Residential and Industrial Subdivision,

Greigs Road, Mt Atkinson Road, Middle Road, Hopkins Road, Truganina, Victoria

Cultural Heritage Management Plan 13712

Sponsor: Mount Atkinson Holdings Pty Ltd

Heritage advisors: Kasey F. Robb and William Truscott

Authors: Kasey F. Robb, William Truscott and Martin Lawler

29 August 2017

Aboriginal Heritage Act 2006
Section 65

Cultural Heritage Management Plan – Notice of Approval

CHMP NAME:	**Residential and industrial subdivision: Greigs Road, Mt Atkinson Road, Middle Road, Hopkins Road, Truganina, Victoria.**
CHMP NUMBER:	**13712**
SPONSOR:	Mt Atkinson Holdings Pty Ltd *ACN/ABN:* 23 162 247 798
Heritage Advisor(s):	Kasey F. Robb and William Truscott
Author(s):	Kasey F. Robb, William Truscott and Martin Lawler (Biosis Pty Ltd)
Cover date:	29 August 2017 *Pages:* i-xxiv and 1-309

Received for approval: 29 August 2017

Clock stopped: 07 August 2017 *Clock started:* 16 August 2017

TO BE COMPLETED BY THE SECRETARY (OR DELEGATE) **I have considered the Evaluation Report for this CHMP and:**	**Yes**	**No**
I am satisfied that the CHMP has been prepared in accordance with the standards prescribed for the purposes of section 53 (in the Aboriginal Heritage Regulations 2007 and the Approved Form).	✓	
I am satisfied that the CHMP adequately addresses the matters set out in section 61.	✓	
In considering this application, I consulted with and considered the views of Aboriginal persons or bodies I considered relevant to the application.	✓	
I have given proper consideration to any relevant human rights	✓	

I, Sally Smith, Acting Director Heritage Services Aboriginal Victoria, acting under authority delegated to me by the Secretary, Department of Premier and Cabinet, and pursuant to section 65(2) of the *Aboriginal Heritage Act 2006* hereby **approve** ~~**/ refuse to approve**~~ this cultural heritage management plan:

Signed: .....

SALLY SMITH

Dated: 31/8/2017

- **This notice of approval should be inserted after the title page and bound with the body of the management plan.**
- **The recommendations in this management plan are now compliance requirements. Officers from the Department of Premier and Cabinet may attend the subject land to monitor compliance with the recommendations.**

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Document information

Activity:	Residential and industrial subdivision
Location:	Greigs Road, Truganina Mt Atkinson Road, Truganina Middle Road, Truganina Hopkins Road, Truganina
CHMP No.	13712
Size:	Large
Assessment:	Complex
Sponsor:	Mount Atkinson Holdings Pty Ltd ABN 23 162 247 798
Heritage advisors:	Kasey Robb William Truscott
Authors:	Kasey F. Robb William Truscott Martin Lawler
Date:	29 August 2017
Biosis project no.:	19337
Citation:	Biosis 2017. Residential and industrial subdivision Greigs Road, Truganina. Cultural heritage management plan 13712. Report for Mount Atkinson Holdings Pty Ltd. Authors: K. F. Robb, W. Truscott and M. Lawler, Biosis Pty Ltd, Melbourne. Project no 19337.

Document control

Version	Internal reviewer	Date issued
Draft version 01	KFR	22/02/2017
Draft version 02	IB	17/05/2017
Final version 01	KFR	30/06/2017
Final version 02	KFR	28/07/2017
Final version 03	KFR	29/08/2017

Mapping

In accordance with the approved form, the following projected spatial data has been forwarded to Aboriginal Victoria for this CHMP: Activity Area boundary; ground survey areas and subsurface testing locations.

Executive summary

Activity

This is a mandatory Cultural Heritage Management Plan (CHMP) under Section 46(a) of the *Aboriginal Heritage Act 2006*. The Sponsor intends to develop a residential and commercial subdivision within the Activity Area.

The proposed activity is a high impact activity under Regulation 46 (subdivision of land into three lots or more) of the *Aboriginal Heritage Regulations 2007*. The Activity Area is in an area of cultural heritage sensitivity under Regulation 22 (registered cultural heritage places) and Regulation 23 (proximity to a waterway) of the *Aboriginal Heritage Regulations 2007*.

The Victorian Aboriginal Heritage Register (VAHR) has allocated CHMP number 13712 to this assessment.

At the time of preparation of this assessment, there is no Registered Aboriginal Party (RAP) for the region that includes the Activity Area.

Activity Area

The Activity Area is located off Greigs Road, Truganina and is bordered by major roadways in the north and east and farmland in the south and west. It also includes a section of road reserve along Middle Road.

The Activity Area includes drainage to Skeleton Creek in the east and the lower slopes of Mount Atkinson in the west. The northern section of the Activity Area is on a raised volcanic plateau and the extent of the Activity Area includes small to large basalt boulders, remnants from past eruptions.

Assessment

A Desktop Assessment was undertaken to provide background information on the activity and its impacts, other archaeological studies, previously recorded Aboriginal places, the environment, and to develop a prediction model for the Activity Area.

A Standard Assessment was undertaken to provide information on the ground surface visibility and previous disturbance to the Activity Area, and to identify areas of archaeological potential.

A Complex Assessment was undertaken to test the prediction model and areas of archaeological potential within the Activity Area.

Consultation with Aboriginal representatives occurred throughout the CHMP.

Results

The Desktop Assessment review identified that the dominant previously recorded Aboriginal place type nearby the Activity Area was artefact scatters. Generally, the number of artefacts related to these places was proportional to their proximity to watercourses, with places with high numbers of artefacts and range in materials adjacent to permanent waterways such as Kororoit Creek or the confluence of Dry and Skeleton Creeks. The evidence from previous assessments within the Activity Area suggests that whilst there is limited water in the immediate vicinity, artefact scatters with a diverse array of raw materials and artefact types, such as Mount Atkinson AS 2 (VAHR 7822-1543) are present, probably due the vantage points provided by this landscape feature.

The geomorphology and geology of the Activity Area is a consequence of Newer Volcanic activity, and while in the geographic region it is generally associated with shallower deposits, especially in areas that have been impacted by agricultural practices that have removed basalt, where this basalt remains intact and forms stony rises there is the possibility of deeper deposits.

The Standard Assessment survey recoded the surface artefact distribution displaying similar patterning to the previously recorded Aboriginal places with the majority of artefacts recorded in the northern section of the Activity Area corresponding with the higher landforms and specific features including Mount Atkinson and drainage associated with Skeleton Creek. After discussions with the Aboriginal representatives, it was generally agreed that the high plateau, steep and moderate slopes landforms contained the greatest archaeological potential. These higher landforms in the northern section of the Activity Area provided landscape features that would have been well utilised by Aboriginal people.

The subsurface testing carried out in the Complex Assessment identified some areas as containing archaeological deposits at depth, on higher elevation landforms where less disturbance from past land use activities (such as ploughing) have taken place. Exempting these locations, the stratigraphic profiles were generally shallow duplex soils. Depths of excavation were generally between 70 and 150 millimetres. This is typical of the Volcanic Plains and supports evidence from other, nearby archaeological investigations.

Re-affirming the results of the Standard Assessment, the steep slope locations where basalt had not been removed were also those with the highest frequency and intensity of subsurface archaeology; for while subsurface archaeology was identified across all landforms, artefacts numbers were low (<5) and sporadic in nature. This largely conforms with the suggestion from the Desktop Assessment predictive model and the Standard Assessment where higher densities of artefacts would be associated with steep - sloped landforms which provide vantage points for the wider landscape while lower densities are distributed across the plains.

In the Desktop Assessment, artefact scatters were identified as being the most likely Aboriginal place types within the Activity Area, although, regionally, places that contain high numbers of artefacts (>50) are in close proximity to prominent waterways such as Kororoit Creek and the confluence of Dry and Skeleton Creeks. As ephemeral drainage lines are the only watercourses located within the Activity Area, the prominence of Mount Atkinson as a vantage point means it would have been frequently utilised by Aboriginal people in the past. This is supported by the large number of surface and subsurface artefacts on Mount Atkinson compared to the remainder of the Activity Area with the exception of a likely quartz flaking event on a stony rise adjacent to the drainage channels. It should also be noted that the summit of Mount Atkinson is not within the current Activity Area and therefore it is predicted that this pattern will be further reflected when investigation commences to the west of the current Activity Area. Wetlands and soaks that would have existed within the Activity Area may not have been ideal locations to maintain a longer presence compared to the higher vantage points, and thus have a less substantial archaeological signature. Likewise, while lower elevation sections of the Activity Area would also have been exploited, this likely took place across far broader areas that, when manifest in archaeological remains, result in an infrequent signature of subsurface cultural material. This conclusion is also reflected in the results of the Standard Assessment.

The Aboriginal cultural heritage found in the current CHMP represents human activities undertaken across a range of landforms within a relatively limited area. However a range of post-depositional impacts have altered the spatial and stratigraphical contexts in which the artefacts were originally deposited.

The cultural heritage of the Activity Area consists chiefly of distributions of surface artefacts which vary in content and frequency across the volcanic landforms, with relatively few locations where subsurface artefacts have been recorded. Subsurface artefacts were recorded in only 20 out of 95 test pits across the Activity Area. The subsurface testing, however, showed a correlation between artefact frequency and landform, with greater quantities of subsurface artefacts found in test pits along the high plateaus and steep slopes. This broadly agrees with the similar distribution of surface artefacts along the high volcanic terraces and steep

slopes. Significantly, however, within the largest and densest concentration of surface artefacts on the lower plain (where a power line easement has exposed ground along the watershed of the stream lines issuing from the base of the volcanic plateau), extensive testing along and adjacent to the same easement recorded no subsurface artefacts. Thus, in deeper soils along the rocky slopes and plateau margins, subsurface artefacts tend to be found in areas where surface artefacts have been recorded. On the lower plains, however, and along tracks on the higher plateaus, the presence of surface artefacts does not result in corresponding distributions of subsurface artefacts.

The differences in subsurface artefact content between the deeper soils of the rocky plateau margins and the shallower soils of the plains is unlikely to reflect an original deposition pattern and is more likely to be a consequence of differential land use. Artefacts have been preserved along rocky terraces and slopes in shallow subsurface contexts where soils have accumulated to a greater depth and where there has been less disturbance by cultivation and stone removal. The presence of greater numbers of subsurface artefacts in these contexts probably reflects the better circumstances for artefact accumulation and subsequent protection from disturbance, rather than a stratigraphical separation from the surface artefacts recorded elsewhere. This is a particularly important point because it suggests that the distinction between surface and subsurface artefacts is more likely to be a function of historical (post-deposition) land use than a chronological marker

Aboriginal places

A summary of the Aboriginal places recorded in the current CHMP is listed in Table 1. Note several previously recorded Aboriginal places have been merged in to the large multi component Aboriginal place Mt Atkinson Landscape (VAHR 7822-4092). A summary of the impact assessment is also listed in Table 1.

Table 1 Aborignal places recorded in the current CHMP

Aboriginal place	Description	Avoid	Minimise	Mitigate
Mt Atkinson Landscape (VAHR 7822-4109)	Large surface and subsurface artefact scatter located on the Volcanic Plains. Multi-component Aboriginal place representing occupation associated with nearby resources and the probable use of Mount Atkinson as an important landscape feature. The place has been disturbed by historical land use practices including pastoral and agricultural	Harm will largely be avoided to Mt Atkinson cone AS 1 component and sections of Mt Atkinson raised volcanic plain AS 1 component. This area will become a reserve and impacts will be restricted to park furniture and access tracks. No largescale earth moving will occur. Harm will also be avoided to sections of Mt Atkinson drainage plain AS 1 component that are in proximity to Skeleton Creek	No	Combination of surface and subsurface archaeological salvage.

Aboriginal place	Description	Avoid	Minimise	Mitigate
	activities.	drainage channel. This area will become a reserve and impacts will be restricted to park furniture and access tracks with limited earth moving to facilitate wetland development.		
Mt Atkinson LDAD 1 (VAHR 7822-1549)	Surface and subsurface low density artefact distribution. Background scatter of artefacts associated with occupation in the wider Volcanic Plains.	No	No	No
Mt Atkinson AS 10 (VAHR 7822-1549)	Recorded in 2003 as isolated surface artefact. No evidence identified in the current CHMP.	No	No	No
Mt Atkinson AS 11 (VAHR 7822-1550)	Recorded in 2003 as isolated surface artefact. No evidence identified in the current CHMP.	No	No	No
Mt Atkinson AS 12 (VAHR 7822-1551)	Recorded in 2003 as isolated surface artefact. No evidence identified in the current CHMP.	No	No	No
Peppercorn Rise 1 (VAHR 7822-3798)	Recorded in 2014 as surface low density artefact distribution.	No	No	Survey salvage.
Mount Atkinson PSP LDAD (VAHR	Recorded in 2014 as surface low density	Harm will largely be avoided to those	No	Combination of surface and

Aboriginal place	Description	Avoid	Minimise	Mitigate
7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16)	artefact distribution.	components associated with Mt Atkinson cone AS 1 component. This area will become a reserve and impacts will be restricted to park furniture and access tracks. No largescale earth moving will occur.		subsurface archaeological salvage associated with Mt Atkinson cone AS 1 component.

Management conditions

Detailed management conditions are included in Section 10. A summary of the salvage requirements is listed in Table 2.

Table 2 Summary of salvage/recording requirements

Aboriginal place	Plough	Controlled burn	Surface artefact recording	Surface salvage	Subsurface salvage
Peppercorn Rise 1 (VAHR 7822-3798)	Salvage area Map 24			Following ploughing	
Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-4)	Minimum 3 hectares Map 25	Minimum 3 hectares Map 25		Following ploughing Following controlled burn	
Mt Atkinson Landscape (VAHR 7822-4109)				Along already exposed access tracks Map 26	
Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-4		Minimum 3 hectares Map 27		Following controlled burn	

Aboriginal place	Plough	Controlled burn	Surface artefact recording	Surface salvage	Subsurface salvage
Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-2)		Minimum 0.75 hectare Map 28		Following controlled burn	5x10 metre at greatest density of artefacts from CHMP 5x10 metre at greatest density of artefacts following controlled burn Map 29
Mt Atkinson cone AS 1 component (VAHR 7822-4109-1)		Minimum 4.5 hectare Map 30	Following controlled burn		All impact zones higher than the 125 metre contour Map 31

Acknowledgements

The authors acknowledge the contribution of the following people in undertaking this CHMP:

- Sean Pinan, Mount Atkinson Holdings Pty Ltd
- Bernie Joyce, University of Melbourne
- Peter Wlodarczyk, GAGIN Pty Ltd
- James Shepherd, Sally Mitchell, Ilya Berelov, Melanie Thomson, Stephanie Vick, Rhiannon Ashton, Timothy Cavanagh, Amy Wood, Aaron Dalla-Vecchia and Darcy Mullaney, Biosis Pty Ltd
- Robert Anthony, Lordes Anthony, Shane Clarke, Lakeisha Clayton, Cory Simpson and James Hughes, Boon Wurrung Foundation Ltd
- Robert Ogden, Joseph Eiszele, Shane Clarke, Shane Clayton, Kobi Sainty, James Brown, John Winch, Mike Haley and Sam Pender, Bunurong Land Council Aboriginal Corporation
- Craig Terrick, Sean Wandin, Mark Gardiner, Jason O'Halloran, Ron Jones, Ann-Maree Chandler, Robbie Jones, Nathan Xiberras, Trevor Downe and Shane Nicholson, Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc.
- James Brown and Leigh Fletcher, Bunurong Land and Sea Association Inc.
- Kellie Clayton and David Thomas, Aboriginal Victoria.

Abbreviations

AHD	Australian Height Datum
CHMP	Cultural Heritage Management Plan
DGPS	Differential Global Positioning System
DPC	Department of Premier and Cabinet
GDA94	Geodetic Datum Australia 1994
LiDAR	Light Detection and Ranging
MGA	Map Grid of Australia
PSP	Precinct Structure Plan
RAP	Registered Aboriginal Party
VAHR	Victorian Aboriginal Heritage Register

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PART 1 – CULTURAL HERITAGE ASSESSMENT

1 Introduction

This is a mandatory Cultural Heritage Management Plan (CHMP) under Section 46(a) of the *Aboriginal Heritage Act 2006*. The Sponsor intends to develop a residential and industrial subdivision within the Activity Area.

The proposed activity is a high impact activity under Regulation 46 (subdivision into three or more lots) of the *Aboriginal Heritage Regulations 2007*. The Activity Area is in an area of cultural heritage sensitivity under Regulation 22 (proximity to registered cultural heritage places) and Regulation 23 (proximity to a waterway) of the *Aboriginal Heritage Regulations 2007*.

A Notice of Intent to Prepare a CHMP was submitted to the Secretary, Department of Premier and Cabinet (DPC) on 31 July 2015 (Appendix 1).

The Victorian Aboriginal Heritage Register (VAHR) has allocated CHMP number 13712 to this assessment.

1.1 Sponsor

Mount Atkinson Holdings Pty Ltd
PO Box 7411
St Kilda VIC 8004
ABN 23 162 247 798

1.2 Heritage advisor

The heritage advisors for this CHMP are Kasey F. Robb and William Truscott, Biosis Pty Ltd.

Kasey has over 10 years' experience working as an archaeologist in Australia, New Zealand and the Pacific Islands. During this time she has conducted archaeological surveys, subsurface testing, monitoring, and salvage excavations. She also has extensive experience in the identification of human remains and the recording of stone artefacts. Her qualifications include a BA(Hons) in archaeology and an MSc in bioarchaeology from the University of Otago, New Zealand.

Since joining Biosis Pty Ltd in 2010, Kasey has managed projects around metropolitan Melbourne and in north-east Victoria as well as participating in large scale projects in Queensland, New South Wales and the Australian Capital Territory. During this time she has authored over 150 consultant reports including CHMPs, archaeological salvages and historic assessments. In addition, she has published in peer reviewed academic journals.

Kasey is a listed heritage advisor under the requirements of the *Aboriginal Heritage Act 2006* and named as a lead investigator on consents issued under the *Heritage Act 1995*. Kasey is also a full member and Victorian Chapter Chairperson of the Australian Association of Consulting Archaeologists Inc. and a full member of the Environmental Institute of Australia and New Zealand.

William has over 7 years' experience in cultural heritage management in Victoria, New South Wales and Western Australia. His qualifications include a BArch(Hons) from La Trobe University where he undertook a project investigating the impacts of large and small scale weather processes on surface archaeology on the Lake Mungo lunette, in the Willandra Lakes World Heritage Area.

His skills include Aboriginal place identification and recording, survey and subsurface archaeological testing and excavation, project research, geographic information systems mapping, report writing and stakeholder liaison. William also has experience in Aboriginal stone artefact identification and analysis.

William is a listed heritage advisor under the *Aboriginal Heritage Act 2006*.

1.3 Location of the Activity Area

The location of the Activity Area is indicated on Figure 1. It is located off Greigs Road, Truganina and is bordered by major roadways in the north and east and farmland in the south and west. It also includes the road reserve along Middle Road. The Activity Area is approximately 35 kilometres west of Melbourne.

Cadastral information for the Activity Area is listed in Table 3.

Table 3 Cadastral information for the Activity Area

Address	181–235 Greigs Road, Truganina VIC 3029 121–179 Greigs Road, Truganina VIC 3029 61–119 Greigs Road, Truganina VIC 3029 1–59 Greigs Road, Truganina VIC 3029 65–159 Hopkins Road, Truganina VIC 3029 161–257 Hopkins Road, Truganina VIC 3029 259–355 Hopkins Road, Truganina VIC 3029 357–453 Hopkins Road, Truganina VIC 3029 455–543 Hopkins Road, Truganina VIC 3029 544–580 Mt Atkinson Road, Truganina VIC 3029 582–618 Mt Atkinson Road, Truganina VIC 3029 670–680 Middle Road, Truganina VIC 3029 658–668 Middle Road, Truganina VIC 3029 646–656 Middle Road, Truganina VIC 3029 634–644 Middle Road, Truganina VIC 3029 545–567 Hopkins Road, Truganina VIC 3029 569–591 Hopkins Road, Truganina VIC 3029 593–617 Hopkins Road, Truganina VIC 3029 Road reserve, Middle Road Truganina VIC 3029	
Local Government Authority	Melton City Council	
Lot/Plan	1 TP747009 2 TP747009 3 TP747009 4 TP747009 4 TP828625 5 TP828625 6 TP828625 7 TP828625 8 TP828625 9 TP828625	1 TP828625 3 TP828625 1 PS512497 2 PS512497 3 PS512497 4 PS512497 6 PS512497 7 PS512497 8 PS512497 9 PS512497
Planning Zone	Urban Growth Zone	
Coordinates*	E296668 N5819014	

Melways/VicRoads	Map 357 Grid H5-H10

* All geographic coordinates in this CHMP are referenced to the Victorian Government Standard GDA94 MGA.

1.4 Owner/Occupier

The Sponsor is the owner of the western section of the Activity Area (development site). The Activity Area is unoccupied but is being utilised for grazing animals.

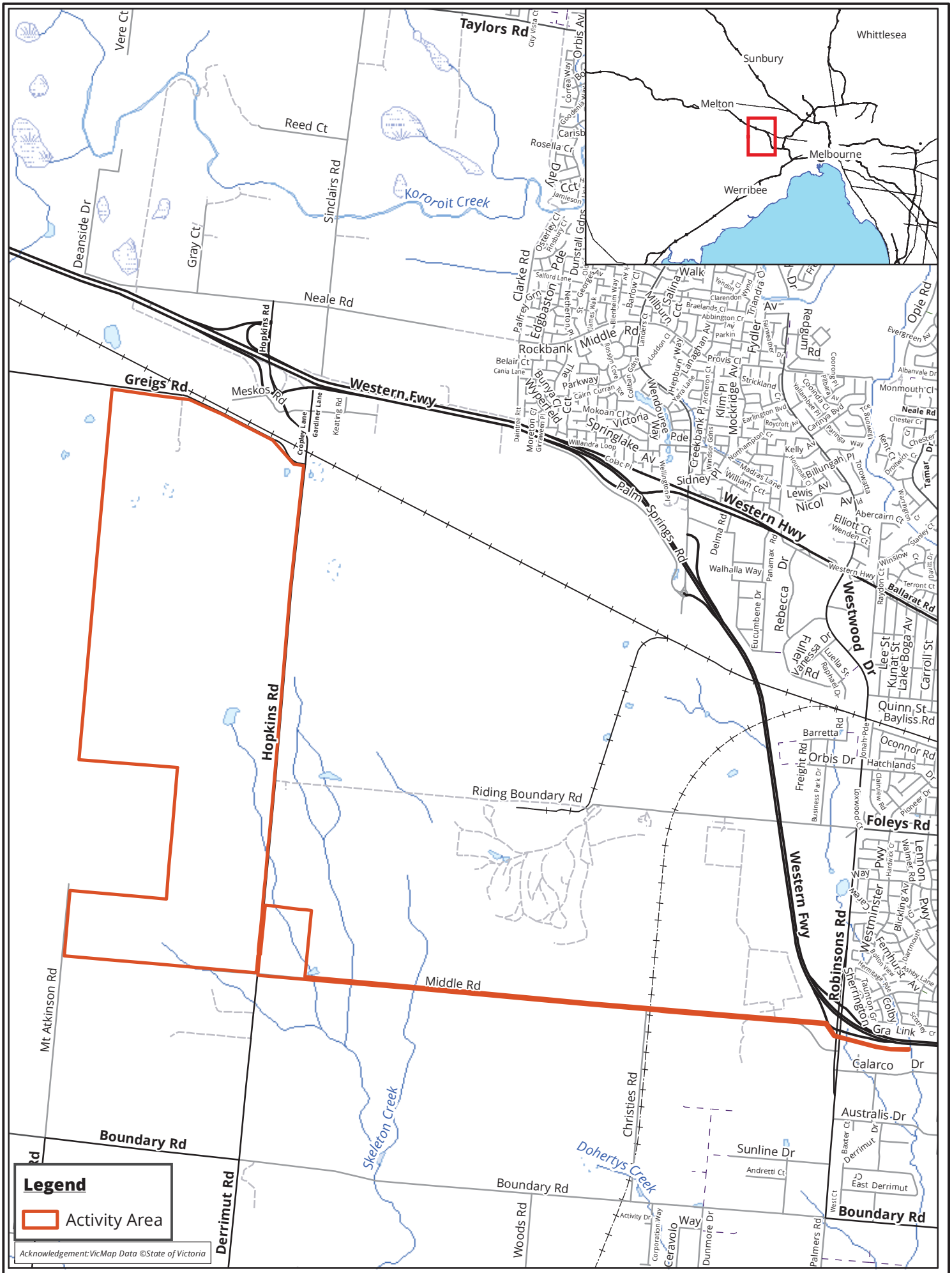
Melton City Council is the owner of the eastern section of the Activity Area (Middle Road). The Activity Area is a road reserve.

1.5 Traditional Owners

There is currently no Registered Aboriginal Party (RAP) appointed for the region that includes the Activity Area. Under Section 65(b)(i) of the *Aboriginal Heritage Act 2006*, a Sponsor may apply to the Secretary, DPC for approval of a CHMP if there is no relevant RAP.

This project commenced before the advent of Activity Advisory Groups which were introduced on 1 August 2016. However all Traditional Owner groups who have expressed ties to the region were consulted throughout the assessment. These are:

- Boon Wurrung Foundation Ltd
- Bunurong Land Council Aboriginal Corporation
- Bunurong Land and Sea Association Inc.
- Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc.



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Ballarat, Brisbane, Canberra, Hobart, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Map 1 Location of the Activity Area

Matter: 19337, CHMP 13712
Date: 12 April 2017,
Checked by: KFR, Drawn by: LH, Last edited by: smitchell
Location:P:\19300s\19337\Mapping\19337_M1_Locality.mxd

0 400 800 1,200 1,600
Metres
N
Scale 1:40,000 @ A4, GDA 1994 MGA Zone 55

2 Activity description

The Victorian Planning Authority, in consultation with Melton City Council, state agencies and key stakeholders, has prepared the Mt Atkinson and Tarneit Plains Precinct Structure Plan (PSP) to guide development in Mt Atkinson and Tarneit Plains. This includes the Activity Area.

The overall PSP is expected to deliver over 6,700 dwellings accommodating approximately 19,000 residents. The PSP also includes retail and commercial zones and roads, utilities, conservation zones and public amenities. The commercial zones include light industrial, industrial and business while public amenities include schools and parks.

The future urban structure of the PSP is shown in Appendix 2 however a full description of the PSP can be found at:

https://vpa-web.s3.amazonaws.com/wp-content/uploads/2014/09/Mt-Atkinson-PSP1082-and-Tarneit-Plains-PSP1085-Precinct-Structure-Plan-April-2016.pdf

The PSP is currently being finalised with details to be included in Amendment C162 to the Melton Planning Scheme. The is a separate planning process to CHMPs and any changes to the proposed layout would require an additional planning scheme amendment.

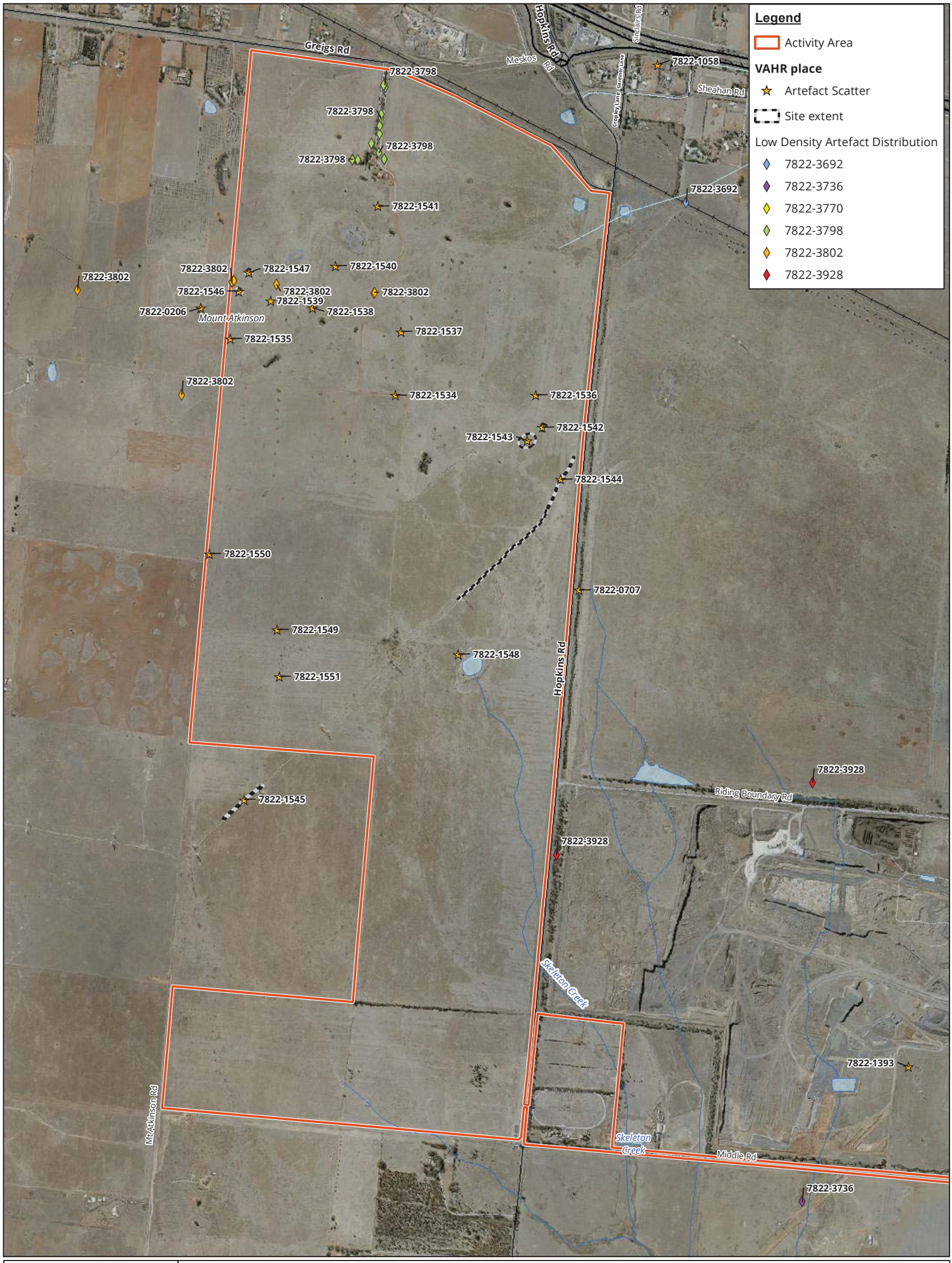
Development within the Activity Area will be in accordance with the planning scheme and includes the extension of existing utilities to the development area (along Middle Road); however, the associated activities have the potential to harm Aboriginal cultural heritage.

Provision of the activity may involve excavation up to 2 metres deep. This includes basalt removal within the PSP covered area and excavation for utilities along Middle Road.

3 Extent of the Activity Area

The extent of the Activity Area is shown in Map 2. The total size of the Activity Area is 684.38 hectares. The Activity Area includes drainage to Skeleton Creek in the east and the lower slopes of Mount Atkinson in the west. The northern section of the Activity Area is on a raised volcanic plateau and the extent of the Activity Area includes small to large basalt boulders, remnants from past eruptions. These have been subject to clearing in the north to facilitate ploughing for agricultural pursuits and have also been utilised in the construction of dry stone walls which delineated former property boundaries. The Activity Area is bisected by several farm tracks that have been subject to regular grading.

The Mount Atkinson homestead is located in the north of the Activity Area, surrounded by mature planted trees and farm buildings. Near the centre of the Activity Area is a dam, constructed as part of the Skeleton Creek drainage. There is also evidence of historic period quarrying, on a stony rise immediately to the north of the drainage channel. The stony rise is also the location of Mt Atkinson AS 5 (VAHR 7822-1543).



Map 2a Extent of the Activity Area

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Acknowledgements: Imagery ©Nearmap 2015; Vicmap©State of Victoria

Matter: 19337, CHMP 13712
Date: 12 April 2017,
Checked by: KFR, Drawn by: SKM, Last edited by: smitchell
Location:P:\19300s\19337\Mapping\19337_M2a_ActivityArea

0 140 280 420 560 700
Metres
Scale 1:15,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

N

Legend

VAHR place

- Artefact Scatter

Low Density Artefact Distribution

- 7822-3547
- 7822-3655
- 7822-3676
- 7822-3736
- 7822-3755
- 7822-3839
- 7822-3877
- 7822-3928
- Activity Area

Map 2b Extent of the Activity Area

0 150 300 450 600 750

Metres
Scale: 1:15,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

N

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Matter: 19337, CHMP 13712
Date: 12 April 2017,
Checked by: KFR, Drawn by: SKM, Last edited by: smitchell
Location:P:\19300s\19337\Mapping\19337_M2b_ActivityArea.mxd

4 Documentation of consultation

4.1 Consultation in relation to the assessment

Table 4 Consultation in relation to the assessment

Date	Name	Organisation	Nature of consultation
2/08/2015	Kasey Robb	Biosis Pty Ltd	On behalf of Sponsor, submits Notice of Intent
	VAHR		
2/08/2015	VAHR		Assigns CHMP number
	Kasey Robb	Biosis Pty Ltd	
9/03/2017	Kasey Robb	Biosis Pty Ltd	Meeting to discuss Aboriginal place registrations
	Kellie Clayton	Aboriginal Victoria	

4.2 Participation in the conduct of the assessment

Table 5 Particpation in the conduct of the assessment

Date	Name	Organisation	Nature of consulation
4/8/2015	Kasey Robb	Biosis Pty Ltd	Standard Assessment
	Melanie Thomson		
	James Hughes	Boon Wurrung Foundation Ltd	
5/8/2015	Kasey Robb	Biosis Pty Ltd	Standard Assessment
	Melanie Thomson		
	Sam Pender	Bunurong Land Council Aboriginal Corporation	
6/8/2015	Kasey Robb	Biosis Pty Ltd	Standard Assessment
	Melanie Thomson		
	Stephanie Vick		
	Trevor Downe	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Shane Nicholson		
	Martin Lawler		
13/1/2016	Kasey Robb	Biosis Pty Ltd	
	Stephanie Vick		
	Robbie Jones	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Nathan Xiberras		
14/1/2016	Kasey Robb	Biosis Pty Ltd	Complex Assessment

Date	Name	Organisation	Nature of consulation
	Stephanie Vick		
	Ann-Maree Chandler	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Robbie Jones		
15/1/2016	Kasey Robb	Biosis Pty Ltd	Complex Assessment
	Stephanie Vick		
	Robbie Jones	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Nathan Xiberras		
10/2/2016	Kasey Robb	Biosis Pty Ltd	Complex Assessment
	Rhiannon Ashton		
	Mike Haley	Bunurong Land Council Aboriginal Corporation	
	Sam Pender		
11/2/2016	Rhiannon Ashton	Biosis Pty Ltd	Complex Assessment
	Sam Pender	Bunurong Land Council Aboriginal Corporation	
	John Winch		
12/2/2016	Rhiannon Ashton	Biosis Pty Ltd	Complex Assessment
	Sam Pender	Bunurong Land Council Aboriginal Corporation	
	John Winch		
24/2/2016	Kasey Robb	Biosis Pty Ltd	Complex Assessment
	Cory Simpson	Boon Wurrung Foundation Ltd	
	James Hughes		
25/2/2016	Kasey Robb	Biosis Pty Ltd	Complex Assessment
	Cory Simpson	Boon Wurrung Foundation Ltd	
	James Hughes		
26/2/2016	Kasey Robb	Biosis Pty Ltd	Complex Assessment
	Cory Simpson	Boon Wurrung Foundation Ltd	
	James Hughes		
30/3/2016	Rhiannon Ashton	Biosis Pty Ltd	Complex Assessment
	Daniel Lim		
	James Brown	Bunurong Land and Sea Association Inc.	
	Leigh Fletcher		
31/3/2016	Kasey Robb	Biosis Pty Ltd	Complex Assessment
	Rhiannon Ashton		

Date	Name	Organisation	Nature of consulation
	James Brown	Bunurong Land and Sea Association Inc.	
	Leigh Fletcher		
1/4/2016	Kasey Robb	Biosis Pty Ltd	Complex Assessment
	Rhiannon Ashton		
	James Brown	Bunurong Land and Sea Association Inc.	
	Leigh Fletcher		
4/5/2016	Kasey Robb	Biosis Pty Ltd	Complex Assessment
	William Truscott		
	Ron Jones	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Nathan Xiberras		
26/5/2016	Amy Wood	Biosis Pty Ltd	Standard Assessment
	Rhiannon Ashton		
	Robbie Jones	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
3/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Robert Anthony	Boon Wurrung Foundation	
	Shane Clarke		
	Lakeisha Clayton		
4/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Shane Clarke	Boon Wurrung Foundation Ltd	
	Lakeisha Clayton		
5/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Shane Clarke	Boon Wurrung Foundation	
	Lakeisha Clayton		
6/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Shane Clarke	Boon Wurrung Foundation Ltd	
	Lakeisha Clayton		
7/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment

Date	Name	Organisation	Nature of consulation
	Aaron Dalla-Vecchia		
	Shane Clarke	Boon Wurrung Foundation Ltd	
	Lakeisha Clayton		
10/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Kobi Sainty	Bunurong Land Council Aboriginal Corporation	
	James Brown		
11/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Shane Clarke	Bunurong Land Council Aboriginal Corporation	
	Shane Clayton		
12/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Shane Clarke	Bunurong Land Council Aboriginal Corporation	
	Shane Clayton		
13/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	John Winch	Bunurong Land Council Aboriginal Corporation	
	Joseph Eiszele		
14/10/2016	Martin Lawler	Biosis Pty Ltd	Complex Assessment
	William Truscott		
	Shane Clarke	Bunurong Land Council Aboriginal Corporation	
	Joseph Eiszele		
24/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Robbie Jones	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Jason O'Halloran		
25/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Robbie Jones	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Jason O'Halloran		
26/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment

Date	Name	Organisation	Nature of consulation
	Aaron Dalla-Vecchia		
	Robbie Jones	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
27/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Mark Gardiner	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
28/10/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Robbie Jones	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Nathan Xiberras		
7/11/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Sean Wandin	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Nathan Xiberras		
8/11/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Ann-Maree Chandler	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Robbie Jones		
9/11/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Craig Terrick	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
10/11/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Nathan Xiberras	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc	
	Robbie Jones		
11/11/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Nathan Xiberras	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.	
	Robbie Jones		
5/12/2016	Timothy Cavanagh	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		

Date	Name	Organisation	Nature of consulation
	Shane Clarke	Bunurong Land Council Aboriginal Corporation	
	Shane Clayton		
6/12/2016	Aaron Dalla-Vecchia	Biosis Pty Ltd	Complex Assessment
	Shane Clarke	Bunurong Land Council Aboriginal Corporation	
	Shane Clayton		
14/12/2016	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Mike Haley	Bunurong Land Council Aboriginal Corporation	
	Kobi Saintly		
17/01/2017	William Truscott	Biosis Pty Ltd	Complex Assessment
	Darcy Mullaney		
	Robert Anthony	Boon Wurrung Foundation Ltd	
	Lakeisha Clayton		
18/01/2017	William Truscott	Biosis Pty Ltd	Complex Assessment
	Darcy Mullaney		
	Robert Anthony	Boon Wurrung Foundation Ltd	
	Lordes Anthony		
19/01/2017	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Lakeisha Clayton	Boon Wurrung Foundation Ltd	
	Lordes Anthony		
20/01/2017	William Truscott	Biosis Pty Ltd	Complex Assessment
	Aaron Dalla-Vecchia		
	Lakeisha Clayton	Boon Wurrung Foundation Ltd	
	Lordes Anthony		
29/03/2017	Aaron Dalla-Vecchia	Biosis Pty Ltd	Standard Assessment
	Lakeisha Clayton	Boon Wurrung Foundation Ltd	
	George Adidi		

4.3 Consultation in relation to the conditions

Table 6 Consultation in relation to the conditions

Date	Name	Organisation	Nature of Consultation
17/01/2017	Kasey Robb	Biosis Pty Ltd	General discussion about appropriateness of ploughing methodology being employed in relation to CHMP 13123 which includes the current Activity Area
	Ron Jones	Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc	
17/01/2017	Kasey Robb	Biosis Pty Ltd	General discussion about appropriateness of ploughing methodology being employed in relation to CHMP 13123 which includes the current Activity Area
	Robert Ogden	Bunurong Land Council Aboriginal Corporation	
17/01/2017	Kasey Robb	Biosis Pty Ltd	General discussion about appropriateness of ploughing methodology being employed in relation to CHMP 13123 which includes the current Activity Area
	Robert Anthony	Boon Wurrung Foundation Ltd	
9/03/2017	Kasey Robb	Biosis Pty Ltd	Meeting to discuss CHMP conditions, propose different methodologies for different sections of the Activity Area
	Ilya Berelov		
	David Thomas	Aboriginal Victoria	
	Sean Pinan	Mount Atkinson Holdings Pty Ltd	
28/09/2017	David Thomas	Aboriginal Victoria	Email comments on draft conditions
	Kasey Robb	Biosis Pty Ltd	
24/07/2017	Kasey Robb	Biosis Pty Ltd	Meeting to discuss CHMP conditions
	Ilya Berelov		
	David Thomas	Aboriginal Victoria	
	Liz Kilpatrick		
	Vanessa Flynn		
	Sean Pinan	Mount Atkinson Holdings Pty Ltd	
	Callan Ainsaar	Stockland	

4.4 Summary of outcomes of consultation

On-site consultation had occurred with representatives of the Traditional Owners throughout this assessment. This includes discussions on the location of previously recorded Aboriginal places, the subsurface testing methodology and results of the assessment. Each Traditional Owner organisation (exempting Bunurong Land and Sea Association Inc., as they amalgamated with Bunurong Land Council Aboriginal Corporation during the course of the assessment) had equal participation in fieldwork and have

been provided the opportunity to visit Mt Atkinson stony rise AS1 component (VAHR 7822-4109-4) which demonstrates the variety of artefact materials and types within the Activity Area.

The Activity Area includes the Activity Area for CHMP 13123. During discussions associated with the CHMP 13123 non-compliance issue, a methodology of ploughing to increase ground surface visibility was discussed both in relation to CHMP 13123 and the current Activity Area. It was agreed that the methodology had been successful in the past and may prove useful where ploughing had previously occurred. This was in the north of the Activity Area on the volcanic plateau where deposits were shallow.

Nearing the completion of the current CHMP, the heritage advisor and Sponsor met with David Thomas, Aboriginal Victoria to discuss specific conditions moving forward. It was acknowledged that Mount Atkinson would largely be preserved within a reserve and that while the PSP includes other reserves these are active spaces with associated sporting facilities and park furniture therefore would not be free from impacts. The heritage advisor presented two different methodologies for salvage conditions, these included areal hand excavation where Aboriginal places were considered to have high scientific significance and the combination of ploughing and surface collection where there are the greatest densities of Aboriginal artefacts. David raised Aboriginal Victoria's position stating that any salvage conditions should be formulated within a research design and that they should seek to contribute to the overall body of knowledge. It was discussed that salvage as a means of artefact recovery only was not preferred. The heritage advisor proposed research questions surrounding salvage methodologies, whereby the current CHMP conditions would permit a compare and contrast study between different methodologies and different landforms. It was noted that the any salvage would be undertaken as a sample of each Aboriginal place component only. This was considered acceptable.

5 Desktop Assessment

5.1 Search of the Victorian Aboriginal Heritage Register

A search of the VAHR was undertaken by Kasey Robb, Biosis Pty Ltd on 10 August 2015. A second search of the VAHR, for new and updated information, was undertaken by William Truscott, Biosis Pty Ltd on 31 January 2017.

The only obstacle in completing the Desktop Assessment was the history of artefact recording at VAHR 7822-1444. Biosis holds a catalogue from artefact recording at VAHR 7822-1544 after its initial registration. This information was not provided to the VAHR at the time of recording but was supplied in 2017.

5.2 Geographic region

The geographic region for the Activity Area has been selected to represent a range of landforms and resources that would be accessible from the Activity Area. It is largely defined by the geology associated with the Mount Atkinson and Mount Cottrell volcanic eruptions.

The geographic region extends to include the entirety of the stony rises of Mount Cottrell to the west, generally following a contour of 120 metres, then north to Kororoit Creek. The boundary then follows Kororoit Creek downstream to the south-west to a contour of 40 metres above sea level. Heading south-west, the boundary follows the same contour to the confluence of Skeleton Creek and Dry Creek. From the confluence of these waterways, the boundary follows the edge of Dry Creek to its confluence with an unnamed waterway near Kenning Road, Tarneit. This waterway extends to the edge of the stony rises of Mount Cottrell.

This geographic region includes the volcanic landforms representative of the Activity Area and waterways that would have been accessible from the Activity Area. These waterways would have provided a wealth of resources for Aboriginal people. It also encompasses a number of previously completed archaeological investigations, the results of which will facilitate prediction modelling for the Activity Area.

The geographic region is shown in Map 3.

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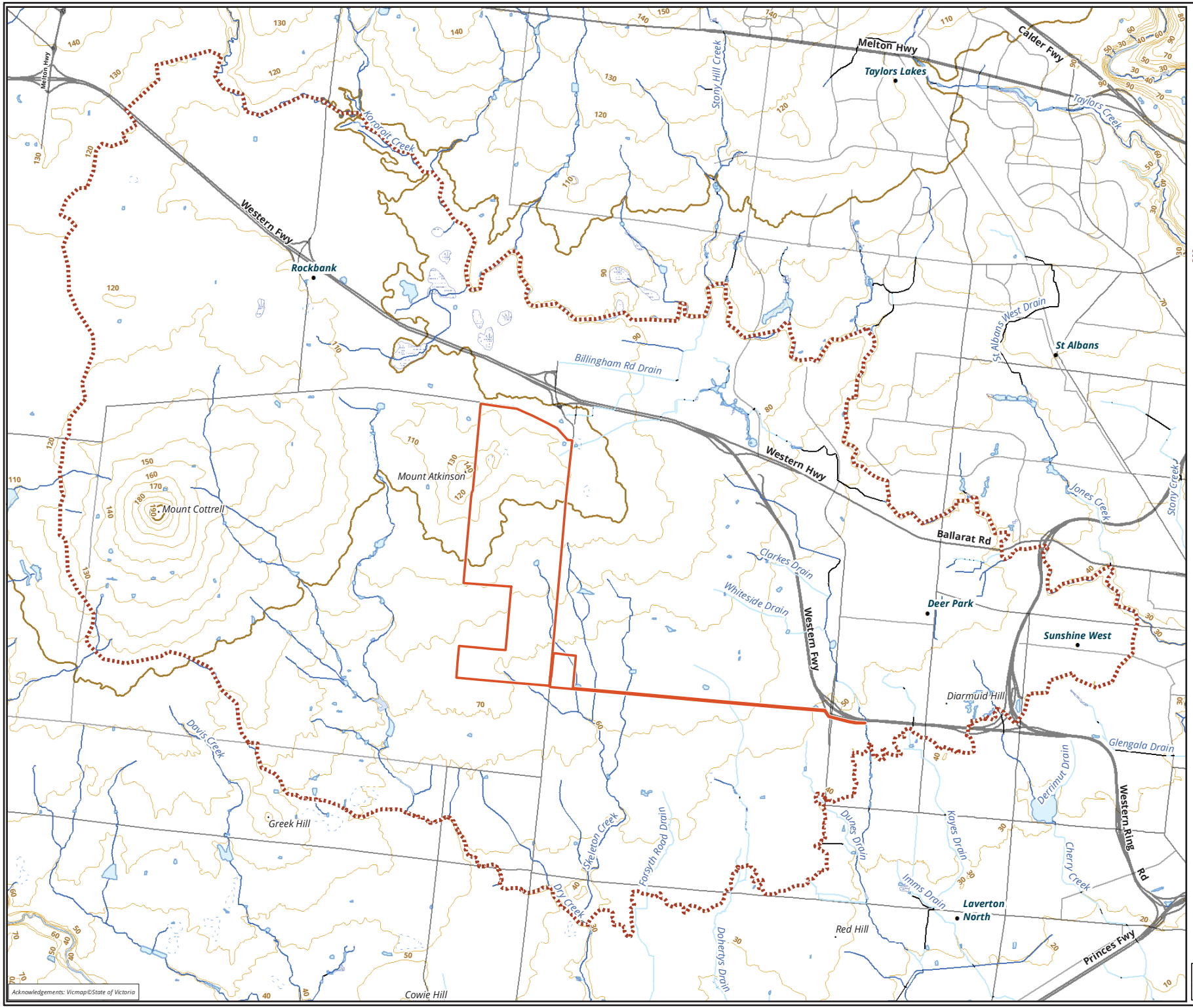


Legend

- Activity Area
- Geographic region

Map 3 Geographic region

0 590 1,180 1,770 2,360 2,950

Metres
Scale: 1:60,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

N

Biosis Pty Ltd
Ballarat, Brisbane, Canberra, Hobart, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Matter: 19337, CHMP 13712
Date: 12 April 2017,
Checked by: KFR, Drawn by: SKM, Last edited by: smitchell
Location:P:\19300s\19337\Mapping\19337_M3_Georegion.mxd

5.3 Aboriginal places in the geographic region

A search of the VAHR has identified 277 previously recorded Aboriginal places within the geographic region. The predominant Aboriginal place types in the geographic region are stone artefact scatters (n=226 (81 per cent)) and low density artefact distributions (n=47 (17 per cent)). Very small numbers of earth features (n=2 (1 per cent)) and stone artefact scatters with associated earth or stone features (n=2 (1 per cent)) have also been recorded. These earth features are all soil deposits containing artefacts in waterway bank settings. All of these soil and stone features are located immediately adjacent to Kororoit Creek and therefore are unlikely to occur within the Activity Area.

Large proportions of these previously recorded places have been recorded in close proximity to a major waterway, such as Kororoit Creek, or the confluence of Skeleton and Dry Creeks. There is generally a relationship to the number of artefacts recorded at a place and its proximity to a waterway. Fitting with this scenario, many places that are further away from established waterways contain fewer artefacts, and there are often one or two surface artefacts located on an exposure lacking vegetation. Many of these places have been recorded relatively recently as a result of the large scale urban growth that the outer western suburbs have experienced. Only minor, ephemeral drainage channels are located in the Activity Area, such as the headwaters of Skeleton Creek. Therefore, there are unlikely to be higher frequencies of artefacts associated with waterways in the Activity Area. Most Aboriginal places consist of small numbers of artefacts, where silcrete, quartzite and quartz are the dominant raw materials in surface and/or subsurface contexts.

There are 70 Aboriginal places recorded within 1.5 kilometres of the current Activity Area. Of these places, 54 are artefact scatters, while the remaining 16 are low density artefact distributions. The following places are typical of setting further away from watercourses, more closely resembling the present Activity Area.

Mount Atkinson (VAHR 7822-0206) is located 140 metres west of the Activity Area on the cone of the extinct volcano and is described as a large, high density scatter with 47 artefacts recorded in one square metre. Raw materials included silcrete, quartz and quartzite that were utilised to make flakes, cores, and microliths.

BQ1 (VAHR 7822-0707) consists of a single sandstone grinding stone located on the eastern side of Hopkins Road, 30 metres from the Activity Area.

Western Freeway 1 (VAHR 7822-1058) is 580 metres north-east of the Activity Area and consisted of one to four silcrete flakes recorded in a ploughed field. There was an unsuccessful attempt to relocate the place in 2016 as part of CHMP 14541.

Mt Atkinson AS 4 (VAHR 7822-1545) is a surface artefact scatter located on a vehicle access track 200 metres south of the Activity Area that consists of six silcrete and four quartz flakes.

Hopkins Road Low Density Artefact Distribution (VAHR 7822-3692) consists of a single chert broken flake located 350 metres east of the Activity Area.

Troups Road Low Density Artefact Distribution 2 (VAHR 7822-3694) consists of ten silcrete flakes, and two angular fragments, a chert angular fragment, a quartz flake and a basalt flake. These artefacts were located 1,200 metres to the north-west of the Activity Area.

In summary, the Aboriginal places discussed above fit in with the wider patterning seen in the geographic region. This is because most of the previously recorded places within 1.5 kilometres of the Activity Area are some distance from the mid to lower reaches of waterways and as a consequence there were low numbers of artefacts recorded. This, however, could be due to the areas immediately to the north, south, east and west being relatively undeveloped and the lack of archaeological investigation in those areas. This contrasts with locations adjacent to Kororoit Creek, where large numbers of artefacts were collected (such as CHMP 12192 and associated salvage excavation outlined below) as these places were heavily utilised in the past due to accessibility to water and associated resources The exception is Mount Atkinson (VAHR 7822-0206), however

this place is located on a prominent landscape feature in the region and affords views across to Port Philip Bay. It is likely this Aboriginal place was utilised for occupations rather than only resource exploitation.

There are 19 Aboriginal places that have been previously recorded within the Activity Area. Of these, 8 are artefact scatters, 7 are isolated artefacts, and 2 are low density artefact distributions. These places are summarised in Table 7.

Most of these places were located in the northern parts of the Activity Area, were recorded in surface contexts and associated with the higher elevations and prominent vantage points; all places with higher numbers of artefacts were associated with these characteristics. There were some places recorded that were situated in lower elevations. These places consisted of single or low numbers of artefacts that had been recorded opportunistically on surface exposures where vegetation had been removed. There were no distinct spatial patterns between these artefacts and the raw materials represented within the assemblages, with silcrete, quartz and quartzite all identified.

Based on the previously recorded Aboriginal places in the geographic region, there are a high number of places concentrated near more permanent watercourses such as Kororoit Creek and the confluence of Dry and Skeleton Creeks. The predominant place types are artefact scatters and Low Density Artefact Distributions. Aboriginal places recorded further away from more permanent watercourses, such as the more ephemeral headwaters of Skeleton Creek and the drainage channel within the Activity Area, contain much lower numbers of artefacts and thus occupation was possibly more transient in nature in these locales. Similar raw materials have been identified throughout the geographic region, including the Activity Area, suggesting that local sources were likely exploited.

Table 7 Details of Aboriginal places located within the Activity Area

Place name	Place type	Features	Landform
Mt Atkinson IA 1 (VAHR 7822-1534)	Artefact scatter	Single surface artefact located among piled basalt boulders. Single quartz flake	Volcanic plains
Mt Atkinson IA 2 (VAHR 7822-1535)	Artefact scatter	Four surface artefacts located in ploughed field. Two quartz flakes and two quartz cores	Middle slope
Mt Atkinson IA 3 (VAHR 7822-1536)	Artefact scatter	Three surface artefacts located on vehicle access track. Three quartz flakes	Middle slope of stony rise
Mt Atkinson IA 4 (VAHR 7822-1537)	Artefact scatter	Singe surface artefact located on vehicle access track. One quartzite flake	Stony rise
Mt Atkinson IA 5 (VAHR 7822-1538)	Artefact scatter	Five surface artefacts located on vehicle access track. Three quartz flakes and one quartz core	Lower slope of stony rise
Mt Atkinson IA 6 (VAHR 7822-1539)	Artefact scatter	Four surface artefacts located in ploughed field. Two quartz flakes, one quartz core and one broken quartz scraper	Lower slope of stony rise
Mt Atkinson IA 7 (VAHR 7822-1540)	Artefact scatter	Single surface artefact located in open grassed paddock. One quartzite flake	Stony rise
Mt Atkinson IA 8 (VAHR 7822-1541)	Artefact scatter	Three surface artefacts located on vehicle access track. One quartz flake, one quartzite core and one silcrete scraper	Stony rise
Mt Atkinson AS 1 (VAHR 7822-1542)	Artefact scatter	Eight surface artefacts located on vehicle track that cuts through small stony rise. Six quartz flakes, one	Stony rise

Place name	Place type	Features	Landform
		quartz core and one quartzite flake	
Mt Atkinson AS 2 (VAHR 7822-1543)	Artefact scatter	16 surface artefacts located on the top of a small stony rise. Silcrete, quartz and quartzite flakes, cores and retouched flakes	Crest of stony rise
Mt Atkinson AS 3 (VAHR 7822-1544)	Artefact scatter	Original recording: 17 surface artefacts located on vehicle access track for a length of 850 metres. 11 silcrete flakes, three quartzite flakes, one quartz flake, one silcrete scraper and one basalt backed blade. Later recording: 583 artefacts located on vehicle access track for a length of 850 metres. Combination of silcrete, quartz and quartzite raw materials, variety of types representing range of stone tool manufacturing. Information not provided to VAHR at time of recording.	Stony rise
Mt Atkinson AS 5 (VAHR 7822-1546)	Artefact scatter	10 surface artefacts located on eastern slopes of Mount Atkinson summit. Five silcrete flakes, four quartz flakes and one quartzite flake	Middle to upper slope
Mt Atkinson AS 6 (VAHR 7822-1547)	Artefact scatter	Seven surface artefacts located on eastern slopes of Mount Atkinson summit. Three silcrete flakes, three quartzite flakes and one silcrete scraper	Middle to upper slope
Mt Atkinson AS 9 (VAHR 7822-1548)	Artefact scatter	Single surface artefact located nearby man-made dam on drainage line. One silcrete backed blade	Flood plain
Mt Atkinson AS 10 (VAHR 7822-1549)	Artefact scatter	Single surface artefact located in ploughed field near fenceline. One quartzite flake	Middle slope of stony rise
Mt Atkinson AS 11 (VAHR 7822-1550)	Artefact scatter	Three surface artefacts located on vehicle access track. Two silcrete flakes and one silcrete retouched blade	Upper crest of stony rise
Mt Atkinson AS 12 (VAHR 7822-1551)	Artefact scatter	Single surface artefact located on stony rise that has had some basalt boulders removed. One silcrete core	Middle slope of stony rise
Peppercorn Rise 1 (VAHR 7822-3798)	Low Density Artefact Distribution	15 surface and one sub-surface artefact located on vehicle access tracks. Five quartz flakes, three quartz angular fragments, two quartz cores, three quartzite flakes, one silcrete flake and one andesite flake	Flat open plain
Mount Atkinson PSP LDAD (VAHR 7822-3802)	Components of LDAD	Single surface artefact (component 5) located in field. One quartzite core.	Middle to upper slope

5.4 Previous work in the geographic region

There has been a total of 194 archaeological assessments undertaken within the geographic region. Of these, 82 were CHMPs for which 71 had a Complex Assessment component. These assessments vary in scope, however many are associated with large scale residential and industrial developments and the installation of utilities. The following are summaries of assessments within the geographic region that are relevant to the current assessment.

Thomson (2003) conducted a survey of the current Activity Area as part of an early assessment of its archaeological potential. The assessment noted that the study area had predominately been used for agricultural and pastoral activities during the 19th century. The northern section contains a number of stony rises while in the western section, at the base of Mount Atkinson is a swamp. The northern section had been ploughed for crops and, consequently, had extensive basalt removal. Much of the southern section consisted of grass plains that were deemed to have less archaeologically significant features than the northern section. During the field assessment, there was generally poor surface visibility due to thick grass cover and numerous basalt boulders. However, the removal of basalt, existing vehicle tracks, and ploughed paddocks allowed for some visibility, and it was in these locations that Aboriginal places were recorded. It is suggested that since the northern section of the property offers an excellent view and vantage point for the surrounding landscape, it may have been an area crossed when travelling between Skeleton Creek and Kororoit Creeks. It was recommended that areas with high to moderate archaeological sensitivity, such as prominent stony rises, drainage lines, and artefact scatter locations, were to be avoided by development and incorporated into open public space where possible.

The installation of a gas pipeline required a Complex Assessment CHMP (11609) by Murphy and Morris (2011) for an 8.4 kilometre corridor that covers the eastern border of the current Activity Area along Hopkins Road. The Standard Assessment identified low potential for cultural material within 200 metres of Kororoit Creek and the upper waters of Skeleton Creek, as well as the elevated landforms and stony rises associated with Mount Atkinson and one new place, Kororoit Creek Scatter 1 (VAHR 7822-2917) located nearby Kororoit Creek. This place consisted of two quartzite artefacts.

The Complex Assessment consisted of a testing program of four 2x1 metres test pits, 4 1 x 1 metre test pits and 13 50 x 50 centimetre test pits. These test pits were located on landforms identified as significant during the survey. There were two distinct soil profiles identified that corresponded with landforms. In the floodplains of Kororoit Creek, recent alluvial clay silts that contained modern refuse overlay sterile clays. The areas of testing that occurred in the current Activity Area consist of thin layers of topsoil overlying silty clay, underlain by basaltic clay to depths. All excavation ceased at below 200 millimetres. No cultural heritage material was collected during subsurface testing. As the place identified was deemed as having extremely low scientific significance and the archaeological component of the place had been removed, no recommendations were required for this CHMP.

Two precinct structure plan studies, for Tarneit Plains in Truganina and Mount Cottrell and Mount Atkinson, that include the current Activity Area, were conducted by McManus and Powers (2015; 2015). Both studies included a background review and a field survey. Of the 18 sites previously recorded within the broader study area, only five were able to be identified, however the majority of these places consisted of isolated artefacts or contained low numbers of artefacts. The field surveys also lead to the registration of Mount Atkinson PSP LDAD (VAHR 7822-3802) of which two components were located within the current Activity Area. The elevated areas on the crest and upper slopes of Mount Atkinson were identified as having a high likelihood of containing Aboriginal cultural heritage, as well as the distinctive stony rises to the east of the summit. Moderate potential was designated throughout lower areas adjacent to drainage and low rises in the southern most section of the current Activity Area. It was recommended that mandatory CHMPs be

undertaken on all properties within the northern seven-eighths of the Activity Area, while parcels within the southern-most eighth should undergo voluntary CHMPs.

Murphy and Morris (2013) undertook a Complex Assessment CHMP (12312) for an industrial subdivision on a 135.5 hectare parcel of land approximately 1.6 kilometres east of the current Activity Area. The Desktop Assessment identified stone artefact scatters as the prominent Aboriginal place types in the region, and that soil profiles are likely shallow (0–30 millimetres), overlying basalt clay and basalt floaters/bedrock. The Standard Assessment could not identify the four previously recorded Aboriginal places within the study area but observed two distinct landforms: flat plains and low-lying swamp/drainage lines. Flat plains adjacent to these swamps/drainage lines were considered to have archaeological potential. Two surface artefacts were recorded as components of Ravenhall Artefact 1 (VAHR 7822-3549). This place was located in a ploughed field within basalt plains. During the Complex Assessment a total of five 2 x 1 metre test pits, and 51 40 x 40 centimetre shovel test pits were excavated. One general soil profile was identified: reddish brown clayey silt (2–10 centimetres deep) overlying red brown basaltic clay or basalt boulders/bedrock. No subsurface artefacts were identified. The test pits were excavated near the previously recorded places, and these excavations also did not contain any cultural material. As none of the previously recorded places could be identified, no recommendations were made for these Aboriginal places. As the surface artefacts related to Ravenhall Artefact 1 (VAHR 7822-3549) had been collected, no further recommendations were made for this place.

A Cultural Heritage Assessment was undertaken by Thomson, et al. (2013) for the majority of the current Activity Area to inform on heritage constraints for the potential development based on background research and a site inspection. The Desktop Assessment identified that artefact scatters could likely be located in all landforms with higher concentrations on Mount Atkinson, its ridges and lower slopes; stony rises and lower order drainage. Isolated artefacts could also be located on all landforms. Previously recorded places were inspected, although low ground surface visibility impeded these inspections at some locations. Most of these artefacts were related to previously recorded places, demonstrating these places were possibly larger than their initially recorded extents. A large number of surface stone artefacts were recorded on vehicle and stock tracks during the site inspection. An area of archaeological potential was identified across the summit and ridges associated with Mount Atkinson, and the ephemeral watercourse that drains to the south-east. It was recommended that a CHMP should be undertaken as part of the master planning that includes a comprehensive survey of the entire site during a period of good surface visibility.

A proposed industrial subdivision on a 67.5 hectare parcel of land located 800 metres east of the current Activity Area required a Complex Assessment CHMP (13025) that was undertaken by Ward, et al. (2014). The Standard Assessment identified five surface artefacts that were registered as the low density artefact distribution Western Highway Rockbank (VAHR 7822-3770). These consist of three silcrete backed implements, and a silcrete and a quartz flake fragment. One landform was observed: gentle basalt plains. Five 1 x 1 metre test pits and 52 40 x 40 centimetre shovel test pits were excavated during the Complex Assessment, with no further cultural material being collected. The stratigraphy of the single landform was described as dark brown light-medium clay forming sub-angular blocky to granular structure with a clear boundary to mottled dark brown to very dark brown medium to heavy clay with prismatic to sub-angular blocky structure at depths of between 70 and 230 millimetres. It was recommended that Western Highway Rockbank (VAHR 7822-3770) undergo surface salvage. There were no other recommendations.

Thomson and James-Lee (2014) undertook a Complex Assessment CHMP (13123) within the northern central part of the current Activity Area for an approximately five hectare section associated with the main driveway and former homestead. No landforms with archaeological potential (e.g. stony rises) were identified during the Standard Assessment, although 15 surface artefacts were recorded in disturbed areas such as vehicle access tracks resulting in the registration of Peppercorn Rise 1 (VAHR 7822-3798). The Complex Assessment consisted of 39 40 x 40 centimetre shovel probes and one 1x1 metre test pit. One further subsurface artefact

was collected, and added to the registration of Peppercorn Rise 1 (VAHR 7822-3798). The stratigraphy consisted of moist, reddish brown clayey silt with small to medium basalt fragments and historic refuse to a depth of 100 millimetres that was overlying compact sticky, strong brown clay with basalt and scoria inclusion. Maximum depths of excavation were 300 millimetres. It was recommended that this place undergo surface salvage.

The installation of a water pipeline between St Albans and the Cowies Hill Reservoir required a Complex Assessment CHMP (12652) that was undertaken by Walther, et al. (2014) on a 17 kilometre alignment that overlaps the easternmost part of the current Activity Area on Middle Road. The Standard Assessment concluded that large swathes of disturbance associated with the construction of roads, swale drains and the Metropolitan Remand Centre, as well as existing residential and industrial development in the northern portions of the proposed works. Three distinct landforms were identified: volcanic plains, stony rises and alluvial terrace. 22 places had been previously recorded within or nearby the alignment, however none were able to be relocated during the Standard Assessment. Six isolated artefacts were recorded during the survey, each located within areas of high surface visibility, where paddocks had been recently ploughed on volcanic plains landform. The component of the alignment that lies within the current Activity Area was designated as being heavily disturbed, and subsequently no subsurface testing took place within the road reserve of Middle Road. The Complex Assessment focused on areas of sensitivity, and a total of 15 1x1 metre test pits and 47 50x50 centimetre shovel test pits were excavated, with a total 49 artefacts being retrieved. The stratigraphy generally consisted of shallow humic clayey topsoil with heavy clay or basalt subsoil or parent material. A total of six LDADs were identified (Middle Road Truganina LDAD 1 (VAHR 7822-3736), Derrimut Road Truganina LDAD 1 (VAHR 7822-3735), Tarneit Road Tarneit LDAD 1 (VAHR 7822-3733), Tarneit Road Tarneit LDAD 2 (VAHR 7822-3734), Dohertys Road Truganina LDAD 1 (VAHR 7822-3737), and Winslow Crescent Deer Park LDAD 1 (VAHR 7822-3738), and one artefact scatter (Kororoit Creek Terrace Deer Park (VAHR 7822-3749)) during this assessment. A subsurface salvage was recommended for Kororoit Creek Terrace Deer Park (VAHR 7822-3749) that required four sample units of 4x2 metre mechanically excavated trenches. Each sample unit will be located on either the lower slope, middle slope, middle terrace or upper terrace of the salvage area. No other recommendations were made.

Cummins, et al. (2014) prepared a Complex Assessment CHMP (12192) for a residential development at Rockbank North on a 477.16 hectare parcel of land approximately 1.2 kilometres north-west of the current Activity Area. The Desktop Assessment determined that artefacts scatters and isolated artefacts are commonly occurring site types, and that artefact scatters have the potential to be numerically and spatially large adjacent to natural water sources. The Standard Assessment recorded 308 surface artefacts, present in both low and high concentrations. Most artefacts recorded were silcrete or quartz, with smaller amounts of quartzite and basalt. Artefact types recorded were general flakes, knapping debris, cores and formal tools. The Complex Assessment focused on the areas archaeological potential associated with waterways and marshes. A total of 172 hand excavated 1 x 1 metre test pits and 23 mechanically excavated 5 x 0.6 metre trenches were excavated, resulting in 3,298 artefacts being retrieved. Stony rises, basalt escarpments, lowland plains and waterway corridors were characterised by dry, loose to firm reddish-brown clayey silt topsoil that was 50 to 100 millimetres deep. Underlying this unit was a firm, sometimes friable, dark reddish brown clayey silt with the occurrence of basalt increasing from occasional to moderate small to medium sized pieces to moderate to frequent small, medium and large pieces with a depth of around 200 millimetres. The base consisted of reddish brown, blocky clay mixed with small to large-sized basalt. A total of 10 Aboriginal places were registered due to this assessment. Four low density artefact distributions: Rockbank North LDAD 1 (VAHR 7822-3699), Rockbank North LDAD 2 (VAHR 7822-3700), Rockbank North LDAD 3 (VAHR 7822-3701), Rockbank North LDAD 4 (VAHR 7822-702); and six artefact scatters: Rockbank Swamp (VAHR 7822-3698), Rockbank Outlook Site Complex (VAHR 7822-3708), Rockbank North Rim Site Complex (VAHR 7822-3707), Rockbank North Elevated Rises (VAHR 7822-3706), Kororoit Creek Basin Site Complex (VAHR 7822-3705), Kororoit Creek East Bank Site (VAHR 7822-3697). The artefact scatters were registered based on landform. It

was recommended that salvage excavation was to consist of 5 x 5 metre trenches, excavated using hand trowels in 50 millimetre spits or by context if possible. Soil was to be excavated in 50 x 50 centimetre quadrants. Surface salvage involved the collection of all identifiable surface artefacts in the areas that were to be impacted. If the density of surface artefacts exceeded 100 within a 4 x 4 metre area, a 50 x 50 centimetre test pit was to be excavated to evaluate the subsurface nature and archaeological potential of the area. If the artefact densities above 25 per 5 millimetre spit were encountered in the trench, the excavation would be expanded to a 1 x 1 metre area. Where harm could not be avoided or minimised by the development, one or both salvage methods were to be employed depending on the significance of the place. Most of Rockbank Swamp (VAHR 7822-3698) was to be retained, so only the northern periphery that was to be impacted was to undergo surface salvage. Only a small portion of Rockbank Outlook Site Complex (VAHR 7822-3708) was to be protected, and consequently four salvage pits were to be excavated and the rest of the place to undergo surface salvage. Surface salvage was also to be undertaken in the western components of Kororoit Creek Basin Site Complex (VAHR 7822-3705) that were less significant to those closer to Kororoit Creek. Five salvage pits were to be excavated, concentrated where the highest impact took place. Where the road impacted Kororoit Creek East Bank Site (VAHR 7822-3697), three salvage excavations were to take place. This corridor and another section impacted by development were to undergo surface salvage. Rockbank North Rim Site Complex (VAHR 7822-3707), Rockbank North Elevated Rises (VAHR 7822-3706), Rockbank North LDAD 1 (VAHR 7822-3699), Rockbank North LDAD 2 (VAHR 7822-3700), Rockbank North LDAD 3 (VAHR 7822-3701) and Rockbank North LDAD 4 (VAHR 7822-702) were to undergo surface salvage.

The salvage of the places registered in CHMP 12192 was undertaken by Burrows and Foley (2015). A total of 12 5 x 5 metre salvage pits were excavated. The surface salvage of the designated areas was also carried out. Due to poor ground surface visibility, ploughing of areas that had been historically ploughed was permitted to increase the visibility of surface artefacts. Thresholds of surface artefacts outlined in the CHMP was met twice, leading to the excavation of two further 1x1 metre test pits. A total of 17,270 Aboriginal stone artefacts were recovered from both surface and subsurface contexts. A total of 300 metres squared was excavated during the salvage program, as well as the additional two 1x1 metre excavations outlined earlier. These 1x1 metre excavations and Subsurface Salvage Areas (SSA) 1, 2 and 3 were located within Kororoit Creek East Bank Site (VAHR 7822-3697). Of the artefacts recovered, 43 were retrieved from SSA 1,592 artefacts from SSA 2 and 13,033 from SSA 3. SSA 1 and 2 were located further from Kororoit Creek and had similar stratigraphic profiles with two stratigraphic units identified: a firm, dark red silt loam with sub-rounded ironstone inclusions that increased in frequency with depth, and mottled brown-orange silt-clay at a depth of 200 millimetres. Most artefacts were silcrete, with small numbers of crystal quartz, quartzite, tachylite and quartz. Most were small flakes, broken fragments and angular fragments. SSA 3 was located on the top of basalt bluffs overlooking Kororoit Creek. The stratigraphy consisted of soft mid-grey brown silt loam with frequent small angular basalt to a depth of 70 millimetres. Underlying this unit was very frequent angular and sub-angular degraded basalt (5 -100 millimetres) and numerous large basalt floaters (>70 centimetres). Ruggedly undulating basalt bedrock made up the base of this pit to a maximum depth of 400 millimetres. Most of the artefacts recovered were also silcrete, with small proportions of quartz, crystal quartz and volcanic material. 603 artefacts displayed usewear or retouch. A total of 966 artefacts were recovered from the surface salvage associated with this place. The basalt bluff that was a component of Kororoit Creek East Bank Site (VAHR 7822-3697) was an outcrop of basalt boulders that was interpreted as a favoured location for repeated semi-permanent Aboriginal occupation. The argument put forth was that the deposit was largely a secondary deposit as a result of artefacts washing into the silt trap formed by the basalt boulders from upslope through a combination of wind, water and gravity, rather than a primary cultural deposit. During the surface salvage of Rockbank Swamp (VAHR 7822-3698) a single quartz artefact was collected.

The salvage of Kororoit Creek Basin Site Complex (VAHR 7822-3705) lead to the excavation of another five areas (SSA 4, SSA 5, SSA 6, SSA 7 and SSA 8). The stratigraphy of SSA 4, 6 and 8 consisted of shallow, homogenised clay-loam soil similar to those of SSA 1 and 2. The stratigraphy of SS 5 was similar to that of

SSA 3, and due to the position of SSA 7, in a depression subject to regular inundation the sediments were also relatively shallow. 61 artefacts were retrieved from SSA 4, 194 artefacts from SSA 5, 64 artefacts from SSA 6, 82 artefacts from SSA 7 and 79 artefacts from SSA 8. A further 32 artefacts were collected during the surface salvage. Rockbank North Elevated Rises (VAHR 7822-3706) underwent a surface salvage that recovered 14 stone artefacts. The North Rim Site Complex (VAHR 7822-3707) also underwent surface salvage and a further 46 artefacts were collected.

Four subsurface salvage excavation areas were excavated as part of the salvage recommendations for Rockbank Outlook Site Complex (VAHR 7822-3708) which resulted in the collection of 22, 100, 191 and 127 artefacts. A further 146 artefacts were collected during the surface salvage of this place. The subsequent stone artefact analysis demonstrated that size sorting and differential weathering patterns indicate vertical movement of artefacts of multiple ages. Subsequently artefacts from lower depths could not be assumed to be older than those higher in the profile. Horizontal displacement was limited to movement at the intra-site level, and context can be determined to landform level, rather than precise stratigraphic provenance. At Kororoit Creek East Bank Site (VAHR 7822-3697) the reduction of silcrete was focused on margin of the creek line where large cores and unmodified nodules were provisioned for future use. Wide variation in formal tool form, raw material and reduction strategies suggest this site was an area of intensive occupation. Diversity in raw material and reduction strategies away from Kororoit Creek suggest that each low density occurrence of artefacts represents a short-term activity-focused event, suggesting a foraging pattern whereby the creek was used as a base, and frequent short term forays into the surrounding area have left widespread traces across the wider landscape. A total of 118 stone artefacts were submitted for usewear and residue analysis, of which 50 (three groundstones and 47 flaked artefacts) were deemed suitable for further analysis. The ground surfaces identified evidence for seed grinding and plant processing. A variety of residues were recorded on 24 artefacts, for which a quarter were related to hafting practices, another quarter to use, and half could not be attributed to utilisation. Use related residues identified were plant, bone, collagen, proteins, ochre-like mineral and resin.

A Complex Assessment CHMP (11154) was undertaken by Cummins, et al. (2015) for a residential subdivision on a 51.9 hectare parcel of land located approximately 1.5 kilometres north-west of the current Activity Area. During the Standard Assessment 136 silcrete, quartz and quartzite stone artefacts were recorded, particularly on the northern and eastern boundaries of the property. Two areas of archaeological potential were also identified: the plain adjacent to a wetland and an elevated stony rise overlooking an ephemeral creek in the west of the property. The Complex Assessment consisted of two 1 x 1 metre test pits and 173 50x50 centimetre shovel test pits. The stratigraphy consisted of shallow clayey silt overlying clay or basalt at a depth of between 100 and 350 millimetres. Most excavations ceased at between 150 and 200 millimetres. From the test pits and 16 of the shovel test pits a total of 47 artefacts were collected. An additional 114 surface artefacts were recorded during the Complex Assessment.

