANU) and primary author of this amendment. Stevie is a registered Heritage Advisor with First Peoples—State Relations, being appropriately qualified and experienced in the management of Aboriginal cultural heritage in Victoria. This experience includes extensive practical experience in completing Aboriginal cultural heritage assessments, working alongside Traditional Owners.

Dr Elle Grono (BPh Hons ANU, MArchSci ANU, PhD ANU) is a geoarchaeological and palaeoenvironmental specialist with a professional and research focus on soils, sediments and environmental proxies. Elle has contributed landscape interpretation for this addendum.

Jim Wheeler (BA Hons ANU, MAACAI), co-author of the original ACHA, has provided the quality assurance review this report.

1.5 Acknowledgements

The authors would like to thank the Bunurong Land Council Aboriginal Corporation, the Department of Transport and Planning and the Casey City Council for their assistance in preparing this report.

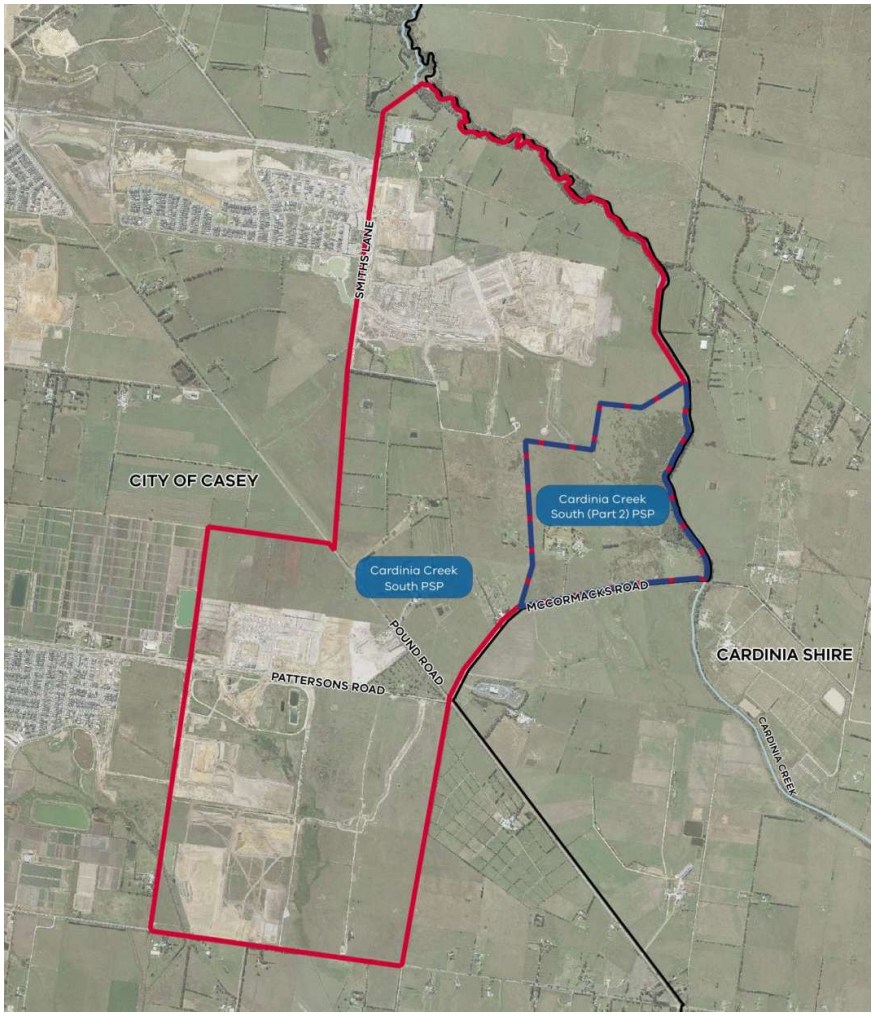


Figure 1. View of Cardinia Creek South and Cardinia Creek South (Part 2) precinct boundaries (VPA 2025)

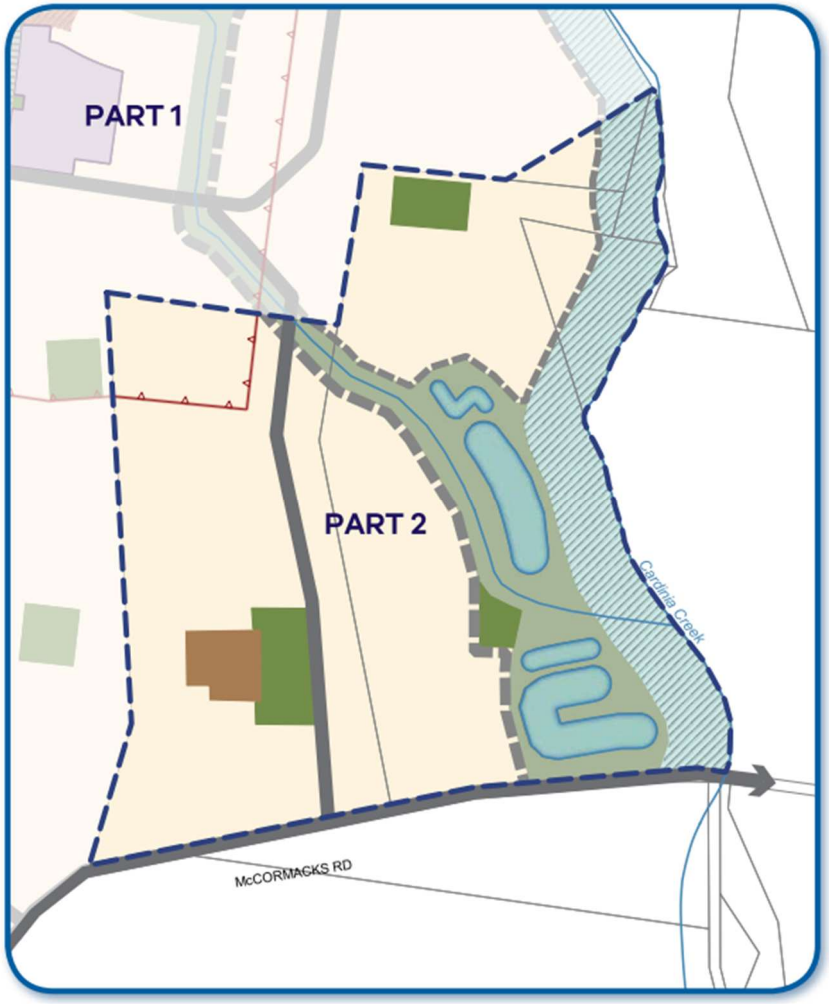


Figure 2. Indicative future urban structure of Cardinia Creek South Part 2 (VPA 2018: 80)

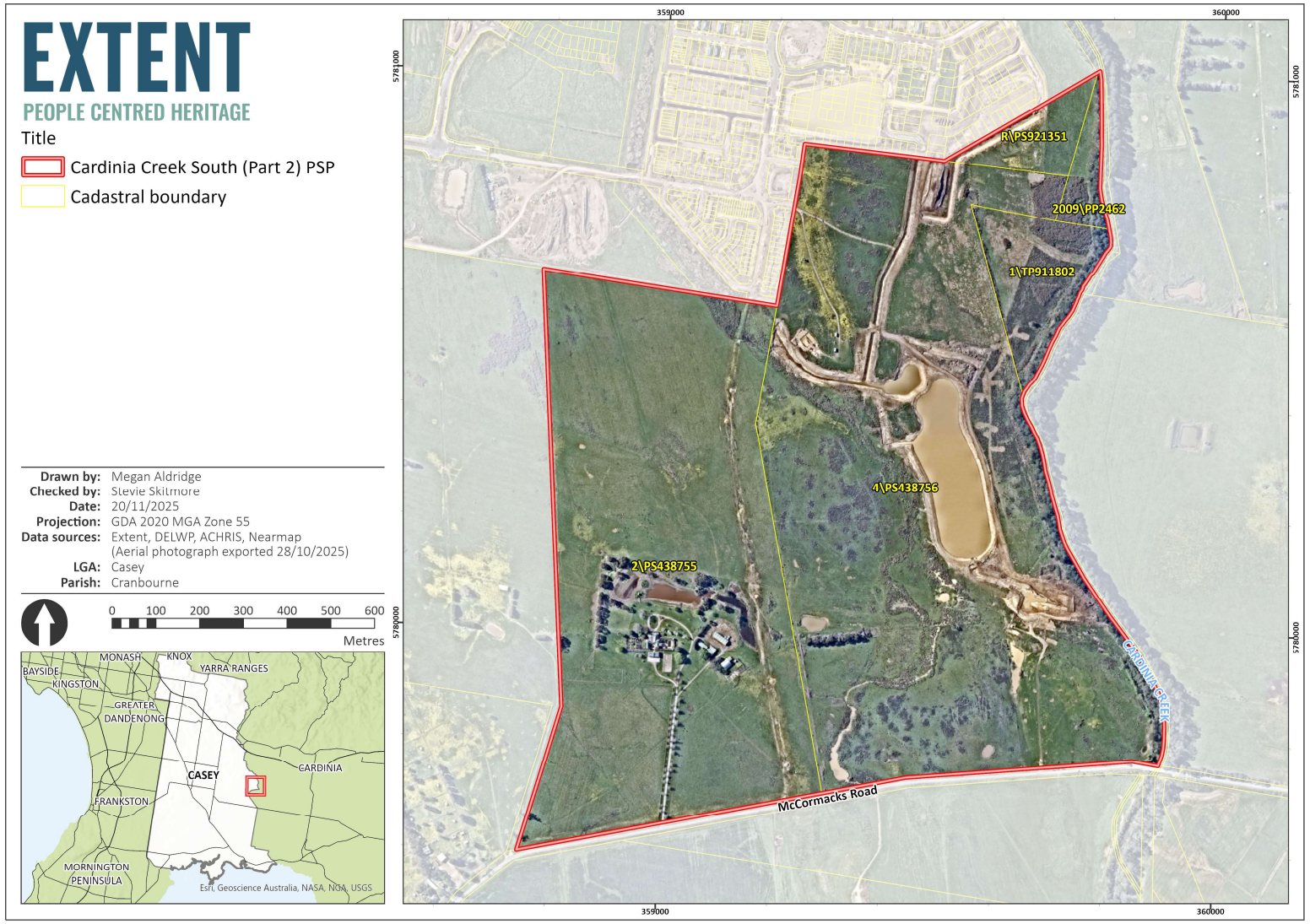


Figure 3. Boundary of Cardinia Creek South (Part 2) precinct, showing current cadastre

2. McPherson PSP ACHA and addenda

2.1 Review of McPherson PSP ACHA (2015)

The ACHA prepared by Sutton et al. (2015) aimed to characterise Aboriginal cultural heritage potential and sensitivity within the Cardinia Creek South (formerly McPherson) precinct to inform planning for the PSP. The ACHA consisted of a desktop assessment and pedestrian survey to inform development of a predictive sensitivity model, associated mapping, and recommendations.

The desktop assessment first comprised designation of a 'geographic region' from which data for the predictive model would be drawn. This was defined as the Bunyip River Basin, to capture a wide range of research undertaken within the watershed of the former Koo-Wee-Rup Swamp. A review was then presented of Aboriginal Cultural Heritage Places ('Aboriginal Places') registered on the VAHR, followed by a review of archaeological studies undertaken across the geographic region, to draw out patterns relating to the likelihood of identifying Aboriginal Places. These results were then combined with information relating to the environmental context of the PSP study area, an overview of historical land use disturbance, and a pedestrian survey of 18 properties to characterise landforms and features within the precinct that may retain a higher or lower archaeological sensitivity.

Very few targeted heritage assessments had been conducted in the Cardinia Creek South (formerly McPherson) precinct at the time of preparing the 2015 ACHA, and none had been undertaken within the boundary of the Cardinia Creek South (Part 2) precinct. This necessitated a wide analysis of archaeological data across a broad geographic region to develop a predictive Aboriginal heritage sensitivity model, which due to the paucity of local data at the time was a relatively coarse-grained model.

2.2 Overview of required addenda

In the decade since preparing the 2015 ACHA, numerous archaeological studies have now been completed close to and within the former McPherson precinct. These allow for a much more fine-grained assessment of Aboriginal Places, landforms, disturbance and archaeological sensitivity within the Cardinia Creek South (Part 2) precinct.

This addendum builds on the work of the 2015 ACHA by updating the review of Aboriginal Places within 2 km of the precinct's boundary. It also includes an updated review of Cultural Heritage Management Plans (CHMPs) and salvage reports undertaken within, overlapping, or abutting the precinct boundary, with an aim to identify registered Aboriginal Places and archaeological site patterning identified in each study. The data from this recent research work has been used to update the predictive sensitivity mapping with respect to the Cardinia Creek South (Part 2) Precinct.

Table 1 below provides an overview of each addendum included in this report.

Table 1. Summary of addenda included in this report

ACHA section no.	ACHA section title	Overview of addendum
5.3	Review of Aboriginal Places	A review of all Aboriginal Places within geographic region, with a detailed review of all Places registered within the precinct itself. The scope of the geographic region has been altered to a 2 km buffer around precinct.
5.7.	Review of Local Studies (Cultural Heritage Management Plans)	Review of CHMP and salvage reports (both completed and in preparation) undertaken since 2015 that lie within, overlap or abut the precinct boundaries.
5.8. and 5.9	Aboriginal Ethno-history and Review of Thomas Journals to identify local Aboriginal occupation	Provision of updated ethnohistorical research, with a focus on specific references to Aboriginal occupation within and use of in the Cardinia Creek South (Part 2) precinct. Analysis of historical maps and plans is also utilised.
5.10	Environmental Context (landforms and geomorphology)	Some minor commentary on recent research into local environmental history is provided to provide further context to Aboriginal occupation.
5.11	Landuse Disturbance History in the Study Area	A synthesis of findings from local studies regarding land use and areas of disturbance within the precinct, with commentary on the implication of this for archaeological sensitivity.
5.12	Predictive Model	Based on the above addenda, a revised overview of factors predicted to influence archaeological sensitivity within the precinct. Revising mapping of landforms and disturbance is presented.
6.	Predictive Sensitivity Mapping	Revised mapping of archaeological sensitivity within the precinct.
7.	Management Recommendations	A review off and inclusion of additional management recommendations for the precinct, based on the above findings.

3. Addendum to '5.3 Review of Aboriginal Places'

3.1 Registered Aboriginal Places within the geographic region

An application was submitted to search the VAHR, with access granted on 28 October 2025 (Access Approval Number 15967). A search of the VAHR was conducted on 5 November 2025 for all registered Aboriginal Places both within and within 2km of the precinct's boundary (the defined 'geographic region' for this report). The location of these Places is shown in Figure 5 below and these comprise 46 artefact scatters, 20 low-density artefact distributions (LDADs) comprising 289 components, and one combined artefact scatter and Aboriginal Historical Place (the latter place will be considered in detail in Section 3.2 below).

Artefact scatters and LDADs both comprise lithic-based cultural material (most often referred to as 'stone artefacts') and tend to represent locations where stone-based technology was either produced or discarded. The difference between the two categories is purely related to the density of material identified, with artefact scatters representing densities of 10 or more stone artefacts in an area measuring 100 m^2. All artefact scatters are recorded with 'place extents', polygons which define the modelled boundary within which the stone artefact density exists. All other stone material occurring at lower densities, including isolated artefacts, are recorded as singular 'components' of an LDAD, comprising singular point data for each identified artefact. It is important to note that LDADs were only introduced as a recording category by the VAHR in 2013. Prior to this, all stone artefacts of any density were recorded as artefact scatters with a single point only (and remain as such in the VAHR).

The 2015 ACHA indicates that the majority of Aboriginal Places are located close to waterways such as Cardinia Creek, and to a degree this interpretation appears to hold. However, the complexity of current and historical hydrological schemes across the region (as reviewed in Section 6 below) indicates that proximity to current waterway alignments is not the only factor at play. Indeed, most artefact scatters across the geographic region are identified on (and in) landforms loosely grouped under 'sandy rises', discrete and slightly elevated parts of the landscape formed by either aeolian (wind-transported) or alluvial (water-transported) sedimentation. Conversely, LDADs occur in varying densities across most other landforms, although they are largely absent from areas subject to continuous and/or seasonal flooding. It should be noted that usually, place patterning is somewhat attributable to where archaeological reports have been completed. In the current case however, around 70% of the geographic region has been assessed through the CHMP process, providing sufficient data for such conclusions to be drawn.

Artefact densities of up to 430 artefacts/m^2 have been identified in the region [redacted], but densities vary significantly between artefact scatters. Higher densities are generally present on the crest of sandy rises that are near permanent water sources (including freshwater springs). Artefact scatters tend to comprise a mix of silcrete, quartz, quartzite and basalt flakes, often with a high degree of late-stage

reduction. There are also a high number of formal backed artefacts in the geographic region's assemblage.

3.2 Registered Aboriginal Places within the precinct

As of 20 November 2025, 14 Aboriginal Places have been registered within the Cardinia Creek South (Part 2) precinct. These comprise 10 artefact scatters, 3 LDADs and one combined artefact scatter and Aboriginal Historical Place registration. These places are detailed in Table 2 and are shown in Figure 6. The combined place (VAHR 7921-1846, Barnibyrnong) is reviewed separately in Section 3.2.1 below.

Landscape interpretation provided in associated archaeological reports shows that the precinct occupies a particularly complex hydrological and geomorphological zone on the northern margins of the former Koo-Wee-Rup Swamp. This part of Cardinia Creek is characterised by a mosaic of discrete sandy rises adjacent to and within several defined watercourses incised into a shallow sandy plain in the west, with an outfall into tea tree swamp in the east. Further landscape interpretation is presented in Section 6.

A total of 1,940 stone artefacts has thus far been identified during archaeological investigations within the precinct. As with the wider geographic region, artefact scatters within the precinct are largely confined to the crests and upper slopes of sandy rises, particularly on elevated areas directly overlooking incised channels, where they attain densities of up to 129.5 artefacts / m^2 (Anderson, in preparation). Artefacts are generally present throughout the entire soil profile of rises, albeit tending to cluster immediately above the underlying clay. The most common material types are micro-crystalline silcrete, quartz and quartzite, with some tachylite, basalt and coastal flint also present. Artefact types and conjoin analyses indicate that tool manufacture and maintenance were occurring on rises within the precinct, most likely associated with resource procurement from adjacent swampland.

Note that archaeological salvages have been undertaken at VAHR 7921-1846 (Barnibyrnong), VAHR 7921-1847 (95 McCormacks Road Clyde North AS 02) and are currently being undertaken at VAHR 7921-1974 (125 McCormacks Road AS4) and VAHR 7921-1975 (125 McCormacks Road AS5). Salvages provide an opportunity to understand Aboriginal occupation and use in a much more detailed way than test pitting undertaken as part of CHMP complex assessments. The results of these salvages are yet to be finalised, with interim results based on communication with the relevant Heritage Advisors included in Section 4 below.

Note also that two CHMPs (19932 and 19961) are in preparation for parts of 125 McCormacks Road. Correspondence with the Heritage Advisors for these CHMPs indicate that they are at complex assessment stage at the time of writing. Two stone artefacts identified during preparation of CHMP 19961 (Bensted and McDonald, in preparation) were registered as VAHR 7921-2069 on 14 November 2025 and are included in this report.

3.2.1 VAHR 7921-1846 (Barnibyrnong)

VAHR 7921-1846 (Barnibyrnong) is of particular importance within the precinct, being one of the very few registered Aboriginal Historical Places in the wider region due to its direct historical

connection to Bunurong ancestors. Both components of this place (the artefact scatter and Aboriginal Historical Place) are reviewed below.

3.2.1.1 Artefact scatter component

The artefact scatter component was first identified in 2020 during preparation of CHMP 17539 (Clark et al. 2021), with 80 stone artefacts identified from four 2 x 1 m mechanical test pits and one 1 x 1 m manually excavated test pit along the crest of the sandy rise. Artefacts were identified at depths of 200-700 mm, with the main concentration (n=39) at 400-500mm. The CHMP assessment noted that the highest densities occurred in the test pit with the highest elevation on the rise (MTP08), and also that it was likely that the artefact scatter extended beyond the boundary of the narrow activity area of CHMP 17539.

A salvage program was subsequently undertaken as a condition of CHMP 17539 (Van Berkel et al., in preparation), comprising a manual 30 m^2 open area excavation (Trench A), and two mechanically excavated 20 x 1 m transects (Trench B and C) to the south along the rise crest. An additional 328 artefacts were identified in Trench A, 14 in Trench B and 71 in Trench C. Artefact analysis indicated that the majority were made of a very high quality microcrystalline silcrete and a dark fine-grained silicious material (the latter being a relatively unusual type for the region), and that these materials would have been brought to the location from elsewhere. Combined with the assemblage from CHMP 17539, the diversity of artefact forms indicated that stone artefact manufacture and maintenance occurred along the ridgeline. The presence of backed artefacts and 'thumbnail scrapers' in the assemblage was also considered indicative of resource processing. Two Optically Stimulated Luminescence (OSL) samples were processed from Trench A, indicating that cultural material was deposited from around 4,670 ± 325 years before present (BP).

Further investigation of VAHR 7921-1846 took place in 2021 during preparation of CHMP 17418 (Skitmore et al. 2025). An additional 93 artefacts were identified in these three test pits between 300-900 mm. The boundaries of the Aboriginal Place were subsequently expanded to incorporate the remainder of the crest and upper slopes of the sandy rise landform, with a Potential Archaeological Deposit (PAD) noted [redacted].

3.2.1.2 Aboriginal historical place component

Ethnohistorical research undertaken for CHMP 17418 (Skitmore et al. 2025) identified several historical sources relating to the use of the ridgeline by Bunurong groups between the 1820s and the 1850s (see Section 5 for more detail). It was decided during consultation with BLCAC following the CHMP's complex assessment that the information collated was sufficient to register an Aboriginal Historical Place component for VAHR 7921-1846. Aboriginal Historical Places are places registered on the VAHR for their known associations with, and cultural significance to, Aboriginal people. The name 'Barnibyrnong' was first recorded by former St Germain homestead resident Thomas Patterson in the 1890s, and was chosen by BLCAC as the name of the Aboriginal Place registration.

