KILMORE-WALLAN BYPASS

CULTURAL HERITAGE MANAGEMENT PLAN: DESKTOP AND STANDARD ASSESSMENT

CULTURAL HERITAGE MANAGEMENT PLAN NUMBER: 11988

Sponsor:	VicRoads (ABN 61 760 960 480)
Cultural Heritage Advisor:	Dr Shaun Canning and Vicki Vaskos Australian Cultural Heritage Management
Author(s):	Vicki Vaskos, Fiona Schultz and Laura Donati Australian Cultural Heritage Management
Activity Size:	Large
Assessment Type:	Standard

Plan Date: 19 November 2012

Abbreviations

Term	Meaning
AAV	Aboriginal Affairs Victoria, Department of Planning and Community Development
ACHM	Australian Cultural Heritage Management (Victoria) Pty Ltd
Activity Area	Investigation area, all five options combined
ADR	Alternative Dispute Resolution
AHA 2006	Victorian *Aboriginal Heritage Act 2006*
AHR 2007	Victorian *Aboriginal Heritage Regulations 2007*
APD	Authorised Project Delegate
APM	Activity Project Manager
ASTT	Australian Small Tool Tradition
BP	Before Present
CHA	Cultural Heritage Assessment
CHM	Cultural Heritage Management
CHMP	Cultural Heritage Management Plan
CHVR	Cultural Heritage Values Recording
HV	Heritage Victoria
In Situ	In archaeology, in situ refers to an artefact or an item of material culture that has not beer moved from its original place of use, construction or depositior
Isolated artefact	4 or less artefacts within a 10 metre by 10 metre area; recorded as a single co-ordinate
KWB	Kilmore Wallan Bypass
LGA	Local Government Area
Newly recorded site	Site recorded as part of the Kilmore Wallan Bypass Examination (both Phase 1 and 2
NOI	Notice of Intent (to prepare a Management Plan)
Previously Recorded Site	Site located as part of previous unrelated fieldwork
Site	Artefact scatter of 5 or more artefacts within a 10 metre by 10 metre area; polygon around the site
Taungurung	Taungurung Clans Aboriginal Corporation
RAP	Registered Aboriginal Party
VAHR	Victorian Aboriginal Heritage Register
VCAT	Victorian Civil and Administrative Tribunal
VicRoads	Roads Corporation

EXECUTIVE SUMMARY

This Cultural Heritage Management Plan (CHMP) has been prepared as a mandatory CHMP for VicRoads (the Sponsor ABN: 61 760 960 480).

NATURE AND EXTENT OF PROPOSED ACTIVITY

The Kilmore Wallan Bypass will link the Northern Highway from the north of Kilmore with the Hume Freeway to the east of Kilmore. The project will construct a single two lane carriageway highway bypass of Kilmore and Wallan.

The key construction activities shall involve civil works and a variety of structural works that include; large culverts, creek crossings, rail crossing, pedestrian underpasses and major interchanges. Other construction activities will include clearing of vegetation, general earthworks (including topsoil stripping, excavation, filling and topsoil spreading), relocation of utility services, drainage installation, landscaping, lighting and signage. Significant earthworks are required on all options (including excavation) as a result of very hilly terrain throughout the area.

The activity area comprises of five (5) bypass options, which are located in the towns of Kilmore and Kilmore East. The five options that are the subject of the Kilmore Wallan Bypass (KWB) investigations are the:

Eastern options:

1. Sunday Creek Road;
2. Dry Creek;
3. O'Gradys Road; and
4. Quinns Road.

Western Option:

5. Encompassing Paynes Road and Kings Lane.

The corridors for investigation purposes cover approximately 928 ha. The functional design for the road and bridge works shows a development footprint for the ultimate duplicated facility as listed below for each option:

- Dry Creek – 165 ha
- Quinns Rd – 173 ha
- O'Gradys Rd – 166 ha
- Western – 197 ha
- Sunday Ck – 149 ha

Route Length:

The length of each option is as follows:

- Dry Creek – 11.2 km
- Quinns Rd – 12.7 km
- O'Gradys Rd – 12.3 km
- Western – 17.1 km
- Sunday Ck – 11 km

The activity area, which lies approximately 60 kilometres north of Melbourne, encompasses a roughly rectangular area of land between Wandong and Broadford.

CULTURAL HERITAGE MANAGEMENT PLAN

A Cultural Heritage Management Plan (CHMP) is required under Section 47 of the Victorian *Aboriginal Heritage Act* (2006) (AHA 2006) if any high impact activity is planned in an identified area of cultural heritage sensitivity

that has not been subject to significant ground disturbance, as defined in the Victorian *Aboriginal Heritage Regulations* (2007) (AHR (2007)).

This CHMP is required because the proposed activity, the construction of the Kilmore Wallan Bypass (KWB), triggers a CHMP.

Specifically, parts of the activity area are within areas of cultural heritage sensitivity, as sections of the activity area intersect with or lie within 200 of Dry Creek, Nanny Creek, Broadhurst Creek and Kilmore Creek [Regulations 23(1)]. The proposed bypass construction is a high impact activity. Each of the five proposed bypass options exceeds a length of 100 metres and their construction would result in significant ground disturbance. [Regulation 44(1)(e)].
A desktop assessment and standard assessment has been prepared for the five options. The complex assessment (and therefore final CHMP) will be completed for the preferred option only.

RESULTS OF THE DESKTOP AND STANDARD ASSESSMENT STAGES

Desktop Assessment

The desktop assessment identified a total of 52 previously recorded sites within the geographic region. Of these sites (isolated artefacts (n=21), artefact scatters (n=30) and one earth feature), four are located within the activity area. These are:

1. VAHR 7823-0142: ARTC Passing Lane 4 AS 1;
2. VAHR 7823-0186: Melbourne- Sydney Passing Lane 3-1;
3. VAHR 7823-0179: Kilmore East 1; and
4. VAHR 7823-0180: Kilmore East 2.

There is one further site located within 200 metres of the activity area (ARTC Passing Lane 4 IA 1: 7823-0143).

The desktop assessment determined that there is the potential for Aboriginal archaeological sites to be present within the activity area. The activity area is intersected by four waterways and their tributaries (Dry Creek, Nanny Creek, Kilmore Creek and Broadhurst Creek). Previous research has shown that 80% of all known Aboriginal sites occur within 200m of a source of potable water (Canning, 2003: 262). Also, the activity area is characterised by both gentle and steep slopes that characterise central Victoria.

Based on our current knowledge of the activity area, and the known distribution of archaeological sites within the geographic region, the following predictive statements can be made:

- Elevated locations above the Creeks and associated tributaries and Creek terraces have higher potential to contain surface artefact scatters and subsurface archaeological deposits, particularly those areas that lie within 200 metres of creek lines.
- Artefact scatters may be located in both disturbed and undisturbed contexts.
- Scarred trees may occur anywhere within the activity area where remnant native trees of an appropriate age survive.
- There is the possibility of locating earth features within the activity area, as an earth feature is located within the geographic region.
- Elevated locations have higher potential to contain stratified subsurface archaeological deposits in primary context or at least occasional isolated artefacts.

Standard Assessment

Subsequent to the completion of the first phase of fieldwork, amendments were made to the activity area, which included an additional western option. These additional areas, including the western option, were surveyed during the second phase of fieldwork.

The first phase of fieldwork was carried out between 6 February and 14 February 2012 by ACHM archaeologists Vicki Vaskos (BA Hons LLB Hons, qualified cultural heritage advisor), Jennifer Chandler (BArch Hons, qualified cultural heritage advisor) and Edward Turner (BA Hons, qualified cultural heritage advisor) together with traditional owner representatives Mick Harding, Rodney Monk, Shane Monk and Chris Hume from the

Taungurung. The second phase of fieldwork was carried out between 3 October - 10 October 2012 and on 23 October by ACHM archaeologists Vicki Vaskos (BA Hons LLB Hons, qualified cultural heritage advisor), Erica Walther (BArch Hons, qualified cultural heritage advisor), Fiona Schultz (Archaeologist) and Edward Turner (BA Hons, qualified cultural heritage advisor) together with traditional owner representatives Mick Harding and Rodney Monk from the Taungurung.

The activity area was inspected for the presence of archaeological sites and areas of cultural heritage sensitivity. Ground surface visibility across a majority of the activity area was extremely poor (<10 %) due to dense grass cover. Portions of the ground surface were exposed due to stock movement, ploughing and erosion around waterways.

There were no culturally modified scarred trees, culturally modified charcoal, caves, rock shelters or cave entrances located within the activity area.

Despite an extensive survey of the rail reserve impacted by the activity area, the four previously existing sites (VAHR 7823-0180, VAHR 7823-0179, VAHR 7823-0142 and VAHR 7823-0186), all located within the rail reserve, were not relocated.

Low ground surface visibility over the activity area (all five (5) options) hindered the ability to determine the extent of these newly recorded sites. Some of the newly recorded sites were eroding out of slopes near these waterways and their associated tributaries. This indicates that these sites are likely to continue in a subsurface context.

Very low ground surface visibility was encountered throughout the majority of the assessment (<10%). Due to the low ground surface visibility only broad statements can be made on Aboriginal use of the landscape within the activity area. The five bypass options are either intersected by or lie within 200 of Dry Creek, Nanny Creek, Broadhurst Creek and Kilmore Creek. As predicted in the predictive model (Section 5.1.9), a majority of the newly recorded sites were located on crests or in association with these waterways. River and Creek valleys would have provided the most advantageous settlement localities for Aboriginal people throughout the history of human settlement in the region. The river valley environments provided Aboriginal people with a range of necessary resources, as well as providing shelter from the elements, timber for fires, tools, and housing; all manner of food sources, and stone for tool manufacture. The ridgelines and valley landscapes may also have served as travel routes throughout much of the region.

Sixty three (63) new sites (45 isolated artefacts and 18 artefact scatters) were located during the standard assessment. Forty eight (48) (15 artefact scatters and 33 isolated artefacts) are located within the current investigation area for all five options.

	Site Occurrence Count - Study Area				Site Occurrence Count - Earthwork Footprint			
Option	Artefact Scatter	Isolated Artefact	Previously Recorded Site	(Total)	Artefact Scatter	Isolated Artefact	Previously Recorded Site	(Total)
Sunday Creek	5	13	2	20	2	6	1	8
Dry Creek	10	17	3	30	3	5	0	8
O'Gradys Road	6	21	4	31	1	4	0	5
Quinns Road	1	8	0	9	0	2	0	2
Western Option	3	8	0	11	0	2	0	2

Table: Sites located within the current investigation area by option

OPTIONS ASSESSMENT

The assessments have been made by comparing the number of sites, both artefact scatters and isolated artefacts, located in each of the five options. Both the Quinns Road Option and the Western option contain no artefact scatters and relatively low numbers of isolated artefacts.

Based on the assessment of each option according to the VicRoads rating assessment criteria, the Quinns Road and the Western Options are of the least impact to Aboriginal Cultural Heritage (being negligible benefit or disbenefit [-1]). This assessment is based only on the desktop and standard assessment completed to date.

RECOMMENDATIONS

The desktop and standard assessment has demonstrated that the activity will impact on an area where Aboriginal cultural heritage is or is likely to be present. The Aboriginal Heritage Regulations (60) state that:
"(1) A complex assessment is required if the desktop assessment or standard assessment shows that—

(a) Aboriginal cultural heritage is, or is likely to be, present in the activity area; and

(b) it is not possible to identify the extent, nature and significance of the Aboriginal cultural heritage in the activity area unless a complex assessment is carried out".

The complex testing is to take place for the bypass route which is chosen for construction (i.e. the preferred option only).

This requirement for complex testing is supported by the Taungurung representatives who participated in the survey. The complex testing methodology will need to be discussed with and agreed upon by the Taungurung.

In addition to complex testing, it was communicated to the Cultural Heritage Advisor (CHA) onsite by the Taungurung representatives that cultural heritage values recording should be completed prior to the commencement of the complex CHMP assessment. The Taungurung have requested that cultural heritage values recording (CHVR) take place over all five options regardless of which option is chosen for the final bypass route.

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PART 1: ASSESSMENT

1. INTRODUCTION

Cultural heritage sites or places represent a tangible or intangible record of human interactions within the landscape. The daily activities of humans throughout the millennia survive as the archaeological record across the continent. In Victoria, these sites or places provide evidence of approximately 30,000 years of Aboriginal occupation prior to the arrival of Europeans, and also evidence of the more recent past since European settlement.

Throughout most jurisdictions in Australia, cultural heritage sites or places are protected by either State or Commonwealth heritage legislation, or a combination of both. The Aboriginal Heritage Act (*AHA 2006*) provides legal protection for all materials, sites or places relating to the Aboriginal occupation of Victoria.

1.1. REASON FOR PREPARING THE PLAN

This CHMP is being prepared because the proposed activity, the construction of the Kilmore Wallan Bypass (KWB), triggers a CHMP.

Specifically, the activity area is in an area of cultural heritage sensitivity, as sections of the activity intersect or lie within 200 metres of Dry Creek, Nanny Creek, Kilmore Creek and Broadhurst Creek [Regulations 23(1)]. The proposed bypass construction is a high impact activity as each of the five proposed bypass options exceeds a length of 100 metres and their construction would result in significant ground disturbance. [Regulation 44(1)(e)].

1.2. NOTICES GIVEN BY VICROADS

The Notice of Intention to Prepare a Cultural Heritage Management Plan (NOI) for the overall study area was lodged with both Aboriginal Affairs Victoria (AAV) and with the Registered Aboriginal Party (RAP) the Taungurung Clans Aboriginal Corporations (Taungurung) on the 16 November 2011. Amended NOIs were lodged with both AAV and the Taungurung on 19 July 2012.

The Taungurung responded to the NOI on 17 November 2011 indicating that they would be evaluating the CHMP.

The NOI was also sent to the owners/ occupiers of the properties within the area covered by the CHMP.

Copies of these notices are attached in Part 3 of this Plan.

1.3. RELEVANT PARTIES

1.3.1. Sponsor

The sponsor of this Plan is:

Roads Corporation (VicRoads)
ABN: 61 760 960 480
Contact Name: Mal Kersting
Address: 53-61 Lansell Street, Bendigo 3550.

VicRoads is established under s.15 of the *Transport Act 1983 (Vic)*, and trades as VicRoads. VicRoads' statutory functions and powers are listed in s.16 of that Act. One of those functions is to maintain, upgrade, vary and extend the State's declared road network.

1.3.2. Cultural Heritage Advisor

The field assessment and writing of this CHMP was undertaken by Australian Cultural Heritage Management (Victoria) Pty Ltd (ACHM). The consultants undertaking the works documented in this report are qualified cultural heritage advisors in accordance with the requirements stated in Section 189(1) of the Aboriginal Heritage Act (2006).

Dr Shaun Canning supervised all aspects of this project. Vicki Vaskos and Fiona Schultz undertook the desktop assessment. Vicki Vaskos, Jenni Chandler, Erica Walther and Fiona Schultz and Edward Turner undertook the standard assessment. All geospatial data was prepared by Sarah Turner and Russell Pilbeam. Laura Donati undertook the historical research.

The following is a brief description of the qualifications and experience of the cultural heritage advisor as stated in Schedule 2(3) of the Aboriginal Heritage Regulations (2007).

The primary supervisor of this CHMP is:

Dr Shaun Canning is senior archaeologist and anthropologist and a General Manager of the consulting firm Australian Cultural Heritage Management (Vic) Pty Ltd. (ACHM), which specializes in cultural heritage assessment, expert advice, management of complex and large-scale cultural heritage management projects (both primarily in relation to Australian Indigenous culture and heritage), native title research, Indigenous community development issues, geographic information systems, cartography and analysis. Dr. Canning holds a Bachelor of Arts degree majoring in Cultural Heritage Studies and Anthropology, a Bachelor of Applied Science (Hons) degree in Parks, Recreation and Heritage, and a PhD in Australian Indigenous Archaeology (La Trobe), specialising in predictive modelling and cultural heritage management in the Melbourne metropolitan area. Shaun has extensive experience in Indigenous cultural heritage management in the resources and public land management sectors, alongside considerable experience in community consultation and Aboriginal education. Shaun has particular expertise in the use of GIS and predictive modelling in archaeological, cultural and natural heritage management contexts. Shaun is active in many professional associations, and is currently National Webmaster of the Australian Association of Consulting Archaeologists Inc. Shaun is a Fellow of the Australian Anthropological Society (FAAS) and a Full Member of the Australian Association of Consulting Archaeologists Inc (MAACAI).

The authors of this CHMP are:

Vicki Vaskos is an archaeologist at Australian Cultural Heritage Management (Vic.) Pty Ltd. (ACHM). Vicki has completed a Bachelor of Arts degree with Honours, majoring in Classical Studies and Archaeology, at The University of Melbourne (2005). Vicki has also completed a Bachelor of Laws with Honours at Monash University (2010), and was admitted to legal practice in March 2011. Since early 2011 she has worked on archaeological surveys and excavations throughout Victoria and Western Australia. Vicki is a qualified cultural heritage advisor and archaeologist in accordance with the requirements of Section 189 (1) of the Aboriginal Heritage Act 2006.

Fiona Shultz. Fiona Schultz has completed a Bachelor of Archaeology degree at La Trobe University (2011). Since 2006 she has worked on archaeological projects in Victoria, Western Australia and has also participated in academic surveys in Ghana, West Africa.

1.3.3. Registered Aboriginal Parties (RAPs)

The Registered Aboriginal Party for the activity area is the Taungurung Clans Aboriginal Corporations (Taungurung).

The Taungurung is a Registered Aboriginal Party under the *AHA* 2006 (Vic) and as defined in that Act and has responsibility for the management and administration of Aboriginal cultural heritage matters in the activity area.

The Taungurung have elected to evaluate the Plan, participate in the assessment and engage in ongoing consultation with the CHA and the Sponsor.

A copy of the written notice from the Registered Aboriginal Party to VicRoads specifying that they intend to evaluate this Plan is attached in Part 3 of this Plan.

1.3.4. Owner(s) and Occupiers of Relevant Land

A total of 195 properties (excluding roads and road reserves) will be impacted by the proposed activity. A list of the properties that are impacted by this assessment is contained within Section 3.2.

1.4. LOCATION OF THE ACTIVITY AREA

The activity area lies approximately 60 kilometres north of Melbourne between Wandong and Broadford and includes the towns of Kilmore and Kilmore East.

The footprint for the proposed works does not exceed the footprint of the activity area. The total length of the activity area including off-ramps and access-roads is approximately 51 km. The activity area is located within the Mitchell Shire Council area.

The corridors for investigation purposes cover approximately 928 ha. The functional design for the road and bridge works shows a development footprint for the ultimate duplicated facility as listed below for each option:

- Dry Creek – 165 ha
- Quinns Rd – 173 ha
- O'Gradys Rd – 166 ha
- Western – 197 ha
- Sunday Ck – 149 ha

The length of each option is as follows:

- Dry Creek – 11.2 km
- Quinns Rd – 12.7 km
- O'Gradys Rd – 12.3 km
- Western – 17.1 km
- Sunday Ck – 11 km

The extent of the activity area is indicated on Map 2.

The properties impacted by the proposed activity are listed in Section 3.2.

2. ACTIVITY DESCRIPTION

2.1. Nature and Extent of the Activity

VicRoads propose to construct a bypass of the townships of Kilmore and Wallan linking the Northern Highway to the north of Kilmore with the Hume Freeway.

The activity area encompasses a roughly rectangular area of land between Wandong and Broadford (See Map 1).

The Kilmore Wallan Bypass will link the Northern Highway from the north of Kilmore with the Hume Freeway to the east of Kilmore. A bypass of Wallan is achieved by utilising the existing Hume Freeway whereas Kilmore would be bypassed via a new alignment between the Hume Freeway and the intersection of the Northern Highway and Kilmore-Broadford Road. The project will construct a single two lane carriageway highway bypass of Kilmore and Wallan by 2017 and will reserve and acquire sufficient land for possible future widening to a dual carriageway. The bypass will reduce truck traffic through the town centres and improve road safety and functionality in the town centres.

Key construction activities:

The key construction activities shall involve civil works and a variety of structural works that include; large culverts, creek crossings, rail crossing, pedestrian underpasses and major interchanges. Other construction activities will include clearing of vegetation, general earthworks (including topsoil stripping, excavation, filling and topsoil spreading), relocation of utility services, drainage installation, landscaping, lighting and signage. Significant earthworks are required on all options (including excavation) as a result of very hilly terrain throughout the area.

Description of the five options for the KWB Project:

Sunday Creek Option: The option connects to the Hume Freeway at the existing Clonbinane interchange. The road heads westwards over farmland towards the Kilmore East hamlet utilizing sections of the existing Sunday Creek Road where possible. The bypass option crosses over the Melbourne-Sydney Railway at Kilmore East and runs parallel to, and north of Kilmore East Road. It then continues through in a north-west direction through rural residential and farming areas before connecting to the Northern Highway, south of the Broadford-Kilmore Road turnoff with a large diameter roundabout. There are local road connections at Broadford- Wandong Road, Saunders Road, Kilmore East Road and at Kellys Lane. The Northern Highway and Broadford-Kilmore Road intersection would also be upgraded to a large roundabout. The section of this option between the Kilmore East and the Northern Highway shares a common alignment with the O'Gradys Road and Dry Creek Options.

Dry Creek Option: The option connects to the Hume Freeway just north of the existing Wandong Interchange via two southerly oriented ramps one. The bypass options then runs parallel to, and east of, the Melbourne-Sydney Railway and Dry Creek through tree plantation and faming land. The option crosses over the Melbourne-Sydney Railway at Kilmore East hamlet and then shares a common alignment with the Sunday Creek and O'Gradys Road Options.
There are local road connections at Kilmore East Road and Kellys Lane.

O'Gradys Option: The option connects to the Hume Freeway at the existing Wandong interchange, requiring an upgrade of the existing interchange. The bypass option then runs along the existing O'Gradys Road through rural residential and farming areas. The option deviates from the O'Gradys Road to cross the railway to avoid the Kilmore East hamlet. It then again crosses over the Melbourne-Sydney Railway north of the Kilmore East hamlet and shares a common alignment with the Sunday Creek and Dry Creek Options.

There are local road connections at Kilmore-Epping Road, Kilmore East Road, Broadhurst Lane, Mathiesons Road, Sir Leo Curtis Drive, O'Gradys Road and Kellys Lane.

Quinns Road Option: The option connects to the Hume Freeway at the existing Wandong interchange, requiring an upgrade of the existing interchange. The bypass option then generally follows the existing Epping-Kilmore Road and includes a connection to the Northern Highway south of Kilmore with a large roundabout. The bypass option then runs northwards parallel to, and east of Quinns Road and Andersons Road. It runs along the western base of Monument Hill Reserve to the east side of the golf course and race track along Hunts Road, requiring relocation of Hunts Road access along the east side of the bypass. The option then crosses Kilmore East Road and continues north-west through rural residential and farming areas before connecting to the Northern Highway south of the Broadford-Kilmore Road turnoff. There are local road connections at O'Gradys Road, Mathiesons Road, Millard Road, Quinns Road, McIvors Road, Tootle Street, Monument Hill Drive, Kilmore East Road, and Kellys Lane. The Kilmore-Broadford Road intersection would also be upgraded to a large roundabout.

Western Option: The option connects to the Hume Freeway at the existing Wandong Interchange, requiring an upgrade of the existing interchange. The bypass option then generally follows the existing Epping-Kilmore Road connecting to the Northern Highway south of Kilmore with a large diameter roundabout. The bypass option continues westward running parallel to, and south of Gehreys Lane, before turning northward at Paynes Road and running parallel to and west of Paynes Road. The option connects to the Kilmore-Lancefield Road with a large diameter roundabout. The option then continues northward running parallel to, and west of, Kings Lane, before turning north-east past the waste water treatment facility before connecting to the Northern Highway at the Broadford- Kilmore Road intersection with a large diameter. There are local road connections at Broadhurst Lane, O'Gradys Road, Mathiesons Road, Millard Road, Quinns Road, Mill Road, Fitzgerald Road, McDougalls Road, Willowmavin Road and Costello's Road.

The area to the east of Kilmore generally comprises steep hilly terrain providing challenging road alignment choices to achieve suitable road gradients for truck travel. If this project is to successfully reduce truck traffic in Kilmore and Wallan, the bypass must provide an attractive alternative to travelling through central Kilmore and Wallan along the Northern Highway. Two (2) of the eastern options (Dry Creek option and O'Gradys Road option) are adjacent to, or cross, the floodplain located along Dry Creek.
Much of the Western Option presents fewer geographic difficulties, with the majority of the alignment composed of cleared agricultural land, with little remaining native vegetation and minor grade impacts.
The options involve the upgrade of existing roads and the construction of new sections of road. The use of local roads has been avoided with the exception of O'Gradys Road, Sunday Creek Road and Hunts Road. It is expected that structures shall be erected at (where applicable) the crossings of Kilmore, Broadhurst and Dry Creeks, being either bridge structures or culverts. Major structures are also required over the Sydney – Melbourne Railway as underpasses are not feasible due to the proximity of Dry Creek floodplain. Major structures also include an overpass of Kilmore East Road and interchange upgrades at Clonbinane and Wandong. The Dry Creek option proposes a new half diamond interchange north of the existing Wandong interchange.

Safe intersection connections shall be made at points along the bypass route to connect local and arterial roads to the bypass, thereby improving traffic flow and accessibility for local traffic. Some large farming properties will have direct access to the new road however consideration has been given to service roads for controlling access and improve the safe operation of the bypass where required.

The concept design has been developed with an alignment to avoid and minimise impacts on key constraints (in both 2 lane and potential future 4 lane configurations). Subject to the outcome of the environmental, economic and social investigations the concept design could be modified to address certain impacts
Note: A nominal 60 metres road reserve width for each route corridor has been proposed for flat terrain. This would allow enough room for future widening if required along with setbacks for safety and maintenance purposes. In very hilly terrain or where access restoration is required, the road reserve width could be expected to be much wider than 60 metres.

Reserve widths in excess of 200 metres could be required for the bypass to lower the slope (grade) of the road for vehicles to more easily navigate.

This is achieved by either cutting through the hills/ridges or building the road up in valleys. The resulting footprint is much larger due to the embankments/cuts required to achieve this.

2.2. Impacts on the Land Surface

The proposed activity will involve ground disturbance, as construction of the new carriageways will involve both 'cut' and 'fill' earthworks. These will necessitate the stripping of topsoil within the designated construction zone, thus disturbing Aboriginal cultural material that may be located on the surface and within shallow subsurface deposits.

All works associated with the road duplication are summarised below:

- Road construction – highway, services roads and property access;
- Site offices and stockpile sites;
- Structural works (including major culverts, creek and rail crossings, pedestrian underpasses and major interchanges);
- Utility/service relocation;
- Drainage works;
- Landscaping;
- Clearing of vegetation;
- Car Parking;
- Temporary/realigned property access;
- Earthworks – cut and fill ;
- Installation and lighting and signage.

3. EXTENT OF ACTIVITY AREA

3.1. ACTIVITY AREA LOCATION AND DESCRIPTION

The activity area is located approximately 60 kilometres north of Melbourne and lies within the Mitchell Shire Council municipality. The activity area comprises of five bypass options, which include the townships of Kilmore and Kilmore East. The activity area encompasses a roughly rectangular area of land between Wandong and Broadford (See Map 1).

The activity area comprises of five (5) bypass options, which are located in the towns of Kilmore and Kilmore East. The five options that are the subject of the assessment are the:

Eastern options:

1. Sunday Creek Road;
2. Dry Creek;
3. O'Gradys Road; and
4. Quinns Road.

Western Option:

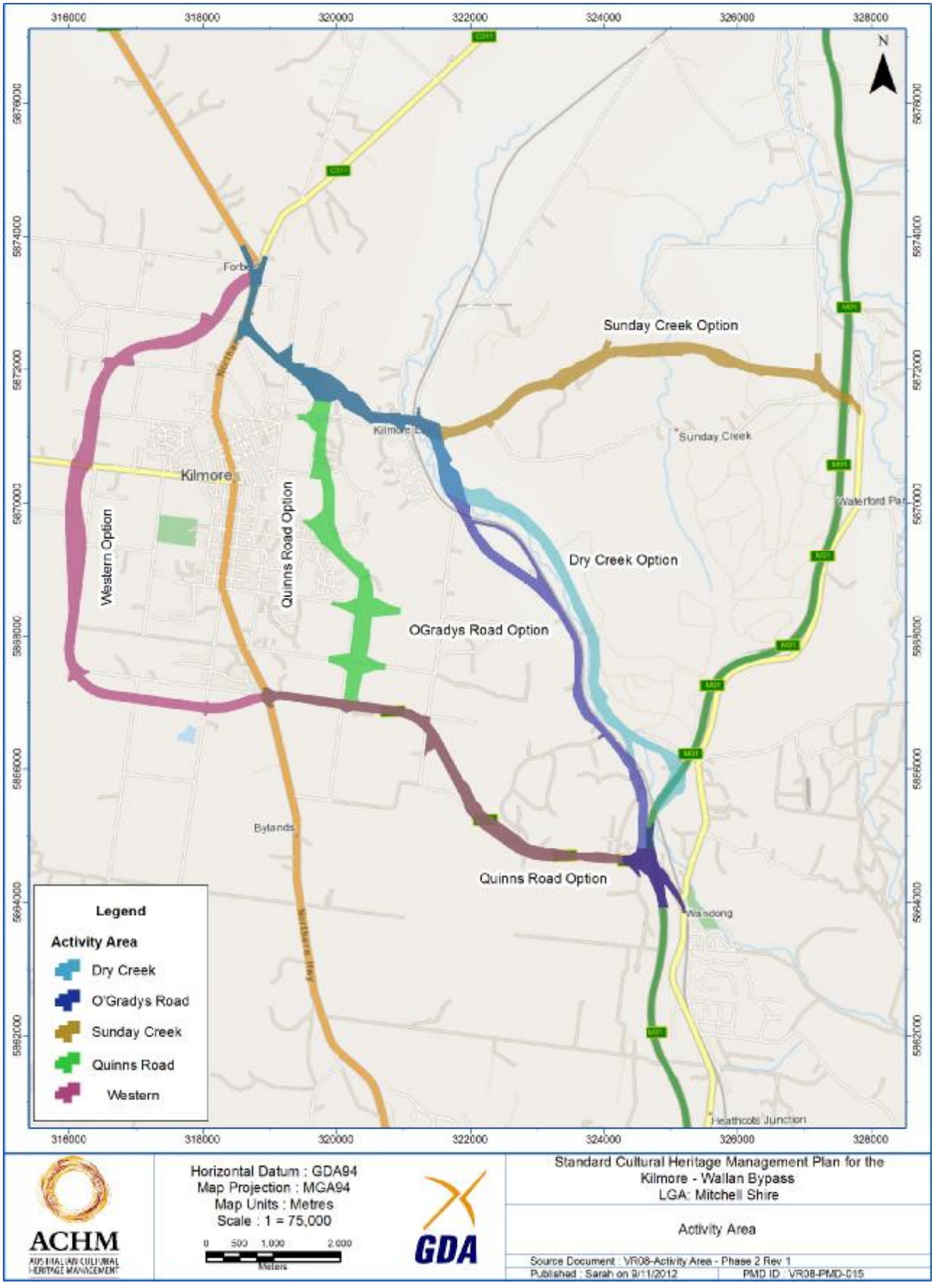
5. Encompassing Paynes Road and Kings Lane.