Six new Aboriginal places were registered: Troups Road AS 1 (VAHR 7822-2784), Troups Road AS 2 (VAHR 7822-2779), Troups Road AS 3 (VAHR 7822-0278), Troups Road AS 4 (VAHR 7822-2785), Troups Road AS 5 (VAHR 7822-2786) and Troups Road AS 6 (VAHR 7822-2778). Harm to Troups Road AS 1 (VAHR 7822-2784) and Troups Road AS 6 (VAHR 7822-2778) could not be avoided, and as there was no subsurface component to this place, a surface salvage was recommended. Harm to Troups Road AS 2 (VAHR 7822-2779) and Troups Road AS 5 (VAHR 7822-2786) could not be avoided, and as there were surface and subsurface components to this place, a 2x2 metre salvage trench and a surface salvage were recommended. Harm to Troups Road AS 3 (VAHR 7822-0287) could not be avoided, but as the place consisted of a single subsurface artefact, no further management was recommended. Harm to Troups Road AS 4 (VAHR 7822-2785) could not be avoided, however part of the place was to be preserved within a wetland reserve and as there was a surface and subsurface component to this place, both a salvage trench and a surface salvage were recommended.

The subsequent salvage for the places recorded in CHMP 11154 was undertaken by Lawler, et al. (2016). Troups Road AS 2 (VAHR 7822-2779), Troups Road AS 4 (VAHR 7822-2785) and Troups Road AS 5 (VAHR 7822-2786) initially underwent subsurface salvage. Four areas were excavated: Excavation Area 1 — a 2 x 2 metre trench, Excavation Area 2 — a 10 x 1 metre trench, Excavation Area 3 — a 5 x 5 metre trench and Excavation Area 4 — another 5 x 5 metre trench. The stratigraphic profiles of these excavation areas generally agreed with those identified during the CHMP. A total of 455 artefacts were collected through these excavations. Most excavation areas recorded low frequencies of artefacts (>8 per square metre), which is comparable to those of the CHMP and reported in the wider region. Artefacts were generally located throughout the stratigraphic profile, although these were shallow with the deepest trench reaching 350 millimetres. The low number of artefacts per square metre meant that there was no further requirement for further salvage excavation. Surface artefact retrieval was required at five of the six places. The extent of each Aboriginal place was traversed on foot and all artefacts were collected and their location mapped using a DGPS. The extent of each Aboriginal place and a 10 metre buffer had the grass cut and were then ploughed. Each extent was then traversed as before. A total of 410 surface artefacts were retrieved during the surface salvage. The 865 artefacts recovered during the surface and subsurface salvage. Silcrete, quartzite and quartz dominated the overall assemblage, with smaller proportions of tachylite, crystal quartz, chert and basalt. Material was of variable, although generally good quality material. The high proportion of snapped flakes and narrow size range of artefacts suggests high levels of post depositional disturbance. The distribution of raw materials and primary forms are typical of assemblages from the broader region. Assemblages of each place were homogenous due to ploughing, with the exception of Troups Road AS 5 (VAHR 7822-2786) that displayed less post depositional disturbance attributed to its location within a stony rise. At the conclusion of this project, there were no additional salvage recommendation requirements.

O'Connor (2016) undertook a Complex Assessment CHMP (13886) for the installation of power poles along a 19 kilometre alignment, the southernmost section of which bisected the Activity Area along Riding Boundary Road. The Standard Assessment was broken up into four arbitrary survey units. Three landforms were identified: stony rises, basalt plains/floodplains, and former wetlands/creeks. The current Activity Area was located within Survey Unit 4 and was designated as having moderate likelihood of containing cultural heritage. This is due to the limited extent of disturbance and the elevated stony rises located further to the west. No archaeological material was identified during the Standard Assessment. The Complex Assessment consisted of a total of 85 40 x 40 centimetre shovel test pits and three 1 x 1 metre test pits, which were excavated in 11 transects positioned to test each landform. The stratigraphy was generalised for each landform, and in summary consisted of a thin layer of medium red-brown clayey silt overlying compacted red-brown clay with depths varying between 80 and 250 millimetres. Within the current Activity Area sediments consisted of dry, compact mid-brown silt overlying dry, cemented, undulating mid-brown clay, at depths of between 50 and 80 millimetres. No cultural heritage material was identified during this stage of the assessment. As no cultural heritage was identified, there were no specific recommendations.

A residential subdivision for five parcels of land approximately 2.3 kilometres north-west of the current Activity Area required a Complex Assessment CHMP (14429) which was undertaken by Wisniowiecka and Schell (2016). A total of 46 surface artefacts were identified on the volcanic plain landform during the Standard assessment. Three different landforms were identified: volcanic plains, rocky outcrops and low lying land subject to inundation. The rocky outcrops and volcanic plains landforms were deemed suitable for subsurface testing. A total of 12 1 x 1 metre test pits were excavated during the Complex Assessment. The stratigraphy on the rocky outcrop was generally dark brown clayey silt overlying dark brown silt containing basalt buckshot, another layer of dark brown clayey silt with gravels before the base of clay at around 160 millimetres. The volcanic plains stratigraphy consisted of loose dark red/brown silt with small as of clay, overlying a compacted dark red/brown clay base at a depth of between 90 and 370 millimetres. No subsurface cultural heritage was recorded. The lack of subsurface artefacts confirmed the results of the Standard assessment that only a sparse low-density scatter of artefacts were located on volcanic plains. It was

posited that such low densities of artefacts were present that they would only be identified by large scale stripping of soil horizons. Two new Aboriginal places were registered: Troups Road LDAD 3 (7822-3990) and Troups Road LDAD 4 (VAHR 7822-4002). Troups Road LDAD 3 (7822-3990) consists of 44 surface artefacts in a ploughed field made up of silcrete, quartz and quartzite. Troups Road LDAD 4 (VAHR 7822-4002) consists of a quartzite and a tachylite surface artefact. These places were to undergo surface salvage, and portions of the property were to be ploughed in areas of low visibility to determine the extent of these places.

5.4.1 Summary of Previous Investigations

The previous investigations indicate that there is an abundance of cultural heritage material within the geographic region, and material has also been identified within the current Activity Area. However, the characteristics of these places is largely determined by the landform, proximity to water and previous disturbances that have taken place in the past. Common landforms identified in previous assessments are stony rises, volcanic plains and alluvial terraces. Complex Assessments have generally targeted landforms that have been associated with archaeological material, such as stony rises, alluvial terraces and plains landforms nearby watercourses. Test pits of 1 x 1 metre, 50 x 50 centimetre shovel test pits and mechanical trenches have all been utilised to test these landforms. The stratigraphic profile of volcanic plains landforms generally consisted of shallow (50–300 millimetre) silty clay that may have basalt inclusions, overlying either clay or basalt parent material. The larger and higher significance places that have been recorded in nearby CHMPs were generally located nearby Kororoit Creek; however, areas where historic farming had led to ploughing and removal of surface basalt has taken place, where frequent Aboriginal occupation may have been located, are now void or extremely limited in physical remains of these materials. There is also a general pattern of fewer artefacts located at an Aboriginal place as distance from these permanent watercourses increases.

5.5 Historical and ethno-historical accounts in the geographic region

For the purposes of this assessment, information about Aboriginal Victorian pre and post contact history has been sourced from 19th and 20th century primary and secondary ethnographic/historical records.

5.5.1 Ethno-historical accounts of Aboriginal people

Linguistic boundaries and social organisation

Prior to European colonisation, the Victorian landscape was delineated by socio-dialectical groups who shared a common language and who, as a group, identified as owning particular areas of land, with individually owned tracts of country. This was a system of spatial organisation based on land tenure (Clark, 1990).

Aboriginal groups mapped natural features as boundaries for their ranges, estates and economic territories. Howitt (1904) identified a large portion of south-central Victoria as holding a confederation of five language groups; together they comprised the Kulin Nation. Kulin is a common word for human being among the *Bun wurrung*, *Woi wurrung*, *Djadja wurrung*, *Wada wurrung*, and *Daung wurrung*, who shared cultural and linguistic similarities as well as being economically and socially affiliated. The Kulin groups also had common religious beliefs and creation legends. The Activity Area is located near the border area of the *Woi wurrung* and *Bun wurrung* language groups.

Land ownership and access rights or responsibilities centred on the smaller named groups that formed the broader language grouping. These groups are often called 'clans' or 'local descent groups'; however, as (Wesson, 2000, p. 8) reasons, they are better described as 'named groups', as the membership structure of these groups, and their degree of division from other groups, could vary. In most instances, primary allegiance was owed to this named group, although this could vary according to context and location. Commonly, named groups were led by senior elders who exercised internal political and religious authority,

as well as being recognised as their spokesperson when dealing with other groups (Atkinson & Berryman, 1983). Particularly influential group leaders could also assume authority over the leaders of other culturally affiliated groups (Wesson, 2000). The named groups who occupied the Activity Area were the *Kurung Jang Balug* of the *Woi wurrung* and the *Yalukit Willam* of the *Bun wurrung*.

The *Kurung Jang Balug* occupied land at the Werribee River and Mount Cottrell, while the *Yalukit Willam* who occupied the coastal track at the head of Port Phillip Bay extending to Werribee River, and at Williamstown, Sandridge and St. Kilda (Clark, 1990).

Social activity involving neighbouring named or socio-dialectical groups was usually held in warmer periods, held at the intersection of group boundaries and arranged by a person assigned of the responsibility of travelling between groups to organise the time, place, and events of the meeting. This person could speak a number of different dialects and acted as an intermediary in negotiations between the groups. Activities would include sports and dancing, with up to 500 men, women and children attending (Atkinson & Berryman, 1983).

The succession or inheritance of lands and named group estates could occur in a number of ways. Individuals and groups could inherit lands from their father, their mother, through their birthplace, conception place, the burial place of their ancestors, and through totemic connections (Wesson, 2000). Access rights also crossed generations and marriage partners. Howitt (1904, p. 311) wrote that:

> The right to hunt and to procure food in any particular tract of country belonged to the group of people born there, and could not be infringed by others without permission. But there were places which such a group of people claimed for some special reason, and in which the whole of the tribe had interest. Such a place was the stone quarry at Mt. William near Lancefield, from which the material for making tomahawks was procured. The family proprietorship in the quarry had wide ramifications... when neighbouring groups wished for some stone they sent a messenger to Bill-billeri saying that they would send goods in exchange for it, for instance, skin-rugs.

People would often travel or reside in the territory of another named-group so that they could fulfil religious or family obligations, or exercise the privilege, granted to them by family or moiety associations, of exploiting the resources of another estate (Barwick, 1984). For daily activities and the exploitation of local estates, people are thought to have travelled in small residential units or extended family groups, often termed bands (Wesson, 2000).

Moiety affiliation

A further level of social organisation was moiety affiliation. In northern Victoria, Howitt (1904) records that the groups along the Murray River were divided into the same two moieties , *waa* (crow) and *bunjil* (eaglehawk), as the Kulin people to the South. The moiety of the *Kurung Jang Balug* of the *Woi wurrung* was *waa*, however it is unclear whether the moiety of *Yalukit Willam* of the *Bun wurrung* was *waa* or *bunjil*.

Membership to a named group is variably defined by a localised matrilineal or patrilineal descent group, with a female member of the group partnering with men outside of their group (exogamous) and across moiety lines; however they maintained an identity of belonging to their father's group. Men then had to adhere to certain duties, such as providing food to their father-in-law. Social engagement could be influenced by appropriate conduct between family members, for example men had avoidance behaviours they had to adhere to in the presence of their mother-in-law, and there were other speech or special duties which were expected in family relationships (Atkinson & Berryman, 1983).

Religion

Knowledge of Aboriginal religion was recorded and maintained through visual and oral tradition which ensured the maintenance of social structures through generations. Such knowledge was not always readily shared with non-Indigenous social observers and as such limited written versions from early settlers, explorers or government employees exist for Victoria. Ceremonies were occasionally performed to entertain Europeans however the meaning behind these performances was never fully explained (Robinson, 1840). Private ceremonies and locations, such as age initiations were actively kept secret (Presland, 1994).

Economy and resource utilisation

Certain individuals within Aboriginal groups had responsibilities assigned to them for the management of natural resources. Anthropogenic manipulation of the environment was observed by the first Europeans within northern Victoria, for example fire regimes which cleared tracks also aided in hunting and dissuaded settlers for entering Aboriginal territory (Atkinson & Berryman, 1983).

Canoes were cut from the bark of river red-gums and box trees with stone axe heads in spring to early summer, shaped over a fire, seasoned in the sun, then the end blocked with clay (Edwards R. , 1975). Hooped nets made from fibre were used to catch crayfish, yabbies and fish, while cross-line nets were strung low above the water for catching ducks or below the water to catch schools of fish (Gott & Conran, 1991). Line nets were also used to catch emus and kangaroos; a strategically placed group of people drove the animals towards the nets. Reed spears with hafted bone, carved barbs, stone pieces or hardened wooden points set into the head were used for catching larger marsupials. Oven mounds (cooking pits), were then constructed to bake the game or large volumes of vegetables (Atkinson & Berryman, 1983).

Roots, such as the Yam Daisy *Microserus* spp., seeds and fruits were important staples in the Aboriginal diet, as well as for medicine (Coutts, 1979; State of Victoria Agriculture Victoria, 2017). Yam Daisy tubers were roasted in hot coal-fired earth ovens, or ground and mixed with water to form dough which was baked in ovens (Zola & Gott, 1992). Plant resources were also utilised for domestic activities and played an essential role in providing raw material for manufacturing. For example, the leaves and stems of grasses provided fibre suitable for making coarse string utilised for bags and fishing nets while the outer bark of trees was used to construct canoes or shelters. The Activity Area would have contained grass species such as kangaroo, wallaby, spear and red-leg grasses and associated herbs and lilies. Likely plant resources available to Aboriginal people in the region would have been the Common Rice-flower *Pimelea humilis*, Kangaroo Grass *Themeda triandra* and Slender Sun-orchid *Thelymitra pauciflora s.l.* (Department of Environment and Primary Industries, 2013). Along the courses of creeks and tributaries in the region, riparian vegetation would have existed. Common species would have included River Red-gum *Eucalyptus camaldulensis* and Wattles *Acacia spp*., with River Red-gums the dominant species (McDougall, 1987). Species found around swamps include River red-gum and shrubs and groundcovers such as Tangled Lignum *Muehlenbeckia florulenta* and Marsh Club-sedge *Bulboschoenus medianus.* Wood was also used for the making of various weapons, such as spears, and implements such as axe handles and digging sticks. Prior to vegetation changes in the area due to agricultural activities, tussock grasslands dominated the volcanic plains west of Melbourne and would once have been the most striking feature of this landscape. Today only one per cent of the original grassland in the Western region survives (McDougall, 1987).

Kororoit Creek is likely to have been home to numerous species such as Platypus *Ornithorhynchus anatinus* and the Rakali or Water Rat *Hydromys chrysogaster* (Land Conservation Council, 1973). Many types of fish, eels, yabbies, snakes, frogs, lizards, ducks and their eggs would also have been abundant. It would also have been host to waterfowl, wading birds, ducks, ibis, herons and egret. More broadly, bird life probably included grassland species such as the plains-wanderer *Pedionomus torquatus*, bush thick-knee *Burhinus grallarius* and grey-crowned babbler *Pomatostomus temporalis*. The Western Plains fauna would have included emu *Dromaius novaehollandiae*, kangaroos, fat tailed dunnart *Sminthopsis crassicaudata*, eastern barred bandicoot

Perameles *gunnii* and common wombat *Vombatus ursinus* (Orr, 2007). Strict fire regimes were utilised to clear land for containing larger animals such as kangaroos and wallabies to certain areas by encouraging particular vegetation on which the animals grazed (Aboriginal Affairs Victoria, 1996). The fauna available in the geographic region would have provided an abundant and varied diet for Aboriginal people, as well as a resource for making clothing and costume, food storing and consuming containers, medicine, shields and tools, instruments and other recreation activities (Gott & Conran, 1991).

5.5.2 Historical accounts of Aboriginal people

The rapid spread of European colonisation altered Victorian Aboriginal society. The increased presence of settlers resulted in dispossession of Aboriginal people from their traditional land and diminished access to resources. These factors combined with population decline from introduced diseases and conflict, transformed Aboriginal society.

In 1839 an Aboriginal Protectorate Scheme was established in Victoria; the Protectorates provided religious instruction, rations, homes and medical care to Aboriginal people while recording population information (Broome, 2005). Official inquiries into the welfare of Aboriginal people were held in 1849 and again in 1858. Although informants at the inquiries remarked on the rapid fall in the Aboriginal population, it was a number of years before any action was taken. The latter inquiry led to the formation of the Aboriginal Protection Board in 1860 which encouraged Aboriginal people to move onto reserves (Edwards W. , 1988). In 1869, the Aborigines Act was passed to give the Governor of Victoria power to dictate where Aboriginal people could reside, what activities they could undertake on and off reserves and the authority to take charge of Aboriginal children (Edwards W. , 1988).

5.6 Landforms and/or geomorphology of the Activity Area

On the 11 September 2015 Kasey Robb and Martin Lawler, Biosis Pty Ltd and Bernie Joyce, University of Melbourne conducted a site visit to establish the geology, geomorphology, and landforms present within the Activity Area and how these might relate to Aboriginal activity and resource procurement. The results of this site visit were documented in a report produced by Joyce (2015) (Appendix 7).

Geology

The Activity Area is located on the eastern portion of the Mount Atkinson lava hill and its southern slopes (Map 4). The northern third of the Activity Area is dominated by the eruption point itself, which rises to 140 metres AHD immediately to west of the Activity Area. The surrounding lava hill forms a series of stepped concentric lobes with gently rising plateau surfaces and steep slopes, becoming progressively steeper to the summit. The southern two thirds of the Activity Area consist of plains shelving gently to the south and south-east, formed by earlier basalt flows derived either from Mount Atkinson itself or from the older and more extensive basalt shield flows from Mount Cottrell, five kilometres to the east of Mount Atkinson.

The Mount Cottrell eruption has been dated by Potassium Argon (K-Ar) dating to 2.24 million years ago. (Mitchell, 1990). Unlike the more contained lava hill formation of Mount Atkinson, Mount Cottrell is a lava cone surrounded by an extensive lava shield of radial tongue flows extending as far as 10 kilometres from the eruption point, merging into the Greek Hill flows to the south and the Mount Atkinson formation to the east. On its west side, the Mount Cottrell lava flows may have constrained and diverted the ancestral course of the Werribee River (Condon, 1951; Rosengren, 1986; Rosengren, 1994).

The Mount Atkinson eruption has been dated to 1.41 million years ago, almost a million years later than that of Mount Cottrell (Hare, Cas, Musgrave, & Phillips, 2005). Its initial phase consisted of fluid lava flows extending in broad, thin sheets to the north, east and south, with its longest flows to the south-east which Mitchell (1990) has mapped as far as the Princes Freeway at Laverton, 14 kilometres from the eruption point.

The southerly flows overlapped the older basalts from Mount Cottrell, Greek Hill and Cowie Hill, extending across the southern part of the present Activity Area. In an unpublished report for the Geological Survey of Victoria, Stewart (1977) notes that the Pywheitjork 7 borehole near Mount Cottrell revealed a 3.2 metre flow of Mount Atkinson basalt overlying the older Mount Cottrell basalt. At the Boral-owned quarry east of Hopkins Road, two stages of flow from Mount Atkinson are exposed: an upper flow of light grey basalt, 6 metres to 15 metres in thickness, overlying a lower stratum of dark greenish grey basalt (Stewart, 1977, p. 11).

In her 1990 Honours thesis on the geology and geochemistry of the Newer Volcanics provinces of the Werribee Plains, Mitchell (1990) compared the geochemistry of Mount Cottrell and Mount Atkinson, citing the work of Price and Gray (1988) who showed that, while the basalts from each volcano have a similar petrography, they are geochemically distinct. The basalts from Mount Atkinson contain fewer olivine phenocrysts and usually have a slightly finer grain size than those of Mount Cottrell (Stewart, 1977).

Towards the end of the main eruptive phase of Mount Atkinson, the earlier fluid lava flow became cooler and more viscous, building up into a series of raised terraces extending more than three kilometres from the eruption point, with thick, ropy lava beds ending in distinct, steep-sided lobed edges. This complex covers an area of more than 860 hectares surrounding the eruption point, rising from 90 metres AHD to the summit of the cone at 140 metres AHD. It occupies most of the northern half of the Activity Area. In contrast to the gradual slopes of the older lava flows to the south, rising from 64 metres AHD to 90 metres AHD within the Activity Area, the concentric lobes around the cone rise in a series of steep-sided volcanic terraces, becoming steeper towards the summit. The surface of these rises are characterised by large blocks of weathered reddish ropy and vesicular basalt, many lying approximately horizontal in the direction of the flow. Fractured crusts and folds of lava have formed along the upper edges of the lobes. On the south-east edge of this landform, at a distance of 1.5 kilometres from the summit, Assoc. Professor Joyce has identified a lava rise which may be a 'tumulus' — a roughly circular mound on the lava flow, possibly caused by internal pressure forcing up the original lava flow surface (Joyce, 2015).

To the south of the raised, steep-edged volcanic terraces which dominate the northern part of the Activity Area, the southern slopes are more gradual, with a gradient generally dipping to the south-east, and extensive level plains. Exposed basalt in this area is predominantly grey, in contrast to the reddish basalt of the raised northern terraces. Stewart (1977, p. 9) has pointed out that before European clearance, the surface of these flows would have been much more rocky, with very frequent large basalt boulders. Weathering and erosion have also smoothed and infilled the original flow surfaces across this area.

Aboriginal people likely utilised these raised areas as vantage points within the otherwise relatively low lying landscape. Plains by drainage and swampy areas may have been utilised infrequently as campsites, however these places often leave little trace within the archaeological record.

Drainage

Drainage across the Activity Area is strongly influenced by the geomorphology and topography of this landscape. Run-off from the northern volcanic terraces flows between the lobe edges and probably also follows underground, leaving few surface streams on this landform. However, Joyce (2015) has pointed out that the exposed horizontal basalt along the terrace margins provides natural weathered hollows which fill with rainwater and dew, and these small natural water sources may have been used by Aboriginal hunting groups away from the stream courses.

At a distance of 1.5 kilometres to the west of the Activity Area, separating the main volcanic landforms of Mount Cottrell and Mount Atkinson, is a broad creek valley (Dry Creek) which is one of the principal seasonal watercourses of the region. A number of smaller stream courses dissect the lower elevation volcanic plains to the south and east of the northern volcanic terraces within the Activity Area. These probably issue from underground springs within the lava terraces, augmented by surface water drainage and run-off from the

northern terraces. Drainage generally follows the volcanic flow lines from north-west to south-east, often channelled between the lobe boundaries, deepening these and carrying weathering deposits and sediments onto the open plains downstream. Within the Activity Area itself, drainage takes the form of minor, ephemeral stream courses and the larger watercourses lie to east and west of this area.

Where the drainage from the northern slopes reaches the level grassland plains to the south and south-east, there are areas of poorly drained seasonal marshland and ponded depressions, some of which may have developed as wetlands.

Naturally weathered hollows along terrace margins would have been frequently utilised by Aboriginal people, as well as seasonal marshlands and wetlands associated with the lower landforms in the south of the Activity Area. However, these drainage lines may have been recently utilised by agriculture practises and be the locations of dams.

Landscape units

The Activity Area can be broadly subdivided into landscape units based on topography and gradient (Map 5). These are:

- *Raised plateau* occupying the raised volcanic terraces surrounding the Mount Atkinson eruption point, at heights of between 100 metres and 122 metres AHD. These are relatively level plains strewn with surface basalt which may have been partly cleared. Water sources are likely to have been sparse and limited to rock pools and depressions.
- *Steep slopes* along the margins of the raised volcanic terraces at heights of between 95 metres and 144 metres AHD, including the summit of Mount Atkinson. The rock-strewn slopes are likely to have been least impacted by European clearance activity, and may also provide good surface visibility.
- *Moderate slopes* in the northern part of the Activity Area, fringing the higher landforms of the volcanic terraces between heights of 88 metres and 103 metres AHD. The slopes may be crossed by springs issuing from the volcanic terraces. These slopes are more likely to have been impacted by surface clearance works. Sedimentation and accretion of hill wash debris, as well as the impacts of grazing and masking by grassland cultivation may limit exposure of surface artefacts except along tracks and fence lines and on stream beds.
- *Gentle slopes and level plains* occupying the southern half of the Activity Area at heights of between 63 metres and 90 metres AHD. The plains are dissected by minor streams, with areas of marshland. These areas are also likely to have been impacted by historical surface clearance as well as drainage activities. Surface visibility is likely to be poor except on tracks and along fence lines.

These landscape units may have influenced not only the types of land use by Aboriginal people but also the nature of land clearance and subsequent land use by European settlers. This in turn may help determine the impacts of historical land use and the visibility of Aboriginal cultural heritage.

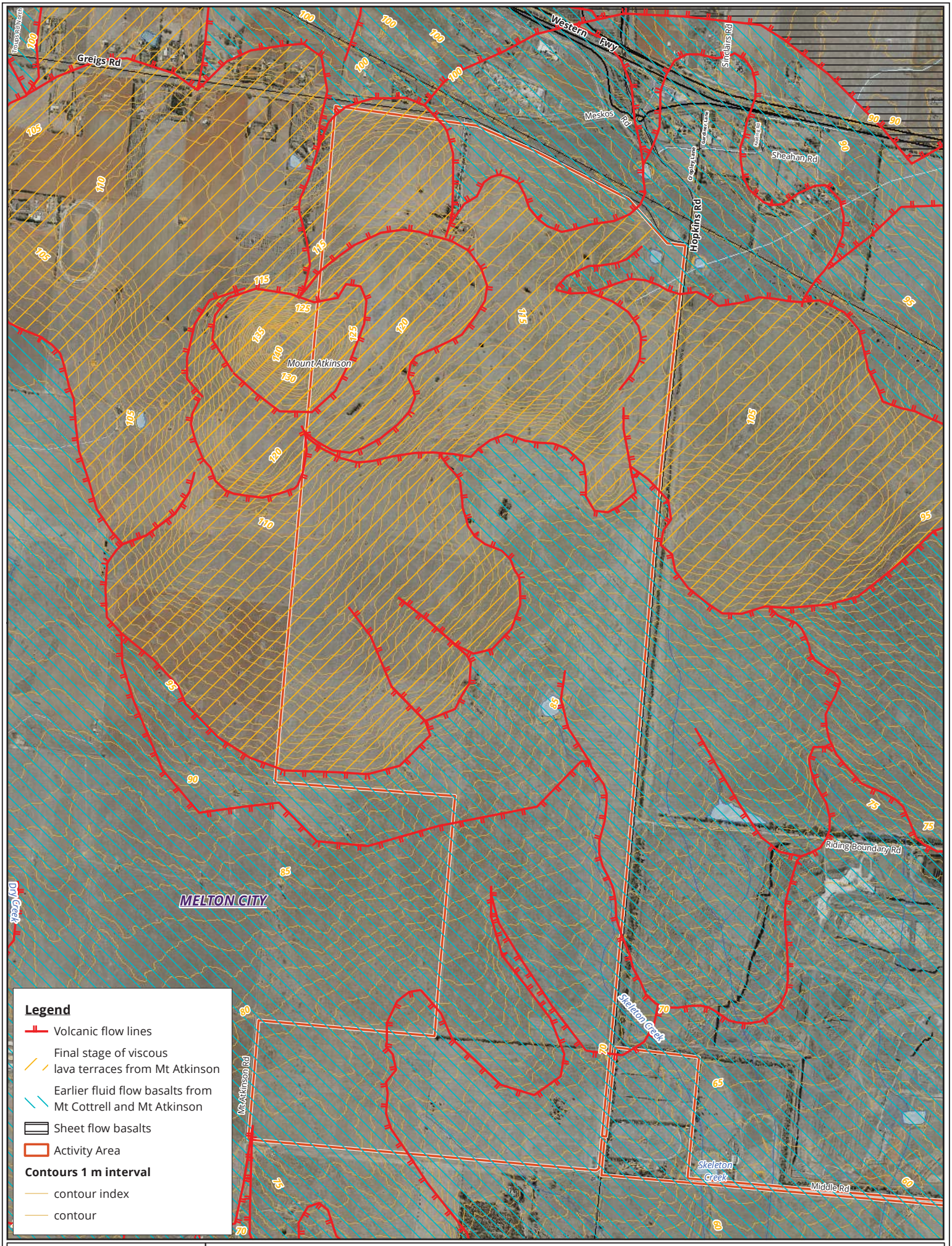
Soils

The soils of the Activity Area are also characteristic of the volcanic geology and geomorphology of this area. The soils of these volcanic landforms are shallow to moderately deep Ferrosols (iron rich gradational soils) on the upper and mid slopes with Red Sodosols on the lower slopes. There may be some black variants as well, depending on drainage (David Rees of the Department of Economic Development, Jobs, Transport and Resources, pers. com. to Assoc. Professor Joyce).

Weathering of basalt soils commonly releases iron (giving red clays and 'buckshot' iron oxide concretions), calcium carbonate (seen as coatings on soil pads) and montmorillonitic clay (resulting in swelling and

shrinking red clay soils). Sometimes *gilgai* depressions and ridges are also formed (Stace, 1968, pp. 415-420). On weathered plains flows the soils may be darker in colour, where there has been greater moisture and vegetation content. Local depressions may be areas of accumulation of moisture, either in ponded depressions or along initially simple drainage lines. Salts from weathering may accumulate under dry conditions, often formed from airborne marine salts. Soils and clays produced by weathering may be eroded from higher areas such as volcanoes and flow ridge, and accumulate in depressions and also streamlines. Gravel and quartz sand, and clays from the weathering of adjacent outcrops of bedrock and granite may add to the soil and stream material. In addition, windblown fine sand and silt has been added to the volcanic plains north of Werribee and Melbourne in the past, particularly during the cold conditions of the Last Glacial, 30,000 to 20,000 years ago when winds were more active and stream activity more irregular, and with vegetation reduced, and trees likely to be absent for much of that period, allowing wind and water reworking of topsoils.

The highly weathered soils that occur within the Activity Area are not conducive to the preservation of organic material, and given that these are largely erosive landscapes that have likely been subject to agricultural practices, archaeological material is rarely preserved in situ. The sediments that tend to contain cultural heritage material are generally shallow, though where abundant surface basalt is present these formations can form silt traps that stabilise sheet erosion and can reduce the rate of artefact removal. Where these basalt formations are not present, archaeological material present has likely undergone a series of deflation events within the shallow soils that overlay the culturally sterile basalts and clays.



Map 4a Volcanic landforms of the Activity Area

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Metres

Scale 1:15,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

Legend

- Volcanic flow lines
- Earlier fluid flow basalts from Mt Cottrell and Mt Atkinson
- Sheet flow basalts
- Activity Area

Contours 1 m interval

- contour index
- contour

Map 4b Volcanic landforms of the Activity Area

0 150 300 450 600 750

Metres
Scale: 1:15,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

N

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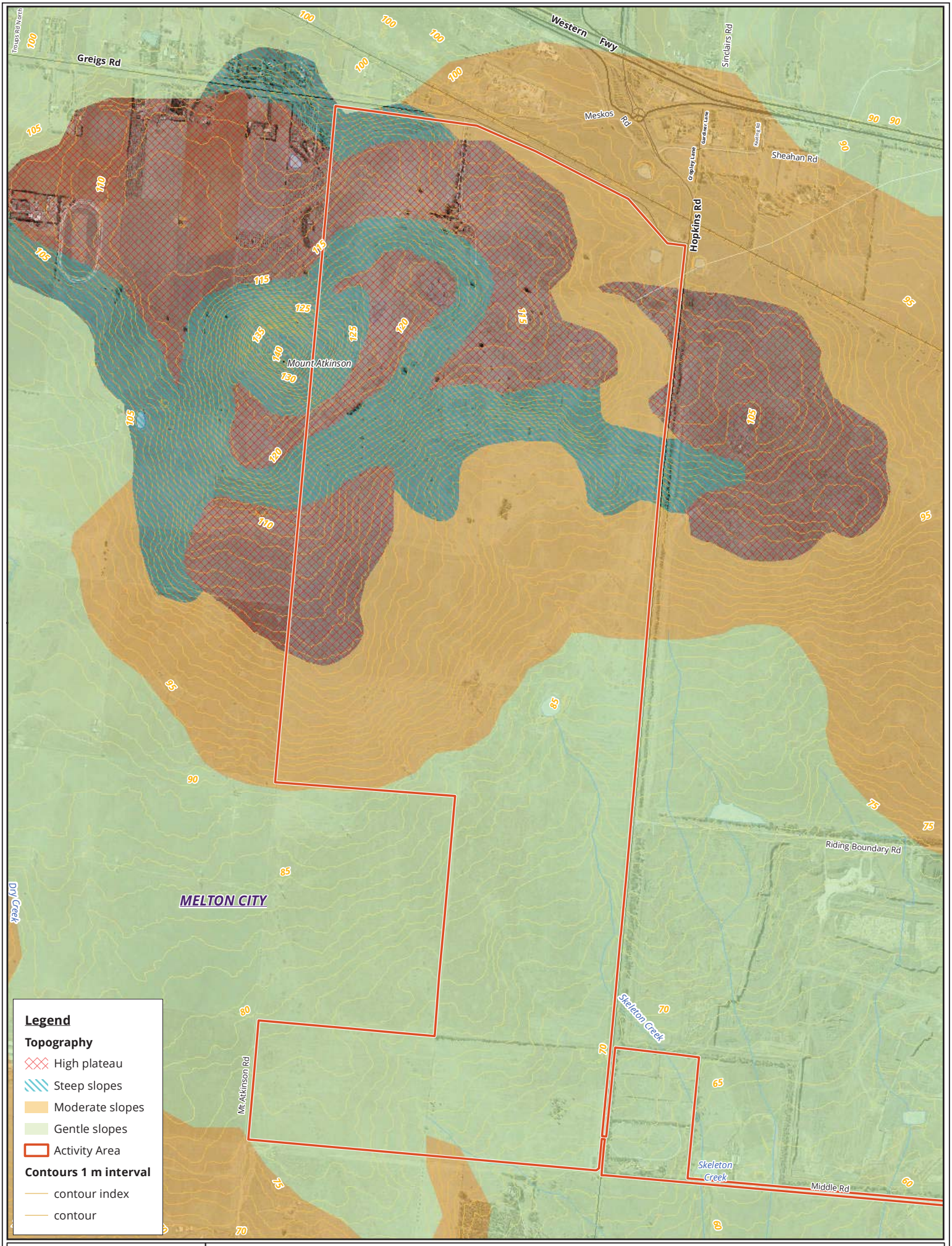

Map 5a Topography of the Activity Area

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Date: 12 April 2017,
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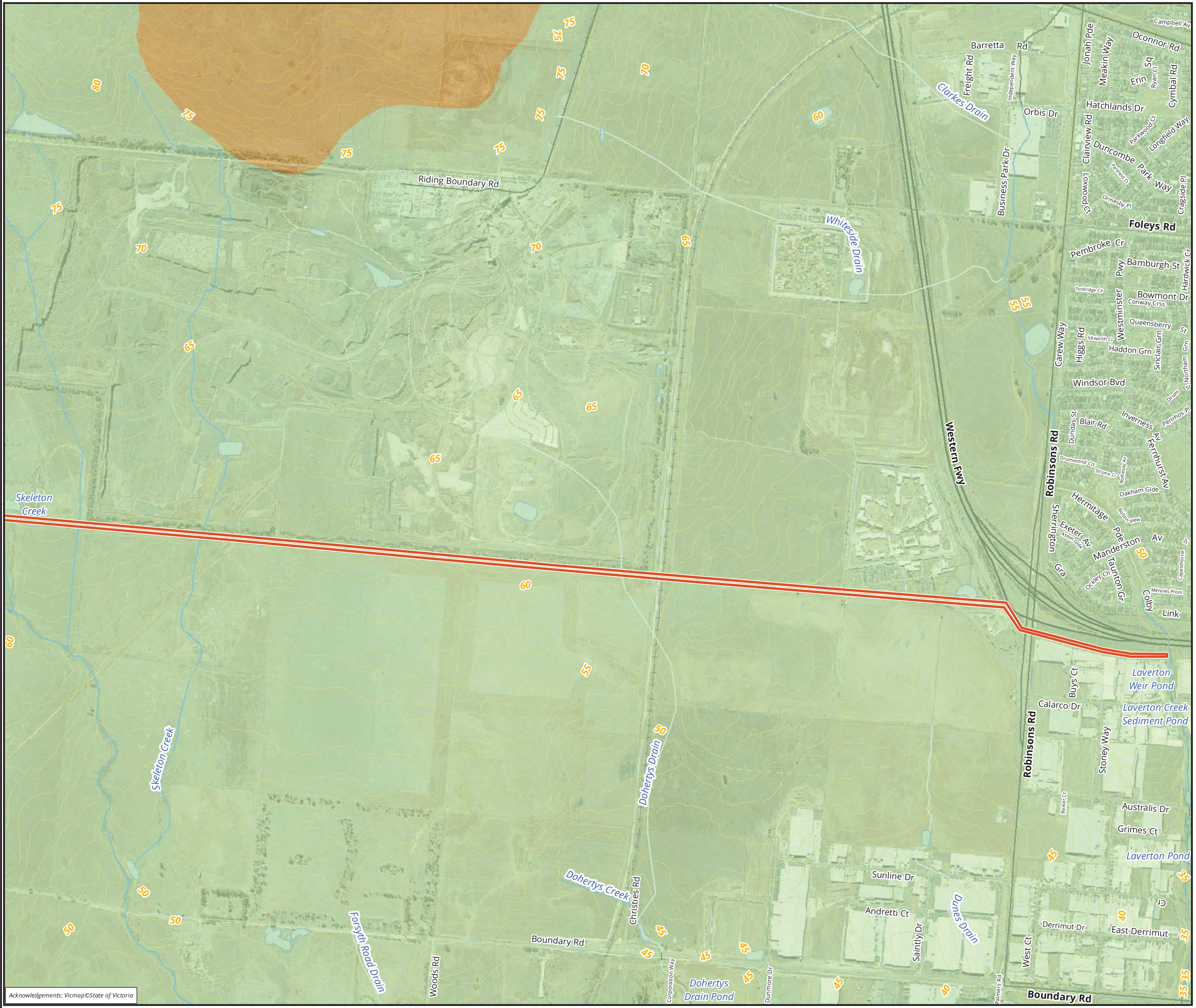

Legend

Topography

- Moderate slopes
- Gentle slopes
- Activity Area

Contours 1 m interval

- contour index
- contour

Map 5b Topography of the Activity Area

0 150 300 450 600 750
Metres
Scale: 1:15,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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5.7 Land use history of the Activity Area

The open grasslands to Melbourne's West were some of the earliest parts of the Port Phillip district to see European Settlement. Much of the Rockbank area was initially grazed under pastoral leases. However, there was little settlement in the Rockbank area, despite it being on the road to Ballarat. The treeless grassy plains of the west were seen as perfect for grazing; however, settlement was not rapid due to the drier nature of the region.

In 1850 William John Turner Clarke (1805 -1874) (known as 'Big' Clarke), employed a previously unused provision of an 1842 Imperial Land Act, the 'Sunbury Special Survey Purchase', which allowed him to purchase over 20,000 acres of crown land at an upset price of £1 per acre by paying for the survey and transfer costs himself. With this purchase he also obtain an exclusive right to graze an additional 120,000 acres under a lease or licence, known as a 'grass right'. Clarke then bought up much of the grazing licence land when it was opened for selection in the later 1850s and 1860s in up to 640 acres (1 square mile) blocks. The Rockbank area was sold in smaller lots in order to encourage 'closer settlement', and in part to the land reforms that came after the Eureka rebellion, which aimed to address the needs of the less established immigrants to the colony.

The Activity Area has largely been used for grazing from the 1840s when grazing licenses were introduced. The open grassy country was ideal for grazing sheep and hence stone fencing was built to contain the livestock. Land auctions held in 1850 and 1854 brought small scale development of drystone walls, small dwellings and associated farm structures such as dairies, stock yards, sheds and outhouses. Evidence of this occupation remains from the dams, dry stone walls and other water source historical sites recorded in relation to the Activity Area (Vines, Mount Atkinson Homestead, Heritage Impact Statement, 2014).

The majority of land in the Truganina region was taken up by Clarke, Straughton and Taylor (1854). In 1854, a plan of the Parish of Derrimut shows that Section XXV (within which the Activity Area lies) was occupied by J. Fox (Lot 1), J. Flinn (Lot 2) and W. J. T Clark (Lots 2 and 3), while section XVII was occupied by C. Clark (Lot 1), W. J. T. Clark (Lots 2, 4 and 6) and A. E. Cohen (Lots 3 and 5) (Plan 1). Allotment 2 was purchased from the Crown by John Flinn on 19th May 1854. However, most of the other allotments around Flinn's were purchased by Clarke, and Flinn ultimately sold his land to Clarke who incorporated it into his vast Rockbank pastoral estate, with the transfer taking place on 30 April 1865 (Plans, 1865).

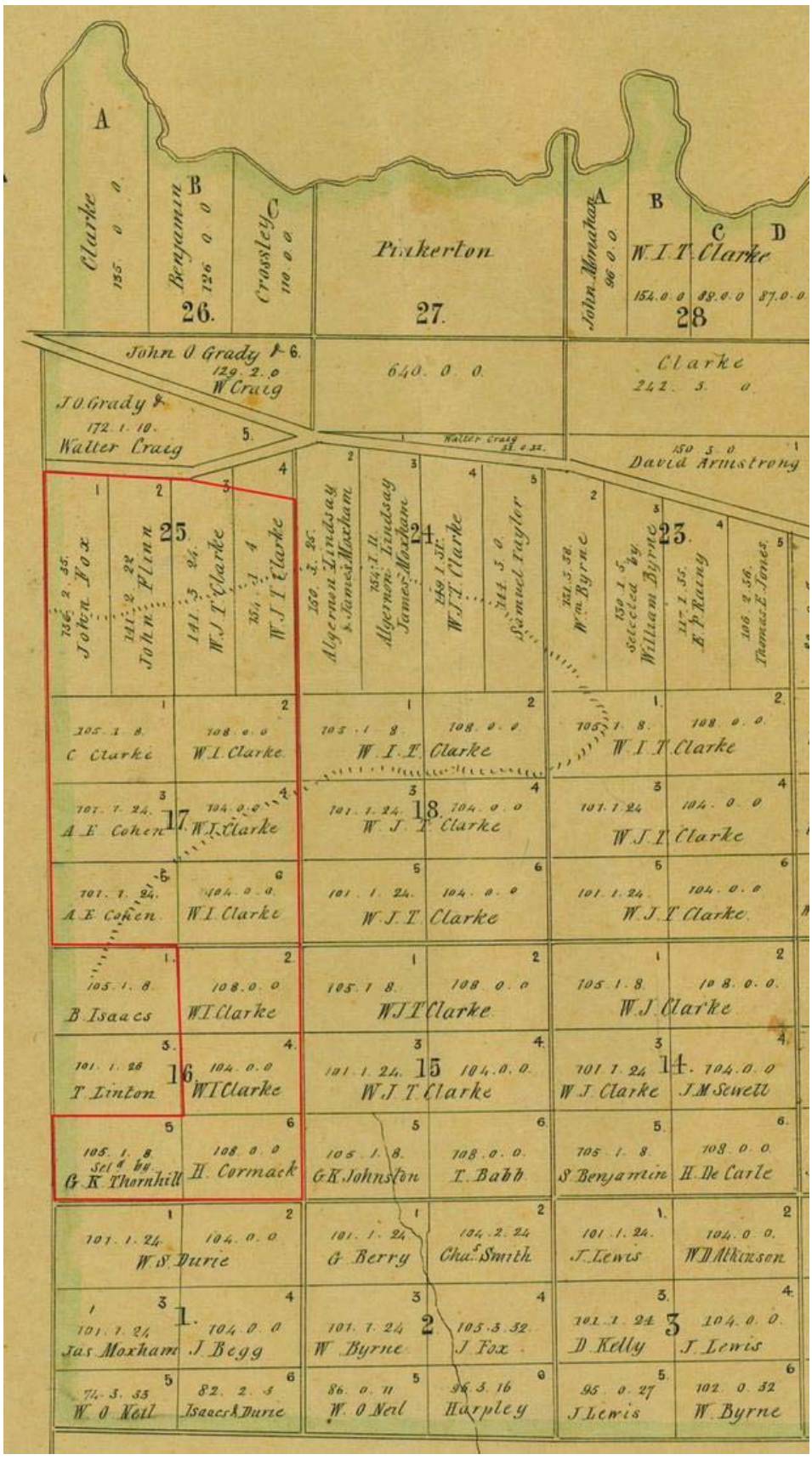
Moloney (2007) suggests that Flinn sold up because of the difficulties of farming in the poor seasons, with drought, wheat rust and pleuro-pneumonia in cattle driving many off the land in the early 1860s. However, Flinn may have had other reasons for buying what was a particularly rocky parcel of land. Flinn is recorded in local newspapers in the 1870s and 1880s, as a road contractor, with numerous tenders and contracts for clearing, forming, draining and metalling roads in the Melton, Wyndham (Werribee) Braybrook and Footscray roads districts and shires. It is likely that Finn took advantage of the rocky nature of his land to supply stone for road building. Many of the roads in the district were constructed using the Telford method, which involved laying cobble-sized stones as the road base. These were abundant in the stony country in the district, and particularly so on the Mount Atkinson land (Vines, Mount Atkinson Homestead, Heritage Impact Statement, 2014).

Properties remained without fences until the 1850s as shepherds were employed to herd sheep, though when the land was sold at auction, the first dry stone walls were erected as external boundaries between properties (Vines, 2015). The large land holders such as the Clarkes were responsible for the construction of many of these, and stone wallers were recruited from the Cumberland district in England. Later, smaller internal walls were constructed by local farmers. Many of these dry stone walls date from the 1860s to 1880s when shepherds were drawn to the goldfields and stock needed to be divided. Along Skeleton Creek dry stone walls are known to occur in the centre of the creek to allow stock from properties on both sides of the creek access to water (Maloney, 2007). Middle Road had been gazetted by 1856.

Around 1949 the farm was owned by William Verner Amess, who appears to have been an absentee landlord. He leased it to well-known local grazier, Councillor and Mayor of the City of Werribee, Baden Powell. Powell purchased the property in 1969 and the family held it until 2004. The property was used mainly for sheep and some cattle grazing. Some cropping of barley was undertaken, although most land remained undeveloped and was too rocky for ploughing.

The Dial Before You Dig assessment Indicated electrical transmission lines cross the southern and central sections of the Activity Area (Map 6). The homestead that resides in the north central is a federation style single story, timber-framed, weatherboard-clad and corrugated iron roofed structure, with nearby large galvanised corrugated steel outbuilding that served as stables, machinery shed, tack room and shearers quarters. Another smaller outbuilding for storage, and a windmill are also located nearby the homestead. A large shearing shed and a small poultry shed were also located nearby the homestead, but have since been demolished (Vines, 2014). Publically available aerial photography suggests that large sections of the northern and central parts of the Activity Area have undergone substantial rock removal, based on mounds in linear formations (Plate 1 and Map 6). This removal of basalt was likely carried out with machinery that racked the basalt from below the surface before being moved into piles. Based on the location of these piles of basalt, much of the northern section of the Activity Area have undergone some level of disturbance (Map 6). Any Aboriginal heritage that was intact or in situ would no longer be so after undergoing these processes, and material located on slopes would then be more susceptible to sheet erosion.

Based on the historical land use within the Activity Area, the primary land use in the past has been grazing, as well as some basalt extraction and cropping. Aside from farming infrastructure, such as the homestead, sheds and fencing; there has been an electrical transmission line installed across the southern and central section of the Activity Area, as well as a gravel road within the reserve of Middle Road. Aerial photography indicates substantial rock removal in the northern section of the Activity Area, with identifiable piles of basalt often in linear arrangements. It is recognised that these land uses have impacted the integrity of Aboriginal cultural heritage deposits and that the background scatter of artefacts identified in previous assessments is likely not in situ, particularly in the northern sections of the Activity Area. However it is noted that Mount Atkinson proper has little land use impacts within the Activity Area.



Plan 1 **1856 Plan of Parish of Derrimut. Note Mount Atkinson upper slopes are marked in the top left corner (Surveyor General's Office of Victoria, 1856)**

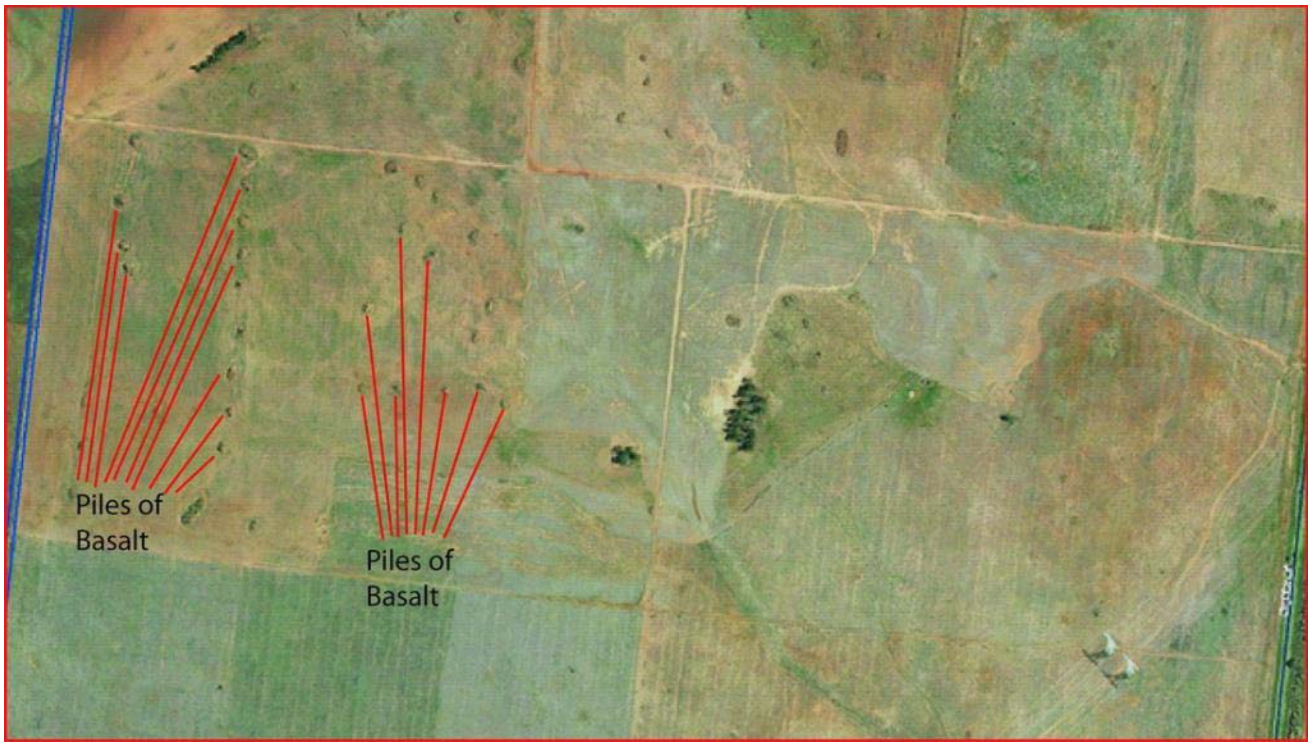


Plate 1 Aerial image with examples of basalt piles in central western portion of the Activity Area

5.8 Conclusions from the Desktop Assessment

The dominant previously recorded Aboriginal place type nearby the Activity Area are artefact scatters. Generally, the number of artefacts related to these places was proportional to their proximity to watercourses, with places with high numbers of artefacts and range in materials adjacent to permanent waterways such as Kororoit Creek or the confluence of Dry and Skeleton Creeks. Whilst Aboriginal places have been identified further away from these waterways, most have been identified on lower elevation landforms, and these have generally contained lower numbers of artefacts, and less variation in artefact types. The evidence from previous assessments within the Activity Area suggests that whilst there is limited water in the immediate vicinity, artefact scatters with a diverse array of raw materials and artefact types, such as Mount Atkinson AS 2 (VAHR 7822-1543) are present. Joyce (2015) writes of a possible soak near Mount Atkinson, he also pointed out that various rockwells in the basalt floaters had potential to hold water. These probable resources, along with the views from Mount Atkinson and some stony rises, would have made the Activity Area a focus for Aboriginal exploitation.

Common raw materials within these places include silcrete, quartzite and quartz, with basalt, tachylite and chert also recorded in assemblages. The geomorphology and geology are a consequence of Newer Volcanic activity, and while in this region it is generally associated with shallower deposits, especially in areas that have been impacted by agricultural practices that have removed basalt, where this basalt remains intact and forms stony rises there is the possibility of deeper deposits. As outlined in Section 5.6, there are a number of landforms present within the Activity Area, and previous assessments have identified a number of Aboriginal places across these landforms. Where places of higher complexity, such as those with a greater number of artefacts or likely intact stratigraphic deposits, have been recorded, are generally within stony rises or Mount Atkinson proper on the younger basalt flows where deposits have remained largely intact. In general,

previous assessments have identified lower complexity places such as background scatter of artefacts, on moderate and gentle slopes.

Place prediction model

Based on the above review of the geographic region, including its environment, recorded Aboriginal places, previous archaeological assessments and information on the activities of Aboriginal people, a place prediction model has been developed. The place prediction model utilises the existing regional information in order to target landforms which might have archaeological potential during the Standard Assessment. The place prediction model acts as a guideline for designing the ground survey strategy and identifies key points for consideration.

Therefore, the Aboriginal place types likely to be found within the Activity Area are:

- *Artefact distributions* consisting of 10 or more stone artefacts within a 10 x 10 metres area, these places are usually most likely to occur on river or creek flats, terraces or slopes within 100 metres of major water courses and are associated with tool production, domestic activities and resource procurement. Due to the location of previously recorded places and the absence of major watercourses within the Activity Area, these places are likely to be located on steep slopes landforms that provide vantage points in the landscape. Mt Atkinson (VAHR 7822-0206) and Mt Atkinson AS 2 (VAHR 7822-1543) are two such previously recorded places, and where similar characteristics occur (high point, relative absence of ploughing such as a stony rise) these is a good possibility additional places will occur. Based on the previously recorded places, expected artefact raw materials include silcrete, quartz, and quartzite.
- *Low Density Artefact Distributions (LDAD)* consisting of distributions of artefacts at a rate of less than 10 within a 10 x 10 metre area. LDADs and isolated finds are most likely to occur on river or creek flats, terraces or slopes within 100 metres of major water courses, however can also be represented within less intensely occupied areas such as plains. Given that the Activity Area contains an ephemeral drainage line, and nearby assessments have recorded LDADs, this Aboriginal place type is likely occur as a background scatter to artefact scatters, in lower elevations adjacent to the drainage line or where erosion has further dispersed artefacts from their original deposition. Like artefact scatters, the raw materials likely associated with this place type are quartz, silcrete and quartzite.

The following place types are considered unlikely to be identified with the Activity Area:

- *Earth features and mounds* can include evidence of occupation such as charcoal, burnt clay, lithic material, animal bones and shells. They are usually identified in preserved landscapes where the material has been covered by successive deposits of alluvium and elevated ridges or rises, or within proximity to water sources. There is little to no evidence in the immediate vicinity of these site types being present, other than within immediate proximity to Kororoit Creek approximately 2 kilometres north of the Activity Area. The landforms present within the Activity Area do not generally accrue sediment, and it is unlikely that these features will be present.
- *Scarred trees* represent cultural modifications of trees to obtain the bark for use as shelters, canoes and shields. Despite widespread removal of native forest which has resulted in little remnant vegetation, scarred trees may occur where remnant vegetation exists. Recent aerial imagery indicated that there are no mature relevant tree species present within the Activity Area. This is likely as result of land clearing practises from the initial pastoral use of the region.
- *Stone arrangements* are places where Aboriginal people have positioned stones deliberately to form shapes or patterns. The purpose of these arrangements is often unknown. A stone arrangement has been recorded within the geographic region, however this place is immediately adjacent to Kororoit Creek, and these places are rare. Due to the relatively intensive pastoral land use of the Activity Area,

and the likelihood of ploughing and or rock racking having taken place, it is unlikely that these sites types, if present, would have survived.

Based on the results of the Desktop Assessment, the following research questions have been developed. The results of the current CHMP will be utilised to address these questions. Note these research questions will be further developed to frame any further investigations required as conditions of this CHMP.

Research Questions

Does Aboriginal place patterning reflect landforms?

It is understood that there have been changes in the amount of surface water in places such as swamps and soaks through time when compared to more permanent water sources such as Kororoit Creek that are located within or nearby the Activity Area. An explanation for patterning may correspond with the location of these creeks, swamps and soaks.

Can stages of stone tool manufacture be identified and are these associated with specific activity patterns?

The descriptions and analyses of the artefact assemblage aim to provide information on the context from which the artefacts were collected, and to draw conclusions regarding aspects of the prehistoric occupation of the region based on the information potential of the artefact assemblage. It is important to note that the analyses presented in this report are by no means an exhaustive treatment. Several lines of analysis refer to aspects of lithic technology that can be considered as standard reference points in the archaeological study of stone artefacts. These are briefly defined below.

Flakes, tools and cores are the three most basic classes of stone artefact. They each represent stages in a continuum of artefact manufacture and discard. Cores are nuclear bodies of stone (usually small enough to be portable) from which flakes are chipped (or knapped). Depending on the type and size of core they may produce anything from one or a few flakes or up to several tens of flakes. Flakes are the desired, sharp edged products of stone knapping, they may be discarded without being used, utilised without further modification and then discarded or their edges may be worked further to form a tool.

Of particular interest in any assemblage are the numbers and types of retouched tools, as these represent the secondary stage in manufacture of implements and are therefore very informative regarding past human activities. Also of particular interest are the number and types of cores present, as these are the nuclear bodies from which flakes are removed, often showing initial preparatory stages of manufacture that can be informative about the technological strategies employed to make stone tools. Cores can also be very informative about the relative abundance of various raw materials.

The exploitation of stone as a resource involves a reductive technology, in that each stage (e.g. the striking of a flake from a core) results in a reduction of the mass of the object being knapped. This can generally be considered a continuum of reduction, along which manufacturing stages (or place in the continuum) can be identified. In this report only two stages of manufacture are identified and defined - primary and secondary. Primary manufacture refers to the initial production of flakes, whilst secondary manufacture refers to the process of modifying flakes into tools.

Can the Aboriginal places identified on different landforms be associated with specific activity patterns?

Spatial analysis examines the pattern of artefacts or archaeological places as they appear in relation to one another. The location of artefacts can be used to interpret Aboriginal occupation and activity patterns, although recent land use activities may also contribute to or blur these patterns.

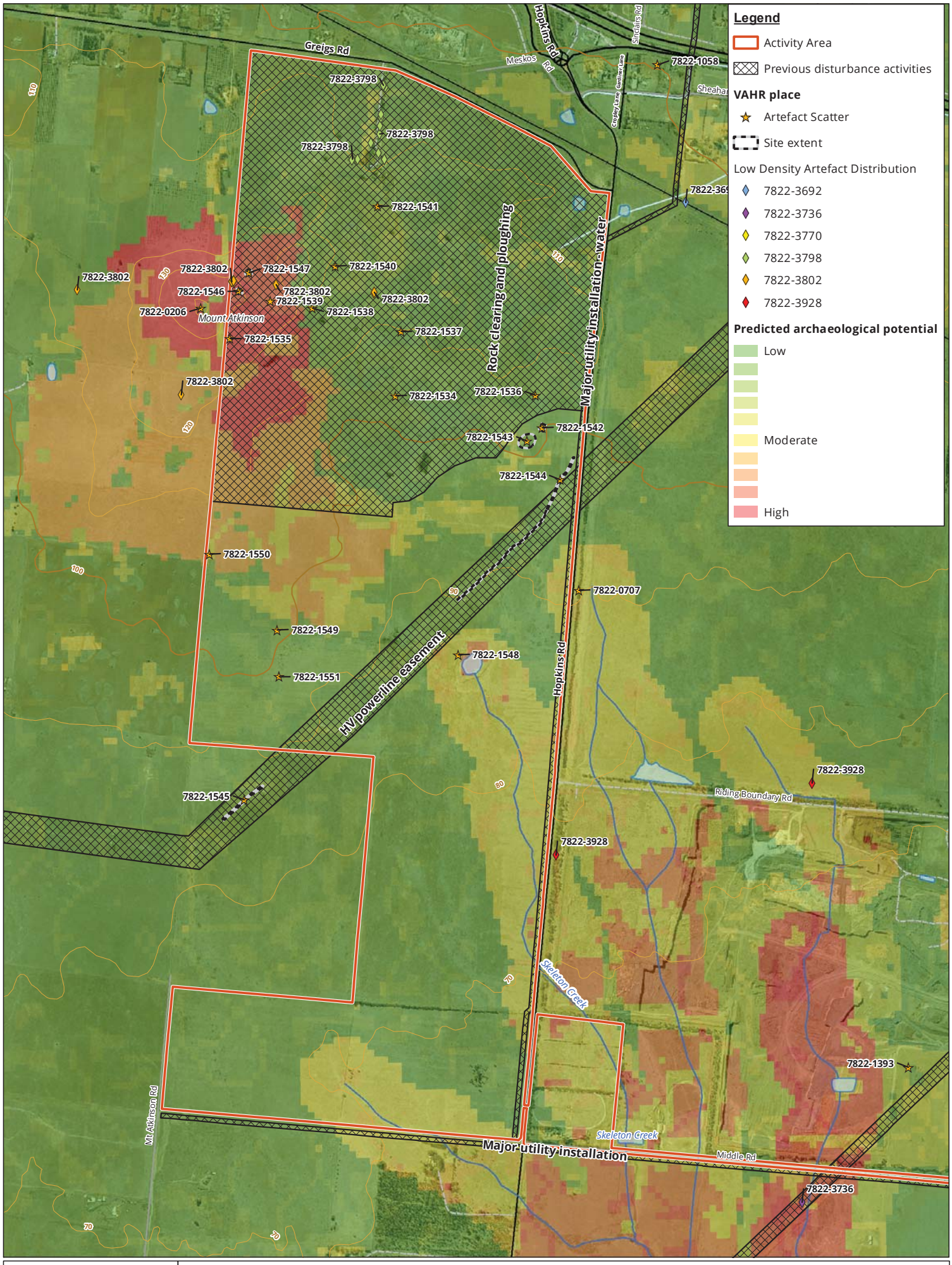
Were the lithic materials sourced locally?

The amount of cortex present on artefacts, and artefact size, can be used to make inferences about whether or not raw materials are sourced locally, or whether they have been imported to the area. Generally, the further away it gets from a stone source the greater a raw material is curated, resulting in a distance decay of size and amount of cortex (Hiscock, 1986).

Silcrete is usually the most dominant form of raw material encountered in the south-east Australian archaeological record. Given the nature of the parent rock from which silcrete is formed, it can have variable flaking quality for the manufacture of artefacts. Generally, this flaking quality is dependent on the texture and composition of the silcrete. The coarser grained varieties produce durable working edges although not as sharp as finer grained varieties (Holdaway & Stern, 2004).

Quartz is probably the most readily available material and is typically well represented in Victorian assemblages. Due to its fracture pathways it has variable flaking quality (Holdaway & Stern, 2004).

Quartzite is another popular lithic resource. It is granular in texture with finer grained varieties better suited for knapping than other varieties which may produce irregular edges (Holdaway & Stern, 2004).



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Map 6a Results of the Desktop Assessment

Acknowledgements: Imagery ©Nearmap 2015; Vicmap©State of Victoria

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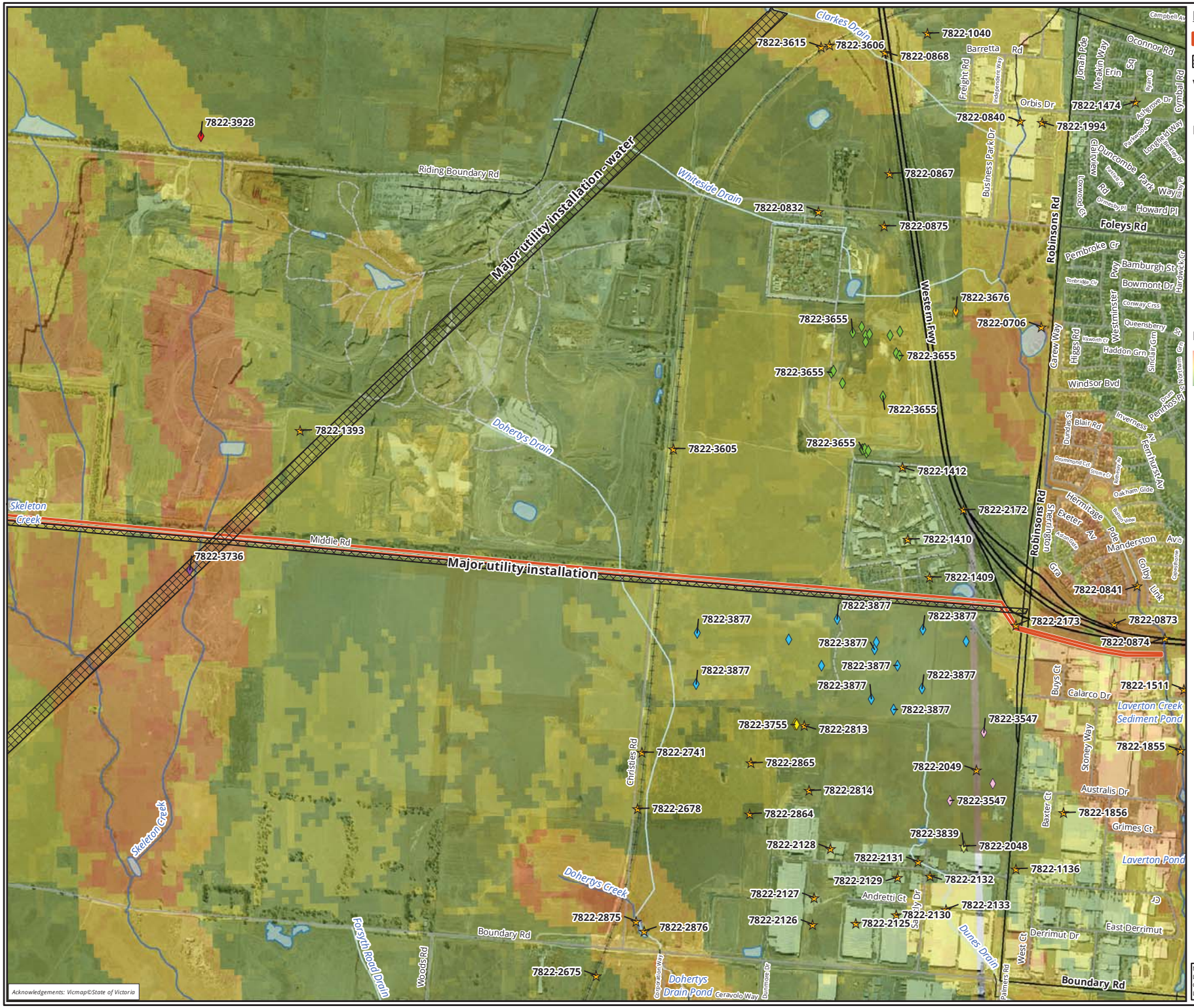

Legend

- Activity Area
- Previous disturbance activities

VAHR place

- Artefact Scatter

Low Density Artefact Distribution

- 7822-3547
- 7822-3655
- 7822-3676
- 7822-3736
- 7822-3755
- 7822-3839
- 7822-3877
- 7822-3928

Predicted archaeological potential

High

Low

Map 6b Results of the Desktop Assessment

0 150 300 450 600 750

Metres

Scale: 1:15,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

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Ballarat, Brisbane, Canberra, Hobart, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Matter: 19337, CHMP 13712

Date: 30 June 2017,

Checked by: KFR, Drawn by: SKM, Last edited by: lmilne

Location:P:\19300s\19337\Mapping\19337_M6b_Desktop.mxd

6 Standard Assessment

6.1 Aims

The aims of the Standard Assessment are to:

- identify and record any surface Aboriginal cultural heritage material
- identify landforms with the potential for subsurface Aboriginal cultural heritage material
- assess whether a Complex Assessment is required.

6.2 Methodology

The Standard Assessment was completed in four stages:

- August 2015 – general survey
- May 2016 – controlled burn survey
- May 2016 – general survey
- March 2017 – Middle Road survey.

The ground survey was supervised by Kasey Robb, Biosis Pty Ltd, with the involvement of additional Biosis Pty Ltd archaeologists and Aboriginal representatives from the Bunurong Land Council Aboriginal Corporation, the Bunurong Land and Sea Association, the Boon Wurrung Foundation Ltd and the Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.

The Standard Assessment was completed by traversing the Activity Area on foot with vehicle transportation between different sections. Intervals between survey participants varied with areas of high ground surface visibility such as access tracks, averaging 1 metre while areas of poor ground surface visibility such as the grazed plains, averaging 3 metres.

The following survey units, based on landform units identified in the Desktop Assessment (Map 5a), were utilised:

- Raised volcanic plateau
- Steep slopes
- Moderate slopes
- Gentle slopes and level plains.

Full survey coverage of the Activity Area was undertaken and views of the Activity Area were recorded using digital photography. Field notes were also taken recording ground conditions, the vegetation type, landform and details of areas of archaeological potential for Aboriginal cultural heritage.

Locations of identified Aboriginal cultural heritage material were recorded in accordance with Aboriginal Victoria's (2008; 2013) guidelines (Map 7).

Following the completion of the ground survey, discussions were held with the Aboriginal representatives to establish cultural heritage management requirements for the Activity Area including a methodology for the Complex Assessment.

6.3 Results

The only obstacle in completing the ground survey was the overall poor ground surface visibility. A number of factors hinder the identification of surface Aboriginal cultural heritage material. Ground surface visibility can be defined as how much of the ground surface is visible and what other factors (such as vegetation, gravels or leaf litter) may limit the detection of Aboriginal cultural heritage material (Burke & Smith, 2004). The higher the level of ground surface visibility, the more easily Aboriginal cultural heritage material can be identified; therefore an Activity Area with a good ground surface visibility will enable a better representation of Aboriginal cultural heritage material than an Activity Area where the ground surface is obscured (Ellender & Weaver, 1994).

After discussions with the Aboriginal representatives and the Sponsor, it was agreed that a controlled burn would provide an opportunity to increase ground surface visibility and test the predictive model which suggests that areas of archaeological potential and therefore greatest artefact density, would be associated with stony rises and terraces. Two sample landforms were selected:

- Steep-edged terrace
- Drainage plain.

No Aboriginal cultural heritage material had previously been recorded in either of the proposed burn locations. While the controlled burn did increase ground surface visibility overall, it had mixed results with some tussock species burning poorly. The results are discussed further below in reference to the specific landform.

6.3.1 Raised plateau

As detailed in the Desktop Assessment, this area surrounds Mount Atkinson proper. It is characterised by plains with small to large basalt boulders. Clearing of these boulders has occurred as part of historic land use practices and there is evidence of scraping soil surrounding the now rock piles and grading access tracks. There is little native vegetation in this landform which is now dominated by tussock grasses and has formerly been utilised for cropping although is now exclusively grazed. There is variable ground surface visibility with the best observations made along access tracks and at the base of trees (Plate 2).

No Aboriginal cultural heritage material was recorded in this landform and the previously recorded Aboriginal places were not relocated (VAHR 7822-1538, VAHR 7822-1540, VAHR 7822-1550 and VAHR 7822-3798).

Plate 2 High plateau, example of rock clearing and poor ground surface visibility (facing east)

6.3.2 Steep slopes

This area includes the upper slopes of Mount Atkinson and the very edge of recent volcanic flows. It is characterised by large basalt boulders which due to their size, are still in situ. Mount Atkinson affords views across the plains to Port Philip Bay and is a dominant landscape feature (Plate 3). At the margins of this landform, bordering the high plateau in the north-west of the Activity Area is an area described as a soak by Joyce (2015). While no water was observed during the Standard Assessment or subsequent visits during the Complex Assessment, a difference in vegetation was noted. Other vegetation in this landform is a combination of native and introduced grasses although is patchy in areas where basalt is predominate. Access tracks bisect this landform providing high ground surface visibility (Plate 5). The base of boulders also had good ground surface visibility in addition to providing some shelter from prevailing winds. An historical period quarry, probably for local use only was also evidenced in proximity to VAHR 7822-1543 (Plate 4). This activity has impacted the Aboriginal place.

While the specific artefacts associated with the previously recorded Aboriginal places were not relocated (VAHR 7822-1535, VAHR 7822-1541, VAHR 7822-1542, VAHR 7822-1543, VAHR 7822-1546 and VAHR 7822-1547), artefacts in the general proximity to some of these places were recorded. Additional artefacts were recorded in areas of high ground surface visibility, particularly on the access tracks and in association with Mount Atkinson. This is consistent with conclusions from the Desktop Assessment which identified this landform as having archaeological potential.

A section (1.835 hectares) of this landform was subject to a controlled burn (Map 7a). The steep-edged terrace was at a volcanic flow margin and the burning exposed sediment in between basalt platforms that was not previously observable (Plate 6). Aboriginal cultural heritage material was recorded in this section.

Plate 3 Steep slopes, Mount Atkinson in background (facing west)

Plate 4 Steep slopes, quarried stony rise (facing south-west)

Plate 5 Steep slopes, example of good ground surface visibility (facing north)

Plate 6 Steep-edged terrace post controlled burn (facing east)

6.3.3 Moderate slopes

This area is immediately south of the steep slopes and includes the upper margins of drainage into Skeleton Creek. Similar to the high plateau, it is characterised by plains with small to large basalt boulders. Clearing of these boulders has occurred as part of historic land use practices and there is evidence of scraping soil surrounding the now rock piles and grading access tracks. As the landform moves into the gentle slopes, there is an increase in native grasses. While the northern margins have been utilised for cropping, it is now exclusively grazed. There is variable ground surface visibility with the best observations made along access tracks.

Artefacts were recorded in areas of high ground surface visibility, particularly on the access tracks. The previously recorded Aboriginal places were not relocated (VAHR 7822-1536, VAHR 7822-1549, VAHR 7822-1551 and VAHR 7822-1554).

A section (2.823 hectares) of this landform was subject to a controlled burn (Map 7). The drainage plain was in proximity to artefacts recorded on an access track and burning of the thick vegetation exposed sediment that was not previously observable. Aboriginal cultural heritage material was recorded in this section.

Plate 7 Moderate slopes (facing south-east)

6.3.4 Gentle slopes and level plains

This area includes the entire southern section of the Activity Area including the extension along Middle Road. With that section showing signs of largescale disturbance with the introduction of utilities and impacts from road construction. The Traditional Owners agreed that further investigation in this section of the Activity Area was not warranted.

The major feature of this landform in the remainder of the Activity Area is the drainage to Skeleton Creek, which in the north, near the steep slopes, contains large numbers of artefacts. The area is characterised by

small to medium basalt boulders, although it is noted that rock clearing has not taken place and therefore the landform is less disturbed from historical land use practices than the remainder of the Activity Area (Plate 8). There is evidence of major utility installation in this landform (transmission lines bisecting the Activity Area and the water pipeline along Middle Road), and the resultant grading to provide access tracks. The vegetation is dominated by native grasses which reflects the less disturbed nature of this landform. Initial ground surface visibility was poor, therefore this section was visited during different seasons to ensure adequate survey coverage (Plate 10). Ground surface visibility improved with this approach but the highest ground surface visibility was on the aforementioned access tracks (Plate 9). Overall this landform unit had the greatest ground surface visibility outside access tracks.

Exempting VAHR 7822-1544 (which crosses two landform units extending along the drainage channel), no artefacts in proximity to the previously recorded Aboriginal places were identified (VAHR 7822-1548). Artefacts were recorded in areas of high ground surface visibility, particularly on the access tracks.

Plate 8 Gentle slopes, typical basalt distribution (facing east)

Plate 9 Gentle slopes example of good gournd surface visibility (facing north)

Plate 10 Level plains, second visit ground surface visibility

6.3.5 Mature indigenous tree species

No mature, suitable species of indigenous tree that might show cultural modification by Aboriginal people were recorded within the Activity Area.

6.3.6 Caves, rock shelters and cave entrances

No caves, rock shelters or cave entrances were located in the Activity Area.