[redacted]

[redacted]

3.2.1.3 BLCAC statement of significance

Barnibyrnong is considered by Bunurong knowledge holders to have important cultural and spiritual significance due to its direct connection to gathering and ceremonial places, travel routes and cross-cultural interactions. The following statement of significance was provided to the author by BLCAC in June 2023 during completion of CHMP 17418 to support registration of Barnibyrnong as an Aboriginal Historical Place:

> The Bunurong Land Council Aboriginal Corporation (BLCAC) provides this statement of significance for Barnibyrnong (also known as St Germain's).
>
> The Activity Area at 95 McCormacks Road, Clyde North (as shown in CHMP 17416) and surrounds are highly significant to Bunurong people should be protected for future generations. Specifically, the recorded cross-cultural colonial era places where known interactions between Bunurong people and Europeans occurred is considered at the time of this statement to be rare and highly significant. Consequently, the protection of this Place would be beneficial to the Bunurong people.
>
> Overall, the Places recorded in this CHMP, so near to Cardinia Creek, are important within the broader cultural landscape and the Bunurong connection to Country and Place. When these Places are considered within the geographic region of CHMP 17418 they contribute to the overall seasonal narrative of Bunurong landscape use. The ability of these Places to be interpreted and understood has been increased during the CHMP assessment process. The proposed cultural values study and any management conditions should include the ability to continue that assessment and understanding of both the landscape and the Bunurong story. This enables the BLCAC to recapture lost knowledge, which will then in turn increase the significance of the broader cultural landscape.
>
> At a time when the cumulative impacts of urbanisation are rapidly changing this landscape forever and erasing evidence of former Aboriginal travel routes, camp sites and history, the Aboriginal Places within the Activity Area for CHMP 17418 (particularly VAHR 7921-1846) provide an essential link with both tangible and intangible Bunurong cultural values. There are not only direct links to this Place for those post-Contact interactions and ancestors such as Jimmy and Eliza Dunbar, but substantial potential for research into the 35,000+ years that Bunurong people have traversed this Country. The research undertaken for this CHMP including the ethnographic history and first-person accounts from the colonial landowners reveal details on Bunurong language, relationships and behaviour in that initial post-Contact period and interactions between the invaders and the original custodians.
>
> This Place, known as Barnibyrnong, is considered by Bunurong knowledge holders to have important spiritual significance due to its direct connection to Bunurong ancestors, gathering Places, ritual places and ritual journeys and is connected to numerous aspects of Bunurong intangible heritage.

3.2.2 Cultural heritage significance and management conditions

Considering the significance of Aboriginal Places is a key component of CHMP assessments and assists with developing management conditions that provide the appropriate level of harm avoidance or minimisation in relation to proposed developments. Significance evaluations and management conditions within approved CHMPs have been reviewed for the purpose of this addendum to inform development of the PSP in line with the existing management framework under the *Aboriginal Heritage Act 2006* (Vic) ('the Act').

3.2.2.1 Cultural heritage significance

Section 4 of the Act defines cultural heritage significance as:

1. archaeological, anthropological, contemporary, historical, scientific, social or spiritual significance; and

2. significance in accordance with Aboriginal tradition.

Significance in accordance with Aboriginal tradition concerns the relationship and importance of Aboriginal Places to the Aboriginal community. Aspects of cultural significance include both people's traditional and contemporary links with a given Aboriginal Place, landscape feature or associated story, as well as an overall concern by Aboriginal people for Places and their continued protection. Such values may relate to both tangible and intangible heritage, and places and events with colonial-era associations also sometimes becoming significant.

Cultural significance is solely a matter for the local Aboriginal community (in this case represented by BLCAC) to assess and determine. BLCAC provided the following statement to the author during preparation of CHMP 17418 (Skitmore et al. 2025):

> The Activity Area is significant to Bunurong people and ideally it would be protected for future generations. Specifically, the recorded cross-cultural colonial era places where known interactions between Bunurong people and Europeans occurred is considered at the time of this statement to be rare and significant. Consequently, the protection of this place would be beneficial to the Bunurong. Overall, the Places recorded in this CHMP, so near to Cardinia Creek, are also important within the broader cultural landscape. When these Places are considered within the geographic region of this CHMP they contribute to the overall seasonal narrative of Bunurong landscape use. The ability of these Places to be interpreted has been increased during the CHMP activity and would complement the development. As the ability to interpret the activity increases, so will its significance. This enables the Bunurong people to recapture lost knowledge, which will then in turn increase the significance of the broader cultural landscape. This Place is considered by Bunurong knowledge holders to have important spiritual significance due to its direct connection to gathering Places, ritual Places and ritual journeys and is connected to numerous aspects of Bunurong intangible heritage.

BLCAC also provided the following during preparation of CHMP 18983 (Skitmore et al. 2024):

> BLCAC respectfully offer the below statement of significance which covers all of our traditional land and water Country.
>
> Over the last 35,000 years Bunurong people have adapted to a range of significant changes within their Country. Our stories of the Bay flooding with water, asteroid impacts near

Cranbourne, Arthurs Seat once being an Island, volcanic activity in the western suburbs, the great floods, fires and earthquakes, all speak of such events.

Over 1000 generations of our people have been here before us. Archaeological excavation within our Country has already demonstrated about 35,000 years' worth of occupation. These sites can show us how our ancestors interacted with their environment and how that interaction changed over time. We regard all evidence of our people's occupation as sacred.

No amount of data can compensate for the loss of a site but if we can't *literally* preserve a site, the only other way it may be preserved is by way of careful data collection as part of a Cultural Heritage Management Plan (CHMP). The importance of the accuracy of this data being collected for *protection* is paramount as we regard this information as sacred. It holds the stories of our people and our past. In some places our archaeology is the only thing that remains within a given landscape, the only thing left that hasn't been changed or moved, and because of this, it is now sacred to us.

All of our Country is highly significant, every square inch, every rock, every leaf, every dune, every artefact. If we could attribute the cause of this blanket high significance rating of our Country to any one thing, it would be that in Melbourne especially, so much has been destroyed and lost as the city grew, and so quickly. If you lose enough of something, what little you have left becomes so much more important. Similarly, when someone passes, their earthly possessions become more important to those they left behind.

With regards to knowledge and stories, each of our Elders that passed away during early colonization is the equivalent of a state library burning down today. One Bunurong Elder of the time was famously quoted saying that, '*Once we are gone, no one is going to know where anything is*'. Clearly considering the vast amount of knowledge he and his people had collected about the landscape, all written in their songs and stories. Another Elder was noted as saying, '*one day smart people will lament at our passing*', no doubt acknowledging again the ocean of information collected on every living thing here, every tree, every animal and the key to the complex balance of all things that his people had managed to evolve and sustain. European people are still learning of the complexities of Aboriginal culture.

With no written language and change occurring here so quickly, we have lost many of the ancient stories of this landscape. At the time, Bunurong people's focus was more on trying to stay alive than the luxuries of continuing to practice culture, which included the careful passing on of stories and knowledge, different levels of which would require certain initiations, performed over time.

These statements indicate that the entire precinct (as part of a broader cultural landscape associated with the Cardinia Creek corridor) is associated with important cultural and social values to Bunurong Traditional Owners, and this significance is not limited to the boundaries of the identified Aboriginal Places. It also notes the special significance of VAHR 7921-1846 (Barnibyrnong), which is reiterated in the separate statement issued by BLCAC on this place (see Section 3.2.1.3).

The archaeological significance of an Aboriginal Place is generally seen as being directly linked to its scientific or research value. CHMP 17418 (Skitmore et al. 2025) and CHMP 18983 (Skitmore et al. 2024) utilise a formula derived from Bowdler (1984).

The significance assessments as determined by the CHMPs are provided in Table 3 below.

3.2.2.2 Cultural heritage management conditions

Cultural heritage management conditions ('conditions') are developed within CHMPs and are approved under the Act to determine how harm to Aboriginal Places can be avoided, minimised or otherwise managed. Conditions are written specifically in relation to the activity proposed by the CHMP. Conditions are developed in consultation with the RAP, and the RAP is the approval authority for the CHMP. A review of conditions is included here to inform the recommendations review section of this addendum. An overview of conditions in relation to each Aboriginal Place is provided in Table 3 below.

For the majority of Aboriginal Places in the precinct subject to disturbance, harm to the place is managed through archaeological salvage programs. These allow for the identification, collection and use of cultural material such as stone artefacts in cultural interpretation and allow reburial of this material in an area not subject to future impact. In some instances, harm can be minimised by limiting development impact to a portion of an Aboriginal Place and undertaking salvage in the remainder. In other instances, harm to an Aboriginal Place can be completely avoided.

Of note is Condition 17 of CHMP 17418 (Skitmore et al. 2025), relating to VAHR 7921-1846. This requires the Sponsor to establish an Aboriginal heritage conservation area called the 'St Germains Heritage Protection Zone' in the area shown in Figure 4, develop a Conservation Management Plan for the area, and establish a park ('Barnibyrnong Park') in the area shown in Figure 4. Additionally, the condition requires the sponsor to enter into an agreement with the City of Casey under section 173 of the *Planning and Environment Act 1987* to ensure that the requirements of the Conservation Management Plan are strict compliance obligations on title.

Once these specific management conditions have been implemented, development is then allowed across the remainder of the Aboriginal Place. Other Conditions and Contingency Plans of CHMP 17418 ensure that contractors working on site are aware of the potential for cultural heritage material to be unearthed, and ensure that works temporarily cease in these areas whilst any identified material is recorded and salvaged by a heritage advisor and the RAP.

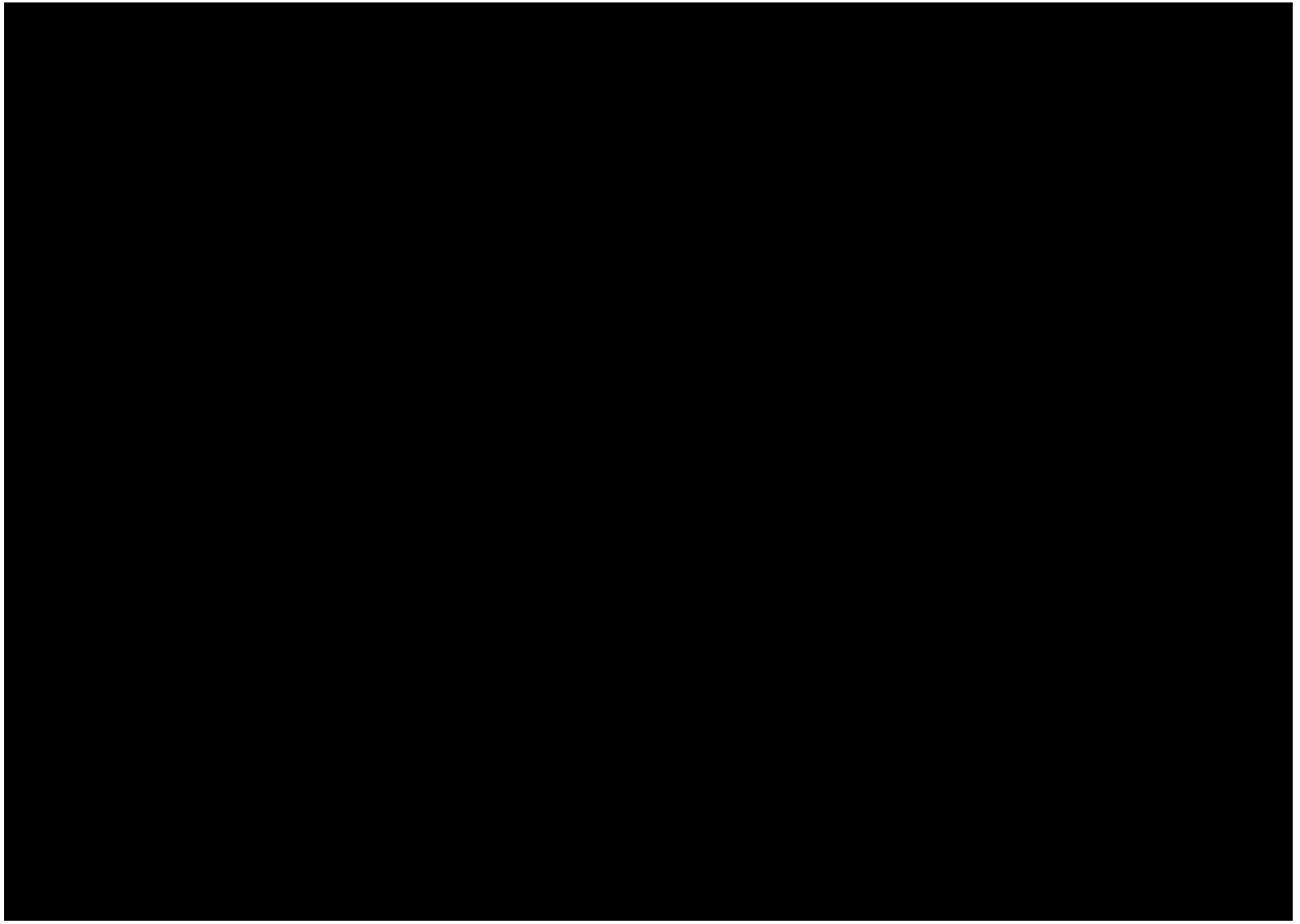


Figure 4. Map included as part of Condition 17 in CHMP 17418 (Skitmore et al. 2025: 30)

Table 2. Aboriginal Places registered in the precinct

[redacted]

Table 3. Significance assessment and summary of management conditions for Aboriginal Places in the precinct

[redacted]

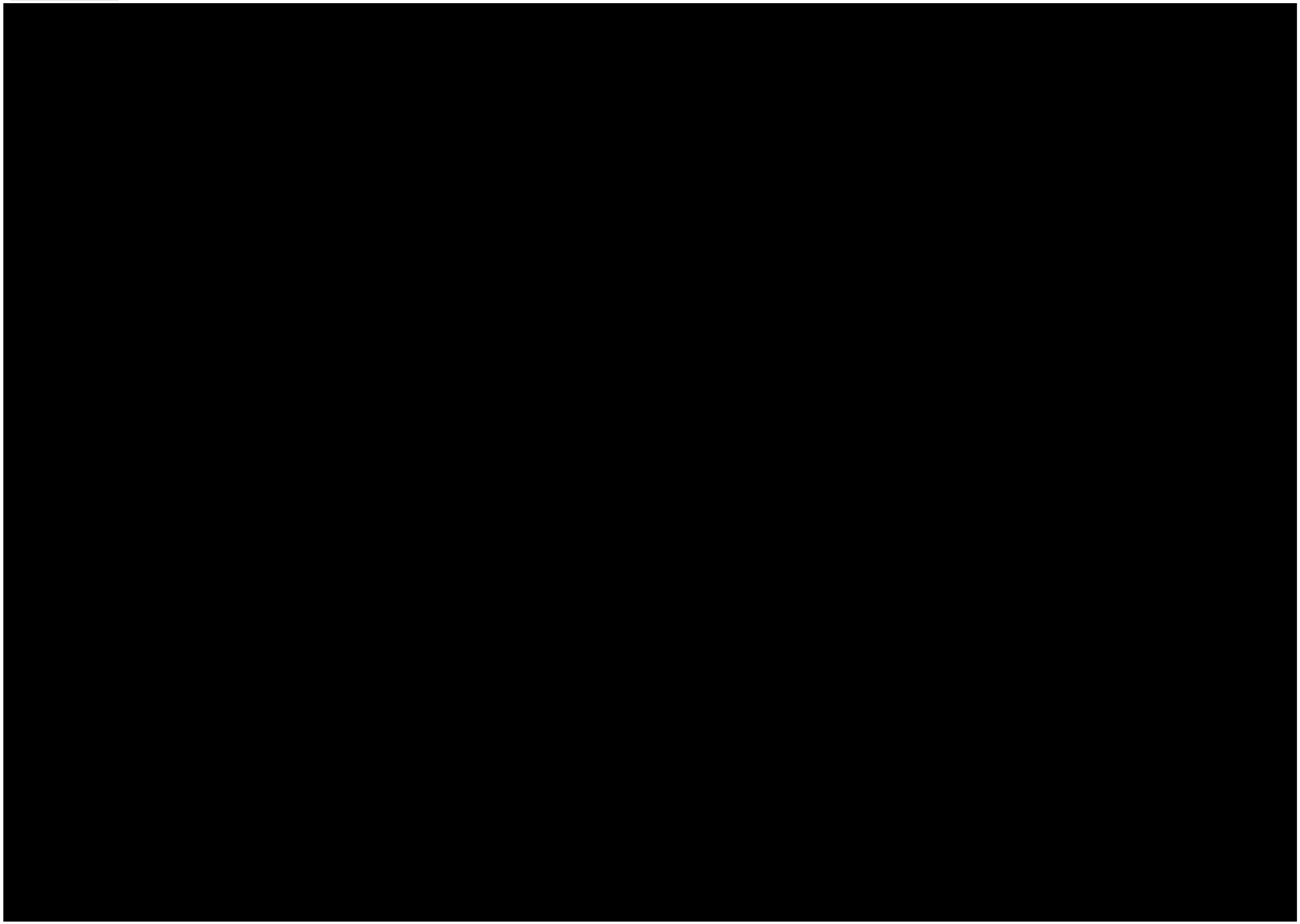


Figure 5. Registered Aboriginal Places within 2km of the Cardinia Creek South (Part 2) precinct

Figure 6. Registered Aboriginal Places within the Cardinia Creek South (Part 2) precinct

4. Addendum to '5.7 Review of Local Studies (Cultural Heritage Management Plans)'

4.1 Overview

This section provides additional reviews of all archaeological studies conducted within, partially within, or abutting the precinct. The following 10 reports have been completed or are in preparation at the time of writing:

- **CHMP 17539**: 95 McCormacks Road, Sewer Main and Road Reserve Upgrade (Clark et al. 2021)
- **CHMP 17539 archaeological salvage**: 95 McCormacks Road, Sewer Main and Road Reserve Upgrade (Van Berkel et al., in preparation)
- **CHMP 17418**: 95 McCormacks Road, Residential Subdivision (Skitmore et al. 2025)
- **CHMP 18983**: 125 McCormacks Road, Drainage Works (Skitmore et al. 2024)
- **CHMP 18983 archaeological salvage**: 125 McCormacks Road, Drainage Works (Extent Heritage, in preparation)
- **CHMP 19932**: 125 McCormacks Road, Residential Subdivision (Anderson, in preparation)
- **CHMP 19961**: Growling Grass Frog Habitat Wetlands, 125 McCormacks Road (Bensted and McDonald, in preparation)
- **CHMP 12430 archaeological salvage**: 110 Smiths Lane, Clyde North Residential Subdivision (Janson et al. 2020)
- **CHMP 16800 [abutting western boundary only]**: 75 McCormacks Road (Mathews et al. 2020)

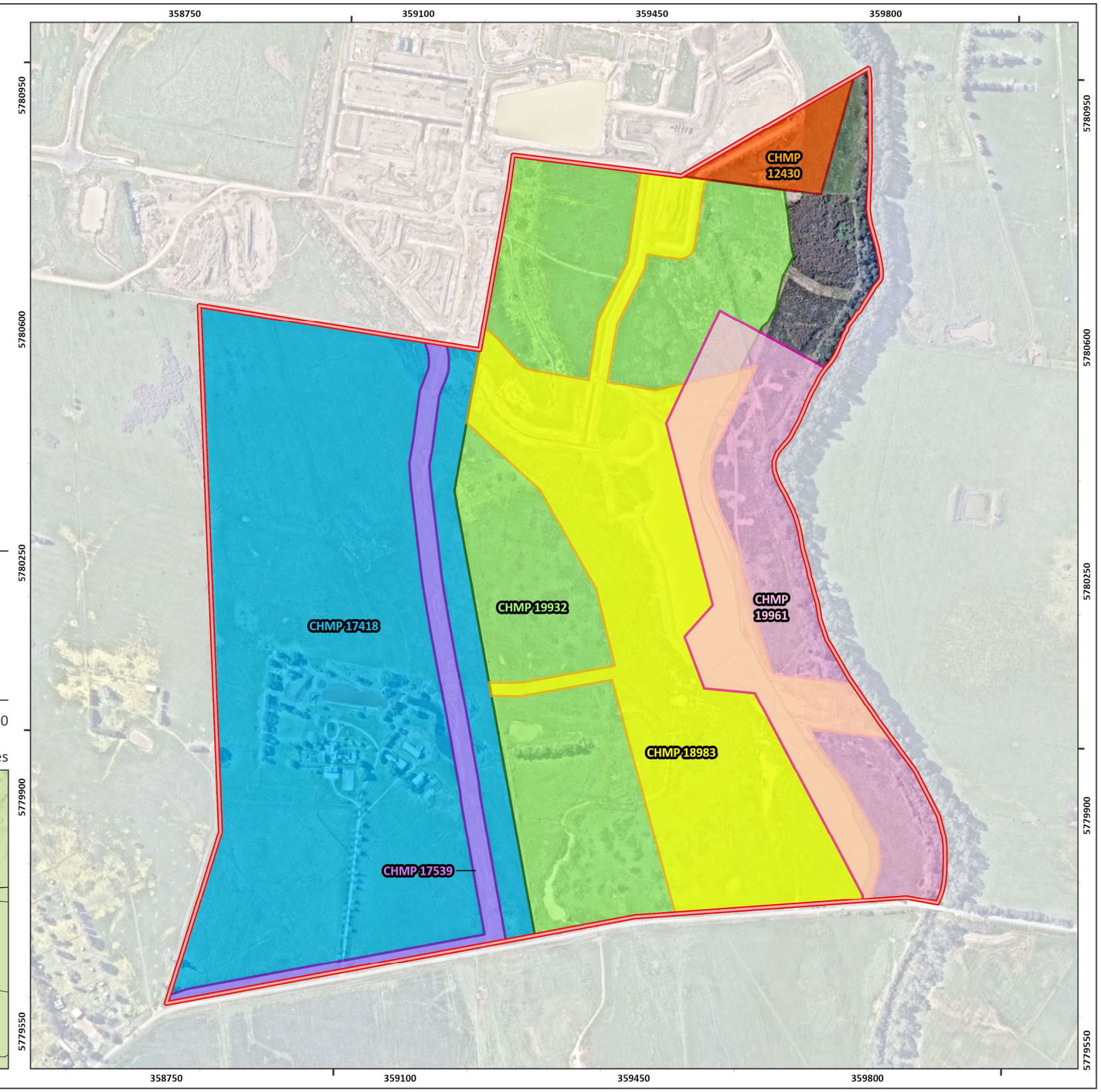
These studies are reviewed below by property for ease of comparative analysis. Parts of CHMP activity areas that intersect with the precinct are shown in Figure 7. A combined map showing all archaeological reports, test pit locations, salvages, registered Aboriginal cultural heritage and yet to be registered Aboriginal cultural heritage is shown in Figure 8. An archaeological synthesis is provided at Section 4.6.