The activity area varies in width between approximately 150 metres and 1000 metres. The activity area covers an area of approximately 928 hectares, and is approximately 51 km is length.

The topography of the activity area is both gently and moderately undulating. Significant topographic features within the activity area include the four creeks which intersect the activity area (Dry Creek, Nanny Creek, Kilmore Creek and Broadhurst Creek), their tributaries, existing roads and ridge and valley formations.

Map 2 shows the activity area examined (all five options combined).

Map 1: General Location Map.



Map 2: Map showing the five options which make up the current activity area.

3.2. PROPERTY DETAILS

The footprint for the proposed works does not exceed the footprint of the activity area (Map 2). The total length of the activity area including off-ramps and access-roads is approximately 51 km. The activity area is located within the Mitchell Shire.

A total of 195 properties (excluding road reserves) will be impacted by the proposed activity. The details of these properties are as follows:

4. DOCUMENTATION OF CONSULTATION

The Taungurung are the RAP for the region which incorporates the current activity area. The Taungurung were invited to participate in the preparation of the CHMP, including participation in the fieldwork and consultation in the assessment, initiatives and processes of the CHMP.

The Taungurung have given notice under s.55 of the *AHA* 2006 of its intention to evaluate this Plan. The RAPs response to the NOI has been included within Appendix 2.

4.1. Consultation in relation to the Assessment

From: Name and/ or Organisation	To: Name and/or Organisation	Date	Type of Correspondence	Discussion
Jon Bartlett (Vic Roads)	AAV; Taungurung	16/11/2011	Email	Submission of NOI
Vicki Vaskos (ACHM)	Kym Monahan (Taungurung)	22/12/2011, 24/1/2012	Emails	Invitation as RAP to participate in fieldwork, arranging fieldwork dates
Vicki Vaskos (ACHM), Jennifer Chandler (ACHM), Jon Bartlett (VicRoads)	Kym Monahan (Taungurung)	2/2/2012	Meeting	Inception Meeting
Vicki Vaskos (ACHM), Jenni Chandler (ACHM), Edward Turner (ACHM)	Mick Harding (Taungurung), Rodney Monk (Taungurung), Shane Monk (Taungurung), Chris Hume (Taungurung)	6/2/2012-14/2/2012	In person	Fieldwork
Vicki Vaskos (ACHM)	Kym Monahan (Taungurung)	25/ 9/2012	Email	Email requesting participation in second phase of fieldwork
Vicki Vaskos (ACHM), Edward Turner (ACHM), Erica Walther (ACHM) and Fiona Schultz	Mick Harding (Taungurung) and Rodney Monk (Taungurung)	3/10/2012 – 10/10/2012; 23/10/2012	In person	Fieldwork

Table 1: Documentation of Consultation.

4.2. Participation in the conduct of the Assessment

The fieldwork component of this CHMP, comprising a pedestrian archaeological survey was completed in partnership between ACHM (Vic) Vicki Vaskos (Archaeologist, Cultural Heritage Advisor), Jennifer Chandler (Archaeologist, Cultural Heritage Advisor), Erica Walther (Archaeologist, ACHM), Fiona Schultz (Archaeologist) and Edward Turner (Archaeologist, Cultural Heritage Advisor) and representatives of the Taungurung Mick Harding, Rodney Monk, Shane Monk and Chris Hume.

The first phase of fieldwork was undertaken between 6 February and 14 February 2012, and the second phase between 3 October- 10 October 2012 and on 23 October.

Subsequent to the completion of the first phase of fieldwork, amendments were made to the activity area, which included an additional western option. These additional areas, including the new western option, were surveyed during the second phase of fieldwork.

4.3. CONSULTATION IN RELATION TO THE CULTURAL HERITAGE MANAGEMENT INITIATIVES AND PROCESSES

The consultation process comprised of ongoing interaction between the project archaeologist and the Taungurung, whose recommendations and assessments have been incorporated into this management plan throughout all its phases. This consultation is documented in Section 4.1 above, and described below.

At the commencement of the project an inception meeting was held between VicRoads, ACHM and the Taungurung to discuss the project objectives and extent.

Following the completion of the desktop assessment, Taungurung representatives participated in the pedestrian survey and held discussions with the cultural heritage advisor on site, making recommendations on the likelihood of Aboriginal archaeological sites being present within the activity area.

As a result of the survey and in conjunction with the Taungurung it was determined that a program of subsurface testing would be required (a complex CHMP) to determine the nature, extent and significance of Aboriginal cultural heritage sites impacted by the activity. Proper archaeological testing methods, using a series of both 1 x 1s and shovel test pits, should be employed over the impacted sites.

4.4. Summary of Outcomes of Consultation

The consultation process comprised ongoing interaction with the Taungurung, whose recommendations and assessments have been incorporated into all phases of this management plan.

The Taungurung were briefed on the nature and extent of the proposed activity prior to the commencement of the desktop assessment. Following the desktop assessment, Taungurung representatives participated in the pedestrian survey and held discussions with the cultural heritage advisor on site, making recommendations on the likelihood of Aboriginal archaeological sites being present within the activity area.

As a result of the survey it was determined, in conjunction with the Taungurung, that a program of sub-surface testing would be required (a complex CHMP) for the preferred bypass option. It was also determined that due to the location of the activity area, that the recording of all Aboriginal cultural heritage (including cultural heritage [intangible] values) would be required in order to gain an approved CHMP.

5. ABORIGINAL CULTURAL HERITAGE ASSESSMENT

5.1. Desktop Assessment

5.1.1. Search of the Victorian Aboriginal Heritage Register

This investigation involved a search of the Victorian Aboriginal Heritage Register (VAHR) administrated by Aboriginal Affairs Victoria for information relating to the activity area. This search included the Victorian Aboriginal Heritage Register Supplementary Lists – Aboriginal Historic Places and Action File.

The VAHR was searched on both 10 January 2012 and 24 September 2012 (to include the additional areas).

Background research was also undertaken into the cultural heritage context and environmental history of the activity area. This involved reviewing existing information on the activity area including:

- Any reports from previous heritage surveys undertaken in or within the vicinity of the activity area or any relevant cultural heritage matters;
- Any published works about cultural heritage in the relevant geographic region;
- Any historical and ethno-historical accounts of Aboriginal occupation of the relevant geographic region;
- Any oral history relating to the activity area;
- Any relevant community submissions received by VicRoads.

Limitations or Obstacles

There were no limitations or obstacles encountered during the completion of the Desktop Assessment.

5.1.2. The Geographic Region

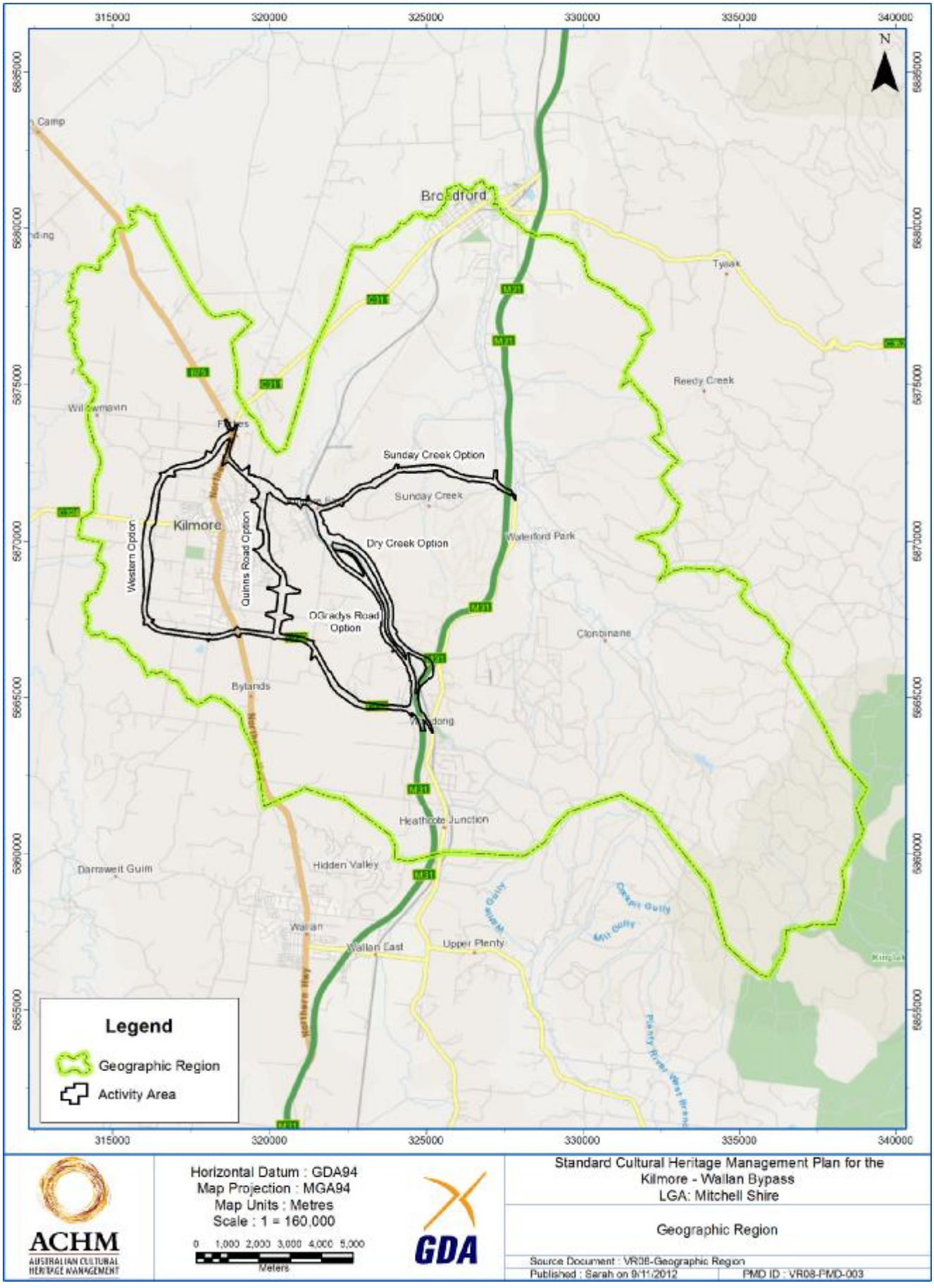
The geographic region (See Map 3) in which the activity area is located has been defined by the hydrology of the region surrounding the activity area.

The geographic region is bordered to the west by Kurkuruc Creek, Lintons Creek and Slab Hut Creek, and their associated tributaries. To the east it is bounded by Sunday Creek and its associated tributaries. Dry Creek runs through the centre of the geographic region. These creeks are bordered by valleys.

These valleys would have provided the most advantageous settlement localities for Aboriginal people throughout the history of human settlement in the area. The river valley environments provided Aboriginal people with a range of necessary resources, as well as providing shelter from the elements, timber for fires, tools, and housing; all manner of food sources, and stone for tool manufacture. The importance of the availability of perennial fresh water to the resident Aboriginal populations also cannot be overlooked. The valley landscapes may also have served as travel routes throughout much of the region (du Cros 1987, Flood 1976).

These waterways were also vital for non-Aboriginal people in the region. They enabled pastoralism, agriculture and industry.

This geographic region allows a predictive model to be made for the way in which resources within the region were likely used and likely site types within the activity area.



Map 3: Map of the Geographic Region containing the activity area

5.1.3. Aboriginal Places within the Geographic Region

The Victorian Aboriginal Heritage Register (VAHR) is a record of all previously recorded Aboriginal sites in Victoria, and is a mechanism where a proponent can identify Aboriginal heritage sites on a parcel of land prior to conducting ground disturbing activities on that land.

The VAHR was searched for previous Aboriginal cultural heritage investigations and records of Aboriginal heritage sites within the geographic region on both the 10th of January 2012 and 24 September 2012.

The following table (Table 5-1) summarises the number and type of previously recorded Aboriginal places within the geographic region.

Place Number (VAHR)	Place Name	Place Type	Place within the activity area?
7823-0038	Rocklands Property M5	Artefact Scatter	No
7823-0041	Moranding - M1	Isolated Artefact	No
7823-0042	Moranding - M2	Isolated Artefact	No
7823-0078	Boundary Rd Kilmore 1	Isolated Artefact	No
7823-0079	Boundary Rd Kilmore 2	Isolated Artefact	No
7823-0080	Ryans Creek IAO 1	Isolated Artefact	No
7823-0081	Ryans Creek IAO 2	Isolated Artefact	No
7823-0082	Ryans Creek IAO 3	Isolated Artefact	No
7823-0083	Kilmore Creek IAO 1	Isolated Artefact	No
7823-0084	Kilmore Creek 1	Artefact Scatter	No
7823-0085	Kilmore Creek 2	Artefact Scatter	No
7823-0086	Kilmore Creek 3	Artefact Scatter	No
7823-0087	Kilmore Creek 4	Artefact Scatter	No
7823-0088	Kilmore Creek 5	Artefact Scatter	No
7823-0089	Kilmore Creek 6	Artefact Scatter	No
7823-0090	Ryans Creek 1	Artefact Scatter	No
7823-0091	Ryans Creek 2	Artefact Scatter	No
7823-0092	Ryans Creek 3	Artefact Scatter	No
7823-0093	Ryans Creek 4	Artefact Scatter	No
7823-0094	Ryans Creek 5	Artefact Scatter	No
7823-0095	Ryans Creek 6	Artefact Scatter	No
7823-0096	Moranding 1	Isolated Artefact	No
7823-0097	Kilmore SST AS1	Artefact Scatter	No
7823-0098	Kilmore SST IAO2	Isolated Artefact	No
7823-0099	Kilmore SST IAO1	Isolated Artefact	No
7823-0133	George St 1	Artefact Scatter	No
7823-0134	George St 2	Artefact Scatter	No
7823-0142	ARTC Passing Lane 4 AS1	Artefact Scatter	Yes
7823-0143	ARTC Passing Lane 4 IA1	Isolated Artefact	No
7823-0144	ARTC Passing Lane 4 IA2	Isolated Artefact	No
7823-0145	ARTC Passing Lane 4 IA3	Isolated Artefact	No
7823-0146	ARTC Passing Lane 4 IA4	Isolated Artefact	No
7823-0149	Northern Highway Wallan 3	Isolated Artefact	No
7823-0150	Arkells Lane 1	Artefact Scatter	No
7823-0179	Kilmore East 1	Artefact Scatter	Yes
7823-0180	Kilmore East 2	Isolated artefact	Yes
7823-0186	Melbourne-Sydney Passing Lane 3-1	Artefact Scatter	Yes
7823-0187	Melbourne-Sydney Passing Lane 3-2	Isolated Artefact	No
7823-0188	Melbourne-Sydney Passing Lane 3-3	Artefact Scatter	No
7823-0193	Willowmavin Rd 1	Artefact Scatter	No
7823-0194	Willowmavin Rd 2	Isolated artefact	No
7823-0209	George Street 3	Isolated Artefact	No
7823-0216	Brewery Hill Artefact Scatter	Artefact Scatter	No
7823-0244	Green St. Kilmore Artefact Scatter 2	Artefact Scatter	No
7823-0245	Green St. Kilmore Artefact Scatter 1	Artefact Scatter	No
7923-0005	Overdale 1	Earth Feature	No
7923-0115	Mitchell 1	Artefact Scatter	No
7923-0154	ARTC Passing Lane 4 AS2	Artefact Scatter	No
7923-0155	ARTC Passing Lane 4 AS3	Artefact Scatter	No
7923-0156	ARTC Passing Lane 4 IA 5	Isolated Artefact	No

Place Number (VAHR)	Place Name	Place Type	Place within the activity area?
7923-0247	North Mountain Road Artefact Scatter	Artefact Scatter	No
7923-0248	Wandong Artefact Scatter	Artefact Scatter	No

Table 2: Shows a total of 52 Aboriginal archaeological places have been previously recorded within the geographic region.

A total of 52 Aboriginal archaeological places have been previously recorded within the geographic region. These include isolated artefacts (n=21), artefact scatters (n=30) and one earth feature.

Four previously recorded places, (3 artefact scatters (VAHR 7823-0142, VAHR 7823-0179 VAHR 7823-0186) and isolated artefact (VAHR 7823-0180)) are located within the activity area. These four sites are all located within the rail reserve.

Name of sites located within the activity area	VAHR Number	Content
Kilmore East 2	7823-0180	1 Silcrete flake
Kilmore East 1	7823-0179	5 Silcrete flaked pieces, 1 Quart flaked piece and 1 Silcrete core
ARTC Passing Lane 4 AS1	7823-0142	2 Silcrete flakes, 1 Silcrete backed blade and 3 Quart flakes
Melbourne Sydney Passing Lane 3-1	7823-0186	2 Hornfels flake, 1 Silcrete bladelet, 29 Silcrete flaked piece, 9 Quart flaked piece, 2 Hornfels flaked piece, 6 Silcrete flake, 1 Silcrete core, 1 Quartzite flaked piece, 3 Crystal Quart flaked piece, 1 Quart core, 1 Quartzite flake

Table 3: Showing the content of the four sites located within the activity area.

5.1.4. Previous Archaeological Work in the Geographic Region

A number of regional and localised archaeological investigations involving surveys and /or sub-surface testing have taken place in the Kilmore region since the early 1990s. These include regional studies taking in Kilmore and surrounds. Four surveys and test excavations were conducted prior to the introduction of the *AHA* 2006. Since the introduction of the *AHA* 2006, ten CHMPs have been completed in the vicinity of the current activity area.

5.1.4.1. Pre–AHA 2006 archaeological investigations completed within the Geographic Region

Following are summaries of the four pre – Aboriginal Heritage Act (*AHA)* 2006 archaeological investigations completed within the Geographic Region:

A two-stage study of the north-western Wurundjeri area was undertaken by Murphy with Du Cros and Associates (1995; 1996).The area covered by this regional survey encompassed Craigieburn, Broadford, Daylesford and Bacchus Marsh and included the current activity area in Kilmore. Murphy undertook a sample field survey within this area, concentrating on creeks and rivers, exposed surfaces and hill landscape units (Murphy and Associates. 1995). These units were classified as 'volcanic plains and low hills' and 'high hills and mountain ranges', with subdivisions including 'plains' and 'rivers and creeks' (Murphy and Associates. 1996:16). As a result of her survey, Murphy noted that stone artefact scatters of fewer than 30 artefacts, isolated artefacts and scarred trees were likely to be found on level to gently sloping areas on top, upper and lower slopes in all landform units. Amongst her generalised conclusions, she noted that silcrete, quartz and greenstone are the most common raw materials used in artefact production and sources of silcrete close to water are likely to have been quarried by Aboriginal people (Murphy and Associates. 1996).

In 2000, Clarke, Thompson and Stevens conducted an archaeological survey of the proposed site of a water re-use facility beside the Kilmore Creek (Clarke et al. 2000). Isolated artefacts (VAHR 7823-0078, VAHR 7823-0079) were located on flat to gently sloping land eroding from the edge of Boundary Road. Ground surface visibility was poor beyond the road margins and it was interpreted that the artefacts had been exposed on the verge by the passage of livestock. Surface artefacts and artefact scatters, predominantly of silcrete, were also located in neighbouring ploughed paddocks (VAHR 7823-0080 to VAHR 7823-0095). The location of sites was correlated

to good ground visibility and proximity to water, with sites predominantly located within 250 m of local waterways and none located further than 500 m from a creek.

In 2005 a survey and test excavation was undertaken in Glanville Drive, Kilmore, by Chamberlain and Nicholls. This archaeological assessment did not identify any Aboriginal places but noted poor surface visibility in the activity area. Sub-surface investigations, using mechanical and hand excavation, did not reveal any artefacts within this particular land parcel. It was concluded that the high level of disturbance observed in the soil structure from ploughing made it likely that any Aboriginal places present in the area would be heavily disturbed (Chamberlain 2005).

An archaeological assessment was undertaken on at 114 George Street, Kilmore in 2006, prior to the passage of the current legislation (Bell and Paynter 2006). This survey targeted areas of good surface visibility, along fence lines and beneath the established eucalypts which stand on the basalt outcrop in the northeast of the activity area. Two artefact scatters (VAHR 7823-0133 and VAHR 7823-0134) were located on the southern margins of the activity area. George Street 1 (VAHR 7823-0133) consisted of a silcrete flake and a chert core in a disturbed context. George Street 2 (VAHR 7823-0134) comprised a flake and a scraper made of silcrete located in a cutting. Generally poor surface visibility was noted across the activity area with a number of areas of prior ground disturbance resulting from stock and farming practices. Areas of possible cultural sensitivity were identified as the slopes of the drainage line that runs across the southern section of the property and, potentially, the basalt outcrop in the northern section of the property. This outcrop has been extensively quarried in the historic period but, since the outcrop is elevated and affords a good view of the surrounding landscape, Bell and Paynter noted it as a possible area of sensitivity.

5.1.4.2. Cultural Heritage Management Plans (CHMPs) completed within the Geographic Region

Following are summaries of the ten CHMPs that have been completed since the introduction of the *AHA 2006* within the geographic region:

In 2008, CHMP 10351 was produced for a subdivision at Willowmavin Road, Kilmore (Chandler 2008), which is approximately 1.5 kilometres west of the Northern Highway. This investigation located two Aboriginal places (VAHR 7823-0193 and VAHR 7823-0194) during a pedestrian field survey of twelve transects, taking in all but the north-west and south-east corners of the property, which were inaccessible due to buildings and dense vegetation, respectively. The two places located at Willowmavin Road consist of a scatter of four artefacts (silcrete = 2, quartz = 2) and an isolated silcrete artefact. Subsequent sub-surface testing, involving 35 shovel test pits across the activity area, did not locate any further Aboriginal places. A second phase of subsurface testing to determine the extent of VAHR 7823-0193, consisting of four shovel test pits and one 1x1m test square, located four further flaked artefacts.

In 2008, CHMP 10170 was produced for a pump station and associated pipeline (Hill 2008). The report was commissioned by Goulburn Valley Water. The activity area is located near Broadford and covers an area of approximately 23 km. The report consisted of a desktop, standard and complex assessment. The desktop assessment concluded that while no previously recorded sites were located within the activity area, it was in an area of cultural heritage sensitivity. This was due to the location of one site within 50 m of the activity area (VAHR 7923-0115) and numerous named waterways both within the activity area and within 200 m of the activity area. The standard assessment consisted of a pedestrian transect survey covering the entirety of the activity area, effective where there was adequate visibility. Four new Aboriginal sites were located during the standard assessment (VAHR 7923-0200, 7923-0201, 7923-0202, 7923-0203, 7923-0207). All of these sites comprised artefact scatters. During the course of the complex assessment 90 0.5 m x 0.5 m test pits, one 1 m x 1 m test pit and 15 auger holes were excavated. The excavation of the 1 m x 1 m test pit revealed a stratigraphic profile consisting of a thin humic topsoil (2cm) overlying a light brown silt unit (2-35cm) over a mottled orange/brown clay base. Five additional sites were located during the complex assessment (7923-0204, 7923-0205, 7923-0206, 7923-0208, 7923-0209). Five of the total sites were avoided by the activity and it was recommended that the remaining four be salvaged prior to development.

In 2007, a voluntary CHMP (10099) was produced for a railway passing lane extending from south of Kilmore East Road to south of Smiths Lane, Kilmore (approximately 7 km), which lies within 500 metres of the current activity area. The report was commissioned by South Improvement Alliance and produced by Andrew Long and Associates (Feldman et al. 2007). It consisted of a desktop, standard and complex assessment. The desktop

assessment ascertained that five previously recorded sites existed within the activity area (VAHR 7823-0142, 7823-0143, 7823-0144, 7823-0145, and 7823-0146). The standard assessment consisted of a pedestrian transect survey that aimed to relocate the previously recorded sites within the activity area as well as locate new sites. The previously recorded sites were not relocated and no additional archaeological sites were identified. However, a complex assessment was recommended due to the lack of visibility on potentially sensitive landforms. During the course of the complex assessment 189 STPs (0.4m x 0.4m) and one 1m x 1m test pit was excavated across the activity area. These excavations revealed the stratigraphic profile to consist of a shallow humic layer (20mm) overlying a brown loam (20-100mm) on a brown clay and mudstone base. Three sites were located during the course of the complex assessment (VAHR 7823-0186, 7823-0187, 7823-0188) all consisting of artefact scatters. A subsurface component was discovered at three of the previously recorded sites that were not relocated during the complex assessment (VAHR 7823-0142, 7823-0143, 7823-0144). All sites were determined to be of low archaeological significance and no further investigation was recommended prior to the proposed development.

In 2009, CHMP 10429 was produced for the proposed exploration drilling for gold at Clonbinane, Victoria, which lies approximately 5 kilometres east of the current activity area. The study extended over an area of 9 313 m^2. The report was commissioned by Beadell Resources Ltd and undertaken by ACHM Vic (Canning and Ricardi 2009). It consisted of a desktop and standard assessment. The desktop assessment established that no previously recorded sites were located within or within 50 m of the activity area. The standard assessment consisted of a pedestrian transect survey. No archaeological sites were located during this assessment and it was established that the area had been disturbed during previous mining activities. No further investigation was recommended prior to the proposed development.

In 2010, a voluntary CHMP (11443) was produced for a residential subdivision in George St, Kilmore, covering an area of 17.9 ha. The report was commissioned for Bellayne Nominees Pty. Ltd. and undertaken by ACHM Vic. (Birkett-Rees and Thiele 2010). It consisted of a desktop, standard and complex assessment. The desktop assessment established that two previously recorded sites were located within the activity area (VAHR 7823-0133, 7823-0134) and that no other sites were located within 200 m of the activity area. The standard assessment consisted of a pedestrian transect survey that covered 100% of the activity area. During this assessment it was ascertained that the activity area had been heavily disturbed through land clearance, quarrying, agricultural and pastoral activities. The previously recorded sites were not relocated, however, one new site (VAHR 7823-0209) was located within a disturbed deposit. Due to the poor visibility a complex assessment was recommended. During the course of this assessment a 1m x 1m test pit and 35 shovel probes were excavated across the activity area. Excavation of the test pit revealed the stratigraphy to consist of a disturbed dark grey clay loam with heavy root content (0-100 mm) overlying a dark grey clay loam without root material (100-250 mm) over a dark grey heavy clay base excavated to 300 mm. No archaeological sites were identified during the complex assessment. All three of the sites recorded within the activity area were to be avoided by the proposed development. It was recommended that the activity proceed without any further archaeological work.

In 2011, CHMP 11632 was produced for the proposed Tootle Street and Kilmore Creek tributary redevelopment, Kilmore. The report was commissioned by Mitchell Shire Council and undertaken by Gaye Sutherland and Matthew Barker (Sutherland and Barker 2011). It consisted of a desktop, standard and complex assessment. The desktop assessment established that there were no previously recorded sites within the activity area. The standard assessment consisted of a pedestrian transect survey. No archaeological sites were located during the standard assessment. Due to poor visibility and lack of disturbance over the entirety of the activity area a complex assessment was recommended. During the course of this assessment two 1m x 1m test pits were excavated. The stratigraphic profile revealed during this excavation consisted of dark reddish brown clay loam down to a depth of approximately 250 mm over a dense reddish brown clay base. No Aboriginal cultural material was located during the assessment. It was recommended that the activity proceed without any further archaeological work.

In 2010, CHMP 11218 was produced for the proposed Wandong to Heathcote Junction Foot Cycle Path, covering an area of 2 km. The report was commissioned by Mitchell Shire Council and undertaken by Gaye Sutherland (Sutherland) 2010). It consisted of a desktop and standard assessment. The desktop assessment established that no previously recorded sites were located within the activity area and that large portions of the activity area were significantly disturbed. The standard assessment consisted of a pedestrian transect

survey within the areas that were largely undisturbed. During the course of the standard assessment on new Aboriginal archaeological site was located on an elevated rise (VAHR 7923-0247). As the site could not be avoided it was recommended that it be salvaged prior to the proposed activity. No other archaeological work or investigation was recommended prior to the proposed activity.

In 2011, CHMP 11586 was produced for the proposed self-storage development on Clarke Street, Kilmore (approximately 200 metres east of Sydney Street, Kilmore) covering an area of 0.58 ha. The report was commissioned by Ray Potter (Potter Family Corporation) and undertaken by Biosis Research (Patton 2011). It consisted of a desktop, standard and complex assessment. The desktop assessment established that no previously recorded sites were located within the activity area. The standard assessment consisted of a pedestrian transect survey. No archaeological sites were located during the standard assessment. Due to poor visibility and lack of disturbance over the entirety of the activity area a complex assessment was recommended to target a creek terrace that was identified as having archaeological potential. During the course of the complex assessment two 1m x 1 m test pits and 39 0.45 m x 0.45 m shovel test probes were excavated. The stratigraphic profile revealed as a result of excavation consisted of dark brown silty clay (0-160 mm) overlying dark olive brown clay (160-400 mm) onto a black clay base. No Aboriginal cultural material was located during the assessment. It was recommended that the proposed development proceed without further archaeological investigation.

In 2011, CHMP 11592 was produced for a residential subdivision in Melbourne St, Kilmore, covering an area of 7.62 ha. The report was commissioned by Lygon WI Pty Ltd and undertaken by Archaeology at TARDIS (Murphy and Owen 2011). It consisted of a desktop, standard and complex assessment. The desktop assessment established that no previously recorded sites were located within the activity area. The standard assessment consisted of a pedestrian transect survey. No archaeological sites were located during the standard assessment. Due to poor visibility and lack of disturbance over the entirety of the activity area a complex assessment was recommended. This assessment originally consisted of a 1m x 1m test pit to investigate the stratigraphy of the activity area and twelve 25m x 50cm mechanical transects. Four additional 50 cm x 50cm were excavated to test the extent of cultural deposits. The stratigraphic profile revealed as a result of excavation consisted of mid brown silt with basalt inclusions (0-5cm) over reddish brown silt with frequent basalt inclusions (5-26cm) down to a basalt boulder base. One site was identified as a result of the complex assessment (VAHR 7823-0216). Due to the low significance of this site no further investigation was recommended prior to the proposed activity.

In 2007, a voluntary CHMP (10017) was produced for a pedestrian overpass at Wandong Train Station. The report was commissioned by VicTrack and undertaken by Matrix Archaeological Services (Calladine and Ellis 2007). The desktop assessment established that there were no previously recorded Aboriginal archaeological sites within the activity area. It was also established that there is a low potential for historical sites within the activity area. The survey consisted of a pedestrian transect survey. The aim was to identify cultural heritage values within the area. No new Aboriginal archaeological sites were located as a result of the assessment. Two new non-Aboriginal sites were identified outside of the area of proposed impact (D7923-0048, D7923-0047). It was concluded that there was no possibility of impacting on Aboriginal or non-Aboriginal heritage during the proposed development. It was recommended that the works proceed without further archaeological investigation.