6.3.7 Area of archaeological potential

The location of previously recorded Aboriginal places and surface artefacts are generally associated with the northern half of the Activity Area and the high plateau, steep and moderate slopes landforms. These landforms were considered to have archaeological potential in the Desktop Assessment, and was confirmed during the Standard Assessment. This is because they provide both shelter from prevailing weather conditions and views across the landscape to Port Philip Bay. This aspect and their proximity to drainage channels and soaks, likely made them a focus for Aboriginal occupation. Where these landforms intersect with gentle slopes, particularly around the drainage to Skeleton Creek, the abutting landforms are also considered to have archaeological potential.

6.3.8 Aboriginal places

Each of the previously recorded Aboriginal places was inspected however artefacts were only recorded within proximity to VAHR 7822-1543 and VAHR 7822-1544 (Map 7a).

As a result of the current assessment, many of the previously recorded Aboriginal places have been amalgamated in to landform registrations. These places are discussed in further detail in Section 8.

6.4 Conclusions from the Standard Assessment

Landforms described in the Desktop Assessment were reaffirmed in the Standard Assessment. The surface artefact distribution displays similar patterning to the previously recorded Aboriginal places with the majority of artefacts recorded in the northern section of the Activity Area corresponding with the higher landforms and specific features including Mount Atkinson (steep slopes landform) and drainage associated with Skeleton Creek (moderate slopes landform) (Table 8). This largely conforms with the predictive model which suggested higher densities of artefacts would be associated with these features while lower densities are distributed across the plains. While there was generally poor ground surface visibility overall, this is exemplified in the sample seen on access tracks where there was excellent ground surface visibility i.e. those access tracks in the north, associated with higher landforms, have greater numbers of surface artefacts than access tracks in the south. In addition there was overall greater visibility in the southern sections of the Activity Area as this was visited several times over different seasons to ensure opportunities existed to test the Desktop Assessment predictive model. Therefore the Standard Assessment, consistent with the earlier surveys of the Activity Area, identified a greater number of artefacts in the northern section of the Activity Area which corresponded with the raised volcanic plateau, than the southern section of the Activity Area which corresponded with the plains. This conclusion excludes those areas in immediate proximity to the drainage channel. Artefacts in the northern sections of the Activity Area are likely disturbed by historic land use practices with the rock clearing reported in the Desktop Assessment recorded over the north of the Activity Area.

Overall ground surface visibility was poor with effective survey coverage estimated at less than 10 per cent. This may affect the artefact distribution discussed above although it is noted that with attempts to increase ground surface visibility i.e. controlled burns and survey during different seasons, the results of the second survey in May 2016 supported the above conclusions. The highest ground surface visibility was associated with access tracks that are in continuous use. Exempting Mount Atkinson, it is noted that the previously recorded Aboriginal places were also identified were historic land use practices had resulted in increased ground surface visibility e.g., along access tracks.

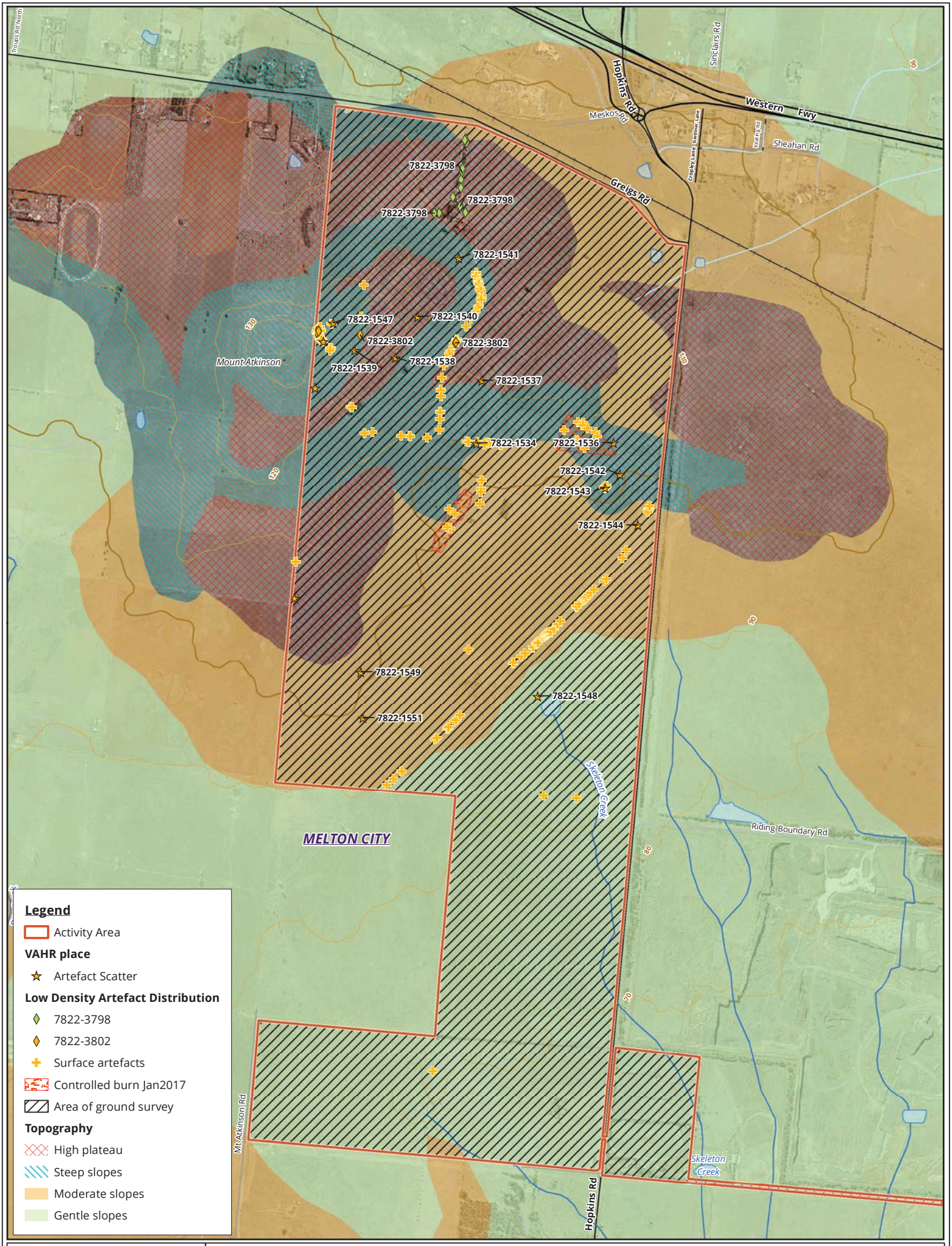
After discussions with the Aboriginal representatives, it was generally agreed that the high plateau, steep and moderate slopes landforms contained the greatest archaeological potential. These higher landforms in the northern section of the Activity Area provided landscape features that would have been well utilised by Aboriginal people, including Mount Atkinson and the stony rises in proximity to the drainage channels. These channels drain into Skeleton Creek so there is potential that they would have also been utilised to guide movement of Aboriginal people across the landscape. The pattern of surface artefact distribution suggests that those features in proximity to a water resource were targeted for occupation. It should be noted however that the geomorphology associated with the Volcanic Plains makes it difficult to determine whether artefact discard is from single period continued use or repeated use over time. In the case of Mount Atkinson, it is hypothesised that the is the latter as it provides a vantage point not typical of the wider landscape.

To determine whether there is a subsurface component to the previously recorded Aboriginal places and the newly identified surface artefacts, a Complex Assessment was required. It was also important to extend the subsurface testing methodology to the southern section of the Activity Area to further test the predictive model and explore the artefact distribution described above.

Table 8 Artefact numbers in each landform

Landform	Artefacts (N)
High plateau	0

Landform	Artefacts (N)
Steep slopes	224
Moderate slopes	97
Gentle slopes	7



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Map 7a Results of the standard assessment

Acknowledgements: Vicmap ©State of Victoria

Matter: 19337, CHMP 13712
Date: 27 July 2017,
Checked by: KFR, Drawn by: SKM, Last edited by: acurtis
Location:\\bio-data-01\matters$\119300s\19337\Mapping\19337_M7a_StandardAssess

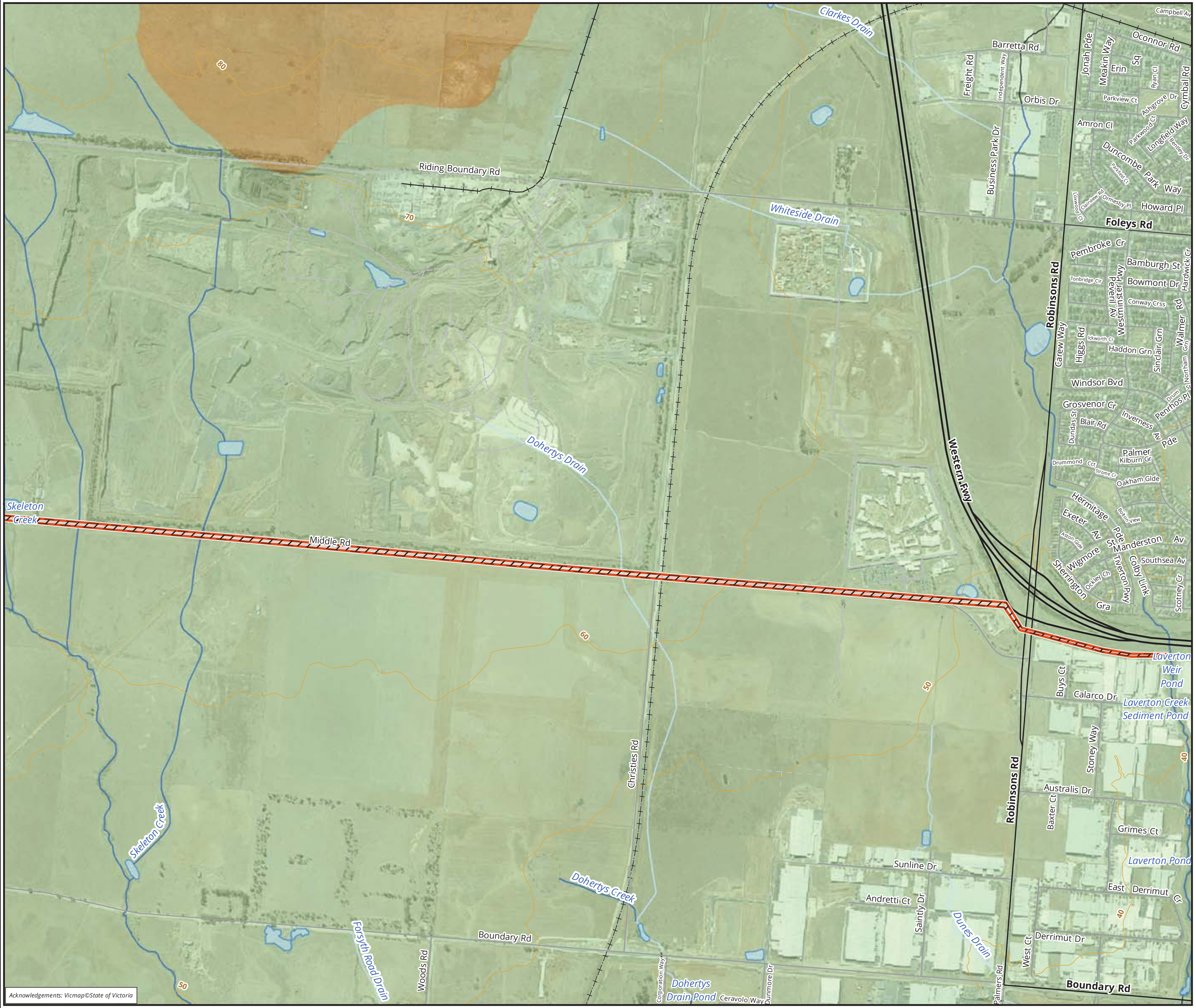
0 150 300 450 600 750

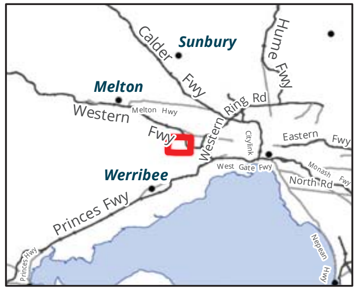
Metres

Scale 1:15,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N





Legend

- Activity Area
- Area of ground survey

Topography

- Moderate slopes
- Gentle slopes

Map 7b Results of the standard assessment

0 150 300 450 600 750

Metres

Scale: 1:15,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Matter: 19337, CHMP 13712
Date: 11 August 2017,
Checked by: KFR, Drawn by: SKM, Last edited by: acurtis
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7 Complex Assessment

7.1 Aims

The aims of the Complex Assessment are to:

- investigate the areas of archaeological potential
- identify and record any subsurface Aboriginal cultural heritage material
- ascertain the nature and extent of any Aboriginal places.

7.2 Methodology

To address the above aims and investigate conclusions from the Desktop and Standard Assessments, landform subsurface testing was undertaken. This sampling strategy sought to:

- determine whether there was a subsurface component to the previously recorded Aboriginal places
- determine the nature of stratigraphy across the landforms, particularly where land use practices such as ploughing have impacted the traditionally shallow deposits of the Volcanic Plains
- determine whether the pattern in surface artefact distribution is reflected in subsurface deposits ie. reduction in artefact numbers in the southern section of the Activity Area, away from Mount Atkinson and the drainage channels.

Subsurface testing locations were selected to sample a range of landform features e.g. crest and lower slopes of small rises, edge of raised plateau and lower plain. The locations and sampling strategy were discussed with the Traditional Owners during fieldwork. From this outset this approach was based on attempting to understand Aboriginal peoples' use of the landscape rather than establishing discrete Aboriginal place extents, therefore shovel test pit extent testing was not undertaken, and instead Aboriginal places were recorded in association with landform features.

Note based on the results of the Standard Assessment, including consultation with Traditional Owners, no subsurface testing was undertaken for Middle Road.

The Complex Assessment was completed January 2016 and January 2017. The subsurface testing was supervised by Kasey Robb and William Truscott, Biosis Pty Ltd, with the involvement of additional Biosis Pty Ltd archaeologists and Aboriginal representatives from the Bunurong Land Council Aboriginal Corporation, the Bunurong Land and Sea Association, the Boon Wurrung Foundation Ltd and the Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc.

The stratigraphy and general subsurface nature of the Activity Area was determined by the controlled hand excavation of 2 x 1 metre test pits across the Activity Area. Each test pit was excavated with trowel, hand pick and shovel in arbitrary 100 millimetre spits. Each test pit was excavated until a sterile layer was reached. All excavated soil was screened through 5 millimetre hand sieves and was kept approximately one metre from the test pit during excavation and sieving. Each test pit was backfilled at the completion of excavation and recording.

A test pit log was recorded with stratigraphic details including soil colour (Munsell), pH and description (Table 9 to Table 103). Each test pit was spatially recorded using a Trimble GeoX DGPS and later post-processed to sub-one-metre accuracy (Map 8).

Where Aboriginal cultural heritage material was identified, it was bagged according to provenance and removed from the Activity Area for later analysis.

Following the completion of the subsurface testing, discussions were held with the Aboriginal representatives and Aboriginal Victoria to establish cultural heritage management requirements for the Activity Area.

7.3 Results

The subsurface testing was completed with a number of minor obstacles. As testing was completed over a vast amount of time, weather conditions varied greatly – from hot and dusty in summer to wet and difficult to sieve in winter. Access could also be problematic, as abundant basalt floaters were often obscured by long grass. Other than these minor obstacles, which could be overcome, there were no major obstacles in completing the Complex Assessment.

7.3.1 Test pits

A total of 95 test pits were hand excavated, the details of which are outlined below.

Table 9 Test Pit 1 data

Test Pit 1				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297259.870 Northing 5818612.234	Located on high plateau landform with nearest drainage hundreds of metres to the south. It is located within the erosive final stage of viscous lava flows. Some exposed basalt nearby. Piles of basalt boulders within 100 metres. Grassland with boxthorn nearby.	None	1. 0–110mm: Fine grained, friable, strong brown clayey silt with rootlets, basalt and quartz inclusions, 7.5YR 4/6, pH 6.5. 2. 110mm: Fine grained, compact, dark reddish brown silty clay with basalt inclusions, 5YR 3/4, pH 7.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 11 General location of Test Pit 1 (facing north-east)

Stratigraphic drawing

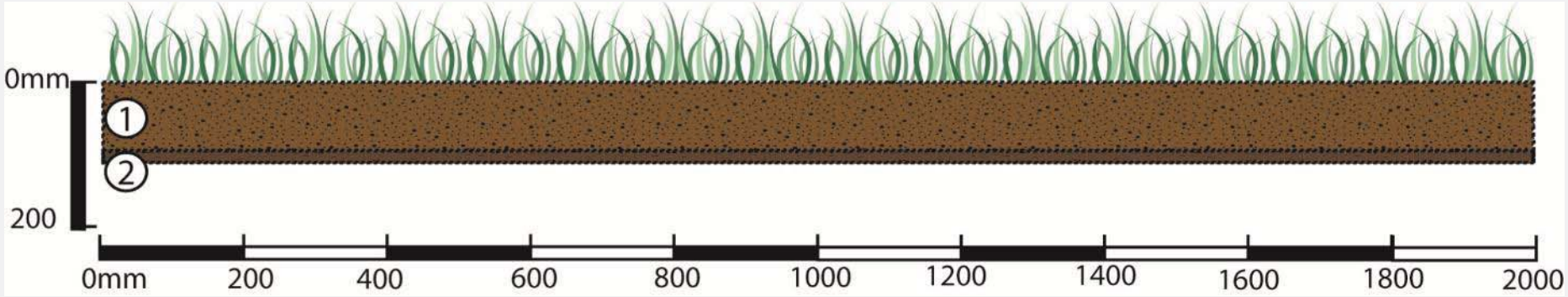


Figure 1 Stratigraphic drawing of north section of Test Pit 1

Table 10 Test Pit 2 data

Test Pit 2				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297254.728 Northing 5818396.360	Located within the steep slopes landform sloping down to the south, near the edge of the high plateau to the north within the erosive final stage of viscous lava terracing. Ephemeral drainage located to south. Grasses and artichoke thistles. Some exposed basalt nearby.	None	1. 0–80mm: Fine grained, cemented, reddish brown clayey silt with rootlets, basalt. 5YR 4/4, pH 6.5. 2. 80mm: Fine grained, cemented, dark reddish brown clay with basalt inclusions. 5YR 3/4, pH 6.5. 3. Basalt floater.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 12 General location of Test Pit 2 (facing south-east)

Stratigraphic drawing

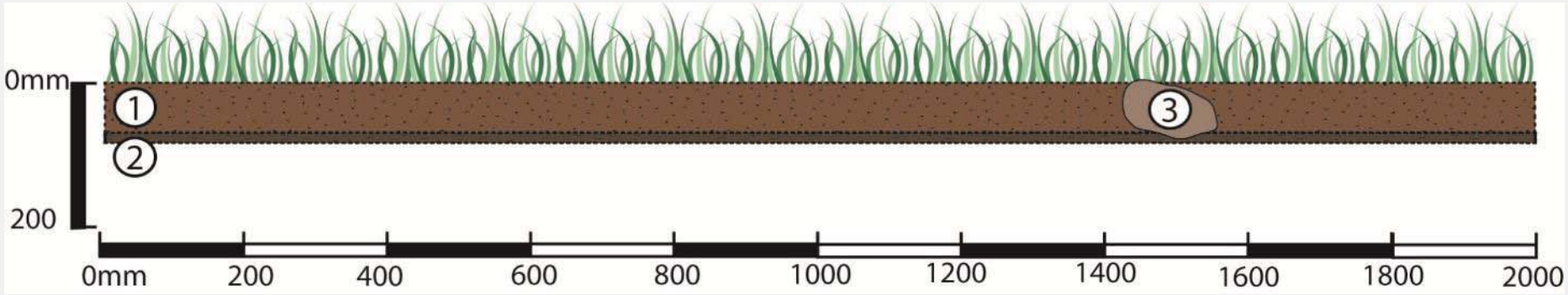


Figure 2 Stratigraphic drawing of north section of Test Pit 2

Table 11 Test Pit 3 data

Test Pit 3				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296811.666 Northing 5817901.932	Located on moderate slopes landforms on accreting plains made up of older fluid flow basalts, immediately north of upper reaches of drainage that continues to the south-east. Grasses and row of young trees nearby. Basalt has been collected in piles.	None	1. 0–80mm: Fine grained, friable, strong brown silt with rootlets and small basalt pebbles and rootlets. 7.5YR 4/6, pH 6.5. 2. 80mm: Fine grained, compact, dark brown clay. Cracking clay due to water movement. 7.5YR 3/2, pH 7.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 13 General location of Test Pit 3 (facing north-west)

Stratigraphic drawing

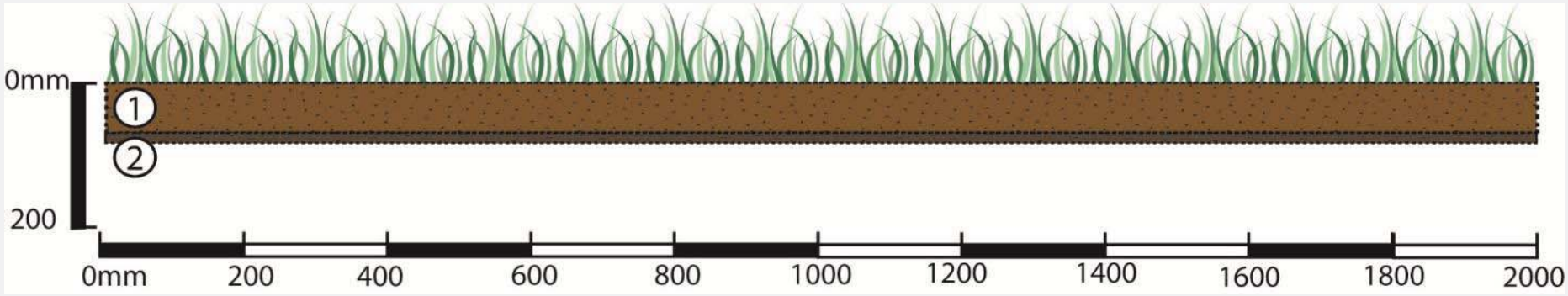
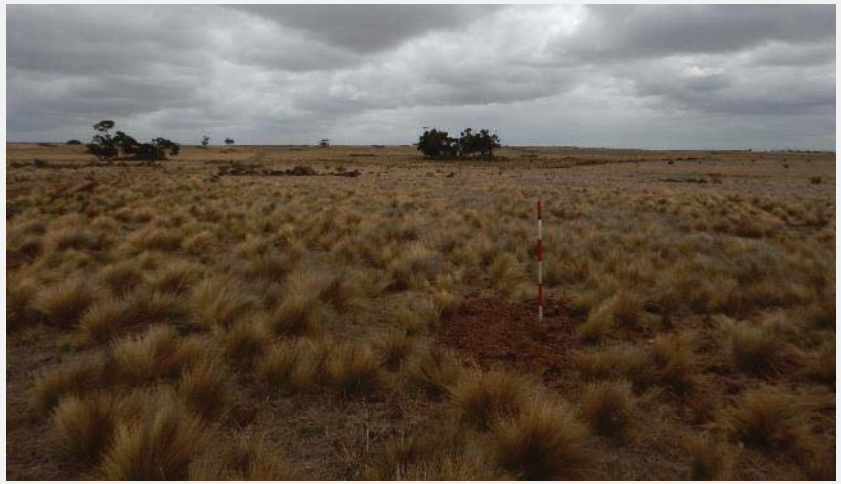


Figure 3 Stratigraphic drawing of north section of Test Pit 3

Table 12 Test Pit 4 data

Test Pit 4				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296748.151 Northing 5817584.974	Located on moderate slopes landforms, to south of upper reaches of drainage that continues to south east. It is located within the erosive final stage of viscous lava terracing. Grasses and tussock grasses surround. Small surface basalt in vicinity.	None	1. 0–80mm: Fine grained, cemented, brown clayey silt with rootlets and basalt. 7.5YR 4/4, pH 6. 2. 80–140mm: Fine grained, cemented, very dark brown clay with fine rootlets. 7.5YR 2.5/3, pH 7.	
Test pit size		**Artefacts**		Plate 14 General location of Test Pit 4 (facing north)
2 x 1 metre		None		

Stratigraphic drawing

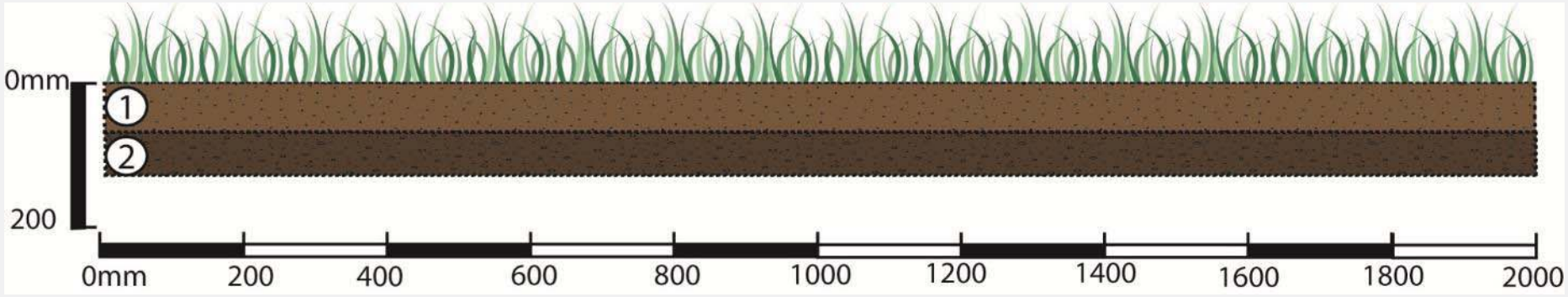


Figure 4 Stratigraphic drawing of north-west section of Test Pit 4

Table 13 Test Pit 5 data

Test Pit 5				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297004.084 Northing 5817628.876	Located on moderate slopes landforms on accreting plains made up of older fluid flow basalts, to north of upper reaches of drainage that continues to south east. Grasses and tussock grasses surround. No basalt visible in vicinity.	None	1. 0–50mm: Fine grained, friable, brown clayey silt with rootlets, invertebrates and basalt. 7.5YR 4/2, pH 6. 2. 50–100mm: Fine grained, compact, prismatic, very dark grey clay with rootlets. Large divot to 150mm 10YR 3/1, pH 7.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 15 General location of Test Pit 5 (facing south-east)

Stratigraphic drawing

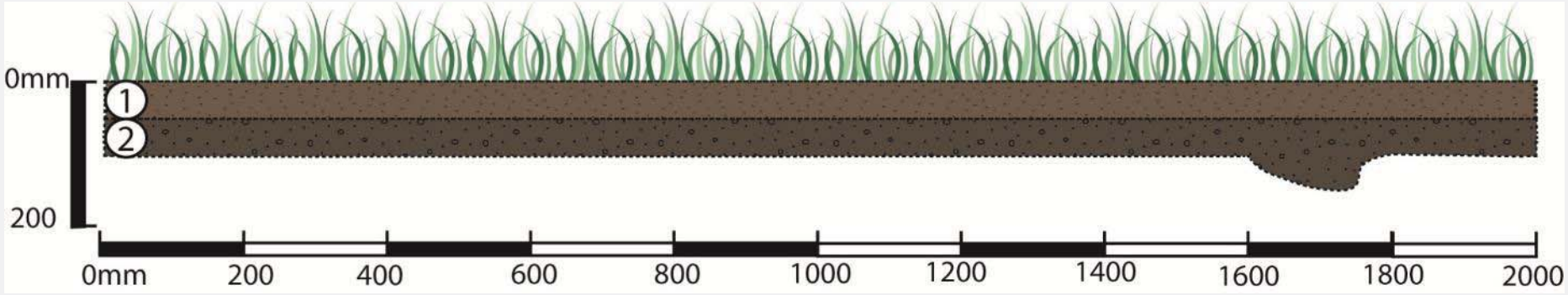


Figure 5 Stratigraphic drawing of north-east section of Test Pit 5

Table 14 Test Pit 6 data

Test Pit 6				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297338.588 Northing 5817975.850	Located on steep slopes landform on tumulus formation associated with erosive landscapes and with final stage of viscous lava terracing. Ephemeral drainage to south. Grasses, artichoke thistle and box thorn. Small surface basalt in vicinity.	VAHR 7822-1542 VAHR 7822-1543 Surface artefacts from Standard Assessment	1. 0–140mm: Fine grained, friable, strong brown silt with rootlets, plastic and basalt. 7.5YR 5/6, pH 6. 2. 140mm: Fine grained, compact, yellowish red silty clay. 5YR 4/6, pH 6.5. 3. Basalt floater.	
Test pit size		**Artefacts**		
2 x 1 metre		132 quartz 7 quartzite 4 silcrete (0–80mm)		

Plate 16 General location of Test Pit 6 (facing north-west)

Stratigraphic drawing

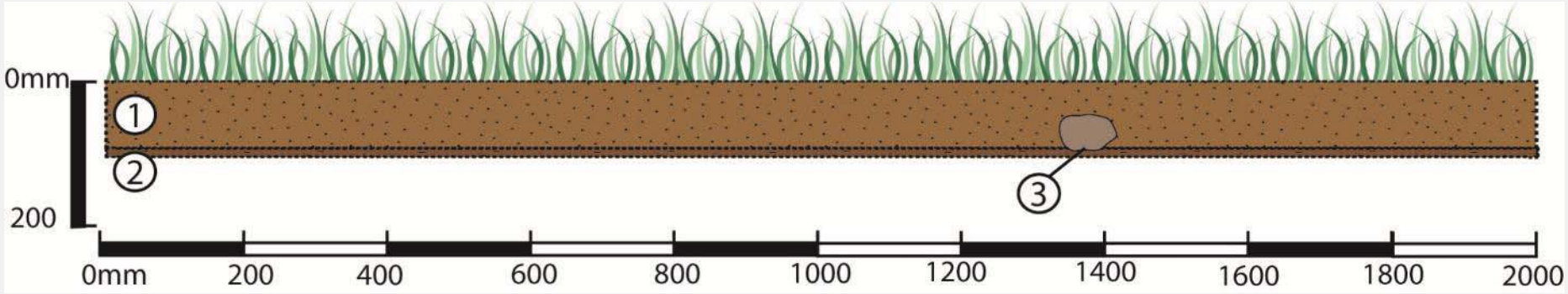


Figure 6 Stratigraphic drawing of north section of Test Pit 6

Table 15 Test Pit 7 data

Test Pit 7				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296825.4365 Northing 5819323.696	Located on high plateau landform with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava flows. No exposed basalt nearby. Grasses and tussock grass.	None	1. 0–50mm: Fine grained, friable, yellowish red clayey silt with rootlets and basalt fragments. 5YR 4/6, pH 6.5. 2. 50–140mm: Fine grained, weakly cemented, dark reddish brown clayey silt with increasing clay content. 5YR 3/4, pH 6.5. 3. 140mm: Fine grained, compact, dark reddish brown clay. 5YR 3/3, pH 7.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 17 General location of Test Pit 7 (facing south-west)

Stratigraphic drawing

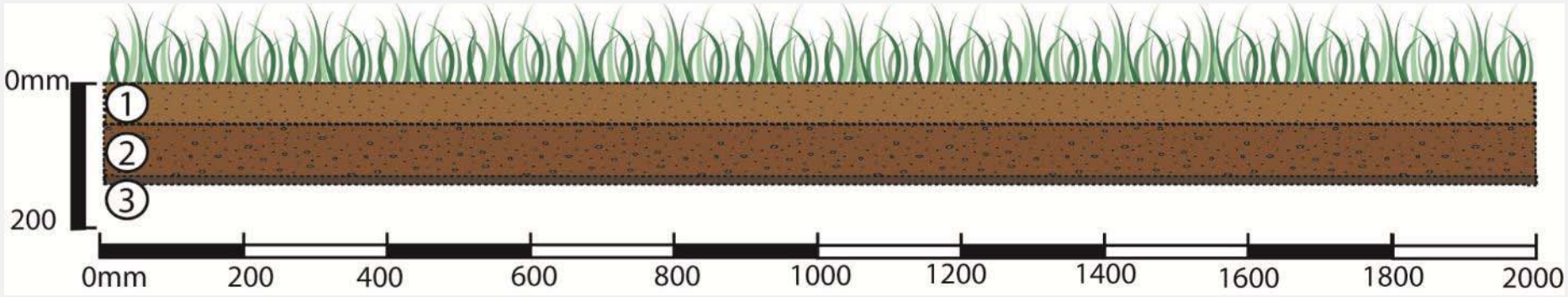


Figure 7 Stratigraphic drawing of south section of Test Pit 7

Table 16 Test Pit 8 data

Test Pit 8				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296902.2842 Northing 5819219.429	Located on high plateau landform with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava flows. No exposed basalt nearby. Piles of basalt within 100 metres. Grasses and tussock grass.	None	1. 0–80mm: Fine grained, friable, red brown clayey silt with rootlets, and basalt and small scoria fragments. 5YR 5/4, pH 6.5. 2. 80–110mm: Fine grained, friable, reddish brown clayey silt with basalt fragments and increasing clay. 5YR 4/4, pH 6.5. 3. 110mm: Fine grained, compact dark reddish brown clay. 5YR 3/3, pH 7	
Test pit size		**Artefacts**		
2 x 1 metre		1 quartzite (100mm)		

Plate 18 General location of Test Pit 8 (facing south)

Stratigraphic drawing

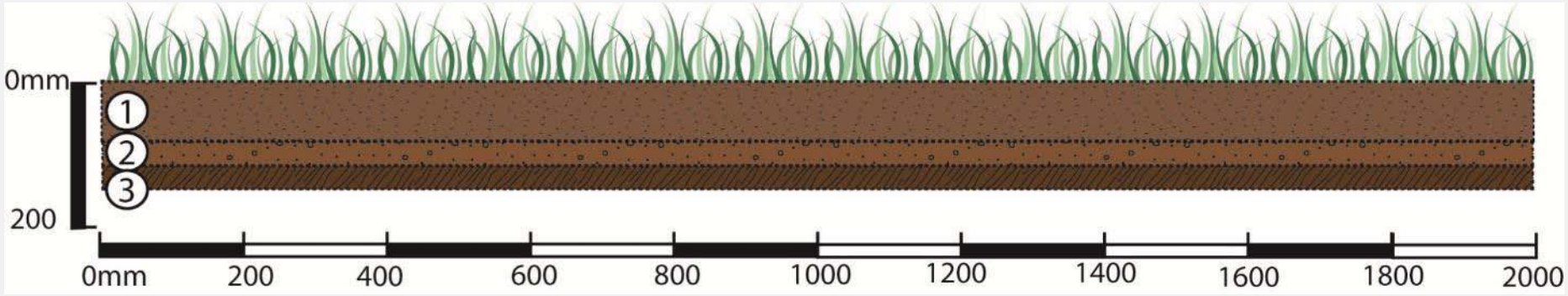


Figure 8 Stratigraphic drawing of south section of Test Pit 8

Table 17 Test Pit 9 data

Test Pit 9				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297161.522 Northing 5819081.248	Located on high plateau landform with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava flows. No exposed basalt nearby. Grasses and tussock grass.	None	1. 0–60mm: Fine grained, friable, yellowish red clayey silt with rootlets and occasional quartz pebbles. 5YR 4/6, pH 7. 2. 60–110mm: Fine grained, compact to friable, dark reddish brown silty clay. 5YR 2.5/2, pH 7.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 19 General location of Test Pit 9 (facing south-east)

Stratigraphic drawing

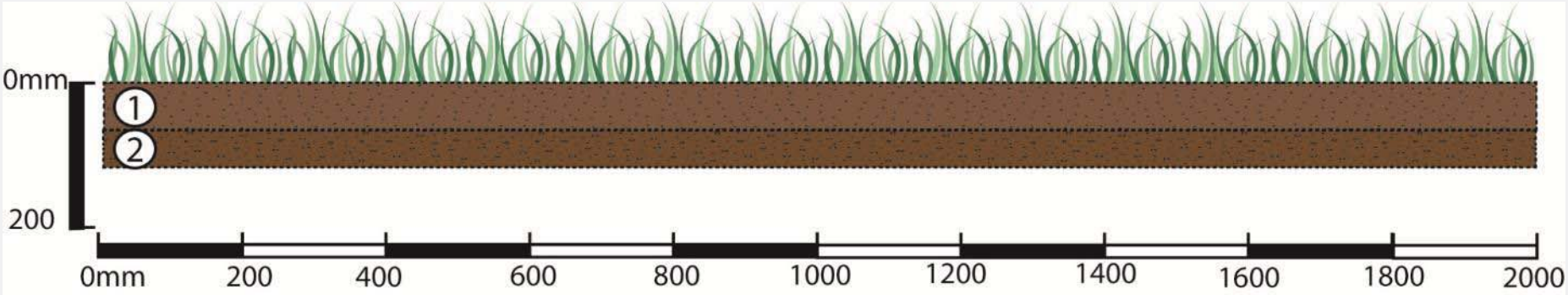


Figure 9 Stratigraphic drawing of south section of Test Pit 9

Table 18 Test Pit 10 data

Test Pit 10				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297418.166 Northing 5819217.934	Located on moderate slopes landform with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava terracing. No exposed basalt nearby. Grasses and tussock grass.	None	1. 0–120mm: Yellowish red clay silt loam with rootlets, infrequent basalt/scoria. 5YR 4/6, pH 7. 2. 120mm: Compact, dark reddish brown silty clay with higher moisture content than in previous test pits. 5YR 3/4, pH 7.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 20 General location of Test Pit 10 (facing south-west)

Stratigraphic drawing

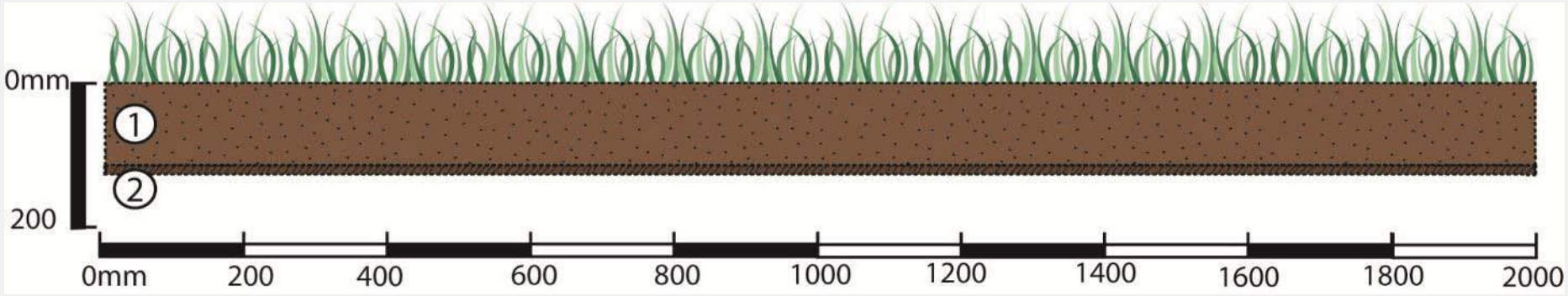


Figure 10 Stratigraphic drawing of south-west section of Test Pit 10

Table 19 Test Pit 11 data

Test Pit 11				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296166.907 Northing 5819661.101	Located on steep slopes landform with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava terracing. No exposed basalt nearby. Grasses and tussock grass.	None	1. 0–140mm: Fine grained, yellowish red silt loam with large basalt floaters. 5YR 4/6, pH 7. 2. 140–230mm: Compact, dark reddish brown clayey silt with frequent basalt, occasional quartz and quartzite pebbles. 5YR 3/4, pH 7. 3. 230–370mm: Fine grained, compact, dark reddish brown silty clay with occasional quartz and quartzite pebbles. 2.5YR 3/4,pH 7. 4. 370–590mm: Fine grained, very compact, dark reddish brown silty clay where the clay content increases with depth. 2.5YR 3/4, pH 7.	
Test pit size		**Artefacts**		
2 x 1 metre		1 quartzite 1 silcrete		

Plate 21 General location of Test Pit 11 (facing east)

Stratigraphic drawing

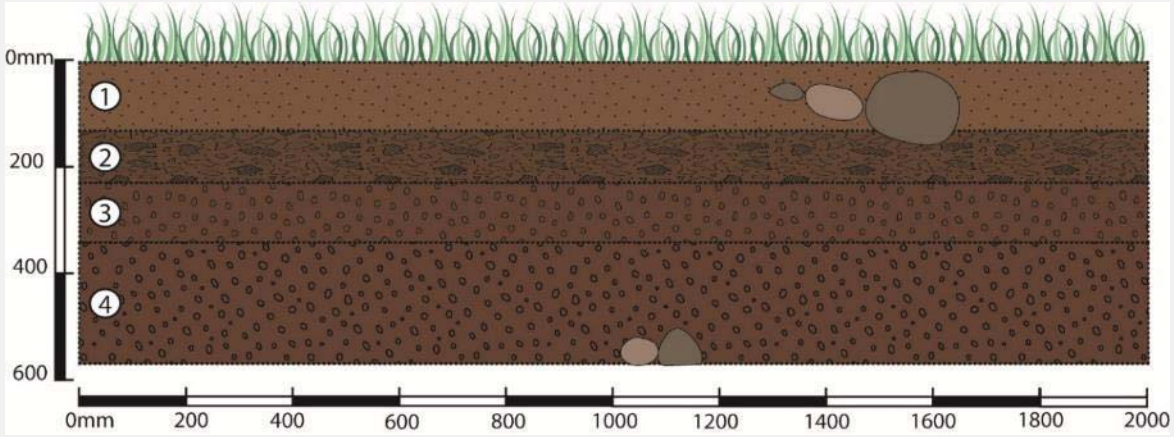


Figure 11 Stratigraphic drawing of south section of Test Pit 11

Table 20 Test Pit 12 data

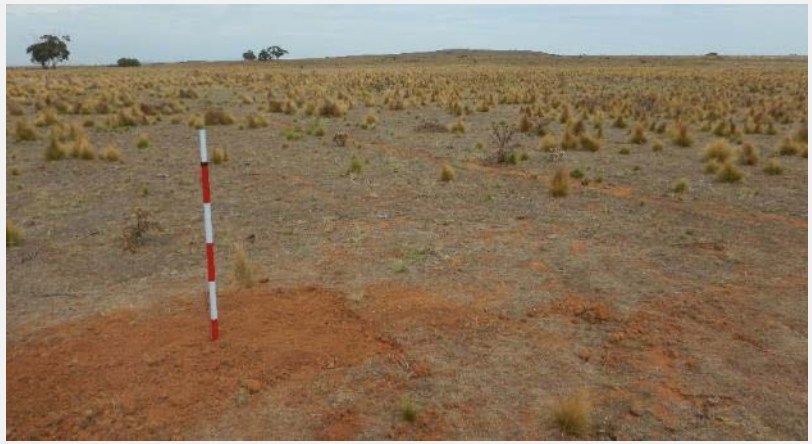
Test Pit 12				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296933.292 Northing 5818833.826	Located on high plateau landform with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava flows. No exposed basalt nearby, but large piles of basalt nearby. Grasses and tussock grass.	None	1. 0–20mm: Fine grained, friable, reddish yellow silt with rootlets, basalt and rubble. 7.5YR 6/6, pH 6. 2. 20–80mm: Fine grained, friable, strong brown clayey silt with basalt and rubble and increasing clay. 7.5YR 5/6, pH 6. 3. 80mm: Cemented, fine grained, dark brown clay, 5YR 3/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 22 General location of Test Pit 12 (facing south-west)

Stratigraphic drawing

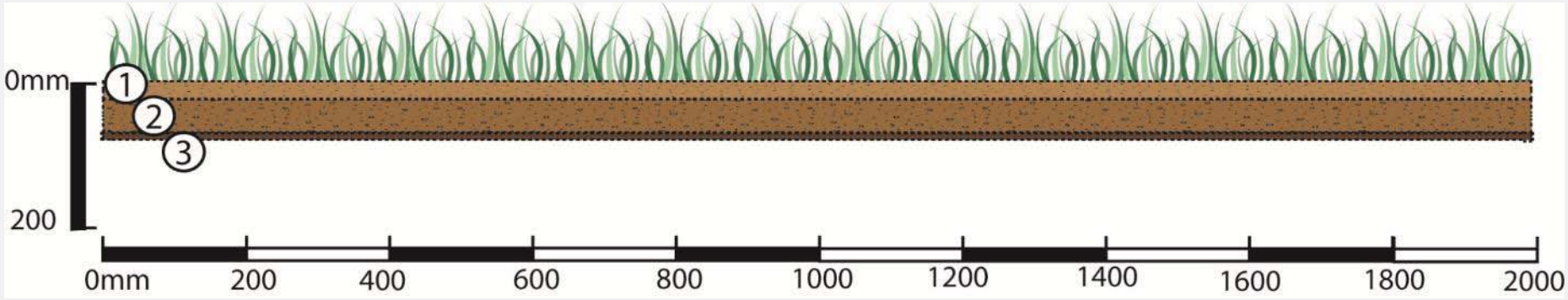


Figure 12 Stratigraphic drawing of south section of Test Pit 12

Table 21 Test Pit 13 data

Test Pit 13				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296970.325 Northing 5818715.610	Located on high plateau landform with nearest drainage being ephemeral watercourses to south. It is located within the erosive final stage of viscous lava flows. No exposed basalt nearby, but large piles of basalt nearby. Grasses, tussock grass and artichoke thistle.	None	1. 0 - 30mm: Fine grained, friable, reddish yellow silt with rootlets, basalt and rubble. 7.5YR 6/6, pH 6. 2. 30 - 120mm: Fine grained, friable, strong brown clayey silt with basalt, rubble and increasing clay content with depth. 7.5YR 5/6, pH 6. 3. 120mm: Fine grained, cemented, dark brown clay, 5YR 3/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 23 General location of Test Pit 13 (facing west)

Stratigraphic drawing

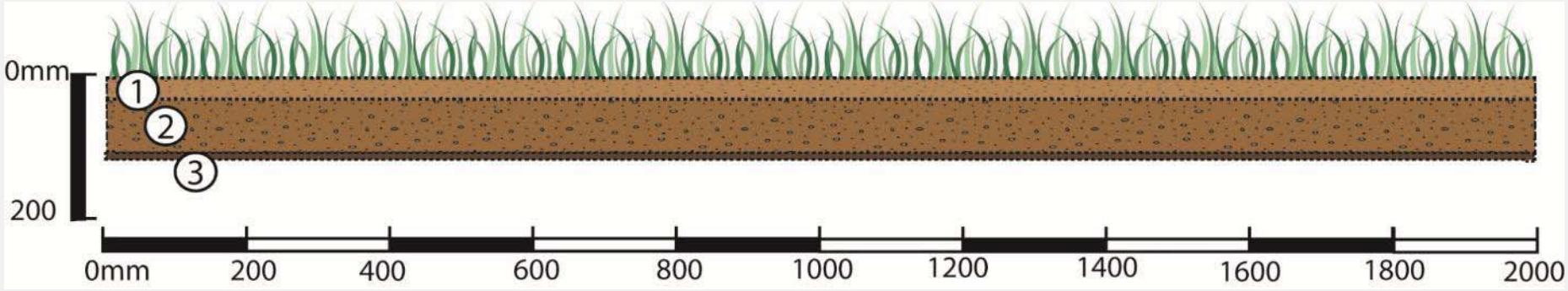


Figure 13 Stratigraphic drawing of south section of Test Pit 13

Table 22 Test Pit 14 data

Test Pit 14				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297568.705 Northing 5818405.981	Located on high plateau landform at the edge of moderate slopes with nearest drainage being ephemeral watercourses to south. It is located within the erosive final stage of viscous lava flows. Small surface basalt nodules nearby. Grasses and tussock grass.	None	1. 0 –40mm: Fine grained, friable, light brown silty clay with rootlets, basalt and rubble. 7.5YR 6/4, pH 6. 2. 40–120mm: Fine grained, friable, brown silty clay. 7.5YR 4/4, pH 6. 3. 120mm: Fine grained, cemented, dark reddish brown clay. 5YR 3/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 24 General location of Test Pit 14 (facing north)

Stratigraphic drawing

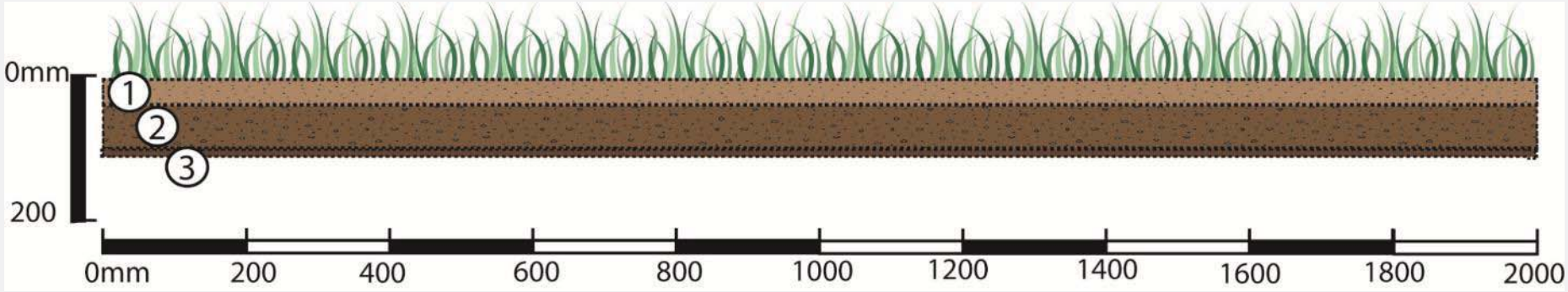


Figure 14 Stratigraphic drawing of south section of Test Pit 14

Table 23 Test Pit 15 data

Test Pit 15				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297583.420 Northing 5818856.018	Located on high plateau landform with moderate slopes to the north with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava flows. No exposed basalt nearby. Grasses and tussock grass.	None	1. 0–20mm: Fine grained, friable, light brown silt with rootlets, basalt and rubble. 7.5YR 6/4, pH 6. 2. 20–120mm: Fine grained, friable, brown clayey silt with rootlets and increasing clay content with depth. 7.5YR 4/4, pH 6. 3. 120mm: Fine grained, cemented brown clay. 7.5YR 4/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		1 quartz (100mm)		

Plate 25 General location of Test Pit 15 (facing north-east)

Stratigraphic drawing

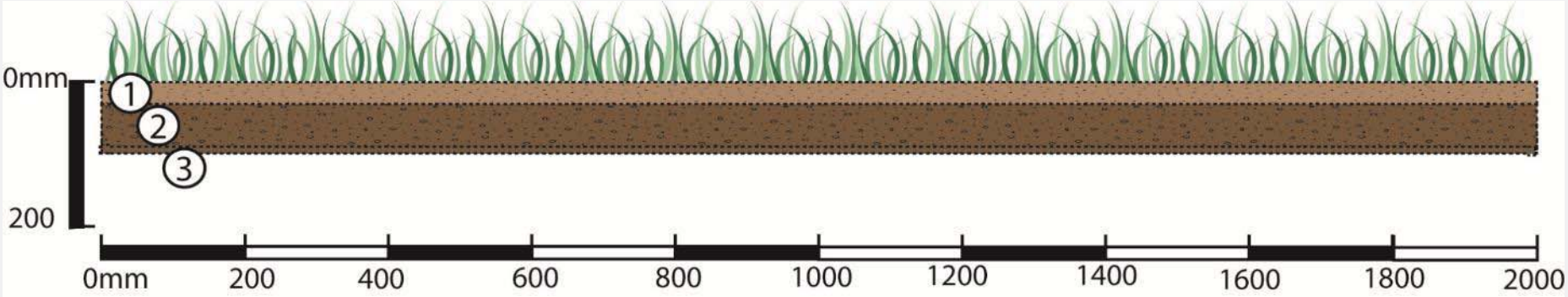


Figure 15 Stratigraphic drawing of north section of Test Pit 15

Table 24 Test Pit 16 data

Test Pit 16				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296704.240 Northing 5818602.385	Located on high plateau landform immediately west of steep slopes with nearest drainage being ephemeral watercourses to south. It is located within the erosive final stage of viscous lava flows. No exposed basalt nearby, but large piles of basalt nearby. Grasses and tussock grass.	VAHR 7822-3802	1. 0–30mm: Fine grained, friable, brown silty clay with rootlets. 7.5YR 5/4, pH 6. 2. 30–110mm: Fine grained, compact, light brown silty clay with basalt fragments. 7.5YR 6/4, pH 6. 3. 110mm: Fine grained, cemented, strong brown clay. 7.5YR 4/6, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		1 basalt (80mm)		

Plate 26 General location of Test Pit 16 (facing west)

Stratigraphic drawing

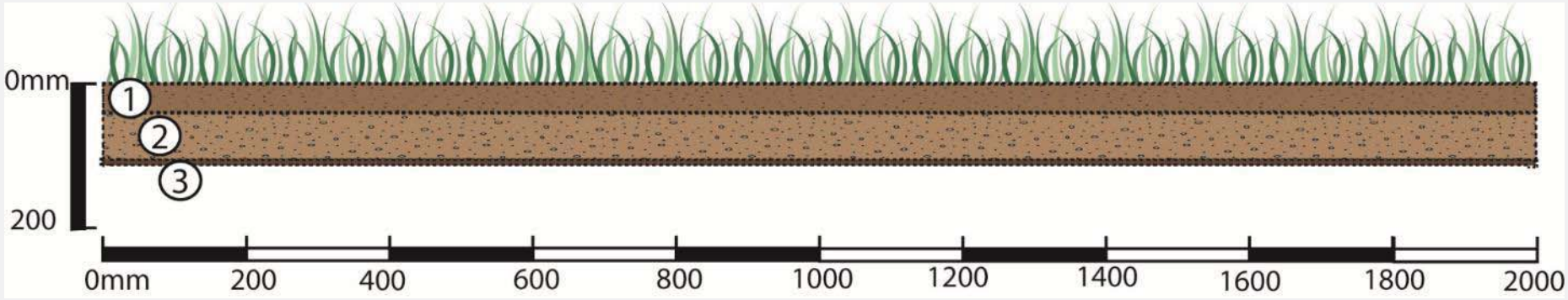


Figure 16 Stratigraphic drawing of south section of Test Pit 16

Table 25 Test Pit 17 data

Test Pit 17				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296768.227 Northing 5818326.731	Located on steep slopes landform with nearest water being ephemeral drainage to south. It is located within the erosive final stage of viscous lava terracing. No exposed basalt, but large piles of basalt nearby. Grasses, tussock grass and artichoke thistle.	None	1. 0–50mm: Fine grained, friable, brown silt with rootlets. 7.5YR 4/4, pH 6. 2. 50–130mm: Fine grained, friable, brown silt with volcanic rock rubble. 7.5YR 5/4, pH 6. 3. 130mm: Fine grained, cemented, strong brown clay. 7.5YR 4/6, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 27 General location of Test Pit 17 (facing south-east)

Stratigraphic drawing

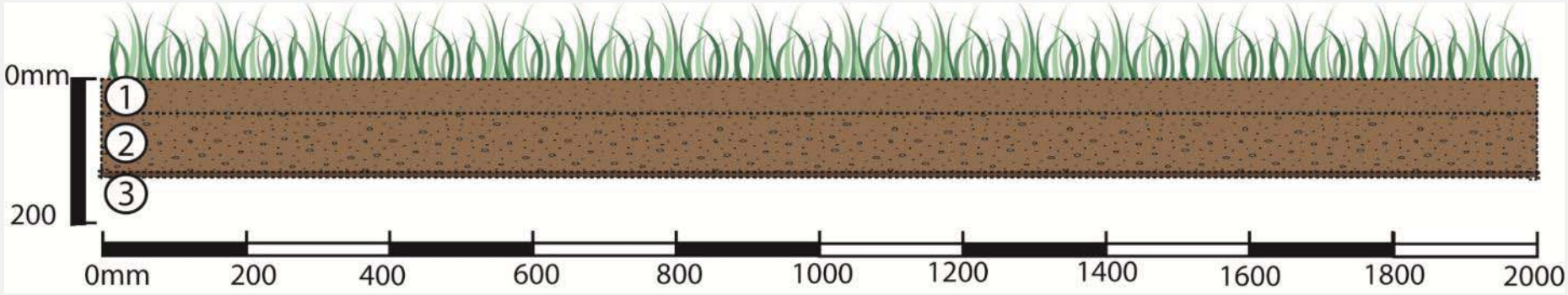


Figure 17 Stratigraphic drawing of south section of Test Pit 17

Table 26 Test Pit 18 data

Test Pit 18				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297077.643 Northing 5818186.072	Located on steep slopes landform at southern edge near moderate slopes with nearest water being ephemeral drainage to south. It is located within the erosive final stage of viscous lava terracing. No exposed basalt, but large piles of basalt nearby. Grasses and artichoke thistle.	None	1. 0–50mm: Fine grained, compact, pink silt with rootlets. 7.5YR 7/3, pH 6. 2. 50–130mm: Fine grained, compact, light brown clayey silt with volcanic rubble and increasing clay content with depth. 7.5YR 5/4, pH 6. 3. 130mm: Fine grained, cemented strong brown clay. 7.5YR 4/6, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 28 General location of Test Pit 18 (facing north-west)

Stratigraphic drawing

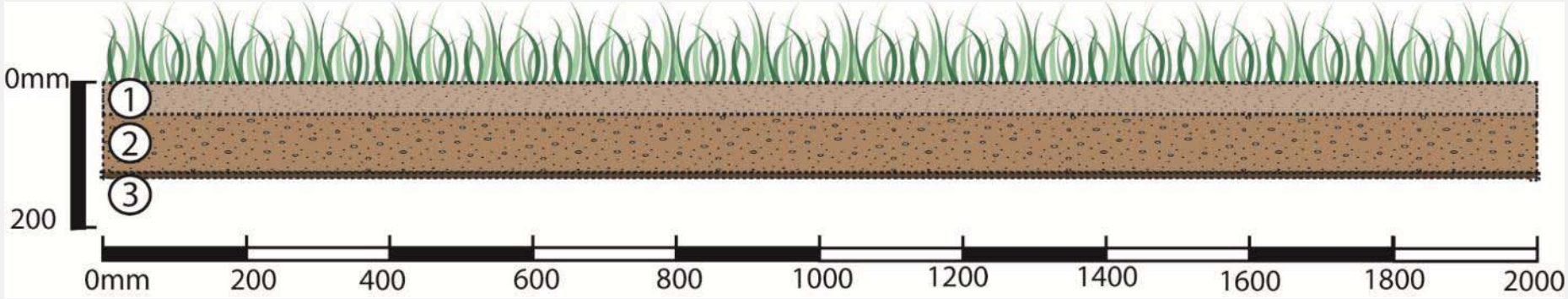


Figure 18 Stratigraphic drawing of north section of Test Pit 18

Table 27 Test Pit 19 data

Test Pit 19				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296906.779 Northing 5818124.793	Located on moderate slopes landform with nearest water being ephemeral drainage to south. It is located within the accreting plains made up of older fluid flow basalts. No exposed basalt, but large piles of basalt nearby. Grasses, tussock grass and artichoke thistle.	VAHR 7822-1534	1. 0–20mm: Loose to friable strong brown clayey silt with rootlets. 7.5YR 4/6, pH 6.5. 2. 20–100mm: Friable, brown clayey silt with occasional basalt fragments and increasing clay content with depth. 7.5YR 4/4, pH 6.5. 3. 100mm: Friable, dark reddish brown silty clay. 5YR 3/4, pH 6.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 29 General location of Test Pit 19 (facing north)

Stratigraphic drawing

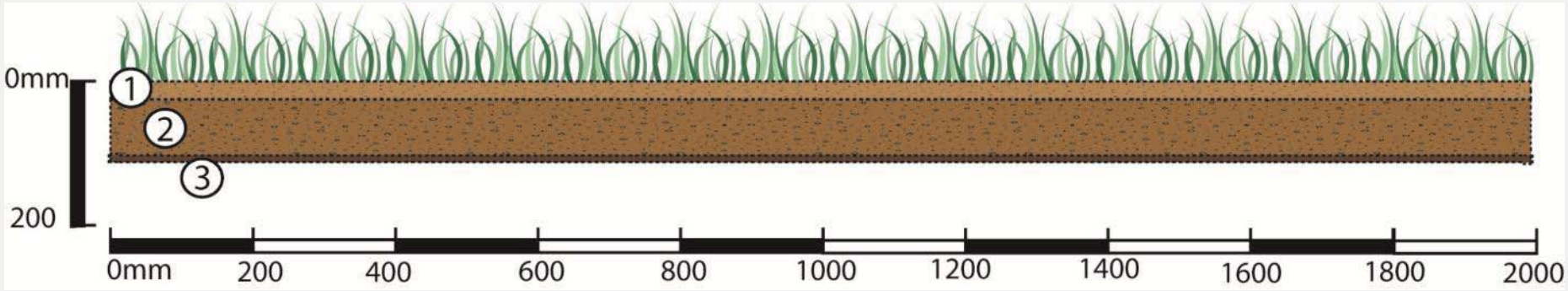


Figure 19 Stratigraphic drawing of southern section of Test Pit 19

Table 28 Test Pit 20 data

Test Pit 20				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297325.573 Northing 5817758.351	Located on moderate slopes landform with nearest water being ephemeral drainage to south-west. It is located within the accreting plains made up of older fluid flow basalts. No exposed basalt. Grasses and tussock grass.	None	1. 0–50mm: Friable, strong brown clayey silt with occasional small basalt fragments. 7.5YR 4/6, pH 6.5. 2. 50–80mm: Compact to friable, dark reddish brown silty clay with no inclusions. 5YR 3/4, pH 6.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 30 General location of Test Pit 20 (facing east)

Stratigraphic drawing

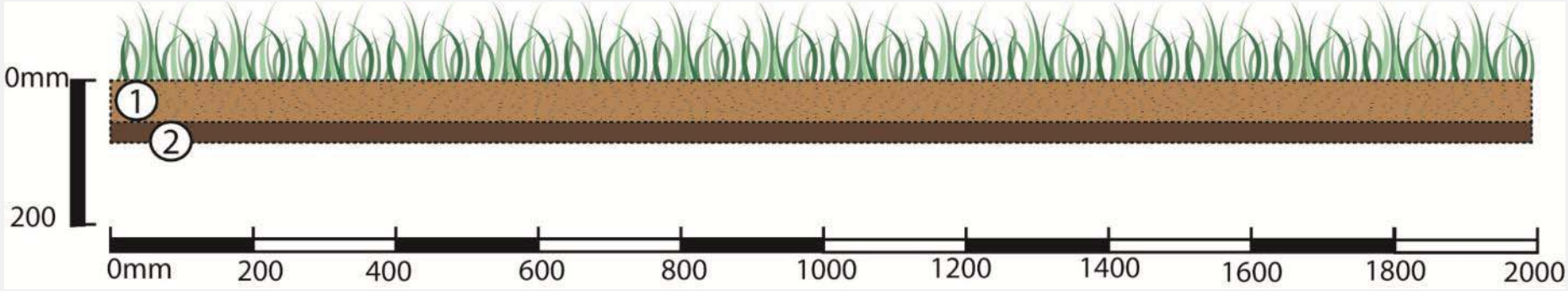


Figure 20 Stratigraphic drawing of eastern section of Test Pit 20

Table 29 Test Pit 21 data

Test Pit 21				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297439.054 Northing 5817265.185	Located on gentle slopes landform on the edge of moderate slopes to north with nearest water being ephemeral drainage to the west. It is located within the accreting plains made up of older fluid flow basalts. No exposed basalt in the vicinity. Grasses and tussock grass.	None	1. 0–70mm: Friable, brown clayey silt with occasional basalt floaters. 7.5YR 4/3, pH 6.5. 2. 70–90mm: Friable to compact, dark brown silty clay with no inclusions. 7.5YR 3/2, pH 6.5.	
Test pit size		**Artefacts**		
2 x 1 metre		1 quartz		

Plate 31 General location of Test Pit 21 (facing north)

Stratigraphic drawing

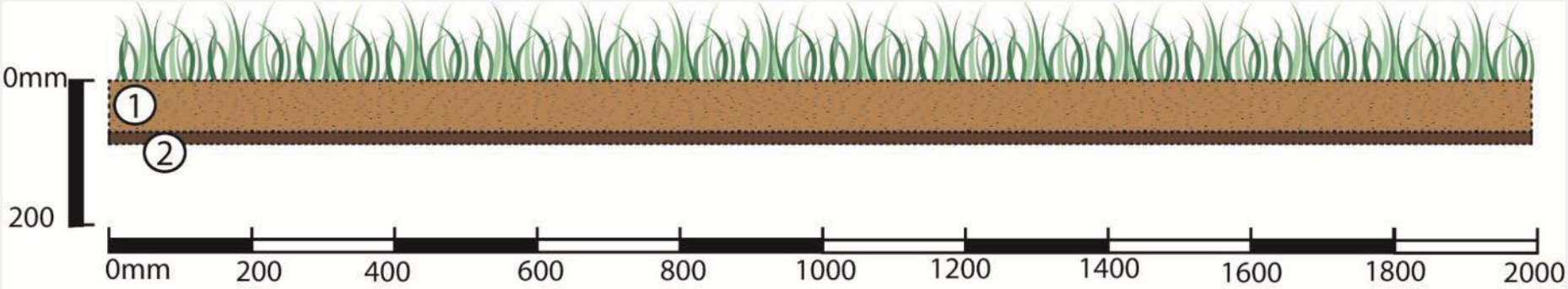


Figure 21 Stratigraphic drawing of eastern section of Test Pit 21

Table 30 Test Pit 22 data

Test Pit 22				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297123.259 Northing 5817248.023	Located on moderate slopes landform on the edge with gentle slopes with nearest water being ephemeral drainage immediately to the east. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby. Grasses and tussock grass.	None	1. 0–70mm: Friable, brown clayey silt with basalt floaters and rootlets. 7.5YR 4/4, pH 6.5. 2. 70mm: Compact to friable, dark reddish brown silty clay with basalt floaters and rootlets. 5YR 3/4, pH 6.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 32 General location of Test Pit 22 (facing west)

Stratigraphic drawing

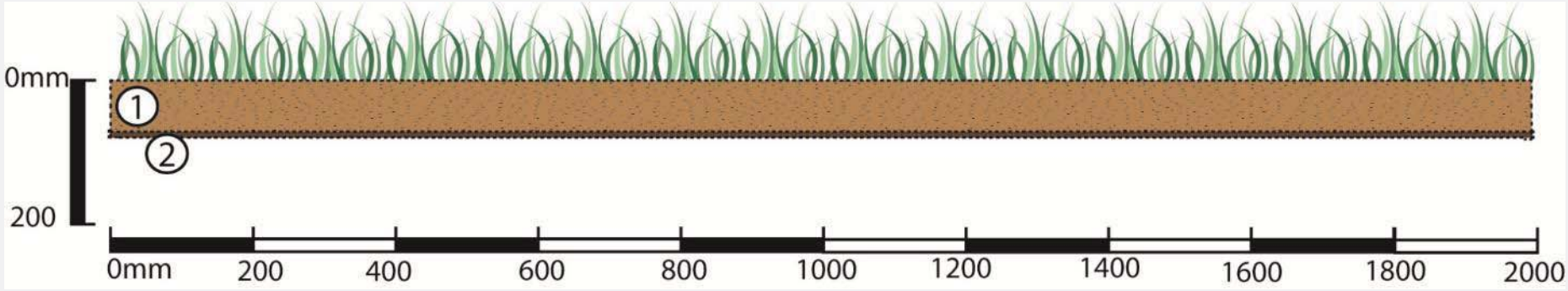


Figure 22 Stratigraphic drawing of eastern section of Test Pit 22

Table 31 Test Pit 23 data

Test Pit 23				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296832.131 Northing 5817403.390	Located on moderate slopes landform with nearest water being ephemeral drainage to north-east. It is located within the erosive final stage of viscous lava flows. Some exposed basalt floaters, and large piles of basalt nearby. Grass and tussock grass.	None	1. 0 –80mm: Friable, brown clayey silt with small basalt floaters and rootlets. 7.5YR 4/4, pH 6.5. 2. 80+ mm: Compact to friable, dark reddish-brown silty clay with small basalt floaters and rootlets. 5YR 3/4, pH 6.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 33 General location of Test Pit 23 (facing east)

Stratigraphic drawing

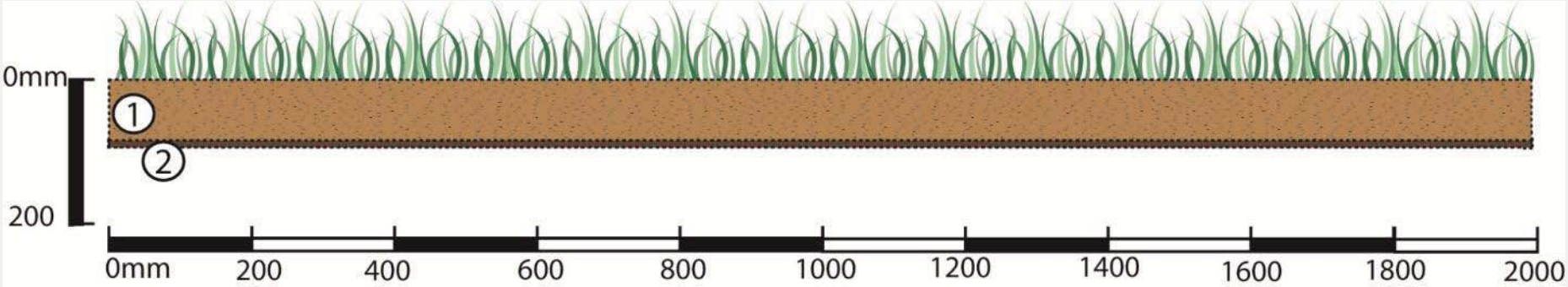


Figure 23 Stratigraphic drawing of western section of Test Pit 23

Table 32 Test Pit 24 data

Test Pit 24				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296587.255 Northing 5819565.060	Located on steep slopes landform with high plateau to the south with Kororoit Creek to the north. Located within the erosive final stage of viscous lava terracing. No surface basalt. Grasses.	None	1. 0–115mm: Friable, yellowish red silt. 5YR 4/6, pH 7. 2. 115–270mm: Friable, red clayey silt with basalt fragments. 2.5YR 4/8, pH 6.5. 3. 270–360mm: Friable, red silty clay. 2.5YR 4/8, pH 6.5 4. 360mm: Cemented, dark red clay with low silt content. 2.5YR 3/6. pH 6.5	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 34 General location of Test Pit 24 (facing south)

Stratigraphic drawing

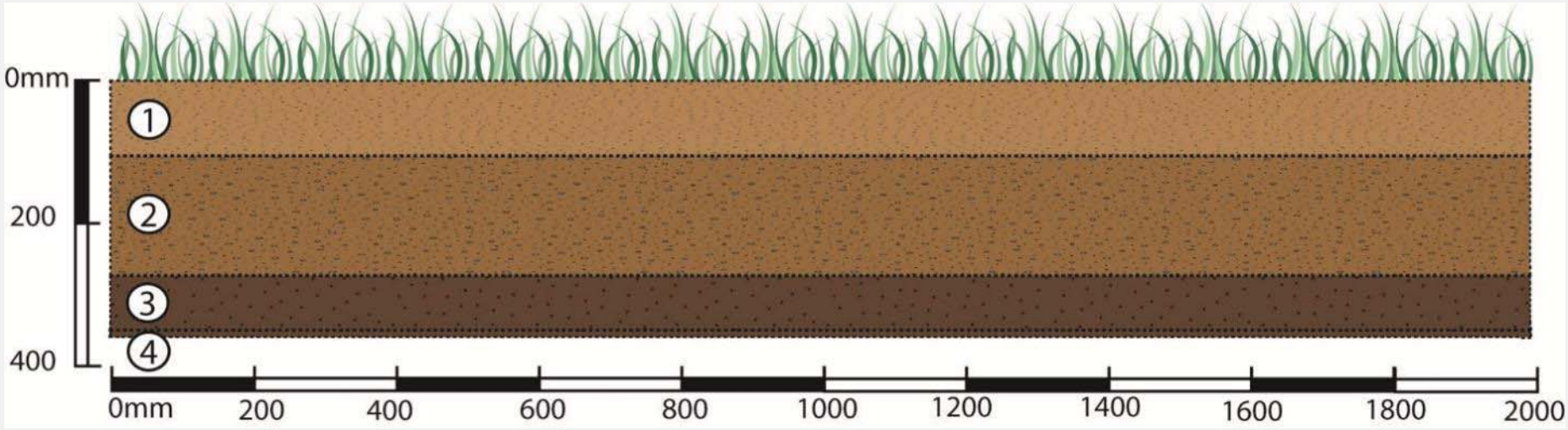


Figure 24 Stratigraphic drawing of northern section of Test Pit 24

Table 33 Test Pit 25 data

Test Pit 25				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296463.440 Northing 5819549.810	Located on steep slopes landform adjacent high plateau immediately to the south with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava terracing. Small surface basalt nodules nearby. Grasses and tussock grass.	None	1. 0–70mm: Friable, fine grained strong brown silt with basalt and rootlets. 7.5YR 5/6, pH 6. 2. 70–190mm: Weakly cemented, fine grained, strong brown silt with occasional sandy inclusions. 7.5YR 4/6, pH 6. 3. 190mm+: Cemented, fine grained, dark brown clay. 7.5YR 3/4. pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		1. 1 quartz 2. 1 quartzite		

Plate 35 General location of Test Pit 25 (facing west)

Stratigraphic drawing

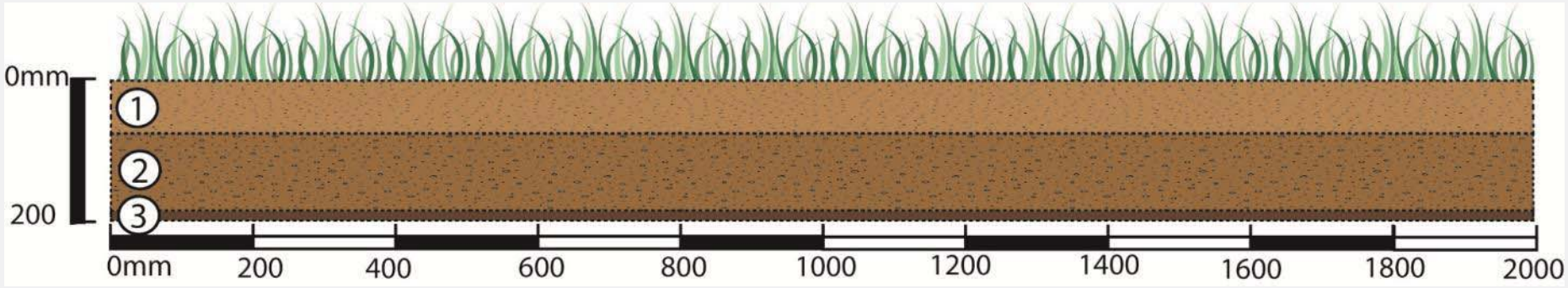


Figure 25 Stratigraphic drawing of southern section of Test Pit 25

Table 34 Test Pit 26 data

Test Pit 26				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296394.211 Northing 5819323.453	Located on high plateau landform with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava flows. No surface basalt visible nearby. Grasses and tussock grass.	None	1. 0–80mm: Compact, fine grained, strong brown silt with basalt and rootlets. 7.5YR 5/8, pH 6. 2. 80–140mm: Weakly cemented, fine grained, yellowish-red clayey silt with basalt fragments. 5YR 5/6, pH 6. 3. 140mm: Cemented, fine grained, dark brown clay. 7.5YR 3/4. pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		1 silcrete		

Plate 36 General location of Test Pit 26 (facing south)

Stratigraphic drawing

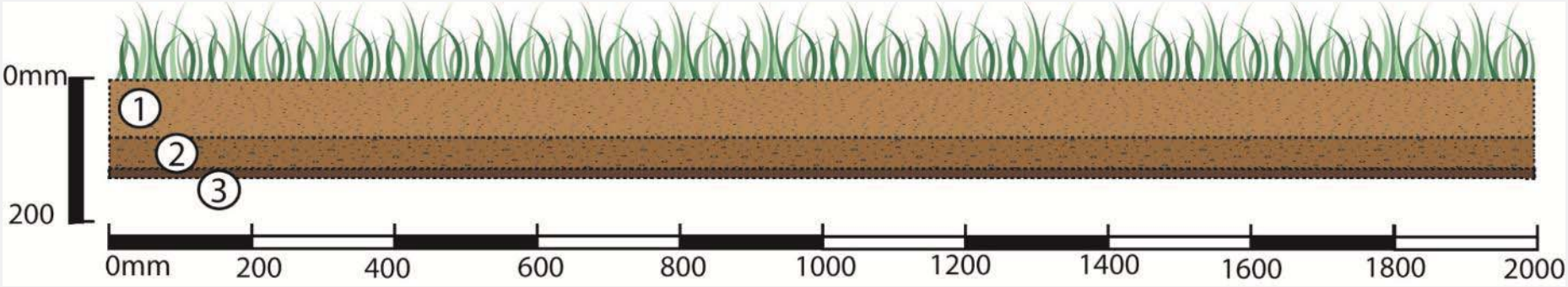


Figure 26 Stratigraphic drawing of southern section of Test Pit 26

Table 35 Test Pit 27 data

Test Pit 27				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296047.757 Northing 5818665.766	Located on steep slopes landform near peak of Mount Atkinson with Kororoit Creek to the north. It is located within the erosive final stage of viscous lava terracing. Small and medium basalt nodules and floaters. Grasses and tussock grass.	VAHR 7822-1546 VAHR 7822-1547 VAHR 7822-3802 Surface artefacts from Standard Assessment	1. 0–120mm: Friable, fine grained, dark brown silt with rootlets and basalt floaters. 7.5YR 3/3, pH 5.5. 2. 120–250mm: Friable, fine grained, dark brown clayey silt with basalt floaters, rubble and possible scoria. 7.5YR 3/4, pH 6. 3. 250mm: Weakly cemented, fine grained dark reddish brown silty clay with basalt floaters. 5YR 3/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		8 silcrete 3 quartz 11 silcrete 2 quartz 2 quartzite		