EXTENT

PEOPLE CENTRED HERITAGE

CHMPs within study area

Cardinia Creek South (Part 2) PSP



Drawn by: Megan Aldridge
Checked by: Stevie Skitmore
Date: 12/12/2025
Projection: GDA 1994 MGA Zone 55
Data sources: Extent, Nearmap, DELWP, ACHRIS (Aerial photograph exported 28/10/2025)
LGA: Casey
Parish: Cranbourne

0 100 200 300 400 500 600
Metres

Figure 7. Activity areas of CHMPs completed and in preparation within Cardinia Creek South Part 2 PSP (showing areas of overlap only)

Figure 8. Map showing all excavated test pits and salvages in the precinct, showing both registered and not yet registered Aboriginal cultural heritage

4.2 95 McCormacks Road, Clyde North

4.2.1 CHMP 17539: 95 McCormacks Road, Sewer Main and Road Reserve Upgrade (Clark et al. 2021)

Mirvac Victoria engaged Extent Heritage to prepare a CHMP for a proposed sewer main and road reserve upgrade at 95 McCormacks Road. CHMP 17539 was prepared for a narrow corridor along the southern boundary of the precinct, turning north to link with the adjacent residential development. This CHMP was commenced following the standard assessment of CHMP 17418 (see Section 4.2.3) so this review covers only the complex assessment stage.

The complex assessment involved excavation of three 1 x 1 m test pits (TPs) and fourteen 2 x 1 m machine test pits (MTPs) (test pit locations are shown in Figure 8 and Figure 11). The test pits identified four landforms, being two sandy rises in the southern part of the activity area, an alluvial floodplain associated with a former watercourse running to the north of the St Germain homestead, and a low-lying undulating sandy plain across the balance. A total of 96 stone artefacts were identified and were registered as two artefact scatters and one LDAD (VAHR 7921-1846; VAHR 7921-1847 and VAHR 7921-1844).

The CHMP was evaluated by FP-SR, as no RAP had been appointed at the time of commencement. The cultural heritage management conditions ('conditions') of the CHMP required archaeological salvage of parts of VAHR 7921-1846 and VAHR 7921-1847 prior to undertaking the activity (see Section 4.2.2 below).

4.2.2 CHMP 17539 Salvage: 95 McCormacks Road, Sewer Main and Road Reserve Upgrade (Van Berkel et al., in progress)

Salvage excavations were undertaken by Extent Heritage at VAHR 7921-1846 and VAHR 7921-1847 as conditions of CHMP 17539, prior to construction of the sewer main connection by Mirvac. This report is currently in preparation and the below is based on the draft report provided to the author.

4.2.2.1 Salvage at VAHR 7921-1846 (Barnibyrnong)

At VAHR 7921-1846 (Barnibyrnong), the salvage included a 30 m^2 open area excavation (Trench A) and two 20 x 1 m linear transects (Trenches B and C)[redacted]. At VAHR 7921-1847 (95 McCormacks Road Clyde North AS 02), this comprised a single 5 x 1 m transect (Trench D) across the width of the defined rise. Research questions included clarifying the chronology and use of both Aboriginal Places through further artefact collection and analysis, and a program of OSL dating.

A total of 331 stone artefacts were recovered from Trench A between 0–656 mm below surface level. The highest artefact concentrations were recorded between 400–500 mm (n=151), and 500-600 mm (n=148), with artefacts almost absent in the plough zone (0–300 mm, n=2). Overall, there appears to be a clear vertical and horizontal integrity to the deposit, with clear

clustering of artefacts of similar material and form (see Figure 9). This integrity is supported by the artefact analysis, which shows a high proportion of complete flakes in the assemblage with limited post-depositional impact.

The identification of 13 cores within the assemblage strongly suggests that tool production was occurring on the rise in this location. Given very little cortex is present, this indicates the use of material sourced from and previously used elsewhere. Indeed, the bulk of the assemblage comprises silcrete and an indiscernible fine-grained silicious material (likely a form of chert) which are sourced at some distance from the precinct. Artefacts made from the latter material are statistically smaller than those made with other material, indicating the extended use of cores and this a greater preference for this material. Crystal quartz flakes and cores are also present in the assemblage, with Traditional Owner representatives on site during the salvage providing information that this raw material was often associated with ceremonial use.

OSL samples were collected from artefact bearing layers to attempt to define the chronological boundaries of artefact deposition. The sample taken from the deepest artefact bearing layers at VAHR 7921-1846 indicates that sandy rise formation and artefact deposition commenced at this part of the rise around 4,670 ± 325 years BP, meaning that the assemblage most likely dates to the mid-to-late Holocene after establishment and stabilisation of the Koo-Wee-Rup Swamp and its associated resources (Jacobs 2022).

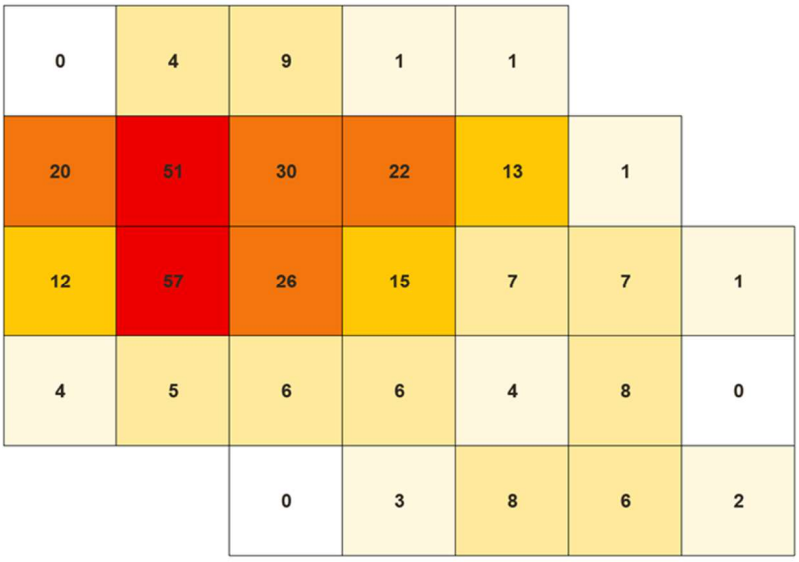


Figure 9. Artefact counts per square metre in Trench A (VAHR 7921-1846)

A total of 14 and 71 artefacts were identified in Trenches B and C respectively, indicating lower densities of cultural material at lower elevations of the sandy rise. Artefacts occurring in most square metres within the transects, most often occurring at densities of around 1-2 artefacts, and with numbers occasionally ‘spiking’ to around 10 artefacts per metre. Whilst this may represent a series of discrete knapping events occurring along the rise, the low numbers of artefacts, limited scale of excavation and lack of conjoin analysis do not provide enough information for statistical analysis to this effect. That said, a combined 40 m transect along the

crest was very useful in showing how artefacts occur in varying densities within almost all square metres of the sandy rise.

4.2.2.2 Salvage at VAHR 7921-1847 (95 McCormacks Road Clyde North AS 02)

One mechanically excavated MTP measuring 5 x 1 m (Trench D) was excavated at VAHR 7921-1847 and reached a depth of 1720 mm, the deepest soil profile yet encountered across the precinct. A total of 21 artefacts were identified, all between 800-1000 mm and comprised of a mixture of silcrete, quartz and fine-grained silicious material. The stratigraphy of this rise appeared much more disturbed, with clear evidence of animal burrows within the top 500 mm. This disturbance history was shown in the three OSL samples taken from VAHR 7921-1847, with clear mixing of grains shown in all samples indicating consistent bioturbation down the soil profile. While it seems likely that the rise itself began to form from at least 25,000 years BP, little can unfortunately be said about the age of the artefact assemblage.

4.2.3 CHMP 17418: 95 McCormacks Road, Residential Subdivision (Skitmore et al. 2025)

Mirvac Victoria engaged Extent Heritage to prepare a CHMP for a residential subdivision at 95 McCormacks Road. This CHMP covered the entire property, including the activity area of CHMP 17539 above. The desktop assessment prepared for this CHMP was the first detailed predictive model developed for the precinct. A review of historic aerial photographs and coarse-grained elevation data indicated the presence of sandy rises and possible alluvial terraces within the activity area, and concluded that these were archaeologically sensitive landforms with a strong likelihood of containing subsurface Aboriginal cultural heritage material. The desktop assessment also identified historical references associating the St Germain Run with the Bunurong community (see Section 5).

A standard assessment comprised a pedestrian survey of all accessible parts of the study area, confirming the presence of sensitive landforms and identifying one stone artefact in a disturbed context [redacted]. Following this, the complex assessment was then completed for CHMP 17539 (see Section 4.2.1 above).

A complex assessment was subsequently undertaken for CHMP 17418, with testing planned to determine whether the extents of VAHR 7921-1846 and VAHR 7921-1847 extended beyond their originally recorded boundaries, and to test landforms across the remainder of the activity area. This comprised forty-nine 2 x 1 m MTPs and seven 1 x 1 m TPs, resulting in the identification of 515 stone artefacts in subsurface contexts (see Figure 8). These artefacts were registered as eight Aboriginal Places, being additional components of VAHR 7921-1844, expanded Aboriginal Place registrations of VAHR 7921-1846 and VAHR 7921-1847 and submission of five new Aboriginal Place registrations: VAHR 7921-1872, VAHR 7921-1873, VAHR 7921-1874, VAHR 7921-1875 and VAHR 7921-1876. The contents of these places are detailed in Table 2 above. [redacted].

A deep sandy soil profile was consistently encountered during excavation, comprising an upper layer of dry, friable dark grey silty loam grading to lighter grey bleached silty sands. A cemented and compact mottled grey-orange clay was encountered variously between 450 mm and 1200 mm. Most artefacts identified during the complex assessment were recovered in the lower part of the grey bleached sandy silt profile, near its interface with the clay.

The complex assessment also provided more information on the levels of disturbance and the mosaic of landforms in the western portion of the precinct, including the importance of a former ephemeral watercourse (now channelled and dammed to the immediate north of St Germain). Considered against the broader studies across the region (as reviewed in the 2015 ACHA), the findings of CHMP 17418 strongly suggest long-term, repeated use of (even slightly) elevated landforms on the margin of ephemeral waterways and areas of seasonal inundation in the precinct.

The CHMP was evaluated by FP-SR, as no RAP had been appointed at the time of commencement. Management of identified places included designation of a heritage protection zone and parkland over parts of VAHR 7921-1846 (see Section 3.2.2), and archaeological salvage at other Aboriginal Places.

4.3 125 McCormacks Road, Clyde North

4.3.1 CHMP 18983: 125 McCormacks Road, Drainage Works (Skitmore et al. 2024)

Mirvac Victoria engaged Extent Heritage to undertake a CHMP for proposed drainage channels and associated works at 125 McCormacks Road in the eastern part of the precinct. The Bunurong Land Council Aboriginal Corporation (BLCAC) had been appointed as the RAP by the commencement of the CHMP and were the evaluating body. The desktop assessment indicated the likelihood of archaeologically sensitive landforms in the activity area, including sandy rises.

A standard assessment was conducted with representatives from BLCAC. This comprised a pedestrian survey and auger program across all accessible parts of the activity area, with an effective survey coverage of only 0.39%. No Aboriginal cultural heritage was identified, however, several sandy rises with a high potential for subsurface Aboriginal cultural heritage were identified.

A complex assessment was then undertaken consisting of excavation of 111 test trenches (see Figure 8). These comprised 13 manual 1 x 1 m TPs, 18 mechanical 2 x 1 m MTPs and 80 manual 0.5 x 0.5 m radial shovel test pits (RSTPs) to define the extent of each identified artefact scatter. A total of 218 lithic artefacts were identified during the complex assessment across 25 test pits, with these registered as five new Aboriginal Places (Figure 12):

- 125 McCormacks Road LDAD (VAHR 7921-1965);
- 125 McCormacks Road AS1 (VAHR 7921-1972);

- 125 McCormacks Road AS2 (VAHR 7921-1973);
- 125 McCormacks Road AS3 (VAHR 7921-1974); and
- 125 McCormacks Road AS4 (VAHR 7921-1975).

Detail of these places is included in Table 2 above. [redacted]

This CHMP was evaluated by BLCAC, with management conditions developed collaboratively. These included archaeological salvage of all parts of Aboriginal Places subject to development impact.

4.3.2 Salvage (CHMP 18983): 125 McCormacks Road, Drainage Works (Extent Heritage, in preparation)

Archaeological salvage is currently being conducted as a condition of CHMP 18983 prior to construction of drainage works in these locations (see Figure 8 and Figure 13). The following information was provided by the excavation director on 26 November 2025 regarding interim salvage results at VAHR 7921-1974 (125 McCormacks Road AS3):

- 385 m^2 of the 400 m^2 salvage has been completed to date;
- Stratigraphy consists of a silty sand deposit to the depth of around 600-700 mm, graduating to a clayey sand, and underlain by a massive clay from around 1,500 mm.
- All Aboriginal cultural heritage material consists of stone artefacts, with the majority identified between 500-900 mm.
- Artefactual densities are highly variable across the excavated area, ranging between 1 and 93 artefacts / m^2.
- While cataloguing and artefact analysis has not yet taken place, identified raw materials include silcrete (coarse-to-fine grain), quartz, quartzite, coastal flint and petrified wood.
- Fragmented charcoal is present throughout the deposit, being indicative of burning events.

The identification of petrified wood in the assemblage is a unique occurrence in the precinct but is not surprising given that stone artefacts are produced from this material where it is in abundance. Petrified wood has been recorded in numerous places across the Koo-Wee-Rup Swamp and indicates local resource procurement (Spencer-Jones et al. 1975).

4.3.3 CHMP 19932: 125 McCormacks Road, Residential Subdivision (Anderson, in preparation)

A complex assessment is currently being completed by Extent Heritage for Jet Wise Enterprise at 125 McCormacks Road in advance of a residential subdivision. As of 30 November 2025, 43 MTPs have been excavated within the activity area, at a 50 m spacing between pits across modelled low and moderate sensitivity areas and a 25 m spacing across high sensitivity areas. Aboriginal cultural material so far identified comprises 673 stone artefacts, identified both in surface exposures and in subsurface contexts across 15 MTPs (see Figure 8).

The complex assessment is continuing, and this cultural heritage material is yet to be registered with the VAHR. Conditions of management are yet to be determined in consultation with BLCAC.

4.3.4 CHMP 19961: Growling Grass Frog Habitat, 125 McCormacks Road (Bensted and McDonald, in preparation)

Niche have been engaged by Melbourne Water and are currently finalising CHMP 19961 for the construction of frog ponds adjacent to Cardinia Creek in the eastern part of the precinct. A standard and complex assessment has been completed, comprising manual excavation of test pits at 25-50 m spacings along the activity's alignment (see Figure 8). The activity area largely comprises a shallow sandy plain subject to seasonal inundation. Two stone artefacts were identified in during complex assessment testing, being flakes of crystal quartz and quartzite. These were registered on the VAHR on 14 November 2025 as two components of 125 McCormacks Road LDAD 2 (VAHR 7921-2069). The activity area was assessed as generally having a low archaeological sensitivity. Conditions of management include curation of recovered cultural material.

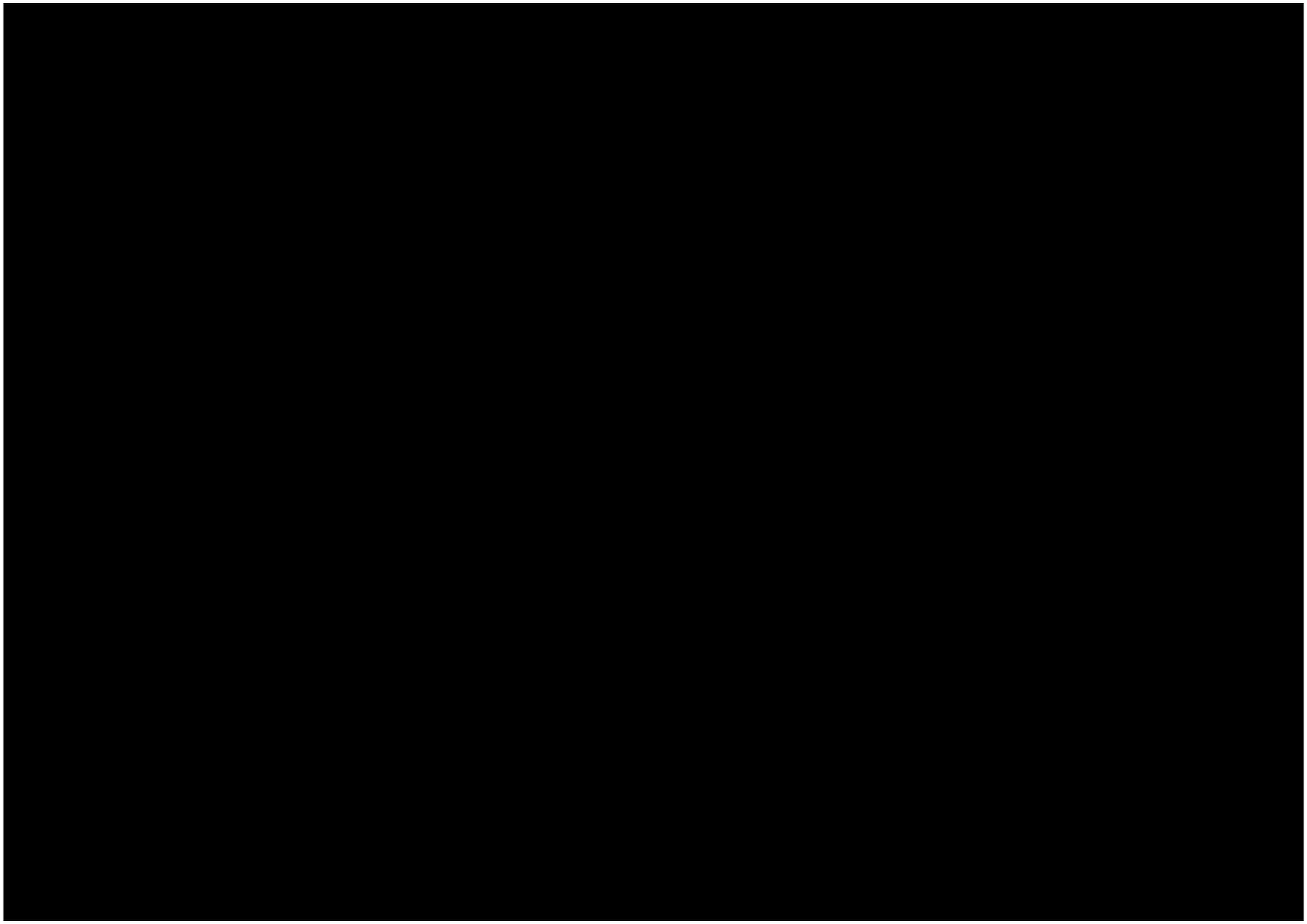


Figure 10. Aboriginal Places and test pits excavated at 95 McCormacks Road after completion of CHMP 17539 and CHMP 17418

Figure 11. CHMP 17539 activity area showing Aboriginal Places, test pits and salvage trench locations

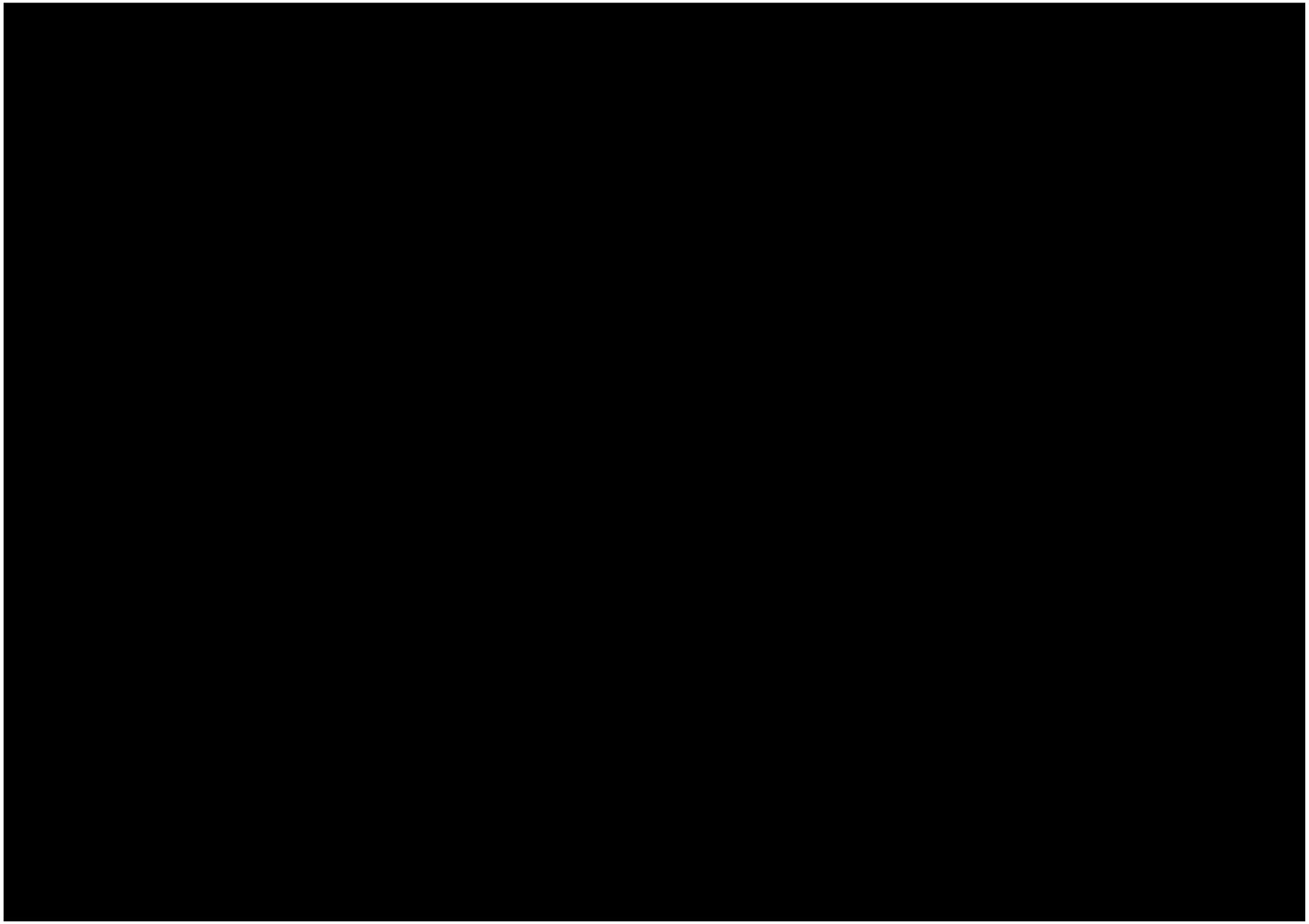


Figure 12. Complex assessment test pit locations and results for CHMP 18983 with identified rise landforms

Figure 13. Salvage locations as conditions of CHMP 18983

4.4 110 Smiths Lane, Clyde North

4.4.1 CHMP 12430: 110 Smiths Lane, Clyde North Residential Subdivision (Tunn and Foley 2016)

Note that the activity area of this CHMP overlaps slightly with the north-eastern corner of the precinct. This brief review focuses on the assessment relevant for this portion.