5.1.5. Historical and Ethno-Historical Accounts in the Geographic Region

The desktop assessment also included a review of relevant documentation on Aboriginal archaeology and history of the geographic region. This is used together with information on previously recorded archaeological site locations, and areas of cultural heritage sensitivity in the surrounding region to formulate a predictive model on where Aboriginal cultural heritage sites are most likely to occur within the activity area and what site types can be expected.

5.1.5.1. Aboriginal Pre-Contact History

Ethnohistory

Ethnographic information collected during the first years of contact between Aboriginal people and European settlers provides us with a vital interpretative link to the ways in which Aboriginal people organised their everyday lives in the past. Archaeologists utilise the ethnographic record as a means of informing aspects of the archaeological record. This ethnographic data provides a series of vignettes of Aboriginal behaviour in the years immediately after initial contact (Coutts et al. 1977, McBryde 1984a). By revising this information, it is possible to construct very general ideas of how Aboriginal people utilised landscapes or resources and to develop models of Aboriginal behaviour to help explain the archaeological record (Frankel 1991).

While the available ethnographic data is a valuable historical resource, it must be treated with caution if used as the basis for reconstructions of Aboriginal society or land use practices in prehistory (Murray and Walker 1988, Wobst 1978). The value in ethnographic data is the view it provides of Aboriginal society at, or just after, the point of contact between two very different cultures. Eurocentric notions of cultural superiority somewhat cloud many of the early ethnographic accounts of Aboriginal society (Coutts et al. 1977, McBryde 1984a). As well as biases introduced by a Eurocentric worldview, the collection of ethnographic data during the first years of settlement in Victoria was by no means consistent. In some parts of the state, a relatively large body of ethnographic literature exists, while in other areas there may be no ethnographic data at all. Therefore, the level of ethnographic detail known for each area differs enormously, and the inferences that can be drawn for each area similarly differ. It must also be remembered that ethnographic accounts were often recorded after Aboriginal populations had suffered almost irreparable damage, and the data recorded were one or two generations removed from pre-contact times (Coutts et al. 1977, McBryde 1984a:132-134). Despite the inherent limitations of this data, ethnographic accounts of Aboriginal society during the years immediately after contact can be used as a means of informing archaeological investigations.

The ethnographic resources for the geographic region and the larger area occupied by the Taungurung (or Daung Wurrung after Clark (1990a) are relatively limited compared with that of other areas. For example Protector William Thomas's letters and notes have provided a valuable insight of Bun wurrung society that would otherwise not have been available. Early explorer Major Mitchell passed through Goulburn River Country but his opinion and treatment of Aboriginal people throughout his explorations was anything but positive or specific (Baker 2006).

Protectors James Dredge (Protector 1838-1840) and subsequently William Le Souf (Protector 1840-1843) occupied the Protectorate station on the Goulburn River, where many Taungurung were displaced to. Protectors Dredge and Le Souf were not as visible within the ethnographic record as other individuals such as William Thomas. In fact, Le Souf was dismissed due to abuse of public funds and poor treatment of the Aboriginal people within his protectorate (O'Connor 2010: 20).

The ethnographic information for the region has been synthesised into a brief general account of various aspects of Aboriginal life at the time of contact. This synthesis includes information from other Kulin nations. This form of synthesis is required as much of the ethnographic data is simply not available. From the available data, it is possible to build only a very basic picture of Aboriginal life at the time of first contact with Europeans.

Social Organization

Prior to European settlement, Aboriginal people occupied all aspects of the Victorian landscape, governed by a distinct and complex system of land ownership. The principal unit of Aboriginal social organization in the southern parts of Victoria was the clan. The clan unit in southern Victorian Aboriginal society was a patrilineal descent group, sharing historical, spiritual, economic, territorial and genealogical identity (Barwick 1984, Clark 1990b). At the time of first contact between Aboriginal people and Europeans, much of southern and central Victoria was the traditional estate of the five tribal groups shown in Table 5.3 (below).

Name	Territory
Bun Wurrung	Mornington Peninsula and Westernport Bay, north into the Dandenong's
Woi Wurrung	Yarra and Maribyrnong rivers and surrounding tributaries. To Mt Macedon, Mt William, Kilmore. East of the Werribee river
Wada Wurrung	Bellarine Peninsula, Otway Ranges, west of the Werribee river to Streatham
Djadja Wurrung	Loddon and Avoca river catchments, Bendigo
Daung Wurrung	Kilmore to Euroa, east to Mt Buller, west to Kyneton.

Table 5.1: The known tribal groups of south central Victoria and their traditional territories. These tribal groups consisted of numerous smaller clans. There are numerous variations in the spelling of each clan or tribe name; however for consistency we follow Clark (1990).

Each of the five tribes consisted of numerous smaller clans. The Taungurung (Daung Wurrung) were comprised of 9 clans occupying the Broken, Delatite, Goulburn, Coliban and Campaspe watersheds. The activity area falls within the clan estates of the Look willam with traditional lands taking in the Campaspe River, near Kilmore (Clark 1990a:364-5). Clark also associates this area with the Nira balug, who occupied the Kilmore, Broadford and Pyalong region, an overlap that highlights the difficulty in imposing firm clan boundaries. The common spiritual, economic, genealogical and political identities shared by many of the clan groups resulted in the larger tribal groups also being intimately interconnected.

The clan was further subdivided into individual family groupings, known as a 'band' (Presland 1994). These smaller family units were the principal economic unit of the clan on a day-to-day basis. Social, ceremonial, or ritual gatherings between band, clan and tribe were common. At these gatherings ceremonial duties were discharged, alliances formed, marriages arranged, goods traded, and kinship obligations met. Gatherings of up to 800 people at a time were known to have occurred in the region (McBryde 1978, McBryde 1984a, McBryde 1984b).

Dredge described the connection of the Taungurung (Daung Wurrung) connection to land:

> *Within these boundaries of their* own country, *as they proudly speak, they feel a degree of security and pleasure which they can find nowhere else - here their forefathers lived and roamed and hunted, and here also their ashes rest. And this is the scene of their fondest and earliest recollections…with every nook they are familiar, they know just where their favourite roots are most abundant, the haunts of the Kangaroo, Emu and Opossum - in short, it is their home (Dredge, 1842)*

The Nira balug are mentioned by Le Souf (in (Curr 1886-1887: vol.3, 523); see (Clark 1990b:373-4) on variations to the spelling of Nira balug) with specific reference to their connection to the Broadford-Kilmore region:

> *All the country from the Dividing Range, where Heathcote now is, and Pyalong, belonged to the nerboolok, one of their principal haunts being the curious little hill near Bradford* [sic], *known as the Sugarloaf.*

Economy

The traditional territories of the Taungurung (Daung Wurrung) encompassed a vast range of available economic resources. Most relevant to the current activity area is the richness and diversity which would have been presented by the southern tributaries of the Goulburn River and the grassy valleys and rocky foothills dominating the area. The Taungurung (Daung Wurrung) were a landlocked tribal group (Clark 1990a: 364) and did not have direct access to coastal resources.

From early ethnographic accounts and contemporary research, it is known that the Aboriginal people of the Kulin hunted, fished, or trapped a wide variety of fauna. This dependence on local flora and fauna demanded extensive knowledge of variations in seasonal availability and ecology (Coutts 1981a, Coutts 1981b, Kirk 1981). The animals hunted throughout the Melbourne region included kangaroo, emus, possum, bandicoot, koala, echidna, wombat, and a variety of reptiles and smaller marsupials (Bunce 1859, Thomas 1854, Winter 1837). Bunce (1859) believed that possum was the most common target in upland areas as they were more common than kangaroos or wallabies. He commented that their diet was 'varied occasionally by wombat, native bear and porcupine' (Bunce 1859).

Birds were caught in nets, traps or by hand. Fishing by trap or spear and eel harvesting were also widely used modes of food procurement throughout south-eastern Australia ((Bunce 1859); (Coutts 1981b)). Nearby

Kilmore Creek would have afforded a significant supply of fresh water and resources of fish, yabbies, freshwater mussels and potentially eels.

Aboriginal people also placed great reliance upon the procurement of plant foods from their clan estates. While hunting activities often receive priority in contemporary accounts of prehistoric ways of life, the procurement and processing of various plant taxa was of vital economic importance (Gott 1982: 59-67). The ethno-botanist Beth Gott estimated that vegetable foods gathered from the areas surrounding Melbourne approximated half of the diet of the Aboriginal population of the region, and a similar conclusion could be drawn for other Kulin nations.

Certain plant foods are regarded as having been staples in Aboriginal diets prior too European settlement. The 'Yam Daisy' (Frankel 1982a: 43-45) or 'Murnong' ((Gott 1982: 59-67); (Gott 1983: 2-18)) -Microseris scapigera - is particularly noted as having been a staple food throughout the region, and indeed many parts of Victoria. Hewitt supports this statement and observes that Yam Daisy was likely to have formed a seasonal staple and was observed regularly in early settlers reports (Hewitt 2010:25). Further plant food resources include small but edible tuber-bearing lilies, such as the bulbine lily and milkmaids, which grow alongside Murnong in grassland environments (Low 1991: 100). The importance of subterranean tubers such as the 'yam daisy', however, was its ease of procurement and consistency of availability. Not only was this food source extensive and required limited processing, it was available year round (Gott 1982: 59-67), and 'was always a fallback food' (Gott 1999).

Water plants from surrounding creeks, including cumbungi (Typhaceae) and water ribbons (Tryglochin), offered further resources. Other plants contributed to nutritional requirements, as well as having medicinal uses or a more utilitarian function in the manufacture of utensils, string, baskets or clothing.

Trade and Exchange

The work of Isabel McBryde at the Mt William greenstone quarry (McBryde and Watchman 1976, McBryde and Harrison 1981, McBryde 1984ba, McBryde 1984a, McBryde 1979, McBryde 1978), located approximately 15 km northwest of the activity area, established the existence of a complex trade and exchange network operating in the region at the time of European contact. McBryde successfully identified the source of hundreds of greenstone hatchet heads found across south-eastern Australia since European settlement. While there were several sources identified, McBryde was able to show that the greenstone sourced from the Mount William quarry was more widely distributed across southern Australia than that from any other quarry – in other words, more of the Mount William greenstone had travelled further than stone from any other source. The significance of this is not simply that the material was widely distributed; the significance of the dispersal lies in the fact that exported Mount William greenstone was found in areas where the extant population had access to local greenstone of equal quality and utility.

McBryde (1984: 268) found that greenstone quarried from other sources tended to be found within about 100 kilometres of the source, while the majority of the Mount William greenstone in her sample (n=224) was located at distances greater than 300 kilometres from the source, and was generally distributed to the west of Mt William. This patterned distribution in the archaeological record cannot simply be explained as a coincidence, or an artefact of site survival. Clearly, some type of behavioural influence was determining the widespread dispersal of this material. The survival of complete uncurated hatchet heads at great distances from the source, and the existence of heavily worked hatchet heads from other quarries in the same assemblages as the curated material indicate that the greenstone from Mount William held far more than just utility value. Frankel (1991: 128) however, noted a problem with McBryde's analysis. The way in which McBryde calculated the distribution and density of axe heads from the Mt William quarry created a distortion in the data. McBryde calculated the number of hatchet heads in 50 kilometre wide bands radiating away from Mt William. McBryde did not account for the increase in area of each of these bands, as each band got further away from Mt William. Frankel (1991) recalculated McBryde's data for the area west of the Mt William quarry. While the results were broadly similar, the ratio of hatchet heads found per 10,000m2 was higher closest to the quarry, and very few hatchets were found between 50-150km from their source, and the distribution at greater distances is more even than McBryde's analysis suggests (Frankel 1991: 128).

The patterned distribution observed by McBryde (McBryde, 1978; McBryde, 1984a; McBryde, 1984; McBryde and Harrison, 1981; McBryde and Watchman, 1976) can be interpreted as part of a complex ethno-historical system of trade and exchange between the traditional owners' of the Mt William greenstone quarry, and the recipients of its product (i.e. hatchet heads). The widely distributed nature of the Mt. William greenstone, encompassing areas where greenstone of comparable quality and quantity was readily available, indicates that attributes of this stone other than its utility were highly valued. The goods being traded (i.e. the greenstone)

were more meaning-laden than a piece of stone would otherwise suggest. The items being exchanged formed part of a larger system of reciprocity, where information, meaning, and socio-political identity were encoded in the act of exchange; and indeed, were the currency.

The patterning of the distribution of Mt William greenstone was also found to reflect the alliance and kin networks of the Kulin and their closest allies. McBryde (1984: 284) identified that greenstone from Mt William occurred most abundantly in areas linguistically related to the Kulin, such as central and north-western Victoria, south-western Victoria, and south-eastern South Australia. The distribution of Mt William greenstone also illustrates the ethnographically recorded socio-cultural isolation that existed between the Kurnai of eastern Victoria, and the Kulin of central Victoria. The enmity that existed between the two language groups resulted in a distinct social, political and economic boundary between the Kulin and the Kurnai, and open hostility between the two groups was relatively common (McBryde, 1984). This social division is reflected in McBryde's (1984: 278) analysis of greenstone distribution, showing that although 70% of the Mt William greenstone in her sample was found distributed outside of the Kulin territories, none found its way east of Wilson's Promontory into the lands of the Kurnai people.

5.1.5.2 Aboriginal Post-Contact History

European Impressions

The following extracts detail daily activities of Aboriginal people of the Kulin tribes. They are reflections of the immediate post-contact period by European individuals which can be used to generalise the ways in which Aboriginal people utilised landscapes and resources in the past.

In 1824, Hamilton Hume and William Hovell arrived in the Kilmore and Goulburn region. Although no Taungurung people were encountered by Hume and Hovell, they did observe evidence of grub extraction with steel hatchets from trees near Mount Disappointment (Andrews 1981: 187-88) and noted that much of the country around Sunday Creek was on fire, as 'this appear [sic.] to be the Season for their burning of the old grass to get new' (Andrews 1981: 199).

The long-term presence of European settlers in the activity area began in 1837 with the establishment of a run at Dry Creek by Dr Richard Hamlyn. Hamlyn's flocks grazed on land where Kilmore was later established (Maher 1972: 1) (Snodgrass 1969: 209). Overall there is limited anecdotal information on the Taungurung in the regional area in the post-contact period, though some observations were documented by early settlers such as the squatters Peter Snodgrass (Bride 1969: 216) and Charles Hutton (Bride 1969: 205-6) in the 1840s, and by John Zwar, who wrote the memoirs of his youth in Broadford during the 1850s and 1860s in 1935 (Zwar 1975). J.C Hamilton also noted that the ranges east of Kilmore served as a meeting place for Aboriginal groups:

> *My first clear recollection of the natives of this country was in the early fifties in the Kilmore district, and in the year 1845 I witnessed their great national event, the Coayang. I suppose there would be from 150 to 200 of the Goulburn Valley, Kilmore, and other tribes, and the place of meeting was in the ranges east of Kilmore. We crept through the bushes until we got to about a hundred yards from them, and witnessed a scene that would have rivalled Tam o' Shanter's dance of witches. Fires burned brightly, the spectators were ranged in groups, and on a space cleared of grass painted and naked warriors (except for a girdle round their waist and small neat bundles of boughs round their ankles) danced backwards and forwards along the lines of spectators. The women supplied the music and kept wonderful time, their instruments being opossum rugs beaten with small sticks, whilst there was a chorus of not at all unmusical voices (Hamilton 1923: 93-94).*

European settlers were often struck by the apparent ease with which the Aboriginal inhabitants of the area could procure sufficient resources to sustain themselves, especially given the difficulties some early European settlers encountered in the new and strange conditions. Exploring north-west of Geelong in 1837, Thomas Learmouth details the proficiency of Aboriginal groups' fishing technologies, the abundance of fish and the economic importance of fluvial environments:

> *'…near our encampment we found a fishing weir of the natives, in which were small conical nets of good workmanship. Nearly a bushel* [67 pounds, approximately 30 kg] *of delicious little fish like whitebait was in the nets, part of which we took, and faithfully remunerated the owners by giving provisions to a couple of men whom we induced to approach' (Learmonth 1853: 96).*

This quantity of fish can be presumed to be the yield from one weir and one set of nets, for a part of one day. The fish caught may have been one of the numerous indigenous fish species from Victorian waterways, which normally do not exceed 8-10cm in length. Species such as Smelt, Hardyhead, Gudgeon, Pigmy Perch, Gobies, and Galaxids were all relatively abundant (Barnham 1998).

Local Accounts of Aboriginal People

Within the current geographic region specific ethnographic accounts of local Aboriginal people are rare. However, descriptions have been made of Taungurung (Daung Wurrung) within their traditional lands at the time of contact and settlement.

The majority of the historic record related to Aboriginal people within the region relates to the operation of the Protectorate stations under Dredge and subsequently Le Souf (Clark 2000:23-4) Early accounts often state that there were large gatherings of Aboriginal people, such as the annual event previously noted by J.C. Hamilton (Hamilton 1923: 93-94). These accounts sometimes also note that there were attacks on settlers in response to European occupation of traditional lands (Snodgrass 1969, Hutton 1898). Snodgrass also mentions some of the effects of European contact on the indigenous tribes, stating that the Aboriginal population seemed 'to have been much more numerous some few years before our arrival amongst them, but they suffered severely…' from introduced diseases including small-pox and influenza (Snodgrass 1969).

While there is a general paucity of ethnographic data available for most of the wider region, it is nonetheless possible to advance a generalised model of Aboriginal land use for the region.

5.1.6. Landforms and/or Geomorphology of the Activity Area

5.1.6.1. Geology and Geomorphology

The activity area lies on the dissected uplands within the Eastern and Western Victorian Uplands land system. The East Victorian Uplands land system is characterised by mountains and hills and sedimentary rock. Generally, the ridge tops in this system have become more convex and their elevations are low (Victorian Resources Online, 2012). In general, the landscapes of the Palaeozoic sedimentary rocks, of the Western Victorian Uplands system, are characterised by undulating low hills dissected by a dendritic drainage pattern (Victorian Resources Online, 2012).

The underlying geology of the eastern section of the activity area comprises predominantly of Upper Silurian deposits of Kilmore Siltstone (Sxk), with smaller areas of Quaternary unnamed colluvium (Qc1) ((Department of Sustainability and Environment 2012). The underlying geology of the western section of the activity area comprises of Quaternary Unnamed colluvium (Qc1), Quaternary unnamed incised colluvium (Nc1), Quartenary Unnamed sheetflow basalt (Qno1) and a Neogene Pintadeen Basalt(Nx1) (Department of Sustainability and Environment 2012).

The geology of the activity area contains sheet flow basalt formed through sedimentary and extrusive volcanic processes of a Neogene (Miocene) age. These deposits are predominantly olivine basalt with minor scoria and ash layers (Department of Primary Industries 2012). These volcanic flows overlie Late Silurian (c.420 MYA) deep marine siltstone and sandstones. The Miocene period is relatively recent in geological terms (5.3-23.0 MYA), however the date of this geological feature predates the Quaternary, which includes the human occupation of Australia (2.6MYA).

The activity area is intersected by Dry Creek, Nanny Creek, Kilmore Creek and Broadhurst Creek. Several minor watercourses drain into these creeks and interest the activity area. These creeks are incised channels flanked by deposits of Quartenary (Holocene) fluvial alluvium, including gravel, sand and silt. Quaternary (Pleistocene and Holocene) colluvial deposits are also located beside Dry Creek. These Holocene and Pleistocene alluvial and colluvial deposits are directly relevant to the archaeology of this CHMP.

5.1.6.2. Topography

The topography in the geographic region area is characterised by hill crests and undulating valleys with relatively narrow alluvial floodplains. The geographic region is well drained, with many drainage lines or tributary creeks.

The activity area is characterised by rises, ridges and drainage lines. The landscape contains flats, low and moderate rises with crests and both gentle and steep gradients. Beyond the large rivers and creeks, which follow channels incised into the underlying basalt flow, drainage is only slightly incised. The top of the rises in the activity area affords views of the surrounding terrain and valleys.

5.1.6.3. Hydrology

The most dominant hydrological features within the activity area are Dry Creek, Nanny Creek, Kilmore Creek and Broadhurst Creek, and their associated tributaries. The Kilmore Creek is one a series of tributary watercourses of the Goulbourn River.

Given that the activity area, and wider geographic region, is dominated by hydrological features, it is considered likely that water was perennially available within the current activity area, and generally throughout the geographic region.

5.1.6.4. Vegetation Regime

The activity area is located within the Central Victorian Uplands Bioregion and the Highlands - Northern Fall (Department of Sustainability and Environment 2012).

The 1750 Ecological Vegetation Classes (EVCs) indicate that prior to European settlement the activity area was likely to have contained forests (EVC 47 (Valley Grassy Forest), EVC 23 (Herb-rich Foothill Forest), EVC 22 (Grassy Dry Forest) and EVC 18 (Riparian Forest)).

This range of native flora would have provided a wide variety of resources for Aboriginal people.

Introduced species of pasture grasses and weeds currently dominate the activity area. The 2005 EVC's note that there is some remnant Herb Rich Foothill Forest (EVC 23), Grassy Dry Forest (EVC 22) and Valley Grassy Forest (EVC 47). Species typical of these EVC classes are listed above.

5.1.7. Land Use History of the Activity Area

5.1.7.1. Aboriginal Land Use Model

The wider region surrounding the activity area contains landforms which would have been utilised by Aboriginal people prior to European contact. These landforms and their utilisation are discussed below.

Hills

Very little archaeological or ethnographic evidence exists to assist in the construction of land use models for the hill environments. Where there are archaeological sites, they have been interpreted as evidence for ephemeral procurement activities during times seasonally suited for utilising the higher regions of the region. Pleistocene utilisation of higher altitudes would have been limited, given the extreme climatic conditions and restricted growth patterns of many vegetation communities, and the subsequent restrictions on the distribution of fauna. Without archaeological or ethnographic evidence however, it can only be assumed that Aboriginal people did utilise the higher zones of the region, particularly during the Holocene. To what degree this zone was utilised is not known.

Rivers and Creek Valleys

Deeply incised river and creek valleys, such as those found in the region, have been the focus of many previous archaeological investigations (see below for work conducted specifically in the vicinity of the activity area), both academic and management orientated (Bowler 1969, Bowler 1970, Bowler et al. 1967, Burke 1989, Burke 1990, Casey and Darragh 1970, Coutts and Cochrane 1977, du Cros 1989, Duncan 1998, Ellender 1988, Gallus

1983, Gill 1953, Gill 1954, Gill 1955, Gill 1966, Mulvaney 1964b, Mulvaney 1970b, Mulvaney 1970a, Munro 1997, Rhodes 1990, Tunn 1997, Tunn 1998, Tunn 2006). These valleys would have provided the most advantageous settlement localities for Aboriginal people throughout the history of human settlement in the region.

The river valley environments provided Aboriginal people with a range of necessary resources, as well as providing shelter from the elements, timber for fires, tools, and housing; all manner of food sources, and stone for tool manufacture. The importance of the availability of perennial fresh water to the resident Aboriginal populations also cannot be overlooked. The valley landscapes may also have served as travel routes throughout much of the region (du Cros, 1989). The intensity of occupation and use of the incised valleys is reflected in a relatively rich and dense archaeological record. Intensive use of these environments has resulted in the formation of an almost continuous distribution of archaeological material within a corridor on either side of the waterways forming the valleys. The evidence for intensive Aboriginal occupation of these areas is manifested in a great many high density artefact scatters, scarred trees, stone quarries, fish traps, human burials, and earth mounds. The nature of the alluvial sediments in certain areas (i.e. Keilor) has revealed that this spatially continuous pattern is not of recent origin, but has a demonstrable Pleistocene antiquity (Gill, 1966; Tunn, 1997, 1998, 2006). The deeply stratified alluvial sequences found in the valley landscapes has the potential to reveal the archaeological signature of spatially varied but continuous activities over a period of perhaps the last 30,000 years.

Basalt Plains

From the limited environmental and ethnographic data, it is clear that parts of the basalt plains to the west of the activity area and wider Melbourne area were a valuable resource, rich in game and vegetable foods. However, the very nature of this landscape would have restricted many of the activities of Aboriginal people. Irrespective of season, this landform offers very little shelter from the elements. During wetter periods, the easily waterlogged plains offer very little protection from wind or rain, while fuel for fires would have been hard to obtain. During the hotter months, the lack of trees and fresh water would have equally restricted Aboriginal use of this environment.

It is likely that Aboriginal use of this landscape was predominantly seasonal. The archaeological record of these activities will be limited to isolated artefact locations and small single-episode campsites, indicative of sporadic activities. Year-round foraging activities, such as the collection of *Microseris scapigera*, will have left virtually no archaeological signature on the plains. The occurrence of mounds may indicate Murnong processing activities; however this has not been demonstrated archaeologically in the region. Hunting activities will have left only slight traces through the occasional occurrences of isolated artefacts, or small accumulations of artefacts. Areas of swamp situated in this area will also have been utilised seasonally. The archaeological record of this activity will be the presence of repeat-episode campsites located around the margins of swampy areas (du Cros 1989).

5.1.7.2. Historical Land Use

This land use history will examine the surrounding areas of Wallan and Kilmore, two towns that sit approximately 60km north of Melbourne, that are to be affected by the Kilmore-Wallan bypass. There will be a specific focus on the role the Hume freeway (previously known as Sydney rd.) has had in the establishment of Kilmore and Wallan as townships.

During the post settlement period, the region was first traversed by the explorers, Hamilton Hume and William Hovell, in 1824 as they made their way overland from Sydney in search of a favourable stock route to Melbourne (Pegram 2012). One of the first Europeans to settle in the Kilmore district was Charles Booney in 1837 when he established a sheep station, the only one within a twenty mile radius. Yet due to difficulties hiring labourers (partly because of the property's remoteness) he soon abandoned it and moved to nearby Mt Macedon (Knight 2008). Prior to his departure, though, his sheep station was the second overnight stop for the newly established mail courier service that ran between Melbourne and Sydney (Knight 2008). The site was also a popular resting place for many people travelling along the crudely constructed road to Sydney, a journey that was both arduous and long. The watering hole and shelter of the station were welcome relief, for both people and stock alike.

In 1837, Kilmore became an important stop in the mail route from Melbourne to Yass and later onwards to Sydney. Although the condition of the route along Sydney Road was anything but satisfactory, it must have been adequate to envisage a regular mail run, especially in wet weather when creek and river crossings became particularly perilous. This mail run became significant as it helped to set out the path that would one day become the Hume Freeway. It also provided the first direct and regular overland connection with Sydney (Anderson 1994) (Figure 1).

Figure 1: The cramped conditions of a country mail coach, c.1900 (Anderson 1994).

In 1841, William Rutledge purchased 5120 acres of Crown land as part of a Special Survey, for which he paid a pound an acre. The Special Survey made provisions for a township, with one or twenty acre plots. In time, Rutledge called the town Kilmore, after his hometown in Ireland (Pegram 2012).Soon after acquiring the land, Rutledge sought to sell off allotments but the 1841 sales were hampered by a depression that had gripped the young colony. Unable to sell, he rented out much of his land. By 1843 the economic situation had improved and Rutledge was able to sell the remaining few allotments of his land (Knight 2008).

By 1843 the township of Kilmore was well established. It soon became the colony's first inland Catholic diocese (1849) and Anglican parish (1850)(Pegram 2012).Proximity to the Sydney Road and to fresh and reliable water sources made it an appealing town for many, as did its rich soils (Knight 2008). Agricultural activities were pursued, such as wheat production, and by 1851, the surrounds of Kilmore were cultivating some three thousand acres of wheat. As a result, the town boasted three flour mills, the first of which was constructed in 1847 (Knight 2008). The position of the mills were important as it meant that locals no longer had to travel to Melbourne or elsewhere to access a flour mill (Birkett-Rees and Thiele 2010).Other commercial enterprises also flourished. Businesses serving the passing traffic along Sydney Road sprung up, from boot makers and boarding houses to live stock keepers and blacksmiths (Knight 2008). A maximum security gaol (1859) and St Patrick's Catholic Church (1857-62) were established as was Kilmore's own newspaper which was named 'The Kilmore Standard of Freedom'. In 1865, the township's population had reached two thousand (Birkett-Rees and Thiele 2010).

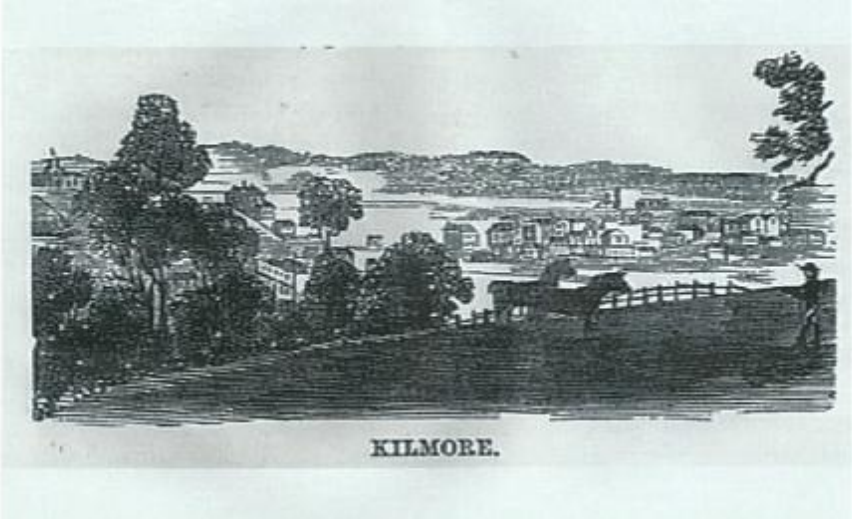


Figure 2: A wood engraving of Kilmore, 1873 (Anonymous 1873).

As time progressed and the new century advanced, Kilmore and surrounds relied heavily on agricultural production. Wheat continued to be one of the main crops, together with potatoes, hay, peas, turnips, oats and barley (Birkett-Rees and Thiele 2010).Dairying was also a popular pursuit and by 1891 the old Kilmore gaol was transformed into a butter factory, thereby utilising milk produced in the region.

Perhaps wishing to instil some order in Kilmore, the government surveyed a new town centre in 1851 and within months, some of the allotments were auctioned. To differentiate this from the 1841 town of Rutledge's privately owned Special Survey, it became known as the New Township or Government Survey for many years (Knight 2008).The two neighbouring town centres joined together to form a larger centre, with the New Township becoming the business and administrative heart of Kilmore. Befitting its status, the new part was where the post office (1861) and courthouse (1864) were located. Today, approximately forty of Kilmore's historic buildings are listed on the Register of the National Estate (Pegram 2012).