Plate 37 General location of Test Pit 27 (facing east)

Stratigraphic drawing

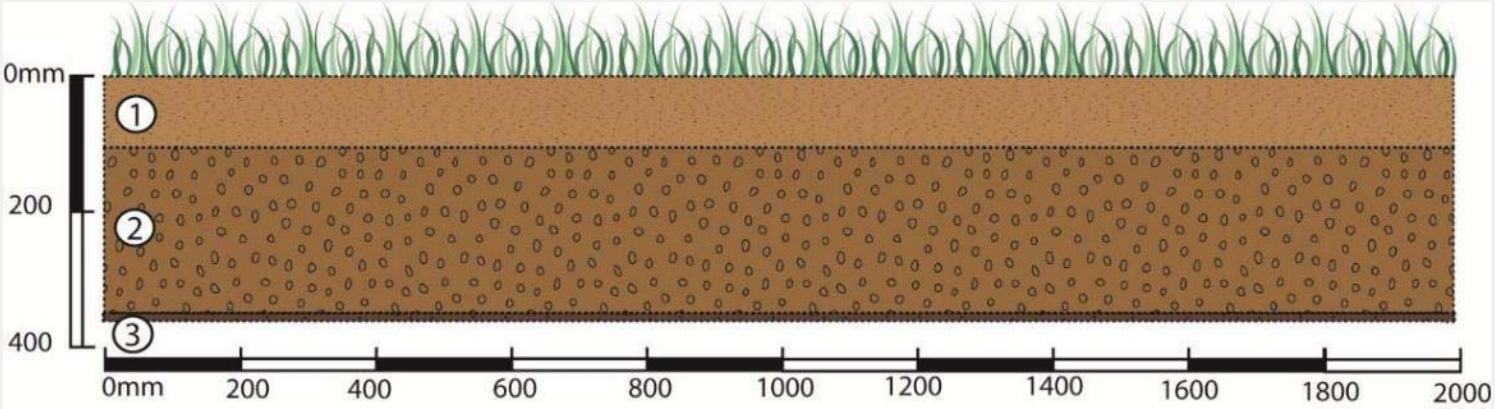


Figure 27 Stratigraphic drawing of north section of Test Pit 27

Table 36 Test Pit 28 data

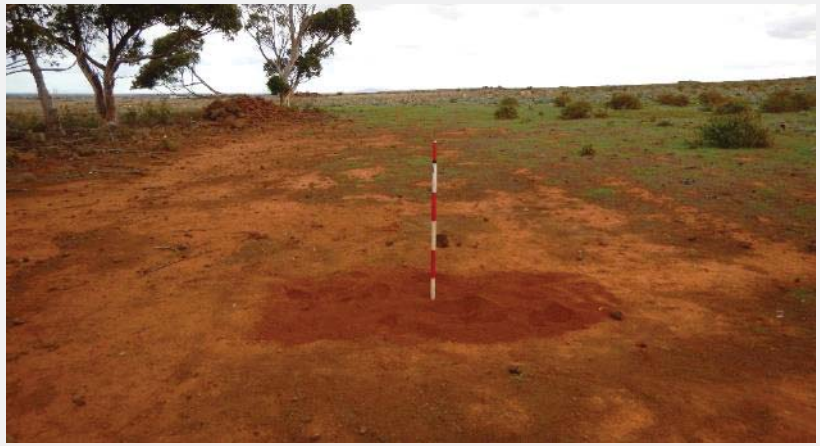
Test Pit 28				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296174.232 Northing 5818340.261	Located on high plateau landform adjacent steep slopes immediately to the south with nearest water being ephemeral drainage to south-east. It is located within the erosive final stage of viscous lava flows. Small surface basalt nodules and piles of basalt nearby. Grasses.	Surface artefacts from Standard Assessment	1. 0–80mm: Dry, friable, fine grained, dark yellowish brown silty clay with clear contact and occasional rootlets. 10YR 4/6, pH 5.5. 2. 80+mm: Dry, compact, dark reddish-brown clay with occasional rootlets, 2.5YR 2.5/3, 6.	
Test pit size		**Artefacts**		
2 x 1 metre		1 quartzite		

Plate 38 General location of Test Pit 28 (facing south-west)

Stratigraphic drawing

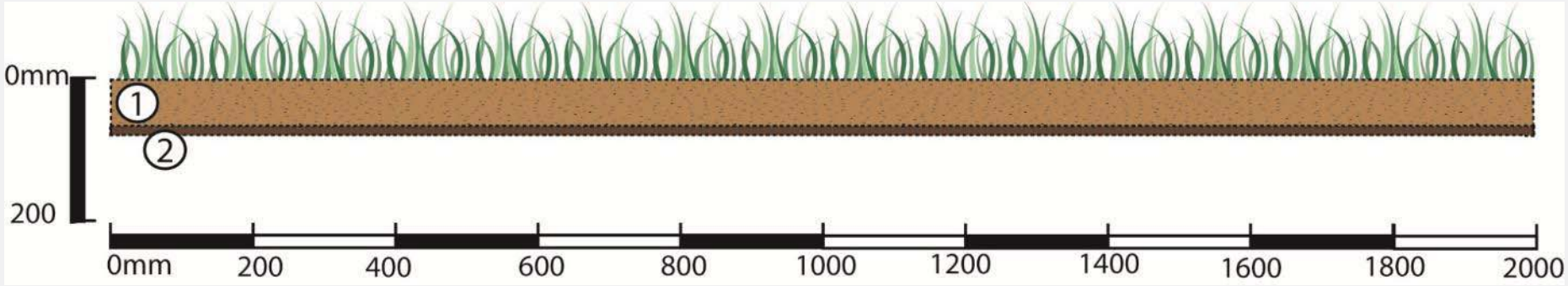


Figure 28 Stratigraphic drawing of north section of Test Pit 28

Table 37 Test Pit 29 data

Test Pit 29				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 295861.038 Northing 5816668.167	Located on moderate slopes landform adjacent to gentle slopes immediately to the south with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Large basalt floaters nearby. Grasses and tussock grass.	None	1. 0–80/220mm: Moist to wet, friable to firm, very dark brown silty clay with clear, slightly undulating contact dipping down to the north, frequent grass roots and rootlets, and occasional basalt nodules (5–100mm). 10YR 2/2, pH 6. 2. 80–220mm: Moist, firm, dark brown clay with occasional rootlets and very occasional basalt nodules (5-200mm) imbedded in base. 10YR 3/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 39 General location of Test Pit 29 (facing north-east)

Stratigraphic drawing

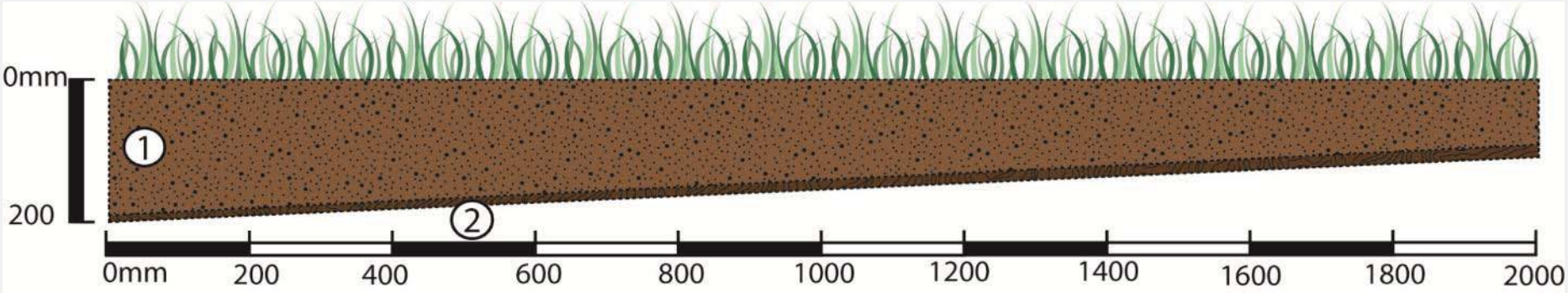


Figure 29 Stratigraphic drawing of west section of Test Pit 29

Table 38 Test Pit 30 data

Test Pit 30				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296371.275 Northing 5817870.942	Located on high plateau landform adjacent moderate slopes immediately to the east with nearest water being ephemeral drainage to south-east. It is located within the erosive final stage of viscous lava flows. Piles of basalt floaters nearby. Grasses and tussock grasses.	None	1. 0–120mm: Moist to wet, friable, very dark brown silty clay with clear, flat contact, frequent grass roots and rootlets, and occasional small (>50mm) basalt nodules. 7.5YR 2.5/2, pH 5.5. 2. 120mm: Moist, firm, very dark brown clay with occasional rootlets and imbedded basalt nodules (<100mm). 7.5YR 2.5/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 40 General location of Test Pit 30 (facing south-east)

Stratigraphic drawing

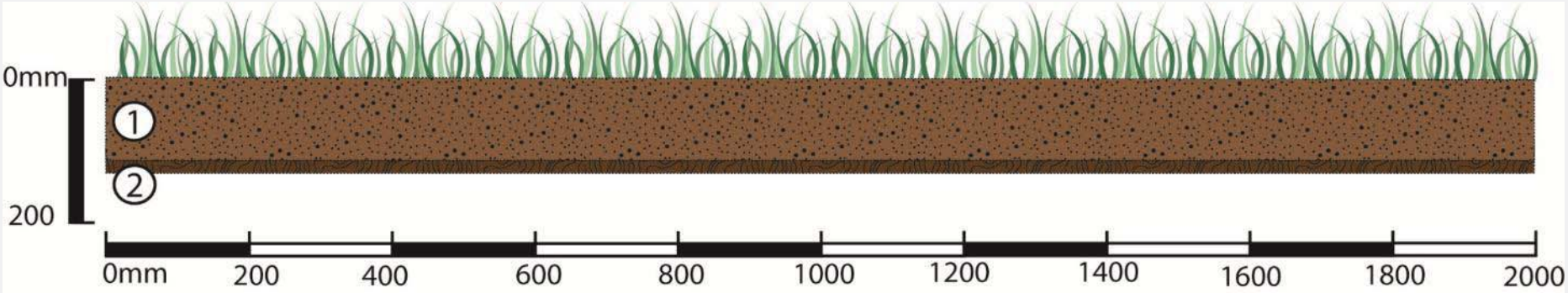


Figure 30 Stratigraphic drawing of west section of Test Pit 30

Table 39 Test Pit 31 data

Test Pit 31				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296448.727 Northing 5818372.097	Located on steep slopes landform with nearest water being ephemeral drainage to south-east. It is located within the erosive final stage of viscous lava terracing. Small surface basalt nodules and piles of basalt floaters nearby. Grasses and artichoke thistles.	None	1. 0–110mm: Wet to moist, friable, very dark brown silty clay with clear flat contact, frequent grass roots and rootlets, and moderate small (>50mm) basalt nodules. 7.5YR 2.5/2, pH 6. 2. 110mm: Moist firm, very dark brown clay with very occasional moderate (>100mm) basalt nodules. 7.5YR 2.5/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 41 General location of Test Pit 31 (facing north-east)

Stratigraphic drawing

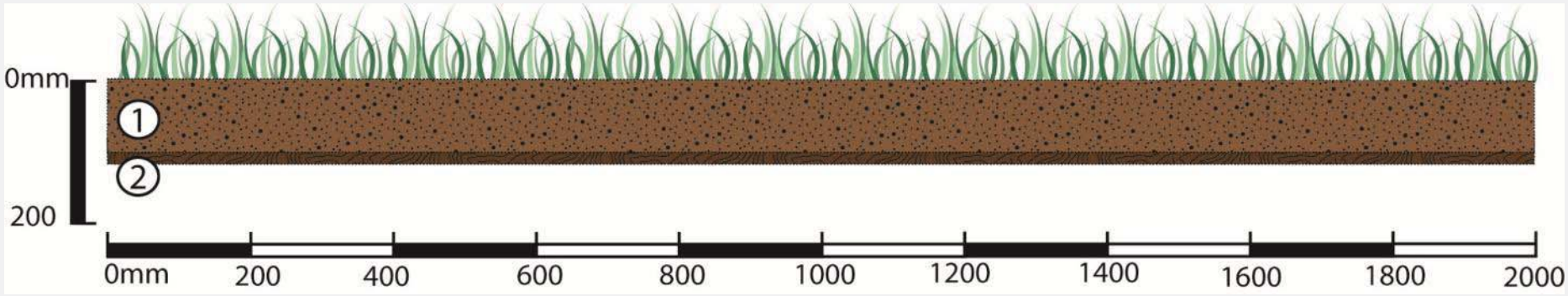


Figure 31 Stratigraphic drawing of west section of Test Pit 31

Table 40 Test Pit 32 data

Test Pit 32				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296224.879 Northing 5818725.665	Located on steep slopes landform with nearest water being ephemeral drainage to south-east and swampy area to north-east. It is located within the erosive final stage of viscous lava terracing. Small surface basalt nodules nearby. Grasses and artichoke thistles.	None	1. 0–90/110mm: Moist, friable, dark reddish-brown silty clay with clear flat contact, frequent grass roots and rootlets, occasional grubs and small basalt nodules (>50mm). 2.5YR 2.5/3, pH 6. 2. 90/110mm: Moist, firm, plastic, dark reddish-brown clay with occasional rootlets. 2.5YR 2.5/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 42 General location of Test Pit 32 (facing south-west)

Stratigraphic drawing

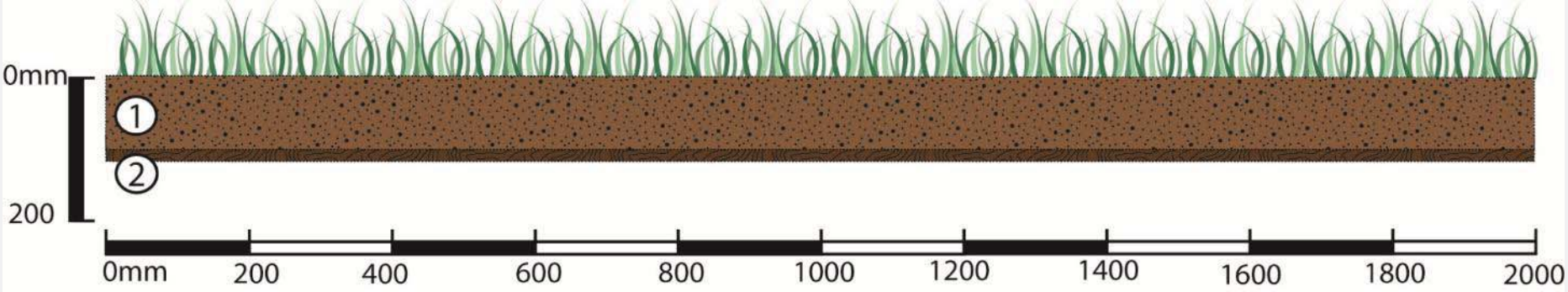


Figure 32 Stratigraphic drawing of west section of Test Pit 32

Table 41 Test Pit 33 data

Test Pit 33				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296513.183 Northing 5818975.873	Located on high plateau landform adjacent to steep slope to north with nearest drainage Kororoit Creek to north. It is located within the erosive final stage of viscous lava flows. No surface basalt visible nearby. Grasses and artichoke thistles.	None	1. 0–100mm Moist, friable, dark reddish brown silty clay with slightly merging and slightly undulating contact, frequent grass roots and rootlets, occasional basalt nodules (up to 80mm). 5YR 3/3, pH 6. 2. 100mm: Moist, firm, plastic, dark reddish brown clay with occasional rootlets. 2.5YR 3/4, pH 6.	
Test pit size		**Artefacts**		**Plate 43 General location of Test Pit 33 (facing south)**
2 x 1 metre		None		
Stratigraphic drawing				

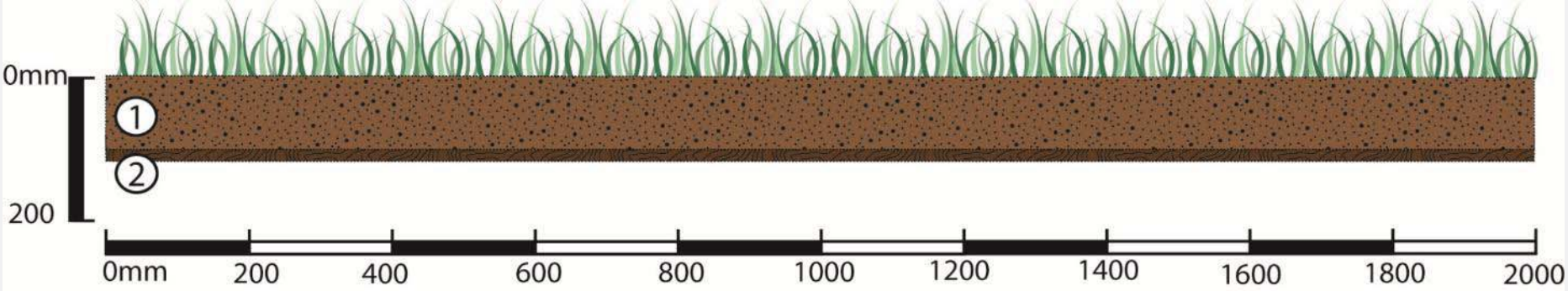


Figure 33 Stratigraphic drawing of north section of Test Pit 33

Table 42 Test Pit 34 data

Test Pit 34				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296170.168 Northing 5819021.563	Located on steep slopes landform adjacent to high plateau to south with nearest drainage being Kororoit Creek to north. It is located within the erosive final stage of viscous lava terracing. Piles of basalt floaters nearby. Grasses and tussock grasses.	None	1. 0–130mm: Moist, friable, dark reddish brown silty clay with clear flat contact, frequent grass roots and rootlets, occasional basalt fragments. 5YR 3/3, pH 5.5. 2. 130mm: Moist, firm, plastic, dark reddish brown clay with occasional rootlets. 5YR 2.5/2, pH 7.	
Test pit size		**Artefacts**		
2 x 1 metre		1. 10 quartz 2. 5 quartz 1 silcrete		
				Plate 44 General location of Test Pit 34 (facing south-west)
Stratigraphic drawing				

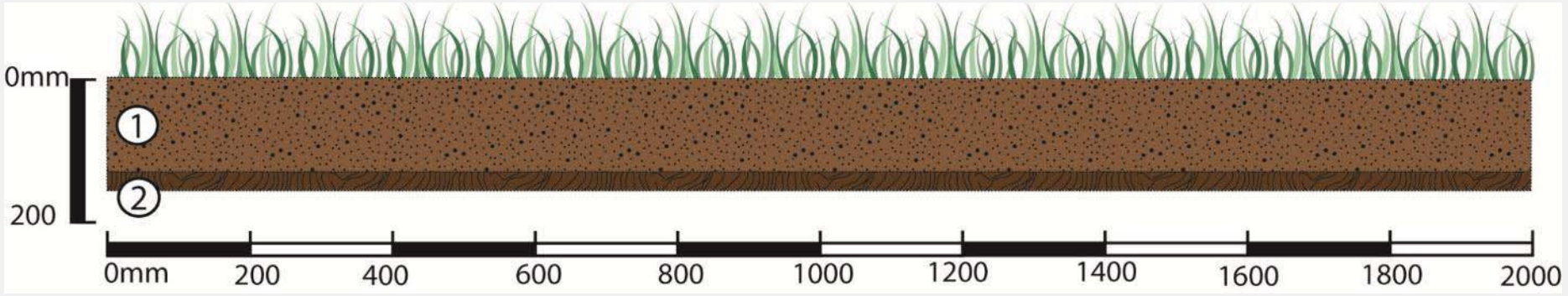


Figure 34 Stratigraphic drawing of north section of Test Pit 34

Table 43 Test Pit 35 data

Test Pit 35				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296625.745 Northing 5817072.283	Located on moderate slopes landform with nearest water being ephemeral drainage to east. It is located within the erosive final stage of viscous lava flows. Exposed basalt floaters nearby. Grasses, tussock grasses and artichoke thistles.	None	1. 0–120mm: Moist, friable, dark reddish brown silty clay with clear undulating contact dependent on basalt floaters, frequent grass roots and rootlets, moderate basalt from 20-500mm. 5YR 2.5/2, pH 5.5. 2. 120mm: Moist, firm, plastic, dark reddish brown clay with moderate large basalt floaters that continue into base. 5YR 3/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 45 General location of Test Pit 35 (facing west)

Stratigraphic drawing

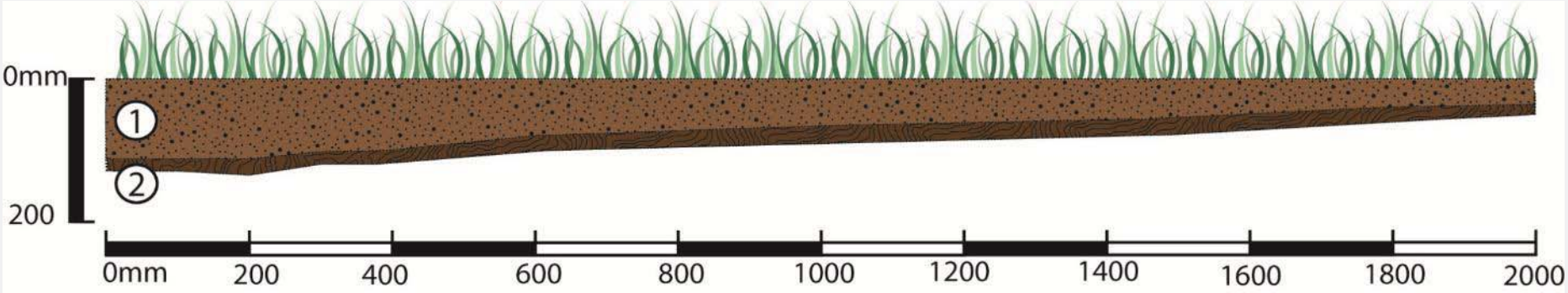


Figure 35 Stratigraphic drawing of north section of Test Pit 35

Table 44 Test Pit 36 data

Test Pit 36				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296352.180 Northing 5816758.574	Located on moderate slopes landform with nearest water being ephemeral drainage to east. It is located within the erosive final stage of viscous lava flows. Exposed basalt floaters nearby. Grasses, tussock grasses and artichoke thistles.	None	1. 0–40/120mm: Moist, friable to firm, dark reddish-brown silty clay with clear undulating contact, frequent grass roots and rootlets, occasional small basalt nodules (>100mm). 5YR 3/2, pH 5.5. 2. 40/120mm: Moist, firm, plastic, dark reddish-brown clay with very occasional imbedded basalt floaters (>200mm). 5YR 2.5/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 46 General location of Test Pit 36 (facing north-west)

Stratigraphic drawing

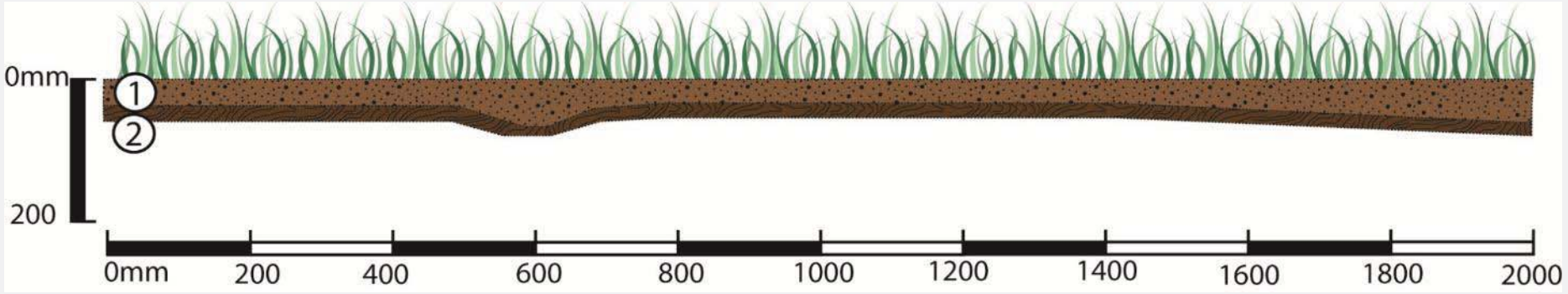


Figure 36 Stratigraphic drawing of north section of Test Pit 36

Table 45 Test Pit 37 data

Test Pit 37				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296035.478 Northing 5817302.212	Located on high plateau landform with nearest water being ephemeral drainage to east. It is located within the erosive final stage of viscous lava flows. Exposed basalt floaters nearby. Grasses, tussock grasses and artichoke thistles.	None	1. 0–60/140mm: Moist, friable, dark reddish-brown silty clay with clear undulating contact, frequent grass roots and rootlets, occasional basalt fragments and nodules (50-200mm). 5YR 3/3, pH 6. 2. 60/140mm: Moist, firm, plastic, dark reddish brown clay with occasional rootlets and large imbedded basalt floaters. 5YR 3/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		3 silcrete 1 basalt		

Plate 47 General location of Test Pit 37 (facing west)

Stratigraphic drawing

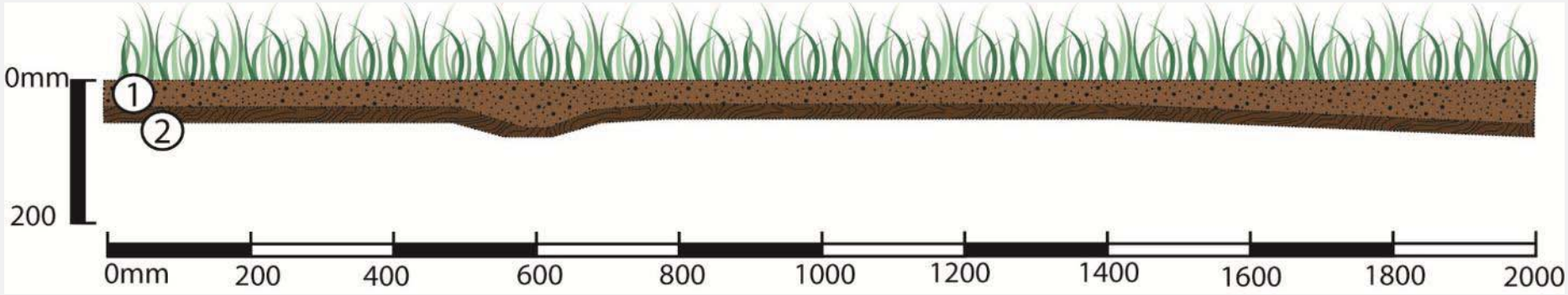


Figure 37 Stratigraphic drawing of north section of Test Pit 37

Table 46 Test Pit 38 data

Test Pit 38				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296560.385 Northing 5815309.014	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby and dry stone walls. Grasses and tussock grass.	Surface artefact from Standard Assessment	1. 0–40//140mm: Dry, friable, brown clayey silt with clear, slightly undulating contact, frequent grass roots and rootlets, occasional small, subangular basalt nodules. 7.5YR 4/6, pH 6. 2. 40//140mm: Dry, firm, very dark brown clay, removed in clumps with occasional rootlets, two imbedded basalt floaters (200mm). 7.5YR 2.5/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 48 General location of Test Pit 38 (facing east)

Stratigraphic drawing

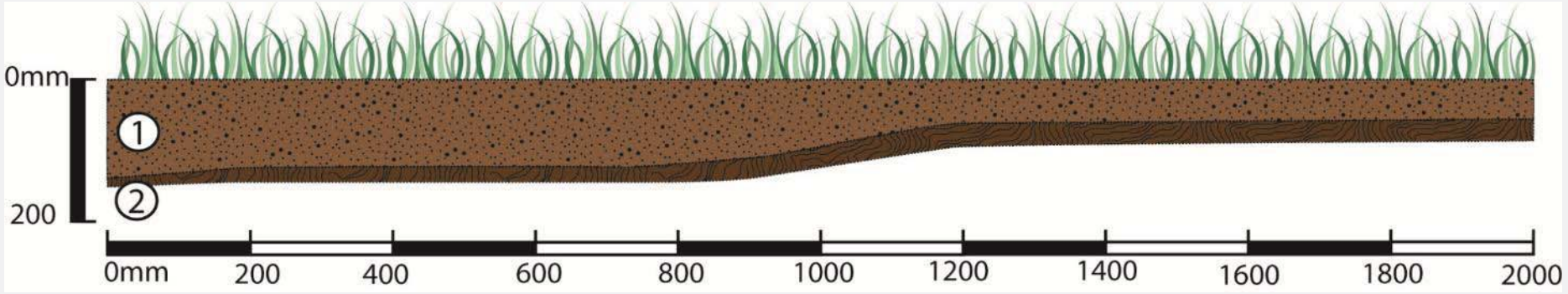


Figure 38 Stratigraphic drawing of north section of Test Pit 38

Table 47 Test Pit 39 data

Test Pit 39				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296487.923 Northing 5818064.900	Located on steep slopes landform with nearest water being ephemeral drainage to south-east. It is located within the erosive final stage of viscous lava terracing. Piles of basalt floaters nearby. Grasses, tussock grasses and artichoke thistles.	None	1. 0–40mm: Moist, friable, reddish-brown silty clay with clear flat contact, frequent grass roots and rootlets, occasional basalt fragments (20–150mm). 5YR 4/3, pH 5.5. 2. 40mm: Moist, firm, dark reddish brown clay with occasional rootlets. 5YR 3/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		1 quartz		

Plate 49 General location of Test Pit 39 (facing south-east)

Stratigraphic drawing

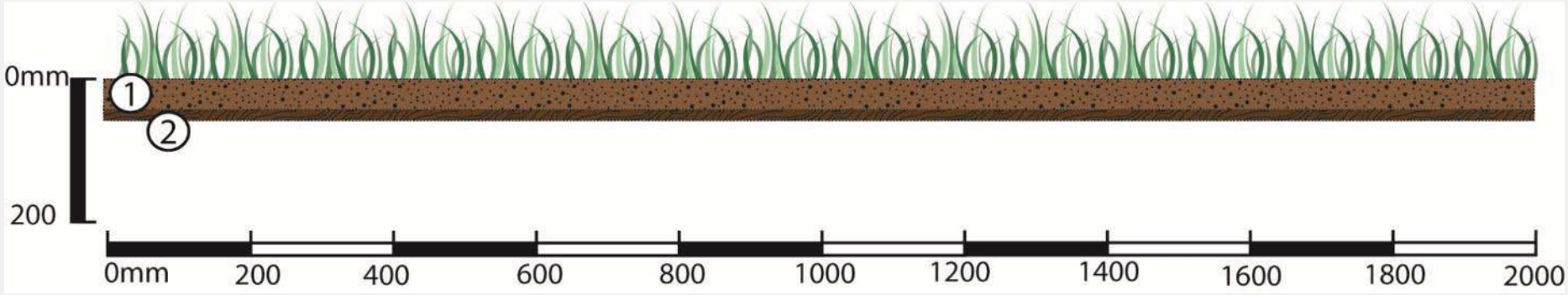


Figure 39 Stratigraphic drawing of north section of Test Pit 39

Table 48 Test Pit 40 data

Test Pit 40				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296637.506 Northing 5817500.040	Located on moderate slopes landform with nearest water being ephemeral drainage to east. It is located within the erosive final stage of viscous lava flows. Exposed basalt floaters nearby. Grasses, tussock grasses and artichoke thistles.	None	1. 0–50mm: Moist, friable to firm, very dark greyish brown silty clay with clear undulating contact, frequent grass roots and rootlets, occasional basalt fragments (>50mm). 10YR 3/2, pH 6. 2. 50mm: Moist, firm, black clay with occasional rootlets. 10YR 2/1, pH 6.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 50 General location of Test Pit 40 (facing south-east)

Stratigraphic drawing

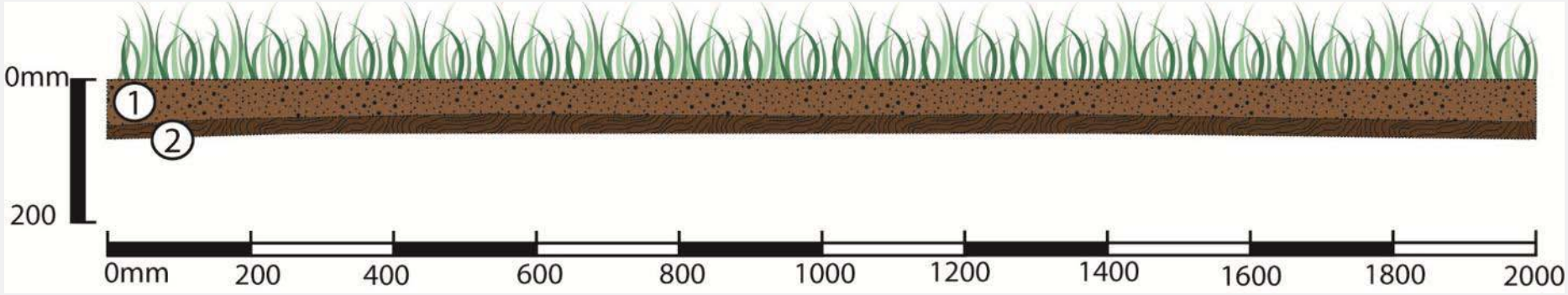


Figure 40 Stratigraphic drawing of west section of Test Pit 40

Table 49 Test Pit 41 data

Test Pit 41				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296264.333 Northing 5817195.480	Located on moderate slopes landform with nearest water being ephemeral drainage to east. It is located within the erosive final stage of viscous lava flows. Exposed basalt floaters nearby. Grasses, tussock grasses and artichoke thistles.	None	1. 0–60mm: Slightly damp, friable, dark reddish brown silty clay with clear slightly undulating contact, frequent grass roots, occasional basalt fragments (20–50mm). 5YR 2.5/2, pH 5.5. 2. 60mm: Moist, firm, dark reddish brown clay with occasional rootlets. 5YR 3/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 51 General location of Test Pit 41 (facing north-east)

Stratigraphic drawing

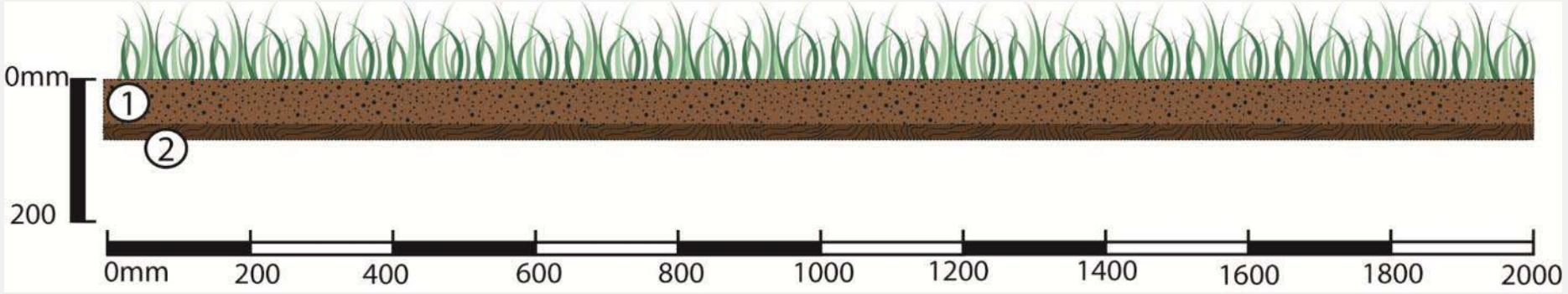


Figure 41 Stratigraphic drawing of north section of Test Pit 41

Table 50 Test Pit 42 data

Test Pit 42				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296412.824 Northing 5817577.254	Located on moderate slopes landform with nearest water being ephemeral drainage to east. It is located within the erosive final stage of viscous lava flows. Exposed basalt floaters nearby. Grasses, tussock grasses and artichoke thistles.	None	1. 0–80mm: Damp to dry, friable, dark reddish-brown silty clay with clear slightly undulating contact that dips around basalt floaters, frequent grass roots and rootlets, occasional basalt fragments. 5YR 3/3, pH 5.5. 2. 80mm: Moist, firm, dark reddish-brown clay with occasional rootlets. 5YR 3/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 52 General location of Test Pit 42 (facing south-east)

Stratigraphic drawing

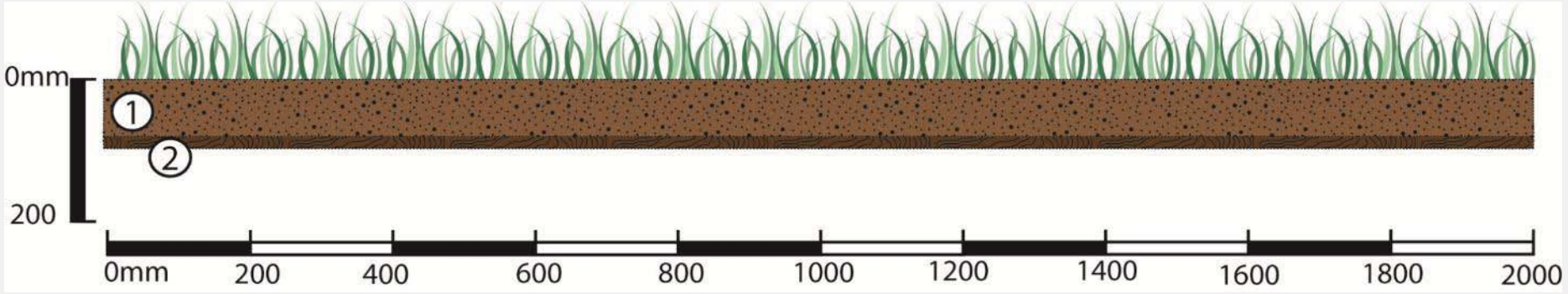


Figure 42 Stratigraphic drawing of west section of Test Pit 42

Table 51 Test Pit 43 data

Test Pit 43				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296863.440 Northing 5816737.511	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Small surface basalt nodules nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–95mm: Moist, friable, dark brown silty clay with clear slightly undulating contact, frequent grass roots and rootlets. 7.5YR 3/4, pH 5. 2. 95mm: Moist, firm, dark reddish brown clay with occasional imbedded degrading basalt patches. 2.5YR 3/4, pH 6. 3. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 53 General location of Test Pit 43 (facing south-west)

Stratigraphic drawing

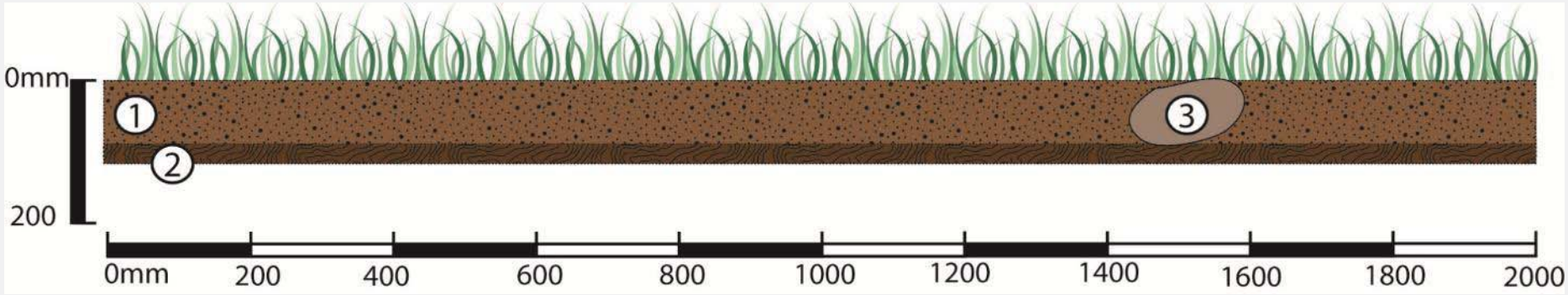


Figure 43 Stratigraphic drawing of west section of Test Pit 43

Table 52 Test Pit 44 data

Test Pit 44				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296934.619 Northing 5816290.741	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby. Grasses and tussock grass.	None	1. 0–70mm: Dry, friable, dark brown clayey silt with clear slightly undulating contact, frequent grass roots and rootlets, moderate small (>70mm) basalt fragments. 7.5YR 3/4, pH 5.5. 2. 70mm: Moist, firm, very dark brown clay with occasional rootlets. 7.5YR 2.5/2, pH 5.5.	
Test pit size		**Artefacts**		
2 x 1 metre		1 silcrete		

Plate 54 General location of Test Pit 44 (facing south-west)

Stratigraphic drawing

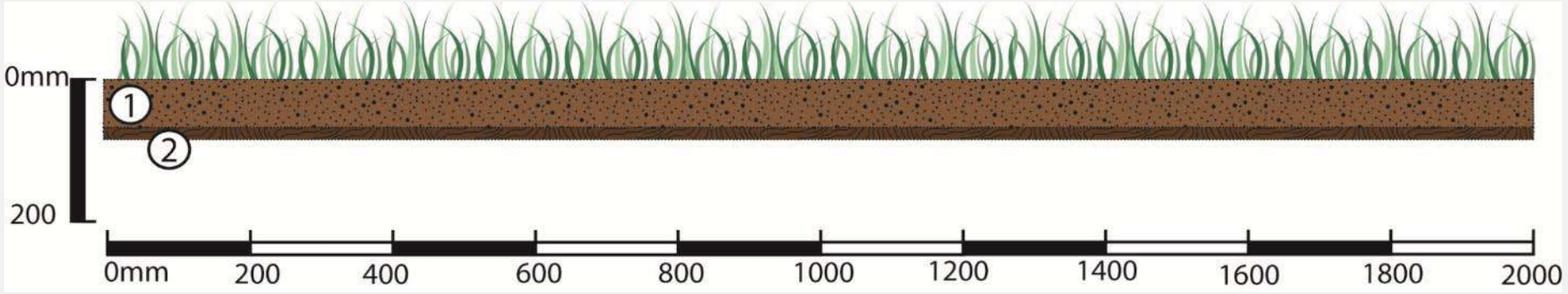


Figure 44 Stratigraphic drawing of west section of Test Pit 44

Table 53 Test Pit 45 data

Test Pit 45				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297135.116 Northing 5815964.476	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses and tussock grass.	None	1. 0–40/120mm: Slightly damp, friable, dark yellowish brown silty clay with clear undulating contact, frequent grass roots and rootlets, occasional small (>100m) basalt fragments. 10YR 3/4, pH 5. 2. 40/120mm: Moist, firm, very dark brown clay with occasional rootlets, very occasional large (>400mm) basalt floaters. 10YR 2/2, pH 6. 3. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 55 General location of Test Pit 45 (facing north-west)

Stratigraphic drawing

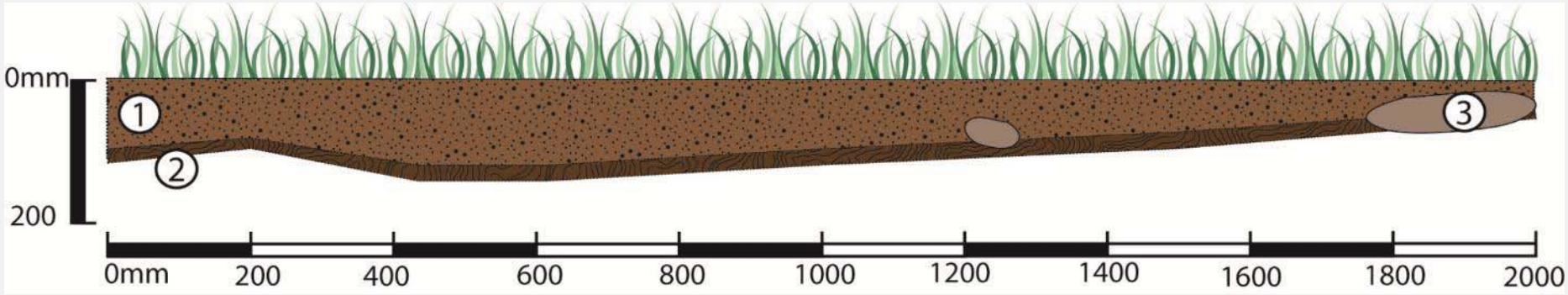


Figure 45 Stratigraphic drawing of west section of Test Pit 45

Table 54 Test Pit 46 data

Test Pit 46				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296820.615 Northing 5815557.401	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses and tussock grass.	None	1. 0–60/90mm: Dry, friable brown clayey silt with clear undulating contact, frequent grass roots and rootlets, occasional small basalt fragments and rounded nodules (30–150mm). 7.5YR 4/4, pH 5.5. 2. 60/90mm: Moist firm dark brown clay with occasional rootlets, imbedded basalt floaters (>300mm). 7.5YR 3/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 56 General location of Test Pit 46 (facing north-east)

Stratigraphic drawing

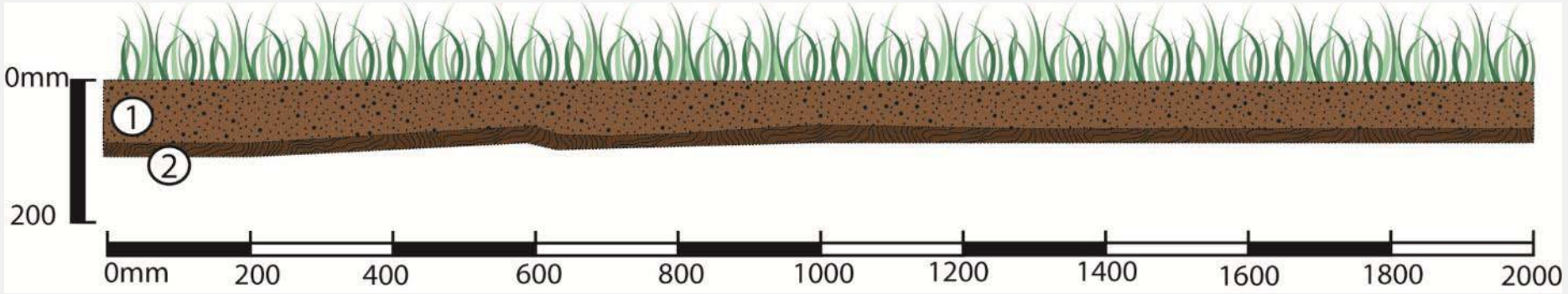


Figure 46 Stratigraphic drawing of west section of Test Pit 46

Table 55 Test Pit 47 data

Test Pit 47				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296649.493 Northing 5816028.651	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–30/80mm: Moist, friable, very dark greyish brown silty clay with slightly undulating contact, frequent grass roots and rootlets, occasional basalt fragments (>60mm). 10YR 3/2, pH 6. 2. 30–/80mm: Moist, firm, dark brown clay with occasional rootlets, one basalt floater (200mm). 10YR 3/3, pH 5.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 57 General location of Test Pit 47 (facing east)

Stratigraphic drawing

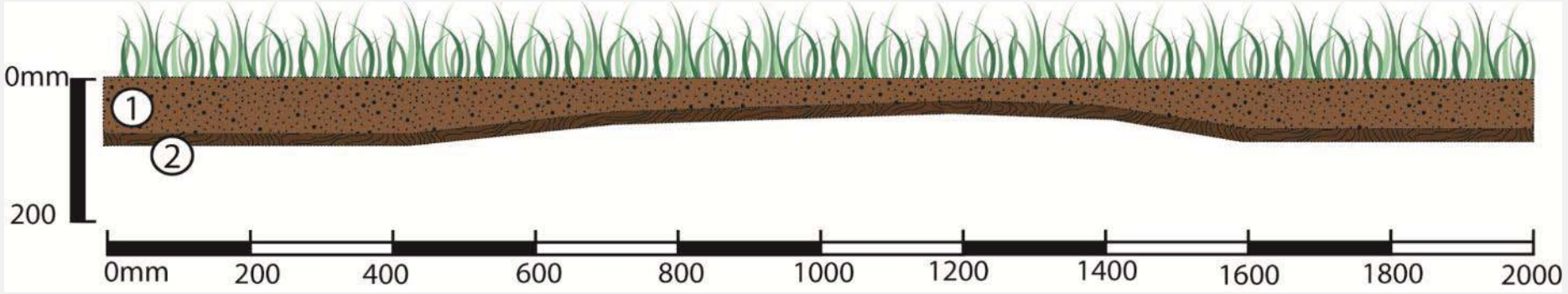


Figure 47 Stratigraphic drawing of west section of Test Pit 47

Table 56 Test Pit 48 data

Test Pit 48				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296672.886 Northing 5816479.485	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–70/90mm: Slightly damp, friable, reddish brown silty clay with clear, slightly undulating contact, frequent grass roots and rootlets, occasional small basalt fragments. 5YR 4/4, pH 5.5. 2. 70/90mm: Moist, firm, dark reddish brown clay with occasional rootlets, very occasional basalt floater (>300mm). 5YR 3/4, pH 6. 3. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 58 General location of Test Pit 48 (facing north-west)

Stratigraphic drawing

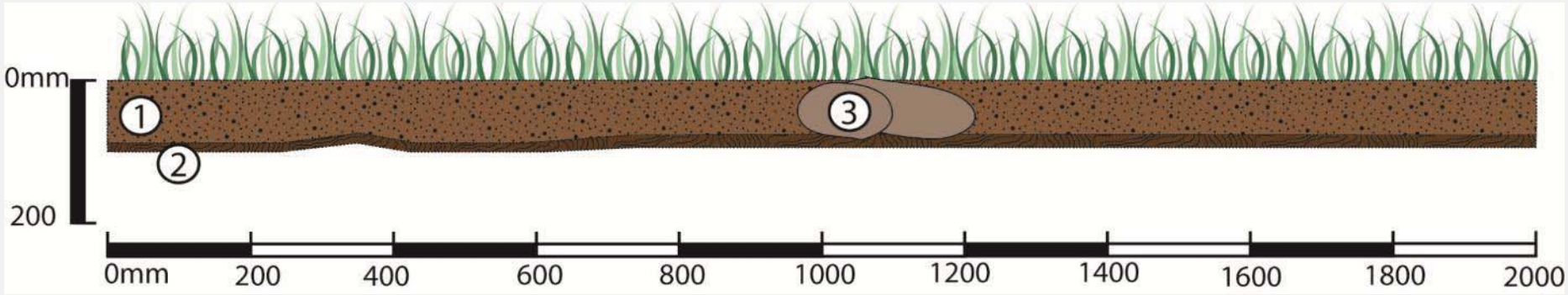


Figure 48 Stratigraphic drawing of north section of Test Pit 48

Table 57 Test Pit 49 data

Test Pit 49				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297348.695 Northing 5816576.195	Located on gentle slopes landform with nearest water being ephemeral drainage to the west. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–60/80mm: Slightly damp, friable, dark reddish brown clayey silt with clear, slightly undulating contact, frequent grass roots and rootlets, occasional basalt rounded nodules (up to 150mm). 5YR 3/2, pH 5.5. 2. 60/80mm: Moist, firm, dark reddish brown clay with occasional rootlets, rounded imbedded basalt nodules (>200mm). 5YR 3/3, pH 6. 3. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 59 General location of Test Pit 49 (facing north-west)

Stratigraphic drawing

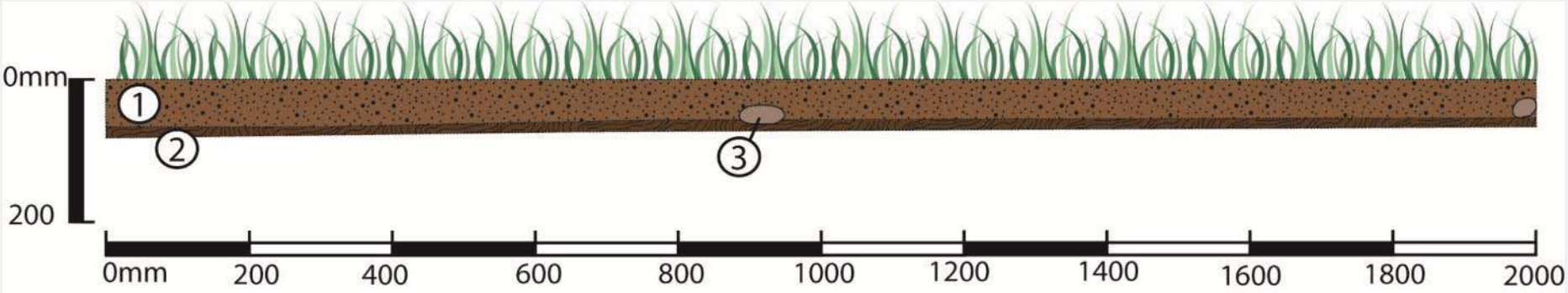


Figure 49 Stratigraphic drawing of north section of Test Pit 49

Table 58 Test Pit 50 data

Test Pit 50				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297336.018 Northing 5816984.956	Located on gentle slopes landform with nearest water being ephemeral drainage to the west. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–30/70mm: Moist, friable to firm, very dark greyish brown silty clay with clear, undulating contact, frequent grass roots and rootlets, very occasional small (>50mm) basalt nodules. 10YR 3/2, pH 5.5. 2. 30/70mm: Moist, firm, plastic, very dark greyish brown clay with occasional rootlets, single small (100mm) basalt floater. 10YR 3/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 60 General location of Test Pit 50 (facing west)

Stratigraphic drawing

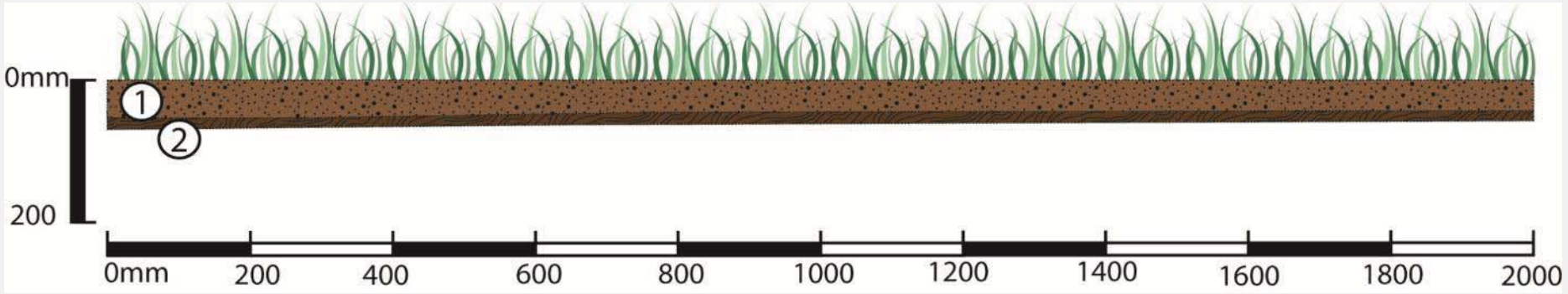


Figure 50 Stratigraphic drawing of north section of Test Pit 50

Table 59 Test Pit 51 data

Test Pit 51				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297151.970 Northing 5815762.621	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–90/180mm: Dry, friable, clayey silt with clear, dark reddish brown with undulating contact, frequent grass roots and rootlets, occasional small basalt fragments and degrading basalt patches (NW corner). 5YR 3/3, pH 5.5. 2. 90/180mm: Moist, firm, plastic, dark reddish brown clay with occasional rootlets small (100mm) and large (400mm) basalt floaters. 5YR 2.5/2, pH 7.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 61 General location of Test Pit 51 (facing west)

Stratigraphic drawing

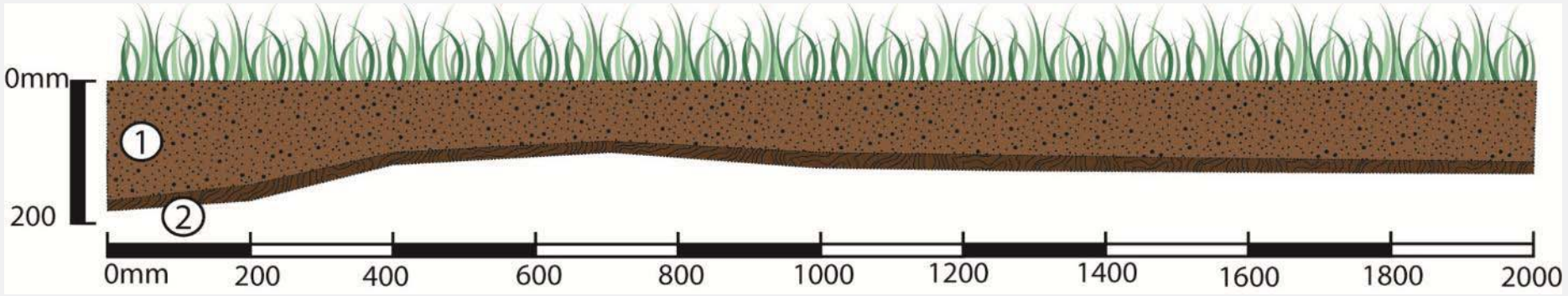


Figure 51 Stratigraphic drawing of north section of Test Pit 51

Table 60 Test Pit 52 data

Test Pit 52				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296857.475 Northing 5815749.982	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–80/130mm: Dry, friable, very dark greyish brown silty clay with clear, undulating contact, frequent roots and rootlets, occasional basalt fragments concentrated at western end. 10YR 3/2, pH 5.5. 2. 80/130mm: Moist, firm, plastic, dark reddish brown clay with occasional rootlets and basalt fragments. 5YR 3/3, pH 6.5. 3. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 62 General location of Test Pit 52 (facing north-east)

Stratigraphic drawing

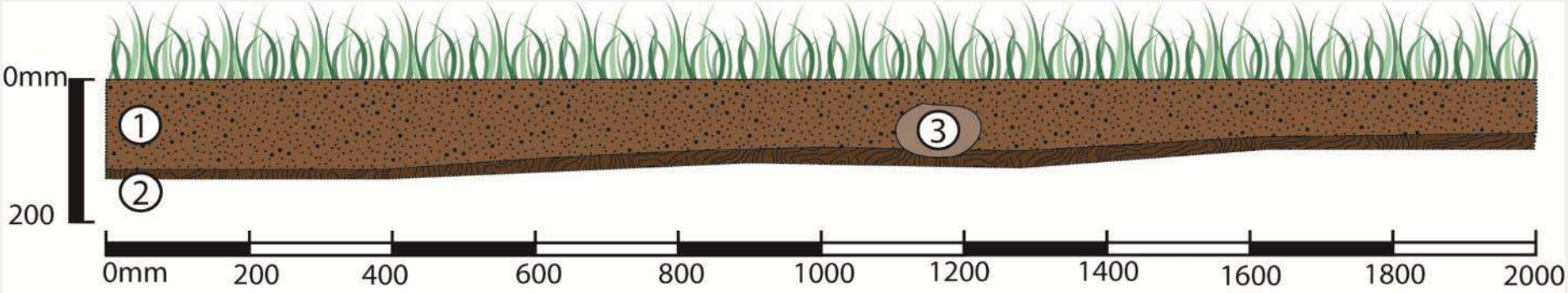


Figure 52 Stratigraphic drawing of north section of Test Pit 52

Table 61 Test Pit 53 data

Test Pit 53				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297252.798 Northing 5816534.424	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	Surface artefact from Standard Assessment	1. 0–90/200mm: Slightly moist, friable, dark brown clayey silt with clear, undulating contact that dips around basalt, frequent grass roots and rootlets, occasional broken basalt fragments. 7.5YR 3/4, pH 5.5. 2. 90/200mm: Moist, firm, dark reddish brown clay with occasional rootlets, moderate basalt floaters and fragments (10-150mm) in NE corner. 2.5YR 3/4, pH 6. 3. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 63 General location of Test Pit 53 (facing north-west)

Stratigraphic drawing

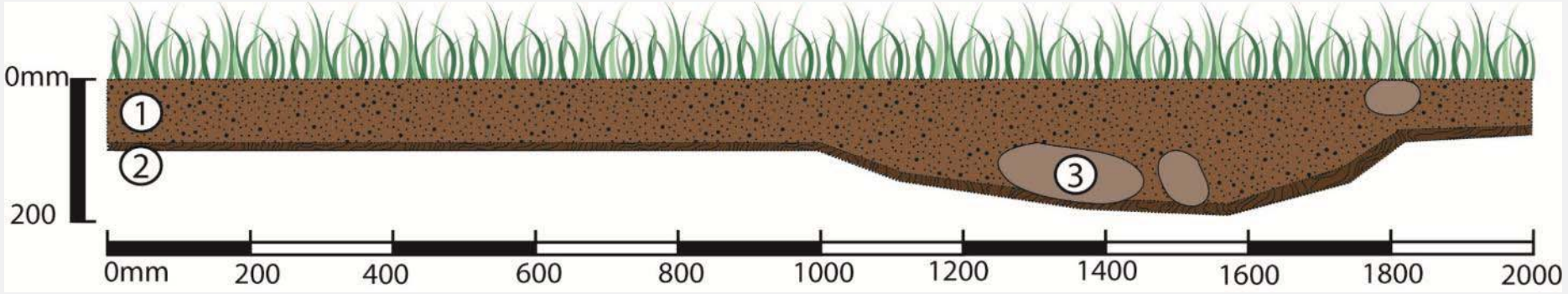


Figure 53 Stratigraphic drawing of north section of Test Pit 53

Table 62 Test Pit 54 data

Test Pit 54				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 295998.682 Northing 5818224.815	Located on high plateau landform with nearest water being ephemeral drainage to south east. It is located within the erosive final stage of viscous lava flows. Piles of basalt floaters nearby and appears to be ploughed. Grasses.	None	1. 0–70mm: Slightly damp, friable to firm, dark reddish-brown silty clay with clear, flat contact, frequent grass roots and rootlets. 5YR 3/3, pH 5.5. 2. 70mm: Moist, firm, dark reddish-brown clay with occasional rootlets. 5YR 2.5/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 64 General location of Test Pit 54 (facing north)

Stratigraphic drawing

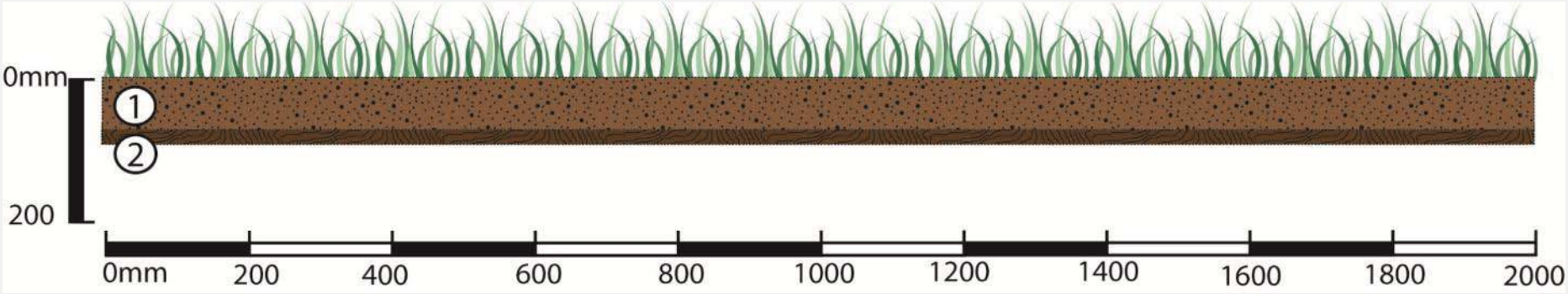


Figure 54 Stratigraphic drawing of west section of Test Pit 54

Table 63 Test Pit 55 data

Test Pit 55				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296348.015 Northing 5815308.939	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses and tussock grass.	None	1. 0–70/120mm: Slightly damp, friable, dark brown clayey silt with clear, slightly undulating contact, frequent grass roots and rootlets, occasional basalt fragments (7-150mm). 7.5YR 3/4, pH 5.5. 2. 70/120mm: Moist, firm, dark reddish brown clay with occasional rootlets and small (100mm) basalt floaters. 5YR 3/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 65 General location of Test Pit 55 (facing south)

Stratigraphic drawing

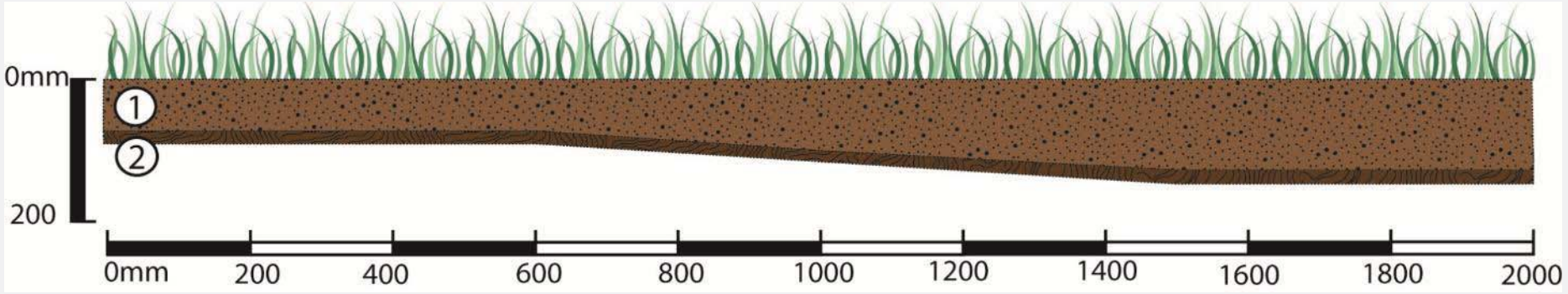


Figure 55 Stratigraphic drawing of western section of Test Pit 55

Table 64 Test Pit 56 data

Test Pit 56				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296550.676 Northing 5814964.934	Located on moderate slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–50/120mm: Dry, friable, dark reddish-brown clayey silt with clear, undulating contact, frequent grass roots and rootlets, occasional basalt fragments (>80mm). 5YR 3/3, pH 6. 2. 50/120mm: Slightly damp, firm, dark reddish brown clay, prismatic and removed in clumps with occasional rootlets and small basalt floaters (>100mm). 5YR 3/3, pH 6.	
Test pit size		**Artefacts**		**Plate 66 General location of Test Pit 56 (facing west)**
2 x 1 metre		None		
Stratigraphic drawing				

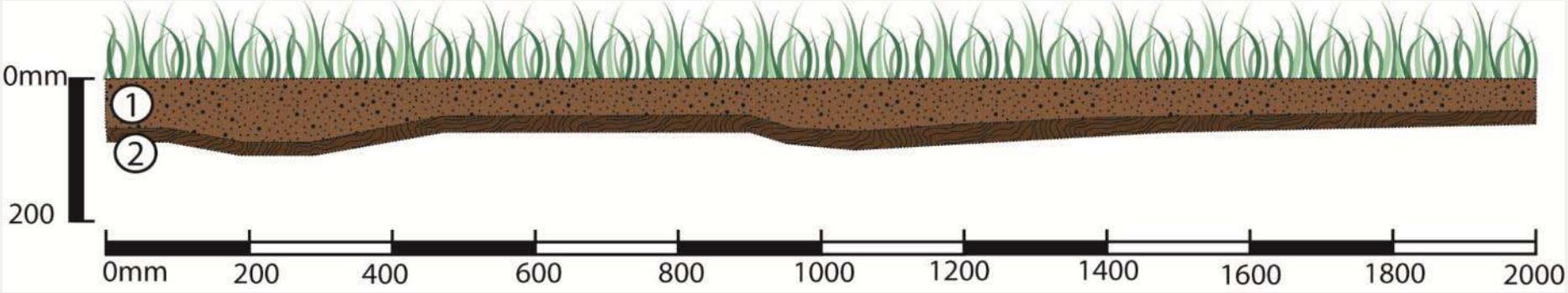


Figure 56 Stratigraphic drawing of northern section of Test Pit 56

Table 65 Test Pit 57 data

Test Pit 57				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296656.937 Northing 5815043.224	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–50/130mm: Dry, friable, very dark brown clayey silt with clear, undulating contact, frequent grass roots and rootlets, occasional basalt fragments (>70mm). 7.5YR 2.5/3, pH 5.5. 2. 50/130mm: Dry, firm, prismatic, dark brown clay, removed in clumps with occasional rootlets, small basalt floaters. 7.5YR 3/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 67 General location of Test Pit 57 (facing east)

Stratigraphic drawing

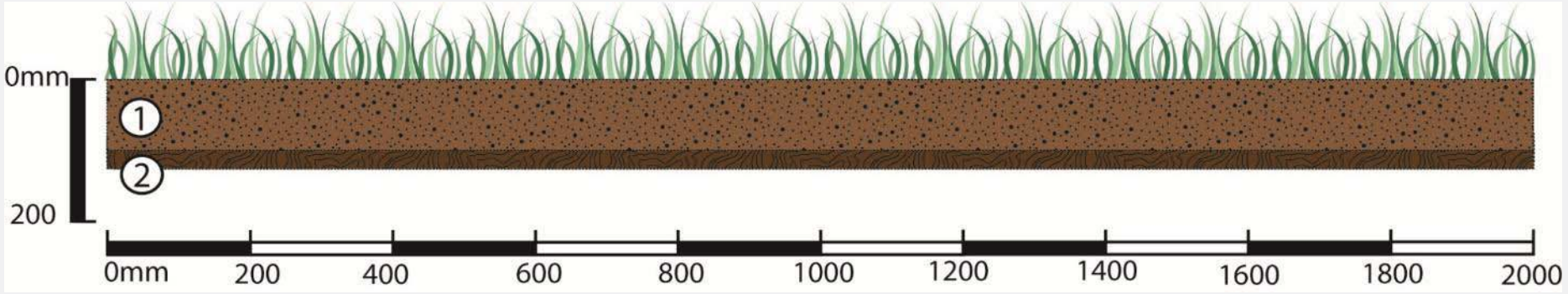


Figure 57 Stratigraphic drawing of north section of Test Pit 57

Table 66 Test Pit 58 data

Test Pit 58				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296146.497 Northing 5815150.974	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–50/110mm: Dry, friable, brown silty clay with clear, undulating contact, frequent grass roots and rootlets, occasional basalt fragments (>100mm), 1 floaters in B (300mm). 7.5YR 4/3, pH 5.5. 2. 50/110mm: Moist, firm, dark brown clay removed in clumps, occasional rootlets, basalt floaters (>300mm). 7.5YR 3/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 68 General location of Test Pit 58 (facing east)

Stratigraphic drawing

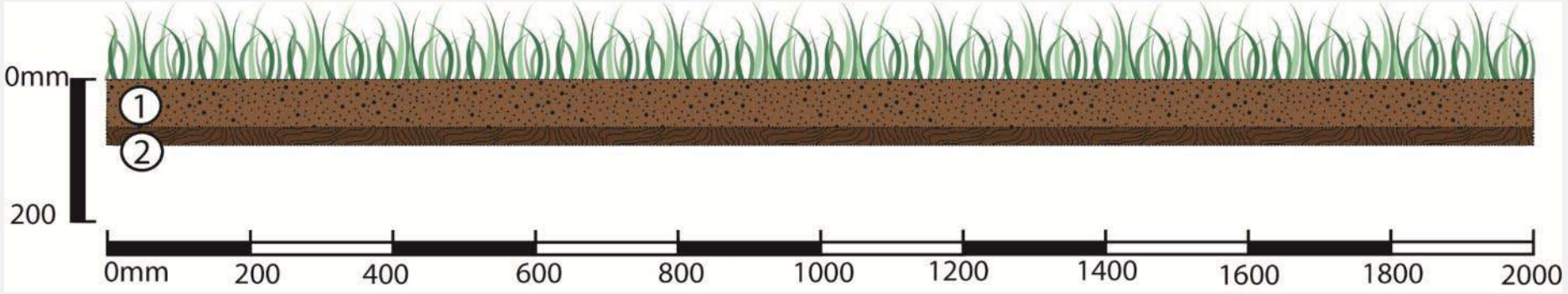


Figure 58 Stratigraphic drawing of north section of Test Pit 58

Table 67 Test Pit 59 data

Test Pit 59				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296488.323 Northing 5815267.516	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–60/110mm: Dry, friable, brown clayey silt with clear undulating contact, frequent grass roots and rootlets, occasional basalt fragments (>120mm). 10YR 4/3, pH 6. 2. 60/110mm: Moist, firm, very dark greyish brown clay with occasional rootlets. 10YR 3/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 69 General location of Test Pit 59 (facing west)

Stratigraphic drawing

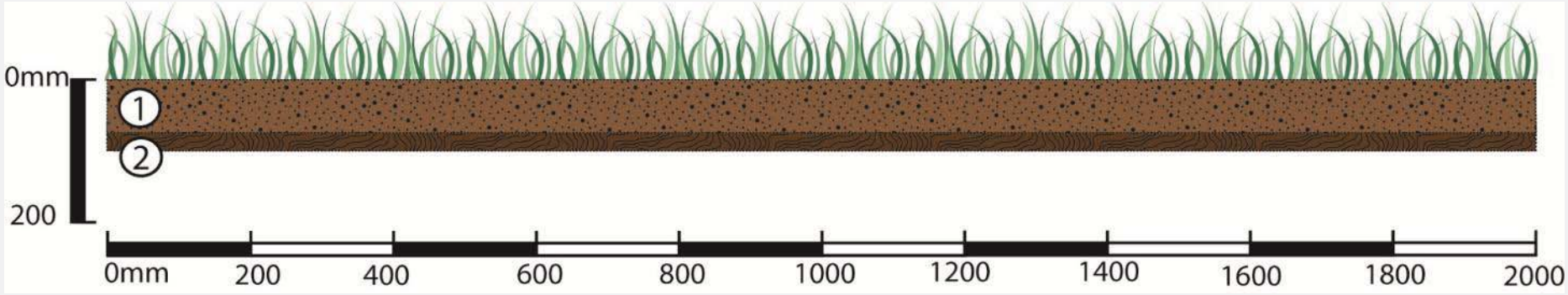


Figure 59 Stratigraphic drawing of west section of Test Pit 59

Table 68 Test Pit 60 data

Test Pit 60				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 295932.116 Northing 5815187.770	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Slight depression with no exposed basalt nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–50/90mm: Dry, friable, very dark greyish brown silty clay with clear, slightly undulating contact, frequent grass roots and rootlets. 10YR 3/2, pH 5.5. 2. 50/90mm: Dry, firm, very dark brown clay with occasional rootlets. 10YR 2/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 70 General location of Test Pit 60 (facing south)

Stratigraphic drawing

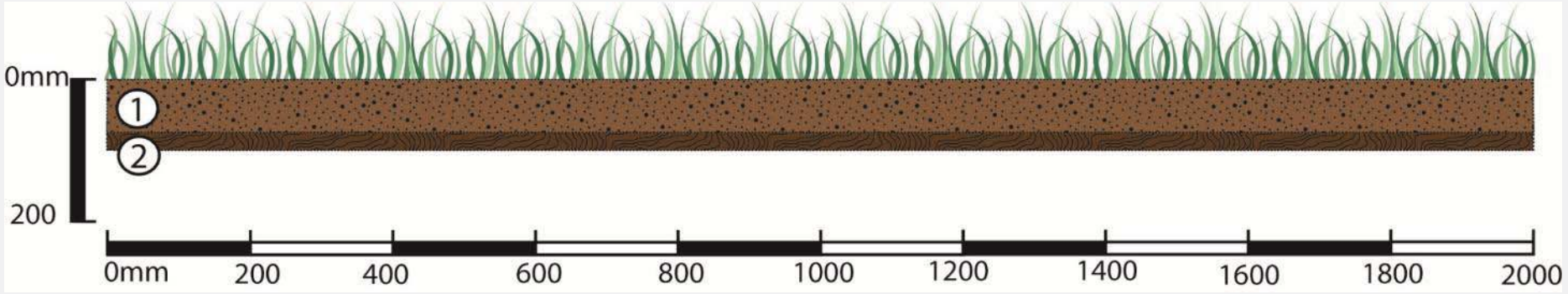


Figure 60 Stratigraphic drawing of west section of Test Pit 60

Table 69 Test Pit 61 data

Test Pit 61				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 295827.018 Northing 5815064.465	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass	None	1. 0–60/170mm: Dry, friable, brown clayey silt with clear, undulating contact, frequent grass roots and rootlets, occasional very small basalt fragments and pebbles increasing in size with depth. 7.5YR 4/3, pH 5.5. 2. 60/170mm: Damp, firm, brown clay with occasional rootlets and small basalt floaters. 7.5YR 4/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 71 General location of Test Pit 61 (facing north-west)