Mirvac Victoria engaged AHMS (now Extent Heritage) to prepare a CHMP for a proposed residential subdivision at 110 Smiths Road, Clyde North. The landscape of the activity area closely resembles that of the western part of the precinct, being a low-lying sandy plan interspersed with low rises. A total of 16 MTPs were excavated during the complex assessment, with four Aboriginal Places recorded, all being associated with elevated rise landforms. [redacted]

4.5 75 McCormacks Road, Clyde North

4.5.1 CHMP 16800: 75 McCormacks Road (Mathews et al. 2020)

[redacted]

Mathews et al. (2020) prepared a CHMP in advance of a subdivision at 75 McCormacks Road, Clyde North. Two landforms were identified during the standard assessment; being a series of subtly elevated sandy rises and a low-lying plain landform consisting of a thin veneer of sand overlying a clay base. Four 1 x 1 m TPs, forty-two 2 x 1 m MTPs, and thirty shovel test pits (STPs) were excavated during the complex assessment, to depths of between 300 mm and 1800 mm, with 225 flaked stone artefacts identified. [redacted] Artefact materials included silcrete, quartz and quartzite, with lower numbers of basalt, hornfels, rhyolite and coastal flint also present. Seventeen formal tool types were identified, including geometric microliths, scrapers and an adze slug. [redacted]

The authors concluded that distribution variation across the activity area was because of the targeted use of rises above a floodplain that would have been subject to intermittent inundation. [redacted] there was evidence that point to some local stone working, replenishment of tool kits, and possibly some local resource extraction and processing. Mathews et al. also concluded that this has left a fairly low-density archaeological signature, and that use probably occurred episodically over a long period of time.

4.6 Regional review based on local archaeological studies

The Aboriginal Places registered within the Cardinia Creek South (Part 2) precinct are located across a low sandy plain and cluster on remnant sandy rises adjacent to a series of ephemeral watercourses. Their location on these rises overlooking the waterway along with repeated high-density evidence of stone tool production and rejuvenation in these locations indicates use of these rises for resource procurement associated with the Cardinia Creek floodplain and Koo-Wee-Rup Swamp margins.

It is likely that the sandy rises have complex and admixed aeolian and alluvial origins, and that their formation commenced in the early part of the LGM (see Section 6 for more detail on sandy rise formation). During the terminal Pleistocene, the sea level was approximately 50 m lower than today (Lambeck and Chappell 2001), with the Cranbourne Sand 'massif' forming part of a semi-arid steppe with sections of woody vegetation confined to microsites close to rivers (Thom et al. 1994). Changing environmental conditions throughout the terminal Pleistocene and into the Holocene appear to have increased the abundance of food and water resources in the region between about 8,000 and 5,000 years BP, with amplified fluvial action leading to alluvial levee building and scouring episodes during the early-to-mid-Holocene (Bowden 1983). A reduction in rainfall around 4,500 BP led to the formation and stabilisation of barrier dunes along the edge of the bay, choking off former drainage lines and creating swamp systems (as shown in Wheeler et al. 2014) During this period the archaeological record indicates a significant increase in artefact deposition, silcrete utilisation, and backed artefact production.

Within the precinct, stone artefacts are sometimes present throughout the entire sandy rise soil profile and may indicate deposition from the terminal Pleistocene through to the present, during the entire episode of dune building. However, in the main, archaeological investigations in the precinct have found artefacts cluster towards the base of the bleached sand horizon, just above the geogenic clay base. While this may suggest early deposition during the initial phases of dune building, it may also indicate post-depositional vertical movement of artefacts through stabilised dune soil horizons. Given the presence of a semi-arid landscape during the early dune building phase, and a more abundant resource environment towards the mid-Holocene, the latter explanation appears to be more likely.

Supporting a mid-Holocene date for the precinct's use is both artefact analyses and dates returned from salvage programs. With the former, microcrystalline silcrete geometric microliths (or backed artefacts; identified at VAHR 7921-1846, VAHR 7921-1873, VAHR 7921-1875, VAHR 7921-1876, VAHR 7921-1965 and VAHR 7921-1972) have traditionally been understood as mid-Holocene markers. Attenbrow et al. (2009) suggest that after initially appearing in assemblages around 8,500 years BP, backed artefacts greatly increased in number between 4,000 and 3,500 years BP, and that this increased production was triggered by heightened foraging risk and / or social re-organisation brought about by a change in climate to a regime that was cooler and drier than any other time during the Holocene. Hiscock and Attenbrow (2003) also hypothesise that high frequencies of backed artefacts correlate to a worsening of the climate around c. 4,000 and 2,000 years BP, and that as easily carried and maintainable multi-purpose tools, they represent a technological strategy for managing risk during drier periods. After around 2,000 years BP, rainfall increased and higher rates of

discharge into the Koo-Wee-Rup that would have further contributed to the formation of alluvial levees and post-deposition sediment reworking (Cohen and Nanson 2007, 414).

Also supporting a mid-Holocene date for the precinct's Aboriginal Places are the results of the OSL program from VAHR 7921-1846 and VAHR 7921-1847. These support a possible Pleistocene date for initial dune formation adjacent to watercourses (part of the sample of OSL3 from VAHR 7921-1847 gives an age estimation of 27,300 ± 3,385 BP). The majority of OSL age estimations from artefact bearing sediments date to the mid- to late-Holocene, and while it is possible that there is terminal Pleistocene use of the precinct, it is more likely that the bulk of the assemblage dates to more recent occupation.

This conclusion is similar to that from salvages conducted at VAHR 7921-1547 and VAHR 7921-1466 [redacted]. These results support a late Pleistocene date for initial sand dune formation (and possibly for artefact deposition) in the local region (19,600 ± 900 years BP; Clark et al. 2020), with a mid-Holocene date of 3,100 ± 200 years BP estimated for artefact dense horizons (Janson et al. 2020). While Pleistocene dates are becoming increasingly common for basal sands in the Cranbourne Sand landscape, Czastka and Canning (2012) and Cummins (2013) have called for a closer assessment of these dates against localised dune formation processes, especially in light of Bowler's assessment (in Light 2010, 268) that the upper sandy mantle of the Cranbourne Sand was highly mobile during the terminal Pleistocene around 18,000–12,000 years BP. Indeed, the results of the salvages in the precinct (Van Berkel et al., in preparation) do suggest a period of significant sediment mixing during the early Holocene.

Overall, the local archaeological studies prepared for the precinct strongly indicate use of the elevated sandy rise landforms on the margins of swampland and waterways for stone tool manufacture and maintenance over at least the last 5,000 years. Conversely, areas within current and former waterways and swamps would have been constantly scoured and disturbed by changing flows, leading to much lower archaeological potential. At least 250 generations of Bunurong people have lived, worked and travelled through the precinct. Growing attraction to the precinct likely correlated with swampland formation and stabilisation in the region from this time, with food and freshwater resources growing increasingly abundant. [redacted].

5. Addendum to '5.8 Aboriginal Ethno-history' and '5.9 Review of Thomas Journals'

Detailed historical information relating to Bunurong associations with the precinct was identified by the author during preparation of CHMP 17418 (Skitmore et al. 2025). This section is based on the ethnohistorical section produced for that CHMP, with some additional references identified during preparation of this addendum. Ethnohistorical information provides a context to archaeological assessments, assists in their interpretation and provides valuable information relating to possible intangible heritage values within a study area. Please note that information drawn from the ethnohistorical record may assist in complementing, but is not intended to replace or supplant, Bunurong oral history, knowledge, and cultural understandings of Country.

The earliest documentary references come from William Hilton Hovell in January 1827, prior to permanent British occupation of the region. Detailed accounts follow from William Thomas in 1840 and 1841, around five years after the establishment of the first pastoral runs along Cardinia Creek. Information directly relating to the St Germain pastoral lease is then available from Thomas Patterson from around the late 1850s.

5.1 1827 expedition notes of William Hovell

In late 1826, William Hilton Hovell accompanied an expedition under Captain Wright to Westernport Bay. Hovell had in 1824 travelled overland to Port Phillip and was dispatched by New South Wales Governor Darling to better report on the region, in preparation for British occupation. In January 1827, Hovell travelled twice to the north-western side of Westernport Bay in an attempt to reach the mountains and link up with his 1824 expedition. An analysis of Hovell's bearings taken during one of these trips all but confirms that the route taken on 14-17th January was along the western bank of Cardinia Creek (Hovell 1827: 49).

Prior to the 1880s, Cardinia Creek dispersed from a clearly defined waterway into two low lying floodplains covered in tea-tree and casuarina in the north-west corner of the Koo Wee Rup Swamp. A detailed 1847 map of the region by WS Urquhart clearly shows that the precinct is located at the head of one of these floodplains, with an 'open grassy plain' shown to the immediate south (Surveyor General's Department, Port Phillip Branch 1847;). Hovell describes this grassy plain (which he terms the 'Dumaresque Plains') and the ridgeline upon which he was travelling:

> I came to another open space, quite clear of trees for several miles square, but so perfectly flat that the water appears to have no possibility of draining off, consequently after rain the ground must be some time before it can absorb the whole, but at this time we could not get a drop to moisten our lips, which would have been very acceptable from it being so very hot, and which we so much required, having come upon a native path, which led in the direction I wished to go, I kept upon it in hopes that it would lead to water, but a thunder storm coming on, and it being half past six o'clock, we came too for the night on a low spine or ridge, soil light and dry; the line of its direction due North & South.

> Before 5 this morning left our resting place: still keeping on the native path which at a little after six o'clock brought us to a Creek of cold running water, this is evidently a mountain stream and a few yards from it is a space of rising ground where the Natives have many old huts here we stopped to get breakfast having gone to bed supperless last night, all the land in this side of the ridge (the part stopped on last night) is better than any we have passed over yet, but it still observes a degree of levelness which must take some time to drain the water off, but if it has its disadvantages in this respect, it will have the advantage of retaining the moisture in dry seasons, the Grass is everywhere young and fresh, very thick and of the same quality as in the other parts of the Colony, the trees are very thin; the land in the direction we have to go is not so flat as this passed over, there are short ridges & the trees are much thicker, I think it will change quality as we approach the Mountains (Hovell 1827: 45, emphasis added).
>
> …Passed many Huts on our way, on the sides of the Creek they had only left them a few days back, the Grass all around has been burned lately… Continued on a ridge with the Creek on our right, and in one hour came to a very pleasing track of Country (Hovell 1827: 45-48).

We can take from the above that in early 1827, there was likely a highly visible path running in the direction Hovell wished to take (north-west to the mountains, on the western bank of Cardinia Creek), and that he was travelling on a 'low spine or ridge' orientated 'north & south' with 'soil light and dry'. By combining the timing and likely path of Hovell's journey, and that the ridgeline was followed on the same day as observing the grassy plains to the south-east, it is possible that Hovell travelled directly through the precinct. It should also be noted that there is a pathway marked running along this ridgeline in the 1847 map (20 years after Hovell's journey and 10 after initial pastoral occupation of the region, see), being the main route between the 'Gippsland Road' to the north and Buchanan's station at what is now Cardinia to the south. [redacted] We can also take from Hovell's observations that a recent campsite was located near this ridgeline, on elevated ground close to a clearly defined watercourse of fresh water.

Over the next few days, Hovell reiterates that many campsites were found alongside the Cardinia Creek, and that the pathway led over high ground across the region. He also visited one campsite to the north of the precinct, and was guided back down Cardinia Creek to near what is now Tooradin by the Aboriginal family that he communicated with there:

> Passed a number of native huts they are always to be found on the banks of Rivers & Creeks … went to the Camp alone, on seeing me unarmed they laid down their spears … [The old man accompanied] us to a considerable distance (about a dozen followed) and put us upon a path which he gave me to understand would take me to where a boat can come [the Inlets].
>
> There were several old men among them, but one in particular who appeared to be the Chief was the oldest, the hair on his head as also his Beard, which was very long was perfectly white his legs and arms very small Body large but he appeared in good health and I should judge his age to be about 70 years, they are all in what may be termed good case, and from the cause of their having several good Kangaroo Dogs no doubt live well …
>
> They had got their huts on the top of a small Hill a Creek on one side, and at the commencement of a very beautiful country, we had three hours travelling on this delightful

> Country ... I do not know how it is watered, as they (the natives) took us along the range and avoided the flats … Between the Tea Tree and the Creek is a native Path this leads over small Conical hills covered with Tea Tree Scrub… (Hovell 1827: 53-59).

Cook and Yugovic (2003) suggest that the grassy plains on the margins of the Koo-Wee-Rup swamp (what they refer to as the Clyde-Tooradin Plain) may have been created and kept open by Bunurong people through cultural burning to allow for ease of movement around the edge of swampland. Indeed, Hovell observes that the Country had recently been burned: 'the Grass all around has been burned lately' and 'stunted Trees with short green branches growing out from the bottom and have the appearance of vines growing up crooked black poles' (Hovell 1827: 48, 56).

5.2 1839—1841 diaries of William Thomas

Methodical movement across country and frequent cultural burning is recorded by Assistant Protector William Thomas who visited the Cranbourne and Clyde regions with Bunurong speaking clans several times between 1839 and 1841. Thomas noted that the group he travelled with burnt the bush 'as they have always done ... to turn out (hunt and drive) opossums & wombats &c' (4 March). 'Old Man Tuet' even told Thomas that they 'would not know where they were ... if [they] did not make fire' (6 March), suggesting an interwovenness between travel routes and burning (Thomas 1840 in Yugovic 2011). Note that the latter quote is included in the BLCAC statement of significance in Section 3.2.2.1.

Thomas writes that Bunurong clan groups would regularly travel around the Mornington Peninsula, starting along the Port Phillip Bay coast, move to the Bass Strait coast, then along the coast of Western Port Bay to the outlet of Yallock River, and then north along the plains to Dandenong, firing the Country along the way (Thomas ML Item 12, Letter to La Trobe, 15 July 1850 in Gaughwin and Sullivan 1984: 88). During the early months of 1840, Thomas travelled with a group of around 60 Bunurong people along this route. The journey itself was from water source to water source. The time spent at any one encampment varied considerably over the forty-two nights spent on the journey. Where there was an absence of good water, the party usually stayed overnight, but remained at one location for fifteen days, and eight at another. Where a lengthy stay was made at any one location small groups would sometimes go hunting for several days before returning to the main encampment.

Thomas describes the establishment and structure of campsites in detail, although it is unclear if he is referring to all campsites in general, or one specific one on the Mornington Peninsula:

> Their habitation is frail but answers well their purpose, a few slabs of bark cut in a few minutes and erected is their habitation, these slats of bark around 6' long oblique raised to the angle of about 90 degrees windward, every alternate sheet is reversed so no rain can enter, the sides are filled up with short pieces of bark and brush and a sheet of bark at the top …
>
> A good Miam (a hut) will hold 2 adults and 3 children – they are not permanent are knocked down or burnt on breaking up the Encampment – they consist of one apartment only. In a large Encampment they are divided into hamlets – some influential black taking charge of six or eight Miams; and so on say 5 Hamlets.

> These hamlets are 50 yds or more from each other, while miams in a single hamlet is not more than 3 or 4 yds apart merely sufficient to avoid danger from each other's fires (Thomas in Gaughwin and Sullivan 1984: 94).

Thomas drew two similar maps in 1840 and 1841 (Figure 19 and Figure 20) that visually show the route. During the outwards journey across the Mornington Peninsula, the route was generally in wooded vegetation dominated by gum (*Eucalyptus spp.*), honeysuckle (*Banksia marginata*), lightwood ('blackwood', *Acacia melanoxylon*), sheoak (*Allocasuarina verticillata*) and cherry (*Exocarpos cupressiformis*), with the occasional heathy or ferny sandy rise or lacustrine swamps often with tea-tree. Three discrete 'grassy plains' were encountered near the campsites marked on the 1841 map as Tayup, Perbinary and Kirkbillesee (the 'Clyde-Tooradin Plains').

Thomas' journal also records foods eaten during the journey, with statistically significant changes in diet depending on shifts in habitat, rainfall and burning (Foreman 2020). During the first week in the wooded areas, prior to rainfall and burning, there was a much higher reliance on species accessible during coastal drought conditions; eels, fish, and duck. During the later stage of the journey, there was a significant change in diet following rainfall and burning towards a wider range of terrestrial foods, especially roots, gum, kangaroo and koala.

Thomas' record of the journey details what was in part a continuance of a traditional seasonal movement through the eastern portion of Bunurong territory, modified by new points of interest that were either avoided or visited. The first permanent British occupation of Bunurong Country occurred in 1835, with the Ruffy brothers establishing their pastoral run at 'Mayune' (sometimes written as Mayoon or Mohun) in what is now the town of Cranbourne, and Terence O'Connor at 'Narmnup' on Cardinia Creek near what is now Berwick. By 1840, interaction seemed to have become centred on the Ruffy and O'Connor homesteads, of which Mooderrogar or 'Budgery Tom' was the senior custodian (Fels 2011: 48). By 1840, several Bunurong people were in the Ruffys' and O'Connor's employ, including senior Bunurong man Kollorlook who worked as a shepherd on the runs.

Groups of Bunurong people regularly camped near the two homesteads, and in March 1840, Thomas noted that a group including Mooderrogar and Kollorlook was well received by the Ruffys and planned to camp at the property (Fels 2011: 140). However, plans changed when three Bunurong men decided to go to Melbourne on Ruffy's dray, and the rest moved on to O'Connor's station at Berwick (Fels 2011: 73). Within four years of European occupation, Bunurong people appear to have already established specific etiquette regarding camping near the new occupants:

> … [they are] very careful where they Encamp to avoid giving offence - they encamp at a nook of the Creek quite out of the way of Cattle &c, & at least half or 3/4 of a mile from the huts (Thomas Journal, Tuesday 17 March 1840, cited in Fels 2011: 73).

Closer to the precinct, several local history publications note interactions between Bunurong people and other local homesteads. One particularly large waterhole in Cardinia Creek, known as 'Tinginbeen' (as shown on Thomas' 1841 map) or 'Gin Gin Bean' (the name of the pastoral property established in this location in 1840 by JF Turnbull) is referred to as where Bunurong people speared large blackfish, which they exchanged for flour, sugar, and salt at the local

homesteads. This included with Robert Henry at a homestead a few kilometres north of the precinct (see Beaumont et. al. 1979: 34). A later reference from the Gin Gin Bean run in 1851 indicates Bunurong people were camping near the homestead until at least this time (see Beaumont et. al. 1979: 12).

5.3 1850s recollections of Thomas Patterson

Of particular interest for the precinct is the memoir and other writings of Thomas Patterson. Born in 1853, Thomas grew up on St Germain Run and spent time with Aboriginal people on the property. St Germain was first licenced in 1845 or 1846 by James Buchanan, with his homestead constructed on the rise where Cardinia now stands and the precinct forming a somewhat distant northern part of the run. The precinct itself was first occupied when St Germain was purchased by Alexander Patterson (Thomas Patterson's father) in 1848 (Szydzik et al. 2015: 4). Patterson constructed an original wattle and daub homestead in 1851 to where the outbuildings to the east of St Germain House (Casey Planning Scheme Heritage Overlay 16) now stand. Patterson remained on this property and lived in both the original and new homesteads until his death in 1896.

Thomas Patterson had 'early recollections' of Bunurong people camping at St Germain Run (thus presumably in the late 1850s). Piecing together his various references to this camp, it appears to be located in an area south-east of the former homestead. Writing in third person, Patterson (1936) recalled that:

> The vicinity of St. Germain's homestead was a favourite camping ground of the Boonerang [Bunurong] tribe of blacks. He has a memorable early recollection of them, through having been taken for a walk by his mother, who had no ordinary courage, along the ferny ridge past the stockyard, to their mia-mias, when many blacks were there, and in later years, when they were few in number, he was very often about with them and learned a good deal of their tribal dialect, and gained some knowledge of their customs and legends.

Patterson goes into more detail on the material culture of and activities that took place at Bunurong campsites near St Germain homestead when he lived there as a young man during an earlier lecture he gave to the Royal Historical Society of Victoria (Patterson 1931):

> …[I was] very often about with the blacks, the vicinity of our station home in Westernport being a favourite camping grounds of the Boonerang tribe, with the result of learning a good deal of their tribal dialect, and gaining some knowledge of their customs and legends, of all of which it is now my - very great regret not to have acquired much more.
>
> They used to keep a small pack of dogs of various sorts and sizes, and when out hunting, if they startled a bandicoot, the dogs would tumble over one another at a turn in the chase, and the black gins would follow up, and scream with laughter and enjoy the fun like children.
>
> Jimmy made a boomerang for me from the cross branch of a cherry tree (likely Cherry Ballart [*Exocarpos cupressiformis*]) growing on the bank of the billabong near his camp, which was unsatisfactory, and he said, 'Cherry tree no good'.
>
> Jimmy called my father Wagabil (old man, with no sinister suggestion) and one day I went over to his camp and he said, 'Where Wagabil?'. To a further instance of his native dictionary

> one evening sitting by the fire in front of his mia mia, where he makes a light for his pipe, and he said to black Eliza his gin, just the one word 'Ween' (fire) and she handed him a lighted stick. His gin 'moondagoorts' (old woman) was a good wife! [moormoordic (young woman)] I have always thought very euphonious and most happy in its application.
>
> The ordinary grey opossums (wallart) was very plentiful in their tribal territory, so the blacks never lacked food, and the little tea and sugar they occasionally received was not much missed from the station stores in those good old days.