Unlike Kilmore, the rise of the township of Wallan, in the parish of Wallan Wallan, was more modest. Fifteen years after Kilmore received a post office, Wallan's post office opened in 1858. The first church, a simple wooden construction costing £71, was built in 1865 by the Methodists (Environment 1999; Goodman 2008).

The young Port Phillip District was irreversibly changed by the discovery of gold in Ballarat in the early 1850s. Kilmore, Wallan and other small towns became nearly overrun with miners, storekeepers and a plethora of other people as they sought their way to the gold fields along the old Sydney Road. Four hundred people alone were said to have hurried to the Reedy Creek diggings in 1858.[Dept. Nat. Res. & Environ.] Gold was even unearthed in Kilmore, as well as Reedy Creek (1858 to 1890s), Strath Creek and Parrot Creek, all of which are located just to the north west of Wandong (Environment 1999). In 1866, the lucrative Sunday Creek gold (approximately nine miles south east of Kilmore) was found. By 1874 little gold was unearthed (Environment 1999). As a direct result of gold fever, the colony's population swelled from 29,000 in 1851 to 123, 061 just a decade later (Goodman 2008).Thus, the road networks, from poorly constructed roads to bush tracks, became ever important as did the towns along the path that serviced the travellers.

Today, the Hume Freeway, or National Highway M31 as it is officially called, is a 303 kilometre road that stretches from Thomastown to Wodonga. From the New South Wales border, the road continues on to Sydney and retains the Hume Highway name. As a result, it is an important link between Australia's two principal cities, as well as connecting the many towns it intercepts along the way, including Wallan, Wallan East and Wandong.

Prior to the construction of the Hume Highway, the Sydney Road was the main northbound road from Melbourne. The first Sydney Road (now referred to as the Old Sydney Road) travelled via Yuroke to Kilmore. Sometime later, a new road was created that commenced at Pentridge (present day Coburg) and went north through Kalkallo (then called Rocky Water Holes), Beveridge and Wallan. Until government intervention, these roads were not rigid paths but rather fluid constructions and "for generations 'the Sydney Road' referred not to a line of pavement, but to a roughly defined route along which travellers had many choices of track" (Anderson 1994). This new route was gazetted and formalised in 1850 although no money was spent on its construction or repair until 1853-55 (Lemon, Broadmeadows et al. 1982) (Figure 3). Even when money was had, work on the road was still difficult as gold mania had reduced the number of available men, resulting in a labour shortage

and high wages (Lemon, Broadmeadows et al. 1982).One of the foremost motivations to construct the road was the heavy traffic of vehicles and pedestrians that travelled on it as they sought the easiest route to the gold fields of Ballarat, Bendigo and beyond (Anderson 1994).

Figure 3: Various routes north from Melbourne in the 1850s. Note the different roads to Kilmore and Wallan (Lemon et al. 1982).

In 1914 the Central Roads Board was established with a mandate to oversee the planning, construction and maintenance of the state's road networks. In its inaugural year, it proclaimed Sydney Road a main road and in 1928, the two lane thoroughfare was renamed the Hume Highway, after one of the area's first explorers, Hamilton Hume. In 1976, the highway was upgraded to a freeway complete with four lanes (Rands 2002).With the advent of the car, the thoroughfare was frequently improved and upgraded as the busy motorway continued to deteriorate. Large trucks and buses compromised the road's surface as it was not designed to take such heavy loads, surfaces which were further ruined by the ever increasing number of cars traversing its length (Figure 4). Local residents became increasingly incensed about the heavy traffic passing through their towns. To counteract such resentment, a bypass from Wallan to Broadford commenced in 1976, followed by other bypasses, including that of Violet Town (1980) and Seymour (1982) (Rands 2002). The Wallan-Broadford bypass meant that the old stretch of the Hume from Wallan to the Northern Highway and Broadford-Kilmore intersection was no longer required. Instead, the new freeway would divert north of Beveridge, thereby circumventing Kilmore, Broadford and Wallan.

Figure 4: The Hume Highway in the days when it was known as Sydney Road. The road's poor condition is evident by the exposed foundation stones, 1914 (Anderson 1994).

The roads in the Kilmore Wallan region were subject to flooding as a number of creeks and rivers meander their way through the region, including the Kilmore and Broadhurst Creeks. The periodic inundation of water not only caused bridges and roads to collapse but also damaged homes and livelihoods. Such events occurred in 1860, 1899, 1906, 1910, 1931 and 1946 (Birkett-Rees and Thiele 2010). Bushfires have also threatened the area. In 1851, Kilmore was encircled by flames but the township remained unharmed. Other large fires took place in 1883, 1906, 1913, 1914 and 1927. In 2009, Kilmore East fell foul to the fire of 'Black Saturday' (Birkett-Rees and Thiele 2010).

Today, Kilmore retains its appeal as a country outpost. A significant number of people choose to reside in Kilmore and work in Melbourne, a journey of approximately sixty kilometres by either car or rail from Kilmore East (Pegram 2012).While some seventy per cent of Kilmore's surrounds are still given to grazing, subdivision and the ever present encroachment of the city will inevitably result in a decline of available grazing land in the near future (Pegram 2012).

5.1.7.3. Present Land Use

The current activity area consists of fenced pastures, roads and road reserves, government property, residential lots and both occupied and unoccupied rural land.

5.1.8. Pleistocene Archaeology and Wider Holocene Archaeology

5.1.8.1. Pleistocene Archaeology

This section is not intended as an exhaustive review of the Pleistocene archaeology of central Victoria as archaeological data from the Pleistocene period for inland Victoria is relatively limited, despite many years of investigation and an ever-increasing number of known Pleistocene sites. Pleistocene archaeological evidence of human occupation of inland Victoria is essentially restricted to a handful of excavated sites - Kow Swamp, Clogg's Cave, Billimina, Drual, New Guinea II, Lake Bolac, Lancefield Swamp, and Box Gully.

Keilor and Green Gully

Through the work of a great many individuals (Bowler 1969, Bowler 1970, Gill 1953, Gill 1954, Gill 1955, Gill 1966, Keble and Macpherson 1946, Mahony 1943, Wunderly 1943) spanning several decades, much has been determined from the single cranium discovered at Keilor. The initial investigations revealed that, based on size and anatomical attributes, the cranium most probably belonged to a middle-aged male (Wunderly, 1943). This has subsequently been the subject of some debate, with Alan Thorne placing the male crania into the modern

female range of size variability (Thorne 1977: 189, Thorne 1980). This conclusion, however, was rejected by Brown who determined that the cranium was that of a 'large and robust male' (Brown 1987: 45).

Initial estimates of the age of the Keilor cranium relied solely upon erroneous geological and geomorphological associations. The development of 14C dating techniques during the 1950's provided a means to date the Keilor cranium, independent of the problematic geomorphic correlations postulated by Mahony (1943). Edmund Gill (1953) produced the first 14C dates for the Keilor crania site. Gill dated various cultural features from the location where the Keilor cranium was originally recovered. This series of dates provided an absolute age of between 9,000 and 10,000 years for the terraces in which the cranium was located. Gill (1966) subsequently revised these ages upwards and finally settled upon an age of 19,000 years BP for the Keilor cranium. This age was based upon his belief that the cranium was a true fossil, and as such was older than the terraces in which it was discovered, and the numerous similar dates coming to light from all over Australia during the 1960's. Mulvaney (1964a) attempted to answer many of the lingering questions surrounding the Keilor site by conducting a new series of excavations. This was, however, unsuccessful as a flash flood washed all of Mulvaney's excavation into the Maribyrnong River (Mulvaney, 1964).

While there is data indicating human presence throughout south-eastern Australia as early as 30,000 years ago, many of the older 14C determinations existing for the study area date non-cultural events (i.e. sediments associated with artefacts), and as such should be regarded with some caution (Gallus 1969, Godfrey et al. 1996).

Kow Swamp

Between 1968 and 1972 Alan Thorne excavated the skeletal remains of approximately 22 individuals from Kow Swamp, near Leitchville, Victoria. The skeletal remains date from between 13,000 ± 250 (ANU-403b) and approximately 6,500 years BP. The Kow Swamp burials are best known for their place within the wider debate of human origins in Australia and Aboriginal skeletal morphology than any other issue. Detailed reports on the Kow Swamp burials have never been published, and the remains have subsequently been reburied (Brown 2002, Lourandos 1997, Munro 2000, Thorne and Macumber 1972)

Clogg's Cave

Josephine Flood excavated this limestone cave, located at Buchan in East Gippsland, during 1971-72. Human occupation of Clogg's Cave dates to 17,720±840 BP (ANU-1044). As well as an extensive suite of extant faunal remains, limited extinct faunal remains, and some bone points from the Pleistocene levels of the excavated deposits, a small amount of lithic material was recovered (Flood 1974). Seventy artefacts were recovered from the excavated deposits. These artefacts consisted of a microlithic industry dating to about the last 1,000 years, with an underlying macrolithic industry. The microlithic artefacts were generally 'bipolar scaled artefacts, small low-angled scrapers and backed blades' (Flood, 1974:176-177). Flood (1974) also noted that geometric microliths dominated the backed blades found, as was the case in other Victorian sites. The raw materials found at Clogg's Cave include quartz, chert, jasper, and quartzite. Silcrete is noticeably absent from the Clogg's Cave assemblage.

Flood (1974) concluded from the evidence at Clogg's Cave, and various other Australian Pleistocene assemblages, that there was generally little change in the form of the lithic assemblage at Clogg's Cave until after about 8,000 years ago. It was not until the introduction of hafting technology, and the 'small tool phase' that any great variation is seen in the assemblage (Flood, 1974:184-185). The small amount of lithic material recovered from Clogg's Cave renders it difficult to compare the assemblage to other contemporaneous assemblages in any detail.

New Guinea II

The discovery of the New Guinea II cave site is attributed to Rudy Frank of La Trobe University. Situated on the western margin of the Snowy River, 50 kilometres from the coast, New Guinea II was excavated between 1980 and 1985 by staff and students of La Trobe University. The area inside the cave proper was not excavated to protect fragile rock art; however some 45 square metres near the cave entrance was investigated (Ossa et al. 1995). The results from New Guinea II were broadly similar to those of Clogg's Cave. Significant quantities of

faunal remains were discovered, along with five bone points. A small amount of lithic material was recovered, which was predominantly chert (n=164), quartz (n=30), and other fine-grained siliceous materials (n=52). Other raw materials present included a quantity of limestone flakes (n=10). Ossa et al. (1995) classified artefacts with a mass greater than 5 grams as being 'large', while those less than 5 grams were considered 'small'. Of the 285 artefacts recovered in the shelter area, 88.1% were recorded as being 'small'. There were few formal tools recovered during the excavations. Core/Pebble tools were the most common, but Ossa et al. (1995) noted that this classification is not without its problems. One small blade core was located deep in the sequence, while the remainder of the small blade cores were located in the upper levels of the deposit. Only two geometric microliths were recovered, and these were in the upper two layers of the deposit. Ossa et al. (1995) concluded that the material recovered demonstrated a low-density occupation sequence commencing approximately 21,000 BP and continuing until the late Holocene.

Drual and Billimina

These two important rock shelter sites are located in the Grampians - Gariwerd ranges of south-western Victoria. Originally excavated by Peter Coutts and the VAS in 1975 (Bird et al. 1988, Coutts and Lorblanchet 1982), both of these sites have later proved to possess far greater antiquity and diversity than was at first thought. Prior to recent reassessments of the material from Drual and Billimina it was argued that these sites were only occupied in the late Holocene, as recently as 3,500 BP (Mulvaney and Kamminga 1999), and that no clear change or variation was discernable in the stone tool assemblages (Bird and Frankel 1998). A program of re-dating sediment and re-analysing lithic materials from these sites led to a radical reassessment of both the antiquity of the sites, and the variation in the stone tool assemblages.

New radiocarbon determinations from Drual revealed basal occupation dates of approximately 22,000 BP. Similarly, newly dated evidence from Billimina provided a non-basal date of approximately 9,000 years BP, allowing Bird and Frankel (1998) to argue that cultural material began to accumulate at Billimina before 10,000 BP. These age estimates are significantly different to the original dates obtained by Coutts, and resulted in a reappraisal of the sequence of human occupation of this part of south-western Victoria. Both assemblages are defined as being of low density. Although the raw material types present at Drual are diverse, Billimina does not display the same diversity.

The Billimina assemblage is generally more reduced than the Drual assemblage, indicating differential access or utilisation/scheduling of raw materials. The greater proportion of waste material and cores at Drual may also be indicative of wider ranging tool production activities (Bird and Frankel, 1998).

Lancefield Swamp

In 1975-76 excavations at the Lancefield Swamp, approximately 75 kilometres northwest of Melbourne, revealed a buried bone bed dated to 26,000 BP. This bone bed contained the remains of some 10,000 extinct animals, as well as 2 quartzite artefacts in association with the bone bed. A further 191 artefacts were found in sediments overlying the bone bed. This site provides tantalising evidence for the co-existence of humans and megafauna during the Pleistocene. Although there is a paucity of dated material from the lower levels of the excavations, the implications are that Aboriginal people and the megafauna coexisted in southern Victoria for a period of at least 7,000 years (Gillespie et al. 1978, Horton 1976, Horton and Wright 1981, Orchiston et al. 1977). Recent excavations at Lancefield undertaken by the University of Sydney (Dortch 2004) may provide further information on the Lancefield swamp site.

Box Gully

In 2001 excavations at Box Gully in northern Victoria revealed evidence of ephemeral occupation within the remains of an ancient lunette. Radiocarbon determinations place some of the occupation episodes at between 32,000 cal BP and 26,600 cal BP. The stone tool assemblage recovered from the excavations contained only 7 items, and as such is too small to draw any revealing inferences. However silcrete, quartz and chert are present within the assemblage. The presence of silcrete and chert is uncommon in Murray Valley sites (Richards et al. 2007).

Summary of Pleistocene and Holocene Sites in Victoria

Several other sites in Victoria are dated to the terminal Pleistocene. These sites include a coastal cave, (Bridgewater Cave-Discovery Bay) dated to between 10,760±10 BP (Beta-8465) and 11,390±310 BP (Beta-3923), freshwater shell middens on the Murray River dated to between 11,250± 240(GAK-1062) and 19,980±220 (Beta-58969), and a hearth site at Lake Bolac containing kangaroo bone and quartz artefacts dated to 12,480±560 BP (SUA-1335). Although numerous sites date from 22,000 BP to the beginning of the Holocene, there is few well-documented lithic assemblages on which to construct regional sequences (Bird and Frankel, 1998). Bird and Frankel (1998) have discussed four regional Pleistocene sequences. They are

1. East Gippsland (Clogg's Cane and New Guinea II)
2. Murray River Valley (Kow Swamp, Lake Victoria, Karadoc Swamp)
3. Maribyrnong River Valley (Keilor and Green Gully)
4. Far West Coast (Discovery Bay Bridgewater Cave)

One unifying theme in all of the Pleistocene assemblages is the relatively small size of the recovered samples. As Bird and Frankel (1998:59) also note, quantitative comparison between artefact assemblages is challenging, as many results have not been published. The lack of a common artefact classificatory system is also problematic. The Pleistocene assemblages show a remarkable degree of variation across Victoria. The main variations are summarised in Table 5.3, below, adapted from Bird and Frankel (1998).

Unfortunately, it is not possible to be more precise with much of the Victorian data. The data sets do not have the chronological resolution to allow finer grained analysis, thus blurring the relationships between older and younger materials at each site, and the inter-site relationships between sites of similar content and context.

Area	Sites	Raw Material Availability	Technology	Tool Types
East Gippsland	New Guinea II	Diverse	Freehand	Pebble Tools
	Clogg's Cave	Intersite Variability		Large Scrapers
Maribyrnong	Three Open Sites	Silcrete and Quartz	Bipolar	Large Scrapers
		Intersite Variability	Freehand	Small Scrapers
Murray Valley	Numerous Floodplain Sites	Sparse	Bipolar	Small Scrapers
		Quartz		
Discovery Bay	Numerous Open Sites	Flint	Freehand	Large Scrapers
	Bridgewater Cave			
Gariwerd	Drual	Quartz and Quartzite's	Bipolar	Large Scrapers
	Billimina	Intersite Variability	Freehand	Small Scrapers

Table 4: Regional Pleistocene assemblage trends identified by Bird and Frankel (1998).

5.1.8.2. Wider Victorian Holocene Archaeology

The Holocene period, in general, has been characterised by several archaeological phenomena apparently unique to this period, which have become the subject of intense archaeological debate (Bird and Frankel 1991b, Bird and Frankel 1991a, Bird and Frankel 1998, Frankel 1995, Holdaway 1995, Lourandos 1976, Lourandos 1977, Lourandos 1980, Lourandos 1983, Ross 1981, Ross 1985, Williams 1984, Williams 1987). In contrast to the late-Pleistocene and early Holocene, the mid-Holocene (circa 5,000 BP onwards) has been regarded as a period of rapid social, economic, technological and demographic change throughout Australia, commonly referred to as 'intensification' (Lourandos, 1983).

The transition from the Pleistocene to the Holocene in Australia is both a 'reality of climate history' (Frankel, 1995:649) and a contemporary intellectual construct. Single site or pan-continental analyses of stone tool technology in particular, have led to a '…consensus view that the Pleistocene-Holocene transition did not involve any significant change in stone tool manufacture' (Holdaway 1995: 795). This apparent lack of change in stone tool assemblages through time (until the mid-Holocene) has however been described as a product of archaeological method (Holdaway 1995) rather than a product of the material under analysis, inadvertently highlighting the apparent changes in stone tool technology in the mid-Holocene. A closer analysis of stone tool

assemblages at regional scales dated to either side of the Pleistocene-Holocene transition is seen as one method of redressing the balance and archaeologically challenging the standard view of apparent cultural and technological homeostasis until at least the mid-Holocene (Frankel 1995, Holdaway 1995).

Numerous perceived variations in the archaeological record upon which the intensification argument has been constructed were summarised by Bird and Frankel (Bird and Frankel 1991b) as:

1. Increase in the number of sites,
2. Increased sedentism,
3. Use of Marginal environments,
4. Development of facilities (ie. fish trap complexes) and
5. Increased ceremonial activities.

Coincident with the postulated 'intensification' occurring in prehistoric Aboriginal society, many archaeologists have identified a pan-Australian stone tool industry emerging at about 4,500 BP. This industry emerging in the mid-Holocene is known as the 'Australian Small Tool Tradition' (ASTT) and is characterised by the presence of backed blades and geometric microliths in assemblages, and is commonly associated with the manufacture of timber hafted tools. This ASTT has come to serve as a chronological marker in Australian archaeological sequences, indicating the relative chronology of assemblages by the presence or absence of these supposedly diagnostic artefacts (i.e. backed blades). This 'chronology by association' is often utilised with surface artefact scatters, which are difficult (if not impossible) to date by any other means. The timing of the introduction of the ASTT is commonly held to be the mid-Holocene, at approximately 4,500 BP (Mulvaney and Kamminga, 1999) but may be as early as 9,000BP. Alongside the introduction of new stone tool technologies, the raft of perceived changes in the mid-to-late Holocene archaeological record of south eastern Australia are seen by some as a 'package of related events' (Bird and Frankel 1991a: 1) occurring more or less simultaneously. A review of the available evidence however, draws into question many of the premises and relationships upon which the intensification arguments are based.

Many site chronologies have been built upon the dichotomous relationship between small tool type presence (< 4,500 BP) and small tool type absence (>4,500 BP) in artefact assemblages. This dichotomy is assumed to have specific chronological significance (Bird and Frankel, 1991a) and marks the pan-continental introduction of this technology (Hiscock and Attenbrow 1998). Bird and Frankel (1991a) however, argue that this dichotomy is an artificial relationship, and is not suitable for the construction of chronological sequences based simply on the presence or absence of identifiable 'marker'[s] (Bird and Frankel, 1991a: 2-3). The validity of basing regional chronologies upon this dichotomous ASTT presence or absence has been demonstrated as erroneous by Hiscock and Attenbrow (1998). Evidence from the Upper Mangrove Creek for example, has revealed the presence of backed artefacts in deposits radiocarbon dated to between 5,500 BP and 8,500 BP at Mussel Shelter (Hiscock and Attenbrow, 1998:55) and '…older than 8,000 years BP' (Hiscock and Attenbrow, 1998:57) at Loggers Shelter.

A significant effect of the use of the ASTT as chronological marker may have been the artificial inflation of the number of sites thought to date to more recent periods, largely based on the presence of backed blades or geometric microliths. The sites where a typological chronology has been employed are typically surface artefact scatters where there is only a remote possibility of recovering radiometric dates (Bird and Frankel, 1991b). As these sites cannot be accurately dated, and the use of typological markers as the basis for chronologies is flawed, it is 'effectively impossible to fit these sites into a regional chronological framework' (Bird and Frankel, 1991b: 188).

An apparent increase in the number of coastal shell middens from the mid-Holocene onwards is also seen as a component of the intensification of regional prehistoric Aboriginal behavioural. However, this apparent increase in the number of shell middens is also a flawed premise upon which to construct models of regional change. Bird and Frankel (1991a: 3) argue that taphonomy, site survival, and research agendas have all played a part in creating a biased view of the archaeological database. For example, shell middens make up approximately 50% of the 14C determinations of Bird and Frankel's (1991a) study area. Taphonomic and post-depositional processes along coastal margins are considered to artificially bias the archaeological database, inflating the number of younger sites. It is highly unlikely that many (if any) coastal shell middens more than about 6,000 years old have survived the advance and stabilisation of sea levels at or near their contemporary

mark. Early Holocene or Pleistocene shell middens that may have existed on early coastlines could not have survived the rising of the seas (Rowland 1989). Similarly, research bias may have also favoured the selection of sites displaying better preservation (i.e. generally younger). The combination of these factors may have resulted in the chronological range of 14C determinations being artificially truncated, While the overall number of younger 14C determinations has been artificially inflated, suggesting a dramatic increase in the number and use of coastal sites.

Arguments in favour of increased sedentism in the Holocene, particularly after about 2,500 BP, are often based upon the emergence of a different type of archaeological evidence – earth mounds. A date of approximately 4,000 BP has been recorded at an earth mound site near the Wakool River in the Murray Valley (Berryman and Frankel 1984) however the majority of other investigated mounds in Victoria are dated to about the last 2,000 years (Frankel, 1991a). In her study of earth mounds on the volcanic plains of Western Victoria, Elizabeth Williams concluded that the earth mounds were constructed as 'hut foundations, general camping places, and ovens' (Williams 1987: 317). Bird and Frankel (1991a: 7) however, argue that the archaeological evidence for deliberate construction of these earth mounds as hut foundations is tenuous, and residential use is most likely a secondary use of the mound features.

The notion that an aggregation of large numbers of earth mounds indicates increased sedentism also appears flawed. As Bird and Frankel conclude 'mounds often appear as clusters but where adjacent mounds have been dated they may be separated in time by as much 1,000 years' (1991a:8). The construction of mounds is seen more as evidence of localised responses to the wetter conditions of the last 2,500 years, than any increase in sedentism (Bird and Frankel, 1991a:8).

The emergence of 'stone houses' in parts of south-eastern Australia, such as those at Lake Condah (Coutts, Frank and Hughes, 1978) has also been interpreted as evidence for increased sedentism in prehistoric Aboriginal populations, and associated with increases in local productivity (through fish traps), and population growth. It is implied in the literature (Coutts et al. 1978: 42, Flood 1989: 205-207)that these supposed village sites (complete with stone houses) were more or less permanently occupied, and in close association with the fish trap complexes, such as Lake Condah (Clarke 1994: 11). There is however, no archaeological evidence to support this, nor is there any archaeological evidence demonstrating contemporaneity of occupation (Bird and Frankel, 1991a: 8; Clarke, 1994:11). It has subsequently been argued that the stone houses may represent 'post contact refuge areas' and were not part of a wider prehistoric settlement system (Bird and Frankel, 1991a:8). Although this view of European influenced post-contact housing construction (i.e. mimicry) is also somewhat problematic.
Two types of food procuring facilities have been identified in south-eastern Australia that have played a significant role as archaeological evidence supporting the prehistoric Aboriginal 'intensification' (Lourandos, 1983) argument. These facilities are commonly referred to as 'fish traps', and extensive examples have been recorded at Lake Condah, Toolondo and Mount William in central Western Victoria. The Lake Condah example developed as a result of the hydrology along the edges of the basalt plains with human intervention (Bird and Frankel, 1991a; Coutts, Frank and Hughes, 1978), while the second type of facility recorded at Toolondo and Mount William consists of extensive systems of 'earth cut channels and ditches' (Bird and Frankel, 1991a:8). While it has been argued that these food-procuring systems are evidence for increases in productivity, populations and sedentism, the antiquity, utilisation history and construction sequencing of the features is not entirely clear. The Lake Condah system however, is geomorphologically constrained, and cannot be more than about 4,000 years old (Head, 1989). There is no archaeological evidence available to determine if this feature was gradually or rapidly constructed. Bird and Frankel (1991a:8) argue that these systems could have emerged over a long period rather than because of sudden demographic or environmental pressures or processes.

The development of trade in materials such as greenstone for hatchet heads (McBryde, 1978; 1979; 1984a; 1984b), and the remains of ceremonial sites such as stone arrangements and earth rings (Frankel 1982b) have also been argued to be elements of a wider intensification and development of socio-economic alliance and reciprocity systems. While these phenomena are of undoubted archaeological significance, their place within debates of prehistoric Aboriginal intensification is unclear. None of these archaeological features (i.e. Sunbury earth rings or Mount William hatchet quarry) has been adequately dated. The best estimates available for the introduction of hatchet heads into the archaeological record in south-eastern Australia is sometime after 4,500 BP (Mulvaney and Kamminga, 1999) and possibly as recently as 2,000 years ago (Frankel, 1991a). Whether this apparently recent introduction of hatchet heads proves to be the case, or it has been an artefact of research

biases is yet to be determined. Bird and Frankel (1991a: 9) argue that it is difficult to include any of these types of archaeological phenomena into discussions of prehistoric change as none have been directly dated.

What emerges from a review of the evidence for late-Holocene intensification appears to be an over-reliance upon modern ethnographic analogues, a distinct lack of archaeological evidence for many of the perceived changes in prehistoric Aboriginal behaviour, and an over-reliance upon 'social' explanations (Bird and Frankel, 1991a) for archaeological phenomena poorly understood and often over-represented in the research database. While the intensification of Aboriginal prehistoric society is indeed possible, the current archaeological evidence does not offer unequivocal support for this position. Of greater concern is the perceived need to argue that Aboriginal society was intensifying and advancing towards an agricultural state as Williams, for example, has argued (Williams, 1987:320). The supposed cumulative long-term structural changes in prehistoric behaviour culminating in the intensification of Aboriginal society and the eventual emergence of agriculture is rooted within a social evolutionist paradigm (Bird and Frankel, 1991b) that is not demonstrated by the archaeological evidence in Australia, and is generally not supported by the archaeological evidence of hunter-gatherer societies anywhere in the world. The emergence of agriculture was by no means inevitable or necessary (Rowley-Conwy, 2001) – nor should it be viewed as such.

5.1.8.3. Context of Pleistocene and Holocene Sites in the Activity Area

There has been little pure archaeological research to date within the activity area and surrounds, although there have been previous cultural heritage management investigations. There is one site of Pleistocene antiquity located within 25 kilometres of the current activity area (Lancefield Swamp). It is generally thought that the majority of surface archaeological sites within close proximity to the activity area are of late Holocene antiquity, based on (a) the artefact assemblages most often encountered, and (b) the geomorphic sequences where the cultural materials sites are found (i.e. late Holocene landforms). These sites consist mainly of stone artefact scatters and scarred trees. Throughout the wider region there are numerous artefact scatters, stone procurement locations, scarred trees, and earth features. However, well excavated and dated cultural sequences are rare, as are sub-surface deposits which offer the potential to expand the archaeological record.

5.1.9. Conclusions from the Desktop Assessment

This section provides a concluding statement on the desktop assessment which has informed the development of the predictive model of the site types that possibly exist within the activity area and a predictive statement on the likelihood of finding such sites.

A number of previous studies have been conducted in the geographic region, as a result of both residential and commercial subdivisions and other VicRoads projects. A total of the 52 Aboriginal archaeological places previously recorded within the geographic region, which are isolated artefacts (n=21), artefact scatters (n=30) and one earth feature. Four previously recorded places (VAHR 7823-0142, VAHR 7823-0179, VAHR 7823-0180 and VAHR 7823-0186) are located within the activity area.

Overall, the most commonly occurring artefact type within the geographic region is artefact scatters. Artefact scatters are groupings of stone tools made by Aboriginal people in the past, or the debris from the manufacture of stone tools. Isolated artefacts are considered to be groupings of less than five stone tools within $100m^2$. These usually occur where people were camping or were preparing their tools or weapons, and can be found on or below the ground surface.

Also, one earth feature was located within the geographic region. Earth features can be rings of burnt clay which indicate that camp fires have burnt in that location, or they can be areas of raised ground, where successive camping and occupation episodes have produced a mound.

Other Aboriginal archaeological sites that may occur within the activity area, or generally within the geographic region, are scarred trees and quarries.

Scarred trees are trees that have been culturally modified in some way, usually by having bark cut from the trunk for use as canoes, shields, shelter, containers, or foot holds that have been cut into the trunk to allow access to the upper branches for hunting purposes. Culturally modified trees are most often eucalypt trees that pre-date European settlement (i.e. over 174 years old in the Melbourne region). Scarred trees usually occur close to rivers or creeks or in areas where riparian forests have survived.

Quarries are sites where Aboriginal people collected and worked stone from rocky outcrops. These are generally found on slopes where erosion has exposed the stone beneath. This often occurs on slopes above creeks and rivers, on the sides of old volcanoes and on ridges. Stone quarries have been located within the rail corridor to the south. There is a moderate likelihood of finding this site type within the proposed activity area.

The geographic region in which this study takes place has been defined by the hydrology of the region with a specific focus on how people have used river and creek valleys in the past. River and Creek valleys would have provided the most advantageous settlement localities for Aboriginal people throughout the history of human settlement in the region. The river valley environments provided Aboriginal people with a range of necessary resources, as well as providing shelter from the elements, timber for fires, tools, and housing; all manner of food sources, and stone for tool manufacture. The importance of the availability of perennial fresh water to the resident Aboriginal populations also cannot be overlooked. The valley landscapes may also have served as travel routes throughout much of the region (du Cros, 1987; Flood 1976). Intensive use of these environments has resulted in the formation of a substantial archaeological record within a corridor on either side of the waterways forming the valleys. The evidence for Aboriginal occupation of these areas is manifested in a relatively high number of artefact scatters, scarred trees, stone quarries, and earth mounds in those limited number of locations previously surveyed. The nature of the alluvial sediments in certain areas (i.e. the Snowy River) has revealed that this spatially continuous pattern is not of recent origin, but has a demonstrable Pleistocene antiquity (Flood, 1974; Ossa et al 1995). There are few deeply stratified alluvial sequences within the area. However, those isolated localities have the potential, theoretically, to reveal the archaeological signature of spatially varied but continuous activities over a period of perhaps the last 30,000 years.