Stratigraphic drawing

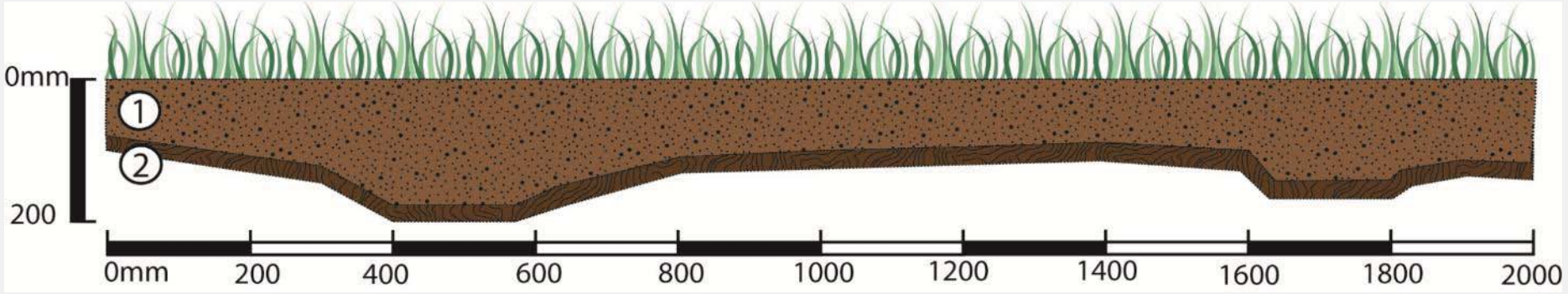


Figure 61 Stratigraphic drawing of north section of Test Pit 61

Table 70 Test Pit 62 data

Test Pit 62				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 295815.987 Northing 5815451.137	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass	None	1. 0–40/80mm: Dry, friable, brown silty clay with clear, slightly undulating contact, frequent grass roots and rootlets. 7.5YR 4/3, pH 5.5. 2. 40/80mm: Damp, firm, dark brown clay with occasional rootlets. 7.5YR 3/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 72 General location of Test Pit 62 (facing west)

Stratigraphic drawing

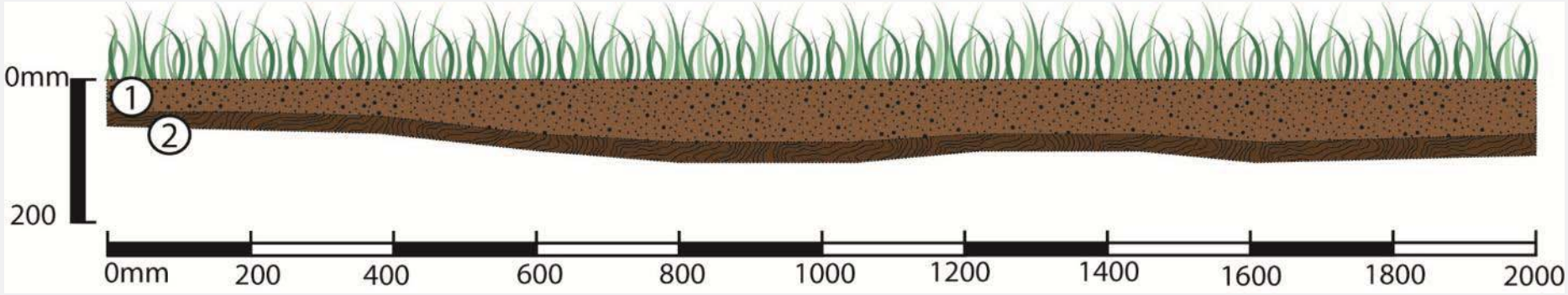


Figure 62 Stratigraphic drawing of west section of Test Pit 62

Table 71 Test Pit 63 data

Test Pit 63				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297216.220 Northing 5814909.779	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass	None	1. 0–30/120mm: Dry, friable, brown clayey silt with clear, undulating contact, frequent grass roots and rootlets, occasional basalt fragments concentrated in depressions. 10YR 4/3, pH 5.5. 2. 30/120mm: Damp, firm, dark brown clay with occasional rootlets, basalt floater in SE corner. 7.5YR 3/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 73 General location of Test Pit 63 (facing south-east)

Stratigraphic drawing

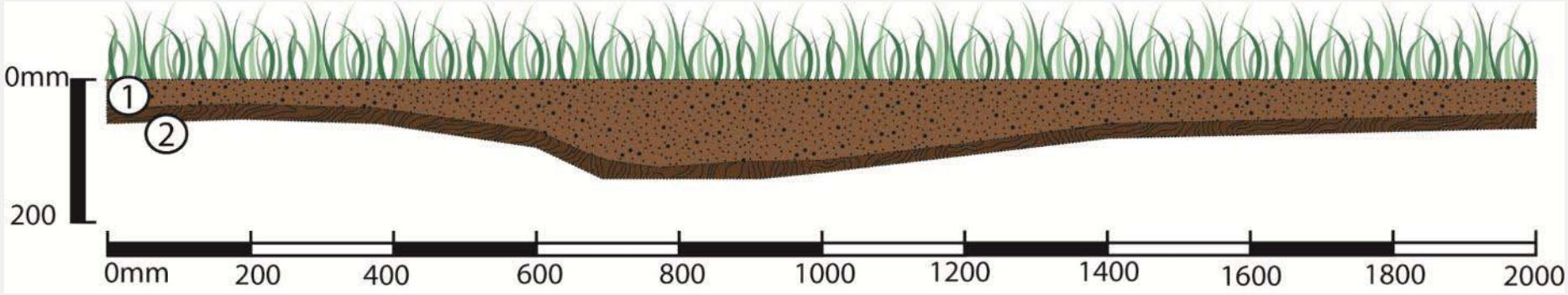


Figure 63 Stratigraphic drawing of north section of Test Pit 63

Table 72 Test Pit 64 data

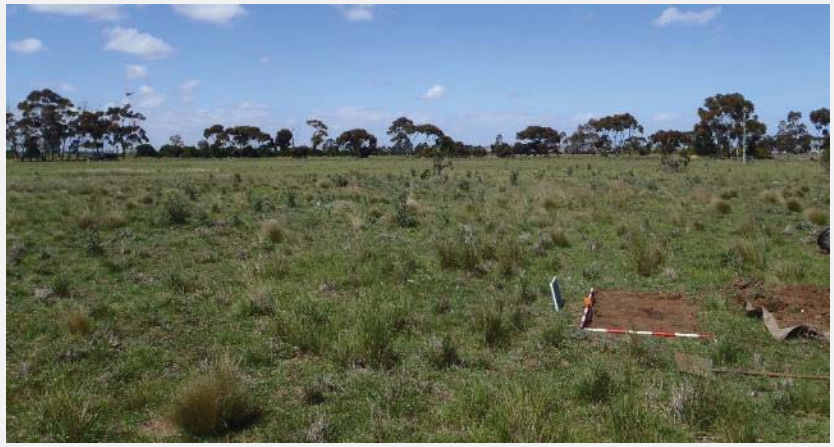
Test Pit 64				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297166.425 Northing 5815303.463	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass	None	1. 0–40/150mm: Dry, friable, dark brown clayey silt with clear, undulating contact, frequent grass roots and rootlets, occasional small basalt fragments. 7.5YR 3/2, pH 5.5. 2. 40/150mm: Damp, firm, very dark grey clay removed in clumps with occasional rootlets. 7.5YR 3/1, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 74 General location of Test Pit 64 (facing east)

Stratigraphic drawing

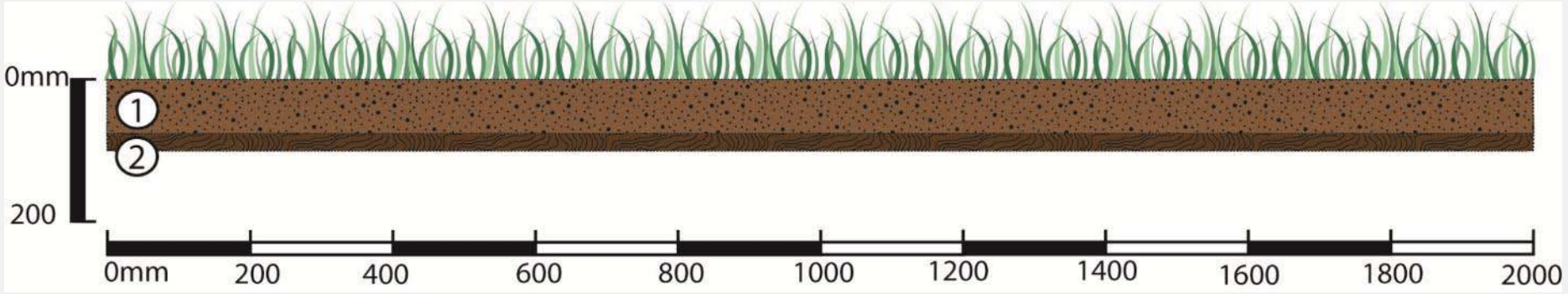


Figure 64 Stratigraphic drawing of north section of Test Pit 64

Table 73 Test Pit 65 data

Test Pit 65				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296921.109 Northing 5815125.038	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses and tussock grass	None	1. 0–50/90mm: Dry, friable, brown silty clay with clear, slightly undulating contact, frequent grass roots and rootlets. 7.5YR 4/4, pH 5.5. 2. 50/90mm: Damp, firm, dark brown clay with occasional rootlets. 7.5YR 3/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 75 General location of Test Pit 65 (facing south-east)

Stratigraphic drawing

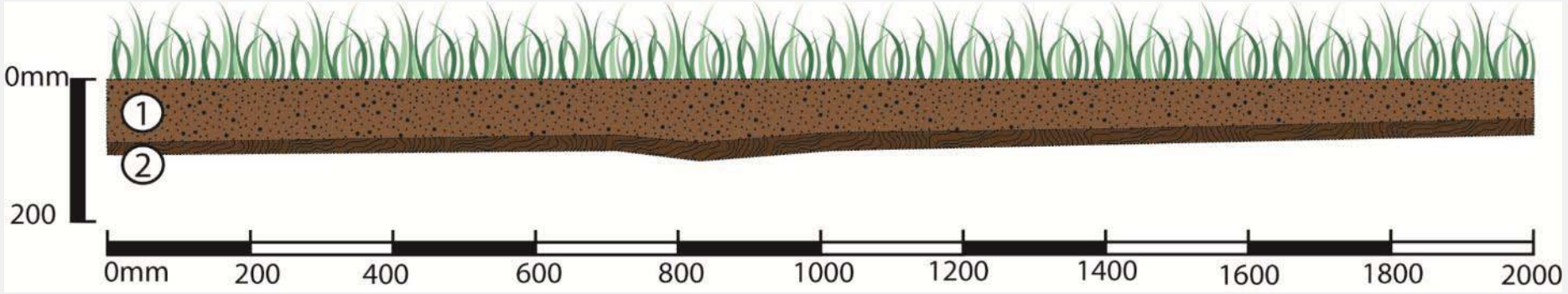


Figure 65 Stratigraphic drawing of west section of Test Pit 65

Table 74 Test Pit 66 data

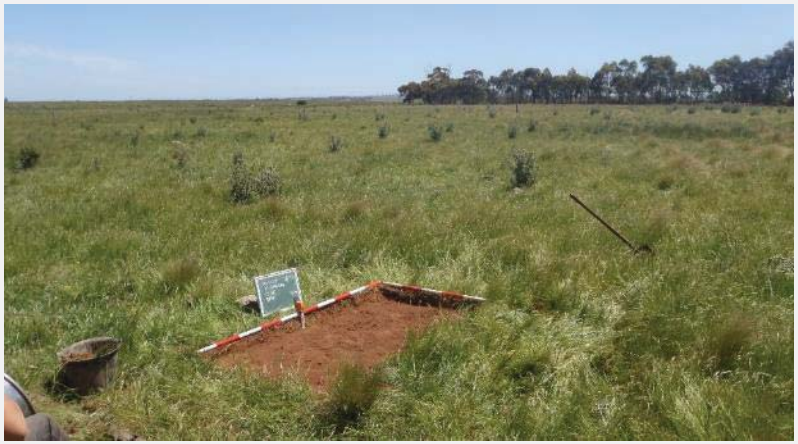
Test Pit 66				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296825.377 Northing 5815397.448	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass	None	1. 0–60/110mm: Dry, friable, brown clayey silt with clear, slightly undulating contact, frequent grass roots and rootlets, moderate angular and rounded basalt (80-150mm) concentrated at the base of unit. 7.5YR 4/4, pH 6. 2. 60/110mm: Damp, firm, reddish brown clay with occasional rootlets, 1 basalt floater (100mm). 5YR 4/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 76 General location of Test Pit 66 (facing north-west)

Stratigraphic drawing

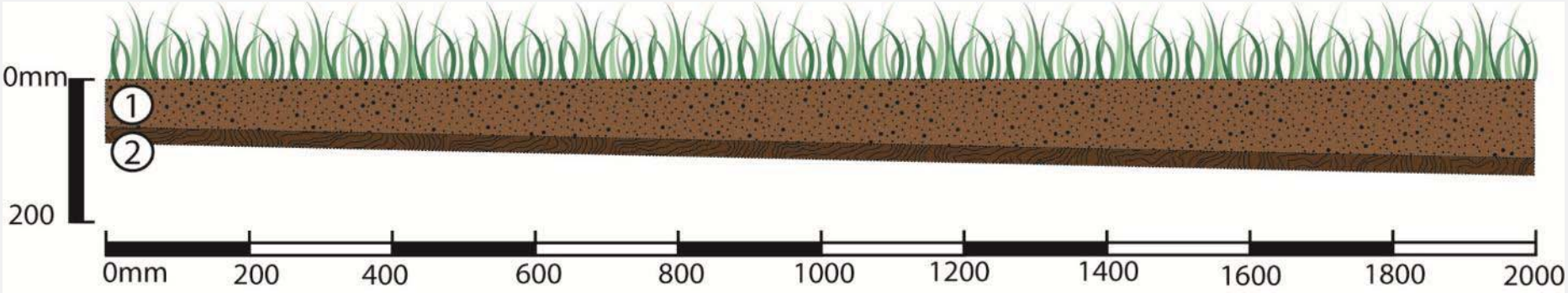


Figure 66 Stratigraphic drawing of west section of Test Pit 66

Table 75 Test Pit 67 data

Test Pit 67				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296616.393 Northing 5816868.666	Located on moderate slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts, at the edge of the younger flows. Exposed basalt floaters. Grasses, artichoke thistles and tussock grass	Surface artefacts from Standard Assessment	1. 0–40/120mm: Dry, friable, brown clayey silt with clear, slightly undulating contact, frequent grass roots and rootlets, occasional subangular basalt fragments. 7.5YR 4/3, pH 5.5. 2. 40/120mm: Dry, firm, brown clay with occasional rootlets, moderate imbedded basalt floaters up to 400mm. 7.5YR 3/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 77 General location of Test Pit 67 (facing west)

Stratigraphic drawing

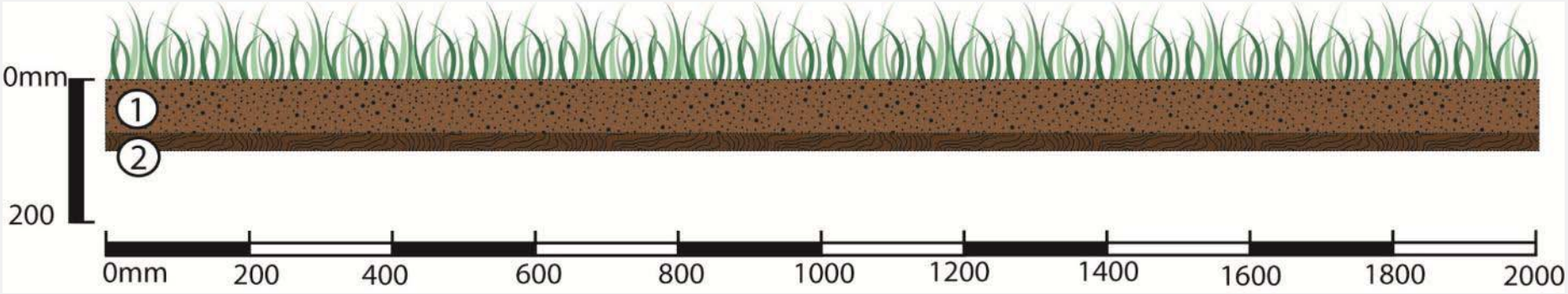


Figure 67 Stratigraphic drawing of north section of Test Pit 67

Table 76 Test Pit 68 data

Test Pit 68				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297006.684 Northing 5817220.180	Located on moderate slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts, at the edge of the younger flows. Exposed basalt floaters. Grasses, artichoke thistles and tussock grass	Surface artefacts from Standard Assessment	1. 0– 60/150mm: Dry, friable, brown clayey silt with clear, undulating contact, frequent grass roots and rootlets, occasional small subrounded and subangular basalt nodules. 7.5YR 4/3, pH 5.5. 2. 60/150mm: Dry, firm, dark reddish-brown clay with occasional rootlets and basalt floaters. 5YR 2.5/2, pH 6. 3. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 78 General location of Test Pit 68 (facing north-west)

Stratigraphic drawing

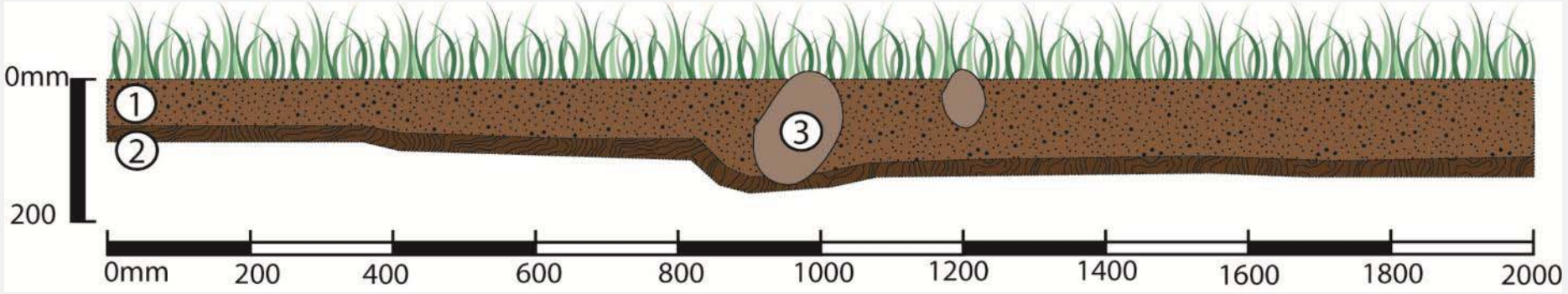


Figure 68 Stratigraphic drawing of west section of Test Pit 68

Table 77 Test Pit 69 data

Test Pit 69				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296593.809 Northing 5818410.048	Located on steep slopes landform with nearest water being ephemeral drainage to south-east. It is located within the erosive final stage of viscous lava terracing. Small surface basalt nodules and piles of basalt floaters nearby. Grasses and artichoke thistles.	VAHR 7822-3802	1. 0–40/200mm: Dry, friable, brown clayey silt with clear, undulating contact, frequent grass roots and rootlets, moderate subangular basalt nodules. 7.5YR 4/3, pH 5.5. 2. 40/200mm: Dry, firm, dark brown clay removed in clumps with occasional rootlets, imbedded subrounded basalt nodules. 7.5YR 3/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 79 General location of Test Pit 69 (facing south-east)

Stratigraphic drawing

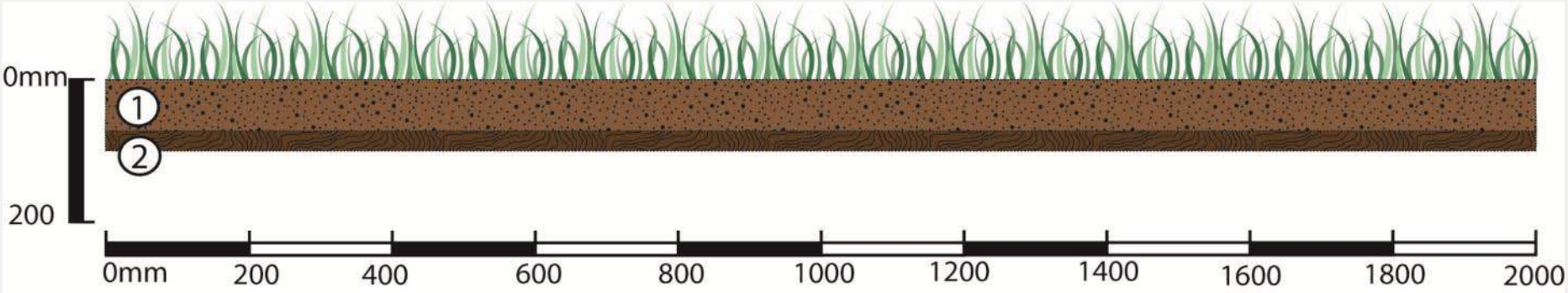


Figure 69 Stratigraphic drawing of west section of Test Pit 69

Table 78 Test Pit 70 data

Test Pit 70				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296778.512 Northing 5818819.076	Located on steep slopes landform with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava terracing. Small surface basalt nodules and piles of basalt floaters nearby. Grasses and artichoke thistles.	Surface artefacts from Standard Assessment	1. 0–110/130mm: Dry, friable, reddish-brown clayey silt with slightly merging, flat contact, frequent grass roots and rootlets, occasional subangular basalt nodules and broken round quartz pebbles. 5YR 4/4, pH 5.5. 2. 110/130mm: Dry, firm, dark reddish brown clay with very occasional rootlets. 2.5YR 3/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 80 General location of Test Pit 70 (facing north-west)

Stratigraphic drawing

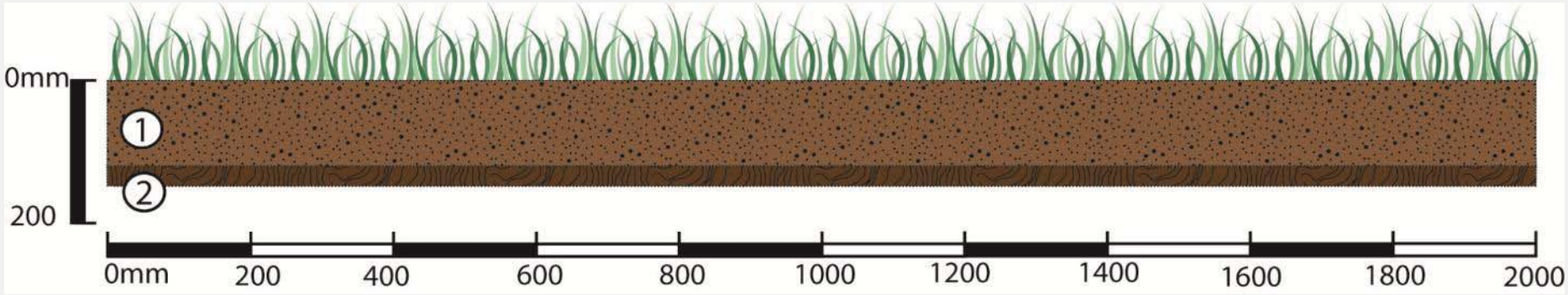


Figure 70 Stratigraphic drawing of west section of Test Pit 70

Table 79 Test Pit 71 data

Test Pit 71				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296776.086 Northing 5817949.203	Located on moderate slopes landforms on accreting plains made up of older fluid flow basalts, immediately north of upper reaches of drainage that continues to south east. Piles of basalt nearby. Grasses, artichoke thistles and tussock grasses.	Surface artefacts from Standard Assessment	1. 0–80/100mm: Dry, friable, brown clayey silt with clear, slightly undulating contact, frequent grass roots and rootlets, occasional small basalt fragments. 7.5YR 4/3, pH 5.5. 2. 80/100mm: Dry, firm, reddish brown clay with occasional rootlets. 2.5YR 3/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 81 General location of Test Pit 71 (facing north-east)

Stratigraphic drawing

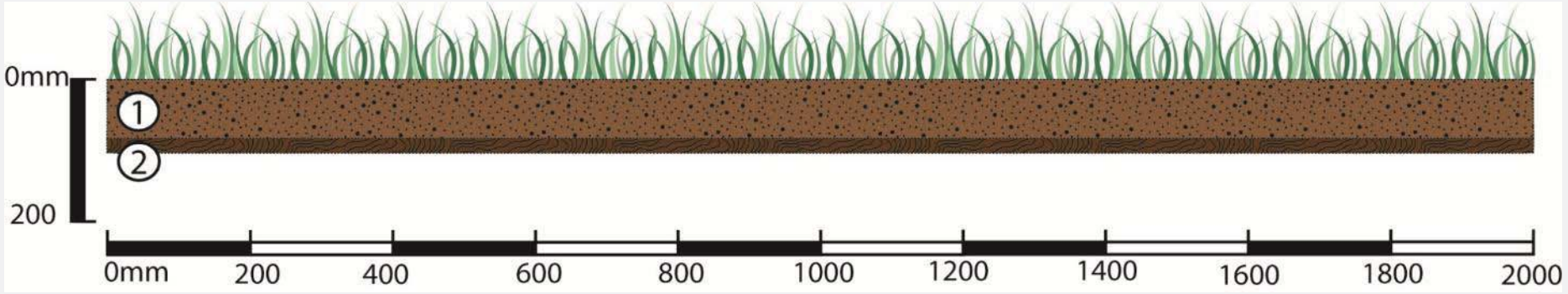


Figure 71 Stratigraphic drawing of west section of Test Pit 71

Table 80 Test Pit 72 data

Test Pit 72				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297342.732 Northing 5817531.109	Located on moderate slopes landforms on accreting plains made up of older fluid flow basalts, to north of upper reaches of drainage that continues to south east. No basalt visible in vicinity. Grasses, artichoke thistle and tussock grasses.	Surface artefacts from Standard Assessment	1. 0–70/100mm: Dry, friable, brown clayey silt with clear, slightly undulating contact, frequent grass roots and rootlets, occasional very small basalt fragments (10–20mm). 7.5YR 4/3, pH 6. 2. 70/100mm: Dry, firm, dark reddish brown clay with occasional rootlets. 5YR 3/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		1. 2 quartz		

Plate 82 General location of Test Pit 72 (facing north-west)

Stratigraphic drawing

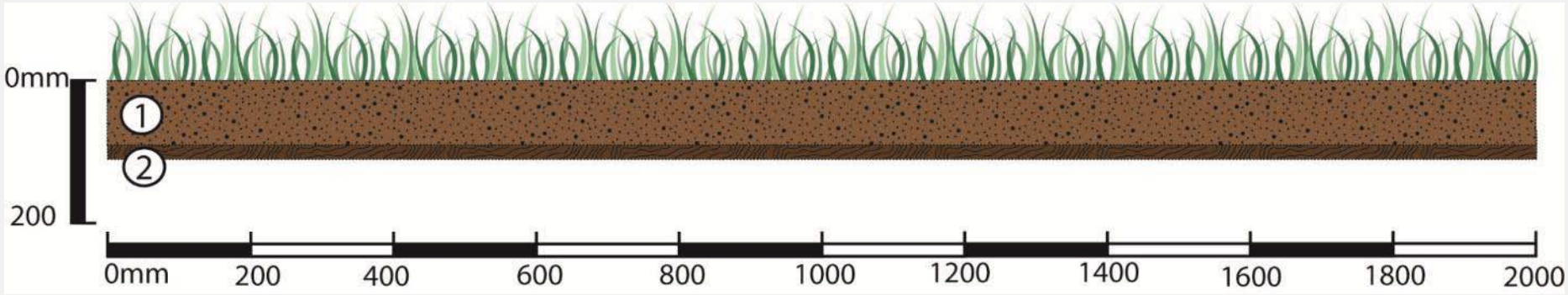


Figure 72 Stratigraphic drawing of north section of Test Pit 72

Table 81 Test Pit 73 data

Test Pit 73				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296428.165 Northing 5818194.601	Located on steep slopes landform with nearest water being ephemeral drainage to south. It is located within the erosive final stage of viscous lava terracing. No exposed basalt, but large piles of basalt nearby. Grasses, tussock grass and artichoke thistle.	Surface artefacts from Standard Assessment	1. 0–70/80mm: Dry, friable, reddish brown clayey silt with clear, slightly undulating contact, frequent grass roots and rootlets, occasional to moderate subrounded basalt fragments and nodules (10-150mm). 5YR 5/3, pH 5.5. 2. 70/80mm: Dry, firm, very dusky-red clay with occasional rootlets. 2.5YR 2.5/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 83 General location of Test Pit 73 (facing east)

Stratigraphic drawing

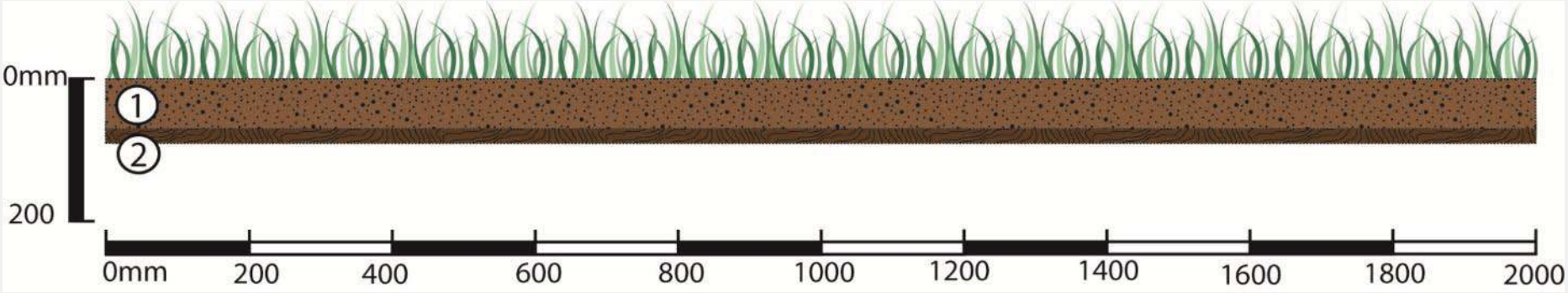


Figure 73 Stratigraphic drawing of north section of Test Pit 73

Table 82 Test Pit 74 data

Test Pit 74				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297213.594 Northing 5818242.106	Located on steep slopes landform with nearest water being ephemeral drainage to south. It is located within the erosive final stage of viscous lava terracing. Exposed basalt floaters nearby. Grasses, tussock grass and artichoke thistle.	Surface artefacts from Standard Assessment	1. 0–160/300mm: Dry, friable, reddish brown clayey silt with clear, undulating contact dependent on basalt floaters, frequent grass roots and rootlets, occasional small and medium subrounded and subangular basalt nodules. 7.5YR 5/4, pH 5.5. 2. 160-300mm: Dry, friable, dark reddish grey clay with occasional rootlets, imbedded basalt floaters (up to 600mm) 7.5YR 3/1, pH 5.5. 3. 160/300mm: Dry, firm, red clay with occasional rootlets, imbedded basalt floaters (up to 500mm). 7.5YR 5/6, pH 6. 4. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		1. 3 quartz		

Plate 84 General location of Test Pit 74 (facing south)

Stratigraphic drawing

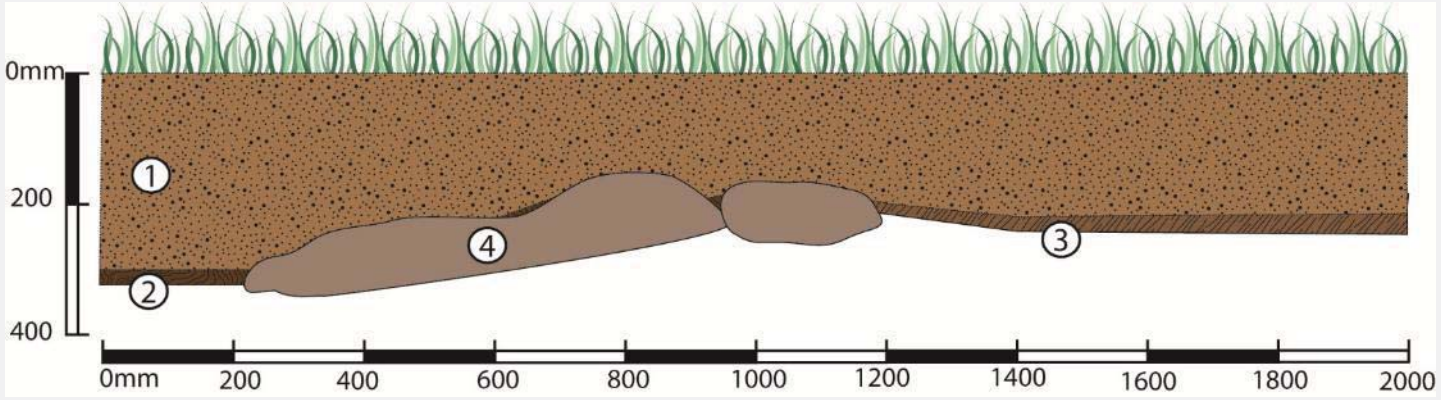


Figure 74 Stratigraphic drawing of north section of Test Pit 74

Table 83 Test Pit 75 data

Test Pit 75				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297371.656 Northing 5818176.119	Located on steep slopes landform with nearest water being ephemeral drainage to south. It is located within the erosive final stage of viscous lava terracing. Occasional basalt floaters. Grasses, tussock grass and artichoke thistle.	VAHR 7822-1536 Surface artefacts from Standard Assessment	1. 0–40/100mm: Dry, friable, brown clayey silt with clear, slightly undulating contact, frequent grass roots and rootlets, occasional small subrounded basalt nodules. 7.5YR 4/2, pH 5.5. 2. 40/100mm: Dry, firm, dark brown clay with occasional rootlets. 7.5YR 3/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 85 General location of Test Pit 75 (facing south-west)

Stratigraphic drawing

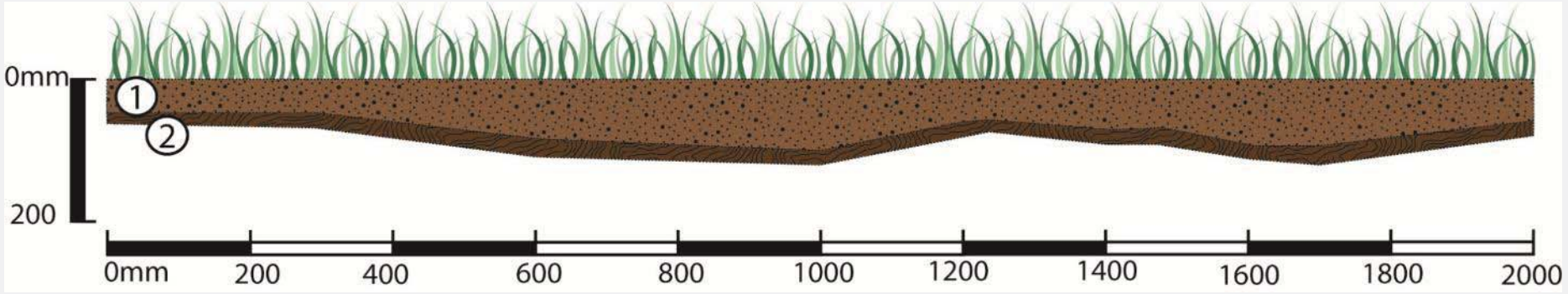


Figure 75 Stratigraphic drawing of north section of Test Pit 75

Table 84 Test Pit 76 data

Test Pit 76				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296229.808 Northing 5816926.965	Located on moderate slopes landform with nearest water being ephemeral drainage to east. It is located within the erosive final stage of viscous lava flows. Exposed basalt floaters nearby. Grasses and artichoke thistles.	VAHR 7822-1551	1. 0–50/120mm: Dry, loose to friable, brown clayey silt with clear, slightly undulating contact, composed of crumb particles, frequent weed roots and rootlets, occasional small subrounded basalt nodules. 10YR 4/3, pH 5.5. 2. 50/120mm: Dry, firm, very dark grey clay with occasional rootlets. 10YR 3/1, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 86 General location of Test Pit 76 (facing north)

Stratigraphic drawing

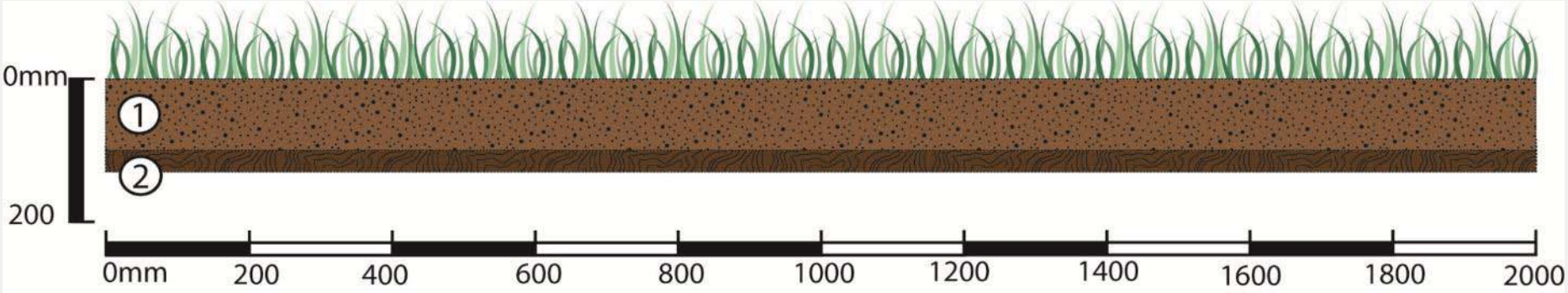


Figure 76 Stratigraphic drawing of north section of Test Pit 76

Table 85 Test Pit 77 data

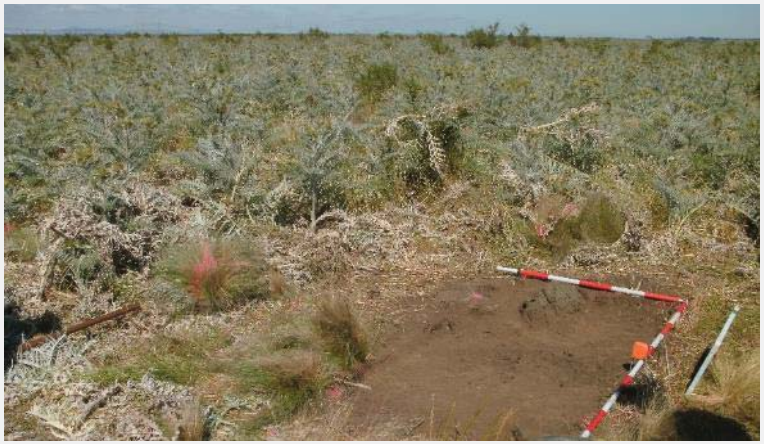
Test Pit 77				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296220.807 Northing 5817120.730	Located on moderate slopes landform with nearest water being ephemeral drainage to east. It is located within the erosive final stage of viscous lava flows. Exposed basalt floaters nearby. Grasses, tussock grasses and artichoke thistles.	VAHR 7822-1549	1. 0–30/70mm: Dry, friable, very dark greyish brown silty clay with clear, slightly undulating contact, frequent grass roots and rootlets, occasional small basalt nodules. 10YR 3/2, pH 5.5. 2. 30/70mm: Dry, hard, black clay, removed in clumps with occasional rootlets and imbedded large basalt floaters. 10YR 2/1, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 87 General location of Test Pit 77 (facing south-west)

Stratigraphic drawing

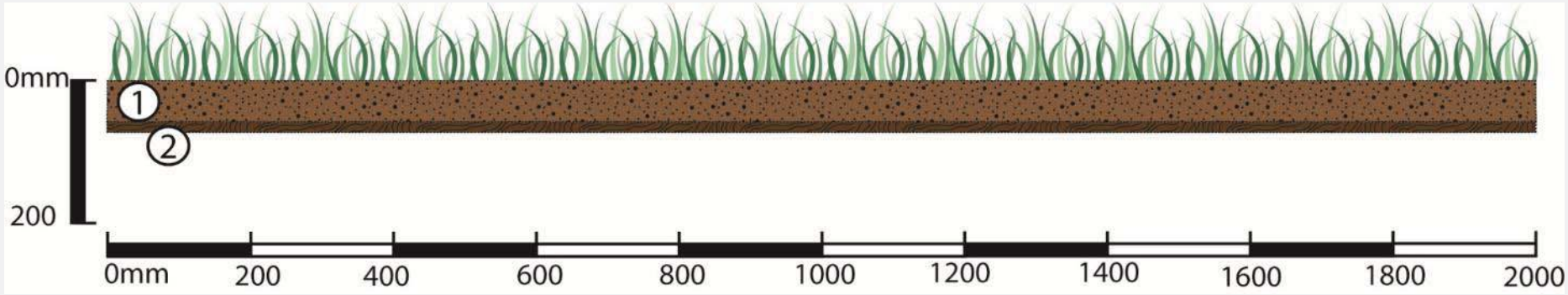


Figure 77 Stratigraphic drawing of north section of Test Pit 77

Table 86 Test Pit 78 data

Test Pit 78				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296374.556 Northing 5818562.293	Located on high plateau landform adjacent steep slopes immediately to the east with nearest water being ephemeral drainage to south-east. It is located within the erosive final stage of viscous lava flows. Small surface basalt nodules and piles of basalt nearby. Grasses.	VAHR 7822-1538	1. 0–70/100mm: Dry, friable, brown clayey silt with slightly merging, slightly undulating contact, frequent grass roots and rootlets, occasional waterworn basalt nodules and medium subangular basalt, very occasional broken quartz. 7.5YR 4/4, pH 5.5. 2. 70/100mm: Dry, firm, very dusky red clay with occasional rootlets. 2.5YR 2.5/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 88 General location of Test Pit 78 (facing west)

Stratigraphic drawing

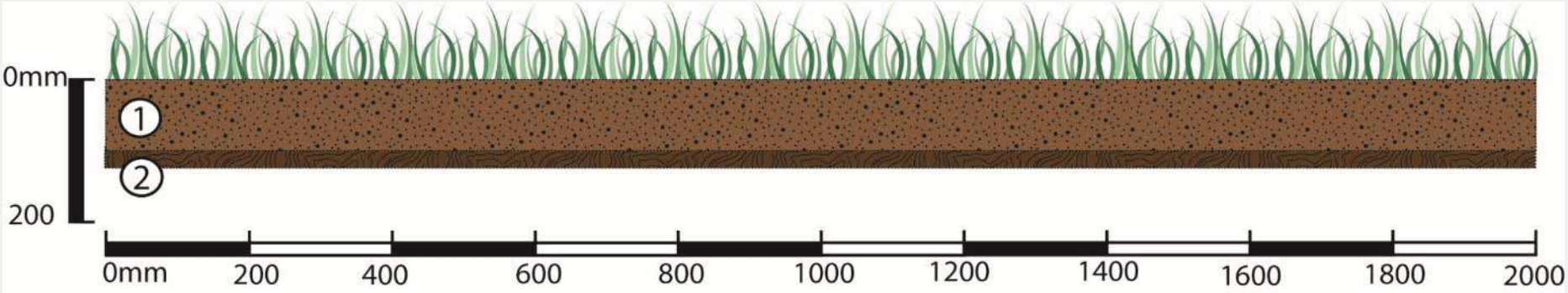


Figure 78 Stratigraphic drawing of west section of Test Pit 78

Table 87 Test Pit 79 data

Test Pit 79				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296477.891 Northing 5818745.266	Located on high plateau landform adjacent steep slopes to the south with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava flows. Small surface basalt nodules and piles of basalt nearby. Grasses and artichoke thistle.	VAHR 7822-1540	1. 0–60/100mm: Dry, friable, brown clayey silt with clear, slightly undulating contact, frequent grass roots and rootlets, occasional subrounded basalt nodules (50-150mm). 7.5YR 4/4, pH 5.5. 2. 60/100+mm: Dry, firm, very dusky red clay with occasional rootlets and one large basalt floater (200mm). 2.5YR 2.5/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		1. 4 quartz		

Plate 89 General location of Test Pit 79 (facing south-west)

Stratigraphic drawing

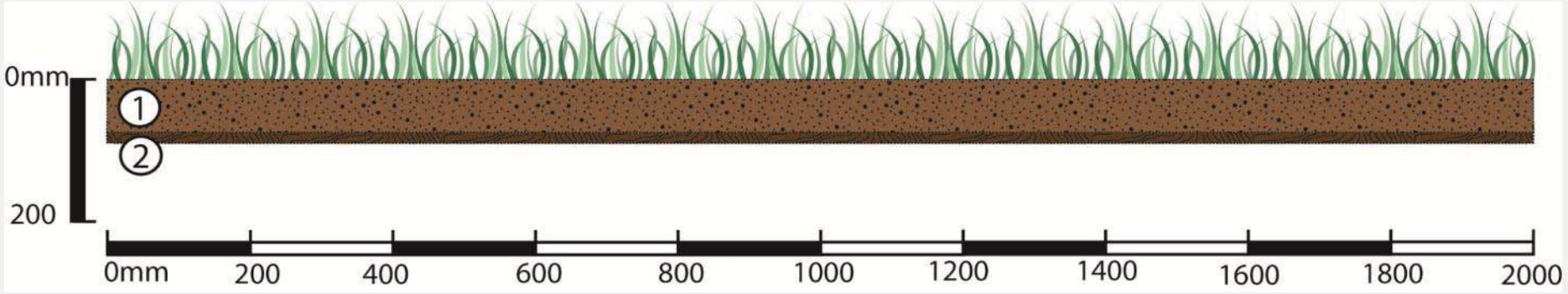


Figure 79 Stratigraphic drawing of west section of Test Pit 79

Table 88 Test Pit 80 data

Test Pit 80				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297350.931 Northing 5816274.667	Located on gentle slopes landform with nearest water being ephemeral drainage to the west. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby. Grasses.	None	1. 0–70/240mm: Dry, compact, brown silt with clear, slightly undulating contact, moderate small (>2mm) degrading basalt fragments. 7.5YR 4/3, pH 6. 2. 70/240+mm: Dry, very compact, dusky red clay with moderate basalt fragments (<50mm), large imbedded basalt floaters. 2.5YR 3/2, pH 7. 3. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		1. 1 quartz		

Plate 90 General location of Test Pit 80 (facing south)

Stratigraphic drawing

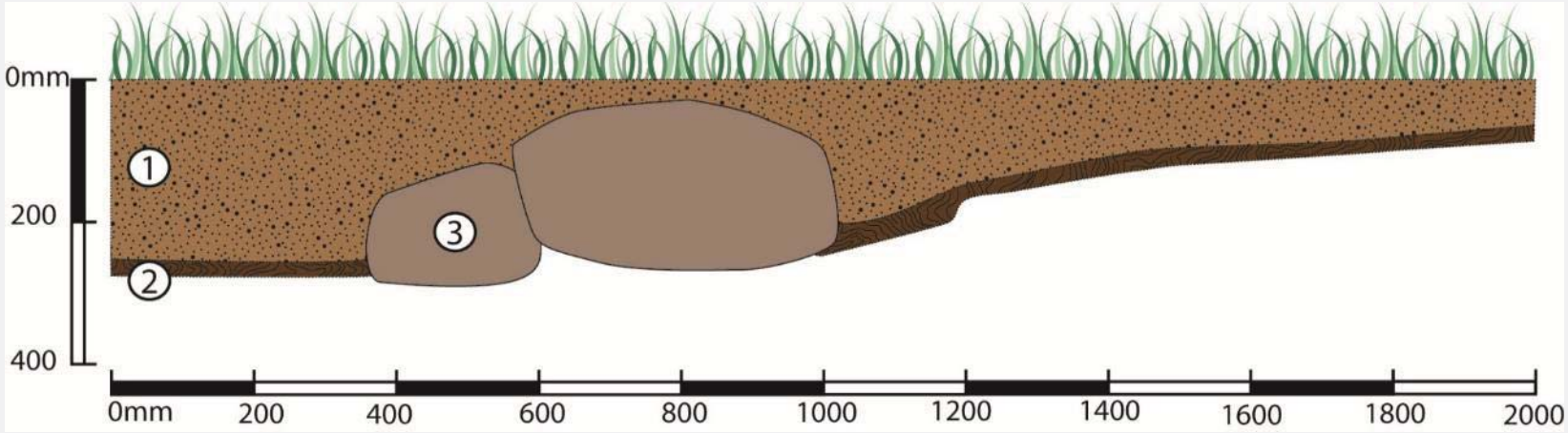


Figure 80 Stratigraphic drawing of west section of Test Pit 80

Table 89 Test Pit 81 data

Test Pit 81				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296964.834 Northing 5816971.379	Located on gentle slopes landform with nearest water being ephemeral drainage and dam to the east. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby. Grasses, artichoke thistles and tussock grass.	VAHR 7822-1548	1. 0–50/200mm: Dry, very compact, brown silt with clear, undulating contact, frequent tussock grass roots, moderate degrading basalt concentrated around single basalt floater. 7.5YR 4/2, pH 5.5. 2. 50/200mm: Dry, very compact, very dusky red clay with single large imbedded basalt floater. 2.5YR 2.5/2, pH 6. 3. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 91 General location of Test Pit 81 (facing north)

Stratigraphic drawing

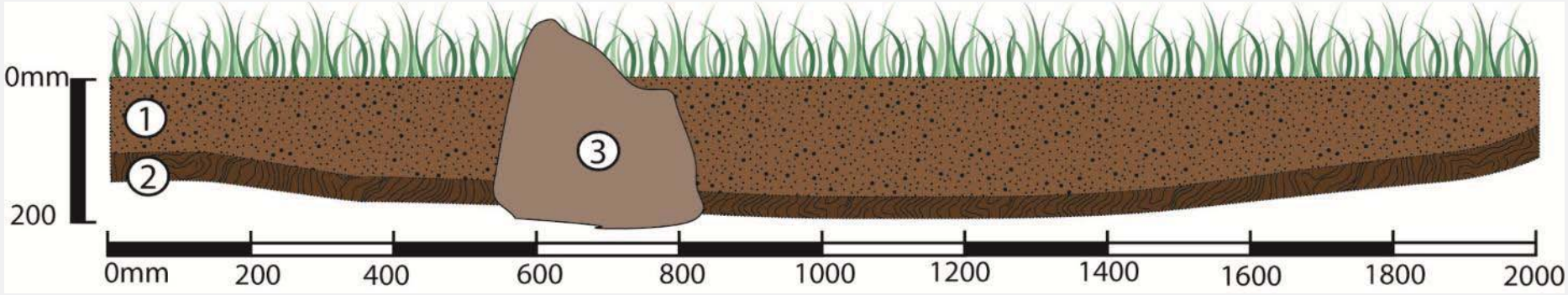


Figure 81 Stratigraphic drawing of west section of Test Pit 81

Table 90 Test Pit 82 data

Test Pit 82				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297684.696 Northing 5815225.144	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. Some exposed basalt floaters nearby. Grasses and tussock grass.	None	1. 0–110mm: Dry, compact, dark greyish brown silt with basalt cobbles and occasional rootlets. 10YR 4/2, pH 6. 2. 110mm: Dry, cracked, cemented, dark brown clay. 10YR 3/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 92 General location of Test Pit 83 (facing west)

Stratigraphic drawing

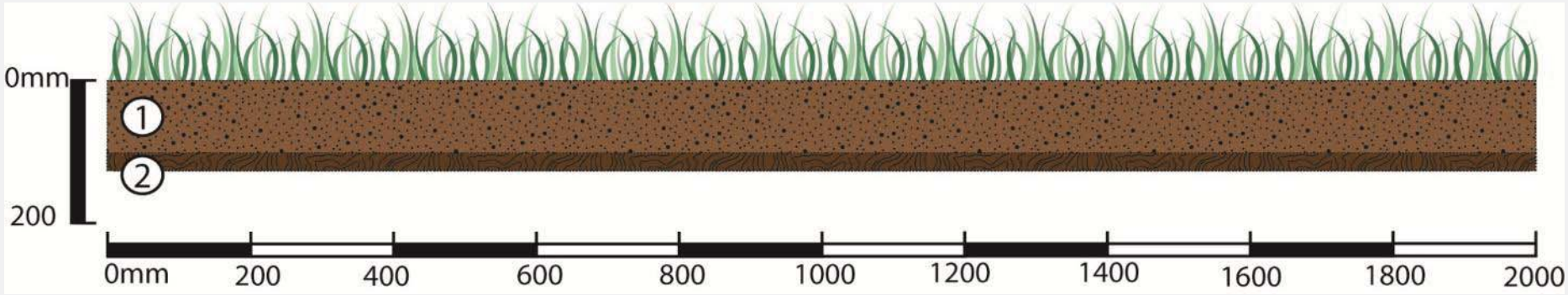


Figure 82 Stratigraphic drawing of north section of Test Pit 82

Table 91 Test Pit 83 data

Test Pit 83				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297731.487 Northing 5815207.356	Located on gentle slopes landform with nearest water being ephemeral drainage to the west. It is located within the accreting plains made up of older fluid flow basalts. No basalt visible nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–110mm: Dry, compact, dark greyish brown silt with basalt cobbles and occasional rootlets. 10YR 4/2, pH 6. 2. 110mm: Dry, cracked, cemented, dark brown clay. 10YR 3/3, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 93 General location of Test Pit 83 (facing east)

Stratigraphic drawing

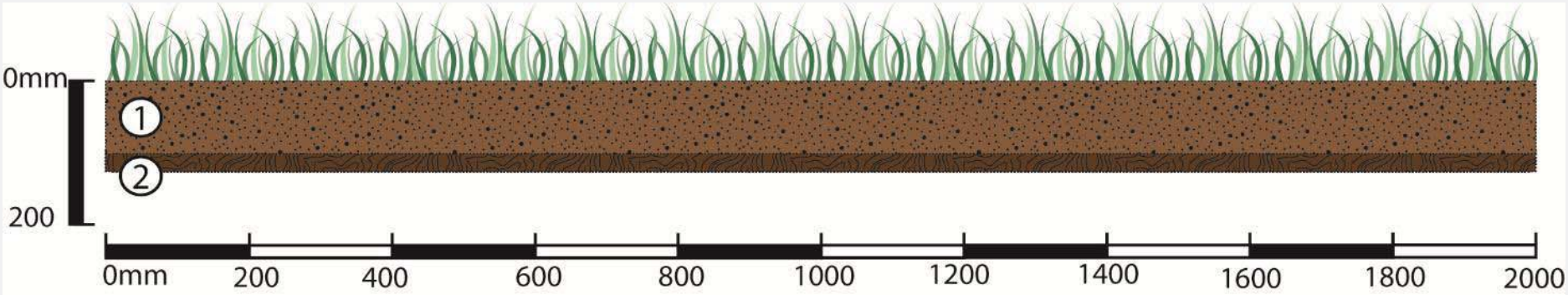


Figure 83 Stratigraphic drawing of north section of Test Pit 83

Table 92 Test Pit 84 data

Test Pit 84				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297560.725 Northing 5815343.836	Located on gentle slopes landform with nearest water being ephemeral drainage to the west. It is located within the accreting plains made up of older fluid flow basalts. No basalt visible nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–50/150mm: Dry, very compact, brown silty loam with degrading basalt nodules and occasional rootlets 7.5YR 4/3, pH 6.5. 2. 50/150mm: Dry, very compact, undulating, dark reddish brown silty clay 5YR 3/3, pH 6.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 94 General location of Test Pit 84 (facing south-west)

Stratigraphic drawing

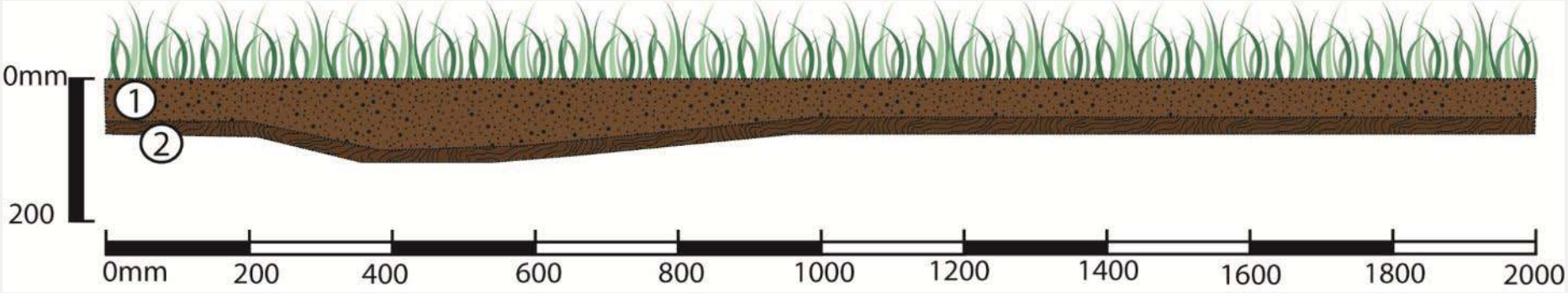


Figure 84 Stratigraphic drawing of west section of Test Pit 84

Table 93 Test Pit 85 data

Test Pit 85				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297617.408 Northing 5815337.091	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. No basalt visible nearby. Grasses and tussock grass.	None	1. 0–50/150mm: Dry, very compact, brown fine silty loam with large (<100mm) subrounded basalt cobbles and occasional rootlets. 7.5YR 4/3, pH 6. 2. 50/150mm: Dry, very compact, undulating, dark reddish brown silty clay 5YR 3/3, pH 6.5. 3. Basalt floater	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 95 General location of Test Pit 85 (facing north)

Stratigraphic drawing

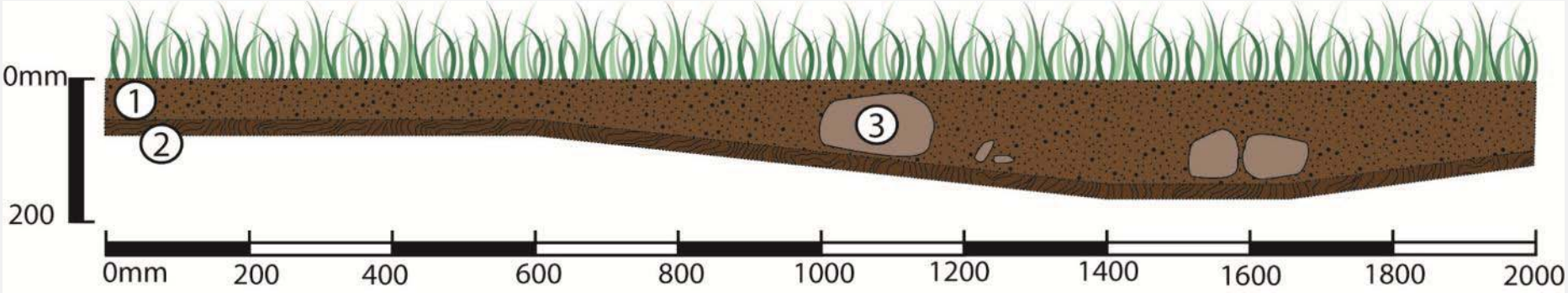


Table 94 Test Pit 86 data

Test Pit 86				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297686.4101 Northing 5814845.056	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. No basalt visible nearby. Grasses and tussock grass.	None	1. 0–40/80mm: Dry, compact, brown silty clay with clear, slightly undulating contact, moderate rootlets, occasional small basalt pebbles (>10mm), 10YR 4/3, pH 5.5. 2. 40/80mm: Dry, indurated, prismatic, very dark brown clay with occasional rootlets. 10YR 2/2, pH 6.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 96 General location of Test Pit 86 (facing south-west)

Stratigraphic drawing

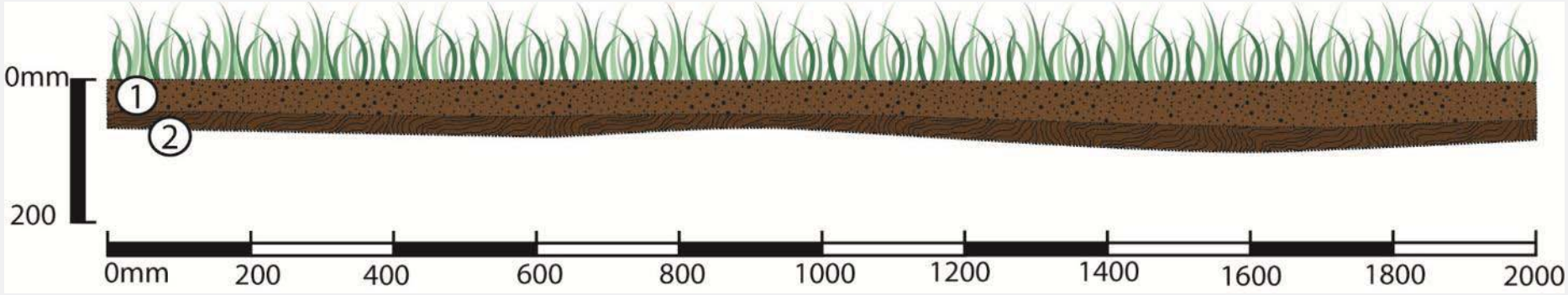


Figure 85 Stratigraphic drawing of north section of Test Pit 86

Table 95 Test Pit 87 data

Test Pit 87				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297660.42 Northing 5814893.343	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. No basalt visible nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–40/60mm: Dry, hard, dark reddish brown clayey silt with clear, slightly undulating contact, moderate grass roots and rootlets. 5YR 2.5/2, pH 5.5. 2. 40/60mm: Dry, indurated prismatic, yellowish red clay with occasional rootlets. 5YR 4/6, pH 5.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 97 General location of Test Pit 87 (facing south-west)

Stratigraphic drawing

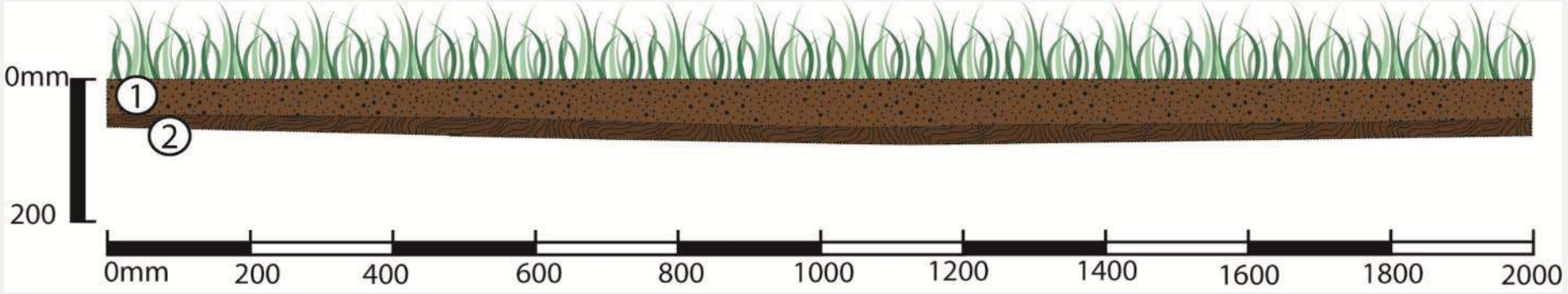


Figure 86 Stratigraphic drawing of north section of Test Pit 87

Table 96 Test Pit 88 data

Test Pit 88				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297485.1852 Northing 5814987.234	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. No basalt visible nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–30/70mm: Dry, hard, dark greyish brown silty clay with clear, slightly undulating contact, moderate grass roots and rootlets, occasional small basalt pebbles. 10YR 4/2, pH 5.5. 2. 30/70mm: Dry, indurated, prismatic, very dark brown clay with occasional rootlets. 10YR 2/2, pH 6.5.	
Test pit size		**Artefacts**		
2 x 1 metre		1 silcrete		

Plate 98 General location of Test Pit 88 (facing west)

Stratigraphic drawing

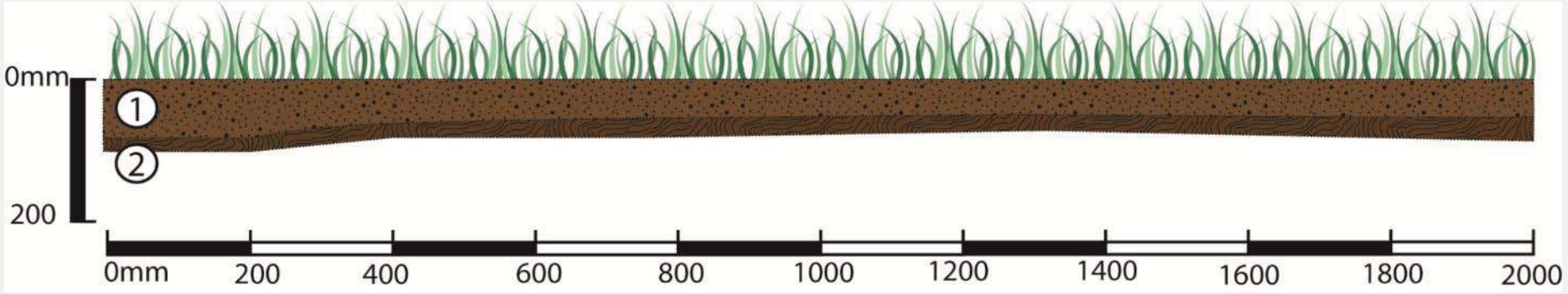


Figure 87 Stratigraphic drawing of north section of Test Pit 88

Table 97 Test Pit 89 data

Test Pit 89				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297379.773 Northing 5814975.786	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. No basalt visible nearby. Grasses, artichoke thistles and tussock grass.	None	1. 0–30/130mm: Dry, hard, greyish brown silty clay with clear, slightly undulating clay with moderate grass roots and rootlets, occasional small basalt fragments. 10YR 5/2, pH 5. 2. 30/130mm: Dry, indurated, prismatic very dark grey clay with occasional rootlets. 10YR 3/1, pH 5.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 99 General location of Test Pit 89 (facing north-west)

Stratigraphic drawing

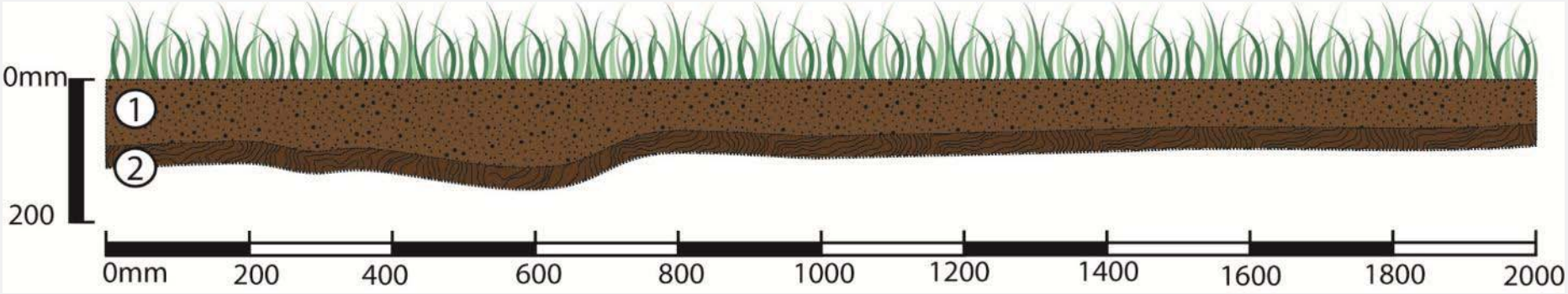


Figure 88 Stratigraphic drawing of north section of Test Pit 89

Table 98 Test Pit 90 data

Test Pit 90				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297352.5127 Northing 5814876.872	Located on gentle slopes landform with nearest water being ephemeral drainage to the east. It is located within the accreting plains made up of older fluid flow basalts. No basalt visible nearby. Grasses and weeds.	None	1. 0–40/130mm: Dry, firm, light olive brown silty clay with clear, undulating contact, clearly disturbed, moderate weed roots and rootlets, occasional basalt chunks (<100mm). 10YR 5/3, pH 5.5. 2. 40/130mm: Dry, indurated, prismatic, very dark brown clay with occasional rootlets. 10YR 2/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 100 General location of Test Pit 90 (facing north-west)

Stratigraphic drawing

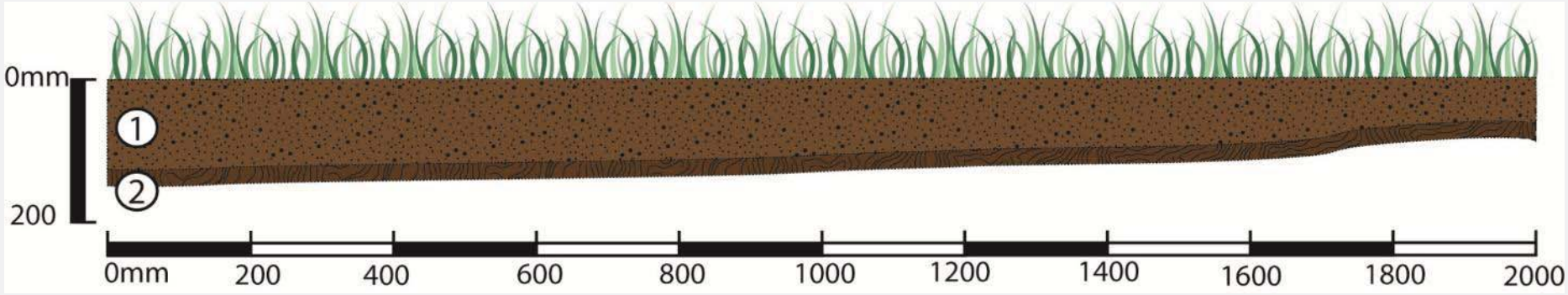


Figure 89 Stratigraphic drawing of north section of Test Pit 90

Table 99 Test Pit 91 data

Test Pit 91				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 297352.5127 Northing 5817469.857	Located on high plateau landform with nearest water being ephemeral drainage to east. It is located within the erosive final stage of viscous lava flows. Exposed basalt floaters nearby. Grasses, tussock grasses and artichoke thistles.	VAHR 7822-1550	1. 0–40/120mm: Dry, firm, brown silty clay with clear, slightly undulating contact, frequent grass roots and rootlets, occasional basalt nodules (50-150mm). 7.5YR 4/2, pH 6. 2. 40/120mm: Dry, indurated, dark brown clay with occasional rootlets. 7.5YR 3/2, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 101 General location of Test Pit 91 (facing north)

Stratigraphic drawing

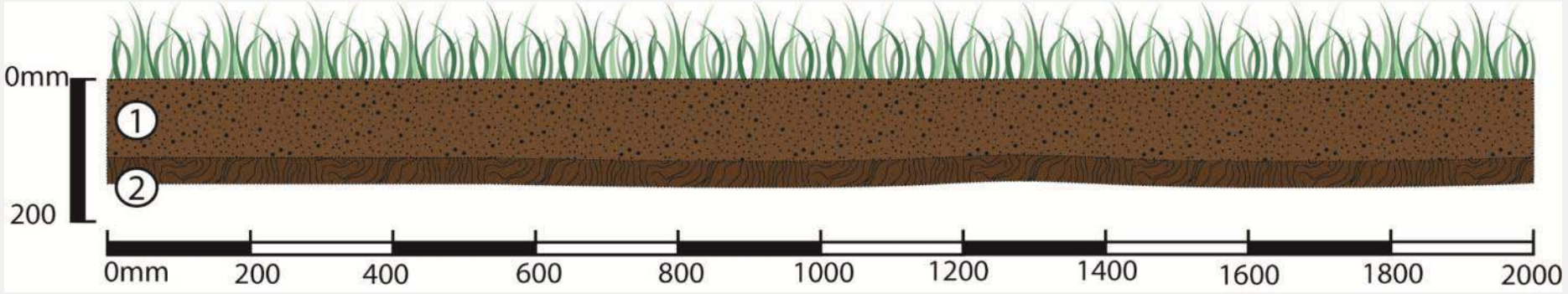


Figure 90 Stratigraphic drawing of north section of Test Pit 91

Table 100 Test Pit 92 data

Test Pit 92				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296621.2086 Northing 5817787.156	Located on moderate slopes landform with nearest water being ephemeral drainage to east. It is located within the erosive final stage of viscous lava flows. Exposed basalt floaters nearby. Grasses, tussock grasses and artichoke thistles.	Surface artefacts from Standard Assessment	1. 0–60/110mm: Dry, friable, dark brown clayey silt with clear, flat contact, frequent grass roots and rootlets, occasional basalt nodules and fragments (20–150mm). 7.5YR 3/4, pH 6. 2. 60/110mm: Dry, hard, very dark brown with occasional and imbedded basalt nodules (~100mm). 7.5YR 2.5/2, pH 6.5.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 102 General location of Test Pit 92 (facing north-west)

Stratigraphic drawing

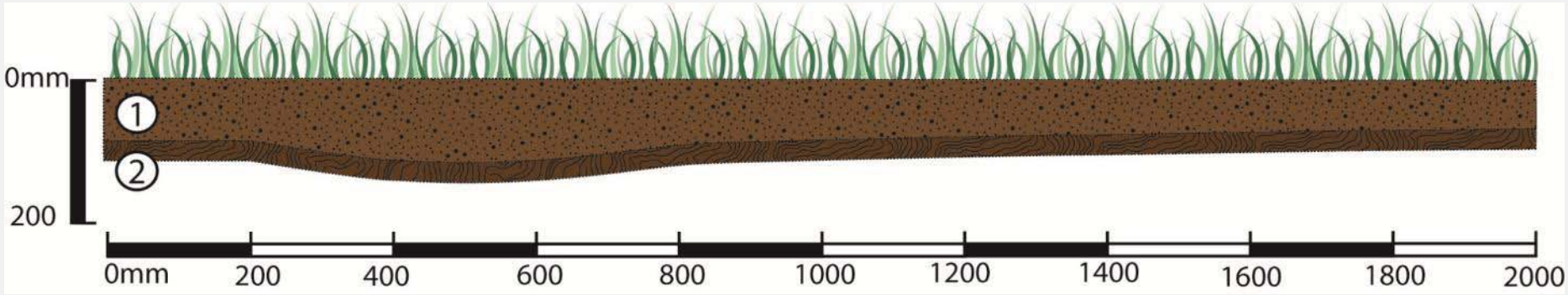


Figure 91 Stratigraphic drawing of north section of Test Pit 92

Table 101 Test Pit 93 data

Test Pit 93				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296516.4658 Northing 5819204.151	Located on steep slopes landform adjacent to high plateau to south with nearest drainage being Kororoit Creek to north. It is located within the erosive final stage of viscous lava terracing. Piles of basalt floaters nearby. Grasses and tussock grasses.	VAHR 7822-3798	1. 0–110/150mm: Dry, firm to friable yellowish red clayey silt with slightly merging, flat contact with frequent grass roots and rootlets, occasional basalt fragments (50–100mm). 5YR 4/6, pH 5.5. 2. 110/150mm: Dry, indurated dark reddish brown clay with very occasional rootlets and moderate imbedded basalt 5YR 3/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		None		

Plate 103 General location of Test Pit 93 (facing north-west)

Stratigraphic drawing

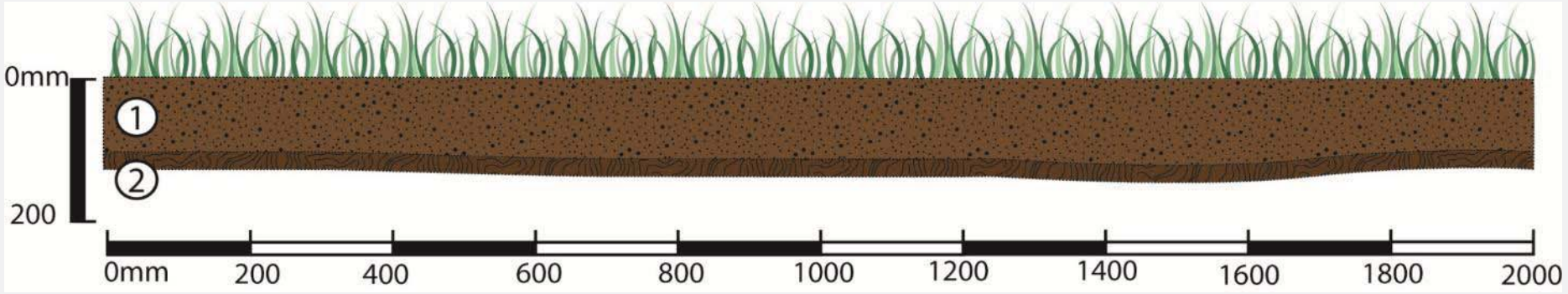


Figure 92 Stratigraphic drawing of north section of Test Pit 93

Table 102 Test Pit 94 data

Test Pit 94				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296183.1435 Northing 5819380.441	Located on high plateau landform with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava flows. No surface basalt visible nearby. Grasses and tussock grass.	None	1. 0–80mm: Damp, friable dark reddish-brown clayey silt with clear flat contact, frequent grass roots and rootlets, occasional basalt fragments (5-20mm). 2.5YR 2.5/4, pH 5. 2. 50–80/150mm: Dry, friable, dark red silty clay with slightly merging, undulating contact, moderate rootlets, occasional basalt fragments (5-50mm). 2.5YR 3/6, pH 5.5. 3. 80/150–200/270mm: Dry, friable, dark red silty clay with slightly merging, undulating contact, moderate basalt fragments, occasional rootlets, increasing clay with depth. 2.5YR 3/6, pH 6. 4. 200/270mm: Dry, hard, dark reddish brown clay with occasional rootlets, imbedded basalt floaters in base. 2.5YR 2.5/4, pH 6.	
Test pit size		**Artefacts**		
2 x 1 metre		3. 5 quartz 3 silcrete		

Plate 104 General location of Test Pit 94 (facing north-east)

Stratigraphic drawing

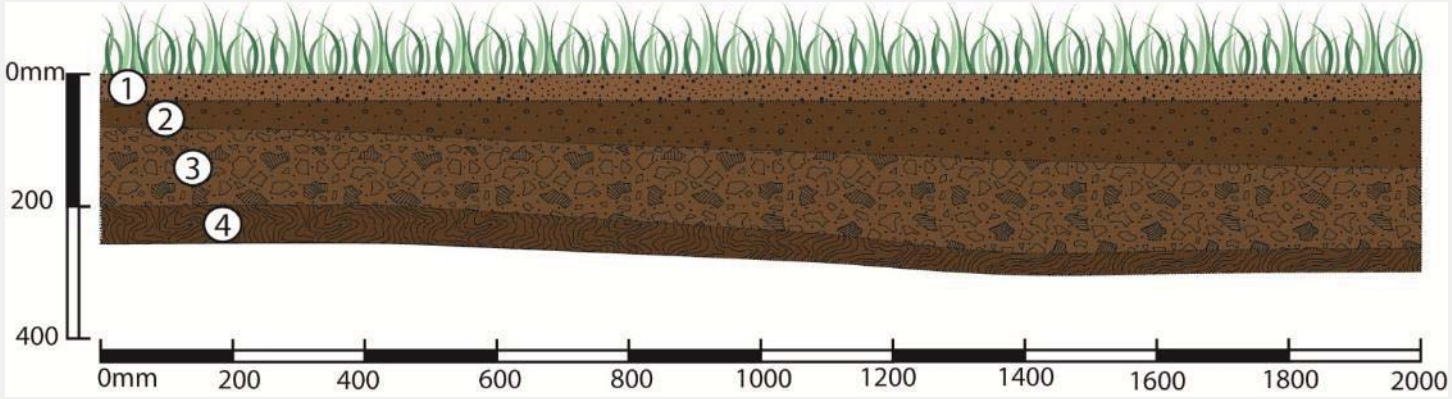


Figure 93 Stratigraphic drawing of north section of Test Pit 94

Table 103 Test Pit 95 data

Test Pit 95				
Coordinates	**Landform description**	**Existing place**	**Stratigraphic description**	**General location photo**
Easting 296666.4102 Northing 5819012.913	Located on steep slopes landform with nearest drainage being Kororoit Creek to the north. It is located within the erosive final stage of viscous lava terracing. Small surface basalt nodules and piles of basalt floaters nearby. Grasses and artichoke thistles.	VAHR 7822-1541	1. 0–80/200mm: Damp, friable dark reddish brown with clear, undulating contact, frequent grass rootlets, occasional large basalt cobbles and basalt fragments. 5YR 3/4, pH 5.5. 2. 80/200mm: Dry, compact, dark reddish brown clay with imbedded basalt cobbles and fragments, occasional rootlets. 5YR 2.5/2, pH 6.	
Test pit size		**Artefacts**		
2x1 metre		None		

Plate 105 General location of Test Pit 95 (facing east)

Stratigraphic drawing

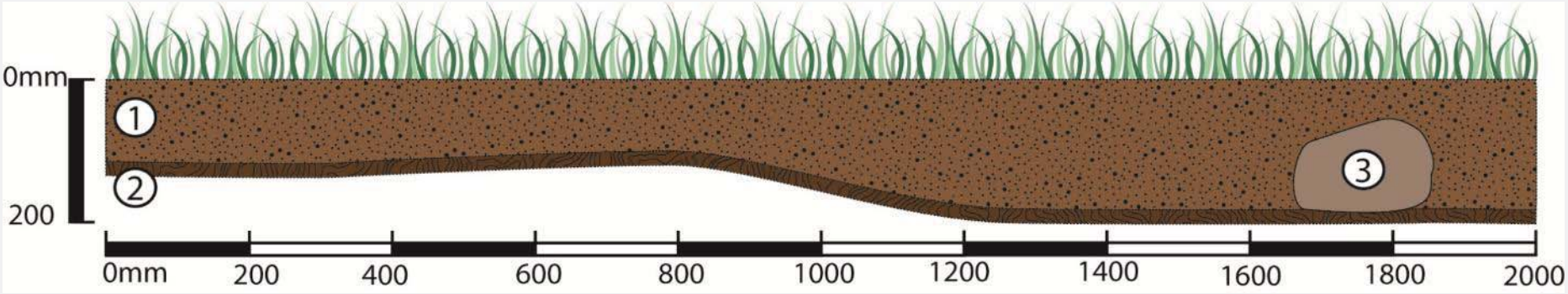


Figure 94 Stratigraphic drawing of north section of Test Pit 95

7.3.2 Discussion

The 95 test pits were excavated across all landscape units within the Activity Area. These included:

- Raised volcanic plateau
- steep slopes
- moderate slopes
- gentle slopes and level plains.