Another reference to the camp location is by Patterson is provided in a newspaper article, primarily about a breaking in of a yearling in the stockyards:

> [he leaped] clean over the high stock-yard fence and across the creek in the home paddock, to the amazement of the men and the delight of the blacks who had strolled along from their camp beside the billabong (Patterson 1929).

We can thus infer the following information about where camps might have been found at St Germain:

- At least one of the camps was located 'along the ferny ridge past the stockyard' in the late 1850s.
- An identity named 'Jimmy' camped 'in the vicinity' of St Germain, near a billabong where a 'cherry tree' was growing on the creek bank. Other references also refer to the camp being located near a billabong.
- The 'home paddock' was within easy walking distance of the billabong and adjacent campsite. The paddock was surrounded by a fence, and had a creek flowing through it.

These descriptions have been compared against a c.1850s plan that shows St Germain homestead and fencelines as they were around the time of Patterson's recollections (Figure 17). Comparing this map against the current landscape supports an interpretation of the 'ferny ridge' being the forked sandy rise extending southeast from the current house. While currently outside the property boundary (and not originally included in the Pre-emptive Right for St Germain), this land was purchased by Patterson in May 1854, extending St Germain across to what is now the south side of McCormacks Road (Department of Crown Lands and Survey, 1878).

[redacted]

Thomas Patterson's memoir also notes that in 1891, he learnt the name used to refer to the general area where St Germain was located from William Barak, a Wurundjeri Woiwurrung Elder who lived at Coranderrk in Healesville:

> King Barak, the last chief of the Yarra Yarra tribe, was of peculiar interest to me, as it was from him, I learned the meaning of Barnibyrnong, the native name of St Germain's, my father's station on the Cardinia Creek in Westernport. The vicinity of the homestead was a favourite camping-ground of the Boonerang tribe of blacks, where I was bred and reared and learned a good deal of their language. The dialects of the Boonerang and the Yarra Yarra tribes were very similar. Yet it was late as 1891, on a visit to the Coranderrk aboriginal station that I learned from Barak the meaning of the word Barnibyrnong, which freely translated, is "the haunt of the ring tailed opposum" (Patterson 1931).

Patterson named his then house in Malvern East 'Barnibyrnong', presumably in commemoration of this childhood association. Supporting this name being associated with the precinct is William Thomas' placename reference 'Benrononong' on his 1840 map, which may be an alternative transcription to 'Barnibyrnong' (Figure 19).

Consultation with Bunurong Traditional Owners Shane Clarke, Daniel Black and Steven Pepper as part of CHMP 17418 indicates that 'Jimmy' and 'Eliza' mentioned by name by Patterson are likely to be Bunurong people Jimmy and Eliza Dunbar, who were largely resident at Mordialloc throughout the 1860s and 1870s (Figure 14). Jimmy was 'a well-known personage in the district for many years, and it is said that he claimed a proprietary right to the land' (Illustrated Australian News 1877, 14 May, 6). Jimmy and Eliza both passed away in in 1877 in Mordialloc. Given Patterson's residence at St Germain throughout the 1860s, this would align well with Jimmy and Eliza visiting St Germain at this time.

Jimmy Dunbar's 'small pack of dogs' referenced by Patterson is also noted in other historical sources. An etching from 1877 (Figure 15) likely shows Jimmy in mourning after Eliza's passing and his dogs of 'various shapes and sizes … tumbling over each other'. When Jimmy died, the 14 dogs of this pack waited by his campsite for his return (Illustrated Australian News 1877, 14 May, 6).

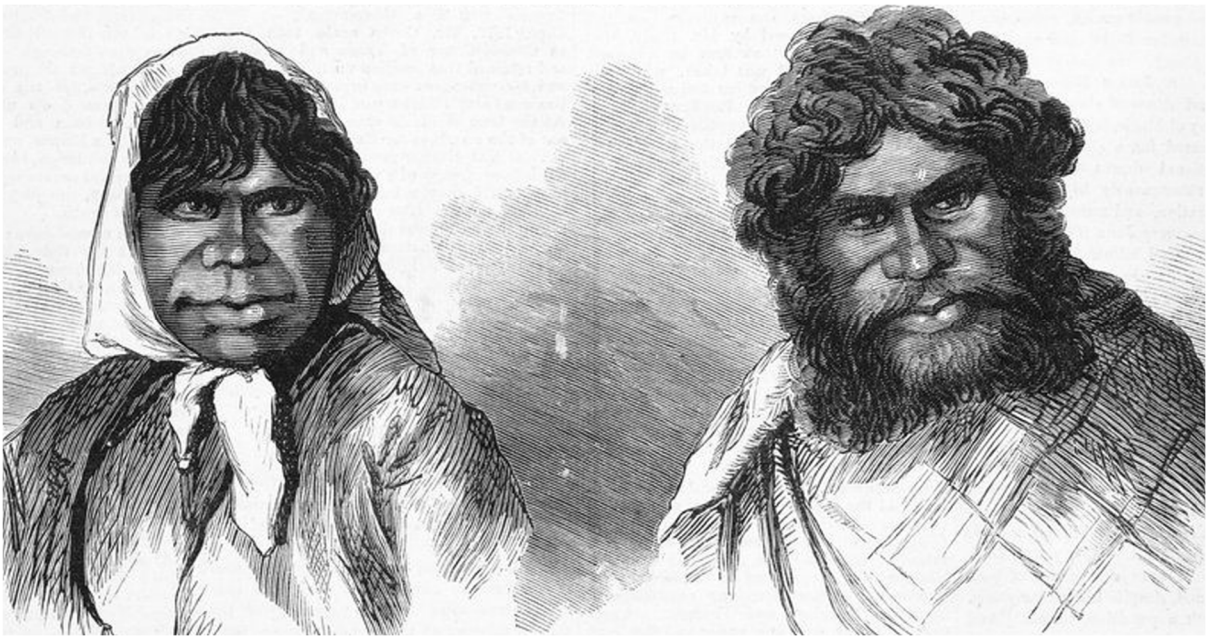


Figure 14. Etching of Eliza and James ('Jimmy') Dunbar (Illustrated Australian News 1877)

Figure 15. Etching of Jimmy Dunbar in Mia Mia with His Dogs, c1877 (Mordialloc and District Historical Society n.d.)

Figure 16. Location of Bunurong campsite south of precinct, as per local oral history. View to south from McCormacks Road (image credit: S Skitmore)

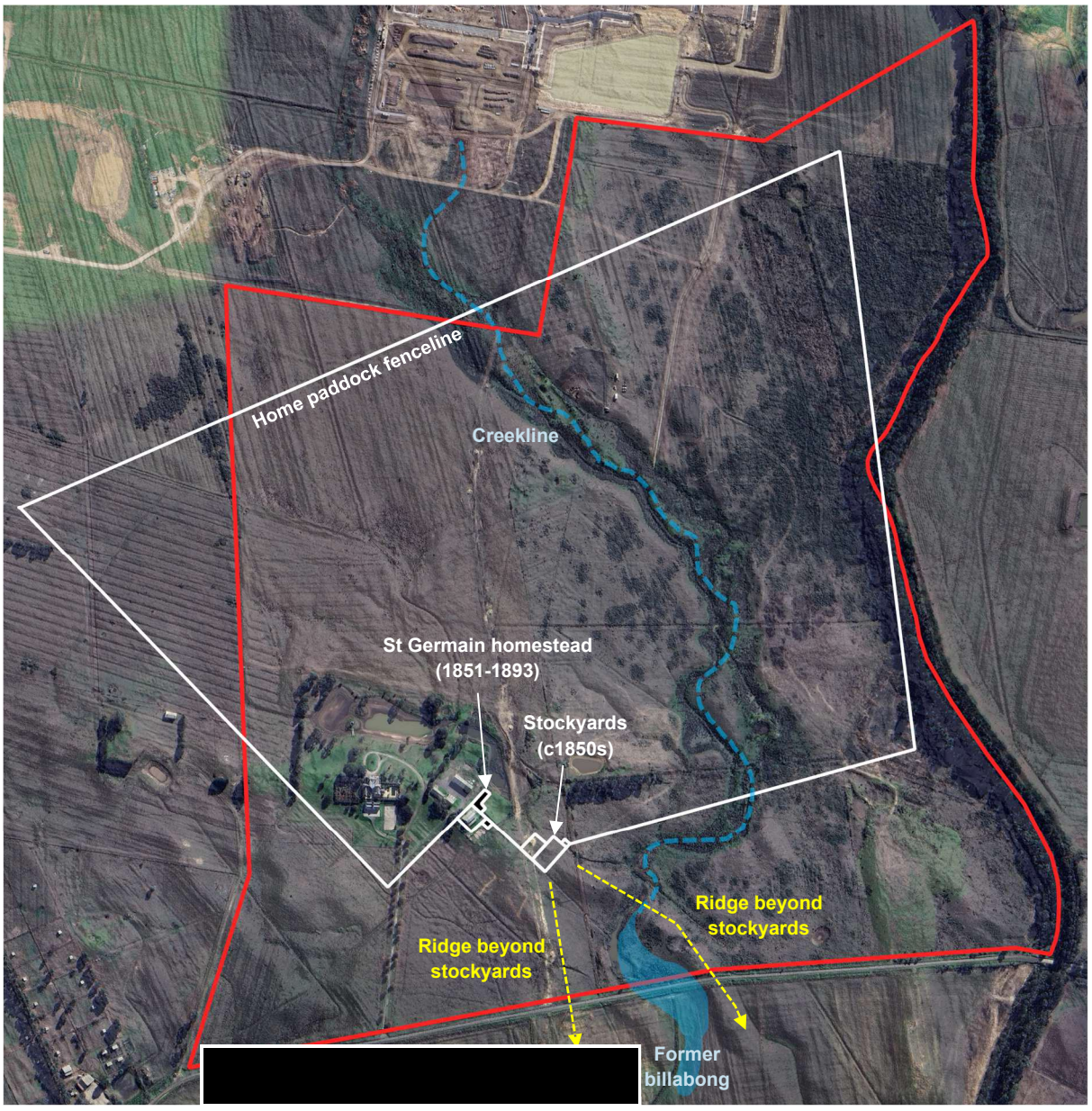


Figure 17. Interpretation of 1850s 'home paddock' of St Germain (based on overlay of Surveyor-General's Department, undated)

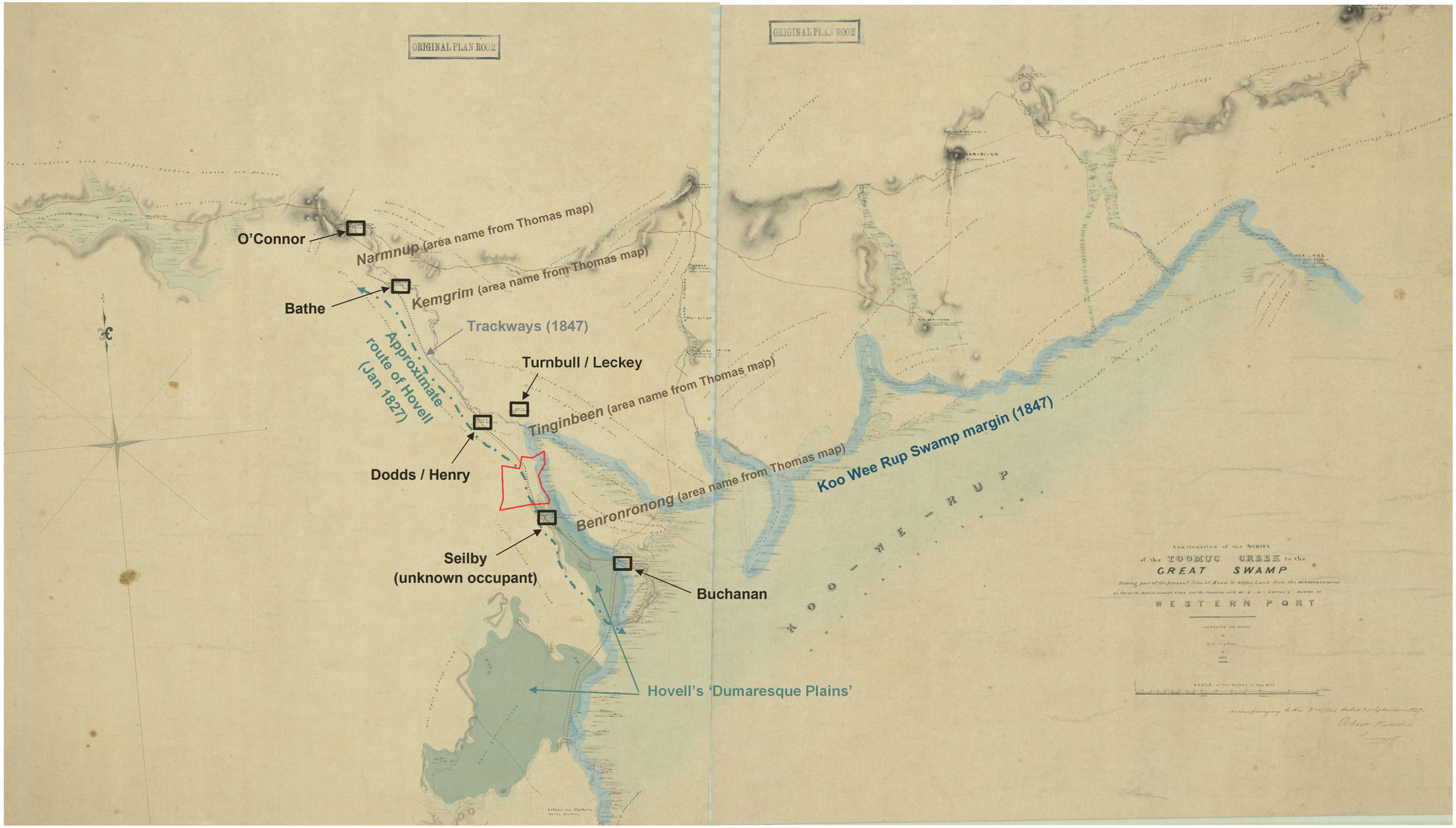


Figure 18. Landscape interpretation of the region with precinct indicated with red outline (Surveyor General's Department, Port Phillip Branch 1847)

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Figure 19. Thomas' map (1840), with approximate location of precinct shown in red

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Figure 20. Thomas' map (1841), with approximate location of precinct shown in red

6. Addendum to '5.10 Environmental Context (landforms and geomorphology)'

The 2015 ACHA provided a coarse-grained mapping of landforms within the precinct (as shown in Figure 22). This mapping can now be amended following completion of local archaeological studies within the precinct, and an updated map is provided in Figure 23. Landform boundaries have been determined through a compilation of the standard and complex assessments reviewed above, as well as analysis of the Digital Elevation Model (DEM) derived from 0.1 m elevation data collected by Light Detection and Ranging (LiDAR) in 2017. This data was provided by DTP for the purpose of this assessment. For this analysis, the DEM was analysed by the author on QGIS 3.40.9 software, utilising a data visualisation model of 45° hillshade at 30 x z-factor magnification.

6.1 Environmental history of 'sandy rise' landforms

Local studies show that the precinct is located at intersection of the Cardinia Creek system and swampland forming a northern reach of the Koo-Wee-Rup Swamp. The Cardinia Creek system is a dynamic and highly variable channel system that has been mobile throughout its history due to fluctuating environmental conditions and colonial-era changes in its drainage.

While most often grouped together in the archaeological studies above, 'sandy rise' landforms conflate two landforms, lunettes and sandy ridges, which have different origins and unique controls on their formation and evolution. Lunettes are features linked to lakes or former lakes. They are aeolian and form on the downwind side of water bodies during dry conditions when the surface of the water body dries out and the sediment on the dried-out surface is picked up by wind and deposited into arcuate ridgelines. Of relevance to the possible early Holocene use of the precinct are lunettes located at the outfalls of Cardinia Creek and Toomuc Creek (the arcuate ridges at Cardinia and Rhysdale, Figure 21). These landforms likely predate the Koo-Wee-Rup Swamp, and suggest that during times of higher aridity (such as during the LGM), Cardinia Creek terminated a localised intermittent wetland system located several kilometers south of the precinct.

Conversely, sandy ridges are alluvial (or a mixture of alluvial / aeolian) and relate to the complex meandering channel system of the Cardinia Creek outfall that has shifted considerably in the history of the landscape. Their formation is linked to hydrological energy flow and the associated sediment load of the channel, with variations in channel dynamics leading to a patchy appearance. These ridges are essentially temporary features in the landscape and are subject to significant reworking and redeposition by later flows. These are most clearly identifiable in the central northern part of the precinct, as a series of curved meander bars and abandoned alluvial levees relating to former waterchannels that have now migrated.

Determining the environmental history of each sandy rise type is difficult without specific geoarchaeological research, and for the purpose of this assessment, these landforms are once again grouped together as 'sandy rises', as the archaeological sensitivity of both landforms is very high.

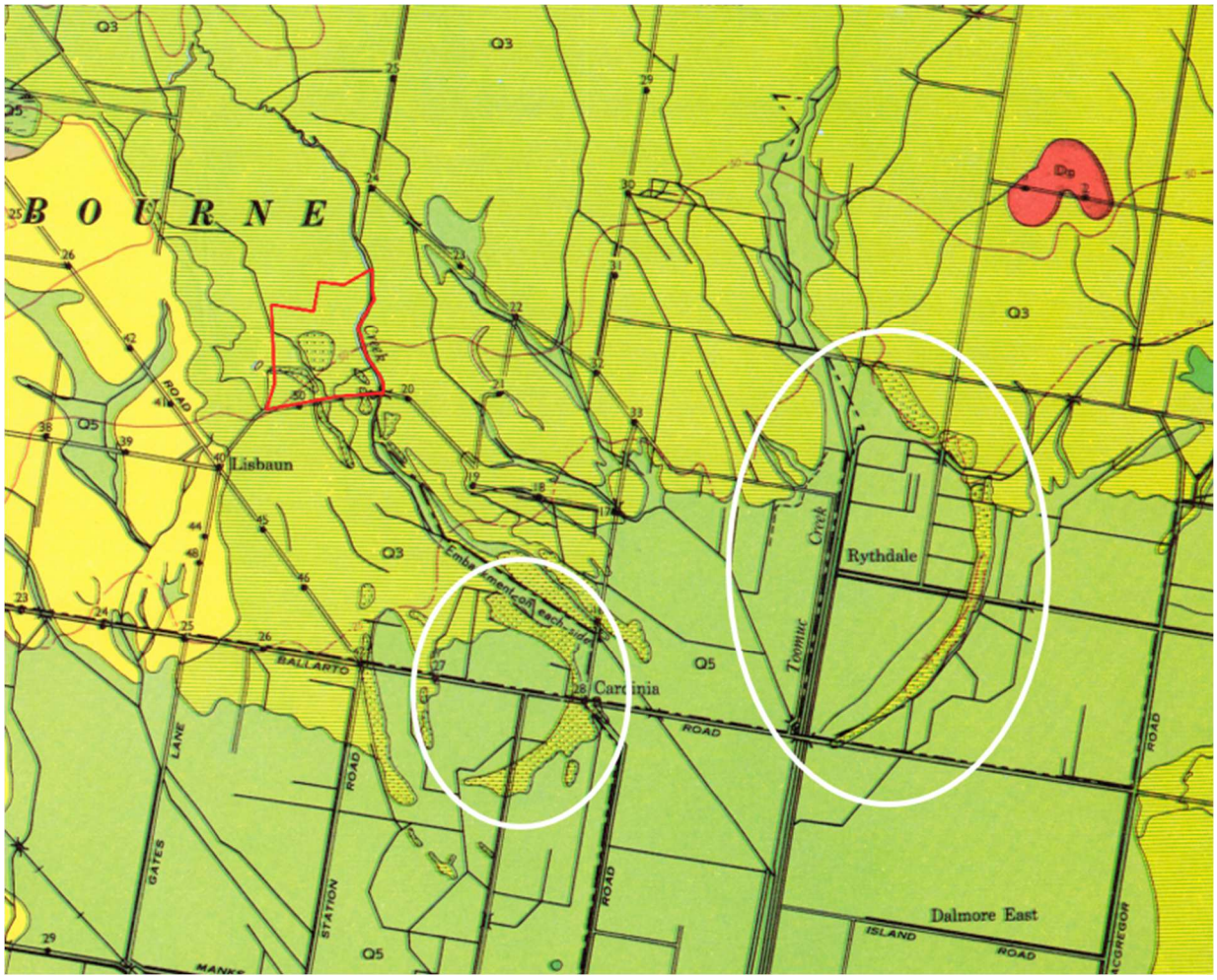

Figure 21. Lunettes (circled) at the former termination of Cardinia and Toomuc Creeks at the Koo-Wee-Rup Swamp (Geological Survey of Victoria 1967) with the precinct outlined in red.