Despite this, sections of the activity area have been subjected to ground disturbance since European settlement. However, there is still the potential for Aboriginal archaeological sites to be present in relatively undisturbed portions of the activity area. As there are four Creeks intersecting the activity area, there is a moderate to high likelihood of locating cultural heritage materials. Previous research has shown that 80% of all known Aboriginal sites occur within 200m of a source of potable water (Canning 2003:262).

There is therefore a moderate to high likelihood of locating Aboriginal archaeological sites within the activity area. The Holocene and Pleistocene alluvial and colluvial deposits, adjacent to the creeks, mean that there may be stratified cultural deposits in these areas of Holocene and potentially Pleistocene antiquity.

Based on our current knowledge of the activity area, and the known distribution of archaeological sites within the geographic region, the following predictive statements can be made:

- Elevated locations above the Creeks and associated tributaries and Creek terraces have higher potential to contain surface artefact scatters and subsurface archaeological deposits, particularly those areas that lie within 200 metres of creek lines.
- Artefact scatters may be located in both disturbed and undisturbed contexts.
- Scarred trees may occur anywhere within the activity area where remnant native trees of an appropriate age survive.
- There is the possibility of locating earth features within the activity area, as an earth feature is located within the geographic region.
- Elevated locations have higher potential to contain stratified subsurface archaeological deposits in primary context or at least occasional isolated artefacts.

5.2. Standard Assessment

This section of the report documents the results of the Aboriginal cultural heritage survey undertaken by ACHM.

5.2.1. Standard Assessment Methodology

A standard assessment was conducted for this CHMP involving a surface archaeological survey. A survey may be able to locate Aboriginal archaeological sites on the surface; however it is generally unlikely that it will locate subsurface deposits.

The specific aims of the Aboriginal archaeological survey were as follows:

1. To inspect the condition of the four previously recorded sites (VAHR 7823-0142, VAHR 7823-0186, VAHR 7823-0180 and VAHR 7823-0179) located within the activity area; and
2. To determine if any Aboriginal archaeological sites not previously recorded are located within the activity area; and
3. To identify areas of Aboriginal archaeological sensitivity across the activity area; and
4. To determine whether a programme of subsurface testing would be required, and hence whether a complex CHMP would be needed for the activity area.

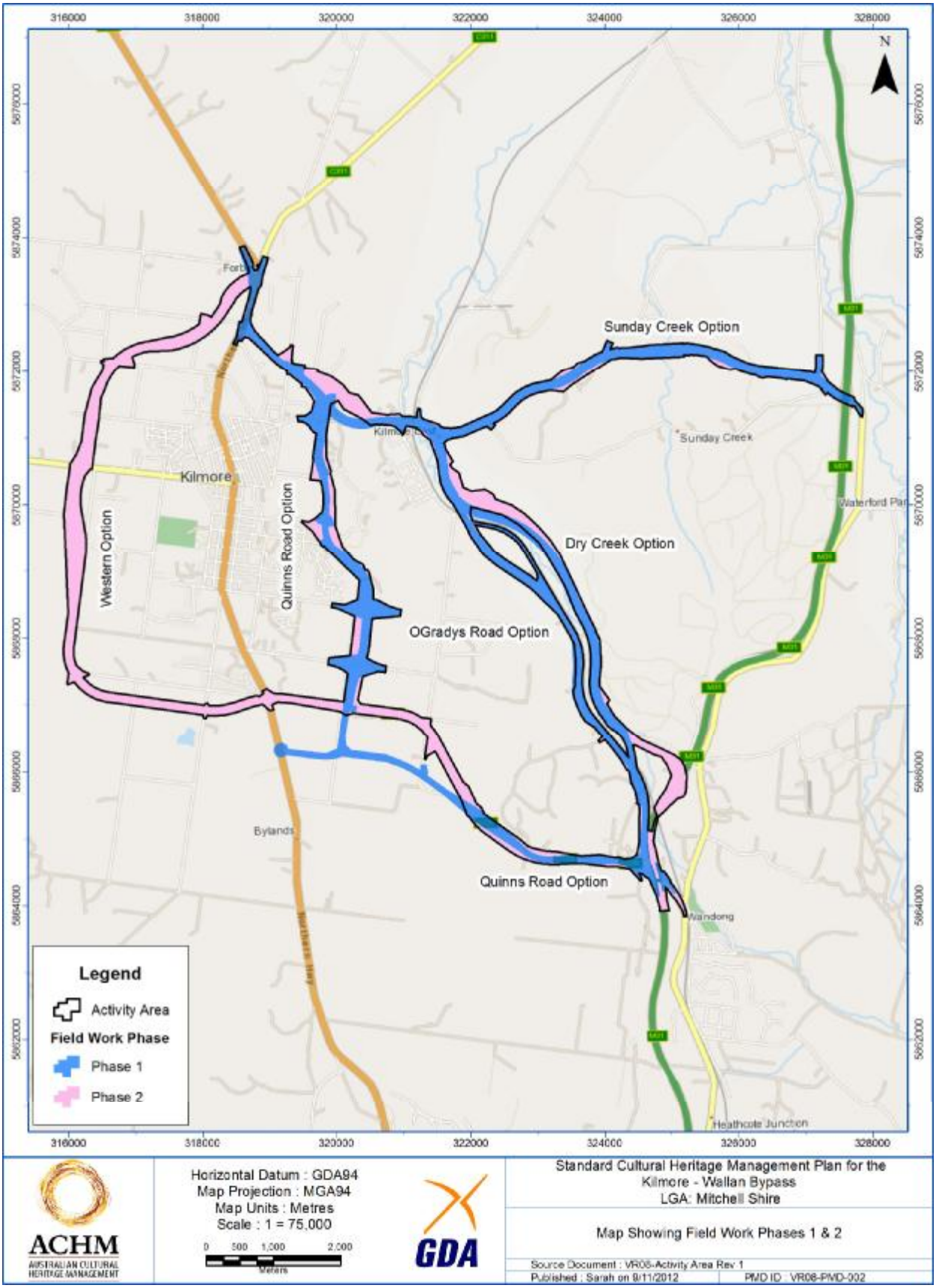
The methodology for the survey was informed by the results of the desktop assessment (Section 5.1) as well as the archaeological predictive model (Section 5.1.9).

A systematic surface survey, using a pedestrian transect methodology, was carried out across the activity area. Specific attention was paid to areas of higher visibility. The survey was completed by four fieldworkers spaced between two and four metres apart. The entire activity area was systematically traversed in transects which were parallel with the alignment of the activity area. Deviations from the transect spacing was made due to obstacles such as: dense vegetation, water bodies (dams, creeks), electric fences, and properties which access was not gained for the survey.

The survey was undertaken in two phases. Subsequent to the completion of the first phase of fieldwork, amendments were made to the activity area, which included an additional western option. These additional areas, including the new western option, were surveyed during the second phase of fieldwork (See Map 5).

The first phase of the field survey was carried out between 6 February and 14 February 2012 by ACHM archaeologists and qualified cultural heritage advisors Vicki Vaskos, Jennifer Chandler and Edward Turner together with traditional owner representatives Mick Harding, Rodney Monk, Shane Monk and Chris Hume from the Taungurung. The second phase of the field survey was carried out between 3 October - 10 October and on 23 October 2012 by ACHM archaeologists and qualified cultural heritage advisors Vicki Vaskos, Erica Walther, Edward Turner and Fiona Schultz together with traditional owner representatives Mick Harding and Rodney Monk.

The percentage of ground surface visibility was recorded throughout the survey. Evidence of prior ground disturbance as well as any areas of potential archaeological sensitivity was closely inspected during the survey. A photo log was kept in order to record the conditions encountered in the activity area. GPS points were taken to mark areas of potential archaeological sensitivity.



Map 4: Showing Phase 1 and Phase 2 of the fieldwork.

Limitations or Obstacles

The survey was limited by two variables:

1. ground surface visibility; and
2. access to individual properties within the activity area.

Ground Surface Visibility

Ground surface visibility during the standard assessment on the whole was extremely low (<10%). Given that the activity area intersects rural properties, a majority of these rural properties had considerable grass cover. As such, visibility was very limited and in some places the visibility was <2% (Figure 5).

Figure 5: A typical example of the groundcover encountered during the survey. Visibility is extremely limited <2%. Facing east on the Sunday Creek Option.

Given their sensitivity, rises, terraces and creek lines within the activity area were the specific focus of the survey. The activity area is intersected by Dry Creek, Nanny Creek, Kilmore Creek and Broadhurst Creek and their tributaries. Generally, visibility around the creek lines was poor (<10%) (See Figure 6). Culturally sensitive landforms (e.g. creek terraces and crests) that had greater visibility often yielded Aboriginal archaeological sites that had not been previously recorded (Figure 7).

Figure 6: Facing east on the lower terrace of Dry Creek. Typical example of the groundcover encountered around the creeks and their tributaries during the survey.

Photograph deliberately removed.

Figure 7: Example of good visibility on a terrace of Dry Creek within property 106753. The flag shows the location of Dry Creek Kilmore IA 4 (VAHR 7823-0264) (VAHR 7923-XXXX).

Areas of good visibility (60%-80%) also often occurred on or around tracks or in association with cattle grazing (Figure 8).

Figure 8: An example of access track visibility within the activity area. Facing north within Department of Sustainability and Environment (DSE) property (117094).Visibility approximately 80%.

Access to private properties

Access was granted to the majority of properties within the activity area. However a number of properties were not able to be surveyed as access was not granted by the landowners.

5.2.2. Results of the Ground Survey

5.2.2.1. General Observations

The ground surface of the activity area was inspected by the field team walking in regularly spaced transects. Notes and photographs were taken throughout the survey. Artefact locations were recorded using a Trimble Juno differential GPS.

Weather conditions during the first phase of fieldwork were generally warm, reaching a maximum temperature of approximately 31° Celsius. Weather conditions during the second phase of fieldwork were generally cooler, reaching a maximum temperature of approximately 28 ° Celsius.

Ground surface visibility was generally poor (<10%) in most areas, as it was heavily cropped (Figure 9). Areas along the vehicle tracks and areas on the edge of crops displayed moderate to good (70%-90%) ground visibility (Figure 10).

Figure 9: Facing east in O'Gradys Road option. This image provides an example of poor ground surface visibility (<10%).

Figure 10: Facing north. Example of good visibility typically encountered along vehicle track (70-90%).

The corridors for investigation purposes cover approximately 928 ha. The functional design for the road and bridge works shows a development footprint for the ultimate duplicated facility as listed below for each option:

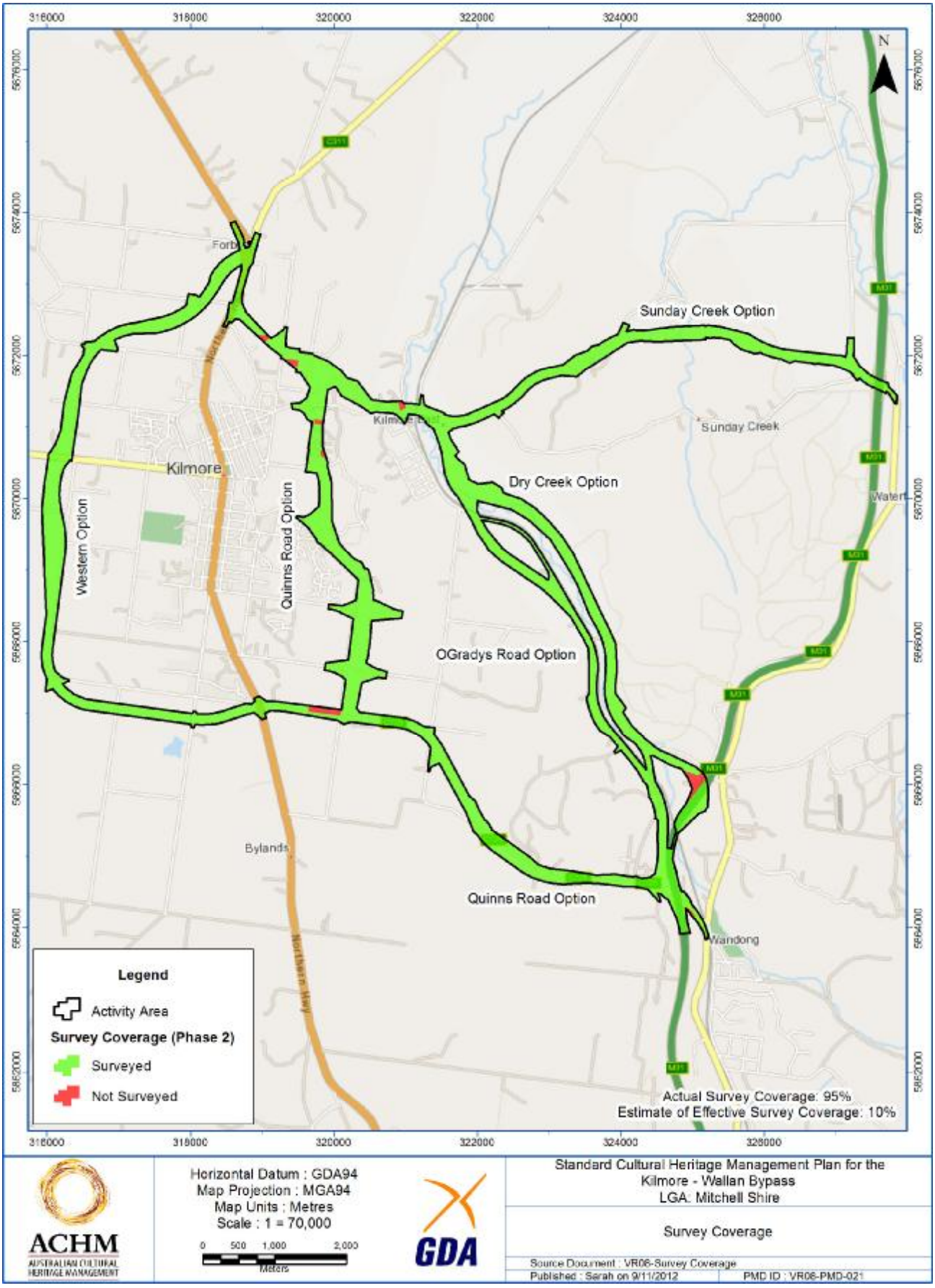
- Dry Creek – 165 ha
- Quinns Rd – 173 ha
- O'Gradys Rd – 166 ha
- Western – 197 ha
- Sunday Ck – 149 ha

The length of each option is as follows:

- Dry Creek – 11.2 km

- Quinns Rd – 12.7 km
- O'Gradys Rd – 12.3 km
- Western – 17.1 km
- Sunday Ck – 11 km

Approximately 95% of the total activity area was surveyed (Map 6: further detailed map series is within the Appendix). However given the limited visibility and lack of access to properties within the entire activity area approximately 10% of the total activity area was effectively surveyed.



Map 5: Map showing the survey coverage for the activity area

The topography within the activity area is generally undulating, with small and moderate rises (Figure 11). Significant topographic features within the activity area are Dry Creek, which intersects the Dry Creek Road option, Nanny Creek which intersects the Sunday Creek option, Broadhurst Creek which intersects the Quinns Road option and Kilmore Creek which intersects the western option. In areas of ground surface visibility, soils encountered were generally compacted light brown silt.

Dry Creek, Nanny Creek, Kilmore Creek and Broadhurst Creek, and their tributaries, would have provided the most advantageous settlement localities for Aboriginal people throughout the history of human settlement in the region. The river and valley environment provided Aboriginal people with a range of necessary resources, as well as providing shelter from the elements, timber for fires, tools, and housing; all manner of food sources, and stone for tool manufacture. The importance of the availability of perennial fresh water to the resident Aboriginal populations also cannot be overlooked. The valley landscapes may also have served as travel routes throughout much of the region (du Cros, 1989).

Figure 11: Facing North in the Sunday Creek option. Topography is moderately undulating.

5.2.2.2. Survey Results

A total of 63 newly recorded sites were located during the survey. These sites located as part of the first and second phases of the KWB are summarised in the table below:

Name and VAHR No.	Cultural Material
Broadford Kilmore East Road IA 1 (VAHR 7823-0261)	silcrete flake (1)
Broadford Wandong Road Kilmore IA 1 (VAHR 7923-0322)	silcrete flakes (4)
Broadhurst Lane Kilmore IA 1 (VAHR 7923-0332)	silcrete flakes (2)
Dry Creek Kilmore 1 (VAHR 7823-0279)	silcrete flakes (7) silcrete flaked piece (1) Quartzite flake (1)
Dry Creek Kilmore 10	Silcrete flake (2) Silcrete angular fragment (3)
Dry Creek Kilmore 2 (VAHR 7823-0280)	silcrete flakes (6)
Dry Creek Kilmore 3 (VAHR 7823-0285)	silcrete flaked pieces (2) silcrete flakes (9) Quart flake (1) Chert flake (1)
Dry Creek Kilmore 5 (VAHR 7823-0281)	Quartzite flake (1) Quartzite core (1) Quartzite flaked piece (1) silcrete flake (4)
Dry Creek Kilmore 6 (VAHR 7923-0333)	silcrete flaked piece (1) silcrete flake (2) Crystal Quart flake (1) Chert flakes (2) Chert flaked piece (1)
Dry Creek Kilmore 7 (VAHR 7923-0334)	silcrete flakes (4)
Dry Creek Kilmore 8 (VAHR 7923-0335)	silcrete flakes (6) silcrete core (1) silcrete flaked piece (3)
Dry Creek Kilmore 9	Silcrete flake (4) Silcrete angular fragment (1)
Dry Creek Kilmore IA 1 (VAHR 7823-0262)	silcrete flake (1)
Dry Creek Kilmore IA 10 (VAHR 7923-0323)	silcrete flakes (2)
Dry Creek Kilmore IA 11 (VAHR 7923-0324)	silcrete flake (1) silcrete core(1) silcrete flaked piece (1)
Dry Creek Kilmore IA 12 (VAHR 7923-0325)	Quartzite flake (1) silcrete flake (1)
Dry Creek Kilmore IA 13 (VAHR 7923-0326)	silcrete flakes (3) Quartzite flake (1)
Dry Creek Kilmore IA 14 (VAHR 7923-0327)	silcrete flakes (2) silcrete core (1)
Dry Creek Kilmore IA 15 (VAHR 7823-0271)	silcrete flakes (4)
Dry Creek Kilmore IA 16 (VAHR 7823-0272)	silcrete flake (1)

Name and VAHR No.	Cultural Material
Dry Creek Kilmore IA 17 (VAHR 7823-0273)	silcrete flakes (3)
Dry Creek Kilmore IA 18 (VAHR 7823-0274)	silcrete flakes (3)
Dry Creek Kilmore IA 19 (VAHR 7823-0275)	silcrete flake (1) Chert flake (1)
Dry Creek Kilmore IA 2 (VAHR 7823-0263)	silcrete flake (1)
Dry Creek Kilmore IA 20	Silcrete flake (1) Silcrete angular fragment (1)
Dry Creek Kilmore IA 21	Silcrete flake (2)
Dry Creek Kilmore IA 22	Silcrete flake (2) Black silcrete angular fragment (1)
Dry Creek Kilmore IA 23	Silcrete flake (2)
Dry Creek Kilmore IA 24	Rhyolite angular fragment (1)Silcrete angular fragment (1)
Dry Creek Kilmore IA 3 (VAHR 7923-0318)	silcrete flake (1)
Dry Creek Kilmore IA 4 (VAHR 7823-0264)	silcrete flake (1)
Dry Creek Kilmore IA 5 (VAHR 7823-0265)	silcrete flake (1)
Dry Creek Kilmore IA 6 (VAHR 7923-0319)	silcrete flake (1)
Dry Creek Kilmore IA 7 (VAHR 7923-0320)	silcrete flake (1)
Dry Creek Kilmore IA 8 (VAHR 7823-0269)	silcrete core (1) silcrete flaked piece (1) silcrete flake (1)
Dry Creek Kilmore IA 9 (VAHR 7823-0270)	silcrete flakes (4)
Dry Creek Tributary Kilmore 1 (VAHR 7823-0282)	silcrete flakes (11)
Dry Creek Tributary Kilmore 2	Silcrete flake (5) Silcrete geometric microlith (1) Silcrete angular fragment (1)
Dry Creek Tributary Kilmore IA 1 (VAHR 7823-0276)	silcrete flakes (2)
Dry Creek Tributary Kilmore IA 2	Silcrete flake (1)
Dry Creek Tributary Kilmore IA 3	Silcrete flake (1) Quart flake (1)
Monument Hill Kilmore IA 1	Silcrete flake (1)
O'Gradys Road Kilmore 1 (VAHR 7823-0283)	silcrete flakes (19)
O'Gradys Road Kilmore IA 3	silcrete flake (1) Quart flake (1)
O'Gradys Road Kilmore IA 4	silcrete flaked piece (1)
O'Gradys Road Kilmore 2 (VAHR 7823-0284)	silcrete flakes (41) silcrete flaked piece (14) silcrete cores (2)
O'Gradys Road Kilmore IA 1 (VAHR 7823-0266)	silcrete flake (1)

Name and VAHR No.	Cultural Material
O'Gradys Road Kilmore IA 2 (VAHR 7823-0267)	silcrete flakes (2)
Paynes Road Kilmore 1	Silcrete flakes (4) silcrete sp core (1)
Paynes Road Kilmore 2	silcrete flake (93) Silcrete core (12) silcrete geometric microlith (1) silcrete flaked piece (6) Quartzite flake (1) Quartzite core (1)
Paynes Road Kilmore 3	silcrete flakes (5) knotched silcrete angular fragment (1) silcrete core (3) silcrete flakes (2) angular fragments (2)
Paynes Road Kilmore IA 1	silcrete core (1)
Paynes Road Kilmore IA 2	silcrete flake (1)
Paynes Road Kilmore IA 3	silcrete flake (1) Crystal Quart flake (2)
Saunders Road Kilmore 1 (VAHR 7923-0336)	silcrete flakes (20) silcrete flaked pieces (3) Crystal Quart flake (1) Quart flake (1) silcrete core(1)
Saunders Road Kilmore IA 1 (VAHR 7923-0328)	silcrete flaked pieces (3)
Walders Road Kilmore 1 (VAHR 7823-0278)	silcrete flakes (4) silcrete core (1) Basalt flake (1)
Walders Road Kilmore IA 1 (VAHR 7823-0268)	silcrete flakes (2)
Walders Road Kilmore IA 2 (VAHR 7823-0277)	silcrete flake (1) silcrete core (1)
Wandong Road Kilmore IA 1 (VAHR 7923-0329)	silcrete flakes (3) Quart flake (1)
Wandong Road Kilmore IA 2 (VAHR 7923-0331)	silcrete core (1)
Wandong Road Kilmore IA 3 (VAHR 7923-0321)	silcrete flaked piece (1)
Wandong Road Kilmore IA 4 (VAHR 7923-0330)	silcrete flakes (3)

Table 5: Showing the 63 newly recorded sites (18 artefact scatters and 45 isolated artefacts) within the activity area.

Fieldwork Phases

The survey was undertaken in two phases: the first phase of the field survey was carried out between 6 February and 14 February 2012 and the second phase between 3 October -10 October 2012 and on 23 October 2012.The fieldwork was carried out by ACHM archaeologists together with representatives of the traditional owners Subsequent to the completion of the first phase of fieldwork, amendments were made to the activity area, which included an additional western option. These additional areas, including the western option, were surveyed during the second phase of fieldwork (See Map 5).

Western Option

This option is approximately 17 km in length, and essentially sits to the west of the Northern Highway.

The option connects to the Hume Freeway at the existing Wandong Interchange, requiring an upgrade of the existing interchange. The bypass option then generally follows the existing Epping-Kilmore Road connecting to the Northern Highway south of Kilmore with a large diameter roundabout. The bypass option continues westward running parallel to, and south of Gehreys Lane, before turning northward at Paynes Road and running parallel to and west of Paynes Road. The option connects to the Kilmore-Lancefield Road with a large diameter roundabout. The option then continues northward running parallel to, and west of, Kings Lane, before turning north-east past the waste water treatment facility before connecting to the Northern Highway at the Broadford- Kilmore Road intersection with a large diameter. There are local road connections at Broadhurst Lane, O'Gradys Road, Mathiesons Road, Millard Road, Quinns Road, Mill Road, Fitzgerald Road, McDougalls Road, Willowmavin Road and Costello's Road.

The topography in this option is gently undulating (Figure 12). Generally, the topography slopes eastward, towards Kilmore Creek. Kilmore Creek is a significant topographical feature within this area and would have provided an advantageous settlement locale for Aboriginal people throughout the history of human settlement in the region.

Figure 12: Facing east in the Western option. Image showing the gently undulating topography, which is characteristic of the Western option.

Visibility in this section was generally poor (<10%). Sections of good visibility (60% -80 %) were encountered in recently ploughed fields and on road reserves (Figure 13).

Figure 13: Facing north on Paynes road. An example of good visibility encountered (80%).

The artefact scatters located within this option were associated with areas of higher elevation (crests and spurs) and in areas of good visibility (Figure 14 and Figure 15).

Photograph deliberately removed.

Figure 14: Facing south, showing the crest of the gentle rise. The flags show the location of Paynes Road Kilmore 2 (VAHR 7923-XXXX) on the crest of the rise.

Photograph deliberately removed.

Figure 15: Facing west on the eastern section of the Western option. The foreground shows an area of good visibility with Broadhurst Lane Kilmore IA 1 (VAHR 7923-0332) in the foreground.

Previously recorded sites within this option:

There are no previously recorded sites within this option.

Newly recorded sites within this option:

During both phases of fieldwork, eleven (11) newly recorded sites were located within this option.

Five (5) of these sites were located in the south-eastern corner of the activity area (adjacent to the Hume Freeway). Topography in this east section of the overall activity area is gently undulating. This section of the activity area is intersected by tributaries of Dry Creek.

The remainder of the sites within this option were located on a crest on Paynes Road (Figure 16). These sites were located on a rise overlooking a tributary of Lintons Creek.

Figure 16: Silcrete flakes that form part of Paynes Road Kilmore 2 (VAHR 7923-XXXX).

The following table (Table 8) details the newly located sites within the Western Option.

Name and VAHR No.	Cultural Material
Broadhurst Lane Kilmore IA 1 (VAHR 7923-0332)	Silcrete flakes (2)
Wandong Road Kilmore IA 1 (VAHR 7923-0329)	Silcrete flakes (3); Quart flake (1)
Wandong Road Kilmore IA 2 (VAHR 7923-0331)	Silcrete core (1)
Wandong Road Kilmore IA 3 (VAHR 7923-0321)	Silcrete flaked piece (1)
Wandong Road Kilmore IA 4 (VAHR 7923-0330)	Silcrete flakes (3)
Paynes Road Kilmore 1 (VAHR 7923-XXXX)	Silcrete flakes (4) Silcrete core (1)
Paynes Road Kilmore 2 (VAHR 7923-XXXX)	Silcrete flake (93) Silcrete core (12) Silcrete geometric microlith (1) Silcrete flaked piece (6) Quartzite flake (1) Quartzite core (1)
Paynes Road Kilmore 3 (VAHR 7923-XXXX)	Silcrete flakes (5) Notched Silcrete angular fragment (1) Silcrete core (3) Silcrete flakes (2) Angular fragments (2)
Paynes Road Kilmore IA 1 (VAHR 7923-XXXX)	Silcrete core (1)
Paynes Road Kilmore IA 2 (VAHR 7923-XXXX)	Silcrete flake (1)
Paynes Road Kilmore IA 3 (VAHR 7923-XXXX)	Silcrete flake (1) Crystal Quart flake (2)

Table 6: Newly recorded sites within the Western Option.

Quinns Road Option

This option is approximately 12 km in length, and essentially runs in an east/west direction between the Northern Highway and the Hume Freeway.

The option connects to the Hume Freeway at the existing Wandong interchange, requiring an upgrade of the existing interchange. The bypass option then generally follows the existing Epping-Kilmore Road and includes a connection to the Northern Highway south of Kilmore with a large roundabout. The bypass option then runs northwards parallel to, and east of Quinns Road and Andersons Road. It runs along the western base of Monument Hill Reserve to the east side of the golf course and race track along Hunts Road, requiring relocation of Hunts Road access along the east side of the bypass. The option then crosses Kilmore East Road and continues north-west through rural residential and farming areas before connecting to the Northern Highway south of the Broadford-Kilmore Road turnoff. There are local road connections at O'Gradys Road, Mathiesons Road, Millard Road, Quinns Road, McIvors Road, Tootle Street, Monument Hill Drive, Kilmore East Road, and Kellys Lane. The Kilmore-Broadford Road intersection would also be upgraded to a large roundabout.
The topography throughout this option is both gently and moderately undulating (Figure 17). Generally the topography was sloping eastward, towards Broadhurst Creek. Broadhurst Creek is a significant topographical feature within this area and it would have provided an advantageous settlement locale for Aboriginal people throughout the history of human settlement in the region. Monument Hill is also a significant topographical feature within this option.

Figure 17: Facing east in the Quinns Road Option. The topography is gently undulating, trending eastwards towards Broadhurst Creek. The groundcover is dense, rendering visibility in this alignment approx. 10%.

The ground surface visibility in this option was generally poor (10%). The terraces of Broadhurst Creek were covered in dense exotic vegetation including blackberries, rendering visibility poor (<10%) (Figure 18). Given their increased sensitivity, crests of rises, rises, terraces and creek lines were focused on during the survey. Culturally sensitive landforms (eg. creek terraces and crests) that had greater visibility often yielded Aboriginal archaeological sites that had not been previously recorded.

Figure 18: Broadhurst Creek and its terraces. Note the terraces are densely covered in vegetation including blackberries.

Previously recorded sites within this option:

There are no previously recorded sites within this option.

Newly recorded sites within this option:

During both phases of fieldwork, nine (9) newly recorded sites were located within this option.

Five (5) of these sites were located in the southeast corner of the activity area (adjacent to the Hume Freeway). Topography in this section of the overall activity area is gently undulating. This section of the activity area is intersected by tributaries of Dry Creek.

- Figure 19: Representative sample of the artefacts contained within Walders Road Kilmore 1 (VAHR 7823 – 0278).

Three (3) of the remaining sites are located on a spur in association with a tributary of Dry Creek. The final site was located on the upper slope of Monument Hill on a vehicle track (Figure 20).

Photograph deliberately removed.

Figure 20: Facing north on vehicle track within Monument Hill, showing location of Monument Hill IA 1 (VAHR 7923-XXXX).

The following table (Table 9) details the newly located sites within the Quinns Road Option.