The age of basalt flows was also taken into consideration because it related to changes in stratigraphy i.e. the depth of subsurface deposits. The distribution of test pits were relatively evenly spread across these landforms and basalt flows (Table 104).

Table 104 Landform on which test pits were excvated

Basalt flow	Gentle slopes	Raised plateau	Moderate slopes	Steep slopes	Total test pits
Earlier, older flows	34	NA	12	NA	46
Final, younger flows	NA	19	11	19	49
Total test pits	**34**	**19**	**23**	**19**	**95**

Soils within the Activity Area varied in contents, depth and consistency. On the steep slopes landforms, soils differed depending on whether the broader location had been ploughed or had basalt removed in the past (generally in the west of the Activity Area). In these locations the stratigraphy consisted of friable, dark reddish-brown silty clay with frequent grass roots and occasional to moderate small basalt fragments with a clear, flat contact between 40 and 130 millimetres to the underlying firm, plastic, dark reddish-brown clay with occasional rootlets and occasionally with medium basalt nodules.

Where basalt was relatively intact on the steep slopes, the stratigraphy consisted of friable, dark brown to reddish-brown silt with frequent grass roots and moderate small to medium subangular and subrounded basalt fragments and nodules with a clear, flat or undulating contact between 120 and 130 millimetres. The underlying friable, dark brown clayey silt with moderate medium basalt nodules to depths of 120 to 300 millimetres. Underlying this soil unit was the basal unit that consisted of friable to firm, dark reddish-brown to red clay with basalt floaters.

The northern-most steep slopes adjacent to Greigs Road, in the north-west of the Activity Area, contained deeper stratigraphy. Friable yellowish red silt loam with large basalt floaters to a depth of 110 to 140 millimetres overlay dark reddish brown to red clayey silt with frequent basalt to between 350 and 370 millimetres. This unit was followed by very compact dark reddish-brown to dark red silty clay, where clay content increased with depth.

The high plateau landforms were also largely concentrated within the northern third of the Activity Area. Generally the stratigraphy in these locations consisted of dry, friable reddish-brown clayey silt with frequent grass roots, occasional subrounded and subangular basalt nodules (50–100 millimetres) and a clear, slightly undulating contact to the underlying dry, firm dark reddish-brown clay at depths between 70 and 150 millimetres. The majority of test pits in this landform contained some form of basalt, although most had been cleared of basalt through ploughing.

Moderate slopes dominate the central third of the Activity Area and contain both more recent and older volcanic flows. Friable to firm dark greyish or reddish-brown with frequent grass roots, occasional basalt fragments and a clear undulating contact to the underlying firm black or dark reddish-brown clay to a depth of between 60 and 120 millimetres. Basalt floaters were often protruding the ground surface or were imbedded in the ground and were exposed during excavation. There were no obvious differences between the stratigraphy on older basalt flows when compared to more recent flows, other than that test pits within older flows contained more basalt floaters. This is likely a consequence of the lesser extent of rock removal in the southern portions of the Activity Area.

The stratigraphy identified on gentle slopes landforms was similar to those of the moderate slopes with dry, compact reddish- to greyish-brown silty clay with frequent grass roots, and occasional small basalt fragments and a clear, slightly undulating contact overlying compact dark greyish- or reddish-brown clay often with imbedded basalt floaters. Clay was generally shallower than the other landforms and was reached at depths of between 30 to 80 millimetres, although dips around degrading basalt floaters contained silty deposits to depths of up to 200 millimetres.

Within these 95 test pits, 20 contained artefacts. A total of 220 artefacts were collected from the subsurface testing, however 143 of these were from Test Pit 6 alone which was located in association with a previously recorded Aboriginal place on a small rise overlooking a drainage channel. As seen in Table 105, the majority of the artefact-bearing test pits were located on steep slopes and high plateau landforms that are strictly located within the final, erosive viscous basalt flows and terraces. This suggests that these landforms were more frequently utilised by Aboriginal people, and as no permanent waterways are located within the Activity Area, prominent points overlooking the broader landscape contain evidence of Aboriginal cultural heritage material.

Table 105 Landform on which artefact bearing test pits are located

Basalt flow	Gentle slopes	Raised plateau	Moderate slopes	Steep slopes	Total
Earlier, older flows	3	NA	2	NA	5
Final, younger flows	NA	8	0	7	15
Total test pits with artefacts	**3**	**8**	**2**	**7**	**20**

Artefacts collected from subsurface testing consisted of quartz, silcrete, quartzite and basalt raw materials. Of the artefact bearing test pits, numbers of artefacts retrieved were generally low (Table 106). 16 of the 20 test pits contained between one and five artefacts. The remaining four test pits were located in either high plateau or steep slopes landforms. This suggests that not only do steep slopes and high plateau landforms have a higher potential for yielding artefacts, but that higher numbers of subsurface artefacts are often present. This is likely due to sediments being relatively intact as these are often the locations of intact stony rises, and/or that these locations were more frequently utilised.

Table 106 Ranges of artefact numbers from positive test pits and landforms

Number of artefacts	Gentle slopes	Raised plateau	Moderate slopes	Steep slopes	Total
1-4	3	7	2	4	16
5-19	0	1	0	1	2
20+	0	0	0	2	2
Totals	**3**	**8**	**2**	**7**	**20**

7.3.3 Aboriginal places

Subsurface testing was carried out at previously recorded places within the Activity Area. All of these places had been recorded containing only surface components. Subsequent subsurface testing at these locations revealed that although surface archaeology had been recorded in the past, due to the thin nature of soils associated with the geology within volcanic landscapes, the only places that retained cultural heritage material were those with significant amounts of exposed basalt (Table 107).

As a result of the current assessment, many of the previously recorded Aboriginal places have been amalgamated in to landform registrations. These places are discussed in further detail in Section 8.

Table 107 Previously recorded Aborignal places and subsurface testing

Place Name	Landform	Associated test pit	Artefacts
Mt Atkinson IA 1 (VAHR 7822-1534)	Steep slopes	19	0
Mt Atkinson IA 2 (VAHR 7822-1535)	Steep slopes	54	0
Mt Atkinson IA 3 (VAHR 7822-1536)	Steep slopes	75	0
Mt Atkinson IA 4 (VAHR 7822-1537)	High plateau	17	0
Mt Atkinson IA 5 (VAHR 7822-1538)	High plateau	78	0
Mt Atkinson IA 6 (VAHR 7822-1539)	Steep slopes	32	0
Mt Atkinson IA 7 (VAHR 7822-1540)	High plateau	79	4
Mt Atkinson IA 8 (VAHR 7822-1541)	Steep slopes	95	0
Mt Atkinson AS 1 (VAHR 7822-1542)	Steep slopes	6	143
Mt Atkinson AS 2 (VAHR 7822-1543)	Steep slopes	6	143
Mt Atkinson AS 3 (VAHR 7822-1544)	Moderate slopes	72	0
Mt Atkinson AS 5 (VAHR 7822-1546)	Steep slopes	27	26
Mt Atkinson AS 6 (VAHR 7822-1547)	Steep slopes	27	26
Mt Atkinson AS 9 (VAHR 7822-1548)	Gentle slopes	81	0
Mt Atkinson AS 10 (VAHR 7822-1549)	Moderate slopes	77	0
Mt Atkinson AS 11 (VAHR 7822-1550)	High plateau	91	0
Mt Atkinson AS 12 (VAHR 7822-1551)	Moderate slopes	76	0
Peppercorn Rise 1 (VAHR 7822-3798)	High plateau	93	0
Mount Atkinson PSP LDAD (VAHR 7822-3802)	Steep slopes	32	0

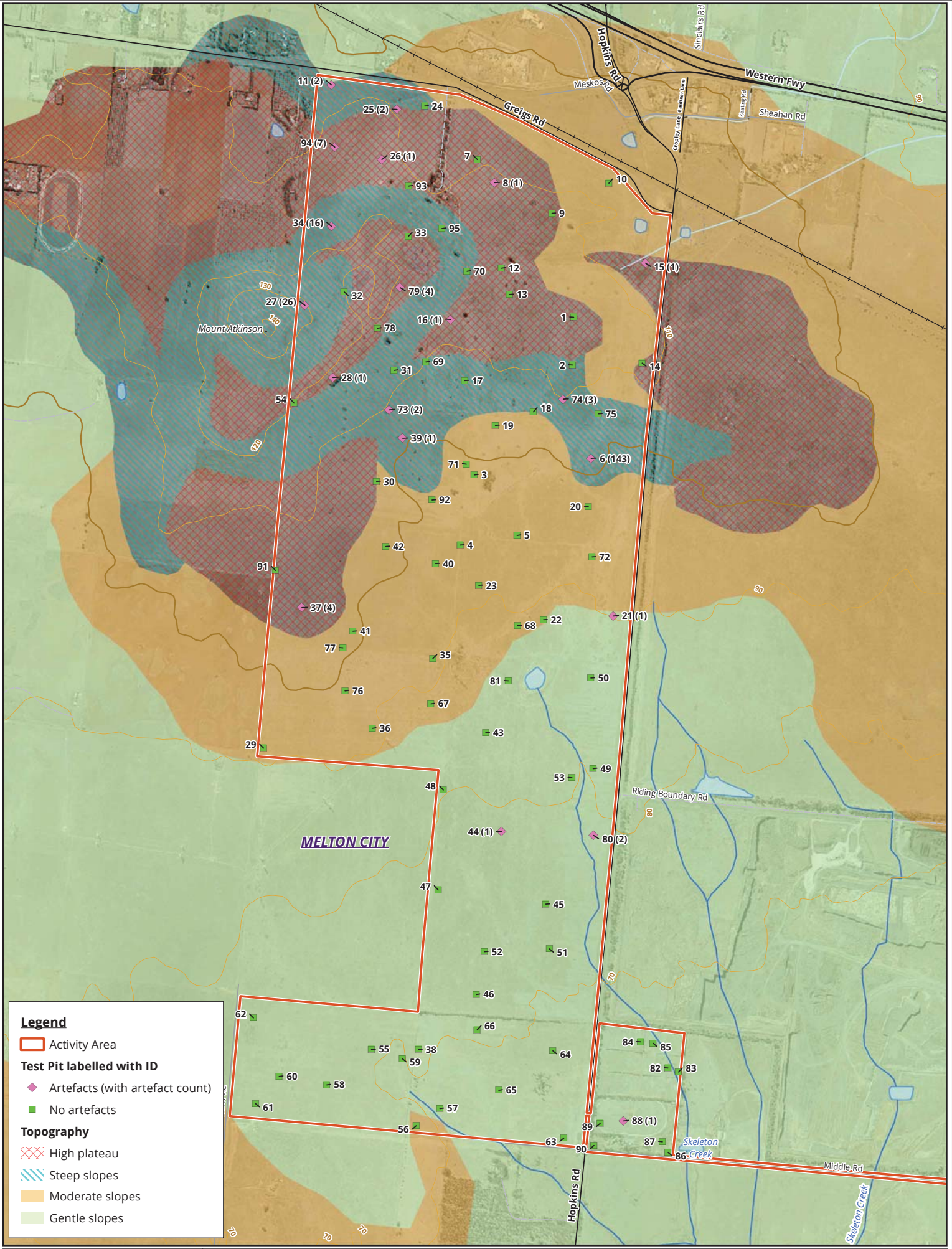
7.4 Conclusions from the Complex Assessment

The subsurface testing carried out across the Activity Area identified some areas as containing archaeological deposits at depth, on higher elevation landforms where less disturbance from past land use activities (such as ploughing) have taken place. The stratigraphic profiles were generally shallow duplex soils consisting of reddish-brown silty clay overlying dark reddish-brown clay with some basalt nodules between 50 and

100 millimetres in size occurring in most profiles. Depths of excavation were generally between 70 and 150 millimetres. This is typical of the Volcanic Plains and supports evidence from other, nearby archaeological investigations. There was some variation in profiles, with deeper sediments located in the far north-western corner of the Activity Area. The stratigraphy was also considerably deeper and contained a higher frequency of basalt in some steep slope areas, specifically near the summit of Mount Atkinson and to the steeper slopes to the east near Test Pits 74 and 6.

Re-affirming the results of the Standard Assessment, these steep slope locations where basalt had not been removed were also those with the highest frequency and intensity of subsurface archaeology; for while subsurface archaeology was identified across all landforms, artefacts numbers were low (<5) and sporadic in nature (Map 9). This largely conforms with the suggestion from the Desktop Assessment predictive model and the Standard Assessment where higher densities of artefacts would be associated with steep - sloped landforms which provide vantage points for the wider landscape while lower densities are distributed across the plains. While large numbers of surface artefacts were identified on cleared access tracks near the drainage channels, this was not supported in the Complex Assessment (Map 9).

In the Desktop Assessment, artefact scatters were identified as being the most likely Aboriginal place types within the Activity Area, although, regionally, places that contain high numbers of artefacts (>50) are in close proximity to prominent waterways such as Kororoit Creek and the confluence of Dry and Skeleton Creeks. As ephemeral drainage lines are the only watercourses located within the Activity Area, the prominence of Mount Atkinson as a vantage point means it would have been frequently utilised by Aboriginal people in the past. This is supported by the large number of surface and subsurface artefacts on Mount Atkinson compared to the remainder of the Activity Area with the exception of a likely quartz flaking event on a stony rise adjacent to the drainage channels (Test Pit 6). It should also be noted that the summit of Mount Atkinson is not within the current Activity Area and therefore it is predicted that this pattern will be further reflected when investigation commences to the west of the current Activity Area. Wetlands and soaks that would have existed within the Activity Area may not have been ideal locations to maintain a longer presence compared to the higher vantage points, and thus have a less substantial archaeological signature. Likewise, while lower elevation sections of the Activity Area would also have been exploited, this likely took place across far broader areas that, when manifest in archaeological remains, result in an infrequent signature of subsurface cultural material. This conclusion is also reflected in the results of the Standard Assessment.



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Map 8a Results of the complex assessment

Acknowledgements: Vicmap ©State of Victoria

Matter: 19337, CHMP 13712
Date: 27 July 2017,
Checked by: KFR, Drawn by: SKM, Last edited by: acurtis
Location:\\bio-data-01\matters$\119300s\19337\Mapping\19337_M8a_Complex

0 150 300 450 600 750
Metres
Scale 1:15,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

N

Legend

Activity Area

Map 8b Results of the complex assessment

0 150 300 450 600 750

Metres

Scale: 1:15,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

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Matter: 19337, CHMP 13712

Date: 12 April 2017,

Checked by: KFR, Drawn by: SKM, Last edited by: smitchell

Location:P:\19300s\19337\Mapping\19337_M8b_Complex.mxd

Legend

- Activity Area
- Surface artefacts

Test Pit labeled with ID

- Artefacts (with artefact count)
- No artefacts
- Contour from LIDAR - 0.5m interval
- Contour from VicMap 1m interval

Previously recorded VAHR place

- Artefact Scatter

Low Density Artefact Distribution

- 7822-3798
- 7822-3802
- Place extent

continuation from above

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Map 9 Results of all assessments

Acknowledgements: Vicmap ©State of Victoria

Matter: 19337, CHMP 13712
Date: 11 August 2017,
Checked by: KFR, Drawn by: SKM, Last edited by: acurtis
Location:\\bio-data-01\matters$\19300s\19337\Mapping\19337_M9_All_Results_A0

0 60 120 180 240 300
Metres
Scale 1:6,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

N

8 Details of Aboriginal cultural heritage in the Activity Area

8.1 Assessment of the Aboriginal cultural heritage

The results of this assessment have further refined information relating to Aboriginal occupation of the region. Successive investigations, particularly those of Thomson (2003) and the current CHMP assessment have shown that the Aboriginal people made extensive use of the range of volcanic landforms within the Activity Area, from lava cone to wetland plain. It was recognised that Aboriginal land use here should be characterised, not just as a distribution of artefacts found but as a range of interactions with the landscape, with particular concentrations in certain landforms and less intensive or differing uses of other areas. Profound changes brought about in historical times by clearance, plough action, drainage, stock and vehicle access have masked some components of the cultural heritage and exposed others. Understanding the ways in which different parts of the volcanic landscape may have been used, the types of material cultural heritage which have resulted from these activities and the effects of historical impacts on the cultural heritage are central to the assessment of the Activity Area. Artefact occurrence is one of the primary means of defining cultural heritage places but in these circumstances cannot be used on its own without also considering what processes may severely distort the distribution of cultural heritage. For this reason, the definition of Aboriginal places within the Activity Area has been based on a landscape model, where landforms have been investigated and assessed and used together with artefact distributions as a basis for defining cultural heritage places. This approach aims to balance the distorting effects of differential land disturbance and artefact retrieval.

Following discussions with the VAHR, it was agreed that the northern and eastern parts of the Activity Area should be registered as one Aboriginal place (Mt Atkinson Landscape VAHR 7822-4109), covering an area of 493 hectares. Within this large place extent, individual landforms and specific concentrations of cultural material have been registered as separate components of that overall Aboriginal place.

Individual places which were previously recorded during the earlier assessments within the Activity Area have accordingly been incorporated in to the newly merged Aboriginal place registration listed in Table 108. Four places recorded between 2003 and 2014 which lie outside the new merged place extent (VAHR 7822-1549, VAHR 7822-1550 , VAHR 7822-1551 and VAHR 7822-3798) remain unchanged. Place Inspection Forms for these Aboriginal places have been submitted to the VAHR. In addition, a number of individual artefacts within the Activity Area have been recorded separately as a Low Density Artefact Distribution (Mt Atkinson LDAD 1 VAHR 7822-4092).

Table 108 Aboriginal place registrations

New Aboriginal place	New place components of the merged Aboriginal place	Original Aboriginal places now merged	
Mt Atkinson Landscape (VAHR 7822-4109)	Mt Atkinson cone AS 1	7822-3802 7822-0546 7822-1539	7822-1547 7822-0206 7822-1535
	Mt Atkinson raised volcanic plain AS 1	7822-1541 7822-3802 7822-1537	7822-1540 7822-1538 7822-1534
	Mt Atkinson steep-edged terrace AS 1	7822-1536	

New Aboriginal place	New place components of the merged Aboriginal place	Original Aboriginal places now merged	
	Mt Atkinson stony rise AS 1	7822-1542	7822-1543
	Mt Atkinson drainage plain AS 1	7822-1544 7822-1548	7822-0707
Mt Atkinson LDAD 1 (VAHR 7822-4092)	N/A	N/A	

8.1.1 Site formation process

The Activity Area covers much of the eastern portion of the Mount Atkinson volcanic formation, including parts of the lava cone, the surrounding raised plateau with its steep-sided terraces and the broad, dissected plains of the lower volcanic slopes beyond this. The cultural heritage found thus represents human activities undertaken across a range of landforms within a relatively limited area. Central to the interpretation of the cultural heritage found is an assessment whether the variety and contrasting types of cultural heritage recorded directly reflect the different uses made of individual components of this landscape by Aboriginal people, exploiting the range of resources available within a couple of hours walk in any direction. The apparent differences in cultural heritage between one area and another may be distorted by taphonomy (the filtering effects of past land use) and by the degree of exposure in each area. We should also consider the effects of palimpsests on this landscape - the masking effects of multiple occupations over a long period, where differences in artefact type may be a result of cultural changes over time rather than differing uses of contemporary landforms.

Aboriginal artefacts have accumulated in the Activity Area primarily as a result of cultural and/or economic activity. All of the artefacts recorded here have been discarded or lost in areas occupied periodically by Aboriginal people. The nature and function of this occupation cannot be demonstrated solely by the artefacts themselves, but on the basis of ethnographic comparison, it is highly likely that the artefacts related to tool-making, food processing and manufacturing activities undertaken across different parts of the volcanic landscape.

A range of post-depositional impacts have altered the spatial and stratigraphical contexts in which the artefacts were originally deposited. An assessment of site formation processes aims to reconstruct these events and their effects. It is likely that the artefacts now remaining originally comprised a much more extensive artefact distribution which accumulated at varying densities across the volcanic landscape. Longer term settlement is most likely to have been undertaken within reach of dependable freshwater sources, which may have varied throughout the year. Much of the artefact production and discard pattern across the Activity Area, however, may have been carried out at specialised activity sites at a distance from the occupation campsites. These may have included ridges commanding the volcanic plains or areas used for skinning and cutting up meat. The artefacts may have been deposited during a long series of occupations over hundreds or thousands of years, most likely within the later Holocene from about 7,000 BP during which the soil profiles and drainage pattern reached their present form. Soil accretion, flooding and slope wash may have periodically displaced or covered these artefacts. The effects of animal and root disturbance (bioturbation) on the soils of the stabilised volcanic terraces will also have contributed to the general movement of artefacts below the surface. Notwithstanding these effects, the modern soil profiles show that there has been limited recent alluvial soil accretion, and much of the accumulated artefact assemblage may have been present as surface or near surface artefacts at the time of the first European settlement in the Rockbank area in the 1840s.

Historical and recent land uses have probably had the greatest impacts on the cultural heritage of the Activity Area. Initial clearance of the volcanic plains by pastoralists in the1840s and early 1850s probably had limited effects as properties remained without fences in the and shepherds were hired to control flocks. The Activity Area lay in Sections 16, 17 and 25 of the Parish of Derrimut, which had been acquired in the first land sales of the 1850s. Section 25, which covered the higher massif of the Mount Atkinson volcanic plateau, was purchased by John Flinn, John Fox and WJT Clark. Flinn, who held the steep-sided volcanic terrace on Lot 2 between 1854 and 1865, is known to have been involved as a contractor in clearance, drainage and road construction in the area in the 1870s and 1880s. It is thought possible that he supplied bedding rock for road construction using basalt from his property. From the 1860s to the 1880s, properties in the area were being fenced with dry stone walls, using field stone collected during clearance and cultivation of the paddocks. Cultivation is most likely to have been undertaken on the lower lying pastures in the southern part of the Activity Area, though clearance of surface rock was probably also carried out across the rocky terraces of the main volcanic massif to the north. Stewart (1977) has commented that loose exposed rock would have been much more evident in that type of volcanic landform before European clearance.

The effects of clearance and selective cultivation to clear the native grassland would have disturbed cultural heritage deposits across the Activity Area, increasingly from the 1850s to the 1880s. Lithic artefact distributions would have survived, albeit in an increasingly dispersed form, but other types of cultural feature such as hearths and potential middens may have been rapidly destroyed. Along the lower plains, stock disturbance and surface run-off from the exposed soils would have led to further erosion and artefact dispersal. Drainage of the lower plains was undertaken by canalising existing natural drainage lines and ditching along paddock boundaries. Most of this disturbance had probably been completed by the end of the 19th century, though construction and maintenance of vehicle access tracks has continued until recently.

Construction of the overhead transmission lines across the Activity Area in the mid-20th century required clearance of a corridor along this alignment, covering a distance of 1.8 km through the Activity Area. The easement for the overhead transmission lines has been maintained as a vehicle access track. The exposure of large numbers of artefacts along this track reflects the impacts to surface and subsurface cultural heritage on this alignment.

Nature of the cultural heritage

The cultural heritage of the Activity Area consists of surface and subsurface artefacts which have been recorded across each part of the volcanic landscape between 2003 and 2016. Most of the assemblage of 1133 was recorded as surface artefacts (n=901; 80 per cent), while 232 artefacts (20 per cent) were recorded in subsurface contexts. The lithic materials comprise silcrete (n=638; 56 per cent), quartz (n=348; 31 per cent), quartzite (n=129; 11 per cent), basalt (n=10; 1 per cent) and other materials including crystal quartz, Andesite and sandstone (n=9; 1 per cent). The overall proportions of these lithic materials vary markedly across the landscape, however, and these should be compared with the compositions of individual assemblages in each landform (Table 109). As the artefact numbers recorded in each landform are low, the individual per centage are not statistically reliable but the lithic composition shows the variability of the assemblages in the Activity Area.

Table 109 Lithic artefact composition by Aborignal place and component – entire assemblage

Place or component	Totals (100%)	Quartz (31%)	Silcrete (56%)	Quartzite (11%)	Basalt (1%)	Other (1%)
Peppercorn Rise 1 (VAHR 7822-3798)	**16**	10 (63%)	1 (2%)	4 (25%)	-	1(2%) (Andesite)

Place or component	Totals (100%)	Quartz (31%)	Silcrete (56%)	Quartzite (11%)	Basalt (1%)	Other (1%)
Mt Atkinson cone AS 1 component	**88**	23 (26%)	52 (59%)	12 (14%)	1 (1%)	-
Mt Atkinson drainage plain AS 1 component (artefacts recorded in 2016/2017)	**100**	49 (49%)	36 (36%)	12 (12%)	2 (2%)	1(1%) (Greenstone)
Mt Atkinson drainage plain AS 1 component (artefacts recorded along power line easement in 2003)	**583**	32 (5%)	486 (83%)	56 (10%)	3 (0.5%)	6 (10%) (chert and crystal quartz)
Mt Atkinson raised volcanic plateau AS 1 component	**86**	66 (77%)	13 (15%)	5 (6%)	1 (1%)	1 (1%) (sandstone)
Mt Atkinson steep-edged Terrace AS 1 component	**15**	12 (80%)	1 (7%)	2 (13%)	-	-
Mt Atkinson stony rise AS 1 component	**231**	155 (67%)	38 (16%)	37 (16%)	2 (1%)	-
Mt Atkinson LDAD 1 (VAHR7822-4092)	**29**	13 (45%)	12 (41%)	3 (10%)	1 (3%)	-
Totals	**1133**	**348**	**638**	**129**	**10**	**9**

Environmental contrasts

In assessing the variation in landforms across this volcanic landscape, it should also be recognised that the pre-European vegetation of the Activity Area would had much greater diversity than today. The pre-1750 mapping shows that much of the Mount Atkinson formation would have been a mosaic of open Plains Grassland, with kangaroo, wallaby, spear and red-leg grasses and associated herbs and lilies (Department of Environment and Primary Industries, 2013). Likely plant resources available to Aboriginal people in the region included the Common Rice-flower and Slender Sun-orchid. Roots, such as Yam Daisy, seeds and fruits were important staples in the Aboriginal diet, and sources of medicine. Along the courses of creeks and drainage lines on the lower drainage plains in the southern part of the Activity Area, the tussock grassland gave way to stretches of riparian scrub, with River Red-gum and wattle. The marshlands and lower lying swamps included River red-gum, shrubs and groundcovers such as Tangled Lignum and Marsh Club-sedge. Replacement of most of the natural vegetation cover by cultivated grasslands since the mid-19th century, and the cumulative impacts of land clearance, drainage and cultivation have profoundly altered this ancient landscape, creating a much more uniform pastoral farmland. This therefore explains the pattern of artefact distribution on Mt Atkinson stony rise AS 1 component which is comparable to Mt Atkinson cone AS 1 component. The proximity of Mt Atkinson stony rise AS 1 to the drainage channels which would have attracted these resources would have made it a focus for occupation while Mt Atkinson stony rise AS 1 maintained its focus due to its vantage across the wider landscape.

Subsurface cultural heritage

The soils of the Mount Atkinson formation are shallow Ferrosols (iron rich gradational soils) on the upper slopes of the volcanic plateau, with Red Sodosols on the lower drainage plains. Typically, the excavated profiles across the Activity Area comprised a brown (7.5YR 4/2) to dark brown (7.5YR 3/4) clayey silt (A and B horizons) overlying a darker dusky red (2.5YR 2.5/2) firm clay with basalt floaters, reached at depths of 70mm to 250mm (C horizon). The subsurface testing showed deeper gradational soils in the north-west part of the Activity Area, with reddish clay silts which became more clayey with depth. Soils of the lower plains in the southern part of the Activity Area were generally more shallow, with clay reached at depths of 30mm to 80mm, but with deeper pockets around exposed basalt clusters. Clearance and intermittent cultivation has disturbed the upper part of the soil profile.

The cultural heritage of the Activity Area consists chiefly of distributions of surface artefacts which vary in content and frequency across the volcanic landforms, with relatively few locations where subsurface artefacts have been recorded. Subsurface artefacts were recorded in only 20 out of 95 test pits across the Activity Area, and more than half of the subsurface artefacts (143 items) were recorded from Test Pit 6 (Mt Atkinson stony rise AS 1 component). The subsurface testing, however, showed a correlation between artefact frequency and landform, with greater quantities of subsurface artefacts found in test pits along the high plateaus and steep slopes. This broadly agrees with the similar distribution of surface artefacts along the high volcanic terraces and steep slopes. Significantly, however, within the largest and densest concentration of surface artefacts on the lower plain (where a power line easement has exposed ground along the watershed of the stream lines issuing from the base of the volcanic plateau), extensive subsurface testing along and adjacent to the same easement recorded no subsurface artefacts. Thus, in deeper soils along the rocky slopes and plateau margins, subsurface artefacts tend to be found in areas where surface artefacts have been recorded. On the lower plains, however, and along tracks on the higher plateaus, the presence of surface artefacts does not result in corresponding distributions of subsurface artefacts.

The differences in subsurface artefact content between the deeper soils of the rocky plateau margins and the shallower soils of the plains is unlikely to reflect an original deposition pattern and is more likely to be a consequence of differential land use. Artefacts have been preserved along rocky terraces and slopes in shallow subsurface contexts where soils have accumulated to a greater depth and where there has been less disturbance by cultivation and stone removal. The presence of greater numbers of subsurface artefacts in these contexts probably reflects the better circumstances for artefact accumulation and subsequent protection from disturbance, rather than a stratigraphical separation from the surface artefacts recorded elsewhere. This is a particularly important point because it suggests that the distinction between surface and subsurface artefacts is more likely to be a function of historical (post-deposition) land use than a chronological marker. While there may be intact subsurface deposits - notably the assemblage of 132 items of quartz in Test Pit 6 within the Mt Atkinson stony rise AS1 component - these subsurface items need not be stratigraphically distinct from the surrounding surface artefacts. Indeed, there may be surface artefacts that have been deposited earlier than the subsurface material.

8.2 Artefact analysis

All artefacts identified during the CHMP were entered into a catalogue for analysis (Appendix 6). Cataloguing and analysis of these artefacts was conducted by Stephanie Vick, William Truscott and Aaron Dalla-Vecchia, Biosis Pty Ltd and based on stone artefact identification and terminology from Holdaway and Stern (2004).

The descriptions and analyses of the artefact assemblage aim to provide information on the context from which the artefacts were collected, and to draw conclusions regarding aspects of the prehistoric occupation of the region based on the information potential of the artefact assemblage. It is important to note that the analyses presented in this report are by no means an exhaustive treatment. Several lines of analysis refer to

aspects of lithic technology that can be considered as standard reference points in the archaeological study of stone artefacts.

To use cultural material to infer how people were using the landscape of the Activity Area, the surface and subsurface assemblages are generally treated as one unless otherwise stated.

8.2.1 Raw material

The following is a discussion of the raw material types that have been recorded at Mount Atkinson and an interpretation of resource availability and selection.

Silcrete is usually the most dominant form of raw material encountered in the south-eastern Australian archaeological record. It can have variable flaking quality for the manufacture of artefacts, dependent on the texture and composition of the silcrete. Within volcanic landscapes such as that of the Activity Area, it is often formed when sediments are cemented by dissolved silica derived from overlying basalt. Outcrops are often located in the incised river and creek channels of western Melbourne (Webb, 1995). While no silcrete sources are located within or nearby the Activity Area, due to the broader geology and amount of this material being recorded it would be unsurprising if a source was located somewhere in the region.

Quartz, while having highly variable flaking quality, is probably the most readily available material and is typically well-represented in virtually all late Holocene south-eastern Australian archaeological assemblages. Quartz forms in a number of ways, often in volcanic landscapes at a result of crystal formation during volcanic activity, whereby subsequent erosion can leave workable nodules in a variety of contexts.

Quartzite is a metamorphic raw material, formed by silcrete or quartz-rich sandstone that has undergone geological heat and/or pressure (Holdaway & Stern, 2004). Within south-east Australia this material may have been sourced from water-worn cobbles in streams or waterways.

The amount of cortex present on artefacts, and artefact size, can be used to make inferences about whether or not raw materials are sourced locally, or whether they have been imported to the area. Generally, the further away it gets from a stone source the greater a raw material is curated, resulting in a distance decay of size and amount of cortex (Hisckock, 1986).

During this assessment a total of 548 artefacts were recorded in surface and subsurface contexts. The Standard Assessment led to the recording of 328 artefacts, whilst a total of 220 artefacts were collected during the Complex Assessment. Overall, quartz (60 per cent), silcrete (28 per cent) and quartzite (11 per cent) are the predominant raw materials in the assemblage (Figure 95). Small numbers of basalt, sandstone and greenstone were also recorded. Relatively similar amounts of silcrete (45 per cent) and quartz (38 per cent) were identified on the surface (Figure 97), however the majority of the subsurface assemblage consisted of quartz material (Figure 96). 66 per cent of the subsurface artefacts were retrieved from a single location (Test Pit 6), of which 92 per cent were quartz. The raw materials of the remaining subsurface artefacts were relatively evenly split between locations, although a higher proportion of artefacts located near the summit of Mount Atkinson were silcrete (based on artefacts retrieved from Test Pit 27).

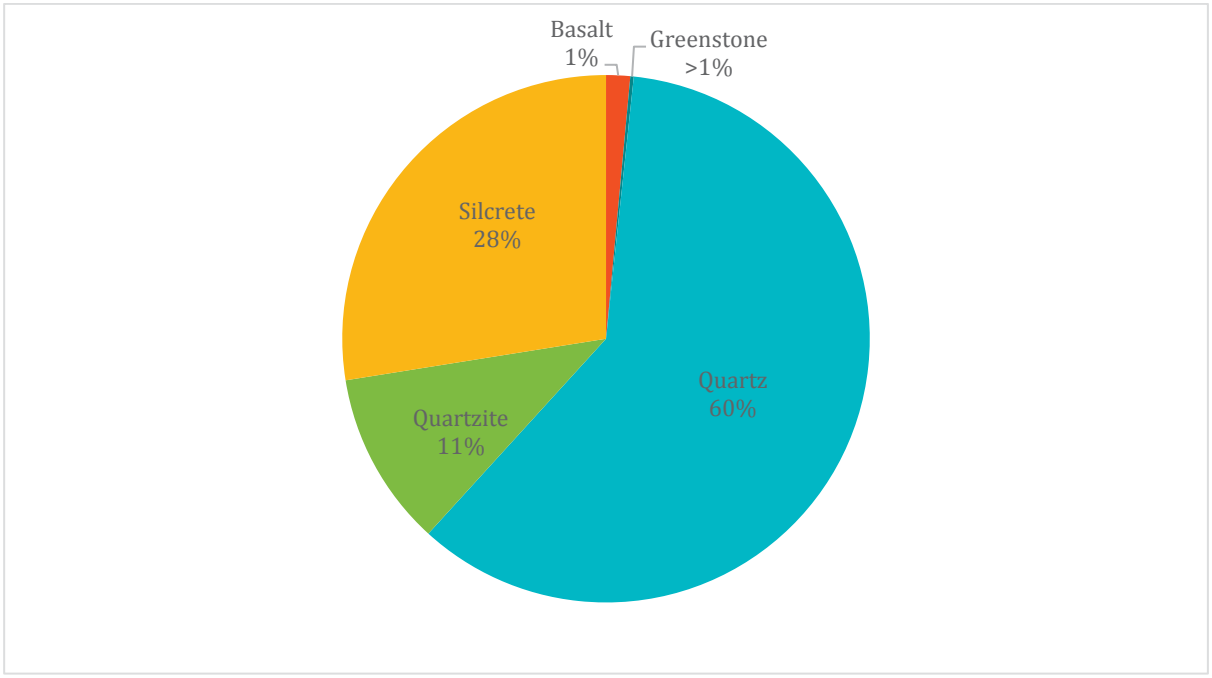


Figure 95 Per centage of raw material represented in surface and subsurface assemblage

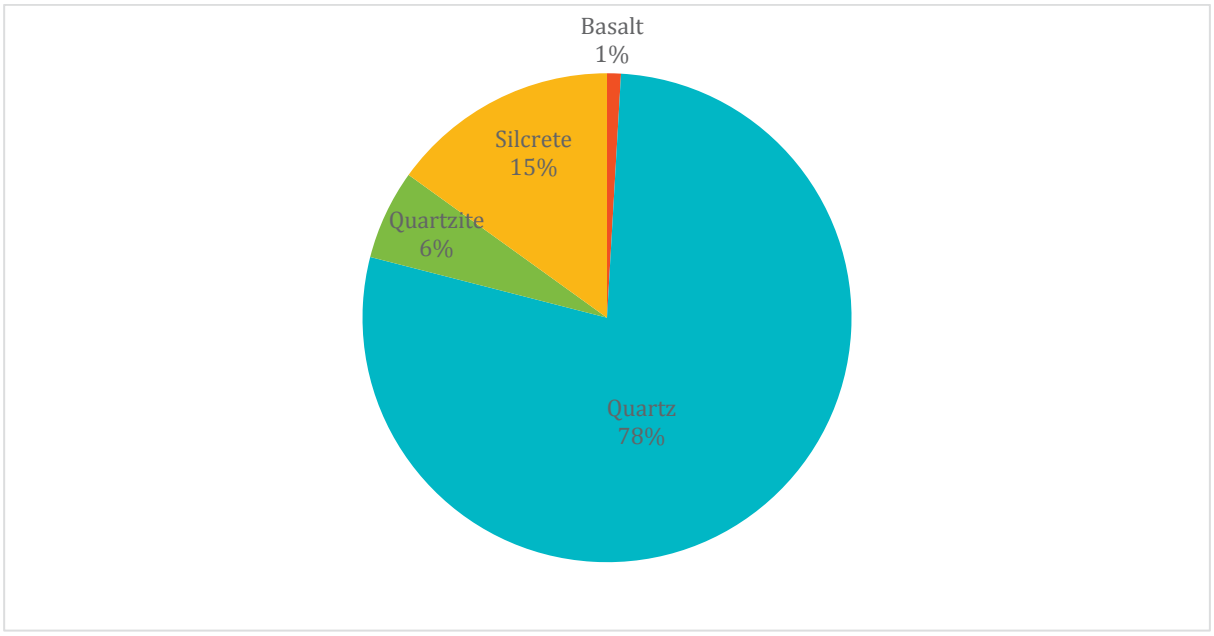


Figure 96 Per centage of raw material represented in the subsurface assemblage

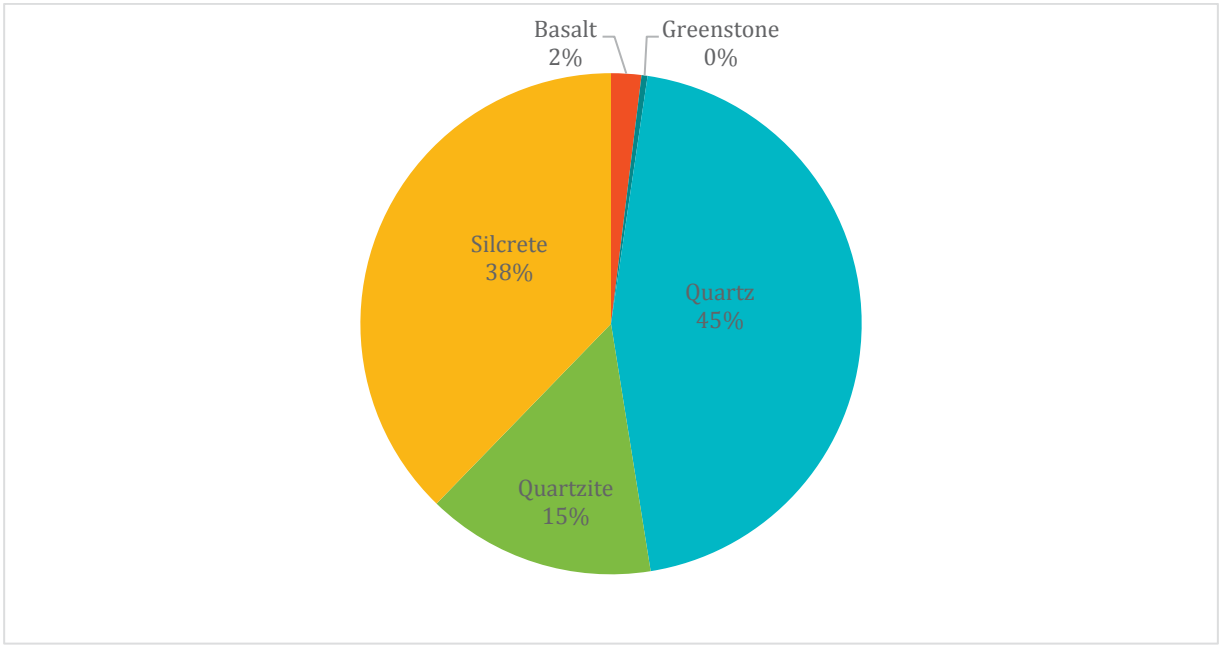


Figure 97 Per centage of raw material represented in the surface assemblage

As the majority of artefact-bearing test pits were relatively shallow (100–200 millimetres), and no artefacts were collected from contexts deeper than 300 millimetres (Figure 99), no assumptions can be made based on geochronology of artefacts and access to raw material. There were no dramatic differences in the proportions of raw materials recorded within surface contexts that were located on higher landforms, (steep slopes and high plateaus), than lower elevation landforms (gentle slopes and plains) (Figure 98). The silcrete recorded in surface and subsurface contexts was generally high quality, fine to microcrystalline material, with few flaws within the stone. Quartz and quartzite artefacts were of varied quality, with some fine material observed as well as lower quality, heavily flawed raw materials.

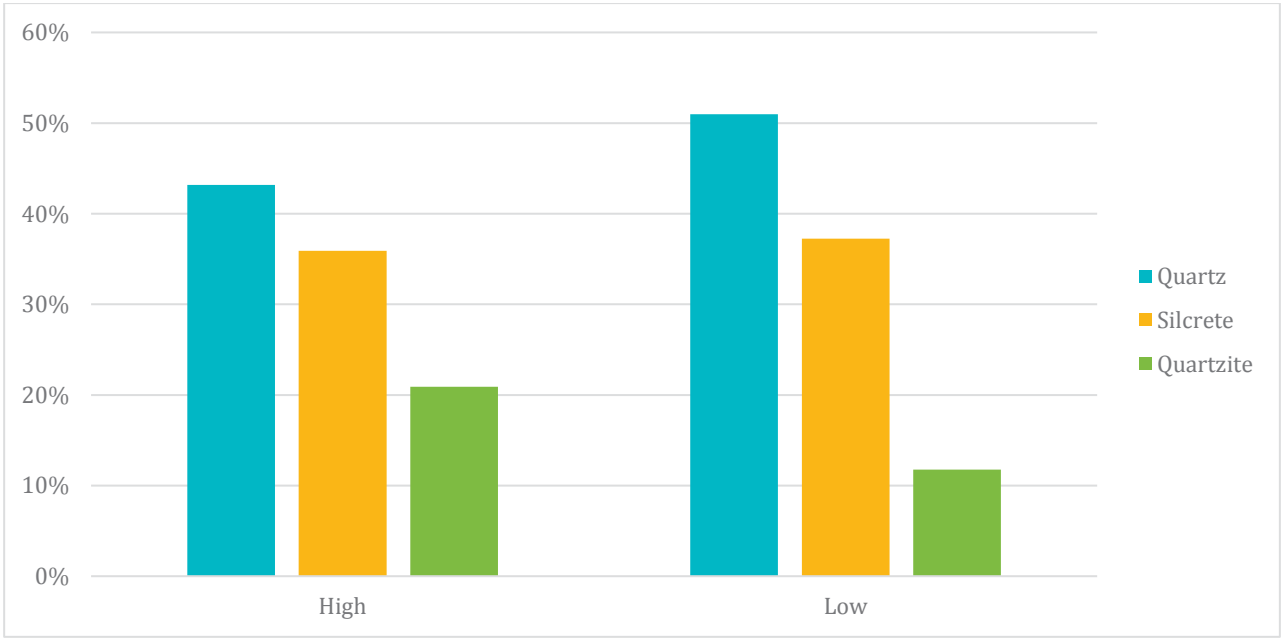


Figure 98 Raw material proportions of surface assemblage within high/low elevation landforms

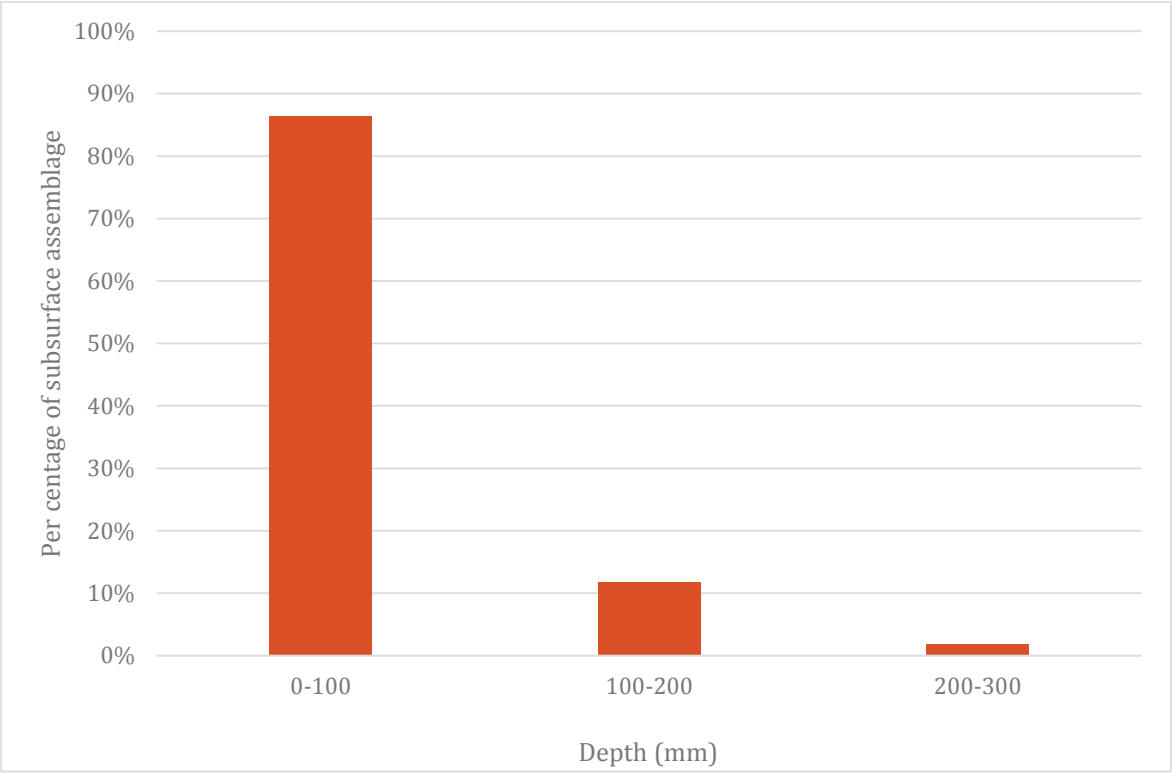


Figure 99 Depths of subsurface artefacts

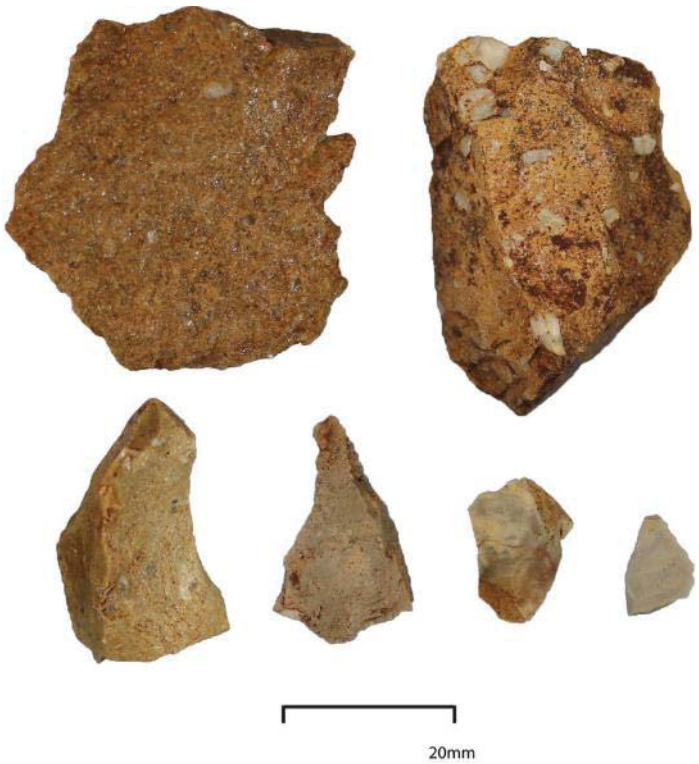


Plate 106 Examples of silcrete artefacts collected within the Activty Area

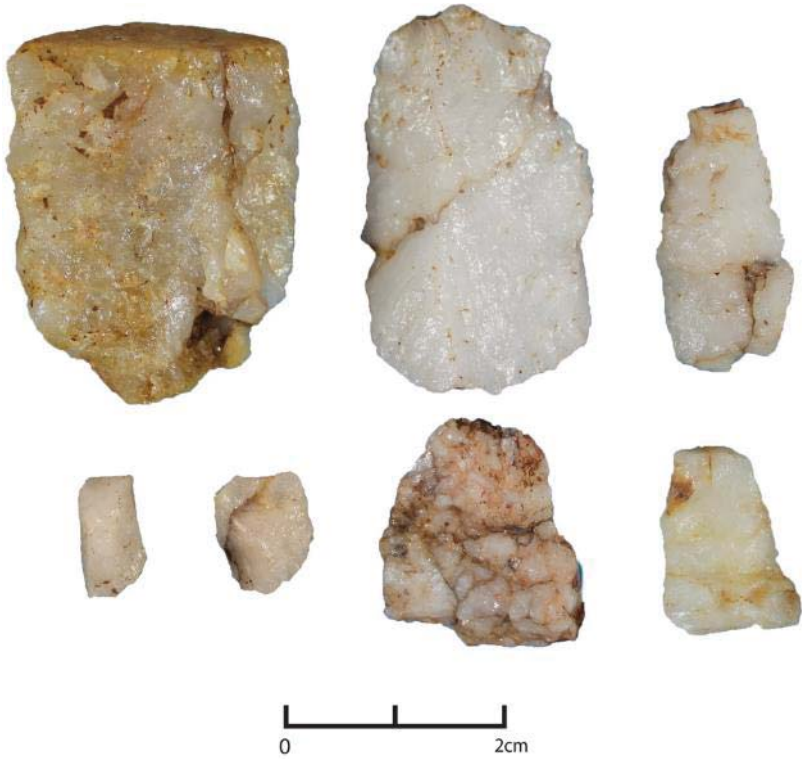


Plate 107 Examples of quartz artefacts collected within the Activty Area

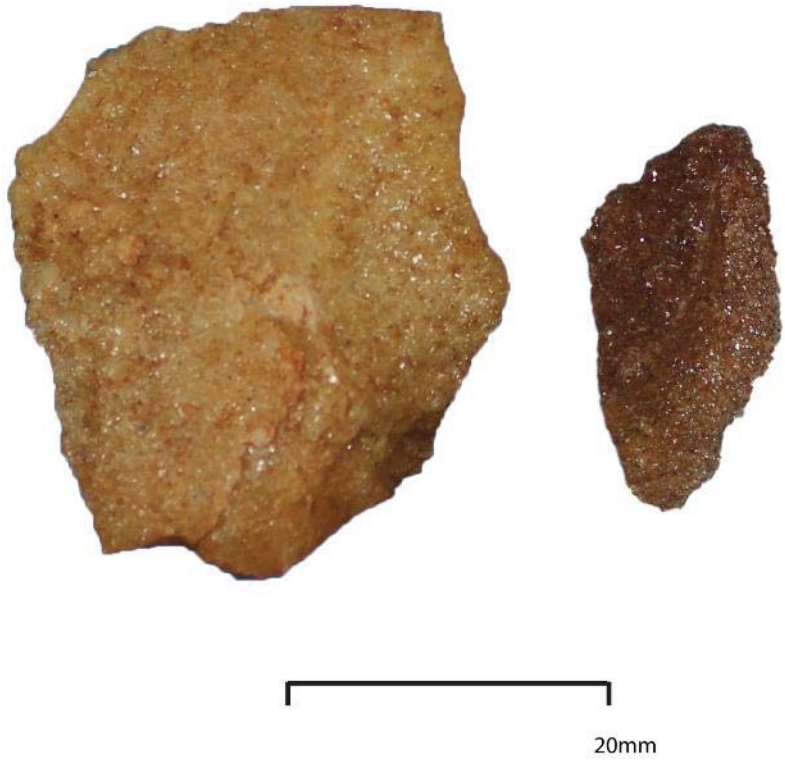


Plate 108 Examples of quartzite artefacts collected within the Activty Area

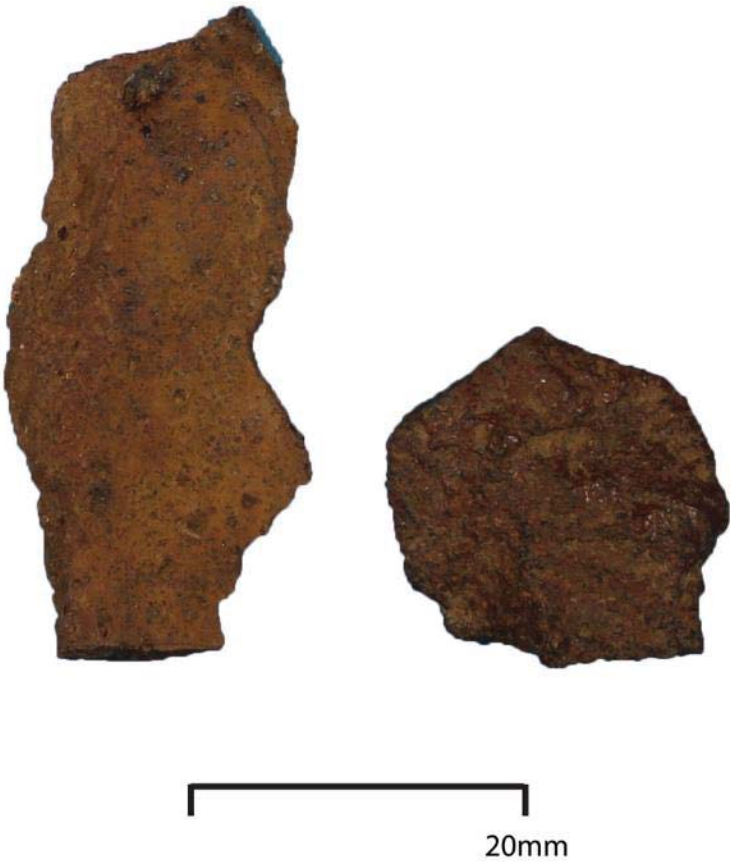


Plate 109 Examples of basalt artefacts collected within the Activity Area

The amounts of cortex present varied. Generally there was a lower proportion of cortex present on silcrete and quartzite, and higher proportions present on quartz artefacts as indicated in Figure 100. In this figure higher proportions of silcrete and quartzite artefacts had undergone total decortation (>80% with no cortex present). This indicates that decortation of silcrete and quartzite was likely being undertaken elsewhere, while quartz may have been sourced nearby. As cortex is of lower quality and not suitable for making tools, it is removed from the core to facilitate access to the more homogenous material within. This process is often recorded as being undertaken at or close to the source, thereby reducing the weight of a nodule. Early reduction at the source minimises the energetic costs involved in transporting raw material (Ericson, 1984).

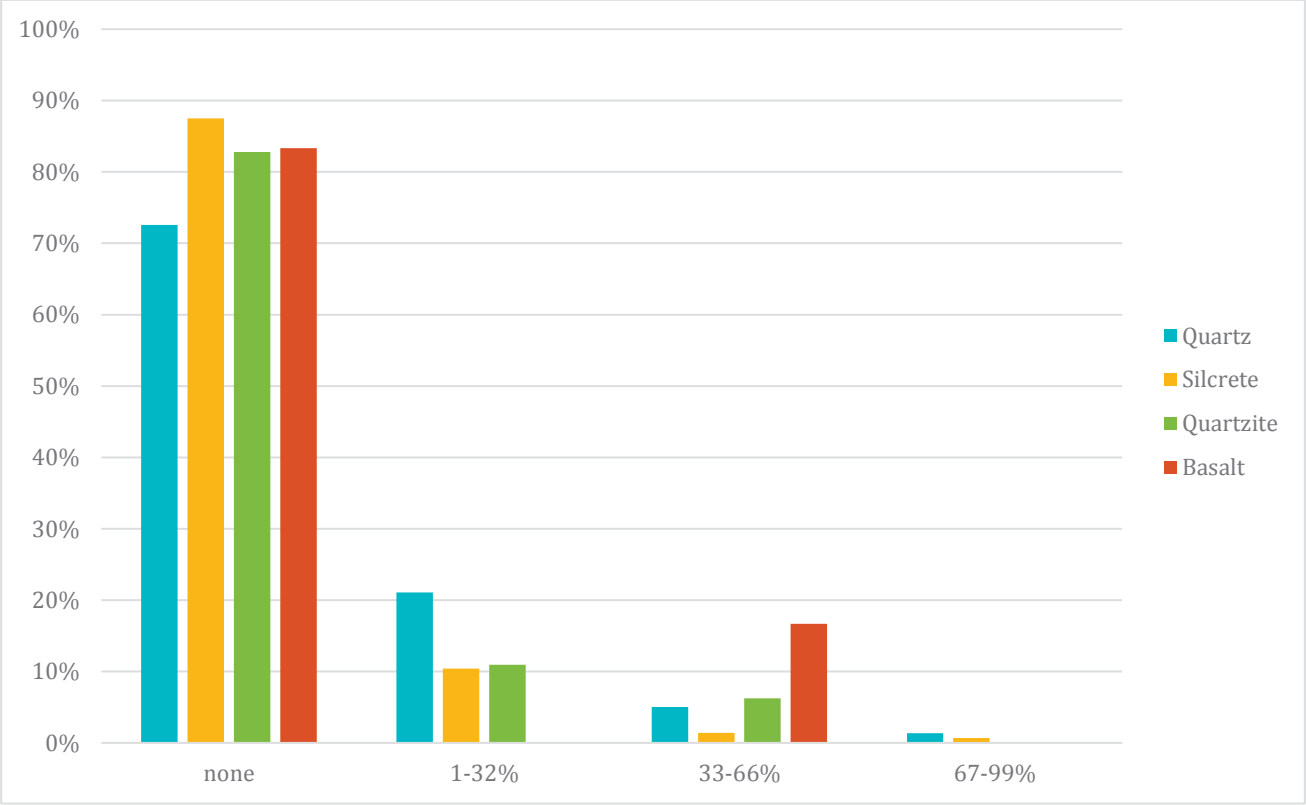


Figure 100 Per centage of cortex represented in the entire assemblage

8.2.2 Typology and function

Flakes, tools and cores are the three most basic classes of stone artefact. They each represent stages in a continuum of artefact manufacture and discard. Cores are nuclear bodies of stone (usually small enough to be portable) from which flakes are chipped (or knapped). Depending on the type and size of core they may produce anything from one or a few flakes or up to several tens of flakes. Flakes are the desired, sharp-edged products of stone knapping, they may be discarded without being used, used without further modification and then discarded, or their edges may be worked further by the stone knapper to form a tool.

Of particular interest in any assemblage are the numbers and types of retouched tools, as these represent the secondary stage in manufacture of implements and are therefore very informative regarding past human activities. Also of particular interest are the number and types of cores present, as these often showing initial preparatory stages of manufacture that can be informative about the technological strategies employed to make stone tools. Cores can also be very informative about the relative abundance of various raw materials.

The exploitation of stone as a resource involves a reductive technology, in that each stage (e.g. the striking of a flake from a core) results in a reduction of the mass of the object being knapped. This can generally be considered a continuum of reduction, along which manufacturing stages can be identified. In this assessment only two stages of manufacture are identified and defined — primary and secondary. Primary manufacture refers to the initial production of flakes, while secondary manufacture refers to the process of modifying flakes into tools.

As typical of flaking debris, angular fragments, flakes and broken flakes dominate the assemblage (Figure 101). The composition of the assemblage displays evidence of manufacturing on-site with complete flakes (N=213), broken flakes (N=221), cores (N=24) and angular fragments (N=57) consisting of the most (99 per cent) of the assemblage. As demonstrated in Figure 102, most of the angular fragments are quartz, which is unsurprising due to the unpredictable nature of flaking this raw material. Most blades (complete and broken)

recorded were silcrete implying that this material was preferable for the manufacture of this flake form (Figure 102).

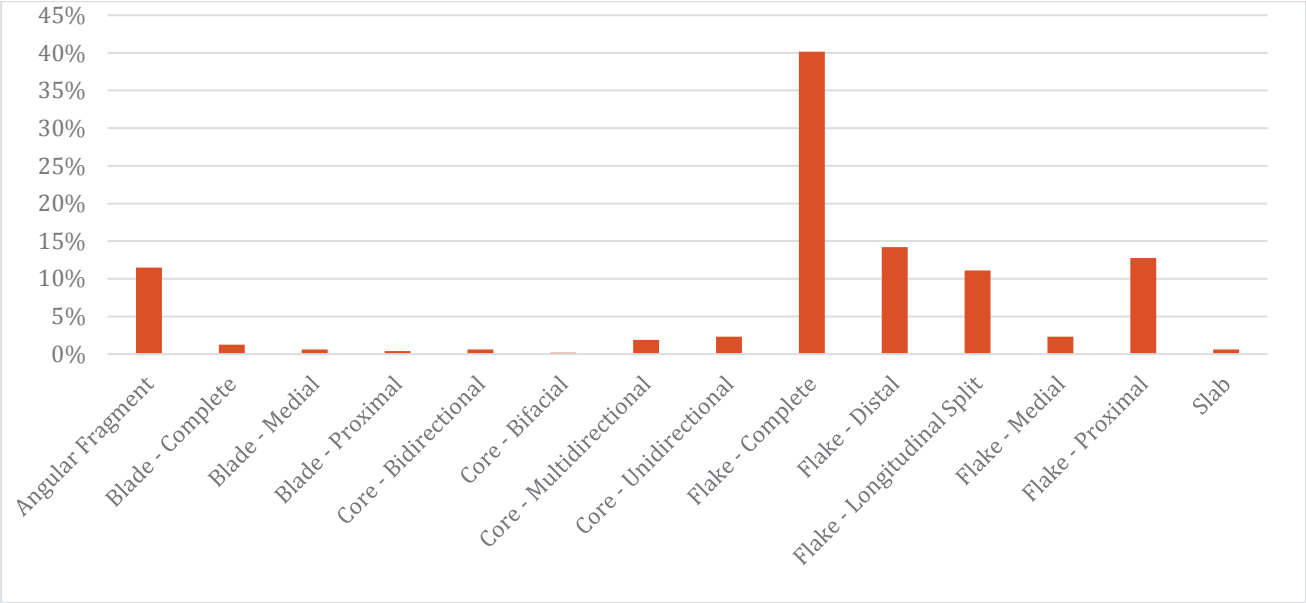


Figure 101 Primary form of the entire assemblage

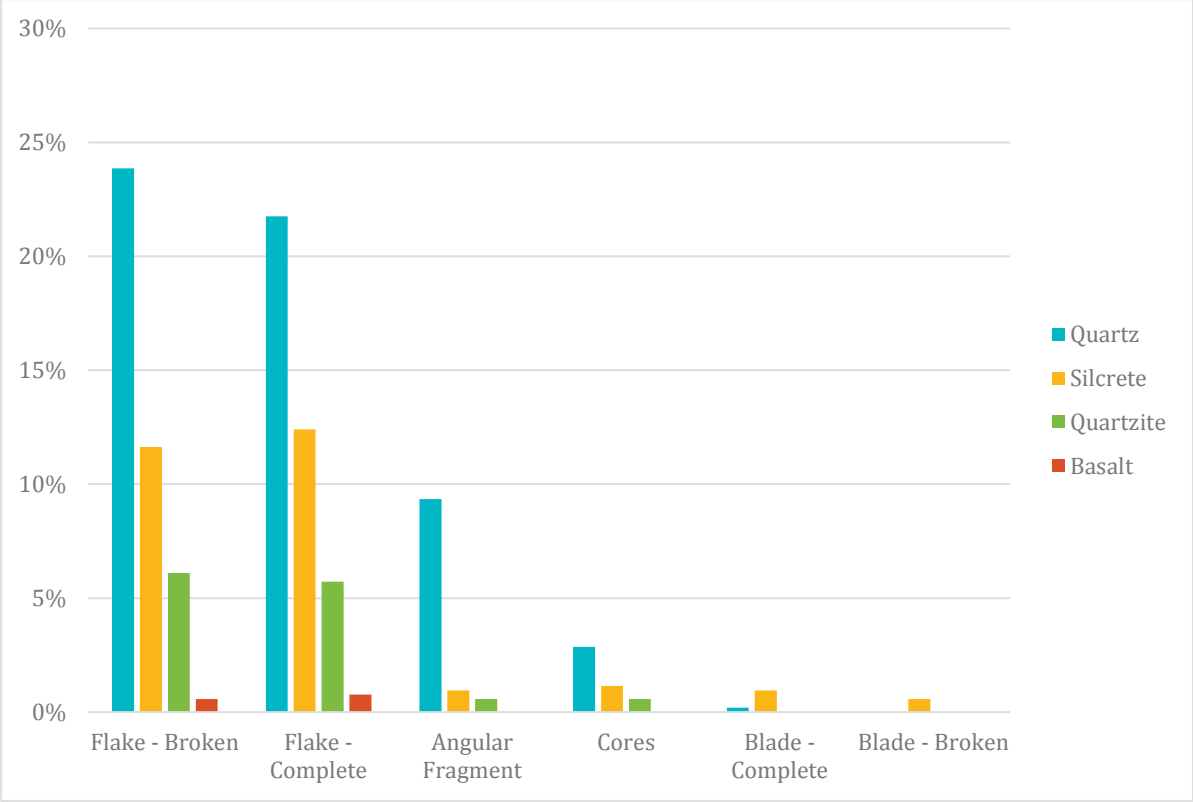


Figure 102 Per centage primary form based on raw material

There are a number of cores present, with the highest proportions being unidirectional (particularly quartz) and multidirectional (particularly silcrete) cores. The rotation of multidirectional cores can indicate intense utilisation of raw materials, either due to lack of nearby sources or preference for a type of raw material.

Unidirectional cores can be attributed to an abundance of raw materials, the testing of a nodule to determine the quality of material, or lower preference for a raw material type. Bifacial and bidirectional cores were also present. These cores are often associated with bipolar flaking techniques used in the removal of quartz. Quartz cores tended to have fewer flakes removed than quartzite and silcrete cores. This higher rate of flake removal from silcrete and quartzite cores was accompanied by smaller negative flake scars, again suggesting higher intensity use of these raw materials. Some cores were worked to exhaustion further supporting higher intensity of use (Figure 103).

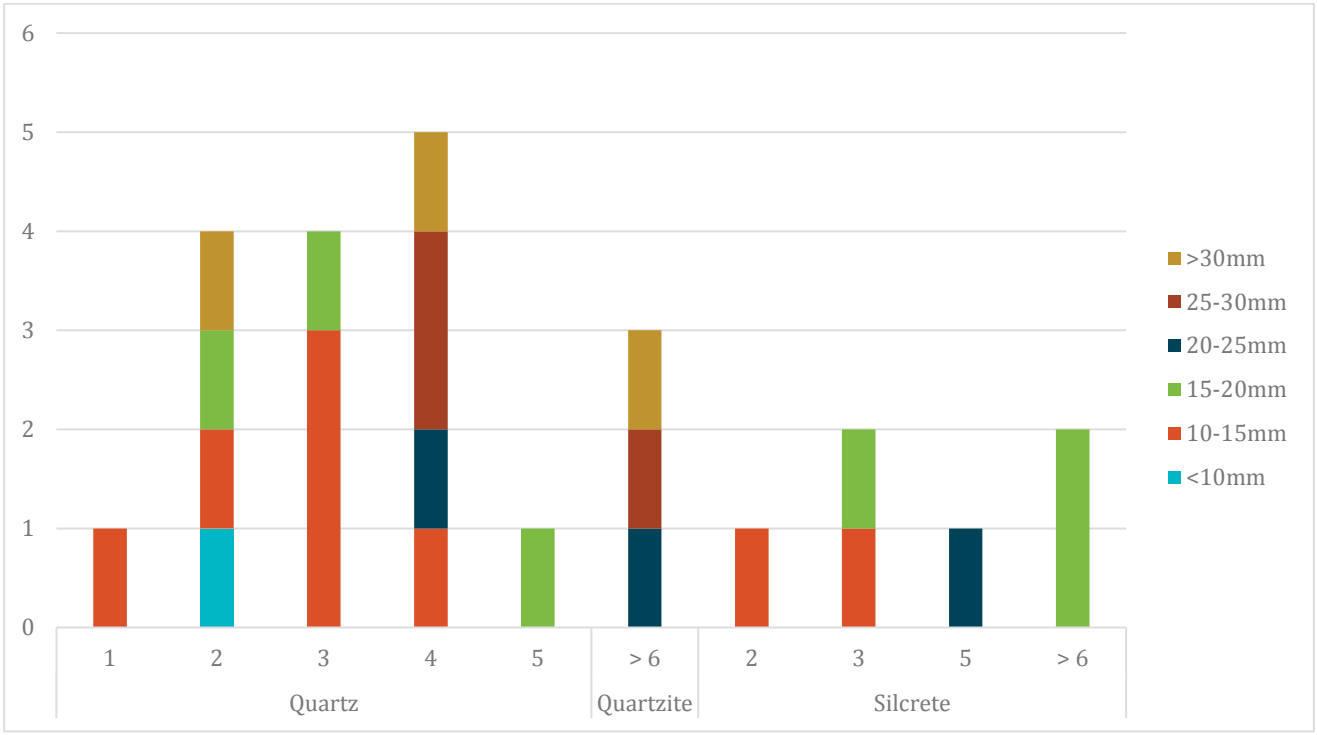


Figure 103 Graph showing number of scars on each core and the count of longest scar length

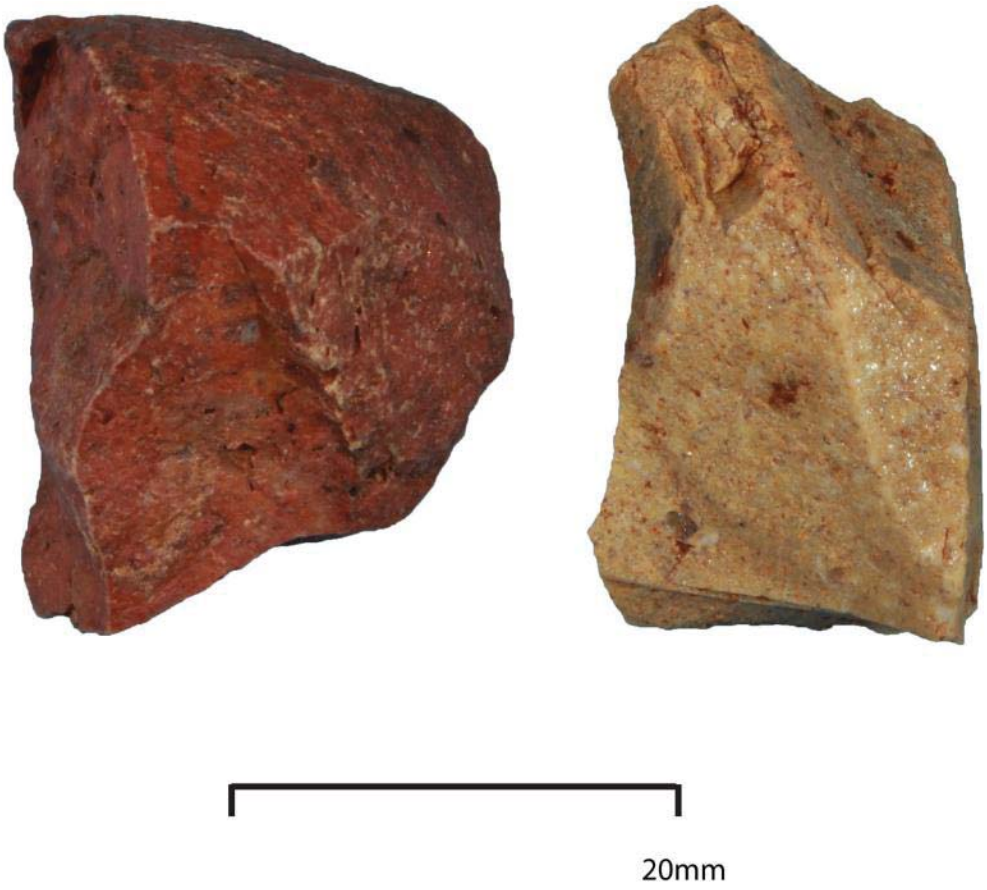


Plate 110 Examples of cores recorded within the Activty Area

Blades and broken blades make up a very small proportion of the assemblage. As mentioned above, these forms were usually manufactured from silcrete. These artefact types are often attributed to the small-tool tradition of Holocene south eastern Australia, and were often tool blanks for implements such as geometric microliths and burins.