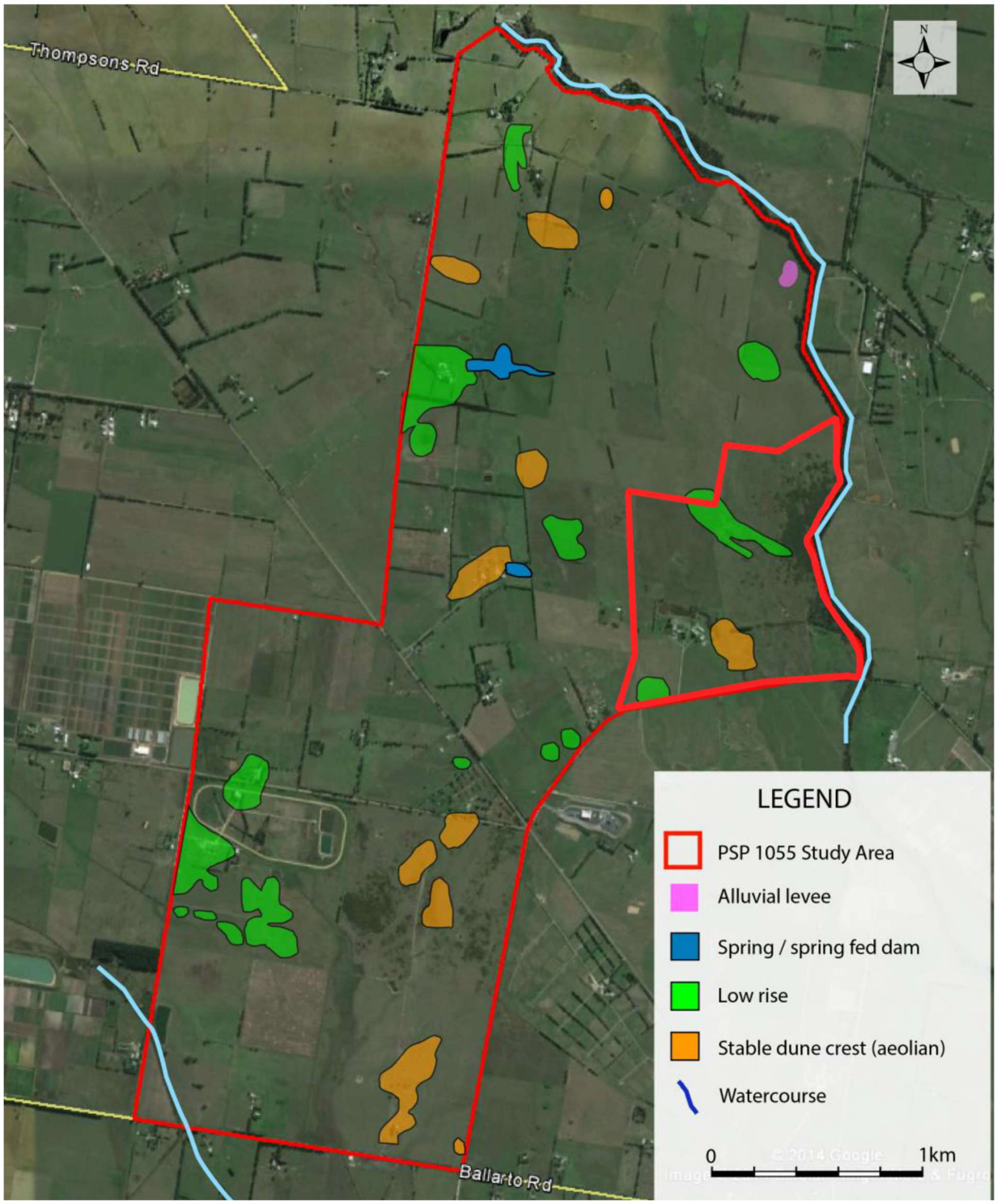

Figure 22. Map from Sutton et al. (2015, Figure 10) showing previously identified landforms in the wider McPherson PSP study area. The Part 2 precinct is marked.

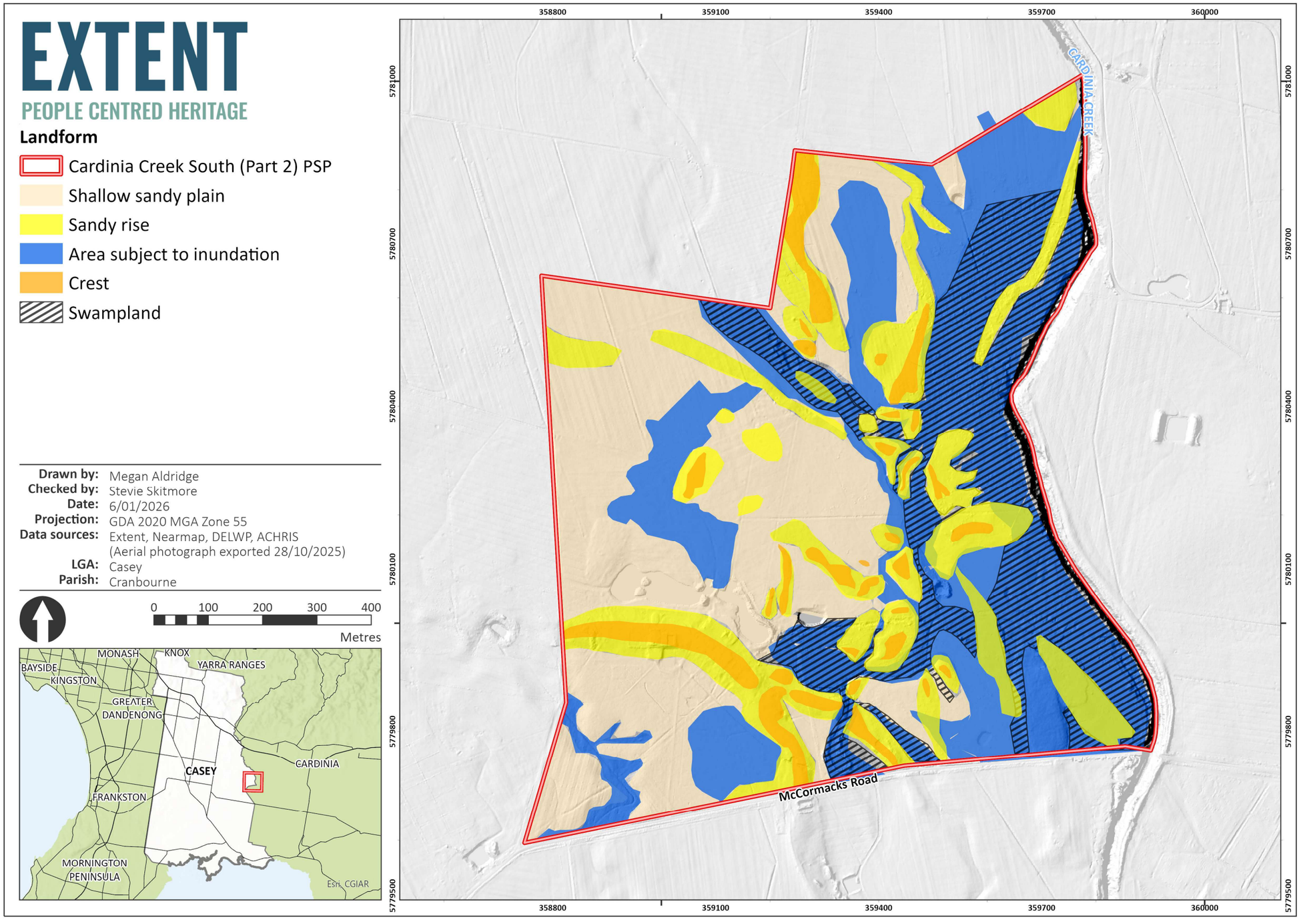

Figure 23. Modelled landforms and landscape features within the precinct

7. Addendum to '5.11 Landuse Disturbance History in the Study Area'

This section provides additional information regarding historical disturbance across the precinct, based on the findings of local archaeological studies and analysis of the DEM provided by DTP utilising the same data visualisation parameters described in Section 6 above (Figure 28). This has provided a fine-grained view of historical disturbance, with these mapped in Figure 27. Note that for the purpose of this addendum, disturbances after January 2021 are not included, as these are largely related to activities conducted under the specific management of CHMP conditions.

A review of land use and historical aerial photography is provided in the 2015 ACHA, with this assessment focusing on identification of areas cut and fill, furrowing, tree removal and creek alteration visible in the DEM. Some localised land use history is also provided where relevant to give context to the DEM analysis.

7.1 Cut and fill

The 2015 ACHA notes artificial drainage, channelling and dam construction occurred across the precinct, with the DEM clearly highlighting areas subject to these impacts. Introduction of fill is noted around the perimeter of dams, most likely redeposited soils from their excavation. One large area of fill overlies a small sandy rise in the southwest corner of the precinct. While cuts are expected to lower the archaeological sensitivity of the immediate area, areas of fill are likely to expected to not reduce sensitivity as they tend to bury and protect underlying areas.

7.2 Furrowing

The 2015 ACHA determined that historical ploughing and furrowing would decrease archaeological sensitivity. It also noted that since all parts of the study area had been subject to ploughing, it should not be regarded as a predictive factor regarding modelling sensitivity (Sutton et al. 2015: 65, 70). However, reassessment of this finding is possible through analysis of the DEM, as the model clearly shows distinct areas where historical furrowing has and has not occurred. Ploughing occurred within the precinct as early as 1859, with the use of a swing plough to prepare areas for growing Tartarian oats, Cape barley and Red Chaff wheat (Port Phillip Farmers' Society, 1859: 33-34, 45). Swing ploughs were horse- or oxen-drawn ploughs that created parallel furrows around 15 cm deep, with ploughed soil gathered into a ridge on the side of the cut.

7.3 Stump extraction

A review of the DEM shows clusters of shallow circular depressions indicative of the former locations of large trees now removed from the precinct. The review of historical aerial photography dating from the 1930s to present in the 2015 ACHA indicates loss of some colonial-

era windbreaks across the precinct's fencelines, likely due to the removal of aging cypress pines.

It is also likely that some of these hollows will relate to Alexander Patterson's land management throughout the latter half of the nineteenth century. The removal of large trees from land to be ploughed and planted would have been a priority for those engaged in agriculture, as Patterson was at the time (Port Phillip Farmers' Society, 1859: 33-34). While removal of trunks and canopy involved little more than a manual saw, dealing with the resulting stumps and root balls was relatively difficult. Various designs for horse- or oxen-powered 'stump extractors' or 'tree grubbers' were available in Victoria in the 1850s, which through a combination of leverage and gearing, pulled old tree stumps whole from the ground. Patterson owned one of the first stump extractors in the region, a Mansfield and Hewitt design which he purchased at the Mornington Farmer's Society Show at Cranbourne in February 1859 (Figure 24).

Such hollows indicate localized disturbance to ground at the location of the tree removal, and some minor redistribution of sediments at these locations. It is however unlikely that this will have impacted significantly on archaeological deposits, given their localized impact. Identifying former tree locations can also assist with reconstructing the precinct's pre-colonial landscape.

7.4 Cardinia Creek modification

The section of Cardinia Creek forming the eastern boundary of the precinct has been subject to historical earthworks, with the 2015 ACHA noting a short elbow within the precinct realigned and filled in prior to 1939.

Alexander Patterson was one of the first landholders in the region to complete drainage works along Cardinia Creek, in 1867, with ad hoc channeling completed using hand tools. However, major works occurred in 1917, when 'defining, straightening, and embanking the Deep, Toomuc, and Cardinia Creeks' occurred (*Construction and Local Government Journal,* 2 January 1917). These works would have either been performed manually by labourers employed under the Village Assistance Program, or by a steam powered Lubecker Dredger (shown at work in Figure 25).

Analysis of the DEM shows a linear berm of very similar dimensions to that behind the Dredger in and indicates use of this machine in 'defining, straightening and embanking' the creek along the eastern boundary (Figure 25). Interestingly, this berm is only visible to along the creek in the southern half of the precinct, indicating that this may have been the northern limit of its use and that the channel was hand-dug north of this point.

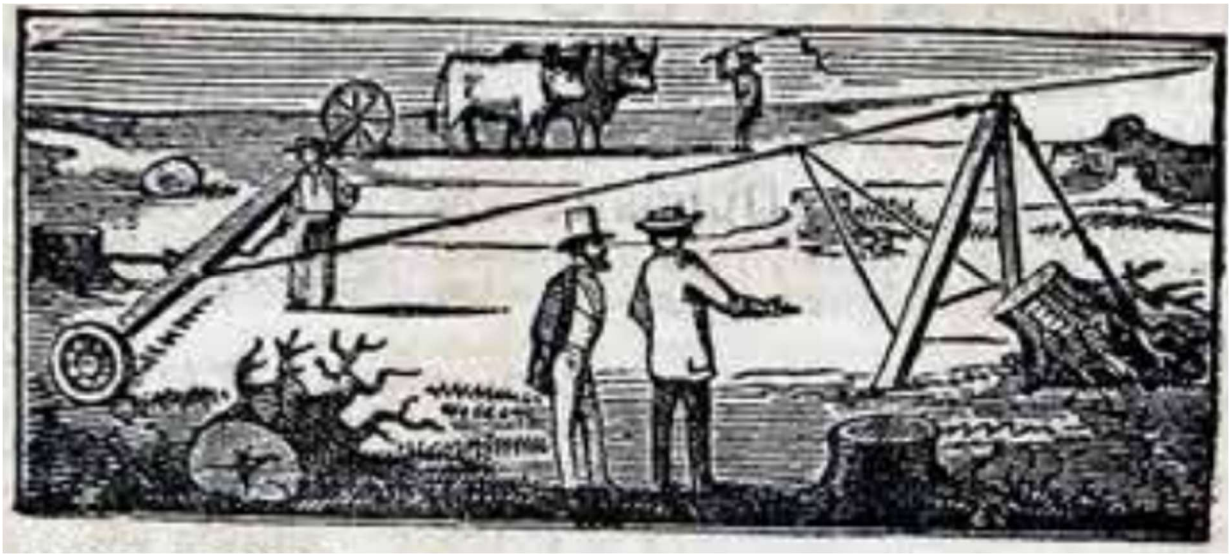

Figure 24. Sketch of the stump extractor design used from 1859 at St Germain (Port Phillip Farmers' Society, 1858-1859: 59)

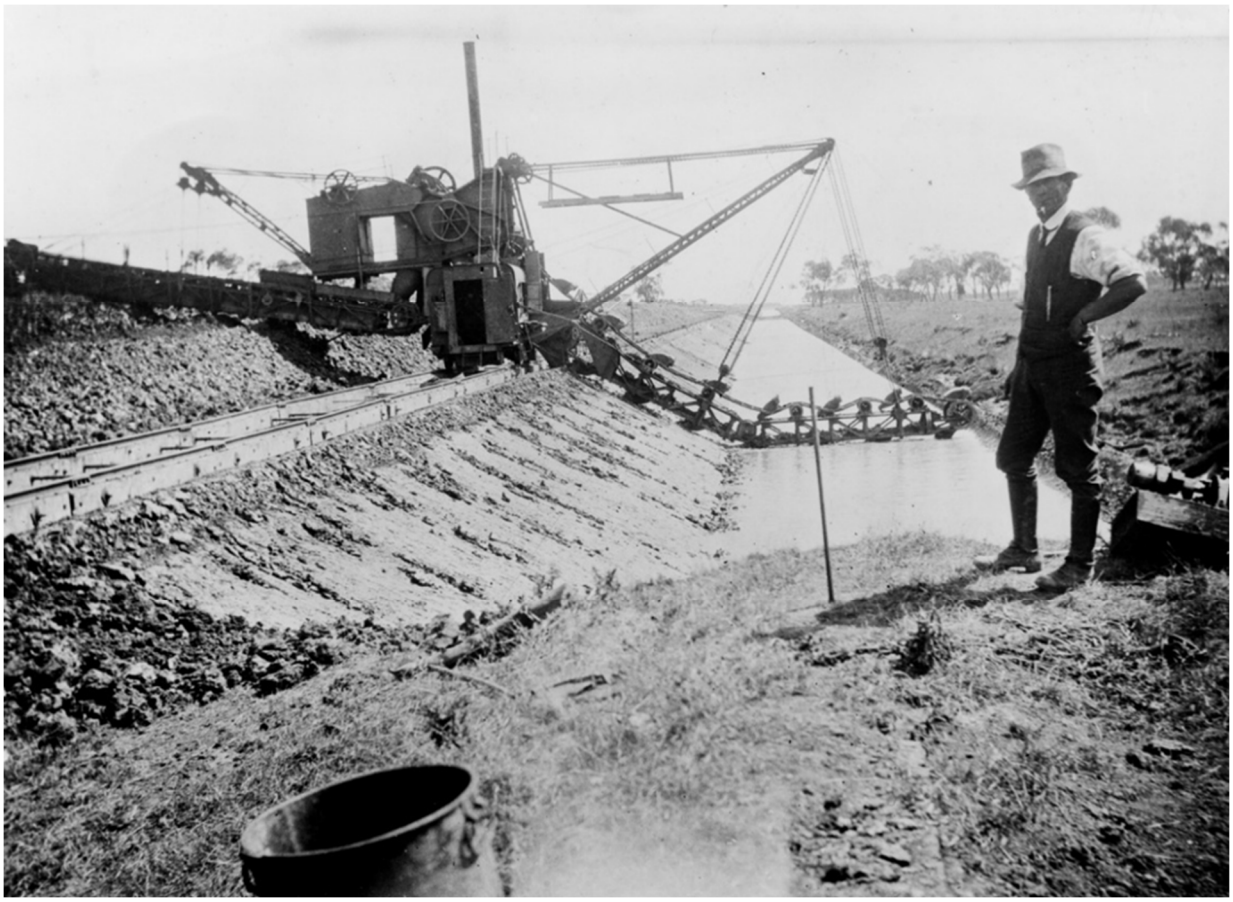

Figure 25. Photograph of the Lubecker Dredge showing its impact on the ground surface c.1920 (State Rivers and Water Supply Commission photographer 1900-1940)

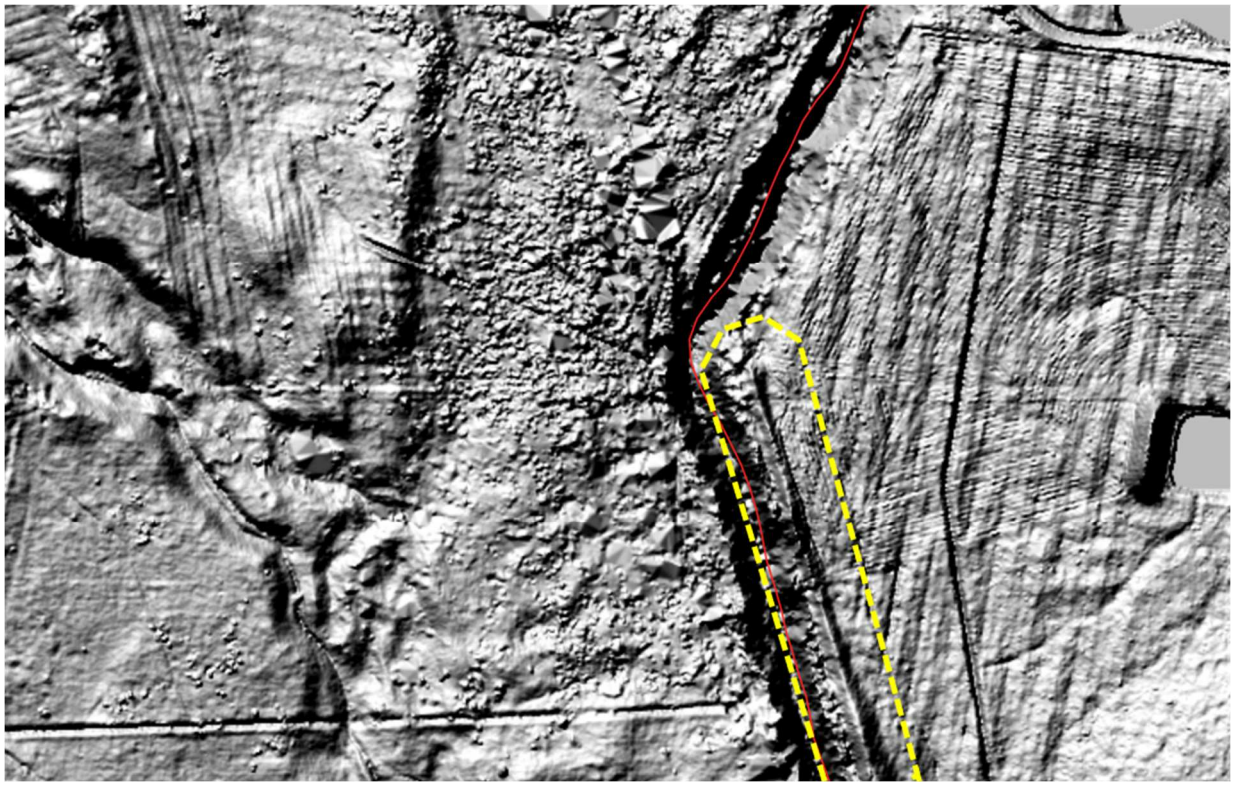

Figure 26. View of part of eastern boundary of PSP, showing commencement of Lubecker Dredge spoil (outlined in yellow, outside of PSP area)

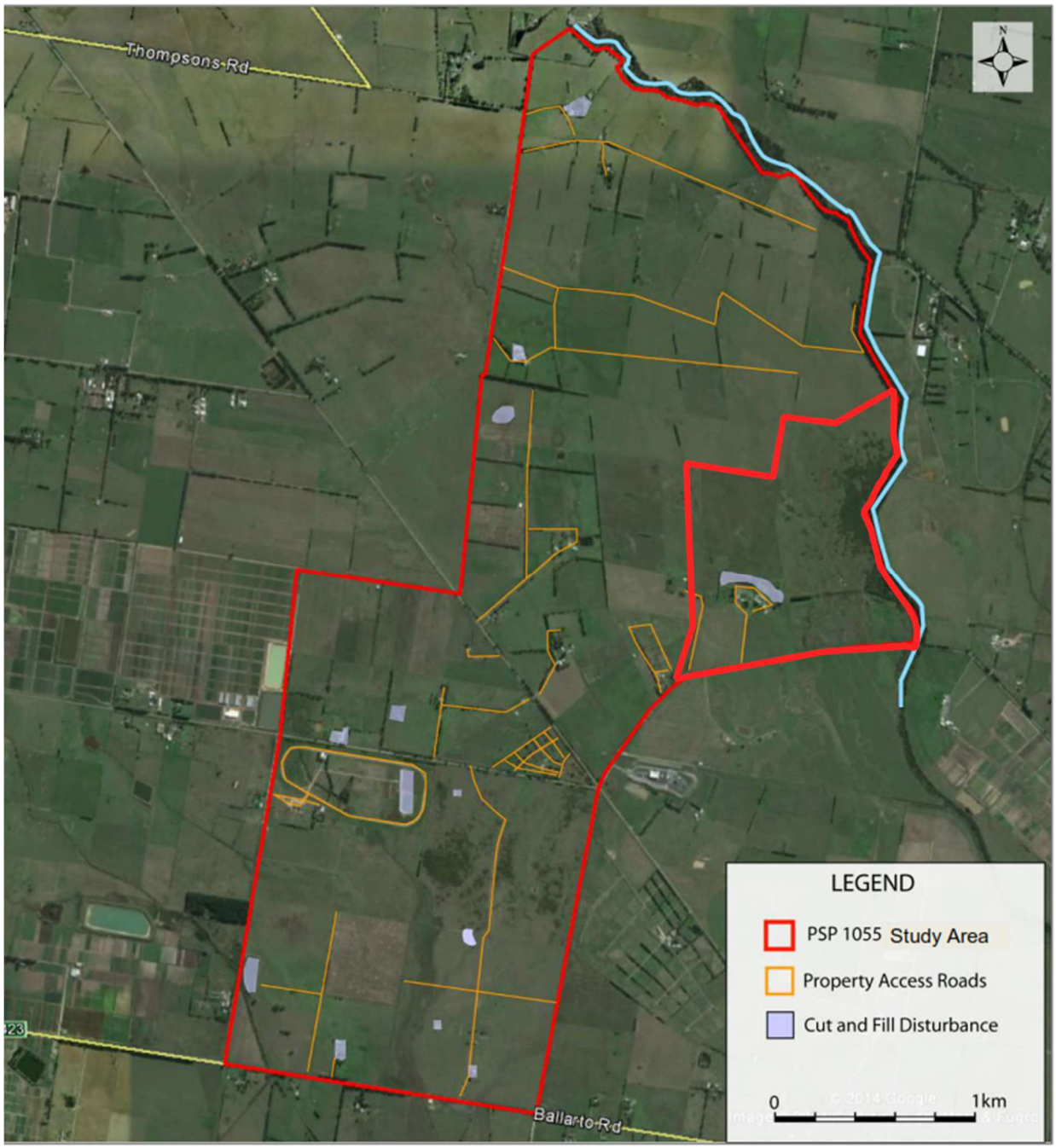

Figure 27. Map showing areas of historical disturbance as assessed by 2015 ACHA (Sutton et al. 2015: Fig. 14). The boundary of the Part 2 precinct is shown.