Name and VAHR No.	Cultural Material
Broadhurst Lane Kilmore IA 1 (VAHR 7923-0332)	Silcrete flakes (2)
Monument Hill Kilmore IA 1	Silcrete flake (1)
Walders Road Kilmore 1 (VAHR 7823-0278)	Silcrete flakes (4) Silcrete core (1) Basalt flake (1)
Walders Road Kilmore IA 1 (VAHR 7823-0268)	Silcrete flakes (2)
Walders Road Kilmore IA 2 (VAHR 7823-0277)	Silcrete flake (1); Silcrete core (1)
Wandong Road Kilmore IA 1 (VAHR 7923-0329)	Silcrete flakes (3); Quart flake (1)
Wandong Road Kilmore IA 2 (VAHR 7923-0331)	Silcrete core (1)
Wandong Road Kilmore IA 3 (VAHR 7923-0321)	Silcrete flaked piece (1)
Wandong Road Kilmore IA 4 (VAHR 7923-0330)	Silcrete flakes (3)

Table 7: Sites located within the Quinns Road Option.

O'Gradys Road Option

This option is approximately 12 km in length, and runs adjacent to O'Gradys Road.

The option connects to the Hume Freeway at the existing Wandong interchange, requiring an upgrade of the existing interchange. The bypass option then runs along the existing O'Gradys Road through rural residential and farming areas. The option deviates from the O'Gradys Road to cross the railway to avoid the Kilmore East hamlet. It then again crosses over the Melbourne-Sydney Railway north of the Kilmore East hamlet and shares a common alignment with the Sunday Creek and Dry Creek Options.

There are local road connections at Kilmore-Epping Road, Kilmore East Road, Broadhurst Lane, Mathiesons Road, Sir Leo Curtis Drive, O'Gradys Road and Kellys Lane.

The topography within this option is both gentle and moderately undulating. Generally the topography was sloping eastward, towards Dry Creek. This option intersects Dry Creek; therefore Dry Creek is a significant topographical feature within the vicinity of this area. Dry Creek would have provided an advantageous

settlement locale for Aboriginal people throughout the history of human settlement in the region and as such, has a direct impact on the archaeology within this section of the activity area.

Ground surface visibility in this section was generally poor, it was however better than the other sections of the activity area (Figure 21). Visibility in this section was approximately 20%. Given their increased sensitivity, crests of rises, rises, terraces and creek lines were focused on during the survey. Culturally sensitive landforms (eg. creek terraces and crests) that had greater visibility often yielded Aboriginal archaeological sites that had not been previously recorded.

Figure 21: Good visibility on a saddle in property 108597. Taungurung representatives flagging artefacts associated with O'Gradys Road Kilmore 1, 2 and IA 3. This track provided excellent visibility (80%). Visibility surrounding the track was approximately 20%.

Previously recorded sites within this option:

Four (4) previously recorded places are located within this option.

All four of these sites lie within the rail reserve.

Photograph deliberately removed.

Figure 22: Image facing north. Arrow showing the location of ARTC Passing Lane 4 AS 1 (VAHR 7823-0142).

Name and VAHR No.	Cultural Material
ARTC Passing Lane 4 AS 1 (VAHR 7823-0142)	Silcrete flake (3) Silcrete broken blade (1) Quart flake (3)
Melbourne Sydney Passing Lane 3-1 (VAHR 7823-0186)	Hornfels flake (2) Silcrete bladelet (1) Silcrete flaked piece (29) Quart flaked piece (9) Hornfels flaked piece (2) Silcrete flake (6) Silcrete core (1) Quartzite flaked piece (1) Crystal Quart flaked piece (3) Quart core (1) Quartzite flake (1)
Kilmore East 1 (VAHR 7823-0179)	Silcrete flakes (6) Quart flake (1)
Kilmore East 2 (VAHR 7823-0180)	Silcrete flake (1)

Table 8: Previously recorded sites within the O'Gradys Road Option.

Newly recorded sites within this option:

During both phases of fieldwork, twenty seven (27) newly recorded sites were located within this option.

Given that Dry Creek is the major topographical feature within this option, the majority of sites located within this option are located in association with Dry Creek or its tributaries.

Photograph deliberately removed.

Figure 23: The flags show the location of the cluster of sites located on the saddle within properties 108567 and 108599. This saddle overlooks Dry Creek.

The following table (Table 11) details the newly located sites within the O'Gradys Road Option.

Name and VAHR No.	Cultural Material
Broadford Kilmore East Road IA 1 VAHR 7823-0261)	Silcrete flake (1)
Broadhurst Lane Kilmore IA 1 (VAHR 7923-0332)	Silcrete flakes (2)
Dry Creek Kilmore 5 (VAHR 7823-0281)	Quartzite flake (1) Quartzite core (1) Quartzite flaked piece (1) Silcrete flake (4)
Dry Creek Kilmore 6 (VAHR 7923-0333)	Silcrete flaked piece (1) Silcrete flake (2) Crystal Quart flake (1) Chert flakes (2) Chert flaked piece (1)
Dry Creek Kilmore 8 (VAHR 7923-0335)	Silcrete flakes (6) Silcrete core (1) Silcrete flaked piece (3)
Dry Creek Kilmore IA 1(VAHR 7823-0262)	Silcrete flake (1)
Dry Creek Kilmore IA 10 (VAHR 7923-0323)	Silcrete flakes (2)
Dry Creek Kilmore IA 11 (VAHR 7923-0324)	Silcrete flake (1) Silcrete core(1) Silcrete flaked piece (1)
Dry Creek Kilmore IA 13 (VAHR 7923-0326)	Silcrete flakes (3) Quartzite flake (1)
Dry Creek Kilmore IA 14 (VAHR 7923-0327)	Silcrete flakes (2) Silcrete core (1)
Dry Creek Kilmore IA 2 (VAHR 7823-0263)	Silcrete flake (1)
Dry Creek Kilmore IA 4 (VAHR 7823-0264)	Silcrete flake (1)
Dry Creek Kilmore IA 5 (VAHR 7823-0265)	Silcrete flake (1)
Dry Creek Kilmore IA 8 (VAHR 7823-0269)	Silcrete core (1) Silcrete flaked piece (1) Silcrete flake (1)
O'Gradys Road Kilmore IA 3	Silcrete flake (1) Quart flake (1)
O'Gradys Road Kilmore IA 4	Silcrete flaked piece (1)
O'Gradys Road Kilmore 1 (VAHR 7823-0283)	Silcrete flakes (19)
O'Gradys Road Kilmore 2 (VAHR 7823-0284)	Silcrete flakes (41) Silcrete flaked piece (14) Silcrete cores (2)
O'Gradys Road Kilmore IA 1 (VAHR 7823-0266)	Silcrete flake (1)
O'Gradys Road Kilmore IA 2 (VAHR 7823-0267)	Silcrete flakes (2)
Walders Road Kilmore 1 (VAHR 7823-0278)	Silcrete flakes (4) Silcrete core (1) Basalt flake (1)
Walders Road Kilmore IA 1 (VAHR 7823-0268)	Silcrete flakes (2)
Walders Road Kilmore IA 2 (VAHR 7823-0277)	Silcrete flake (1) Silcrete core (1)
Wandong Road Kilmore IA 1 (VAHR 7923-0329)	Silcrete flakes (3) Quart flake (1)
Wandong Road Kilmore IA 2 (VAHR 7923-0331)	Silcrete core (1)
Wandong Road Kilmore IA 3 (VAHR 7923-0321)	Silcrete flaked piece (1)
Wandong Road Kilmore IA 4 (VAHR 7923-0330)	Silcrete flakes (3)

Table 9: Sites located within the O'Gradys Road option.

Sunday Creek Road Option

This option is approximately 11 km in length.

The option connects to the Hume Freeway at the existing Clonbinane interchange. The road heads westwards over farmland towards the Kilmore East hamlet utilizing sections of the existing Sunday Creek Road where possible. The bypass option crosses over the Melbourne-Sydney Railway at Kilmore East and runs parallel to,

and north of Kilmore East Road. It then continues through in a north-west direction through rural residential and farming areas before connecting to the Northern Highway, south of the Broadford-Kilmore Road turnoff with a large diameter roundabout. There are local road connections at Broadford- Wandong Road, Saunders Road, Kilmore East Road and at Kellys Lane. The Northern Highway and Broadford-Kilmore Road intersection would also be upgraded to a large roundabout. The section of this option between the Kilmore East and the Northern Highway shares a common alignment with the O'Gradys Road and Dry Creek Options.

The topography within this option is moderately undulating and sloped eastward towards Nanny Creek (Figure 24). Both Nanny Creek and Dry Creek are significant topographical features within this option. Both Nanny Creek and Dry Creek, and their associated tributaries, would have provided an advantageous settlement locale for Aboriginal people throughout the history of human settlement in the region.

Figure 24: Facing West in Sunday Creek Option, showing moderately undulating country. The Nanny Creek valley is in the background of the picture.

Ground surface visibility in this option was generally poor, at approximately 10%. Visibility around Nanny Creek was also generally poor. Given their increased sensitivity, crests of rises, rises, terraces and creek lines were focused on during the survey. Culturally sensitive landforms (eg. creek terraces and crests) that had greater visibility often yielded Aboriginal archaeological sites that had not been previously recorded.

Previously recorded sites within this section of the activity area:

There are two (2) previously recorded sites within this option.

Photograph deliberately removed.

Figure 25: Image facing north. Arrow showing the location of ARTC Passing Lane 4 AS 1 (VAHR 7823-0142).

The following table (Table 12) details the previously located sites within the Sunday Creek Road Option.

Name and VAHR No.	Cultural Material
ARTC Passing Lane 4 AS 1 (VAHR 7823-0142)	Silcrete flake (3) Silcrete broken blade (1) Quart flake (3)
Melbourne Sydney Passing Lane 3-1 (VAHR 7823-0186)	Hornfels flake (2) Silcrete bladelet (1) Silcrete flaked piece (29) Quart flaked piece (9) Hornfels flaked piece (2) Silcrete flake (6) Silcrete core (1) Quartzite flaked piece (1) Crystal Quart flaked piece (3) Quart core (1) Quartzite flake (1)

Table 10: Previously recorded sites within the Sunday Creek Road Option.

Newly recorded sites within this option:

During both phases of fieldwork, eighteen (18) newly recorded sites were located within this option 9Eg. Figure 26).

Given that Dry Creek and Nanny Creek are the major topographical features within this option, the majority of sites located within this option are located in association with these creeks and their tributaries.

Figure 26: Representative sample of the artefacts that comprise Dry Creek Tributary Kilmore 1 (VAHR 7823-0282).

The following table (Table 13) details the newly located sites within the Sunday Creek Option.

Name and VAHR No.	Cultural Material
Broadford Kilmore East Road IA 1 (VAHR 7823-0261)	Silcrete flake (1)
Broadford Wandong Road Kilmore IA 1 (VAHR 7923-0322)	Silcrete flakes (4)
Dry Creek Kilmore 5 (VAHR 7823-0281)	Quartzite flake (1) Quartzite core (1) Quartzite flaked piece (1) Silcrete flake (4)
Dry Creek Kilmore IA 1 (VAHR 7823-0262)	Silcrete flake (1)
Dry Creek Kilmore IA 4 (VAHR 7823-0264)	Silcrete flake (1)
Dry Creek Kilmore IA 5 (VAHR 7823-0265)	Silcrete flake (1)
Dry Creek Kilmore IA 8 (VAHR 7823-0269)	Silcrete core (1) Silcrete flaked piece (1) Silcrete flake (1)
Dry Creek Kilmore IA 9 (VAHR 7823-0270)	Silcrete flakes (4)
Dry Creek Tributary Kilmore 1 (VAHR 7823-0282)	Silcrete flakes (11)
Dry Creek Tributary Kilmore 2	Silcrete flake (5) Silcrete geometric microlith (1) Silcrete angular fragment (1)
Dry Creek Tributary Kilmore IA 1 (VAHR 7823-0276)	Silcrete flakes (2)
Dry Creek Tributary Kilmore IA 2	Silcrete flake (1)
Dry Creek Tributary Kilmore IA 3	Silcrete flake (1) Quart flake (1)
Saunders Road Kilmore 1 (VAHR 7823-0336)	Silcrete flakes (20) Silcrete flaked pieces (3) Crystal Quart flake (1) Quart flake (1) Silcrete core(1)
Saunders Road Kilmore IA 1 (VAHR7923-0328)	Silcrete flaked pieces (3)
Walders Road Kilmore 1 (VAHR 7823-0278)	Silcrete flakes (4) Silcrete core (1) Basalt flake (1)
Walders Road Kilmore IA 1 (VAHR 7823-0268)	Silcrete flakes (2)
Walders Road Kilmore IA 2 (VAHR 7823-0277)	Silcrete flake (1) Silcrete core (1)

Table 11: Newly recorded sites located within the Sunday Creek Option.

Dry Creek Option

This option is approximately 13 km in length, and essentially runs adjacent to Dry Creek and O'Gradys Road.

The option connects to the Hume Freeway just north of the existing Wandong Interchange via two southerly oriented ramps one. The bypass options then runs parallel to, and east of, the Melbourne-Sydney Railway and Dry Creek through tree plantation and faming land. The option crosses over the Melbourne-Sydney Railway at Kilmore East hamlet and then shares a common alignment with the Sunday Creek and O'Gradys Road Options. There are local road connections at Kilmore East Road and Kellys Lane.

The topography in this east section of the overall activity area is both gentle and moderately undulating. This option essentially runs adjacent to Dry Creek, and is heavily intersected by Dry Creek. Generally the topography is sloping westward, towards Dry Creek. Dry Creek is a significant topographical feature within this section of this area, and has a direct impact on the archaeology within this section of the activity area.

Ground surface visibility in this section was generally poor (<10%). Groundcover was extremely dense in sections (particularly in properties 108620 and 108618) (Figure 27), which rendered ground visibility close to 0%.

Figure 27: Facing south in Dry Creek option, showing extremely dense groundcover which rendered ground surface visibility close to 0%.

Previously recorded sites within this section of the activity area:

There are three (3) previously recorded sites within this option.

Photograph deliberately removed.

Figure 28: Image facing north. Arrow showing the location of ARTC Passing Lane 4 AS 1 (VAHR 7823-0142).

The following table (Table 14) details the previously located sites within the Sunday Creek Option.

Name and VAHR No.	Cultural Material
ARTC Passing Lane 4 AS 1 (VAHR 7823-0142)	Silcrete flake (3) Silcrete broken blade (1) Quart flake (3)
Melbourne Sydney Passing Lane 3-1 (VAHR 7823-0186)	Hornfels flake (2) Silcrete bladelet (1) Silcrete flaked piece (29) Quart flaked piece (9) Hornfels flaked piece (2) Silcrete flake (6) Silcrete core (1) Quartzite flaked piece (1) Crystal Quart flaked piece (3) Quart core (1) Quartzite flake (1)
Kilmore East 1 (VAHR 7823-0179)	Silcrete flakes (6) Quart flake (1)

Table 12: Previously recorded sites within the Dry Creek Option.

Newly recorded sites within this section of the activity area:

During both phases of fieldwork, twenty seven (27) newly recorded sites were located within this option.

Given that this option intersects Dry Creek a number of times, the majority of sites located within this option, are located in association with Dry Creek and its tributaries. In particular, a number of sites were located on a south trending spur approximately 25 m from Dry Creek (property 108620) (Figure 29).

Figure 29: Facing south west toward property 108620. The image showing the undulating topography and the spur in the background where the majority of the sites were located.

The following table (Table 15) details the previously located sites within the Sunday Creek Option.

Name and VAHR No.	Cultural Material
Broadford Kilmore East Road IA 1 (VAHR 7823-0261)	Silcrete flake (1)
Dry Creek Kilmore 1 (VAHR 7823-0279)	Silcrete flakes (7) Silcrete flaked piece (1) Quartzite flake (1)
Dry Creek Kilmore 10	Silcrete flake (2) Silcrete angular fragment (3)
Dry Creek Kilmore 2 (VAHR 7823-0280)	Silcrete flakes (6)
Dry Creek Kilmore 3 (VAHR 7823-0285)	Silcrete flaked pieces (2) Silcrete flakes (9) Quart flake (1) Chert flake (1)
Dry Creek Kilmore 5 (VAHR 7823-0281)	Quartzite flake (1) Quartzite core (1) Quartzite flaked piece (1) Silcrete flake (4)
Dry Creek Kilmore 7 (VAHR 7923-0334)	Silcrete flakes (4)
Dry Creek Kilmore 9	Silcrete flake (4) Silcrete angular fragment (1)
Dry Creek Kilmore IA 1 (VAHR 7823-0262)	Silcrete flake (1)
Dry Creek Kilmore IA 15 (VAHR 7823-0271)	Silcrete flakes (4)
Dry Creek Kilmore IA 16 (VAHR 7823-0272)	Silcrete flake (1)
Dry Creek Kilmore IA 17 (VAHR 7823-0273)	Silcrete flakes (3)
Dry Creek Kilmore IA 18 (VAHR 7823-0274)	Silcrete flakes (3)
Dry Creek Kilmore IA 19 (VAHR 7823-0275)	Silcrete flake (1) Chert flake (1)
Dry Creek Kilmore IA 20	Silcrete flake (1) Silcrete angular fragment (1)
Dry Creek Kilmore IA 21	Silcrete flake (2)
Dry Creek Kilmore IA 22	Silcrete flake (2) Black Silcrete angular fragment (1)
Dry Creek Kilmore IA 23	Silcrete flake (2)
Dry Creek Kilmore IA 24	Rhyolite angular fragment (1)Silcrete angular fragment (1)
Dry Creek Kilmore IA 4 (VAHR 7823-0264)	Silcrete flake (1)
Dry Creek Kilmore IA 5 (VAHR 7823-0265)	Silcrete flake (1)
Dry Creek Kilmore IA 6 (VAHR 7923-0319)	Silcrete flake (1)
Dry Creek Kilmore IA 7 (VAHR 7923-0320)	Silcrete flake (1)
Dry Creek Kilmore IA 8 (VAHR 7823-0269)	Silcrete core (1) Silcrete flaked piece (1) Silcrete flake (1)
Walders Road Kilmore 1 (VAHR 7823-0278)	Silcrete flakes (4) Silcrete core (1) Basalt flake (1)
Walders Road Kilmore IA 1 (VAHR 7823-0268)	Silcrete flakes (2)
Walders Road Kilmore IA 2 (VAHR 7823-0277)	Silcrete flakes (2)

Table 13: Newly recorded sites within the Dry Creek Option.

Oral History and Cultural Heritage Values Recording

During the course of the Phase 2 Survey of the Kilmore-Wallan Bypass the requirement for cultural heritage values recording was discussed between the cultural heritage advisor (Erica Walther) and the Taungurung RAP Representative (Mick Harding).

Oral history and cultural heritage values recording is outside the current contracted scope of works, however the following outlines several key points which were raised during the survey in the vicinity of Monument Hill, particularly to the south-west of the small tributary:

- Native (possibly remnant) vegetation is of cultural importance to the Taungurung;
- The presence of important "bush tucker" and medicine plants in the Monument Hill area are also of extremely high cultural importance to the Taungunrung (Figure 30);
- In particular, the presence of Murnong (yam daisy) (*Microseris lanceolata/scapigera*) (Figure 31) in this area is of extremely high cultural importance. This species of plant has an edible root that formed a staple for Aboriginal people throughout Victoria. The plant species has neared extinction due to the introduction of sheep and cattle. The importance of subterranean tubers such as the 'yam daisy', however, was its ease of procurement and consistency of availability. Not only was this food source extensive and required limited processing, it was available year round (Gott, 1982:59-67), and 'was always a fallback food' (Gott, 1999:41-45).
- Cherry ballart (*Excarpos cupressiformis*) also had fruit stalk used for food, sap for snakebite and wood for spearthrowers and boomerangs. Eucalyptus sap was used for medicines and for binding tools and weapons (Figure 33).
- Early Nancy (*Wurmbea dioca*) (Figure 32) and Wax-Lip Orchid (*Glossodia major*) had small starchy tubers which were used for food.

Figure 30: Location of flowering natives and other "bush tucker" within the Monument Hill Reserve.

Figure 31: Flower of the Murnong/Yam Daisy (*Microseris lanceolata/scapigera).*

Figure 32: Early Nancy (*Wurmbea dioca*).

Figure 33: Eucalyptus sap.

5.2.2.3. Conclusions from the Standard Assessment

The activity area was inspected for the presence of archaeological sites and areas of cultural heritage sensitivity.

Ground surface visibility during the standard assessment on the whole was extremely low (<10%). Given that the activity area intersects rural properties, a majority of these rural properties had considerable grass cover. As such, visibility was very limited and in some places the visibility was <2%. Areas of good visibility (60%-80%) were also often occurred on or around tracks, roads, ploughed fields or in association with cattle grazing.

Given their sensitivity, rises, creek terraces and creek lines within the activity area were the specific focus of the survey. The activity area is intersected by Dry Creek, Nanny Creek, Kilmore Creek and Broadhurst Creek and their tributaries. Generally, visibility around the creek lines was poor (<10%). Newly recorded sites were often located on culturally sensitive landforms, such as creek terraces and crests, with greater ground visibility.

Sixty three (63) Aboriginal archaeological sites were located as a result of the standard assessment. The dominant material recorded was silcrete, with some Quart and quartzite also recorded. .The majority of sites located as a result of the standard assessment are isolated artefacts. Forty eight (48) (15 artefact scatters and 33 isolated artefacts) of those sites are located within the current investigation area which includes all five bypass options.

The five bypass options are either intersected by or lie within 200 m of Dry Creek, Nanny Creek, Broadhurst Creek and Kilmore Creek. In general, river and creek valleys would have provided the most advantageous settlement localities for Aboriginal people throughout the history of human settlement in the region. The river valley environments provided Aboriginal people with a range of necessary resources, as well as providing shelter from the elements, timber for fires, tools, and housing; all manner of food sources, and stone for tool manufacture. The ridgelines and valley landscapes may also have served as travel routes throughout much of the region.

As anticipated in the predictive model (Section 5.1.9), a majority of the newly recorded sites were located either on rises or in association with the main waterways and their tributaries. A majority of sites located within the activity area were situated on two landforms: creek lines and their tributaries and high lying areas associated with the crests of hills. Despite the low effective survey coverage (approximately 10%), this observation is interpreted as a reflection of past land use rather than ground surface visibility.

Of particular significance is the comparatively higher density of sites located on a southwest trending spur (within property 108620) within 25 metres of Dry Creek (within the Dry Creek option). It is considered likely that this spur was utilised preferentially given its close proximity to Dry Creek. There is potential, that other low rises associated with permanent water sources within the activity area, are likely to have been used preferentially and potentially as permanent camps. High ridges in this vicinity are considered likely to have been transitory paths. The majority of these sites were located in a blue gum reserve, and have therefore been subject to some disturbance. Adjacent to these sites and in an area of no visible disturbance Dry Creek Kilmore 10 (VAHR 7923-XXXX) was eroding from the ground at the base of a eucalypt tree. This exposure suggests these sites continue in a subsurface context.

Low ground surface visibility hindered the ability to determine the extent of these sites – as many were eroding out of slopes near waterways, there is potential that the sites may continue within a sub-surface context. As such, it is not possible to determine with any accuracy the nature and extent of any of these sites without additional complex testing. A more in depth interpretation of these sites can only be achieved with additional testing.

There were no culturally modified scarred trees, culturally modified charcoal, caves, rock shelters or cave entrances located within the activity area.

5.2.3. Discussion/ Summary

The desktop assessment confirmed the predictive model (Section 5.1.9) and concluded that the probability of finding sites was higher within 200 metres of creek lines and on the rises and ridges overlooking those creeks and their tributaries. The standard assessment confirmed the predictive model (Section 5.1.9) which stated that the probability of finding sites was higher along the creek lines and on the rises and ridges overlooking the creeks that intersect the activity area. In addition, the desktop review and standard assessment indicated that the majority of the activity area did not demonstrate signs of previous ground disturbance and that in these areas there was a reasonable likelihood that as yet undetected and sub-surface archaeological deposits are likely to remain.

During the standard assessment, the activity area was inspected for the presence of archaeological sites and areas of cultural heritage sensitivity.

A total of 63 new sites (45 isolated artefacts and 18 artefact scatters) were located as a result of the standard assessment. Forty eight (48) (15 artefact scatters and 33 isolated artefacts) of those sites are located within the investigation area.

Soil profiles within the activity area have been disturbed by road construction, residential and rural infrastructure construction and ploughing and other agricultural activities. Despite the effect that this ground disturbance has had on any potential subsurface deposits, it is still highly likely that subsurface deposits are located within the activity area.

The results of the survey, including the assessment of disturbance and archaeological potential, were reached in consultation with the Taungurung representatives who participated in the survey.

The desktop and standard assessment has demonstrated that the activity will impact on an area where Aboriginal cultural heritage is or is likely to be present. The Aboriginal Heritage Regulations (60) state that:
"(1) A complex assessment is required if the desktop assessment or standard assessment shows that—

(a) Aboriginal cultural heritage is, or is likely to be, present in the activity area; and

(b) it is not possible to identify the extent, nature and significance of the Aboriginal cultural heritage in the activity area unless a complex assessment is carried out".

The complex testing is to take place for the bypass route which is chosen for construction (i.e. the preferred option only).

Based on the lack of ground surface visibility and the existence of forty eight (48) newly recorded sites within the activity area, a complex CHMP is required for the preferred option in order to accurately determine the nature, significance and extent of cultural heritage material within the activity area.

In addition to complex testing, it was communicated to the Cultural Heritage Advisor (CHA) onsite by the Taungurung representatives that cultural heritage values recording should be completed prior to the commencement of the complex CHMP assessment. The Taungurung have requested that cultural heritage values recording (CHVR) take place over all five options regardless of which option is chosen for the final bypass route.

A proposed sub-surface testing methodology has been formulated as follows:

1. A targeted approach focussing on areas of cultural sensitivity, specifically within a 200 m buffer of waterways to the width of the activity area alignment and;
2. Around previously recorded surface scatters and isolated artefacts within the activity area in order to determine their nature, significance and extent.

The testing approach will include a series of Shovel Test Probes (STPs) and 1 m x 1 m test pit excavations as required.

This is only a proposed methodology; a final and detailed testing methodology will need to be determined in consultation with the Taungurung.

6. DETAILS OF ABORIGINAL CULTURAL HERITAGE IN THE ACTIVITY AREA

6.1. Aboriginal Cultural Heritage in the Activity Area

This assessment comprises of a desktop and standard assessment.

The desktop assessment concluded that the ridgelines and spurs and the terraces of the creek lines within the activity area are highly sensitive for Aboriginal archaeological deposits. The standard assessment confirmed the predictive model (Section 5.1.9) which stated that the probability of finding sites was higher along the creek lines and on the rises and ridges overlooking the creeks that intersect the activity area.

The desktop review and standard assessment indicated that the majority of the activity area did not demonstrate signs of previous ground disturbance and that in these areas there was a reasonable likelihood that as yet undetected and sub-surface archaeological deposits are likely to remain.

Forty eight (48) newly recorded sites and four (4) previously recorded sites are located within the current investigation area (i.e all five bypass options). These sites are included within Table 18. All Aboriginal cultural heritage sites located within the current activity area (new and previously recorded) are also shown on the following map series (Maps 7 to 17)

The following table (Table 16) shows the number and type of site located in each option. Note that the same site can occur within a number of options.

	Site Occurrence Count - Study Area				Site Occurrence Count - Earthwork Footprint			
Option	Artefact Scatter	Isolated Artefact	Previously Recorded Site	(Total)	Artefact Scatter	Isolated Artefact	Previously Recorded Site	(Total)
Sunday Creek	5	13	2	20	2	6	1	8
Dry Creek	10	17	3	30	3	5	0	8
O'Gradys Road	6	21	4	31	1	4	0	5
Quinns Road	1	8	0	9	0	2	0	2
Western Option	3	8	0	11	0	2	0	2

Table 14: Sites located within the current investigation area by option

The following table (Table 17) shows the sites located within the earthwork footprint, and their corresponding option.