The size range of material present is narrow, with 88 per cent of artefacts measuring between 5 and 30 millimetres in maximum dimension (Figure 104). Post-depositional processes and disturbances can cause size sorting of material. Small material (<10 millimetre in maximum dimension) is also underrepresented, further suggesting disturbance — though this could partially be attributed to use of a 5 mm sieve. Small material tends to be transported further over a shorter period of time by processes such as water erosion or bioturbation. Sediment erosion that generally follows the removal of basalt, as well as other impact through grazing and cropping are likely processes to have impacted the overall size range within the Activity Area in the past. These processes often washed micro-debitage from their original place of deposition.

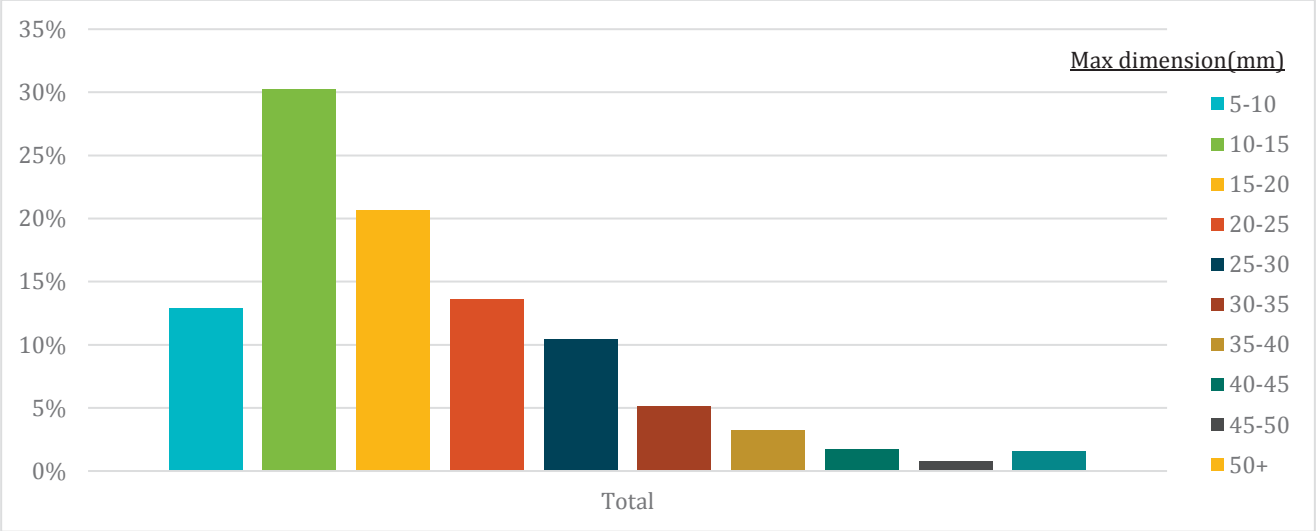


Figure 104 Size range of surface and subsurface artefacts based on maximum dimension

Only 9 per cent of the assemblage displayed signs of retouching or edge damage (Figure 105). Of these artefacts displaying retouch, only 20 (just under half) were formal tools. The majority of these artefacts displayed backing. Backing is a form of retouch where an edge is intentionally blunted and is thought to facilitate hafting (Holdaway & Stern, 2004). These tool types are definitive of the Australian Small Tool Tradition, which typifies mid- to late-Holocene assemblages in Victoria. Other tool types recorded include amorphous, round-edged, and thumbnail scrapers, as well as three notched implements. These scrapers and notched implements have generally been thought to have been utilised in woodworking activities (Holdaway & Stern, 2004).

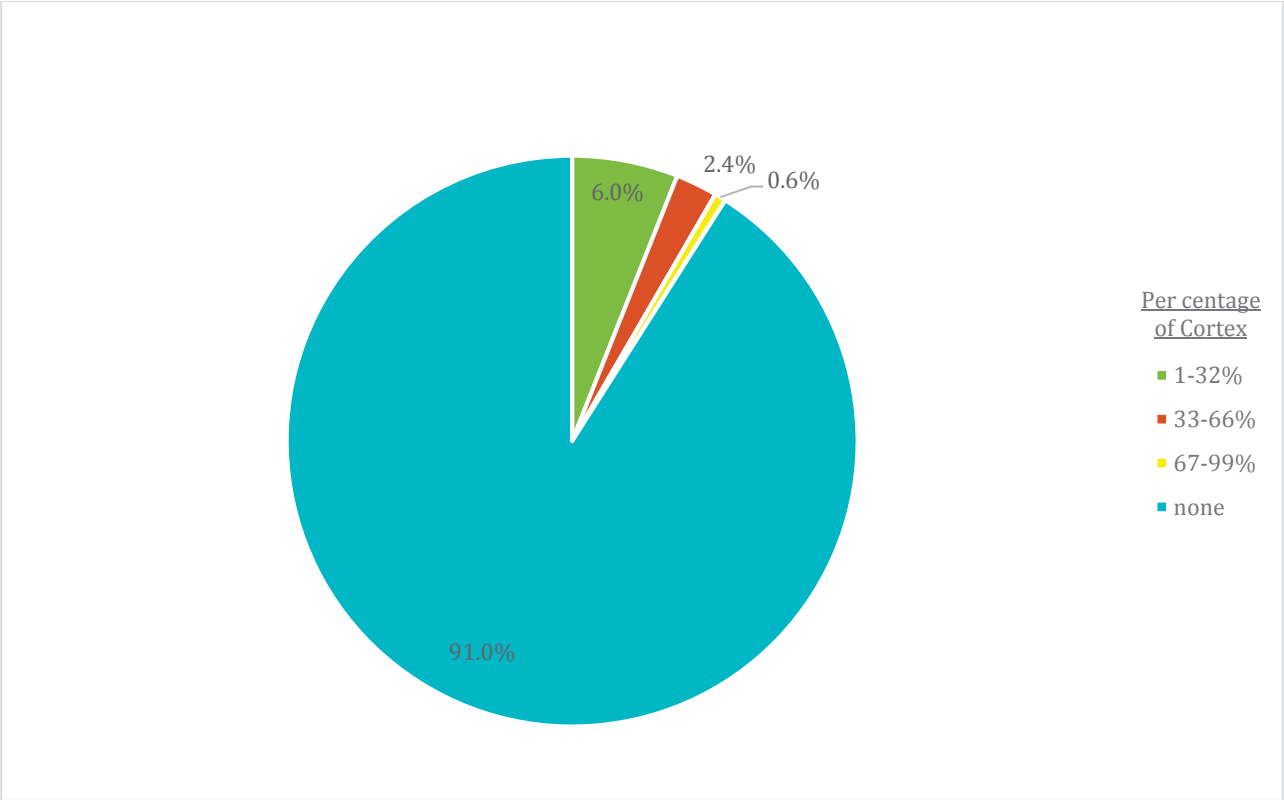


Figure 105 Artefacts displaying retouch/usewear within the surface and subsurface assemblages

Plate 111 Examples of backed implements recorded within the Activity Area

Plate 112 Three sides of a quartzite unidirectional core

8.2.3 Discussion

The cultural heritage material recorded within the Activity Area generally consisted of flaked stone artefacts within either surface or shallow subsurface contexts. Due to the nature of the geology and geomorphology, this is unsurprising as most of the Activity Area consists of shallow soils that overlay basalt or clay that are prone to slope wash. Agricultural practices likely deflated these thin soils further, meaning that temporal links between artefacts in the one location are tenuous as these places are likely time-averaged agglomerations.

The majority of the assemblage consists of silcrete, quartz and quartzite raw materials. With the possible exception of quartz, these raw materials do not naturally occur within the Activity Area and all three were

likely brought in from elsewhere. Basaltic silcrete outcrops generally occur in the north and west of Melbourne within heavily incised river and creek channels, therefore Kororoit Creek and the nearby Werribee River are nearby prime candidates. Other studies within the region (Cummins, Nicolson, Kaskadanis, & Alberto, 2014; Burrows & Foley, 2015) indicate that silcrete nodules likely underwent heavy decortation and procurement at the source, which fits with how silcrete was utilised within the Activity Area. As pointed out in Section 8.2.1, quartzite is often available in nodules within creek channels. Regionally quartzite has been the third most abundant resource, which likely reflects the availability (less than silcrete and quartz), and characteristics for making flaked stone tools (better than quartz, generally poorer than silcrete).

There are differences between the surface and subsurface assemblages located within the Activity Area. However, as discussed previously, these are largely due to the high proportion of subsurface artefacts from a single test pit. Otherwise, the proportions of raw materials, primary form, and maximum dimension were comparable between the two assemblages. The main differential determined was the landform where material was located, as the majority of subsurface material was collected on the higher elevation landforms (steep slopes, high plateaus, and some moderate slopes). In comparison, surface material was disproportionately present on both higher and lower landforms, particularly within linear expanses of surface exposure such as vehicle tracks. While the activities and occupations of the higher elevation landforms contain significant subsurface components, those that occurred within lower elevations have proven difficult to capture in a subsurface context. Within this assessment, activities and occupations in lower elevations have been expressed generally within surface assemblages. This finding conforms to other lower elevation assessments in plains landforms that have been further away from watercourses where, if archaeological material has been present, it has been located largely within surface exposures (Cummins, Verduci, & Burch, 2015; Lawler, Robb, & Vick, 2016; Wisniowiecka & Schell, 2016). This is likely due to the typically shallow nature of soils within this geomorphological unit, as well as a century of ploughing that has not only removed basalt nodules, but also would have deflated already shallow soils and dispersed archaeological material.

There were similarities and differences between the archaeological material collected during this assessment and other assessments within the Activity Area, such as Thomson (2003), Thomson et. al (2013), and Thomson and James-Lee (2014). The assemblage from Thomson's assessment (2003) has a large component of silcrete (83 per cent), with smaller quantities of quartzite (10 per cent) and quartz (6 per cent). As expected with a silcrete dominated assemblage (where flaking qualities are predictable), over 50 per cent of the primary forms recorded were complete flakes, and most cores recorded were multidirectional, as knappers attempted to utilise as much of the raw material as possible. Similar tool types were present to the assemblage from the current assessment, with a range of scrapers (amorphous, round-edged, steep-edged and thumbnail) present, and the majority of formal tools being geometric microliths. These artefacts were collected from vehicle tracks on a combination of high and low elevation locations. The other assessments contained low numbers of artefacts, which are statistically insignificant when compared to this assessment and Thomson (2003).

A total of 87 artefacts was r ecorded on the cone of Mount Atkinson in surface (70 per cent) and subsurface contexts (30 per cent). These lithics were largely silcrete (59 per cent), with smaller proportions of quartz (26 per cent), quartzite (14 per cent) and basalt (1 per cent). Complete flakes (41 per cent) and broken flakes (52 per cent) made up the bulk of the artefacts in this location, with blades (broken and complete) and angular fragments making up the remainder. No cores were recorded, however a high proportion of retouched flakes were located in this location. These consisted of geometric microliths and scrapers. Located on steep slopes landform adjacent to Mt Atkinson AS 5 (VAHR 7822-1546), this place benefits from being a vantage point, with vistas overlooking the broader Kororoit Creek basin to the north, around to the east toward Melbourne, down toward the bay, and Werribee in the south. Much of the basalt is in situ at this location, meaning deposits are not only deeper, but this portion of this area are less susceptible to erosion.

Similarly, the stony rise located to the east of the summit of Mount Atkinson nearby Hopkins Road is relatively intact and has sustained less erosion. Also located on steep slopes landform, this stony rise is likely a tumulus formation that is a product of the final, viscous eruptions of Mount Atkinson. This landform, that contains Mt Atkinson IA 3 (VAHR 7822-1536), is also a prominent vantage point that looks over the headwaters of Skeleton Creek to the south. A total of 232 artefacts were recorded at this location, in both surface (38 per cent) and subsurface (62 per cent) contexts. Quartz (67 per cent) was the dominant raw material (largely being retrieved from the test pit), with smaller proportions of quartzite (16 per cent), silcrete (16 per cent), and basalt (1 per cent). Due to the large amounts of quartz, a large proportion of primary forms recorded were angular fragments. Small numbers of tools were recorded including two geometric microliths, a bondi point, a notched tool and a thumbnail scraper.

The steep-edged terrace near Mt Atkinson AS 1 (VAHR 7822-1542), that partially forms the southern edge of the ridge that extends east of Mount Atkinson contained a total of 15 artefacts. This place also has a prominent vantage point overlooking the plains to the south. Surface and subsurface artefacts in this location were dominated by quartz (80 per cent), with lower proportions of silcrete (7 per cent) and quartzite (13 per cent). The prominence and increased quality of quartz in the area (including the stony rise described above) suggests a possible source of better quality quartz nearby. No tools were recorded at this location.

The raised volcanic plateau that forms the ridge to the east of Mount Atkinson, and immediately north of the stony rise and steep-edged terrace. Within this larger area a total of 86 artefacts were recorded on a combination of steep slopes, high plateau landforms, and moderate slopes that form the high, broad ridgeline. A number of places were previously recorded on this landform, including Mt Atkinson IA 1 (VAHR 7822-1534), Mt Atkinson IA 4 (VAHR 7822-1537). Mt Atkinson IA 5 (VAHR 7822-1538), Mt Atkinson IA 6 (VAHR 7822-1539), Mt Atkinson IA 7 (VAHR 7822-1540), and Mt Atkinson IA 8 (VAHR 7822-1541). Surface (72 per cent) and subsurface (28 per cent) artefacts were also largely quartz (77 per cent), with smaller proportions of silcrete (15 per cent) and quartzite (6 per cent) and greenstone and sandstone slabs also recorded. Two geometric microliths were recorded on this landform. Within these raised landforms the assemblages are largely surface with a smaller, though significant, subsurface assemblage that is usually dominated by quartz. These places contain tools such as geometric microliths and scrapers that are characteristic of the small tool tradition of Holocene south-east Australia.

In contrast, the 100 artefacts recorded on drainage plain located to the south of Mount Atkinson in moderate and gentle slope landforms were largely surface (97 per cent), and the raw materials utilised were evenly spread. Most of these surface artefacts were recorded nearby Mt Atkinson AS 3 (VAHR 7822-1544). Quartz (49 per cent), silcrete (36 per cent), quartzite (12 per cent) again were the dominant raw materials with basalt and greenstone also present. Tool types such as backed implements and thumbnail scrapers are present, inferring that this assemblage also relates to the small-tool tradition. The location of these artefacts on the gentle, lower slopes within the headwaters of Skeleton Creek that seasonally contained swamps and soaks that could be utilised.

The remaining artefacts that were isolated, or recorded in landforms unrelated to those mentioned above, are components of a low-density artefact distribution (VAHR 7822-4092). They are located in a variety of contexts and likely represent a variety of lower intensity utilisation of the landscape, away from prominent vantage points, or where resources were seasonally available.

The archaeological material located in the Activity Area during this assessment demonstrates that the higher elevation areas contain more material that is especially concentrated on prominent vantage points, such as the summit of Mount Atkinson. Other locations are the stony rise and steep-edged terrace located on the southern edge of the broad ridge extending the east of the summit. These locations contain generally higher numbers of artefacts compared to other locations within the Activity Area. However, regionally these places are small to moderate when compared to site complexes adjacent to Kororoit Creek (Cummins, Nicolson,

Kaskadanis, & Alberto, 2014; Burrows & Foley, 2015). The tool types present are relatively uniform across the Activity Area, with backed implements associated with the small tool tradition recorded in a number of locations.

8.3 Research questions

Note the research questions were developed in the Desktop Assessment and the results of the Standard and Complex Assessments cannot fully address them. Discussion here is based on the results of the current CHMP only which is limited by the nature of the investigation. The questions can also be utilised to frame future investigations contributing to the wider pool of knowledge of Aboriginal peoples' use of the landscape.

8.3.1 Does Aboriginal place patterning reflect landforms?

The cultural heritage in the Activity Area relates to the Holocene occupation of Mount Atkinson and the surrounding plains that would have incorporated watersheds of Kororoit Creek, Dry Creek and Skeleton Creek. Due to the nature of the archaeological deposits, previous land use, and landforms within the Activity Area, it is likely that much of the archaeology recorded in the current CHMP is located in deflated contexts. Erosion combined with the thin soils that would likely contain Aboriginal cultural material are unable to give further understanding as to how people utilised this place at different times in the past. Given the presence of backed implements within the assemblage, it is reasonable to assume that people were present from the Holocene when overall rainfall increased leading to further surface water and seasonal soaks and swamps that resources could be procured further away from permanent water sources. The poorly draining volcanic plains landscapes located to the south of Mount Atkinson are candidates for such locations. Vantage points such as the summit of Mount Atkinson and the stony rises overlooking plains to the south contain deeper sediments; however, these sediments do not shed any further light on the geochronology of the Aboriginal places due to the basalt dominated and highly erosive nature of the soils.

8.3.2 Can stages of stone tool manufacture be identified and are these associated with specific activity patterns?

Stages of tool manufacture can be identified in a broad sense. Much of the material is not intensively worked. Early stone reduction stages can be identified by the removal of cortex and the presence of large flakes. Higher quality material displays secondary stages of reduction, with the production of backed implements being undertaken. Traditionally, backed implements have been associated with scraping skins, working wood, cutting meat of fibre and being hafted for use on spears. To confirm any of these activities, scientific testing is required. This testing is beyond the scope of the current assessment.

8.3.3 Can the Aboriginal places identified on different landforms be associated with specific activity patterns?

Artefact patterning shows activities being undertaken across the landscape; however, intensity of activity patterns varies spatially. Areas such as the summit or cone of Mount Atkinson and the stony rise and steep-edged terrace were likely regularly visited places. Based on the assessment at Rockbank, Cummins et al (2014) proposed that Aboriginal people occupied a series of semi-permanent camps where permanent water was present, such as Kororoit Creek, from which smaller groups would head out into the landscape to procure resources. These prominent points could have been secondary locations utilised by people travelling throughout the broader region. Archaeological remains within wider plains and high plateau likely are a consequence of procurement of resources and hence artefacts occur in lower concentrations.

The disturbance noted in the Standard Assessment from land use practices, such as grazing and ploughing, that have led to the removal of basalt in areas to the south of the summit make it difficult to identify discrete sections of the Activity Area that may have been utilised for a specific activity.

8.3.4 Were the lithic materials sourced locally?

Sourcing of raw materials in Victoria is problematic. While sources may be known for materials with a unique appearance, many of the materials are ubiquitous across large areas of the state, making it difficult to attribute them to an individual source without scientific testing. This testing was beyond the scope of the current assessment. Materials such as silcrete may differ significantly within a single source and many sources that existed in the past may have been destroyed or simply may not be well-known. Based on the assessments in Rockbank, silcrete was likely sourced somewhere nearby Kororoit Creek (Cummins, Verduci, & Burch, 2015; Burrows & Foley, 2015) and although no silcrete was outcropping within the Activity Area, the heavy utilisation of this raw material suggests a source nearby. Quartz could have been easily obtainable and the material recorded within the Activity Area suggests it was readily available and disposable.

The low intensity of reduction on most materials suggests that material in the assemblage has not moved far from the source. Low levels of core reduction, platform preparation and retouch all support the argument that material was easily accessible and abundant in the area. Silcrete, generally of higher quality, displays greater intensity of reduction, suggesting that this material is less abundant or sourced from further away.

8.4 Traditional Owner information about Aboriginal cultural heritage

Traditional Owner representatives who participated in the fieldwork did not provide any specific information about the Aboriginal cultural heritage. All of the representatives were given an opportunity to visit Mount Atkinson and the stony rise adjacent to the drainage channel where a large number of surface artefacts were recorded. It was agreed that Mount Atkinson would have been an important landscape feature to Aboriginal people.

Thomson's (2003, p. 41) assessment of the Activity Area noted:

> [Aboriginal places] are evidence of past Aboriginal occupation and the use of the area, and are a main source of information about the Aboriginal past... Recorded (and unrecorded) pre-contact sites also have cultural significance because they are rare or, at least, uncommon site-types. In particular, many sites in the greater Melbourne area have been destroyed by land clearance and land use practices in the historic period.

8.5 Results of the assessment of Aboriginal cultural heritage

A gazetteer of all Aboriginal places identified in this CHMP can be found in Appendix 4. Significance assessments are based on archaeological significance described in Appendix 5.

8.5.1 Mt Atkinson Landscape (VAHR 7822-4109)

Mt Atkinson Landscape (VAHR 7822-4109) is a multi-component Aboriginal place. Below is a summary of the place and each of its 5 components.

Extent

Mt Atkinson Landscape (VAHR 7822-4109) is an extensive surface and subsurface artefact distribution extending from Mount Atkinson's cone in the west, across the raised volcanic plateau, including terraces and stony rises in the east, before extending to the south where it incorporates the upper margins of drainage in to Skeleton Creek (Map 11). Cadastral information is included in Table 110.

Table 110 Mt Atkinson Landscape (VAHR 7822-4109)

Address	235 Greigs Road, Truganina
Lot/Plan	Lot 1 TP 747009
Local Government Authority	Melton City Council

Nature

Mt Atkinson Landscape (VAHR 7822-4109) is a surface and subsurface artefact scatter located on the Volcanic Plains (Plate 113 and Map 23). It is a multi-component Aboriginal place representing occupation associated with nearby resources and the probable use of Mount Atkinson as an important landscape feature. The place has been disturbed by historical land use practices including pastoral and agricultural activities.

Plate 113 Mt Atkinson Landscape (VAHR 7822-4109) (facing south-east)

Significance

Mt Atkinson Landscape (VAHR 7822-4109) contains a large number but limited range of cultural materials and is in fair to good condition. It is assessed as moderate scientific significance.

8.5.2 Mt Atkinson cone AS 1 component (VAHR 7822-4109-2)

Extent

Mt Atkinson cone AS 1 component (VAHR 7822-4109-2) is an artefact scatter restricted to the volcanic cone of Mount Atkinson. Cadastral information is included in Table 111.

Table 111 Mt Atkinson cone AS 1 component (VAHR 7822-4109-2)

Address	235 Greigs Road, Truganina

Lot/Plan	Lot 1 TP 747009
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E296047 N5818665
Size ha	28.95 (extends outside Activity Area)

The place component covers the volcanic cone and its steep-sided slopes, from 140 metres to 116 metres AHD. The extent is defined by LiDAR contour data and the lava flows recorded in the Desktop Assessment (Map 12). The place component has been defined by landform and by the distribution of artefacts recorded between 1989 and 2016.

The place component incorporates five places recorded by du Cros (1989) and Thomson (2003):

- Mt Atkinson (VAHR 7822-0206)
- Mt Atkinson IA 2 (VAHR 7822-1535)
- Mt Atkinson IA 6 (VAHR 7822-1539)
- Mt Atkinson AS 5 (VAHR 7822-1546)
- Mt Atkinson AS 6 (VAHR 7822-1547)

The boundary of the place component also includes artefacts that have been separately recorded as part of a background low density artefact distribution Mount Atkinson PSP LDAD (VAHR 7822-0382), which has not been amalgamated into this place component.

Nature

The place component was originally recorded by Hilary du Cros (1989) as Mt Atkinson (VAHR 7822-0206). It was recorded in the 1989 survey as an extensive distribution of silcrete, quartzite and quartz covering an area of 500 x 300 metres, across the summit of Mount Atkinson.

The place component covers the volcanic cone and its steep-sided slopes, from 140 metres to 116 metres AHD. Almost all of the recently recorded material has been found on the gentler, stepped slope on the north-east side of the cone, on slight terraces at 125 to 126 metres AHD and 129 to 130 metres AHD (Plate 114). Subsurface testing and survey have been restricted to the east side of the volcanic cone, which is divided by the boundary of the Activity Area.

Test Pit 27 produced 26 artefacts , which contributed to the relatively high proportion of subsurface material (n=29: 33 per cent of assemblage). The assemblage of the recently recorded material shows a preponderance of silcrete and a relatively small proportion of quartz, in contrast to the proportions recorded on the adjacent plateau and plains. The recently recorded material contains no cores and little evidence of flake production. It has a relatively high proportion of formal tools (n=7: 8 per cent of assemblage). The component assemblage has a relatively high proportion of cortical material (n=13: 15 per cent of total assemblage) but less than that of the Mt Atkinson volcanic plain AS 1 component, Mt Atkinson stony rise AS 1 component and Mt Atkinson drainage plain AS 1 component. This may correspond to the absence of flake reduction material.

Table 109 summarises the nature of the component artefact assemblage.

Table 112 Mt Atkinson Cone AS 1 component (VAHR 7822-4109-2): Summary of component artefact assemblage

Lithic material	Proportion of component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
Basalt	1 (1%)	Complete flake 1	0	0	0	0
Quartz	23 (26%)	Complete flake 7 Distal flake 2 Longitudinal split 4 Medial flake 1 Proximal flake 4	8 (9% or 35% of all quartz)		0	5
Quartzite	12 (14%)	Complete flake 5 Distal flake 1 Longitudinal split 5 Proximal flake 1	0	1	Scraper - amorphous 1	2
Silcrete	51 (59%)	Angular fragment 1 Complete blade 4 Proximal blade 1 Complete flake 24 Distal flake 8 Longitudinal split 6 Proximal flake 8	5 (10% of all silcrete)	8	Backed geo microliths 5 Scraper round-edged 1	19
Totals	**87**		**13 (15%)**	**9 (10%)**	**7 (8%)**	**26 (33%)**

Plate 114 Mt Atkinson cone AS 1 component (VAHR 7822-4109-2) (facing west)

Significance

Mt Atkinson cone AS 1 component (VAHR 7822-4109-2) contains a large number of artefacts with little surface disturbance and intact subsurface deposits. This landform and its cultural associations is considered rare and therefore has been assessed as having high scientific significance.

8.5.3 Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8)

Extent

The Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8) is an artefact distribution located on the extensive volcanic plateau on the east side of the lava cone. It excludes two artefact concentrations recorded for the current CHMP as separate place components:

- Mt Atkinson steep-edged terrace AS 1 component
- Mt Atkinson stony rise AS 1 component

The place component incorporates five places originally recorded by Thomson (2003):

- Mt Atkinson IA 1 (VAHR 7822-1534)
- Mt Atkinson IA 4 (VAHR 7822-1537)
- Mt Atkinson IA 5 (VAHR 7822-1538)
- Mt Atkinson IA 7 (VAHR 7822-1540)
- Mt Atkinson IA 8 (VAHR 7822-1541).

The cadastral information is included in Table 113.

Table 113 Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8)

Address	235 Greigs Road, Truganina
Lot/Plan	Lot 1 TP 747009
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E296169 N5819021
Size ha	120.21

Nature

The place component covers the extensive volcanic plateau on the east side of the lava cone. It excludes two artefact concentrations recorded for the current CHMP as separate place components (Mt Atkinson steep-edged terrace AS 1 component and Mt Atkinson stony rise AS 1 component) (Plate 115).

Most of the assemblage (n=62:82 per cent) was recorded as surface artefact, concentrated along the base of a terrace between 100 metres and 115 metres AHD. 24 artefacts, mostly quartz, were recorded in subsurface contexts from five test pit locations, with 16 items from Test Pits 34A and 34B (18 per cent of total assemblage). The component assemblage shows a preponderance of quartz (77 per cent). It contains six cores, in quartz and silcrete, with a number of angular fragments. There is a relatively high proportion of cortical material (n=17:20 per cent of total assemblage). The assemblage shows a small proportion of retouched/utilised artefacts (n=3:3 per cent of assemblage) including two backed blades.

Table 114 summarises the nature of the component artefact assemblage.

Table 114 Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8): Summary of component artefact assemblage

Lithic material	Proportion of component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
Basalt	1 (1%)	Proximal flake 1	1	0	0	1
Quartz	66 (77%)	Angular fragment 6 Complete blade 1 Multidirectional core 1 Unidirectional core 4 Complete flake 27 Distal flake 8 Longitudinal split 10 Proximal flake 8	15 (23%)	1	0	21
Quartzite	5 (6%)	Angular fragment 1 Complete flake 2 Distal flake 1	0	0	0	1
Sandstone	1 (1%)	Slab	1	0	Grinding slab	0
Silcrete	13 (15%)	Angular frag 1 Medial blade 2 Multidirectional core 1 Complete flake 5 Distal flake3 Medial flake	0	2	Backed geo microliths - 2	1
Totals	**86**		**17 (20%)**	**3 (3%)**	**3 (3%)**	**24 (18%)**

Plate 115 Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8) (facing east)

Significance

Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8) contains a large number but limited range of cultural materials and is in fair to good condition. It is assessed as moderate scientific significance.

8.5.4 Mt Atkinson steep-edged terrace AS 1 component (VAHR 7822-4109-6)

Extent

Mt Atkinson steep-edged terrace AS 1 component (VAHR 7822-4109-6) consist of a specific landform feature associated with the final stages of lava flows from Mount Atkinson. Cadastral information is included in Table 115.

Table 115 Mt Atkinson steep-edged terrace AS 1 component (VAHR 7822-4109-6)

Address	1 Greigs Road, Truganina
Lot/Plan	Lot 4 TP 747009
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E297212 N5818243
Size ha	4.93

The place component is a concentration of 15 artefacts recorded on the steep south-west facing slope of the volcanic terrace east of the Mount Atkinson cone, within an area of 128 metres east–west by 85 metres

north–south. The artefacts were recorded on the escarpment edge at 105 to 107 metres AHD and also on the slope below this, at 101 to 102 metres AHD.

The artefacts from this steep-edged terrace were distinguished from the distribution of artefacts from the wider volcanic plateau by the concentration within a defined area and the association of artefacts with the terrace edge and slope at one of the steepest parts of the terrace landform. The steep-edged terrace is defined by LiDAR contour data (Map 14). The place component has been defined by landform and by the distribution of artefacts recorded for the current CHMP in 2016.

Nature

The assemblage is a concentration of 15 artefacts recorded on the steep south-west facing slope of the volcanic terrace east of the Mountt Atkinson cone, within an area of 128 metres east–west by 85 metres north–south. The artefacts were recorded on the escarpment edge at 105 to 107 metres AHD and also on the slope below this, at 101 to 102 metres AHD (Plate 116).

The component assemblage consists of 12 surface artefacts and three subsurface artefacts (all from Test Pit 74B at 1 to 100 millimetres in depth). Most of the material was quartz (n=12:80 per cent) with quartzite and single silcrete distal flake. The quartz items included a unidirectional core and flakes. The core and four of the quartz flakes retained cortex. One of the cortical quartz flakes and a cortical quartzite flake showed retouch or usewear.

Table 116 summarises the nature of the component artefact assemblage.

Table 116 Mt Atkinson steep-edged terrace AS 1 component (VAHR 7822-4109-6): Summary of component artefact assemblage

Lithic material	Proportion of component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
Quartz	12 (80%)	Angular frag 1 Unidirectional core 1 Complete flake 7 Distal flake 1 Longitudinal split 2	5	1	0	3
Quartzite	2 (13%)	Longitudinal split 1 Proximal flake 1	0	1	0	0
Silcrete	1 (7%)	Distal flake	0	0	0	0
Totals	15		5	2		3

Plate 116 Mt Atkinson steep-edged terrace AS 1 component (VAHR 7822-4109-6) (facing north-east)

Significance

Mt Atkinson steep-edged terrace AS 1 component (VAHR 7822-4109-6) contains a large number but limited range of cultural heritage material. Due to the presence of basalt floaters, it is relatively undisturbed and has therefore been assessed as being of moderate scientific significance.

8.5.5 Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4)

Extent

The place component occupies a small, prominent rise (a lava tumulus formation) on the edge of the volcanic plateau at 100 metres AHD, overlooking the plain to the south.

The place component incorporates 2 surface artefact distributions, originally recorded by Thomson (2003):

- Mt Atkinson AS 1 (VAHR 7822 -1542) (8 artefacts)
- Mt Atkinson AS 2 (VAHR 7822-1543) (15 artefacts)

The place component is distinct in its concentration of material from the lower density of artefacts across the adjacent volcanic plateau recorded as Mt Atkinson raised volcanic plateau AS 1 component. The stony rise is defined by LiDAR contour data (Map 15).The place component has been defined by landform and by the distribution of artefacts recorded for the current CHMP in 2016.

Cadastral information is included in Table 117.

Table 117 Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4)

Address	65 Hopkins Road, Truganina
Lot/Plan	Lot 5 TP 828625
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E297338 N5817975
Size ha	1.52

Nature

The place component consists of surface and subsurface artefacts recorded on a small, prominent rise (a lava tumulus formation) on the edge of the volcanic plateau at 100 metres AHD, overlooking the plain to the south (Plate 117).

The artefact assemblage is dominated by a quartz flaking deposit recorded at a shallow depth in Test Pit 6A and 6B, which produced 132 items of flaked quartz including 2 cores and 16 angular fragments. Test Pit 6A and 6B also produced 7 flaked quartzite and 4 silcrete. Cores and angular fragments of quartz, quartzite and silcrete.

The assemblage contains a high proportion of cortical material (n=47: 20 per cent), including quartz, quartzite and silcrete. This is comparable with the Mt Atkinson raised volcanic plateau AS 1 component assemblage.

The assemblage has a relatively small proportion of retouched/utilised flakes (n=12: 5 per cent) including 5 formal tools. Again, this is comparable with the Mt Atkinson raised volcanic plateau AS 1 component assemblage.

Table 118 summarises the nature of the component artefact assemblage.

Table 118 Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4): Summary of component artefact assemblage

Lithic material	Proportion of component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
Basalt	2 (1%)	Complete flake Distal flake	0	0	0	0
Quartz	155 (67%)	Angular fragment 35 Bidirectional core 2 Multidirectional core1 Unidirectional core 1 Complete flake 51 Distal flake 23 Longitudinal split 13 Medial flake 5 Proximal flake 24	36 (23% of all quartz)	3	Thumbnail scraper	132 (Test Pits 6A and 6B)

Lithic material	Proportion of component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
Quartzite	37 (16%)	Angular fragment 1 Multidirectional core 1 Complete flake 17 Distal flake 4 Longitudinal split 7 Medial flake 2 Proximal flake 5	4 (11% of all quartzite)	3	Notched tool	7 (Test Pits 6A and 6B)
Silcrete	38 (16%)	Angular fragment 2 Multidirectional core 1 Complete flake 17 Distal flake 5 Longitudinal split 5 Medial flake 1 Proximal flake 7	7 (18% of all silcrete)	6	Backed geo microliths - 2 Bondi point	4 (Test Pits 6A and 6B)
Totals	**232**		**47 (20%)**	**12 (5%)**	**5 (2%)**	**143 (62%)**

Plate 117 Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4) (facing north-west)

Significance

Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4) contains a large number but limited range of cultural materials. There has been some historical disturbance with basalt quarrying but outside this discrete location there is little disturbance. As this landform and its cultural deposits are considered rare, it is assessed as being of high scientific significance.

8.5.6 Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-10)

Extent

The Mt Atkinson drainage plane AS 1 component (VAHR 7822-4109-10) extends across the volcanic plain south of the main volcanic flows and includes several drainage channels of Skeleton Creek. Some drainage channels are not formally mapped.

The place component covers the drainage plain to the south of the volcanic terraces. The landform consists of a gently sloping plain to the south-south-east, dissected by streams between the lava flow lobes. The place is defined by LiDAR contour data (Map 16). The place component has been defined by landform and by the distribution of artefacts recorded during a survey by Thomson (2003) and for the current CHMP.

The place component extent incorporates two previously recorded places, first recorded by Thomson (2003):

- Mt Atkinson AS 3 (VAHR 7822-1544), recorded as an extensive distribution of surface artefacts along a power line easement
- Mt Atkinson AS 9 (VAHR 7822-1548), recorded on the upper side of a dam.

Mt Atkinson AS 3 (VAHR 7822-1544) is an extensive distribution of 583 surface artefacts recorded in 2003 along a power line easement within this place component. As the artefacts recorded in 2003 are distinct in character from those recorded for the current CHMP in 2016, the 2003 assemblage is described separately.

Note a catalogue for the 2003 assemblage was submitted to the VAHR in 2017.

Cadastral information is included in Table 119.

Table 119 Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-10)

Address	65 Hopkins Road, Truganina
Lot/Plan	Lot 5 TP 828625
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E297479 N5817800
Size ha	343.97 (extends outside Activity Area)

Nature

The place component consists of surface and subsurface artefacts which have been recorded between 2003 and 2016 on the drainage plain to the south of the volcanic terraces (Plate 118).

This place component includes an extensive distribution of 583 surface artefacts recorded by Thomson (2003) along a power line easement within this place component. An additional 100 artefacts were recorded during the current CHMP assessment in 2016. As the assemblage of artefacts recorded from the power line easement in 2003 is distinct in character from that recorded in 2016, the 2003 and 2016 assemblages are described separately.

Artefacts recorded within the Aboriginal place component in 2003 along the power line easement

An extensive distribution of artefacts was recorded within the place component in 2003 along a cleared power line easement crossing from north-east to south-west over a distance of 1.7 kilometres. This area lies within the drainage plain at the foot of the volcanic rise to north, at 89 to 91 metres AHD, at the watershed of a number of streams.

The 2003 assemblage consisted of 572 surface items, with 11 artefacts from subsurface contexts. The assemblage consists largely of silcrete (n=486:83 per cent), with only 32 items (5 per cent) of quartz, in striking contrast to most assemblages at Mount Atkinson, where quartz normally forms the largest number of items. The much smaller Mt Atkinson cone AS 1 place component assemblage also shows a preponderance of silcrete but without the flake reduction component.

The 2003 assemblage from the power line easement is strongly characterised by evidence of flake reduction, with a total of 31 cores including 24 multidirectional silcrete cores and a unidirectional silcrete core. No quartz cores were recorded but the assemblage included 55 multidirectional cores of quartzite and a multidirectional core of basalt.

A smaller proportion of cortical material was recorded in 2003 (n=81:14 per cent of the 2003 assemblage), compared to assemblages recorded in 2016 on the drainage plain and on the volcanic raised plateau and stony rise, where 20 to 23 per cent of the artefacts had cortex.

The 2003 assemblage has a relatively high proportion of retouched/utilised material (16 per cent of the overall 2003 assemblage) with a number of formal tools, including backed geometric microliths and scrapers.

Table 120 summarises the nature of the component artefact assemblage from the 2003 survey of the power line easement.

Table 120 Mt Atkinson drainage plain AS 1 component (2003 power line easement): Summary of component artefact assemblage

Lithic material	Proportion of 2003 component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
Basalt	3 (0.5%)	Multidirectional core 1 Complete flake 1 Longitudinal split 1	0	1	0	0
Chert	4 (0.7%)	Complete flake 3 Distal flake 1	1 (25% of chert)	2	0	0
Crystal quartz	2 (0.3%)	Complete flake 2	0	0	0	0
Quartz	32 (5%)	Complete flake 25 Longitudinal split 4 Proximal flake 3	6 (19% of quartz)	6 (19% of quartz)	Amorphous scraper	5
Quartzite	56 (10%)	Angular fragment 3 Multidirectional core 5 Complete flake 26 Distal flake 2 Longitudinal flake 14 Medial flake 1 Proximal flake 5	11 (20% of all quartzite)	7 (13% of all quartzite)	0	2

Lithic material	Proportion of 2003 component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
Silcrete	486 (83%)	Angular fragment 26 Distal blade 1 Proximal blade 1 Multidirectional core 24 Unidirectional core 1 Complete flake 257 Distal flake 51 Longitudinal split 67 Medial flake Proximal flake 46	63 (13% of all silcrete)	78 (16% of all silcrete)	Round edged scrapers 2 Backed geo microliths 11 Backed thumbnail scraper 2 Bondi point 1	4
Totals	**583**		**81 (14%)**	**94 (16%)**	**17 (3%)**	**11**

Artefacts recorded within the Aboriginal place component in 2016 for the current CHMP

Survey and testing for the current CHMP in 2016 recorded a further 100 artefacts within the drainage plain component area. A much smaller number of artefacts were recorded along the power line easement in 2016, probably as a result of poorer surface exposure than that of 2003. It is possible that some of the individual artefacts recorded along the power line easement in 2003 were also recorded in 2016 on the same alignment, though far fewer items were visible during the latter survey. The 2016 assemblage from the drainage plain has a marked preponderance of surface artefacts, with only three items recorded in three test pits from a total of 17 2 metre x 1 metre test pits.

Table 121 summarises the nature of the component artefact assemblage from the 2016 investigations. Comparison of the 2003 power line easement assemblage (Table 120) with the artefacts recorded during the 2016 investigation (of the larger drainage plain component) shows that the main difference between these assemblages is the much smaller proportion of silcrete recorded in 2016. Silcrete items comprised 83 per cent (n=486) of the 2003 power line assemblage but only 49 per cent (n=49) of the 2016 artefacts from the wider drainage plain component. The implication is that, along the power line easement, the proportion of silcrete items to other material may be greater than in other parts of the drainage plain place component, and possibly greater than anywhere else on Mount Atkinson. However, it must be emphasised that the overall numbers of artefacts recorded within the Activity Area are low, and the proportions of lithic materials from these assemblages may not be statistically reliable.

Similar evidence of flake reduction activity is shown in both the 2003 and 2016 assemblages, with 31 cores recorded along the power line easement in 2003 and 10 cores recorded within the overall drainage plain component in 2016. In both assemblages, there are similar proportions of cortical flakes, weighted by the smaller proportion of silcrete with cortex, which dominated the 2003 assemblage. Both assemblages contain similar proportions of retouched or utilised flakes, and similar ranges of backed tools and scrapers. A much smaller number of retouched silcrete artefacts in the 2016 assemblage were considered to be formal tools .

Table 121 Mt Atkinson drainage plain AS 1 component (2016 investigation) (VAHR 7822-4109-10): Summary of component artefact assemblage

Lithic material	Proportion of 2016 component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
Basalt	2 (2%)	Complete flake Slab	0	1	0	0
Greenstone	1 (1%)	Slab	1	0	0	0
Quartz	49 (49%)	Angular frag 6 Bifacial core 1 Multidirectional core 1 Unidirectional core 4 Complete flake 21 Distal flake 7 Longitudinal split 2 Medial flake 3 Proximal flake 2 Slab 2	16 (33% of all quartz)	0	Notched tool	2 from testing
Quartzite	12 (12%)	Angular frag1 Multidirectional core 1 Complete flake 5 Longitudinal split 1 Medial flake 1 Proximal flake 2	3	1	Notched tool Backed geo mic Bondi point Thumbnail scraper	0
Silcrete	36 (36%)	Angular frag 1 Proximal blade 1 Multidirectional core 1 Unidirectional core 2 Complete flake 16 Distal flake 4 Longitudinally split Medial flake 3 Proximal flake 5	3 (8% of all silcrete)	11	0	1
Totals	**100**		**23 (23%)**	**13 (13%)**	**5 (5%)**	**3 (3%)**

Plate 118 Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-10) (facing north)

Significance

Mt Atkinson drainage plain AS 1 (VAHR 7822-4109-10) component contains a limited number of cultural materials and this place type is common throughout the volcanic plains. It is therefore assessed as being of low scientific significance.

8.6 Mt Atkinson LDAD 1 (VAHR 7822-4092)

Extent

Mt Atkinson LDAD 1 (VAHR 7822-4092) is registered as primary grid coordinates only (Map 17). The assemblage consists of 28 items from different landforms representing artefacts that are likely to occur in low densities around Mount Atkinson. They have been recorded from a number of landforms.

Cadastral information is included in Table 122.

Table 122 Mt Atkinson LDAD 1 (VAHR 7822-4092)

Address	235 Greigs Road, Truganina 121 Greigs Road, Truganina 1 Greigs Road, Truganina 65A Hopkins Road, Truganina 161A Hopkins Road, Truganina 646 Middle Road, Truganina 548 Hopkins Road, Truganina
Lot/Plan	Lot 1 TP 747009 Lot 2 TP 747009 Lot 4 TP 747009 Lot 4 TP 828625 Lot 6 TP 828625 Lot 5 PS 512497 Lot 1 TP 128381
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E295914 N5817468 E296623 N5817871 E296646 N5817854 E296627 N5817784 E296614 N5817790 E296548 N5815319 E295926 N5817635 E295925 N5817634 E296902 N5819219 E296166 N5819661 E297583 N5818856 E296463 N5819550 E296394 N5819323 E296182 N5819380 E296488 N5818066 E296034 N5817303 E297484 N5814988

Nature

The assemblage consists of 28 artefacts from different landforms representing artefacts which are likely to occur in low densities around Mount Atkinson (Plate 119). Most of the assemblage is from subsurface contexts (n=21:72 per cent).

The artefacts includes equal proportions of quartz and silcrete with three items of quartzite and one of basalt. The assemblage includes high proportion of cortical flakes (n=11:38 per cent).

Table 123 Mt Atkinson LDAD 1 (VAHR 7822-4092): Summary of artefact assemblage

Lithic material	Proportion of 2016 component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
Basalt	1 (3%)	Complete flake	0	0	0	1
Quartz	12 (45%)	Angular fragment 1 Complete flake 9 Distal flake 1 Longitudinal split 1	6 (46%)	2	0	8
Quartzite	3 (10%)	Bidirectional core 1 Complete flake 1 Proximal flake 1	1	0	0	3
Silcrete	12 (41%)	Multidirectional core 2 Unidirectional core 1 Complete flake 4 Distal flake 2 Medial flake 1 Proximal flake 1	4	3	Backed geo microlith	9
Totals	**28**		**11 (38%)**	**5**	**1**	**21**

Plate 119 Mt Atkinson LDAD 1 (VAHR 7822-4092) (facing south-east)

Significance

Mt Atkinson LDAD 1 (VAHR 7822-4092) contains a limited number of cultural materials and this place type is common throughout the Volcanic Plains. It is therefore assessed as being of low scientific significance.

8.7 Mt Atkinson AS 10 (VAHR 7822-1549)

Mt Atkinson AS 10 (VAHR 7822-1549) was recorded in 2003. The following information has been obtained from the registration site card. No cultural heritage material was relocated or recorded in the current assessment.

Extent

Mt Atkinson AS 10 (VAHR 7822-1549) is an isolated artefact recorded as a primary grid coordinate only (Map 18). Cadastral information is included in Table 124.

Table 124 Mt Atkinson AS 10 (VAHR 7822-1549)

Address	161A Hopkins Road, Truganina
Lot/Plan	Lot 6 TP 828625
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E296222 N5817134

Nature

Mt Atkinson AS 10 (VAHR 7822-1549) is an isolated artefact on the Volcanic Plains (Plate 120).

Plate 120 Mt Atkinson AS 10 (VAHR 7822-1549) (facing south)

Significance

Mt Atkinson AS 10 (VAHR 7822-1549) contains a limited number of cultural materials and this place type is common throughout the Volcanic Plains. It is therefore assessed as being of low scientific significance.

8.8 Mt Atkinson AS 11 (VAHR 7822-1550)

Mt Atkinson AS 11 (VAHR 7822-1550) was recorded in 2003. The following information has been obtained from the registration site card. No cultural heritage material was relocated or recorded in the current assessment.

Extent

Mt Atkinson AS 11 (VAHR 7822-1550) is an isolated artefact recorded as a primary grid coordinate only (Map 19). Cadastral information is included in Table 125.

Table 125 Mt Atkinson AS 11 (VAHR 7822-1550)

Address	65A Hopkins Road, Truganina
Lot/Plan	Lot 4 TP 828625
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E295921 N5817470

Nature

Mt Atkinson AS 11 (VAHR 7822-1550) is an isolated artefact on the Volcanic Plains (Plate 121).

Plate 121 Mt Atkinson AS 11 (VAHR 7822-1550) (facing south-east)

Significance

Mt Atkinson AS 12 (VAHR 7822-1550) contains a limited number of cultural materials and this place type is common throughout the volcanic plains. It is therefore assessed as being of low scientific significance.

8.9 Mt Atkinson AS 12 (VAHR 7822-1551)

Mt Atkinson AS 12 (VAHR 7822-1551) was recorded in 2003. The following information has been obtained from the registration site card. No cultural heritage material was relocated or recorded in the current assessment.

Extent

Mt Atkinson AS 12 (VAHR 7822-1551) is an isolated artefact recorded as a primary grid coordinate only Map 20. Cadastral information is included in Table 126.

Table 126 Mt Atkinson AS 12 (VAHR 7822-1551)

Address	161A Hopkins Road, Truganina
Lot/Plan	Lot 6 TP 828625
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E296231 N5816925

Nature

Mt Atkinson AS 12 (VAHR 7822-1551) is an isolated artefact on the Volcanic Plains (Plate 122).

Plate 118 Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-10) (facing north)

Significance

Mt Atkinson drainage plain AS 1 (VAHR 7822-4109-10) component contains a large number but limited range of cultural materials and this place type is common throughout the volcanic plains. It is therefore assessed as being of moderate scientific significance.

8.6 Mt Atkinson LDAD 1 (VAHR 7822-4092)

Extent

Mt Atkinson LDAD 1 (VAHR 7822-4092) is registered as primary grid coordinates only (Map 17). The assemblage consists of 28 items from different landforms representing artefacts that are likely to occur in low densities around Mount Atkinson. They have been recorded from a number of landforms.

Cadastral information is included in Table 122.

Table 127 Peppercorn Rise 1 (VAHR 7822-3798)

Address	121 Greigs Road, Truganina
Lot/Plan	Lot 2 TP 747009
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E296579 N5819220 E296557 N5819222 E296673 N5819251 E296698 N5819222 E296697 N5819222 E296697 N5819222 E296555 N5819219 E296678 N5819371 E296681 N5819407 E296683 N5819408 E296684 N5819423 E296702 N5819542 E296699 N5819554 E296639 N5819294 E296676 N5819336 E296694 N5819551

Nature

Peppercorn Rise 1 (VAHR 7822-3798) is a dispersed surface distribution recorded along tracks adjacent to a hedgerow (Plate 123).

The artefact assemblage consists of 15 surface artefacts and one subsurface item. The assemblage shows a notable scarcity of silcrete compared with other material but the overall artefact numbers are too small for this to be a significant result. The quartz items include a core and angular fragments. One quartz flake and one quartzite flake have cortex. The assemblage shows a relatively high proportion of retouched/utilised flakes including a quartz scraper. Table 128 summarises the nature of the component artefact assemblage from the 2003 investigations.

Mt Atkinson IA8 (VAHR 7822-1541) was recorded in 2003 as a surface distribution of 3 artefacts (a quartzite core, a quartz flake and a silcrete scraper) within an area of 10 metres x 20 metres. It lies on the slope south-east of VAHR 7822-3798.

Table 128 Peppercorn Rise 1 (VAHR 7822-3798): Summary of 2003 artefact assemblage

Lithic material	Proportion of 2016 component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
Andesite	1 (2%)	Complete flake				
Quartz	10 (63%)	Complete flake Longitudinal split	1	2?	Scraper - Round-edged	Round-edged scraper from testing at 180mm depth

Lithic material	Proportion of 2016 component assemblage	Primary forms	Cortical flakes	Flakes with usewear/ retouch	Formal tools	Subsurface material
		Angular frags (4) Medial flake Unidirectional core Complete flake				
Quartzite	4 (25%)	Complete flake Proximal flake Unidirectional core	1	2		
Silcrete	1 (2%)	Complete flake		1		
Totals	**16**		**2 (13%)**	**5 (31%)**	**1 (2%)**	**1**

Plate 123 Peppercorn Rise 1 (VAHR 7822-3798) (facing south)

Significance

Peppercorn Rise 1 (VAHR 7822-3798) contains a limited number of cultural materials and this place type is common throughout the volcanic plains. It is therefore assessed as being of low scientific significance.

8.11 Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16)

Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16) was recorded in 2015. The following information has been obtained from the registration site card. No cultural heritage material was relocated in the current assessment.

Extent

Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16) is registered as primary grid coordinates only (Map 22). Cadastral information is included in Table 129.

Table 129 Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16)

Address	235 Greigs Road, Truganina 121 Greigs Road, Truganina
Lot/Plan	Lot 1 TP 747009 Lot 2 TP 747009
Local Government Authority	Melton City Council
GDA94 MGA Zone 55	E296218 N5818666 E296021 N5818678 E296029 N5818684 E296651 N5818629 E296654 N5818632

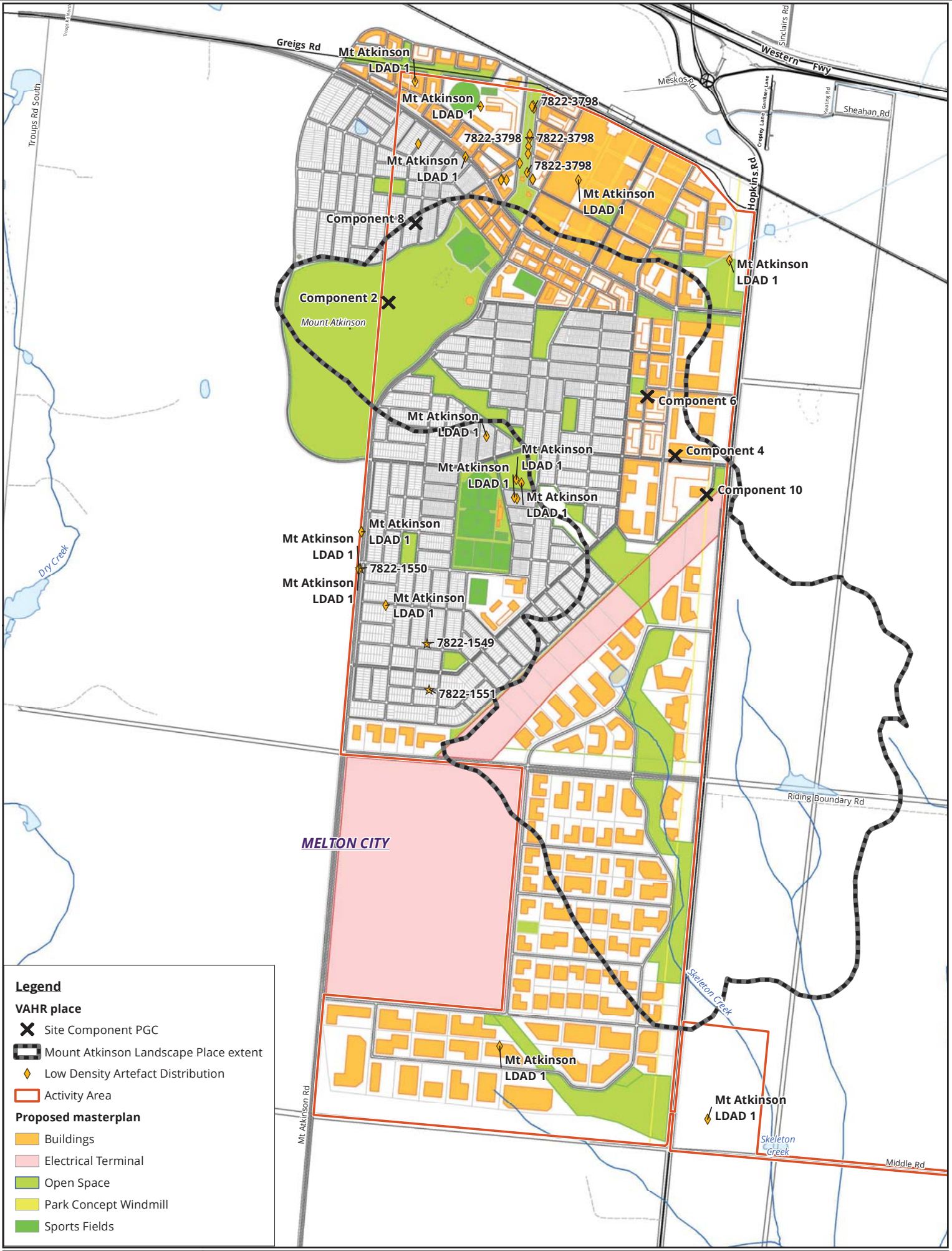
Nature

Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16) is a surface low-density artefact scatter on the volcanic plains (Plate 124).

Plate 124 Mount Atkinson PSP LDAD (VAHR 7822-3802-12, 7822-3802-15) (facing south-east)

Significance

Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16) contains a limited number of cultural materials and this place type is common throughout the volcanic plains. It is therefore assessed as being of low scientific significance.



Map 10 Aboriginal places within the Activity Area

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Acknowledgements: Vicmap ©State of Victoria

Matter: 19337, CHMP 13712
Date: 27 July 2017,
Checked by: KFR, Drawn by: SKM, Last edited by: acurtis
Location:\\bio-data-01\matters$\119300s\19337\Mapping\19337_M10a_AllSites

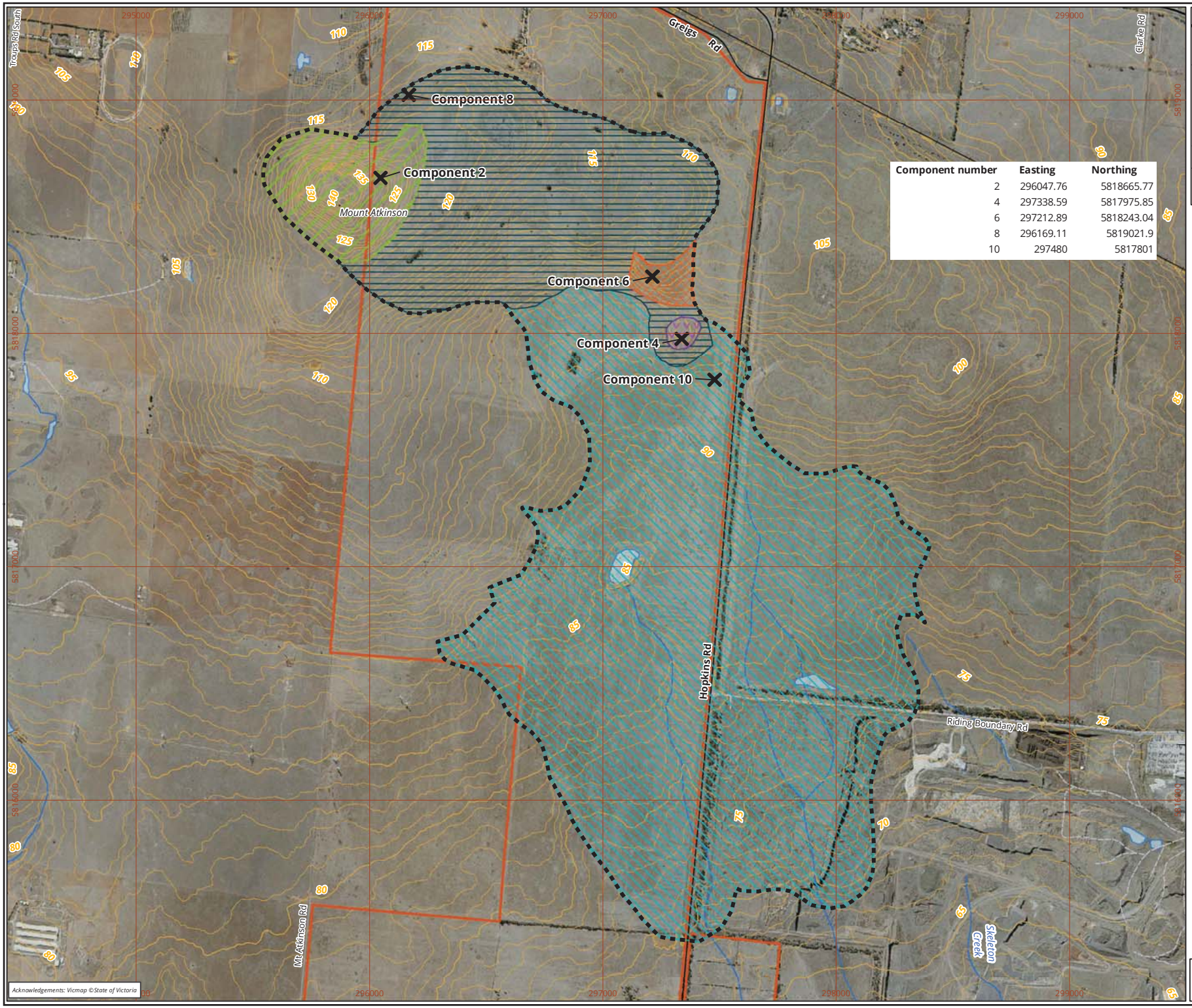
0 150 300 450 600 750

Metres

Scale 1:15,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N



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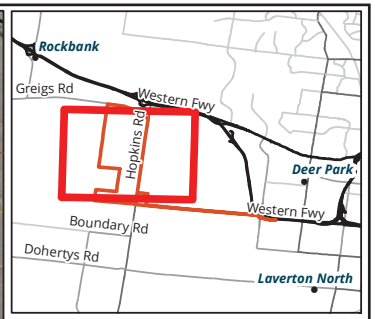
10	297480	5817801



Legend

- Activity Area
- Primary Grid Coordinates
- Place Extent

Place Components

- 1 - Mt Atkinson cone
- 2 - Mt Atkinson stony rise
- 3 - Mt Atkinson steep edged terrace
- 4 - Mt Atkinson raised volcanic plateau
- 5 - Mt Atkinson drainage plain

Topographic map details:
TRUGANINA 7822-3-1
Municipality:
Melton City

Map 11 Extent Plan
Aboriginal Archaeological Place: Mt Atkinson Landscape
VAHR No. 7822-4109

0 150 300 450 600 750

Metres
Scale: 1:15,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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Matter: 19337,
Date: 26 July 2017,
Checked by: KFR, Drawn by: SKM, Last edited by: acurtis
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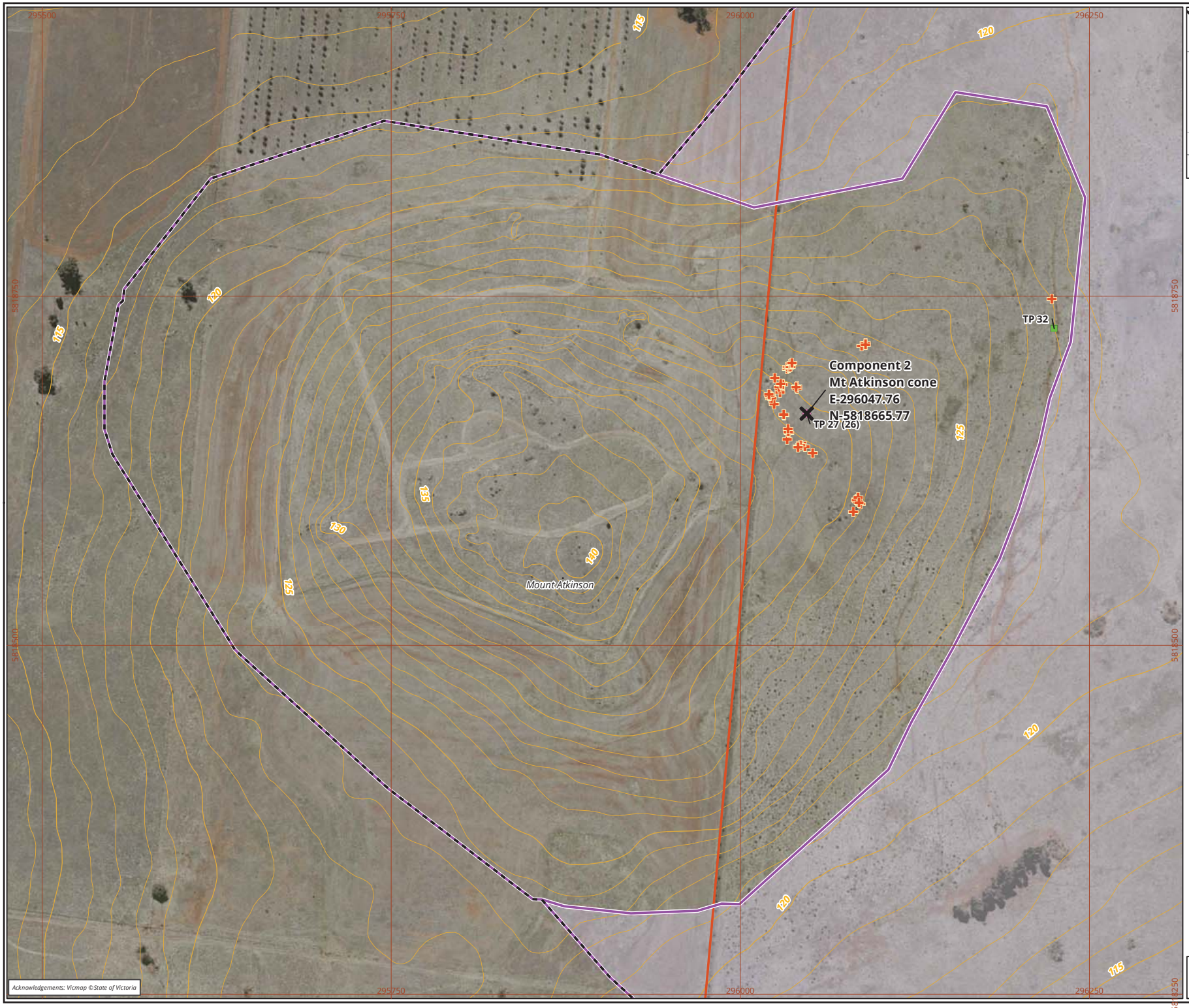

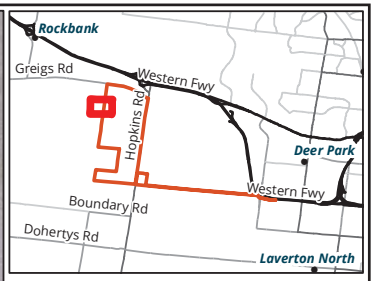

Legend

- Activity Area
- Surface artefact

Subsurface Testing

Test Pit labeled with ID

- Artefacts (with artefact count)
- No artefacts
- Place Extent
- Primary Grid Coordinate
- Component Extent
- Nearby Component Extents

Map 12 Component Plan Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson cone
VAHR No. 7822-4109-2

0 25 50 75 100 125

Metres

Scale: 1:2,500 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

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Date: 28 July 2017,
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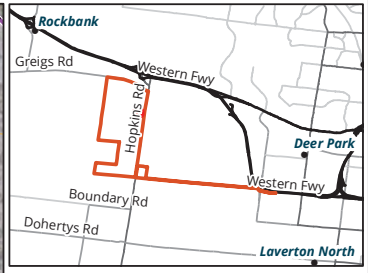

Legend

- Activity Area
- Surface artefact

Subsurface Testing

Test Pit labeled with ID

- Artefacts (with artefact count)
- Place Extent
- Primary Grid Coordinate
- Component Extent
- Nearby Component Extents

Map 13 Component Plan
Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson stony rise
VAHR No. 7822-4109-4

0 5 10 15 20 25

Metres
Scale: 1:500 @ A3
Coordinate System: GDA 1994 MGA Zone 55

N

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Acknowledgements: Vicmap ©State of Victoria

Matter: [Matter],
Date: 28 July 2017,
Checked by: [Consultant], Drawn by: [GIS], Last edited by: acurtis
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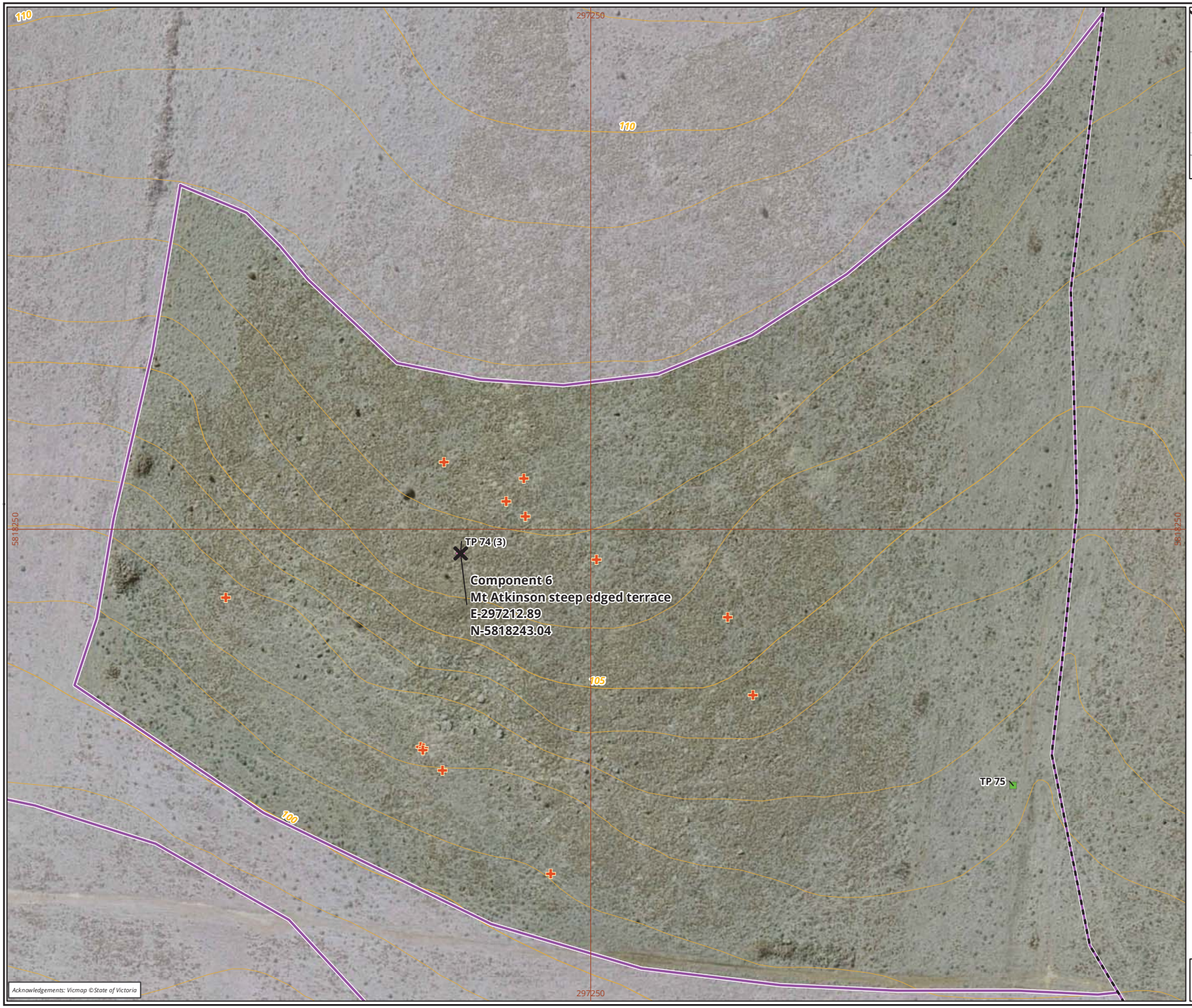
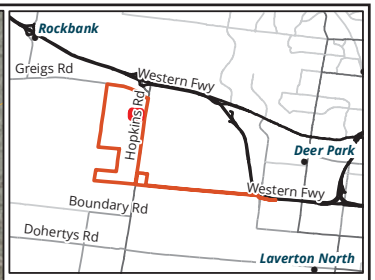
19337_Site_Extent_components





Legend

- Activity Area
- Surface artefact

Subsurface Testing

Test Pit labeled with ID

- Artefacts (with artefact count)
- No artefacts
- Place Extent
- Primary Grid Coordinate
- Component Extent
- Nearby Component Extents

Map 14 Component Plan Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson steep edged terrace
VAHR No. 7822-4109-6

0 10 20 30 40 50

Metres
Scale: 1:1,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

N

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Date: 28 July 2017,
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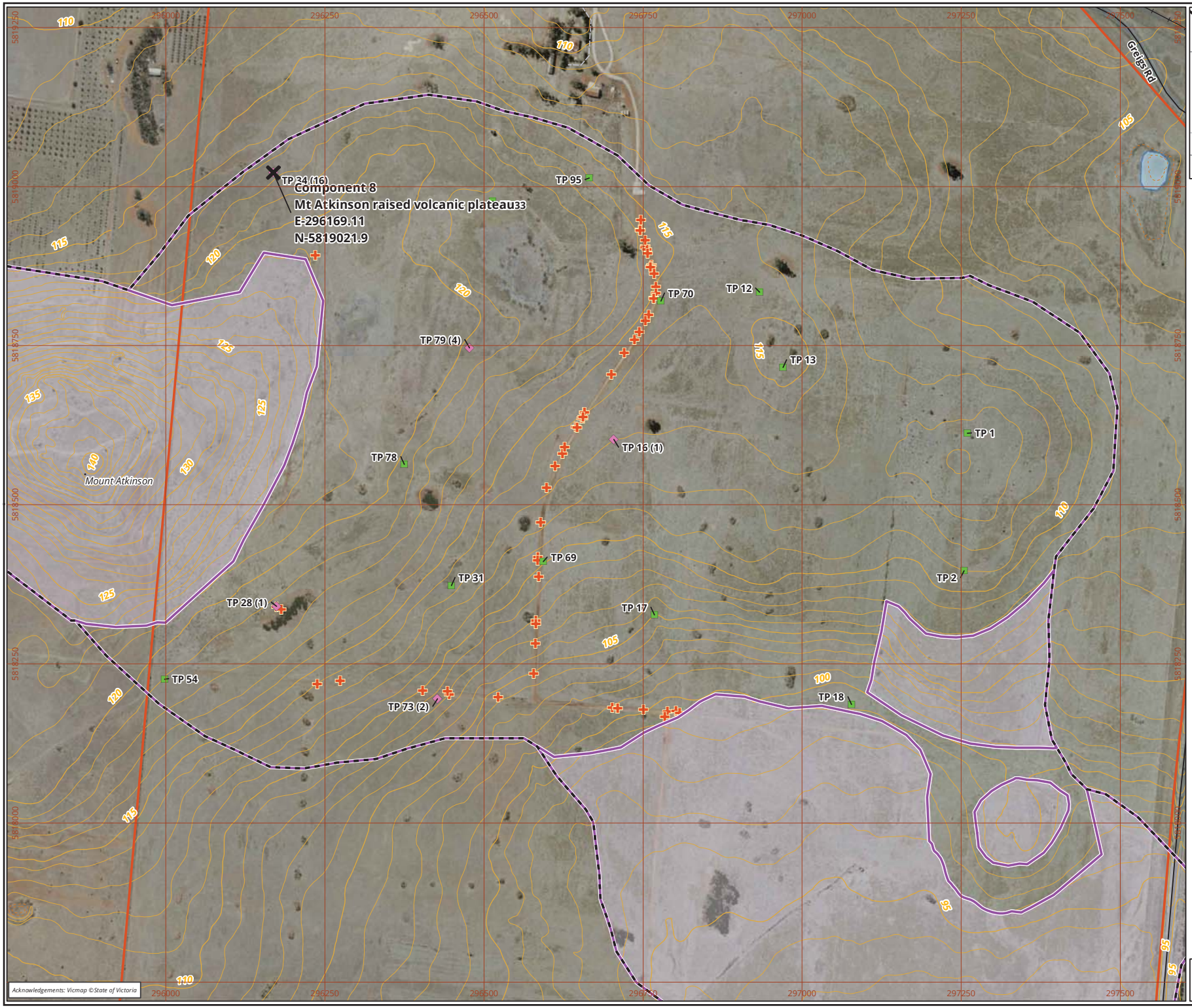