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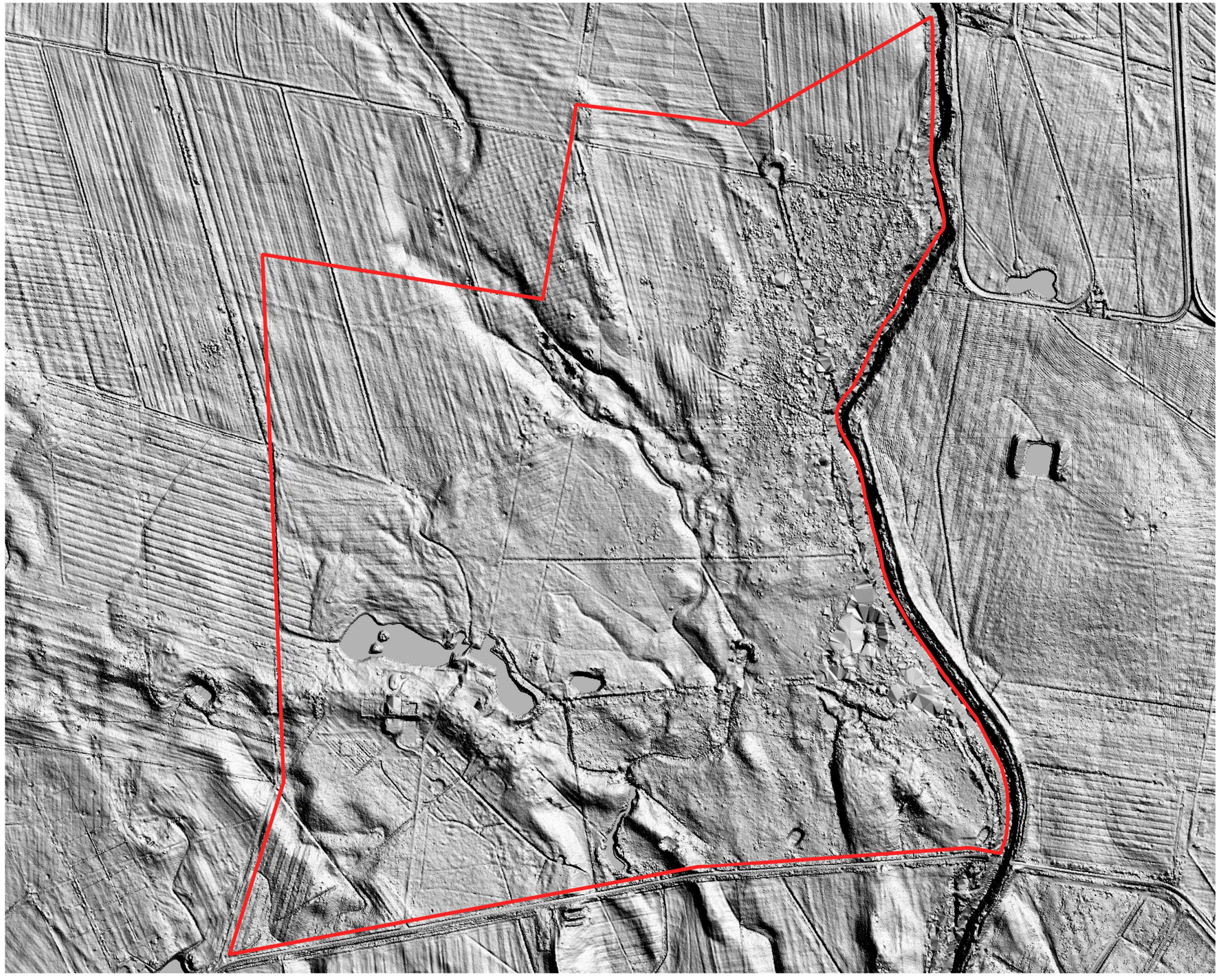

Figure 28. LiDAR based DEM of Cardinia Creek South (Part 2) precinct (hillshade with 40x vertical exaggeration)

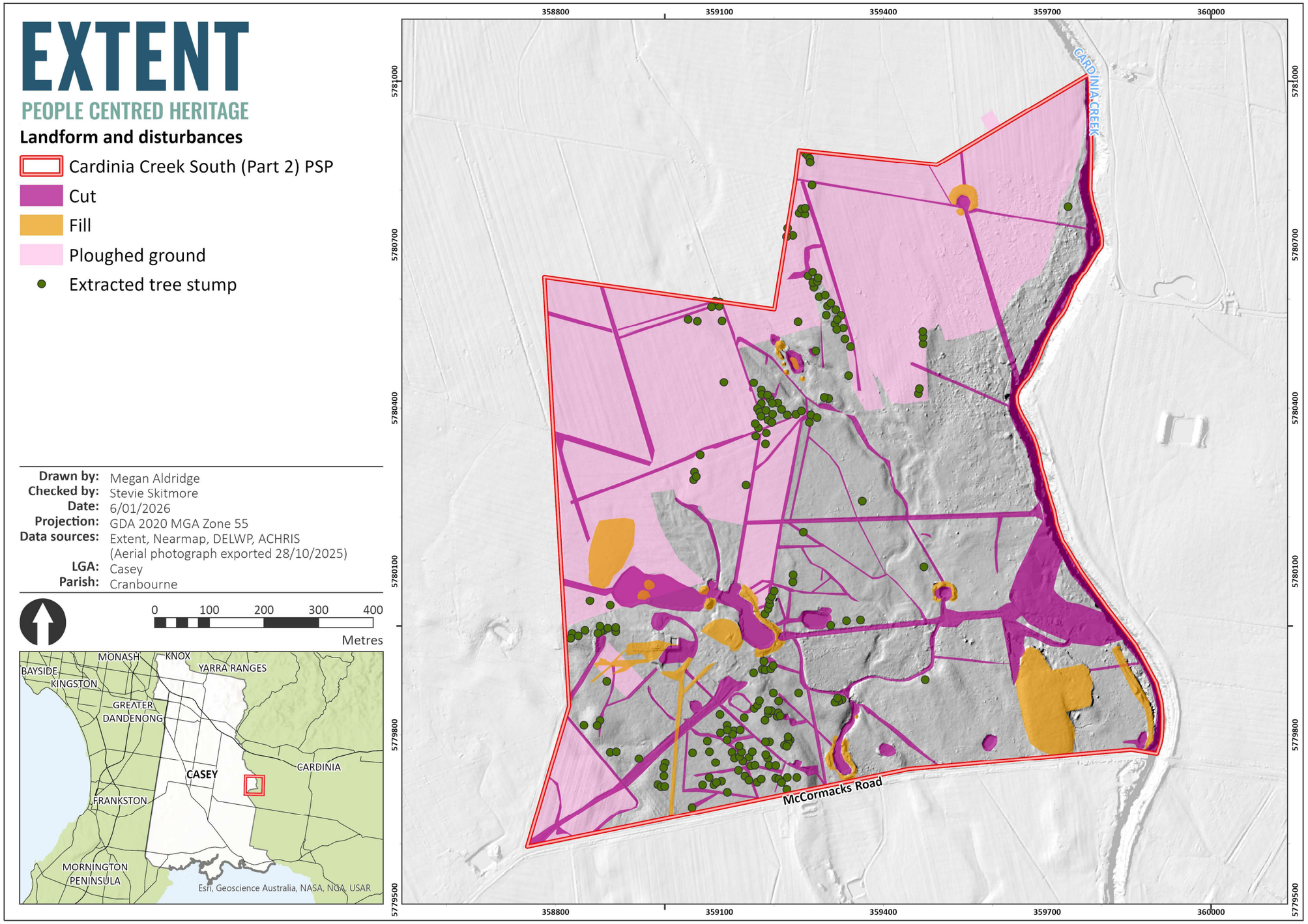

Figure 29. Revised map showing areas of historical disturbance within the precinct

8. Addendum to '5.12 Predictive Model'

Four CHMPs have been completed in the precinct, with two additional also in preparation. These assessments provide a fine-grained understanding of the nature, extent and significance of Aboriginal cultural heritage within the activity areas of these CHMPs. The use of this predictive model and associated sensitivity mapping is thus most useful for areas not covered by these CHMPs.

8.1 Archaeological predictive factors

Drawing on the addenda to the desktop research and previous archaeological studies, the following revised observations and predictions are made relating to the precinct's cultural heritage:

- Artefact scatters comprised of stone artefacts are the primary type of Aboriginal cultural heritage Place in the precinct;
- Artefact scatters are found at varying densities across most landforms, in both surface and sub-surface contexts;
- Higher density artefact scatters and sub-surface deposits are most likely associated with crest landforms;
- Higher density artefact scatters and sub-surface deposits are most likely found on lunettes and alluvial levees (together forming 'sandy rises'). These are also likely to have deeper profiles and better preservation conditions than other landforms;
- Higher elevation areas of sandy rises with wider outlooks are likely to be associated with higher densities of stone artefacts;
- Higher density artefact scatters and sub-surface deposits are most likely to be found directly overlooking water sources or wetlands;
- The density and complexity of artefact scatters and sub-surface deposits is likely to decrease with distance from water sources and wetlands;
- A particularly high density and complexity of archaeological deposits may be found at major confluences and resource intersection zones;
- Swamps and areas subject to seasonal inundation are likely to have much lower potential, but some low-density material can still be found;
- Some forms of historical disturbance consisting of major earth removal (such as cutting drains) will reduce the likelihood of identifying cultural material;
- Other forms of historical disturbance (such as introduction of fill over previously undisturbed ground) is likely to be a neutral or protective factor; and

- Areas with known historical associations may likely contain more intact deposits given their known more recent use.

8.2 Revised archaeological sensitivity mapping

Archaeological sensitivity modelling allows for a landscape-wide understanding of *archaeologically* sensitive landforms and landscape features. In developing the model, we drew on environmental and disturbance variables that were used to identify areas of varying 'archaeological sensitivity'. For the purposes of the model, the term 'archaeological sensitivity' is defined as a combination of likely density, integrity and research value of archaeological deposits within any given area.

Note that such modelling cannot determine the overall cultural heritage sensitivity of certain parts of the precinct, as this must also consider Aboriginal cultural knowledge and cultural values. Also note that large artefact scatters and an Aboriginal Historical Place have already been registered within the precinct.

This addendum to the archaeological sensitivity modelling and mapping is based on a probabilistic approach, where a combination of traits was used to determine the combined level of archaeological potential. The factors used in the 2015 ACHA are provided in Table 4, with revised factors based on the desktop assessment review provided in Table 5.

These factors were weighted by predicted impact on archaeological sensitivity, and polygons created in QGIS 3.40.9 to represent landforms and areas of disturbance. These polygons were weighted according to the scores in Table 5. Second-tier polygons were then formed from intersecting vertices where two or more polygons overlapped, and scores compiled to finalise the resulting polygon score for final sensitivity mapping.

The following transformations were then used to operationalise sensitivity scores:

- >1 = Very Low
- 2 = Low
- 3 = Low-Moderate
- 4 = Moderate
- 5 = High
- 6 = Very High.

Sensitivity mapping from the 2015 ACHA is shown in Figure 30, with revised mapping provided in Figure 31. The 2015 ACHA provides design recommendations for the PSP based on modelled sensitivity in this section. These recommendations are reviewed in Section 10.1 below.

Table 4. Factors used in 2015 ACHA to model sensitivity

Landform / feature	Predicted archaeological sensitivity in 2015 ACHA
Alluvial levee	Very High Sensitivity
Sandy Rise (stable dune crest)	Very High Sensitivity
Low Crest	Moderate Sensitivity
Within 200m of higher order stream	High Sensitivity
Low rise + within 200m of higher order stream	Very High Sensitivity
Within 200m of spring / spring fed dam	High Sensitivity
Flat low-lying areas	Low Sensitivity
Market Gardening	Very Low Sensitivity
Cut and Fill Disturbance	Negligible or Disturbed Sensitivity
All other areas	Low sensitivity

Table 5. Revised archaeological sensitivity factors

Predictive factor	Predicted archaeological sensitivity	Weight in predictive model
Sandy rise (alluvial levee)	High Sensitivity	5
Sandy rise (lunette)	High Sensitivity	5
Low-lying sandy plain	Low Sensitivity	3
Swampland / wetland	Very low sensitivity	2
Crest	Very High Sensitivity	+1
Elevated area with direct outlook over area of seasonal inundation	High Sensitivity	+1
Area subject to seasonal inundation	Reduces underlying sensitivity	-1
Ploughed land	Reduces underlying sensitivity	-1
Cut disturbance	Negligible or Disturbed Sensitivity	-2
Fill disturbance	Negligible impact	0
Stump extraction	Negligible impact	0

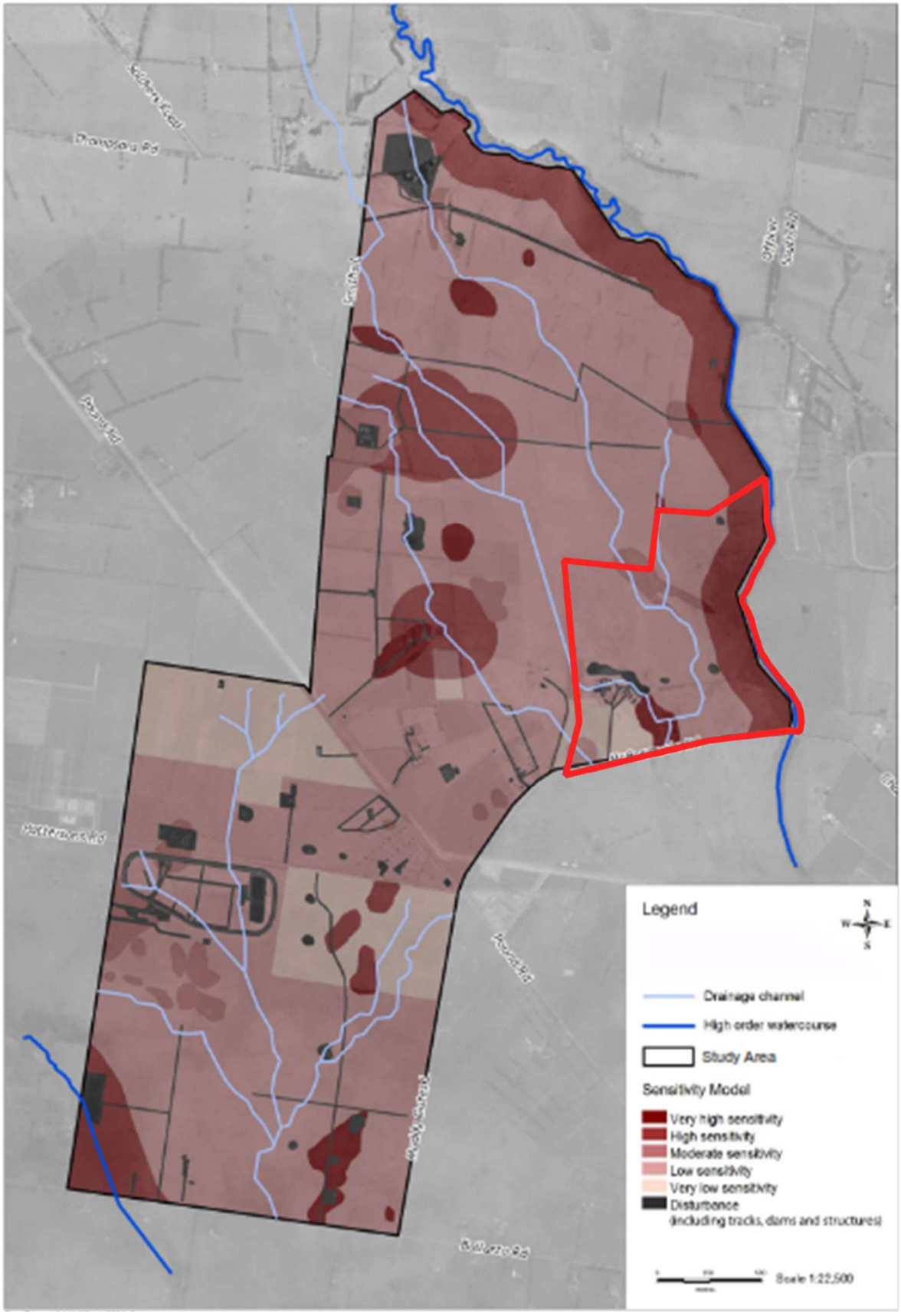

Figure 30. Original predictive model mapping developed for McPherson PSP (Sutton et al 2015: 72). Approximate outline of the precinct is shown in red.

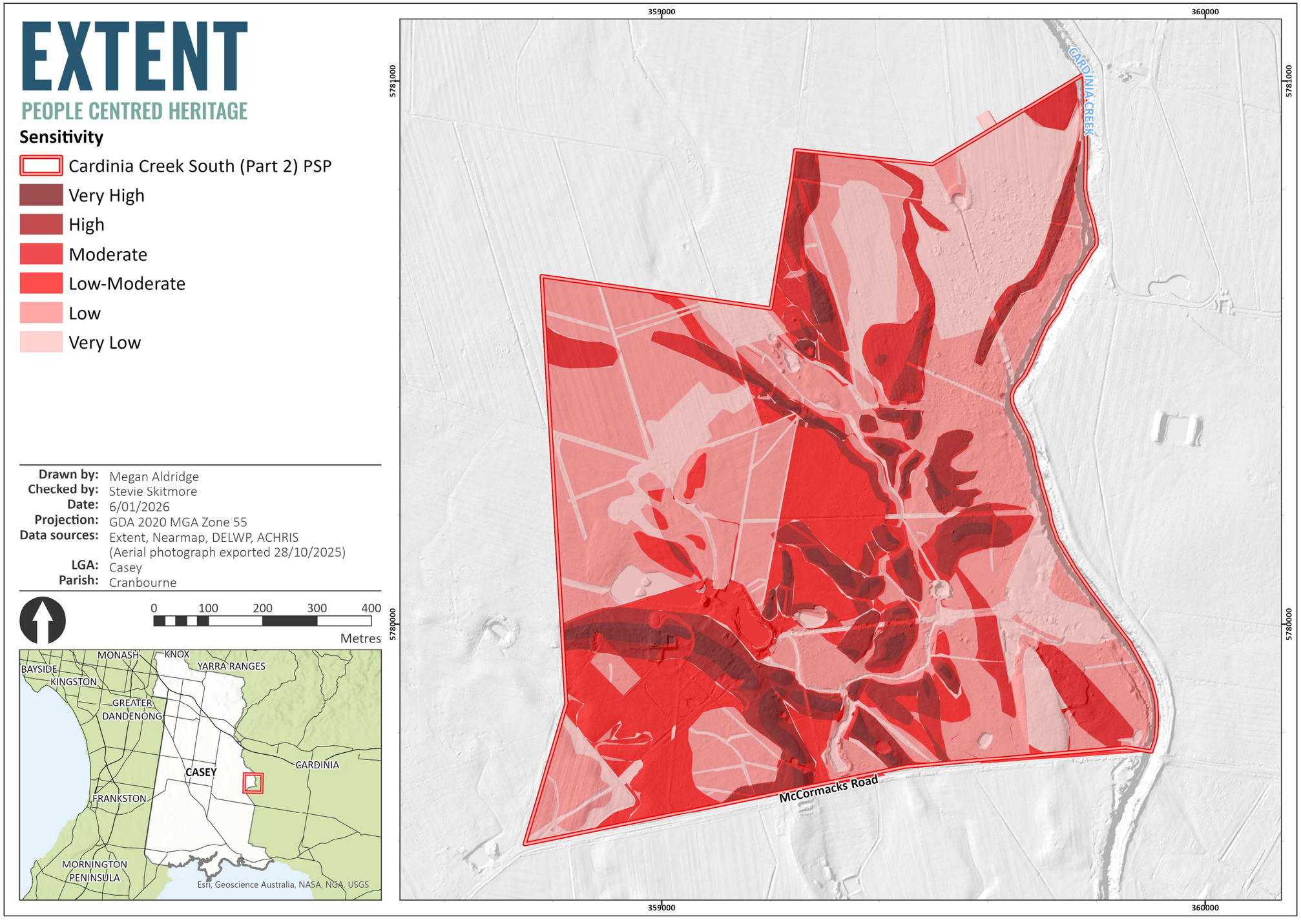

Figure 31. Revised archaeological sensitivity mapping

9. Cultural values

The Department of Transport and Planning held a cultural values inception meeting with the Bunurong Land Council Aboriginal Corporation on 30 September 2025 to discuss Bunurong values and concerns regarding development of the Cardinia Creek South (Part 2) precinct. Full meeting minutes are included are included as Appendix A of this report, with a summary of meeting minutes included below.

The meeting addressed the following items:

- Item 2.1 – Remnant native vegetation
- Item 2.2 – Fauna
- Item 2.3 – Cardinia Creek and ephemeral streams
- Item 2.4 – Landforms (sand dunes and rises)
- Item 2.5 – St Germain Homestead & Barnibyrnong Aboriginal Historical Place

Items 2.4 and 2.5 are addressed by this addendum, with the remaining items outside the scope of the report.