No	Site Name	Site Type	Site intersects option
1	Dry Creek Kilmore 10	Artefact Scatter	Dry Creek
2	Dry Creek Kilmore 9	Artefact Scatter	Dry Creek
3	Dry Creek Tributary Kilmore 2	Artefact Scatter	Sunday Creek
4	Dry Creek Tributary Kilmore 1	Artefact Scatter	Sunday Creek
5	Dry Creek Kilmore 6	Artefact Scatter	O'Grady's Road
6	Dry Creek Kilmore 7	Artefact Scatter	Dry Creek
7	Wandong Road Kilmore IA 3	Isolated Artefact	O'Grady's Road
8	Dry Creek Kilmore IA 1	Isolated Artefact	Sunday Creek
9	Dry Creek Kilmore IA 4	Isolated Artefact	Dry Creek O'Grady's Road
10	Dry Creek Kilmore IA 5	Isolated Artefact	Dry Creek O'Grady's Road Sunday Creek
11	Dry Creek Kilmore IA 6	Isolated Artefact	Dry Creek
12	Broadford Wandong Road Kilmore IA 1	Isolated Artefact	Sunday Creek
13	Dry Creek Kilmore IA 9	Isolated Artefact	Sunday Creek
14	Dry Creek Tributary IA 1	Isolated Artefact	Sunday Creek
15	Dry Creek Kilmore IA 14	Isolated Artefact	O'Grady's Road
16	Wandong Road Kilmore IA 1	Isolated Artefact	Quinn's Road Western Option
17	Wandong Road Kilmore IA 4	Isolated Artefact	Quinn's Road Western Option
18	Dry Creek Kilmore IA 24	Isolated Artefact	Dry Creek
19	Dry Creek Kilmore IA 23	Isolated Artefact	Dry Creek
20	Dry Creek Tributary Kilmore IA 3	Isolated Artefact	Sunday Creek

Table 15: Sites located within the current investigation area by option

Name and VAHR No.	Cultural Material
ARTC Passing Lane 4 AS 1 (VAHR 7823-0142)	Silcrete flake (3) Silcrete broken blade (1) Quart flake (3)
Melbourne Sydney Passing Lane 3-1 (VAHR 7823-0186)	Hornfels flake (2) Silcrete bladelet (1) Silcrete flaked piece (29) Quart flaked piece (9) Hornfels flaked piece (2) Silcrete flake (6) Silcrete core (1) Quartzite flaked piece (1) Crystal Quart flaked piece (3) Quart core (1) Quartzite flake (1)
Kilmore East 1 (VAHR 7823-0179)	Silcrete flakes (6) Quart flake (1)
Kilmore East 2 (VAHR 7823-0180)	Silcrete flake (1)
Broadford Kilmore East Road IA 1 (VAHR 7823-0261)	Silcrete flake (1)
Broadford Wandong Road Kilmore IA 1 (VAHR 7923-0322)	Silcrete flakes (4)
Broadhurst Lane Kilmore IA 1(VAHR 7923-0332)	Silcrete flakes (2)
Dry Creek Kilmore 1(VAHR 7823-0279)	Silcrete flakes (7) Silcrete flaked piece (1) Quartzite flake (1)
Dry Creek Kilmore 3 (VAHR 7823-0285)	Silcrete flaked pieces (2) Silcrete flakes (9) Quart flake (1) Chert flake (1)
Dry Creek Kilmore 5(VAHR 7823-0281)	Quartzite flake (1) Quartzite core (1) Quartzite flaked piece (1) Silcrete flake (4)
Dry Creek Kilmore 6(VAHR 7923-0333)	Silcrete flaked piece (1) Silcrete flake (2) Crystal Quart flake (1) Chert flakes (2) Chert flaked piece (1)
Dry Creek Kilmore 7(VAHR 7923-0334)	Silcrete flakes (4)
Dry Creek Kilmore 8(VAHR 7923-0335)	Silcrete flakes (6) Silcrete core (1) Silcrete flaked piece (3)
Dry Creek Kilmore 9	Silcrete flake (4) Silcrete angular fragment (1)
Dry Creek Kilmore 10	Silcrete flake (2) Silcrete angular fragment (3)
Dry Creek Kilmore IA 1(VAHR 7823-0262)	Silcrete flake (1)
Dry Creek Kilmore IA 4(VAHR 7823-0264)	Silcrete flake (1)
Dry Creek Kilmore IA 5(VAHR 7823-0265)	Silcrete flake (1)
Dry Creek Kilmore IA 6(VAHR 7923-0319)	Silcrete flake (1)
Dry Creek Kilmore IA 8(VAHR 7823-0269)	Silcrete core (1) Silcrete flaked piece (1) Silcrete flake (1)
Dry Creek Kilmore IA 9(VAHR 7823-0270)	Silcrete flakes (4)
Dry Creek Kilmore IA 13(VAHR 7923-0326)	Silcrete flakes (3) Quartzite flake (1)
Dry Creek Kilmore IA 14(VAHR 7923-0327)	Silcrete flakes (2) Silcrete core (1)
Dry Creek Kilmore IA 17(VAHR 7823-0273)	Silcrete flakes (3)
Dry Creek Kilmore IA 18(VAHR 7823-0274)	Silcrete flakes (3)
Dry Creek Kilmore IA 20	Silcrete flake (1) Silcrete angular fragment (1)
Dry Creek Kilmore IA 21	Silcrete flake (2)

Name and VAHR No.	Cultural Material
Dry Creek Kilmore IA 22	Silcrete flake (2) Black Silcrete angular fragment (1)
Dry Creek Kilmore IA 23	Silcrete flake (2)
Dry Creek Kilmore IA 24	Rhyolite angular fragment (1)Silcrete angular fragment (1)
Dry Creek Tributary Kilmore IA 1(VAHR 7823-0276)	Silcrete flakes (2)
Dry Creek Tributary Kilmore 1(VAHR 7823-0282)	Silcrete flakes (11)
Dry Creek Tributary Kilmore 2	Silcrete flake (5) Silcrete geometric microlith (1) Silcrete angular fragment (1)
Dry Creek Tributary Kilmore IA 2	Silcrete flake (1)
Dry Creek Tributary Kilmore IA 3	Silcrete flake (1) Quart flake (1)
Monument Hill Kilmore IA 1	Silcrete flake (1)
O'Gradys Road Kilmore 1(VAHR 7823-0283)	Silcrete flakes (19)
O'Gradys Road Kilmore 2(VAHR 7823-0284)	Silcrete flakes (41) Silcrete flaked piece (14) Silcrete cores (2)
O'Gradys Road Kilmore IA 1(VAHR 7823-0266)	Silcrete flake (1)
O'Gradys Road Kilmore IA 2(VAHR 7823-0267)	Silcrete flakes (2)
O'Gradys Road Kilmore IA 3	Silcrete flake (1) Quart flake (1)
O'Gradys Road Kilmore IA 4	Silcrete flaked piece (1)
Paynes Road Kilmore 1	Silcrete flakes (4) Silcrete sp core (1)
Paynes Road Kilmore 2	Silcrete flake (93) Silcrete core (12) Silcrete geometric microlith (1) Silcrete flaked piece (6) Quartzite flake (1) Quartzite core (1)
Paynes Road Kilmore 3	Silcrete flakes (5) notched Silcrete angular fragment (1) Silcrete core (3) Silcrete flakes (2) angular fragments (2)
Paynes Road Kilmore IA 1	Silcrete core (1)
Paynes Road Kilmore IA 2	Silcrete flake (1)
Paynes Road Kilmore IA 3	Silcrete flake (1) Crystal Quart flake (2)
Wandong Road Kilmore IA 1(VAHR 7923-0329)	Silcrete flakes (3) Quart flake (1)
Wandong Road Kilmore IA 2(VAHR 7923-0331)	Silcrete core (1)
Wandong Road Kilmore IA 3(VAHR 7923-0321)	Silcrete flaked piece (1)
Wandong Road Kilmore IA 4(VAHR 7923-0330)	Silcrete flakes (3)

Table 16: Sites located within the current investigation area (including sites from all five options)

6.2. Significance Assessment

The assessment of cultural heritage value or 'significance' is a fundamental component of the heritage management process, in that it assists in determining which sites, places, landscapes, environments and items are of sufficient importance that they require preservation or greater research prior to destruction. As such, the significance assessment process underpins the legislative framework for heritage site management by establishing a framework within which various types (assessment criteria) and levels (significance rating) of heritage value can be defined. An effective assessment of these values facilitates the formulation of appropriate management decisions for a specific heritage item, whether a building, archaeological site, place or landscape.

Complex testing has not been undertaken as part of this assessment. Therefore, the nature and extent of the sites located within this assessment have not been defined. A significance assessment of the sites within the assessment area must be completed at the conclusion of complex testing.

6.3. Assessment of Options

6.3.1. Options Rating

The following table details the 7 tiers rating Scale used for the following assessement of option.

Ratings Table for Kilmore-Wallan Bypass Options Assessment

Potential Project Benefits	Rating Colour Code	Potential Project Disbenefits
Significant benefit to the State Superior benefit to the region Policy consistency with superior positive impact	VERY WELL 3	
Moderate benefit to the State Significant benefit to the region Superior benefit to the locality Policy consistency with significant positive impact	WELL 2	
Moderate benefit to the region Significant benefit to the locality Policy consistency with moderate positive impact	MODERATELY WELL 1	
Minimal benefit at any level	NEGLIGIBLE 0	Minimal disbenefit at any level
	MODERATELY POOR -1	Moderate disbenefit to the region Significant disbenefit to the locality Policy inconsistency with moderate negative impact
	POOR -2	Moderate disbenefit to the State Significant disbenefit to the region Severe disbenefit to the locality Policy inconsistency with significant negative impact
	VERY POOR -3	Significant disbenefit to the State Severe disbenefit to the region Policy inconsistency with severe negative impact

Table 17: Option assessment criteria

The following table details the sub-objectives and assessment criteria for the applicable planning objective:

Planning Objective	Sub-Objective	Assessment Criteria
7: Avoid or minimise impacts on areas and features of heritage significance, to the extent practicable	Aboriginal Heritage: To avoid or minimize impacts on aboriginal cultural heritage and provide appropriate mitigation measures where required in consultation with Taungurung Clans Aboriginal Corporation and in accordance with the Aboriginal Heritage Act 2006 and Aboriginal Heritage Regulations 2007.	To avoid or minimize impacts on Aboriginal cultural heritage.

Table 18: Table detailing the sub-objectives for Aboriginal Heritage.

Option	Sites within the earthworks footprint		Preliminary Site Significance	VicRoads Rating
Sunday Creek Road Option	Artefact Scatter	3	Low Scientific Significance	Poor: -2
	Isolated Artefact	6		
Dry Creek Option	Artefact Scatter	3	Low Scientific Significance	Poor: -2
	Isolated Artefact	5		
O'Gradys Road Option	Artefact Scatter	1	Low Scientific Significance	Moderately Poor: -1
	Isolated Artefact	4		
Quinns Road Option	Artefact Scatter	0	Low Scientific Significance	Negligible: 0
	Isolated Artefact	2		
Western Option	Artefact Scatter	0	Low Scientific Significance	Negligible: 0
	Isolated Artefact	2		

Table 19: Table detailing the VicRoads assessment methodology to each of the five options.

The preliminary significance ratings are based only on the standard assessment. This means the rating is based upon the number of sites within the earthworks footprint, the type of sites in each of the options, and the inferred (likely) significance of those sites, prior to the complex assessment.

Due to the very poor ground visibility encountered during the standard assessment, it is considered highly likely that the standard assessment has identified only some of the sites that are likely to be present along the five bypass alignments.

Therefore, complex testing will be required to determine the nature and extent of any sites located during the standard assessment as well as to determine if any additional sites lie within the area that could not be adequately inspected due to the low ground surface visibility.

Until complex testing is completed we do not know the extent of any sites in the proposed alignments. Therefore, the above preliminary significance ratings and coding are only preliminary, and are subject to amendment at the completion of the complex assessment.

The assessments have been made utilising a comparison of the number of sites located in each of the five options.

Sunday Creek Road Option

There are 20 sites (2 previously existing and 18 newly located) within investigation area of the Sunday Creek Option.

Of those 20, 8 sites (2 artefact scatters, 6 isolated artefact and 1 previously recorded artefact scatter) lie within the earthworks footprint.

Based on the above this option is awarded a rating of: Poor (-2).

Dry Creek Option

There are 30 sites (3 previously located and 27 newly located) within the Dry Creek Road Option.

Of those 30, 8 sites (3 artefact scatters and 5 isolated artefacts) lie within the earthworks footprint.

Based on the above this option is awarded a rating of: Poor (-2).

O'Gradys Road Option

There are 31 sites (4 previously located and 27 newly located) within the O'Gradys Road Option.

Of these 31, 5 sites (1 artefact scatter and 4 isolated artefacts) lie within the earthworks footprint.

Based on the above this option is awarded a rating of: Moderately Poor (-1).

Quinns Road Option

There are 9 sites (9 newly located) lie within the Quinns Road Option.

Of those 9 sites, 2 sites (2 isolated artefacts) lie within the earthworks footprint.

Based on the above this option is awarded a rating of: Negligible (0).

Western Option

There are 11 sites (11 newly located) within the Western Option.

Of those 11 sites, 2 sites (2 isolated artefacts) lie within the earthworks footprint.

Based on the above this option is awarded a rating of: Negligible (0).

6.3.2. Preferred Options

The assessments have been made by comparing the number of sites, both artefact scatters and isolated artefacts, located in each of the five options. Both the Quinns Road Option and the Western option contain no artefact scatters and relatively low numbers of isolated artefacts.

Based on the assessment of each option according to the VicRoads rating assessment criteria, the Quinns Road and the Western Options are of the least impact to Aboriginal Cultural Heritage (being negligible benefit or disbenefit [-1]). This assessment is based only on the desktop and standard assessment completed to date.

6.4. Preliminary Recommendations

The following table details the preliminary recommendations for both the previously and newly recorded sites located within both phase 1 and phase 2 of the assessment.

Despite these recommendations, it is considered likely that complex testing will locate other, previously unrecorded, Aboriginal places.

The final complex testing methodology will need to be discussed with and agreed upon by the Taungurung.

In addition to the above recommendations, cultural heritage values recording should be completed as part of the complex CHMP assessment. Cultural heritage values recording is essential to assess all Aboriginal cultural heritage within the activity area, regardless of preferred option/impact footprint.

- Cultural Heritage Values Recording (CHVR) should take place over all five options regardless of which option is chosen for the final bypass route. It was communicated to the CHA onsite that all five bypass options pass through significant landforms and sites which are of importance to the Taungurung.
- CHVR should include the invitation of Taungurung elders and include the facilitation of access to sites and landforms of significance, which are also easily accessible by road (i.e. <200m). These areas may include:
    - Monument Hill;
    - The sites located on Paynes Road (within the Western Option);
    - Section(s) of Dry Creek impacted by the activity area;
    - Areas of remnant and significant regrowth vegetation (including property 106783).
- CHVR must be completed by a qualified CHA with experience in CHVR and/or by a qualified anthropologist. Experience of a strong working relationship with the Taungurung is also essential for successful CHVR.

PART 3: OTHER INFORMATION

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APPENDICES

APPENDIX 1 – NOTICE OF INTENTION TO PREPARE A CULTURAL HERITAGE MANAGEMENT PLAN

Notice of Intent to prepare a Cultural Heritage Management Plan for the purposes of the *Aboriginal Heritage Act* 2006

This form can be used by the Sponsor of a Cultural Heritage Management Plan to complete the notification provisions pursuant to s.54 of the *Aboriginal Heritage Act* 2006 (the "Act").

For clarification on any of the following please contact Victorian Aboriginal Heritage Register (VAHR) enquiries on 1800-762-003.

SECTION 1 – Sponsor information (mandatory)

Sponsor (*natural person or body corporate seeking to undertake the activity*): VICROADS

ABN/ACN:

Contact name: JON BARTLETT

Postal Address: 51-63 LANSELL ST, BENDIGO, VIC 3555

Telephone Number 03-5434 5180 Fax number: 03 - 5434 5003

Mobile: 0447 578 932

Email Address: jon.bartlett@roads.vic.gov.au

Sponsor's agent (if relevant)

Company:

Contact name:

Postal Address:

Telephone Number Fax number:

Mobile:

Email Address:

SECTION 2 – Description of proposed activity and location

Project Name: KILMORE WALLAN BYPASS PLANNING STUDY

List the relevant municipal district/s (ie, Local Council or Shire): MITCHELL SHIRE

Clearly identify the proposed **activity** for which the cultural heritage management plan is to be prepared (ie, mining, road construction, housing subdivision):

ROAD CONSTRUCTION – PLANNING AND DESIGN

Clearly identify the **location** (such as listing cadastral information, attaching a copy of a title search, or indicating the street address):

SEE ATTACHED PLAN – MORE DETAIL TO FOLLOW AS THE PROJECT PROGRESSES.

Attach a map (to scale, with a north arrow and indicating the municipal district - if any) that clearly identifies the activity area and its boundaries in respect of which the cultural heritage management plan is to be prepared.

- Please ensure the map refers to existing roads and features, rather than proposed roads and features, and includes their names.
- Please ensure the map has the activity area outlined on it (this area should include all works relating to the proposed activity including location of temporary buildings, space for machinery, etc).
- The map should have a legend; at least three readily identifiable geographical locations (such as road intersections, parcel boundaries, or road/river crossings) and should state the map's projection.
- **Spatial data (ie a GIS file) containing the Activity Area will assist in the processing of your notification**. Please refer to "Lodging Spatial Data in the VAHR" on the AAV website for further information.

SECTION 3 – Cultural Heritage Advisor

If you would like a Cultural Heritage Advisor (a person who has the qualifications or experience [or both] required under s.189 of the Act) notified of the status of this Cultural Heritage Management Plan, please provide the following details for that person:

Name | *Company (if any)* | *Email address*

SECTION 4 – Expected start and finish date for the cultural heritage management plan

Start date 1 12 / 11 *Finish date* / /

SECTION 5 – Why are you preparing this Cultural Heritage Management Plan?

☑ A Cultural Heritage Management Plan is required by the Aboriginal Heritage Regulations 2007

What is the High Impact Activity as it is listed in the regulations? ROAD CONSTRUCTION EXCEEDING 100 METRES.

Is any part of the activity in an area of cultural heritage sensitivity, as listed in the regulations? **Yes** / **No** (*please circle*)

☐ Other reasons (Voluntary)

☐ An Environmental Effects Statement is required

☐ A Cultural Heritage Management Plan is required by the Minister for Aboriginal Affairs

SECTION 6 – List the relevant registered Aboriginal parties (if any)

This section is to be completed only where there is a registered Aboriginal party in relation to the management plan

TAUNGURUNG ABORIGINAL CORPORATION.

SECTION 7 – Signature of Sponsor

I certify that to the best of my knowledge and belief that the information supplied is correct and complete.

Signed: _____ *Date:* 16 / 11 / 11

[Sponsor]

SECTION 8 – Notification checklist

☑ Ensure appropriate attachment/s are completed and attached to this notification (see section 2 of this form).

Please ensure this notice and all attached items are sent to the:

Deputy Director
Aboriginal Affairs Victoria
Department of Planning and Community Development
GPO Box 2392
MELBOURNE VIC 3001

OR ***Email: vahr@dpcd.vic.gov.au***

Notes:

- **Ensure that any relevant registered Aboriginal party/s is also notified. A copy of this notice may be used for this purpose. (A registered Aboriginal party is allowed up to 14 days to provide a written response to a notification specifying whether or not it intends to evaluate the management plan.)**
- **In addition to notifying the Deputy Director and any relevant registered Aboriginal party/s, a Sponsor must also notify any owner and/or occupier of any land within the area to which the management plan relates. A copy of this notice may be used for this purpose.**

APPENDIX 2 – NOTICE FROM EACH RELEVANT REGISTERED ABORIGINAL PARTY TO THE SPONSOR SPECIFYING WHETHER IT INTENDS TO EVALUATE THE PLAN

Thursday, 17 November 2011

Jon Bartlett
Vic Roads
57 Lansell St
Bendigo

Dear Jon

Re: **Notice of Intent – Kilmore Wallan Bypass Planning Study**

I received your Notice of Intent via the email on the 16/11/11, to prepare a Cultural Heritage Management Plan (CHMP) for the above project.

Having reviewed this Notice I wish to advise that we, Taungurung Clans Aboriginal Corporation, are intending to evaluate this CHMP.

Further communication will need to take place in relation to the timing and the method of this project. We would like to have an inception meeting as soon as possible . I have attached a schedule of fees for TCAC. It is also the requirement of TCAC to have a minimum of two Cultural Heritage officer (one male and one female) for all field work .

If you have any queries or require further information, please do not hesitate to contact me on 03 57811134 or via TCAC's email taungurung@gmail.com

Yours Sincerely

Kym Monohan
Executive Officer

Postal Address: 13 Bourke St Kilmore , Victoria 3764
Ph: 03 57811134 Mobile: 0439430264
E-mail: taungurung@gmail.com

APPENDIX 3 – GLOSSARY

Absolute Dating: Is the process of determining a specific date for an archaeological or paleontological site or artefact. Some archaeologists prefer the terms chronometric or calendar dating, as use of the word "absolute" implies a certainty and precision that is rarely possible in archaeology. See also relative dating.

Adze: A stone tool made on flakes with steep flaking along the lateral margins and hafted for use as a wood working tool.

Alluvial Terrace: A terraced embankment of loose material adjacent to the sides of a river valley.

Amorphous: Showing no definite crystalline structure.

Angle Of Applied Force: The angle at which the force of flaking is applied to a core.

Angular fragment: A piece of stone that is blocky or angular.

Anisotropic: Having some physical properties which vary in different directions.

Anvil: A portable stone, used as a base for working stone tools. Anvils most frequently have a small circular depression in the centre which is the impact damage from where cores were held while being struck by a hammer stone. An anvil may be a multi-functional tool also used as a grindstone and hammer stone.

Archaeological Context: The situation or circumstances in which a particular item or group of items is found.

Archaeological site types: The archaeological site types encountered in Australia can be divided into three main groups:

Historical archaeological site: An archaeological site formed since the European settlement containing physical evidence of past human activity (for example a structure, landscape or artefact scatter).

Aboriginal contact site: A site with a historical context such as an Aboriginal mission station or provisioning point, or a site that shows evidence of Aboriginal use of non-traditional Aboriginal materials and technologies (e.g. metal or ceramic artefacts).

Aboriginal prehistoric archaeological site: A site that contains physical evidence of past Aboriginal activity, formed or used by Aboriginal people before European settlement.

These sites may be:

Artefact scatters	Scarred Trees
Isolated artefacts	Mounds
Rock shelters	Rock art
Burial Structures	Hearths
Shell middens	Quarries
Ethnographic Items	Grinding Patches

Archaeology: The study of the past through the systematic recovery and analysis of material culture. Archaeology relies heavily upon science and cognate disciplines to provide interpretations of the past life ways of the peoples under investigation.

Artefact: any movable object that has been utilised modified or manufactured by humans.

Artefact scatter: A surface scatter of cultural material. Aboriginal artefact scatters are often defined as being the occurrence of five or more items of cultural material within an area of about 10m x 10m.

Australian Height Datum: The datum used to determine elevations in Australia. The AHD is based on the mean coastal sea level being zero metres AHD.

Australian Small Tool Tradition: Stone tool assemblages found across Australia, with the exception of Tasmania, dating between 8000 BP to European contact. The tool types include hafted implements (e.g. Bondi points), bifacial and unifacial points, geometric microliths, and blades. The assemblage is named for its distinct lack of larger 'core tools' which characterised earlier assemblages.

Axe: A stone-headed axe or hatchet or the stone head alone, characteristically containing two ground surfaces which meet at a bevel.

Backed Artefact: Backed artefacts are flakes retouched until they have one or more steep and relatively thick surfaces that are covered with negative scars. Since the backing retouch was accomplished with a bipolar and/or anvil-rested knapping technique, these retouched surfaces typically show negative scars originating from two directions, a pattern that is sometimes described as "double backing". Backed pieces are a feature of the 'Australian small tool tradition', dating from about 8000 BP in southern Australia.

Bearing: An angle measured clockwise from a north line of 0° to a given surveyed line.

Bevelled Edge: An edge which has had its angle altered.

Biface: A flaked stone artefact which has flake scars on both ventral and dorsal surfaces.

Bipolar: Technique of knapping where a core is rested on an anvil and force applied to the core at an angle close to 90o in the direction of the core's contact with the anvil.

Blade: A flake at least twice as long as it is wide.

Blaze: A mark carved in a tree trunk at about breast height. This type of mark was traditionally used by explorers or surveyors to indicate a route of passage in a certain direction, or a particular camp location.

Bulb of Percussion: Is a convex protuberance located at the proximal end of the ventral surface of a flake, immediately below the ring crack.

Bulbar Scar: The negative scar on a core that results from the bulb of percussion on the extracted flake.

Burial site: Usually a sub-surface pit containing human remains and sometimes associated artefacts. Human burials can also occur above the ground surface within rock shelters or on tree platform burials.

Burin: A stone implement roughly rectangular in shape with a corner flaked to act as a point for piercing holes.

Cadastral: From the Latin, a cadastre is a comprehensive register of the real property of a country, and commonly includes details of the ownership, the tenure, the precise location (some can include GPS coordinates), the dimensions (and area), the cultivations if rural and the value of individual parcels of land.

Chert: Is a fine-grained silica-rich microcrystalline, cryptocrystalline or microfibrous sedimentary rock that may contain small fossils. It varies greatly in colour (from white to black), but most often manifests as gray, brown, greyish brown and light green to rusty red. Its colour is an expression of trace elements present in the rock, and both red and green are most often related to traces of iron (in its oxidized and reduced forms respectively).

Cleavage Plane: A plane of weakness or preferred fracture in a rock.

Composite: An artefact made up of two or more parts joined together.

Conchoidal Fracture: describes the way that brittle materials break when they do not follow any natural planes of separation. Materials that break in this way include flint and other fine-grained minerals, as well as most amorphous solids, such as obsidian and other types of glass. Conchoidal fractures often result in a curved breakage surface that resembles the rippling, gradual curves of a mussel shell; the word "conchoid" is derived from the word for this animal. A swelling appears at the point of impact called the bulb of percussion. Shock waves emanating outwards from this point leave their mark on the stone as ripples. Other conchoidal features include small fissures emanating from the bulb of percussion.

Conjoin: A physical link between artefacts broken in antiquity. A conjoin set refers to a number of artefacts which can be been refitted together.

Contours: Lines joining points of equal height on a topographic map. Contour lines that are relatively close together depict an area of steep terrain on the earth's surface; whereas lines depicted a distance apart represent flat areas on the earth's surface.

Core: An artefact from which flakes have been detached using a hammer stone. Core types include single platform, multi-platform, and bipolar forms.

Cortex: Weathered outer surface of rock, usually chemically altered.

Crazing: Production of visible surface cracks by uncontrolled heating of rock.

Crown land: Technically belonging to the reigning sovereign, is a class of public land, provided for the enjoyment and benefit of the people.

Crushing: Abrasion, small fracturing and the formation of ring cracks, usually along an artefacts edge.

Cryptocrystalline: Rock in which the Crystal structure is too fine for clear resolution with an optical microscope.

Aboriginal Cultural Heritage means Aboriginal Places, Aboriginal Objects and Aboriginal Human Remains that are connected with the cultural life of the Aboriginal people of the activity area and that are of particular significance to those Aboriginal people in accordance with their traditions and customs.

Aboriginal Human Remains means the whole or part of the bodily remains of an Aboriginal person but does not include a body, or the remains of a body, buried in a public cemetery (within the meaning of the *Cemeteries and Crematoria Act 2003 (Vic)*) that is still used for the interment of human remains.

Aboriginal Object means an object or artefact that relates to the Aboriginal occupation of the land and is of Cultural Heritage Significance to the Aboriginal people of Victoria.

Aboriginal Place means a site, place or area of land or of water that is of Cultural Heritage Significance to the Aboriginal people of Victoria.

Cultural Heritage means Aboriginal Cultural Heritage.

Cultural significance: Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations (Australia ICOMOS Burra Charter Article 1.2).

Cultural Materials: The products of human behaviour, such as stone artefacts or food debris.

Datum: In surveying and geodesy, a datum is a reference point or surface against which position measurements are made, and an associated model of the shape of the earth for computing positions. Horizontal datum's are used for describing a point on the earth's surface, in latitude and longitude or another coordinate system. Vertical datum's are used to measure elevations or underwater depths. The previous datum used in Australia was known as the Australian Geodetic Datum (AGD). However, this was restricted because it was defined to best fit the shape of the earth in the Australian region only. The change in datum's had a major consequence to all coordinates. Both latitudes/longitudes and eastings/northings were shifted by approximately 200 metres in a north-easterly direction.

Debitage: The term debitage refers to the totality of waste material produced during lithic reduction and the production of chipped stone tools. This assemblage includes, but is not limited to, different kinds of lithic flakes, shatter, and production errors and rejects.

Decortication: Removal of cortex from a stone artefact.

Dendrochronology: Is the method of scientific dating based on the analysis of tree-ring growth patterns.

Denticulated: Describes a stone tool which has one edge worked into a series of notches giving a toothed or serrated cutting edge.

Discard: The movement of an object from its systemic context to an archaeological context.

Dispute means a disagreement relevant to the obligations of a Party arising under this Plan.

Distal: The end of a flake opposite the bulb; the area of a flake containing its termination.

Direct Freehand Knapping: A method of holding the material to be flaked in the unsupported hand and directing the hammer stone with the other hand.

Dorsal Surface: The face of a flake which was the core surface prior to flake removal and may therefore retain negative flake scars or cortex.

Edge ground implement: A tool, such as an axe or adze which has been flaked to a rough shape and then ground against another stone to produce a sharp edge.

Edge modification: Irregular small flake scarring along one or more margins of a flake, flaked piece or core, which is the result of utilisation/retouch or natural edge damage. Edge damage refers to the removal of small flakes from the edge of an artefact.

Elevation: The height above mean sea level.

Eraillure Flake: A flake formed between the bulb of force and the bulbar scar. Sometimes the eraillure flake adheres to the core in the bulbar scar. The eraillure flake leaves no scar on the core, but always leaves a scar on the ventral surface of the flake. The eraillure flake is convex / concave (like a meniscus lens), has no distinct features on the "dorsal face", but may contain compression rings on the bulbar face.

Ethno-archaeology: The study of human behaviour and of the material culture of living societies in order to learn how items enter the archaeological record, thus allowing the formation of hypotheses as to how items of material culture entered the archaeological record in pre-history.

Ethnographic Site: Often overlooked in cultural heritage management, an ethnographic site is one which has particular spiritual or ritual significance to a particular group of people. They are more commonly referred to as 'dreaming sites' in Australia, and most appropriately recorded by someone with anthropological qualifications.

Excavation: The systematic recovery of archaeological data through the exposure of buried sites and artefacts. Excavation is a destructive process, and hence it is accompanied by comprehensive recording of every aspect.

Excavation Report: Once an excavation has finished, a report outlining the reasons, aims, methods used and findings from the excavation as well as some conclusions drawn from interpreting the artefacts.

Faceted Platform: A platform which is created by the removal of a number of flake scars.

Feather Termination: A termination of the fracture plane that occurs gradually (i.e. there are no sharp bends in the plane), producing a thin, low angled distal margin.

Feature: In excavations, a feature is something that a human made in the past that has not been or cannot be moved. Examples of this would be a house floor or a hearth (fire pit). When archaeologists are excavating, they often come across features.

Flake: A piece of stone removed from a core during the process of knapping by the application of external force, which characteristically shows traces of the processes of removal: concentric fracture ripples and a bulb of percussion. Flakes with a length: breadth ratio of 2:1 or more are usually referred to as blades. In some cases flakes are the result of shaping a block of stone into a tool of some kind. When removed from a prepared core, however, they were usually used as blanks for making tools. Primary flakes (also called decortication flakes) are large, thick flakes struck off a core when removing the cortex and preparing it for working. Secondary flakes (also called reduction flakes) are large flakes struck off a piece to reduce its size or thickness. Tertiary flakes are small flakes struck off when shaping the detail of a piece to make a specific tool. Retouching flakes are tiny, extremely thin flakes pinched or pushed off a piece to finish it, to fine-shape part of the surface, sharpen it, or resharpen it. Notching flakes are produced when putting hafting notches in stone tools.

Force: The quantity of energy exerted by a moving body; power exerted; energy exerted to move another body from a state of inertia.

Formal tool: an artefact that has been shaped by flaking, including retouch, or grinding to a predetermined form for use as a tool. Formal tools include scrapers, backed pieces, adzes and axes.

Fracture: Irregular surface produced by breaking a mineral across rather than along cleavage planes.

GDA94: Geocentric Datum of Australia. A spatial reference system which is universally implemented across Australia. The Geocentric Datum of Australia (GDA) is a coordinate reference system that best fits the shape of the earth as a whole. It has an origin that coincides with the centre of mass of the earth, hence the term 'geocentric'

Geodesy: The science and mathematical calculations of the shape and size of the Earth.

Geographic coordinates: a geographic coordinate system enables every location on the earth to be specified, using mainly a spherical coordinate system. There are three coordinates: latitude, longitude and geodesic height.

Geographic Information Systems: Is any system for capturing, storing, analysing, managing and presenting data and associated attributes which are spatially referenced to Earth. GIS is a system or tool or computer based methodology to collect, store, manipulate, retrieve and analyse spatially (georeferenced) data.

Geometric microlith: A small tool that has been fashioned from breaking apart a microblade. The piece is then retouched or backed and a small tool formed.

Gilgai soils: Soils with an undulating surface, presenting as a pattern of mounds and depressions. Gilgai soils contain swelling clays, which shrink and swell with alternate drying and wetting cycles. They display strong cracks when dry. Elements of the soil circulate and move during the shrink-swell process.

Global Positioning System: GPS is a satellite based navigation system originally developed by the United State's Department of Defence. A GPS receiver calculates a position by measuring distances to four or more satellites of a possible 24. These orbit the Earth at all times.

Grain: A description of the size of particles or crystals in rocks or sand. Coarse grained rocks have particles or crystals which are large (1mm or more), and fine grained rocks have particles which are small (0.1mm or less).

Greywacke: Hard fine-grained rock of variable composition containing some quartz and feldspar but mostly very fine particles of rock fragments.

Graticule: A network of crossing lines on a map representing parallels of latitude and meridians of longitude as defined by the projection.

Grid: The division of an archaeological site into small squares that denote different areas of excavation, making it easier to measure and document the site.

Grid coordinates: A point on a map given as an easting and northing reading. The values are given in metres.

Grindstone: The abrasive stone used to abrade another artefact or to processes food. Upper and lower grind stones used to grind plants for food and medicine and/or ochre for painting. A hammer stone sometimes doubles as a hammer stone and/or anvil.

Hammer stone: a piece of stone, often a creek/river pebble/cobble, which has been used to detach flakes from a core by percussion. During flaking, the edges of the hammer stone become 'bruised' or crushed by impact with the core. Hammer stones may also be used in the manufacture of petroglyphs.

Hand-Held: Description of the method used to immobilize the rock during knapping, it which it is held in one hand and struck by a hammer stone held in the other hand.

Hardness: Resistance of material to permanent deformation.

Hearth: Usually a sub-surface feature found eroding from a river or creek bank or a sand dune – it indicates a place where Aboriginal people cooked food. The remains of hearth are usually identifiable by the presence of charcoal and sometimes clay balls (like brick fragments) and hearth stones. Remains of burnt bone or shell are sometimes preserved with a hearth.

Heat treatment: The thermal alteration of stone (including silcrete) by stone workers to improve its flaking qualities.

Heritage: The word 'heritage' is commonly used to refer to our cultural inheritance from the past that is the evidence of human activity from Aboriginal peoples through successive periods of later migration, up to the present day. Heritage can be used to cover natural environment as well, for example the Natural Heritage Charter. Cultural heritage can be defined as those things and places associated with human activity. The definition is very broad, and includes Indigenous and historic values, places and objects, and associated values, traditions, knowledge and cultures.

Heritage Place: A place that has aesthetic, historic, scientific or social values for past, present or future generations – 'this definition encompasses all cultural places with any potential present or future value as defined above'. Heritage place can be subdivided into Aboriginal place and historical place, for the purposes of this document.

Hinge Termination: A fracture plane that turns sharply toward the free surface of the core immediately prior to the termination of the fracture. The bend of the ventral surface is rounded and should not be confused with a step termination.

Historic place: A place that has some significance or noted association in history.

Homogeneous: Uniform structure and property throughout the material.

Hunter-gatherer: A member of a society who gains their subsistence in the wild on food obtained by hunting and foraging.

Hydrology: Is the study of the movement, distribution, and quality of water throughout the Earth.

ICOMOS (International Council on Monuments and Sites): ICOMOS is a non-government professional organisation closely linked to UNESCO, with national committees in some 100 countries with the headquarters in France. ICOMOS promotes expertise in the conservation of cultural heritage. It was formed in 1965, and has a responsibility to advise UNESCO in the assessment of sites proposed for the World Heritage List. Australia ICOMOS was formed in 1976. Its fifteen member executive committee is responsible for carrying out national programmes and participating in decisions of ICOMOS.

Incipient Crack: A crack or line of weakness in the rock.

Inclusion: An impurity or foreign body in the stone that reduces the homogeneity of the rock.

Indirect Percussion: Punch technique.

Interpretation: The process of explaining the meaning or use of an artefact.

Inward Force: Force applied to the platform, and directed into the body of the core.

Isolated artefact: The occurrence of less than five items of cultural material within an area of about 100 sq. metres. It/they can be evidence of a short-lived (or one-off) activity location, the result of an artefact being lost or discarded during travel, or evidence of an artefact scatter that is otherwise obscured by poor ground visibility.

Knapper: A person who creates stone artefacts by striking rocks and causing them to fracture.

Knapping Floor: The debris left on one spot and resulting from the reduction of one block of raw material. A knapping location is a site comprised of one or more knapping floors.

Koori: Koori is an Aboriginal term used to describe Indigenous people from Victoria and southern New South Wales.

Lateral Margins: The margins of a flake either side of the percussion axis.

Latitude: The angular distance along a meridian measured from the Equator, either north or south.

Layer: The layer is the level in which archaeologists dig. All excavation sites have different numbers of layers. Archaeologists try to work out when they are moving to a new layer by cultural or man-made clues like floors, but sometimes they will go by changes in soil colour or soil type.

Longitude: The angular distance measured from a reference meridian, Greenwich, either east or west.

Longitudinal Cross Section: The cross-section of a flake along its percussion axis.

Magnetic north: The direction from a point on the earth's surface to the north magnetic pole. The difference between magnetic north and true north is referred to as magnetic declination.

Maintenance: The process of keeping an artefact in a particular state or condition. An edge which is being used is maintained by flaking off blunted portions. A core is maintained by keeping its characteristics within the limits required for certain types of flaking.

Manufacture: The process of making an artefact.

Manuport: Foreign fragment, chunk or lump of stone that shows no clear sings of flaking but is out of geological context and must have been transported to the site by people.

Map scale: The relationship between a distance on a map and the corresponding distance on the earth's surface.

Margin: Edge between the ventral and dorsal surfaces of a flake.

Material culture: A term that refers to the physical objects created by a culture. This could include the buildings, tools and other artefacts created by the members of a society.

Mercator projection: A conformal cylindrical projection tangential to the Equator. Rhumb lines on this projection are represented as straight lines.

Meridian: A straight line connecting the North and South Poles and traversing points of equal longitude.

MGA94: The Universal Transverse Mercator coordinates of eastings, northings, and zones generated from GDA94 are called Map Grid of Australia 1994 coordinates.

Microblade: A very small narrow blade.

Microcrystalline: Rocks in which the crystals are very small but visible in an optical microscope.

Microwear: Microscopic use-wear.

Moiety: A moiety is a half. Tribes were composed of two moieties (halves) and each clan belonged to one of the moieties.

Mound: These sites, often appearing as raised areas of darker soil, are found most commonly in the volcanic plains of western Victoria or on higher ground near bodies of water. The majority were probably formed by a slow buildup of debris resulting from earth-oven cooking: although some may have been formed by the collapse of sod or turf structures. It has also been suggested some were deliberately constructed as hut foundations.

Morphology: The topographical characteristics of the exterior of an artefact.

Mosaic: A number of continuous aerial photographs overlapped and joined together by way of 'best fit' to form a single non-rectified image.

Negative Bulb of Force: The concave surface left after a flake has been removed. See Bulbar Scar.

Notched: Serration or series of alternating noses and concavities.

Obtrusiveness: How visible a site is within a particular landscape. Some site types are more conspicuous than others. A surface stone artefact scatter is generally not obtrusive, but a scarred tree will be.

Overhang: The lip on a core or retouched flake, caused by the platform being undercut by the bulb on the flake removed.

Overhang Removal: The act of brushing or tapping the platform edge in order to remove the overhang in a series of small flakes.

Overlays: The Victorian Planning Provisions establish a number of different Overlays to show the type of use and development allowed in a municipality. Heritage Overlays will list places of defensible cultural heritage significance.

Patina: An alteration of rock surfaces by molecular or chemical change (but not by attrition, hence not to be confused with sand blasting).

Pebble/cobble: Natural stone fragments of any shape. Pebbles are 2-60 mm in size and cobbles are 60-200 mm in size.

Percussion: The act of hitting a core with a hammer stone to strike off flakes.

Percussion Flaking: The process of detaching flakes by striking with a percussor.

Percussion Length: The distance along the ventral surface from the ring crack to the flake termination.

Place: Place means a site, area, land, landscape, building or other works, group of buildings or other works, and may include components, contents, spaces and views. (Australia ICOMOS Burra Charter Article 1.1)

Plane of Fracture: The fracture path which produces the ventral surface of a flake.

Planning scheme: The legal instrument that sets out the provisions for land use, development, and protection in Victoria. Every municipality in Victoria has a planning scheme.

Platform: Any surface to which a fabricator is applied when knapping.

Platform Angle: 1. The angle between the platform and core face on a core. 2. The angle between the platform and dorsal surface on a flake. 3. The angle between the platform and flaked surface on a retouched flake.

Platform Preparation: Alteration of the portion of the platform which receives the fabricator by grinding, polishing or flaking. Removal of small flake scars on the dorsal edge of a flake, opposite the bulb of percussion. These overhang removal scars are produced to prevent a platform from shattering.

Platform removal flake: A flake which contains a platform on the dorsal surface.

Point of force application: The area of the platform in contact with the indenter during knapping. Also known as point of contact.

Positive Bulb of Force: Bulb of force.

Post-depositional processes: The natural or cultural processes which may differentially impact upon archaeological sediments after they deposited.

Potlids: A concave-convex or plano-convex fragment of stone. Potlids never have a ringcrack or any other feature relating to the input of external force. They often have a central protuberance which indicates an internal initiation to the fracture. Potlids are the result of differential expansion of heated rock.

Pre-contact: Before contact with non-Aboriginal people.

Post-contact: After contact with non-Aboriginal people.

Pressure Flaking: The process of detaching flakes by a pressing force. Also Static Loading.

Primary decortication: The first removal of cortex from a core, creating a primary decortication flake. The flake will have a dorsal surface covered entirely by cortex.

Procurement: Obtaining raw materials.

Provenance: The location of an artefact or feature both vertically and horizontally in the site. Archaeologists record the provenance of artefacts and features in their field books and on the artefact bag. Provenance is important because it gives archaeologists the history and context of an object, i.e., exactly where it was found on the site.

Punch: An object which is placed on a core or retouched flake and receives the blow from the percussor.

Quarry: A place where humans obtained stone or ochre for artefact manufacture. A place where stone or ochre is exposed and has been extracted by Aboriginal people. The rock types most commonly quarried for artefact manufacture in Victoria include silcrete, quartz, quartzite, chert and fine-grained volcanics such as greenstone.

Quartz: A form of silica.

Quartzite: Sandstone in which the quartz sand grains are completely cemented together by secondary quartz deposited from solution.

Radiocarbon Dating: Also called carbon dating and C-14 dating. It is used to work out the approximate age of an artefact by measuring the amount of carbon 14 it contains. This dating technique is not perfect. It can only be used on organic remains (typically wood or charcoal). Also radiocarbon is only accurate to ±50 years, and cannot accurately date objects more than 50,000 years old.

Redirecting Flake: A flake which uses an old platform as a dorsal ridge to direct the fracture plane.

Redirection: Rotation of a core and initiation of flaking from a new platform situated at right angles to a previous platform. It produces a redirecting flake.

Reduction: Process of breaking down stone by either flaking or grinding.

Reduction Sequence: A description of the order in which reduction occurs within one block of stone.

Rejuvenate: The process of flaking in such a way that further reduction is possible or is easier. This usually involves removing unwanted features, such as step terminations, or making unsuitable characteristics more favourable, for example changing the platform angle. A Rejuvenation flake is a flake that has been knapped from a core solely for the purpose of preparing a new platform and making it easier to get flakes off a core, as it reduces that angle between platform and core surface.

Relative Dating: A general method of dating objects, which uses their relation to other objects. For example, artefacts found in lower layer are typically older than artefacts in higher layer.

Relic: Deposit, object or material evidence of human past.

Replica: A copy of a prehistoric artefact made by a modern investigator for research purposes.

Replicative Systems Analysis: A method of analysing prehistoric artefacts by creating exact replicas of all the manufacturing debris.

Reserves: The word 'reserve' derives from the land being reserved for a particular public use. Crown land retained in public ownership, but not reserved is termed unreserved Crown land.

Resharpening: The process of making a blunt edge sharper by grinding or flaking.

Retouched Flake: A flake that has subsequently been re-flaked. A flake, flaked piece or core with intentional secondary flaking along one or more edges.

Retouching: The act of knapping a flake into a retouched flake.

Ridge: The intersection of two surfaces, often at the junction of two negative scars.

Ring Crack: A circular pattern of micro-fissures penetrating into the artefact around the Point of Force Application and initiating the fracture. It appears on the ventral surface usually as a semi-circular protuberance on the edge of the platform.

Rock art: Paintings, engravings and shallow relief work on natural rock surfaces. Paintings were often produced by mineral pigments, such as ochre, combined with clay and usually mixed with water to form a paste or liquid that was applied to an unprepared rock surface.

Run: A large area of land in which squatters could pasture their stock without a lot of fencing necessary. Employed shepherds looked after various areas of the runs. Runs became consolidated pastoral holdings. Many of the runs were about 25 sq miles in area and later became parishes.

Sand: Quartz grains with only a small content of other materials. Grain size 2.00 mm to 0.05 mm.

Sandstone: A sedimentary rock composed of sand, and with only a small amount of other material, which has been consolidated by argillaceous or calcareous bonding of grains.

Sahul: This is the name given to the continent when Australia and New Guinea were a single landmass during the Pleistocene era. During this period, sea levels were approximately 150 metres lower than present levels.

Scar: The feature left on an artefact by the removal of a flake. Includes negative bulb, negative ring crack and negative termination.

Scarred tree: Scars on trees may be the result of removal of strips of bark by Aborigines e.g. for the manufacture of utensils, canoes or for shelter; or resulting from small notches chopped into the bark to provide hand and toe holds for hunting possums and koalas. Some scars may be the result of non-Aboriginal activity, such as surveyors' marks.

Scraper: A flake, flaked piece or core with systematic retouch on one or more margins.

Screen: A screen is used by an archaeologist to sift excavated soil in search of small artefacts like nails, ceramic fragments, and organic material like seeds, shell, and bone. Can be either manual (hand held) or mechanical.

Secondary Decortication: The removal of cortex from a core after the primary decortication flake. A secondary decortication flake is one that has both cortex and flake scars on the dorsal surface.

Selection: Runs were subdivided into selections for farming, agriculture and grazing homesteads. After a period of yearly rental payments, the selector could often obtain freehold ownership.

Shell midden: A surface scatter and/or deposit comprised mainly of shell, sometimes containing stone artefacts, charcoal, bone and manuports. These site types are normally found in association with coastlines, rivers, creeks and swamps – wherever coastal, riverine or estuarine shellfish resources were accessed and exploited.

Sieve: See Screen.

Significance: Significance is a term used to describe an item's heritage value. Values might include natural, Indigenous, aesthetic, historic, scientific or social importance.

Silica: Silicon dioxide.

Silcrete: A silicified sediment.

Siliceous: Having high silica content.

Site: An area designated for archaeological exploration by excavation and/or survey usually due to the presence of a concentration of cultural material.

Step Termination: A fracture plane that turns sharply towards the free surface of the core immediately prior to the termination of the fracture. The bend of the ventral surface is sharp, often a right angle.

Stratification: Over time, debris and soil accumulate in layers (strata). Colour, texture, and contents may change with each layer. Archaeologists try to explain how each layer was added--if it occurred naturally, deliberately (garbage), or from the collapse of structures-and they record it in detailed drawings so others can follow. Stratigraphy refers to the interpretation of the layers in archaeological deposits. Usually, the artefacts found on top are the youngest (most recent), while those on the bottom are the oldest.

Structures (Aboriginal): Can refer to a number of different site types, grouped here only because of their relative rarity and their status as built structures. Most structures tend to be made of locally available rock, such as rock arrangements (ceremonial and domestic), fish traps, dams and cairns, or of earth, such as mounds or some fish traps.

Surface Site: A site where artefacts are found on the ground surface.

Taphonomy: The study of the depositional and preservation processes which produce archaeological or paleontological material.

Termination: The point at which the fracture plain reaches the surface of a core and detaches a flake.

Tertiary Flake: A flake without cortex.

Theodolite: Instrument used by a surveyor for measuring horizontal and vertical angles.

Thermal Treatment: Alteration of siliceous materials by controlled exposure to heat.

Thickness: Measurement of the distance between the dorsal and ventral surfaces of a flake.

Thumbnail scraper: A convex edged scraper that is small, generally the size of a thumbnail.

Tool: Any object that is used.

Topographic map: A detailed representation of cultural, hydrographic relief and vegetation features. These are depicted on a map on a designated projection and at a designated scale.

Transverse Cross Section: The cross section of a flake at 90^{o} to the length.

Transverse Mercator projection: A projection similar to the Mercator projection, but has the cylinder tangent at a particular meridian rather than at the equator.

True north: The direction to the Earth's geographic North Pole.

Tula: A flake with a prominent bulb, large platform and platform/ventral surface angle of about 130o, which is retouched at the distal end. Not to be confused with a Tula Adze.

Tula Adze: A composite tool observed ethnographically, consisting of a stone artefact (often a Tula), a wooden handle and resin.

Unidirectional Core: Core from which flakes were removed from one platform surface and in only one direction.

Unifacial: Artefact flaked on only one side.

Unit: Archaeologists lay out a grid over a site to divide it into units, which may vary in size, and then figure out which units will be dug. Archaeologists dig one unit at a time. Keeping track of specific measurements between artefacts and features gives archaeologists the ability to draw an overall map looking down on the site (called a floor plan), to get the bigger picture of the site.

Use-wear: Damage to the edges or working surfaces of tools sustained in use.

Ventral Surface: The surface of a flake created when it is removed and identified mainly by the presence of a ring crack.

VicRoads means the Roads Corporation and its agents (including contractors).

Visibility: The degree to which the surface of the ground can be seen. This may be influenced by natural processes such as wind erosion or the character of the native vegetation, and by land-use practices, such as ploughing or grading. Visibility is generally expressed in terms of the percentage of the ground surface visible for a project area.

Works Area means the area in which any works are taking place.

APPENDIX 4 – GAZETTEER

The following is the gazetteer of the newly recorded Aboriginal Cultural Heritage sites, located during the first and second phases of the KWB.

Table 20: Site Gazetteer.

APPENDIX 6 - OTHER INFORMATION

PHOTOGRAPHS OF THE ABORIGINAL CULTURAL HERITAGE LOCATED DURING PHASE 1 AND PHASE 2 OF THE STANDARD ASSESSMENT

Following are representative photos for each previously recorded site within the activity area:

Photograph deliberately removed.

Figure 34: Arrow showing the location of ARTC Passing Lane 4 AS 1 (VAHR 7823-0142).

Photograph deliberately removed.

Figure 35: Facing south. The image shows the location of ARTC Passing Lane 4 AS 1 (VAHR 7823-0142).

Photograph deliberately removed.

Figure 36: Facing north. The image shows the location of Kilmore East 1 (VAHR 7823-0179).

Photograph deliberately removed.

Figure 37: Facing south. Location of Kilmore East 2 (VAHR 7823-0180).

Following are representative photos for each newly recorded site within the activity area:

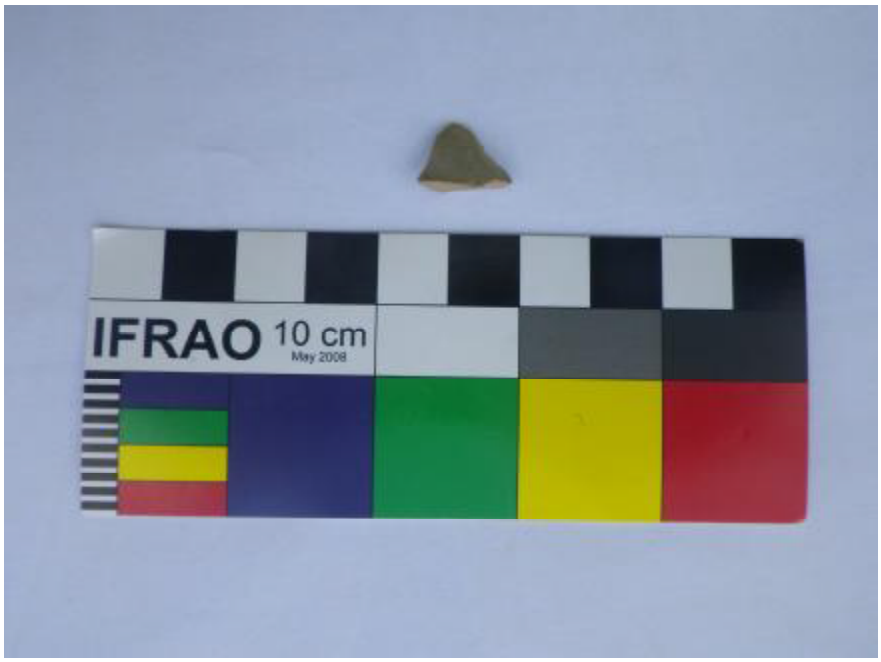

Figure 38: Silcrete artefact that comprises Broadford Kilmore East Road IA 1 (VAHR 7823-0261).

Figure 39: Two silcrete flakes that comprise Broadhurst Lane Kilmore IA 1 (VAHR 7923-0332).

Figure 40: Silcrete artefact that comprises Dry Creek Kilmore IA 1 (VAHR 7823-0262).

Figure 41: Silcrete flake that comprises Dry Creek Kilmore IA 2 (VAHR 7823-0263).

Figure 42: Silcrete flake that comprises Dry Creek Kilmore IA 3 (VAHR 7923-0318).

Figure 43: Silcrete flake that comprises Dry Creek Kilmore IA 4 (VAHR 7823-0264).

Figure 44: Silcrete flake that comprises Dry Creek Kilmore IA 5 (VAHR 7823-0265).

Figure 45: Silcrete flake that comprises Dry Creek Kilmore IA 6 (VAHR 7923-0319).

Figure 46: Silcrete flake that comprises Dry Creek Kilmore IA 7 (VAHR 7923-0320).

Figure 47: Sample of artefacts that comprise Dry Creek Kilmore IA 8 (VAHR 7823-0269).

Figure 48: Sample of artefacts that comprise Dry Creek Kilmore IA 9 (VAHR 7823-0270).

Figure 49: Two silcrete flakes that comprise Dry Creek Kilmore IA 10 (VAHR 7923-0323).

Figure 50: Representative sample of artefacts that comprise Dry Creek Kilmore IA 11 (VAHR 7923-0324).

Figure 51: Quartzite flake and silcrete flake artefacts that comprise Dry Creek Kilmore IA 12 (VAHR 7923-0325).

Figure 52: Representative sample of the artefacts that comprise Dry Creek Kilmore IA 13 (VAHR 7923-0326).

Figure 53: Representative sample of artefacts that comprise Dry Creek Kilmore IA 14 (VAHR 7923-0327).

Figure 54: Representative sample of the artefacts that comprise Dry Creek Kilmore IA 15 (VAHR 7823-0271).

Figure 55: Silcrete flake that comprises Dry Creek Kilmore IA 16 (VAHR 7823-0272).

Figure 56: Representative sample of the silcrete flakes that comprise Dry Creek Kilmore IA 17 (VAHR 7823-0273).

Figure 57: Representative sample of artefacts that comprise Dry Creek Kilmore IA 18 (VAHR 7823-0274).

Figure 58: Sample of artefacts that comprise Dry Creek Kilmore IA 19 (VAHR 7823-0275).

Figure 59: Dry Creek Kilmore IA 20 (VAHR 7923-XXXX).

Figure 60: Dry Creek Kilmore IA 21 (VAHR 7923-XXXX).

Figure 61: Sample of artefacts that comprise Dry Creek Kilmore IA 22 (VAHR 7923-XXXX).

Figure 62: Dry Creek Kilmore IA 23 (VAHR 7923-XXXX).

Figure 63: Dry Creek Kilmore IA 24 (VAHR 7923-XXXX).

Figure 64: Representative sample of artefacts that comprise Dry Creek Kilmore 1 (VAHR 7823-0279).

Figure 65: Representative sample of the artefacts that comprise Dry Creek Kilmore 2 (VAHR 7823-0280).

Figure 66: Representative sample of artefacts that comprise Dry Creek Kilmore 3 (VAHR 7823-0285).

Figure 67: Representative sample of artefacts that comprise Dry Creek Kilmore 3 (VAHR 7823-0285).

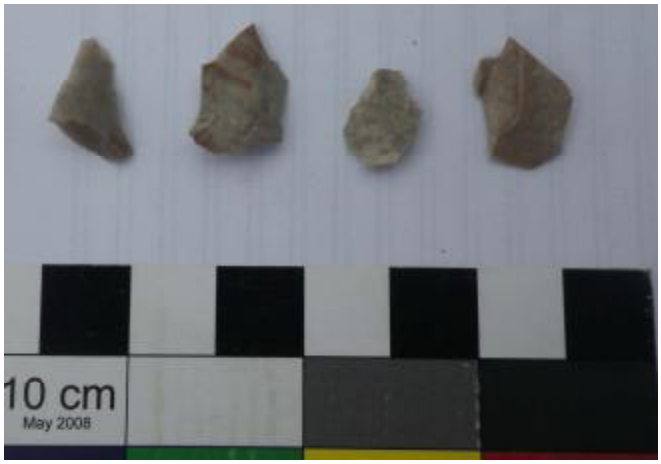

Figure 68: Sample of artefacts that represent Dry Creek Kilmore 5 (VAHR 7823-0281).

Figure 69: Representative sample of artefacts that comprise Dry Creek Kilmore 6 (VAHR 7923-0333).

Figure 70: Representative sample of artefacts the comprise Dry Creek Kilmore 7 (VAHR 7923-0334).

Figure 71: Representative sample of the artefacts that comprise Dry Creek Kilmore 8 (VAHR 7923-0335).

Figure 72: Representative sample of artefacts that comprise Dry Creek Kilmore 9 (VAHR 7923-XXXX).

Figure 73: Representative sample of artefacts that comprise Dry Creek Kilmore 10 (VAHR 7923-XXXX).

Figure 74: Representative sample of artefacts that comprise Dry Creek Tributary Kilmore IA 1 (VAHR 7823-0276).

Figure 75: Dry Creek Tributary Kilmore IA 2(VAHR 7923-XXXX).

Figure 76: Dry Creek Tributary Kilmore IA 3 (VAHR 7923-XXXX).

Figure 77: Representative sample of the artefacts that comprise Dry Creek Tributary Kilmore 1 (VAHR 7823-0282).

Figure 78: Representative sample of artefacts that comprise of Dry Creek Tributary Kilmore 2 (VAHR 7923-XXXX).

Figure 79: Artefact from Monument Hill Kilmore IA (VAHR 7923-XXXX).

Figure 80: Silcrete flake that comprises O'Gradys Road Kilmore IA 1 (VAHR 7823-0266).

Figure 81: Silcrete flakes (refit) that comprise O'Gradys Road Kilmore IA 2 (VAHR 7823-0267).

Figure 82: Representative sample of artefacts that comprise of O'Gradys Road IA 3. (VAHR 7923-XXXX)

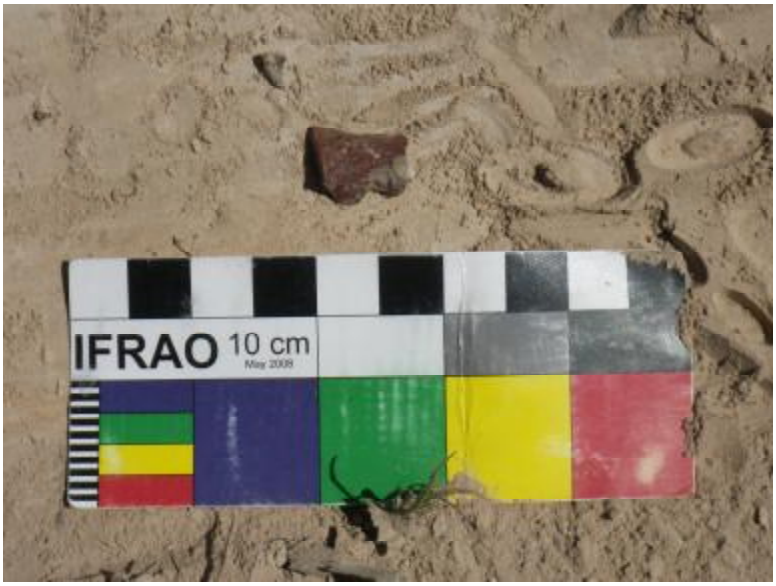

Figure 83: O'gradys Road IA 4 (VAHR 7923-XXXX).

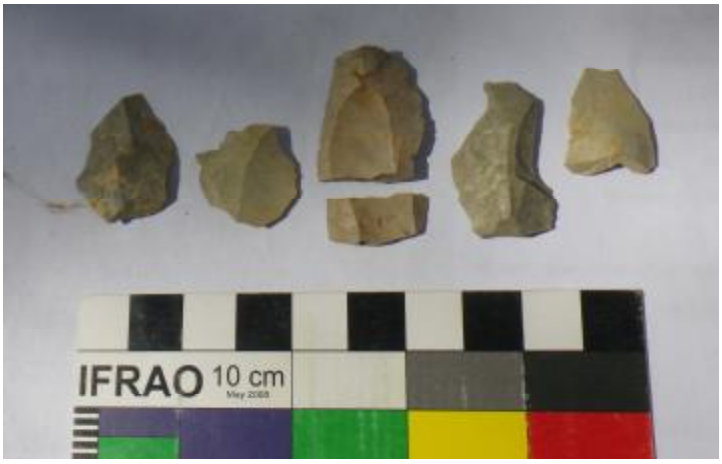

Figure 84: Representative sample of the artefacts that comprise O'Gradys Road Kilmore 1.

Figure 85: Representative sample of artefacts that comprise O'Gradys Road Kilmore 2 (VAHR 7823-0284).

Figure 86: Representative sample from artefacts that comprise Paynes Road Kilmore 1.

Figure 87: Representative sample of artefacts that comprise Paynes Road Kilmore 2(VAHR 7923-XXXX).

Figure 88: Artefacts that comprise Paynes Road Kilmore 3 (VAHR 7923-XXXX).

Figure 89: Paynes Road IA 1 (VAHR 7923-XXXX).

Figure 90: Paynes Road IA 2 (VAHR 7923-XXXX).

Figure 91: Paynes Road Kilmore IA 3 (VAHR 7923-XXXX).

Figure 92: Representative sample of artefacts that comprise Saunders Road Kilmore IA 1 (VAHR 7923-0328).

Figure 93: Representative sample of artefacts that comprise Saunders Road Kilmore 1 (VAHR 7923-0336).

Figure 94: Silcrete flakes that comprise Walders Road Kilmore IA 1 (VAHR 7823-0268).

Figure 95: Flake that is included in Broadford Wandong Road Kilmore IA 1 (VAHR 7923-0322).

Figure 96: Silcrete core that comprises Wandong Road Kilmore IA 2 (VAHR 7923-0331).

Figure 97: Silcrete flaked piece that comprises Wandong Road Kilmore IA 3 (VAHR 7923-0321).

Figure 98: Representative sample of the artefacts that comprise Wandong Road Kilmore IA 4 (VAHR 7923-0330).

Figure 99: Representative sample of artefacts that comprise Walders Road Kilmore 1 (VAHR 7823-0278).

Figure 100: Representative samples of artefacts that comprise Wandong Road Kilmore IA 1 (VAHR 7923-0329).

Figure 101: Representative sample of artefacts that comprise Walders Road Kilmore IA 2 (VAHR 7823-0277).