Item 2.1 discussed aerial photography of vegetation clearing within the Melbourne Strategic Assessment (MSA) Levy Area. BLCAC raised concerns with DTP about the potential destruction of vegetation generally located adjacent to the existing drainage line traversing the north-east corner of 95 McCormacks Road, and the middle of 125 McCormacks Road. BLCAC noted that they do not support clearance of land without some level of arborist or ecological assessment, even in MSA Levy Areas. They also requested a high-level inspection and ecological assessment of this vegetation, and for assessment to involve a BLCAC ranger. Item 2.1 was closed out by BLCAC by confirming with Casey City Council and the landowners that vegetation viewed on aerial imagery were not native vegetation but rather gorse and introduced pasture. Native vegetation within the Cardinia Creek Biodiversity Conservation Area will be protected and no development is proposed within this area.

Item 2.2 discussed fauna connectivity, with BLCAC advising fauna connectivity and movement across land and between green spaces and creek corridors is culturally important. The failure to provide adequate movement corridors results in island populations separated by ad hoc development. In response, DTP actioned a cross-government workshop to discuss kangaroo movement and connectivity in greenfield areas. Full workshop minutes are included as Appendix B of this report. DTP are also currently reviewing the PSP format and structure and are investigating opportunities to address fauna connectivity throughout the PSP process.

Item 2.3 discussed ephemeral streams in the precinct. BLCAC noted its concern about excessive development in floodplains, and how they would prefer to see naturalisation, revegetation, and restoration of waterways and water flows. Eels were noted as a very

significant species for Bunurong People that require suitable habitat and freedom of movement to complete their lifecycle.

Item 2.4 considered landforms in the precinct, with BLCAC noting that dune landforms are likely to contain higher densities of cultural material. BLCAC also noted the importance of high points in the landscape in terms of sightlines. The landform addendum provided in Section 6 of this addendum report provides a fine-grained assessment of sandy rises and ephemeral channels within the precinct, with archaeological sensitivity model and mapping in Section 8 incorporating these features.

Item 2.5 considered management of the St Germain Homestead and Barnibyrnong Aboriginal Historical Place. A review of this Aboriginal Historical Place and associated historical information is provided in Sections 3.2.1 and 5.3 of this addendum report.

10. Review of recommendations

This section reviews the two recommendations of the 2015 ACHA in view of the above addenda. It then presents revised recommendations relating to PSP design, cultural values integration and interpretation, and management of Aboriginal cultural heritage. Recommendations are made with reference to the *Precinct Structure Planning Guidelines: New Communities in Victoria* (VPA 2021).

10.1 Review of previous recommendations

The 2015 ACHA recommended that PSP design be based on assessed risk to archaeological and Aboriginal cultural heritage values, and that impact to these values be kept to a minimum (Recommendation 1). To achieve this, the ACHA recommended design responses according to archaeological sensitivity level, with minimal development occurring within the highest sensitivity areas, and vice versa (Recommendation 2).

The underpinning logic of these recommendations remains appropriate. Avoidance of harm to Aboriginal cultural heritage values should be central to PSP design, and development within areas of highest cultural heritage sensitivity has the highest risk of harming these values. Conversely, the same development in an area of lower sensitivity generally has a lower risk of harm.

The risk of a particular development to Aboriginal cultural heritage values is assessed during the preparation of a CHMP for that specific activity. CHMPs are usually prepared after approval and gazettal of a PSP, with development design shaped by the design responses included in the PSP. In this case, however, three CHMPs have already been approved for construction of a sewer pipeline and residential subdivision at 95 McCormacks Road, major drainage works at 125 McCormacks Road, and for part of a residential subdivision that overlaps the northeast corner of the precinct. Two more CHMPs are currently in preparation for the construction of frog ponds adjacent to Cardinia Creek, and for a residential subdivision across the bulk of 125 McCormacks Road.

These CHMPs have identified and assessed the nature, extent and significance of Aboriginal cultural heritage within their activity areas. They also have developed cultural heritage management conditions to ensure that harm to the cultural heritage and its associated values is minimised or avoided. These conditions are developed between the CHMP sponsor and the RAP, and have included project design changes, designated conservation areas, Aboriginal heritage protection zones, and archaeological salvages. Once approved by the RAP, these conditions become legal requirements on the CHMP sponsor under the *Aboriginal Heritage Act 2006* (Vic).

It is therefore critical that the PSP aligns with the approved conditions of CHMPs within the Cardinia Creek South (Part 2) precinct. For parts of the precinct where no approved management plan is in place, the results of in preparation CHMPs and archaeological sensitivity modelling can be used to determine risk.

10.2 Revised recommendations for the protection and management of Aboriginal cultural heritage

The following revised recommendations are made to inform development of the Cardinia Creek South (Part 2) Precinct Structure Plan and to emphasise the intent of this 2015 ACHA and this addendum as strategic planning documents.

Recommendation 1: PSP alignment with approved cultural heritage management conditions

We recommend a close review of all cultural heritage management conditions of approved CHMPs within the precinct, and that the PSP is designed as to ensure alignment with these conditions.

Specifically, approved conditions relating to the retention and conservation of Aboriginal cultural heritage in the precinct should be incorporated into the PSP design. These include:

- **CHMP 17418: Condition 17** (Skitmore et al. 2025: 28-30), which requires the minimisation of impact to part of VAHR 7921-1846 and the establishment of the *St Germains Heritage Protection Zone*[1] and *Barnibyrnong Park* over part of this Aboriginal Place (as shown in Figure 4 of this addendum); and

- **CHMP 18983: Condition 6** (Skitmore et al. 2024: 6-7, 15), which requires avoidance of impact to VAHR 7921-1972 and to designated parts of VAHR 7921-1974.

The general location of these areas is shown in Figure 32 below. We recommend that the PSP ensure its alignment to these conditions by incorporating these parts of the Aboriginal Places within the precinct's open space network, or within other minimal impact areas such as bio-links, riparian zones, pedestrian links, set-backs and / or asset protection zones.

Recommendation 2: PSP design in areas with CHMPs in preparation

We recommend in the first instance that the VPA communicate with the Sponsors of in-preparation CHMPs and the RAP to ensure that PSP design aligns with in-development cultural heritage management conditions. Where conditions are not yet in development, impact avoidance and minimisation should be prioritised for landforms on which high densities of Aboriginal cultural heritage has been identified.

We specifically recommend that in the part of the precinct covered by the activity area of CHMP 19932 (in-preparation), impact minimisation is prioritised on the sandy rise crests in the northwest and southwest corners of this area. This can be achieved through placement of open space, linear parkland or pedestrian connections within these areas. These areas are shown in red in Figure 32. Note that these areas are defined by a combination of archaeological testing and landform modelling.

[1] Note that the boundary of the *St Germains Heritage Protection Zone* is different to the boundary of Heritage Overlay 16.

Recommendation 3: PSP design in other areas

We recommend that archaeological sensitivity modelling be used to guide PSP design in parts of the precinct where CHMPs have not been approved and are not in preparation. Where CHMPs have been approved, the PSP should adopt management guidance set out in that management plan.

Where no CHMPs have been approved or are in preparation, we recommend the following design responses with reference to the levels of archaeological sensitivity mapped in Figure 31:

- **Very High Sensitivity**: where feasible, prioritise very high sensitivity areas for the location of low impact land uses, such as open space, riparian corridors, bio-link and pedestrian movement links, property set-backs and asset protection zones. Where this is not possible, we recommend protective design responses such as fill and capping to minimise harm from development impact;

- **High Sensitivity**: where there is an opportunity, development impact should be minimized where practicable, for instance, where there are opportunities to establish open space networks and pedestrian links;

- **Moderate Sensitivity**: no specific design or planning recommendations are made for these areas;

- **Low-Moderate Sensitivity**: no specific design or planning recommendations are made for these areas;

- **Low Sensitivity**: it is recommended that these areas be the focus of high-impact areas of the PSP such as a town centre, medium or high density residential, industrial or commercial; and

- **Very Low Sensitivity**: it is recommended that these areas be the focus of high-impact areas of the PSP such as a town centre, medium or high density residential, industrial or commercial.

Recommendation 4: Management of encumbered open spaces

The recommendations above consider that appropriate management of registered Aboriginal Places is incorporation into open spaces and other public areas. It is therefore recommended that City of Casey consider re-visiting their current policy regarding public open space encumbrances – specifically, where Council currently consider a registered Aboriginal Place to be encumbered land and incompatible with open space outcomes. This current policy is actively discouraging development proponents and landowners from utilising open space to minimise harm to Aboriginal cultural heritage, and instead it is providing an incentive for proponents to salvage and destroy Aboriginal heritage that might otherwise be protected.

VPA and City of Casey should consider Aboriginal place registrations as being generally compatible with open space outcomes, particularly with regard to passive open space uses, but also in many cases with active open space uses. This will encourage development proponents to include Aboriginal places and areas of archaeological sensitivity in their open space networks, and lead to significantly improved Aboriginal heritage conservation outcomes.

The new PSP guidelines (VPA 2021) consider the importance of an integrated use to encumbered land to support compact and walkable communities. Aboriginal Places registered within the precinct partially relate to former Bunurong walking routes across the region and thus offer an opportunity for culturally aligned routes of pedestrian movement throughout the precinct. Reactivating these alignments provides additional opportunities in terms of landscape and cultural interpretation, placemaking, and associated community wellbeing.

Figure 32. CHMP conservation conditions and PSP design recommendations

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Appendix A. Meeting minutes: Bunurong Cultural Values Inception Meeting

Minutes

Cardinia Creek South Part 2 PSP – Cultural Values Inception Meeting

Date:	Tuesday, 30 September 2025
Time:	10:00am – 11:00am
Location:	Microsoft Teams
Chair:	Lydia Zhang, Strategic Planner (DTP)
Invited attendees:	Mat Garner (DTP), Caroline Spry (DTP), Julian Dunn (BLCAC – Cultural Values and Research Unit), Caroline Hubschmann (BLCAC – Cultural Values and Research Unit)

Part	Status	Item	Action
1.		**Standing items**	
1.1.	v	Welcome, Acknowledgement of Country	
2.		**Bunurong Cultural Values** – BLCAC is comfortable for DTP to write meeting notes and send 1-2 page summary of what DTP has heard in today's meeting re cultural values in Cardinia Creek South Part 2 to BLCAC for review and endorsement in lieu of a Cultural Values Assessment, in this instance, given the short DTP project timeframe	

2.1.		Remnant Native Vegetation
		– Aerial imagery shows sparse trees and vegetation in the precinct; scattered trees are located within the St Germain's Homestead and on Jetwise parcel, dense canopy coverage along Cardinia Creek
		– Green vegetation patches observed on aerial imagery within the central and north-eastern areas of the precinct
		– Precinct is within the MSA Levy Area
		  – BLCAC does not support clearance of land without some level of arborist or ecological assessment, even in MSA Levy Areas
		– DTP propose a high-level ecologist inspection to provide advice on vegetation patches and scattered trees outside of the creek corridor
		  – DTP will need to test this approach with Casey Council as they are leading the procurement of technical work
		  – BLCAC supports this approach and proposes a BLCAC ranger to join the ecologist site inspection
			DTP: Confirm ecological assessment approach with Casey Council and BLCAC

2.2.		Fauna – DTP notes that kangaroo management plans used to be embedded in the PSP process but are no longer a part as it was seen to duplicate existing planning and wildlife legislation (e.g. DEECA) – BLCAC advises fauna connectivity and movement across land and between green spaces and creek corridors is important, failure to provide adequate movement corridors results in island populations (e.g. kangaroos, wallabies, bandicoots)	DTP: Organise workshop with stakeholders to discuss solutions to fauna connectivity DTP: Review precinct and surrounding precinct green spaces and waterways for fauna movement

Part	Status	Item	Action
		– BLCAC requests this PSP includes crossing points important in east and west of the RAP area (Devon Meadows, Mt Burnett, Mt Cottrell, Deep Creek etc) – DTP advises that safe passage culverts for Southern Brown Bandicoots have been included in the Devon Meadows PSP due to stronger MSA policy, there is limited strategic policy for the management and protection of kangaroos and wallabies in the current PSP – BLCAC would prefer to see implementation of infrastructure based solutions such as overpasses and underpasses to provide safe access to fauna; all native fauna is important for Bunurong People; movement between water sources and green spaces are particularly important – BLCAC regards Cranbourne Gardens as best-practice example – DTP suggest a workshop with key stakeholders to explore local/interstate/international solutions and discuss potential policy reform (VPA infrastructure team, Melbourne Water, DEECA, BLCAC) – BLCAC supports this approach – DTP suggests this be picked up at next monthly DTP/BLCAC meeting as it will be difficult to implement infrastructure solutions for the current precinct given the compact size and the lack of arterial roads – BLCAC would like to ensure that wildlife can safely cross McCormacks Road, can travel N-S freely and from risk of harm; need a more strategic approach beyond PSPs – DTP suggest a review of green spaces and waterways within the precinct and surrounding precincts to better understand connectivity and movement of fauna – BLCAC supports this approach	
2.3.		Cardinia Creek & Ephemeral Streams – BLCAC notes presence of ephemeral streams in current precinct. Is concerned about excessive development in floodplains, would prefer to see naturalisation, revegetation, and restoration of waterways and water flows. Eels are a very significant species for Bunurong People, need to have suitable habitat and movement to complete life cycle. Platypus also important – Melbourne Water have their own policies and standards for vegetation of waterways – DTP can refer this matter to MW and provide BLCAC with further information – BLCAC seeking more engagement and coordination with MW and DTP (including IWM) to discuss design and treatment of drainage – DTP can test a workshop format with government stakeholders (Melbourne Water, DEECA)	DTP: Refer this matter to Melbourne Water and provide BLCAC with information on how MW designs waterways
2.4.		Landforms (Sand Dunes & Rises) – BLCAC notes ephemeral waterways in Digital Elevation Model map should be treated as above – High points in landscape are important for sightlines, may not be relevant in this precinct as the land seems quite flat – Dunes are likely to contain more artefacts	DTP: Ensure that ACHIA 2015 addendum includes landform analysis

Part	Status	Item	Action
		– Aboriginal Cultural Heritage Impact Assessment 2015 addendum will include a review of approved and in preparation CHMPs in the current precinct and any landforms identified in them	
2.5.		St Germain's Homestead & 'Barnibyrnong' Aboriginal Historical Place – BLCAC is comfortable that this Aboriginal Historical Place is addressed through the ACHIA 2015 addendum	DTP: Ensure that ACHIA 2015 addendum includes consideration of 'Barnibyrnong' Aboriginal Historical Place
3.		**Close**	

Key: (▸) Paper circulated; (+) Paper to be tabled; (✓) Verbal update

Appendix B. Meeting minutes: Fauna movement and connectivity workshop

Meeting Minutes

BLCAC Cultural Values and Research Unit (CVRU) – BLCAC - Fauna movement and connectivity in growth areas workshop

Tuesday 18th November 2025, 10 – 11 am

Online MsTeams

VPA Attendees	Alexandrea Malishev, Strategic Planning Manager Caroline Spry, Principal Heritage Advisor Steve Baclay, Director, DTP New Communities Nicholas Power, Senior Planner, DTP New Communities Olivia Gauci, Infrastructure Planner, DTP New Communities Michael Ward, Team leader, MSA Conservation Planning DEECA James Walsh, Senior Planning Policy Officer, DEECA Katherine Whittaker, Senior Wildlife Officer, DEECA Nigel Smith, Manager of Network, DTP Transport Network Strategy
Chair	Seb McRae, Melbourne Water Alia Slamet, Acting Manager – Greenfield Strategic Planning, Melbourne Water Cate Shaw, Waterways and Land Officer, Melbourne Water Caroline Hawker, Heritage Advisor, Melbourne Water Rupert McDonald, BLCAC - Ranger team Dr David Tutchener, BLCAC - Cultural Heritage Unit Julian Dunn, BLCAC – Cultural Values and Research Unit Baden Moore, BLCAC - Water Team Mat Garner, Director, South East Growth Corridor
Apologies	Dr Caroline Hubschmann – Cultural Values and Research Unit

	Item	Description	Who	Key discussion
Introduction	1	Acknowledgement of Country	Mat	• Mat delivered the Acknowledgement of Country • Outlined the intent of the Fauna workshop: to bring agencies together, share constraints and understand where progress is possible. • Mat noted the cultural importance of kangaroos and wallabies to Bunurong people.
	2	Introductions	All	• Attendees from each agency gave introductions including functional roles and areas of responsibility. • Introductions highlighted that no one agency holds full responsibility for protection and movement of fauna which reinforced the need for coordination across stakeholders.
Part A Discussion	3	Overview of concerns from BLCAC	BLCAC (Rupert, Caroline	• Julian and Rupert presented on behalf of the BLCAC • Kangaroo mobs are losing movement pathways because development stages isolate them during construction • Previously there were kangaroo management plans • BLCAC explained that Clyde and western growth areas present the same pattern of kangaroos pushed into isolated areas during development

			H/Julian)	• These areas include conservations areas, MSA areas – BLCAC may manage these areas in the future • BLCAC community members continue to raise strong concerns about kangaroos becoming trapped between new housing estates/ industrial land and fenced environmental reserves. • BLCAC stated that cultural harm occurs when species with cultural significance are unable to follow natural movement routes.
Part B Presentation	4	Overview of state agency approaches to native fauna in growth areas • DTP New Communities • DEECA • DTP transport • Melbourne Water	Steve/ Nick Katherine/James Nigel Alia/ Cate	**4.1 VPA/DTP (refer to slides provided)** • VPA advised that past PSPs required kangaroo management plans through the UGZ schedule with staging plans but this approach is no longer used • Kangaroo management sits outsides the scope of PSP planning • Staging plans attempt to avoid landlocking of kangaroos etc • VPA noted that obligations remain with the landholder under the Wildlife Act 1975 and the Prevention of Cruelty to Animals Act 1986 **4.2 DEECA (refer to slides provided)** • State wide group and support land management • Support with evidence-based advice coming from a Western science perspective • Re-iterated role of Wildlife Act (protection of wildlife in Victoria that includes kangaroos. Primary legislation for prevention of cruelty. It's an offence to undertake actions that cause unreasonable pain or suffering to any animals) and Prevention of Cruelty Act • Discussed Authority to Control • Council can also choose to condition at kangaroo management plan at planning permit stage • DEECA explained that early planning is the most effective point to consider kangaroo mob movement because once construction begins options become limited • 36 conservation areas of varying size and connectivity. Each conservation areas needs to be assessed for management of kangaroos, implications. Funding limitations. Each conservation area is set. • DEECA confirmed that the MSA program is designed for EPBC Act listed species which does not include kangaroos. • DEECA stated that many conservation areas are small isolated or heavily constrained and may not support large kangaroo macropod populations. And these areas may be in the surrounding urban context which represents a risk for human and animal safety. **4.3 DTP Transport (refer to slides provided)** • Road perspective: Council delivery in the interim and we deliver the ultimate road construction • There are limitations in that planning process as we are constrained by the corridor to delivery road infrastructure • Major projects require fauna assessments before construction and this includes targeted surveys and ecological advice. • Projects use fencing underpasses, culverts and other structures to guide fauna safely across roads when movement routes are known. **4.4 Melbourne Water (refer to slides provided)** • Understanding what potential there is through the private land holdings to build connectivity, or opportunities for movement • Constrained to drainage land, but also biodiversity requirements (e.g. EPBC Act) • Drainage land can become unintended holding areas where kangaroos are trapped between waterways and new development. • Linear waterways provide really good linkage habitat corridors but generally it's more for smaller species such as wallabies. • Healthy waterways strategy a focus on aquatic species protecting platypus frogs, fish and species of water birds • Kangaroo mobs sometimes become stranded on land that was not designed to provide habitat or support grazing. • Early planning would help identify locations where fauna could be supported or where mobs are likely to become isolated. Melbourne Water confirmed that its remit does not include long term management of macropod populations.
	5	BLCAC case studies on best-practice approaches to fauna in growth areas/Discussion	All	**BLCAC** • Awareness from the BLCAC of regulatory hurdles that definitely have to be overcome for infrastructure-based solutions • New South Wales and Southern Queensland: in the last few decades underpasses/overpasses connecting green spaces and conservation zones for kangaroos. • Examples include underpasses and forest sites in Port Macquarie (Oxley Highway)/Grafton.

				• Examples also include signs, road pavement markings, fauna exclusion fencing, culvert underpasses, koala refuge and glider poles, rope bridges, variable message signs, kangaroo jump outs and koala climb outs in Brisbane City Council. • Also examples in Drewdale/SE Queensland, Bonville NSW. • BLCAC explained that some approaches work well when conservation areas sit on both sides of a road and the structure follows a clear movement path **DEECA** • Probably not looking at something like this to facilitate wholesale movement of kangaroo mobs outside of precincts because the kangaroos are likely to stay in their own local area. **PSP process constraints** • Constrained on how much land is available within PSP area • We can do the work to identify the fauna movement areas early and ensure that we are securing the land, but this makes it difficult because the infrastructure is normally not delivered until 20 to 30 years after the planning phase. • Infrastructure Contribution Plans limitations due to the current Ministerial Directions and ICP guidelines on what infrastructure can be funded in this space: there is no justification to provide major wildlife movement infrastructure based solutions for fauna movement **Actions**: **M5-A1** DTP transport will identify which major road projects have integrated fauna movement structures and share their learnings. Victoria examples include Calder Freeway, Eastlink.
Closure	6	Next steps and actions	Mat	**Close:** Opportunity to come together as a group and share where our collective stakeholder groups have capacity to influence fauna movement. Melbourne Water suggested an opportunity in the initial stages of the PSP 2.0 process where stakeholders could come together to look at any primary movement corridors with key stakeholders through a coordinated approach at a precinct level. For example, in the vision/purpose or co-design. VPA will discuss this with the PSP 2.0 team. Noting that some of these discussions and conversations might need to happen outside the planning system. **Actions:** **M5-A2:** Add to agenda item fauna movement VPA/BLCAC regular meeting (18/Nov/2025) **M5-A3:** Are there other stakeholders we need to hear from for the broader solution? (18/Nov/2025) **M5-A4:** VPA/BLCAC to report back other actions/potential solutions (18/Nov/2025) **M6-A5:** VPA to discuss options with VPA PSP 2.0 team to include consideration of fauna movement in PSP 2.0 early plan testing processes. (18/Nov/2025)