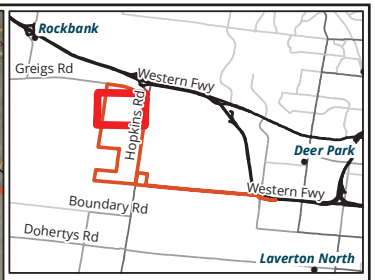

Legend

- Activity Area
- Surface artefact

Subsurface Testing

Test Pit labeled with ID

- Artefacts (with artefact count)
- No artefacts
- Place Extent
- Primary Grid Coordinate
- Component Extent
- Nearby Component Extents

Map 15 Component Plan
Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson raised volcanic plateau
VAHR No. 7822-4109-8

0 50 100 150 200 250

Metres
Scale: 1:5,500 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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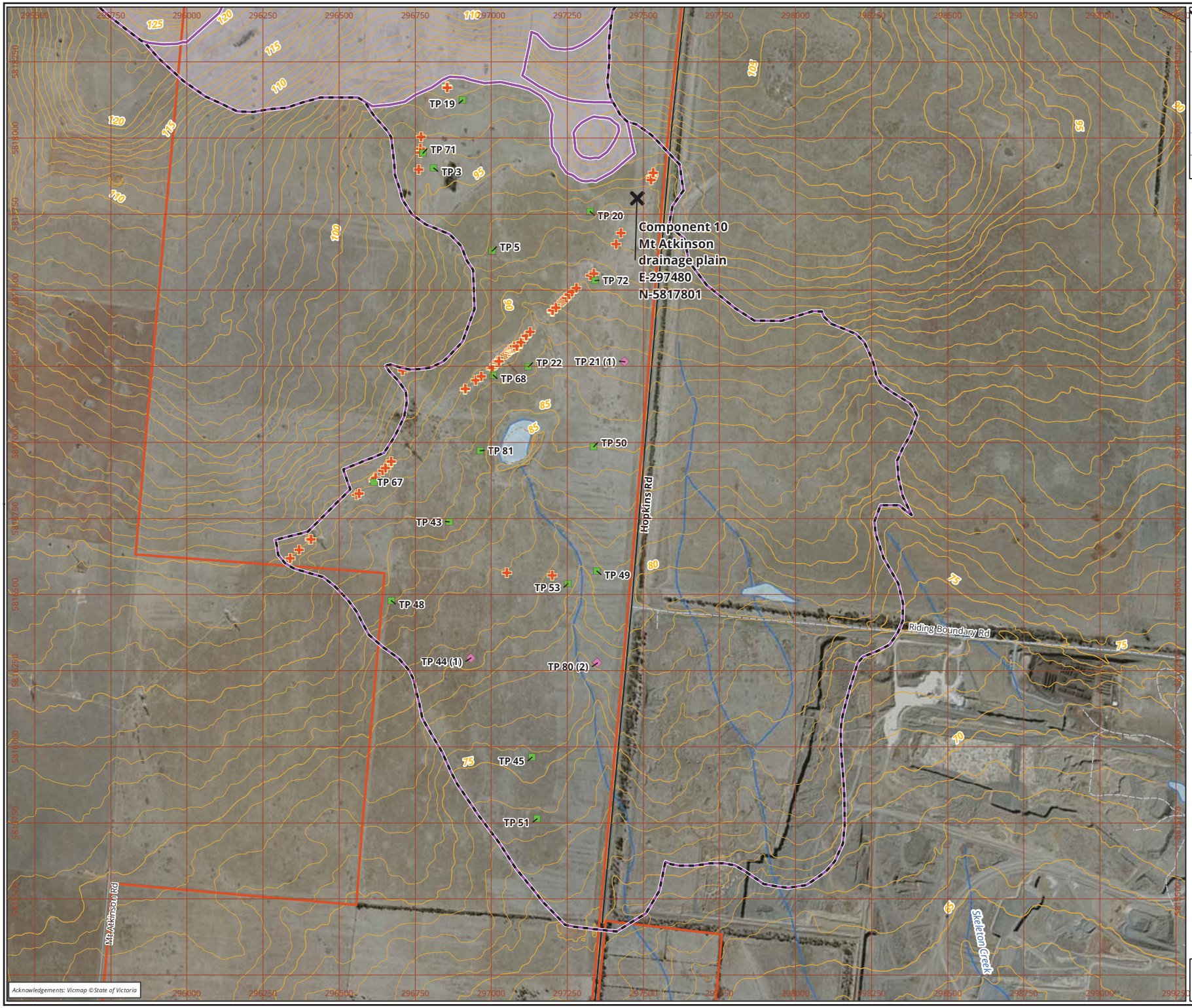

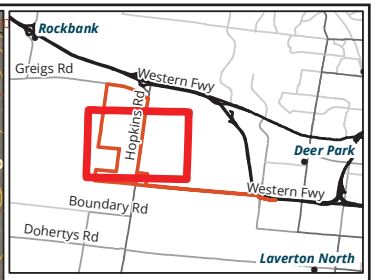

Legend

- Activity Area
- Surface artefact

Subsurface Testing

Test Pit labeled with ID

- Artefacts (with artefact count)
- No artefacts
- Place Extent
- Primary Grid Coordinate
- Component Extent
- Nearby Component Extents

Map 16 Component Plan Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson drainage plain VAHR No. 7822-4109-10

0 110 220 330 440 550

Metres

Scale: 1:11,500 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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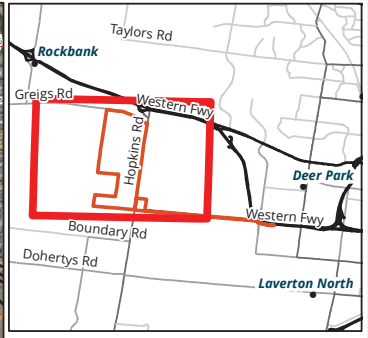

Legend

- Low Density Artefact Distribution
- Activity Area
- Surface artefact
- Site extent

Map 17 Extent Plan
Aboriginal Archaeological Place:
Mt Atkinson LDAD 1
VAHR No. 7822-4092

0 200 400 600 800 1,000

Metres

Scale: 1:20,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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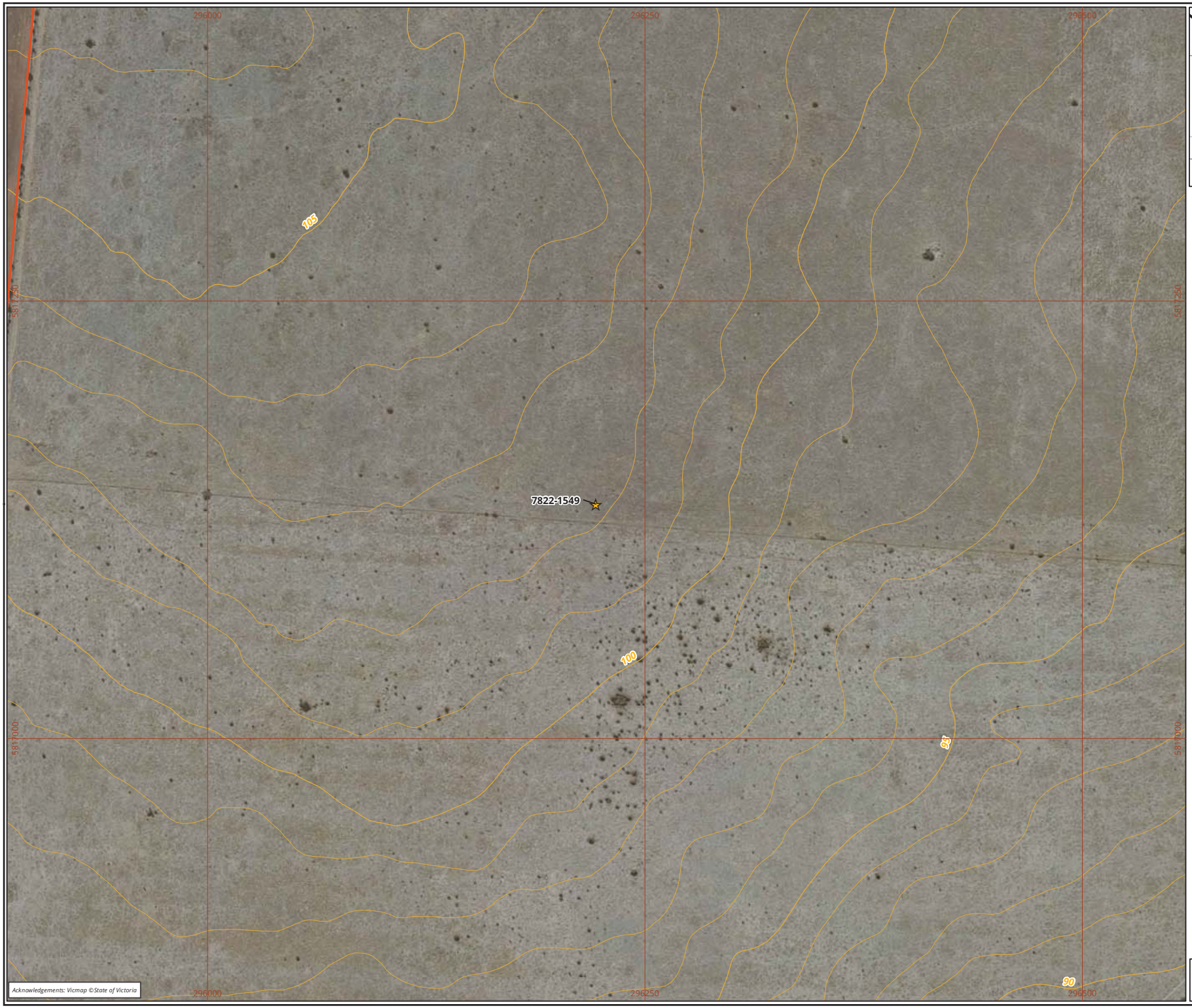

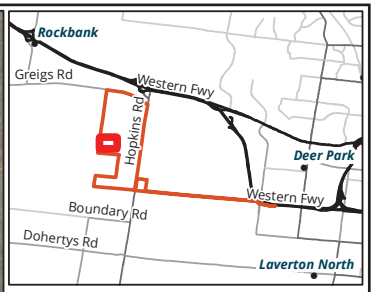

Legend

Previously recorded place

VAHR place

Artefact Scatter

Activity Area

Map 18 Extent Plan
Aboriginal Archaeological Place:
MT ATKINSON AS 10
VAHR No. 7822-1549

0 20 40 60 80 100

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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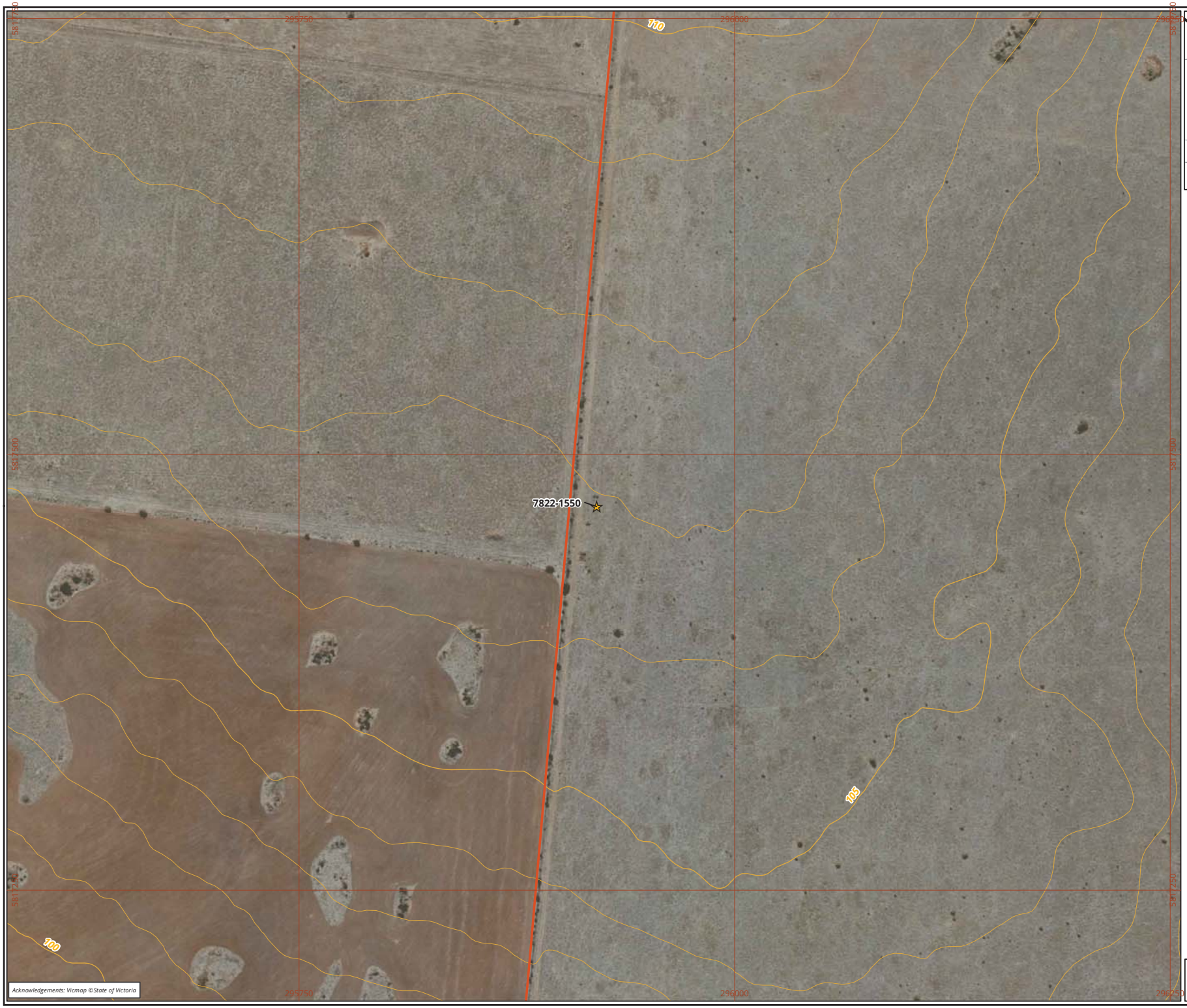

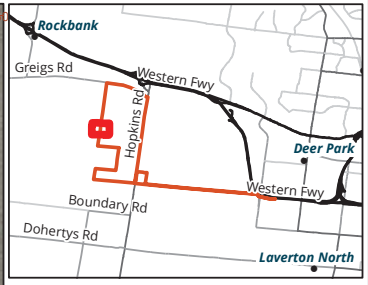

Legend

Previously recorded place

VAHR place

Artefact Scatter

Activity Area

Map 19 Extent Plan Aboriginal Archaeological Place: MT ATKINSON AS 11 VAHR No. 7822-1550

0 20 40 60 80 100

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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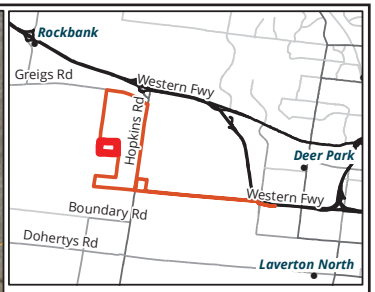

Legend

Previously recorded place

VAHR place

Artefact Scatter

Activity Area

Map 20 Extent Plan
Aboriginal Archaeological Place:
MT ATKINSON AS 12
VAHR No. 7822-1551

0 20 40 60 80 100

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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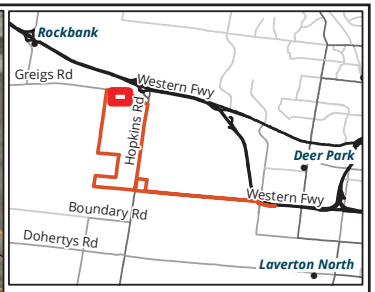

Legend

Previously recorded place

VAHR place

Low Density Artefact Distribution

Activity Area

Map 21 Extent Plan Aboriginal Archaeological Place: Peppercorn Rise 1 VAHR No. 7822-3798

0 20 40 60 80 100

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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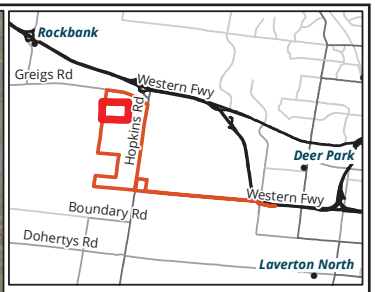

Legend

Previously recorded place

VAHR place

Low Density Artefact Distribution

Activity Area

Map 22 Extent Plan Aboriginal Archaeological Place: Mt. Atkinson PSP LDAD VAHR No. 7822-3802

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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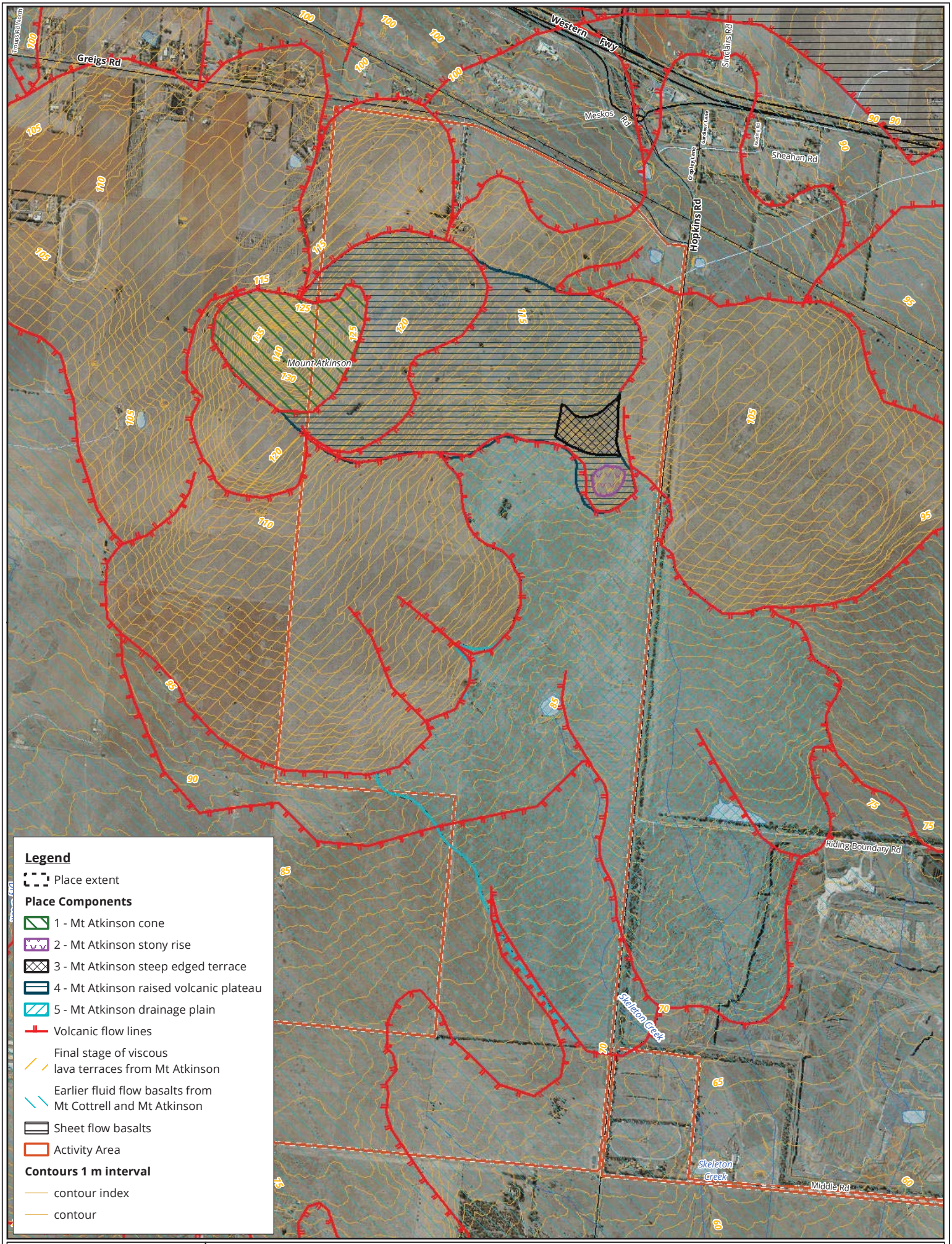

Map 23 Mt Atkinson Landscape (VAHR 7822-4109) overlaying volcanic landforms

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Location:P:\19300s\19337\Mapping\19337_SiteCard_VolcanicLandforms

0 150 300 450 600 750

Metres

Scale 1:15,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

9 Consideration of Section 61 matters — Impact Assessment

9.1 Section 61 matters in relation to Mt Atkinson Landscape (VAHR 7822-4109)

9.1.1 Can harm be avoided?

Harm will largely be avoided to the Mt Atkinson cone AS 1 component (VAHR 7822-4109-2) and sections of the Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-41098), as these are included in the significant landscape zone associated with Mount Atkinson. This area will become a reserve and impacts will be restricted to park furniture and access tracks. No large-scale earth moving will occur i.e. basalt removal as required for the remainder of the Activity Area will not be undertaken. A specific measure for the avoidance of harm is not warranted as the reserve is already enshrined in the Melton City Council Planning Scheme. This prevents development within the Significant landscape Overlay which is associated with Mt Atkinson cone AS 1 component (VAHR 7822-4109-2) and sections of the Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-41098).

Consideration has been given to ways to avoid harm to the other components of Mt Atkinson Landscape (VAHR 7822-4109) however this has not been deemed practical due to the intensive residential and industrial development identified in the PSP.

9.1.2 Can harm be minimised?

While consideration has been given to ways to minimise harm to the other components, this has not been deemed practical due to the nature of the volcanic landform, as it would require large-scale earth moving to facilitate development.

9.1.3 Are specific measures needed for mitigating harm?

A combination of surface and subsurface archaeological salvage to address research questions will provide a mitigation measure. The methodology and location for this salvage is detailed in Section 10.

Note mitigation measures include controlled burns. This CHMP permits harm to the Aboriginal places for the purposes of installing fire breaks ahead of the controlled burns.

Note the collection of artefacts along access tracks is intended as general artefact recovery. It is recognised that artefacts recorded in the Standard Assessment may not be relocated due to the continuous land use activities associated with the access tracks, similarly these activities may also have caused exposure of previously unrecorded artefacts. A condition that addresses known artefacts only is considered restrictive.

Note survey and recording after a controlled burn at Mt Atkinson cone AS 1 component (VAHR 7822-4109-2) is for research only. The surface artefacts will not be collected. This component is one with relatively little disturbance from past land use practices and has been determined to have high archaeological significance. The investigative methodology provides an opportunity to understand Aboriginal occupation within the Volcanic Plains landscape as it relates to patterning and artefact distribution on a specific landform feature.

Note Mt Atkinson steep-edged terrace AS 1 component (VAHR 7822-4109-6) has been subject to a controlled burn as part of the Standard Assessment. In addition, subsurface testing has also been completed as part of the Complex Assessment. This CHMPs provides sufficient information about the Aboriginal place component to inform wider regional interpretations of Aboriginal occupation. Therefore no specific salvage condition for this Aboriginal place component is included in Section 10.

Note the artefact densities utilised in the salvage condition for Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4) are based on artefact numbers from the Complex Assessment where a large number of quartz artefacts were recovered from a single test pit. This indicates the potential for intact subsurface deposits within this Aboriginal Place component.

Note this CHMP proposes two research themes. Research questions included in Section 10 are designed to address these themes. The first research theme deals with addressing past behaviours and land use from recovery of a large sample of artefacts on order to provide a meaningful interpretation albeit from deductive process rather than statistical analysis. This is because the results of the current CHMP do not indicate that artefacts are present in high enough numbers to be make specific conclusions about a particular tool type for example. In addition, the majority of artefacts within the Activity Area likely represent an assemblage accumulated over time rather than through discrete events easily identified from stratigraphy. Two areas that have recorded very high numbers of artefacts have been chosen to address this first research theme. The second research theme seeks to address the issue of ground surface visibility and land use. High visibility areas in the CHMP have produced artefact numbers of a certain density. It is the conclusions of the current CHMP that specific landforms reflect use and occupation of landforms for different purposes and with differing intensities. The comparatively low visibility in some areas within these landforms has meant that there is still a question as to whether artefact numbers reflect use and behaviour as opposed to ground surface visibility. Therefore the second theme will be addressed by increasing visibility through two methods: ploughing and burning. The ploughing and burning will increase visibility by a factor of 10 in each of the landform areas associated with specific Aboriginal place components. Our hypothesis is that an increase in artefact number in each landform consistent with the original findings would indicate that the artefact numbers initially recorded are representative of past land use and landform function. Alternatively large variations in artefact numbers would indicate that ground surface visibility is the major factor responsible for the spatial distribution of artefacts and that areas obscured by poor visibility contain areas of past land use that have not been understood due to ground surface visibility. The outcome of such a finding would suggest that future projects should employ the methods of ground surface visibility improvement advanced here in order to adequately explain and understand past Aboriginal land use and landform function. A steady and proportional increase in artefact numbers according to visibility improvement would suggest that representative observations from exposed areas, as seen in the CHMP, provide a reasonably accurate measure of landform function and past land use.

Research Theme 1

The artefact recording area at Mt Atkinson cone AS 1 component (VAHR 7822-4109-2) and surface salvage at Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4), both subject to controlled burns, is calculated at 50 percent of the total Aboriginal place component area within the Activity Area. This is because both these components have a relatively high density of artefacts when compared to the nearby components. Conditions for these Aboriginal place components have been designed to address research questions relating to Aboriginal occupation of these Volcanic Plains.

Research Theme 2

Areas of visibility are 0.6 hectares in total for high ground surface visibility areas on tracks, breaking down to roughly 0.3 hectares in each Aboriginal place component. The first landform confined to the steep slopes contained an artefact count of 212, while the second landform confined to moderate slopes contained a total of 97 artefacts located during the CHMP Standard Assessment, and a further 583 recovered during Thomson's (2003) survey for a total of 683 artefacts. Densities in the high visibility areas were therefore one artefact per 14 square metres associated with Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8) and 1 artefact per 4.4 square metres in the Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-10). The surface salvage area is calculated as at 3 hectares of the total Aboriginal place component

area within the Activity Area. The nominated salvage areas are immediately adjacent to areas where artefacts were recorded in locations of high ground surface visibility.

9.2 Section 61 matters in relation to Mt Atkinson LDAD 1 (VAHR 7822-4092)

9.2.1 Can harm be avoided?

Consideration has been given to ways to avoid harm to Mt Atkinson LDAD 1 (VAHR 7822-4092); however, this has not been deemed practical due to the intensive residential and industrial development identified in the PSP.

9.2.2 Can harm be minimised?

Consideration has been given to ways to minimise harm to the this Aboriginal place; however, this has not been deemed practical due to the nature of the volcanic landform which requires large-scale earth moving to facilitate development.

9.2.3 Are specific measures needed for mitigating harm?

The nature of this Aboriginal place does not warrant any mitigation measures. This is because many of the artefacts included in this Aboriginal place were recovered during the Complex Assessment.

9.3 Section 61 matters in relation to Mt Atkinson AS 10 (VAHR 7822-1549)

9.3.1 Can harm be avoided?

Consideration has been given to ways to avoid harm to Mt Atkinson AS 10 (VAHR 7822-1549); however, this has not been deemed practical due to the intensive residential and industrial development identified in the PSP.

9.3.2 Can harm be minimised?

Consideration has been given to ways to minimise harm to this Aboriginal place; however, this has not been deemed practical due to the nature of the volcanic landform which requires large-scale earth moving to facilitate development.

9.3.3 Are specific measures needed for mitigating harm?

The nature of this Aboriginal place does not warrant any mitigation measures. This is because it was not relocated in the current assessment.

9.4 Section 61 matters in relation to Mt Atkinson AS 11 (VAHR 7822-1550)

9.4.1 Can harm be avoided?

Consideration has been given to ways to avoid harm to Mt Atkinson AS 11 (VAHR 7822-1550); however, this has not been deemed practical due to the intensive residential and industrial development identified in the PSP.

9.4.2 Can harm be minimised?

Consideration has been given to ways to minimise harm to this Aboriginal place; however, this has not been deemed practical due to the nature of the volcanic landform which requires large-scale earth moving to facilitate development.

9.4.3 Are specific measures needed for mitigating harm?

The nature of this Aboriginal place does not warrant any mitigation measures. This is because it was not relocated in the current assessment.

9.5 Section 61 matters in relation to Mt Atkinson AS 12 (VAHR 7822-1551)

9.5.1 Can harm be avoided?

Consideration has been given to ways to avoid harm to Mt Atkinson AS 12 (VAHR 7822-1551) however this has not been deemed practical due to the intensive residential and industrial development identified in the PSP.

9.5.2 Can harm be minimised?

Consideration has been given to ways to minimise harm to the other components; however, this has not been deemed practical due to the nature of the volcanic landform which requires large-scale earth moving to facilitate development.

9.5.3 Are specific measures needed for mitigating harm?

The nature of this Aboriginal place does not warrant any mitigation measures. This is because it was not relocated in the current assessment.

9.6 Section 61 matters in relation to Peppercorn Rise 1 (VAHR 7822-3798)

9.6.1 Can harm be avoided?

Consideration has been given to ways to avoid harm to Peppercorn Rise 1 (VAHR 7822-3798); however, this has not been deemed practical due to the intensive residential and industrial development identified in the PSP. This is consistent with the conclusions of CHMP 13123.

9.6.2 Can harm be minimised?

Consideration has been given to ways to minimise harm to this Aboriginal place; however, this has not been deemed practical due to the nature of the volcanic landform which requires large-scale earth moving to facilitate development. This is consistent with the conclusions of CHMP 13123.

9.6.3 Are specific measures needed for mitigating harm?

CHMP 13123 developed a measure to mitigate harm to this Aboriginal place, which involved surface archaeological salvage. This measure has not been implemented and consultation with Traditional Owners and Aboriginal Victoria has resulted in an alternative method to increase ground surface visibility. The methodology and location for this salvage is detailed in Section 10.

9.7 Section 61 matters in relation to Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16)

9.7.1 Can harm be avoided?

Consideration has been given to ways to avoid harm to Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16). Those components associated with Mt Atkinson cone AS 1 component (VAHR 7822-4109-1) i.e. (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10,

7822-3802-11, 7822-3802-12) will largely avoid harm as these are included in the significant landscape zone associated with Mount Atkinson. This area will become a reserve and impacts will be restricted to park furniture and access tracks. No large-scale earth moving will occur. Those components associated with Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-4) i.e. (VAHR 7822-3802-15, 7822-3802-16) cannot avoid harm. Avoidance measures have not been deemed practical due to the intensive residential and industrial development identified in the PSP.

9.7.2 Can harm be minimised?

Consideration has been given to ways to minimise harm to this Aboriginal place; however, this has not been deemed practical due to the nature of the volcanic landform which requires large-scale earth moving to facilitate development.

9.7.3 Are specific measures needed for mitigating harm?

A combination of surface and subsurface archaeological salvage to address research questions will provide a mitigation measure for those components associated with Mt Atkinson cone AS 1 component (VAHR 7822-4109-1) i.e. (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12). The methodology and location for this salvage is detailed in Section 10.

9.8 Summary

A summary of the impact assessment for each Aboriginal place is listed in Table 130. Under the current CHMP harm is permitted to Mt Atkinson Landscape (VAHR 7822-4109), Mt Atkinson LDAD 1 (VAHR 7822-4092), Mt Atkinson AS 10 (VAHR 7822-1549), Mt Atkinson AS 11 (VAHR 7822-1550), Mt Atkinson AS 12 (VAHR 7822-1551), Peppercorn Rise 1 (VAHR 7822-3798) and Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16).

Table 130 Summary of impact assessment (refer Map 10)

Aboriginal place	Avoid	Minimise	Mitigate
Mt Atkinson Landscape (VAHR 7822-4109)	Harm will largely be avoided to Mt Atkinson cone AS 1 component and sections of Mt Atkinson raised volcanic plain AS 1 component. This area will become a reserve and impacts will be restricted to park furniture and access tracks. No largescale earth moving will occur.	No	Combination of surface and subsurface archaeological salvage.
Mt Atkinson LDAD 1 (VAHR 7822-1549)	No	No	No
Mt Atkinson AS 10 (VAHR 7822-1549)	No	No	No
Mt Atkinson AS 11 (VAHR	No	No	No

Aboriginal place	Avoid	Minimise	Mitigate
7822-1550)			
Mt Atkinson AS 12 (VAHR 7822-1551)	No	No	No
Peppercorn Rise 1 (VAHR 7822-3798)	No	No	Surface salvage.
Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16)	Harm will largely be avoided to those components associated with Mt Atkinson cone AS 1 component. This area will become a reserve and impacts will be restricted to park furniture and access tracks. No largescale earth moving will occur.	No	Combination of surface and subsurface archaeological salvage associated with Mt Atkinson cone AS 1 component.

9.9 What are the cumulative impacts on Aboriginal cultural heritage in the Activity Area?

This section considers the magnitude of cumulative impacts and the significance of cumulative effects of the activity on Aboriginal cultural heritage. Cumulative impacts of Aboriginal cultural heritage have been considered based on the combination of the overall impact of development within the geographic region, and how this development has impacted Aboriginal cultural heritage.

The limitations of a cumulative impact assessment on Aboriginal cultural heritage material is that the amount of recorded Aboriginal cultural heritage material is finite; and no region (however well-investigated) has been the subject of a comprehensive and systematic survey from which Aboriginal cultural heritage base data can be absolutely defined. The base datum for assessment must rely on Aboriginal cultural heritage material that has been identified, recorded and preferably preserved in situ in order to determine a calculation of loss.

Aboriginal Victoria's *Guide to Preparing a Cultural Heritage Management Plan* (State of Victoria Department of Premier and Cabinet Aborignal Victoria, 2016, p. 25) states that:

> An assessment of the likely impacts on Aboriginal cultural heritage of the activity should also include consideration and assessment of the cumulative impact of the activity on Aboriginal cultural heritage in the activity area in relation to the Aboriginal cultural heritage of the region.

At present, there are no agreed criteria or explicit guidance on a method for assessing potential cumulative effects on Aboriginal cultural heritage material. The following methodology has been developed based on advice from Aboriginal Victoria, in order to consider regional/landform factors relevant to the current CHMP.

Aboriginal cultural heritage values in the geographic region

There are a total of 277 previously recorded Aboriginal places within the geographic region. The 277 places comprise 769 individual place components, including 531 low density artefact distributions components. The predominant Aboriginal place types in the geographic region are stone artefact distributions or isolated artefacts (n=226 (81 per cent)) and low density artefact distributions (n=47 (17 per cent)).

Summary of impacts in the geographic region

Most of the land within the geographic region was probably used for agricultural purposes (cropping and grazing) from the 1850s onwards. Clearance of surface rock and shrubs and cultivation to strip native grassland would have impacted Aboriginal cultural heritage material, if present, typically within the first 250 millimetres of the soil profile. The subdivided lands were further subject to clearance, stripping of surface rock, drainage and road construction. Quarrying of surface basalt was also undertaken at certain locations. More intensive development of these subdivided lands was undertaken at a later stage, and most of the geographic region remained as farmland until the first half of the 20th century. Development for housing, roads and infrastructure has continued from the 1940s to the present day.

In summary, initial clearance and agricultural land use is likely to have caused minimal impacts on Aboriginal cultural heritage material, with intensive subsurface disturbance likely to be localised to construction areas around homesteads and outbuildings. Ploughing is likely to have disrupted the integrity of archaeological deposits for the first 250 millimetres across much of the geographic region.

Impacts to Aboriginal cultural heritage in the geographic region

A search of the VAHR was undertaken to establish known impacts to Aboriginal cultural heritage in the geographic region. Impacts were tabulated using impact assessments from archaeological reports or from air photograph evidence, and are shown in Table 131. Impacts have been separated as no impacts, partly destroyed, destroyed or condition unknown.

It should be noted that there are limitations with these impact calculations. Firstly they are based on proposed impacts, which may not always have occurred if developments were cancelled, or are still scheduled to occur, particularly with recent reports. Much of the early recording of Aboriginal places was undertaken as large-scale regional survey work during the 1980s and 1990s. These studies were not related to specific development proposals and it is uncertain whether the places recorded in these surveys have survived incidental disturbance since that time. Protection of Aboriginal places and documentation of development impacts has become more rigorous since the introduction of the *Aboriginal Heritage Act 2006* but disturbances before this date (particularly minor works outside the planning process) may not have been recorded. Finally, the identification and reporting of Aboriginal places has been largely dependent on other factors such as suitable ground surface visibility and specific development proposals. This has created a very patchy coverage of detailed investigation for the Rockbank region, which almost certainly under-represents the undetected Aboriginal cultural heritage of the region. For these reasons, the analysis of impacts below is not comprehensive and limited by the data available.

The assessment of impacts to previously recorded Aboriginal places within the geographic region divides the impact information into 4 categories:

- *No impacts* (excluding historical impacts such as clearance or cultivation caused before the recording of the place)
- *Partly destroyed* (where at least part of the place is still extant)
- *Places destroyed* (where no part of the place remains)
- *Condition unknown* (where no up to date information is available).

Within the Rockbank region, few Aboriginal places which have never been subject to previous impacts have been recorded. This is a consequence of the shallow cultivated soils of the basalts plains on the outskirts of Melbourne, where there has been less potential for deeply stratified Aboriginal places to be preserved. In practice, artefact places which have been subject to no previous disturbance are most likely to be found in deep alluvial or dune deposits. Other place types such as Aboriginal scarred trees may survive in cultivated

farmland but no scarred trees have been recorded in the geographic region. The assessment shows that all places recorded within the geographic region have been subject to some form of disturbance either from historic land use practices of recent development. This reflects the circumstances of discovery, where artefacts are most likely to be found when they are exposed on the surface as a result of disturbance.

The pattern of disturbance from past land use practices is also reflected in the Aboriginal places recorded in the current CHMP, particularly the place components in the northern section of the Activity Area which has been subject to rock clearance and ploughing. Largely be avoiding harm to the Mt Atkinson cone AS 1 component and sections of the Mt Atkinson raised volcanic plateau AS 1 component, as these are included in the significant landscape zone associated with Mount Atkinson and sections of Mt Atkinson drainage plain AS 1 component that are in proximity to Skeleton Creek drainage channel, which will become a reserve is a positive outcome for the current CHMP.

While the other Aboriginal places and Aboriginal place components will be harmed under the current CHMP, the investigation methodology, designed specifically to address the research questions, provides an opportunity to understand Aboriginal occupation within the Volcanic Plains landscape, and evaluate different investigative approaches which may benefit future CHMP investigation in the geographic region.

Table 131 Known impacts to Aboriginal cultural heritage in the geographic region

Place type (by component)	Total	Destroyed	Partly destroyed	No impacts	Condition unknown
Artefact scatter and isolated artefacts	225 (100%)	170 (75.6%)	24 (10.7%)	12 (1.56%)	19 (8.4%)
LDAD components	531 (100%)	274 (51.6%)	132 (24.9%)	-	125 (23.5%)
Object collection	10 (100%)	-	-	10 (100%)	-
Earth features	2 (100%)	-	-	-	2 (100%)
Stone features	1 (100%)	-	-	-	1 (100%)
Total	769 (100%)	444 (57.8%)	156 (20.3%)	22 (2.9%)	144 (18.7%)

9.10 Are there particular contingency plans that might be necessary?

Contingency plans for disputes, delays and other obstacles that may affect the conduct of the activity are included in Section 11.

9.11 What custody and management arrangements might be needed?

Arrangements for the custody and management of Aboriginal cultural heritage during the course of the activity are included in Section 11.

PART 2 — CULTURAL HERITAGE MANAGEMENT CONDITIONS

These conditions become compliance requirements once this CHMP is approved. Failure to comply with an approved CHMP condition is an offence under Section 67A of the *Aboriginal Heritage Act 2006*.

10 Specific cultural heritage management requirements

10.1 Overview

The conditions included below seek to address the research questions included in the assessment by contributing additional information to the data sets recorded in this CHMP. The results will further our understanding of Aboriginal occupation on the volcanic plains. In addition a new set of research questions have been developed that explore the nature of archaeological investigation by examining different methods for salvage across different landforms. The conduct and reporting of the salvage investigation must, at a minimum, address the following research questions:

Does Aboriginal place patterning reflect landforms?

Can stages of stone tool manufacture be identified and are these associated with specific activity patterns?

Can the Aboriginal places identified on different landforms be associated with specific activity patterns?

Were the lithic materials sourced locally?

Can stratified archaeological deposits on stony rises provide a representative sample compared to surface artefact recovery on the volcanic plains?

Can multi-phase occupation be identified on Mount Atkinson?

Is ploughing an effective artefact recovery method compared to controlled burning?

A summary of each Aboriginal place is listed in Table 132. A summary of the salvage requirements is listed in Table 133.

Table 132 Aborignal place summary

Aboriginal place	Description
Mt Atkinson Landscape (VAHR 7822-4109)	Harm will largely be avoided to Mt Atkinson cone AS 1 component and sections of Mt Atkinson raised volcanic plain AS 1 component. This area will become a reserve and impacts will be restricted to park furniture and access tracks. No largescale earth moving will occur. Harm will also be avoided to sections of Mt Atkinson drainage plain AS 1 component that are in proximity to Skeleton Creek drainage channel. This area will become a reserve and impacts will be restricted to park furniture and access tracks with limited earth moving to facilitate wetland development.
Mt Atkinson LDAD 1 (VAHR 7822-1549)	Surface and subsurface low density artefact distribution. Background scatter of artefacts associated with occupation in the wider Volcanic Plains. Harm cannot be avoided or minimised.
Mt Atkinson AS 10 (VAHR 7822-1549)	Recorded in 2003 as isolated surface artefact. Not relocated in current CHMP. Harm cannot be avoided or minimised.
Mt Atkinson AS 11 (VAHR 7822-1550)	Recorded in 2003 as isolated surface artefact. . Not relocated in current CHMP. Harm cannot be avoided or minimised.
Mt Atkinson AS 12 (VAHR 7822-1551)	Recorded in 2003 as isolated surface artefact. . Not relocated in current CHMP. Harm cannot be avoided or minimised.
Peppercorn Rise 1	Recorded in 2014 as surface low density artefact distribution. Not relocated in current CHMP.

Aboriginal place	Description
(VAHR 7822-3798)	Harm cannot be avoided or minimised.
Mount Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16)	Harm will largely be avoided to those components associated with Mt Atkinson cone AS 1 component. This area will become a reserve and impacts will be restricted to park furniture and access tracks.

Table 133 Summary of salvage/recording requirements

Aboriginal place	Plough	Controlled burn	Surface artefact recording	Surface salvage	Subsurface salvage
Peppercorn Rise 1 (VAHR 7822-3798)	Salvage area Map 24			Following ploughing	
Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-4)	Minimum 3 hectares Map 25	Minimum 3 hectares Map 25		Following ploughing Following controlled burn	
Mt Atkinson Landscape (VAHR 7822-4109)				Along already exposed access tracks Map 26	
Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-4		Minimum 3 hectares Map 27		Following controlled burn	
Mt Atkinson stony rise AS 1 component		Minimum 0.75 hectare Map 28		Following controlled burn	5x10 metre at greatest density of artefacts from CHMP

Aboriginal place	Plough	Controlled burn	Surface artefact recording	Surface salvage	Subsurface salvage
(VAHR 7822-4109-2)					5x10 metre at greatest density of artefacts following controlled burn Map 29
Mt Atkinson cone AS 1 component (VAHR 7822-4109-1)		Minimum 4.5 hectare Map 30	Following controlled burn		All impact zones higher than the 125 metre contour Map 31

10.2 Condition 1 – Peppercorn Rise 1 (VAHR 7822-3798)

Refer Map 24.

Note this condition supersedes that of CHMP 13123.

Peppercorn Rise 1 (VAHR 7822-3798) must be subject to surface salvage prior to the commencement of works within 250 metres of the Aboriginal place. The salvage method is as follows:

1. The salvage area identified on Map 24 must be ploughed to a depth of at least 200 millimetres with an agricultural disk plough. The aim of ploughing is to remove surface vegetation and expose subsurface sediments.
2. Following ploughing, the salvage area must be surveyed by a heritage advisor. A Traditional Owner representative must also be invited to participate in the survey. The survey must occur no earlier than 2 days after ploughing and no later than 2 weeks after ploughing. The survey must be in systematic transects spaced no more than 2 metres apart.
3. All artefacts identified in the survey must have their provenance recorded using a DGPS before being collected.
4. At the completion of the survey, the salvage area identified on Map 24 must be ploughed for a second time.
5. Following ploughing, the salvage area must be surveyed by a heritage advisor. A Traditional Owner representative must also be invited to participate in the survey. The survey must occur no earlier than 2 days after ploughing and no later than 2 weeks after ploughing. The survey must be in systematic transects spaced no more than 2 metres apart.
6. All artefacts identified in the survey must have their provenance recorded using a DGPS before being collected.

Artefacts must be recorded in accordance with *Standards for Recording Victorian Aboriginal Heritage Places and Objects*.

At the completion of fieldwork for this Condition, the activity may commence within the Aboriginal place.

In consultation with the Traditional Owners, the heritage advisor must determine an appropriate storage place for the artefacts until they are assigned a permanent storage location in accordance with Condition 9. The artefacts must be stored in a secure location with copies of the assemblage catalogue.

A report summarising the results of the salvage, including artefact analysis, must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The report must address the research questions and include a comparison with the results of previous stages of investigation associated with the Activity Area. The report must be completed within 90 days of the completion of the survey.

The report must be prepared in accordance with *Practice Note: Salvage Excavation*.

A Place Inspection Form, including relevant spatial data, and Object Collection Form must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The forms must be completed within 60 days of the completion of the survey.

The salvage must be organised and paid for by the site contractors and/or Sponsor.

10.3 Condition 2 – Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8)

Refer Map 25.

Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8) must be subject to surface salvage prior to the commencement of works within 250 metres of the salvage area. This salvage can be completed in conjunction with the salvage in Condition 3. The salvage method is as follows:

1. A minimum 3 hectare section of the salvage area identified on Map 25 must be ploughed to a depth of at least 200 millimetres with an agricultural disk plough. The aim of ploughing is to remove surface vegetation and expose subsurface sediments.
2. Following ploughing, the salvage area must be surveyed by a heritage advisor. A Traditional Owner representative must also be invited to participate in the survey. The survey must occur no earlier than 2 days after ploughing and no later than 2 weeks after ploughing. The survey must be in systematic transects spaced no more than 2 metres apart.
3. All artefacts identified in the survey must have their provenance recorded using a DGPS before being collected.
4. At the completion of the survey, the salvage area identified on Map 25 must be ploughed for a second time.
5. Following ploughing, the salvage area must be surveyed by a heritage advisor. A Traditional Owner representative must also be invited to participate in the survey. The survey must occur no earlier than 2 days after ploughing and no later than 2 weeks after ploughing. The survey must be in systematic transects spaced no more than 2 metres apart.
6. All artefacts identified in the survey must have their provenance recorded using a DGPS before being collected.

Artefacts must be recorded in accordance with *Standards for Recording Victorian Aboriginal Heritage Places and Objects*.

At the completion of fieldwork for this Condition and Condition 3, the activity may commence within the Aboriginal place component.

In consultation with the Traditional Owners, the heritage advisor must determine an appropriate storage place for the artefacts until they are assigned a permanent storage location in accordance with Condition 9. The artefacts must be stored in a secure location with copies of the assemblage catalogue.

A report summarising the results of the salvage, including artefact analysis, must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The report must address the research questions and include a comparison with the results of previous stages of investigation associated with the Activity Area. The report must be completed within 90 days of the completion of the survey.

The report must be prepared in accordance with *Practice Note: Salvage Excavation*.

A Place Inspection Form, including relevant spatial data, and Object Collection Form must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The forms must be completed within 60 days of the completion of the survey.

The salvage must be organised and paid for by the site contractors and/or Sponsor.

10.4 Condition 3 – Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8)

Refer Map 25.

Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-8) must be subject to surface salvage prior to the commencement of works within 250 metres of the salvage area. This salvage can be completed in conjunction with the salvage in Condition 2. The salvage method is as follows:

1. A minimum 3 hectare section of the salvage area identified on Map 27 must be subject to a controlled burn.
2. Following the controlled burn, the salvage area must be surveyed by a heritage advisor. A Traditional Owner representative must also be invited to participate in the survey. The survey must occur no earlier than 2 weeks after the controlled burn and no later than 4 weeks after the controlled burn. The survey must be in systematic transects spaced no more than 2 metres apart.
3. All artefacts identified in the survey must have their provenance recorded using a DGPS before being collected.

Artefacts must be recorded in accordance with *Standards for Recording Victorian Aboriginal Heritage Places and Objects*.

At the completion of fieldwork for this Condition and Condition 2, the activity may commence within the Aboriginal place component.

In consultation with the Traditional Owners, the heritage advisor must determine an appropriate storage place for the artefacts until they are assigned a permanent storage location in accordance with Condition 9. The artefacts must be stored in a secure location with copies of the assemblage catalogue.

A report summarising the results of the salvage, including artefact analysis, must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The report must address the research questions and include a comparison with the results of previous stages of investigation associated with the Activity Area. The report must be completed within 90 days of the completion of the survey.

The report must be prepared in accordance with *Practice Note: Salvage Excavation*.

A Place Inspection Form, including relevant spatial data, and Object Collection Form must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The forms must be completed within 60 days of the completion of the survey.

The salvage must be organised and paid for by the site contractors and/or Sponsor.

10.5 Condition 4 – Mt Atkinson Landscape (VAHR 7822-4109)

Refer Map 26.

Mt Atkinson Landscape (VAHR 7822-4109) must be subject to surface salvage prior to the commencement of works within 250 metres of the Aboriginal place. The salvage method is as follows:

1. The salvage area identified on Map 26 must be surveyed by a heritage advisor. A Traditional Owner representative must also be invited to participate in the survey. The survey must be in systematic transects spaced no more than 2 metres apart.
2. All artefacts identified in the survey must have their provenance recorded using a DGPS before being collected.

Artefacts must be recorded in accordance with *Standards for Recording Victorian Aboriginal Heritage Places and Objects*.

In consultation with the Traditional Owners, the heritage advisor must determine an appropriate storage place for the artefacts until they are assigned a permanent storage location in accordance with Condition 9. The artefacts must be stored in a secure location with copies of the assemblage catalogue.

A report summarising the results of the salvage, including artefact analysis, must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The report must address the research questions and include a comparison with the results of previous stages of investigation associated with the Activity Area. The report must be completed within 90 days of the completion of the survey.

The report must be prepared in accordance with *Practice Note: Salvage Excavation*.

A Place Inspection Form, including relevant spatial data, and Object Collection Form must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The forms must be completed within 60 days of the completion of the survey.

The salvage must be organised and paid for by the site contractors and/or Sponsor.

10.6 Condition 5 – Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-10)

Refer Map 27.

Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-10) must be subject to surface salvage prior to the commencement of works within 250 metres of the salvage area. The salvage method is as follows:

1. A minimum 3 hectare section of the salvage area identified on Map 27 must be subject to a controlled burn.
2. Following the controlled burn, the salvage area must be surveyed by a heritage advisor. A Traditional Owner representative must also be invited to participate in the survey. The survey must occur no earlier than 2 weeks after the controlled burn and no later than 4 weeks after the controlled burn. The survey must be in systematic transects spaced no more than 2 metres apart.

3. All artefacts identified in the survey must have their provenance recorded using a DGPS before being collected.

Artefacts must be recorded in accordance with *Standards for Recording Victorian Aboriginal Heritage Places and Objects*.

At the completion of fieldwork for this Condition, the activity may commence within the Aboriginal place component.

In consultation with the Traditional Owners, the heritage advisor must determine an appropriate storage place for the artefacts until they are assigned a permanent storage location in accordance with Condition 9. The artefacts must be stored in a secure location with copies of the assemblage catalogue.

A report summarising the results of the salvage, including artefact analysis, must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The report must address the research questions and include a comparison with the results of previous stages of investigation associated with the Activity Area. The report must be completed within 90 days of the completion of the survey.

The report must be prepared in accordance with *Practice Note: Salvage Excavation*.

A Place Inspection Form, including relevant spatial data, and Object Collection Form must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The forms must be completed within 60 days of the completion of the survey.

The salvage must be organised and paid for by the site contractors and/or Sponsor.

10.7 Condition 6 – Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4)

Refer Map 28.

Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4) must be subject to surface salvage prior to the commencement of works within 250 metres of the Aboriginal place component. This salvage must be completed before the salvage associated with Condition 7. The salvage method is as follows:

1. A minimum 0.75 hectare section of the Aboriginal place must be subject to a controlled burn.
2. Following the controlled burn, the Aboriginal place must be surveyed by a heritage advisor. A Traditional Owner representative must also be invited to participate in the survey. The survey must occur no earlier than 2 weeks after the controlled burn and no later than 4 weeks after the controlled burn. The survey must be in systematic transects spaced no more than 2 metres apart.
3. All artefacts identified in the survey must have their provenance recorded using a DGPS before being collected.

Artefacts must be recorded in accordance with *Standards for Recording Victorian Aboriginal Heritage Places and Objects*.

At the completion of fieldwork for this Condition and Condition 7, the activity may commence within the Aboriginal place component.

In consultation with the Traditional Owners, the heritage advisor must determine an appropriate storage place for the artefacts until they are assigned a permanent storage location in accordance with Condition 9. The artefacts must be stored in a secure location with copies of the assemblage catalogue.

A report summarising the results of the salvage, including artefact analysis, must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The report must address the research

questions and include a comparison with the results of previous stages of investigation associated with the Activity Area. The report must be completed within 90 days of the completion of the survey.

The report must be prepared in accordance with *Practice Note: Salvage Excavation*.

A Place Inspection Form, including relevant spatial data, and Object Collection Form must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The forms must be completed within 60 days of the completion of the survey.

The salvage must be organised and paid for by the site contractors and/or Sponsor.

10.8 Condition 7 – Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4)

Refer Map 29.

Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4) must be subject to subsurface salvage prior to the commencement of works within 250 metres of the Aboriginal place component. This salvage must be completed after the salvage associated with Condition 6. The salvage method is as follows:

1. A 5x10 metre test pit must be hand excavated. Where possible, the test pit must be located at the location of the greatest density of artefacts identified in the CHMP. A heritage advisor must undertake the excavation. A Traditional Owner representative must also be invited to participate in the excavation.
2. A 5x10 metre test pit must be hand excavated. Where possible, the test pit must be located at the location of the greatest density of artefacts identified from the salvage in Condition 5. A heritage advisor must undertake the excavation. A Traditional Owner representative must also be invited to participate in the excavation.
3. Where a significant archaeological feature e.g. intact hearth or artefact density greater than 50 artefacts per 1x1 metre is recorded, the test pit must be extended in 1x1 metre units until the entirety of the feature is recorded or artefact density is less than 10 artefacts per 1x1 metre.
4. Excavation must proceed in 50 millimetre spits until a sterile horizon (e.g. rock or sterile clay) is reached.
5. All sediment must be sieved through a 5 millimetre screen.

At the completion of fieldwork for this Condition and Condition 6, the activity may commence within the Aboriginal place component.

Artefacts must be recorded in accordance with *Standards for Recording Victorian Aboriginal Heritage Places and Objects*. Should artefacts and/or samples e.g. charcoal from secure contexts, be identified, that would allow for scientific testing e.g. residue or sourcing analysis and dating, then this testing should be undertaken.

In consultation with the Traditional Owners, the heritage advisor must determine an appropriate storage place for the artefacts until they are assigned a permanent storage location in accordance with Condition 9. The artefacts must be stored in a secure location with copies of the assemblage catalogue.

A report summarising the results of the salvage, including artefact analysis, must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The report must address the research questions and include a comparison with the results of previous stages of investigation associated with the Activity Area. The report must be completed within 90 days of the completion of the excavation.

The report must be prepared in accordance with *Practice Note: Salvage Excavation*.

A Place Inspection Form, including relevant spatial data, and Object Collection Form must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The forms must be completed within 60 days of the completion of the excavation.

The salvage must be organised and paid for by the site contractors and/or Sponsor.

10.9 Condition 8 – Mt Atkinson cone AS 1 component (VAHR 7822-4109-2)

Refer Map 30.

Mt Atkinson cone AS 1 component (VAHR 7822-4109-2) must be subject to surface artefact recording prior to the commencement of works within 250 metres of the Aboriginal place component. This surface artefact recording must be completed before the salvage associated with Condition 9. The surface artefact recording method is as follows:

1. A minimum 4.5 hectare section of the Aboriginal place must be subject to a controlled burn.
2. Following the controlled burn, the Aboriginal place must be surveyed by a heritage advisor. A Traditional Owner representative must also be invited to participate in the survey. The survey must occur no earlier than 2 weeks after the controlled burn and no later than 4 weeks after the controlled burn The survey must be in systematic transects spaced no more than 2 metres apart.
3. All artefacts identified in the survey must have their provenance recorded using a DGPS. Note no surface artefacts are to be collected.

Artefacts must be recorded in accordance with *Standards for Recording Victorian Aboriginal Heritage Places and Objects*.

At the completion of fieldwork for this Condition and Condition 9, the activity may commence within the Aboriginal place component.

A report summarising the results of the salvage, including artefact analysis, must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The report must address the research questions and include a comparison with the results of previous stages of investigation associated with the Activity Area. The report must be completed within 90 days of the completion of the survey.

The report must be prepared in accordance with *Practice Note: Salvage Excavation*.

A Place Inspection Form, including relevant spatial data, and Object Collection Form must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The forms must be completed within 60 days of the completion of the survey.

The salvage must be organised and paid for by the site contractors and/or Sponsor.

10.10 Condition 9 – Mt Atkinson cone AS 1 component (VAHR 7822-4109-2)

Refer Map 31.

Mt Atkinson cone AS 1 component (VAHR 7822-4109-2) must be subject to subsurface salvage prior to the commencement of works within 250 metres of the Aboriginal place component. This salvage must be completed after the artefact recording associated with Condition 8. The salvage method is as follows:

1. Where works impact the Aboriginal place component above the 125 metre contour, the entire extent of the impact zone must be hand excavated. A heritage advisor must undertake the excavation. A Traditional Owner representative must also be invited to participate in the excavation.

2. Excavation must proceed in 50 millimetre spits until a sterile horizon (e.g. rock or sterile clay) is reached.
3. All sediment must be sieved through a 5 millimetre screen.

At the completion of fieldwork for this Condition and Condition 8, the activity may commence within the Aboriginal place component.

Artefacts must be recorded in accordance with *Standards for Recording Victorian Aboriginal Heritage Places and Objects*. Should artefacts and/or samples e.g. charcoal from secure contexts, be identified, that would allow for scientific testing e.g. residue or sourcing analysis and dating, then this testing should be undertaken.

In consultation with the Traditional Owners, the heritage advisor must determine an appropriate storage place for the artefacts until they are assigned a permanent storage location in accordance with Condition 9. The artefacts must be stored in a secure location with copies of the assemblage catalogue.

A report summarising the results of the salvage, including artefact analysis, must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The report must address the research questions and include a comparison with the results of previous stages of investigation associated with the Activity Area. The report must be completed within 90 days of the completion of the survey.

The report must be prepared in accordance with *Practice Note: Salvage Excavation*.

A Place Inspection Form, including relevant spatial data, and Object Collection Form must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The forms must be completed within 60 days of the completion of the excavation.

The salvage must be organised and paid for by the site contractors and/or Sponsor.

10.11 Condition 10 – Cultural heritage material

Cultural heritage material collected during the Complex Assessment, the salvage and the activity (if any) must be assigned to the Registered Aboriginal Party (in accordance with Section 12 of the *Aboriginal Heritage Act 2006*). Where there is no Registered Aboriginal Party it should be assigned to the following in order of priority:

1. Any relevant registered native title holder for the land from which the Aboriginal heritage is salvaged
2. Any relevant native title party (as defined in the *Aboriginal Heritage Act 2006*) for the land from which the Aboriginal heritage is recovered
3. Any relevant Traditional Owner of the land from which the Aboriginal heritage is recovered
4. Any relevant Aboriginal body or organisation which has historical or contemporary interests in Aboriginal heritage relating to the land from which the Aboriginal heritage is recovered
5. The owner of the land from which the Aboriginal heritage is recovered
6. Museum Victoria.

An Object Collection Form must be completed and provided to the Victorian Aboriginal Heritage Register by a heritage advisor. The form must be completed within 30 days of the completion of the assignation.

The assignation must be organised and paid for by the site contractors and/or Sponsor.

10.12 Condition 11 – Cultural heritage induction

All personnel involved in overseeing or undertaking initial ground disturbing works, must attend a cultural heritage induction prior to the commencement of the activity. Note multiple inductions may occur over the life of the activity.

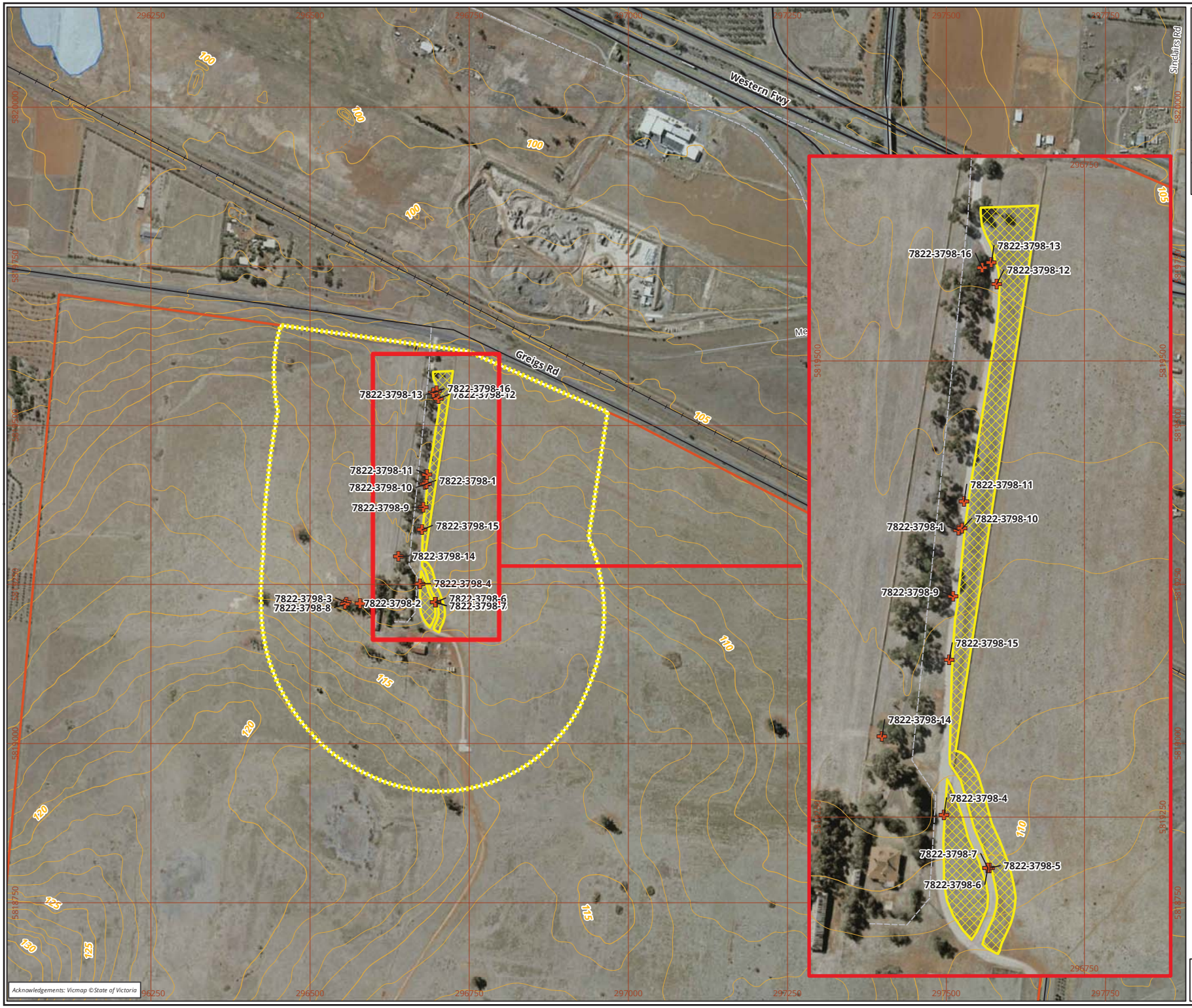
A heritage advisor must give this induction. Each induction must include:

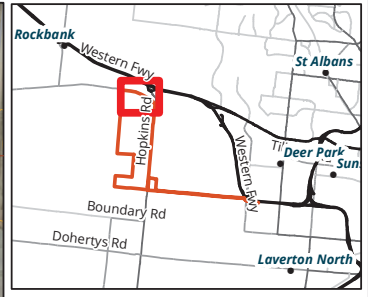
- A brief history of the Aboriginal occupation of the region.
- A summary of the archaeological investigations conducted within the Activity Area.
- Specific details of all Aboriginal places within the Activity Area.
- A summary of the conditions and contingencies contained within the CHMP.
- The obligations of site workers/contractors and Sponsors under the *Aboriginal Heritage Act 2006*.

Each induction must be organised and paid for by the site contractors and/or Sponsor.

10.13 Condition 12 – Cultural heritage management plan

A copy of the cultural heritage management plan must be kept onsite during all ground disturbing works.





Legend

- Activity Area

Previously recorded place

VAHR place

- Low Density Artefact Distribution
- 250m buffer

Condition

- Requires salvage by ploughing

Map 24 Condition 1 Aboriginal Archaeological Place: Peppercorn Rise 1 VAHR No. 7822-3798

0 50 100 150 200 250

Metres

Scale: 1:5,500 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

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Date: 26 July 2017,
Checked by: KFR, Drawn by: LDM, Last edited by: acurtis
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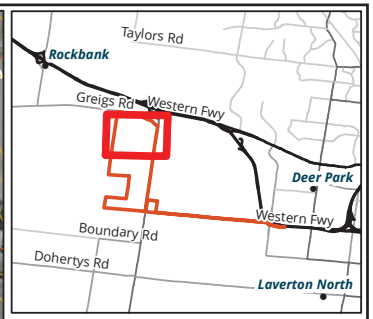

Legend

- Activity Area
- Component Extent
- Requires salvage by ploughing and controlled burn - 3 ha
- 250m buffer

Map 25 Conditions 2 and 3 Component Plan Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson raised volcanic plateau

0 70 140 210 280 350

Metres

Scale: 1:7,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Date: 27 July 2017,
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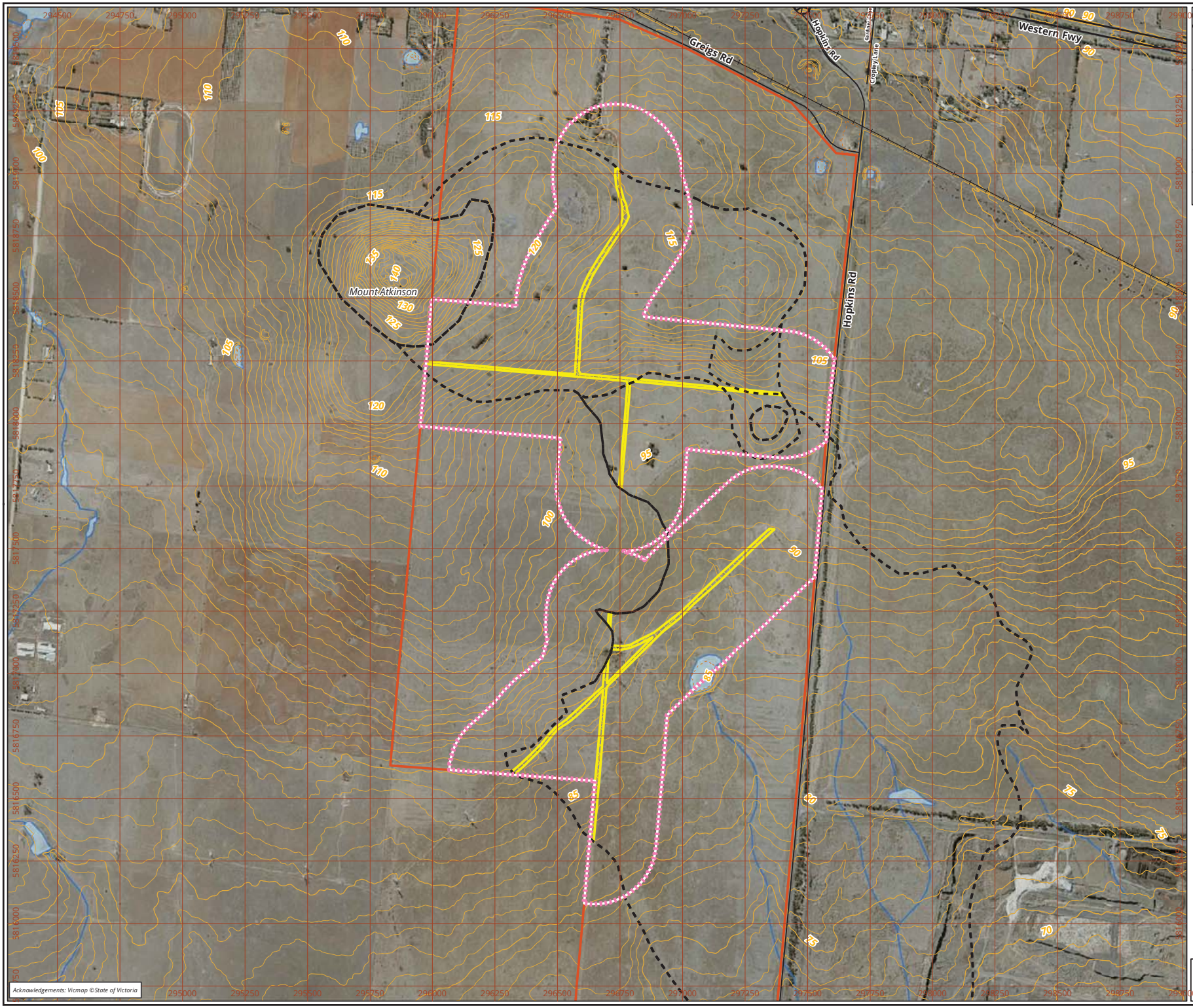

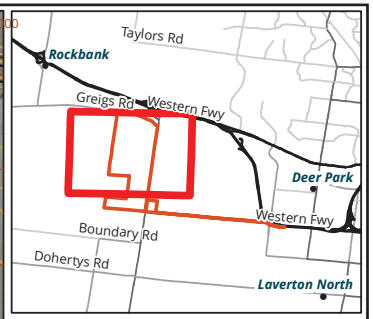

Legend

- Activity Area
- Component Extent
- Requires salvage by survey - All
- 250m buffer

Map 26 Condition 4 Component Plan Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type:

VAHR No. 7822-4109-1

0 140 280 420 560 700

Metres

Scale: 1:14,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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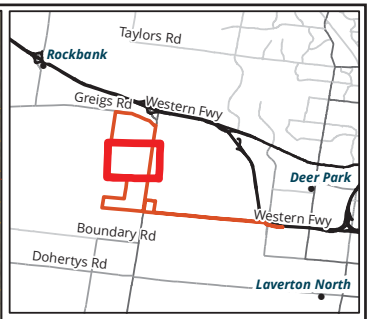

Legend

- Activity Area
- Component Extent
- Requires salvage by controlled burn - 3 ha
- 250m buffer

Map 27 Condition 5 Component Plan Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson drainage plain VAHR No. 7822-4109-10

0 60 120 180 240 300

Metres

Scale: 1:6,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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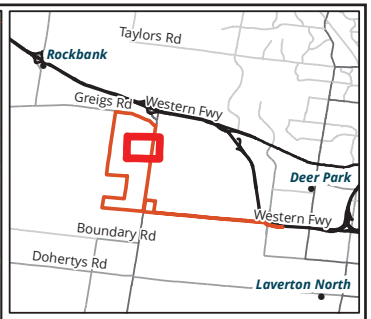

Legend

- Activity Area
- Component Extent
- Requires salvage by controlled burn - 0.75 ha
- 250m buffer

Map 28 Condition 6 Component Plan Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson stony rise VAHR No. 7822-4109-4

0 30 60 90 120 150

Metres

Scale: 1:3,750 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Date: 27 July 2017,
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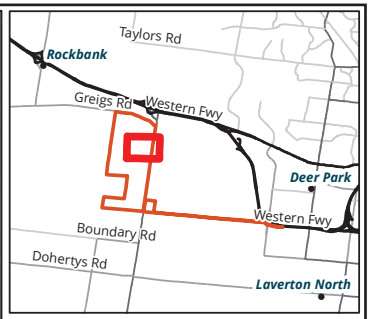

Legend

- Activity Area
- Component Extent
- Requires salvage by excavation - 2x 5x10m minimum
- 250m buffer

Map 29 Condition 7 Component Plan Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson stony rise VAHR No. 7822-4109-4

0 30 60 90 120 150

Metres

Scale: 1:3,750 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Date: 27 July 2017,
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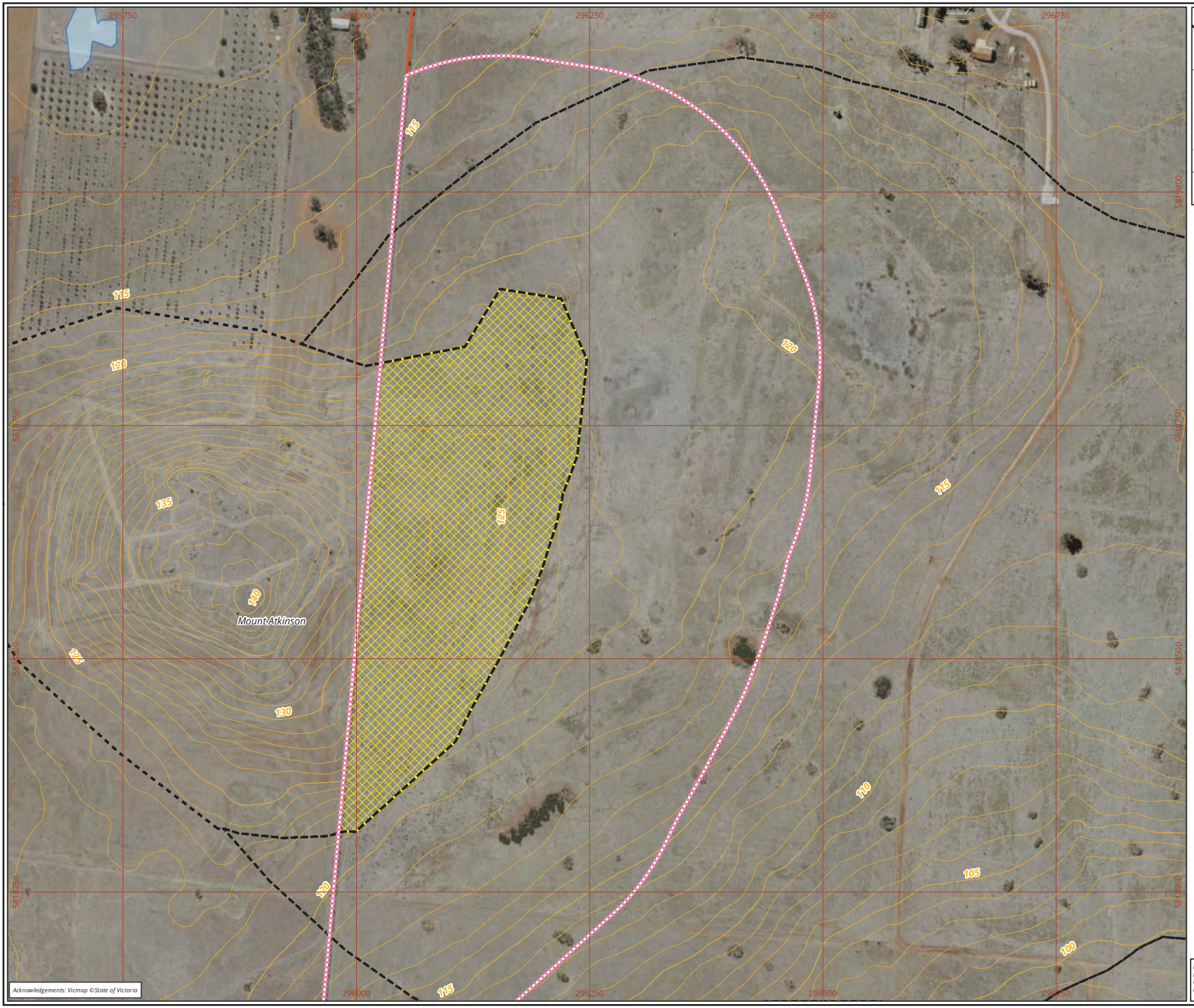

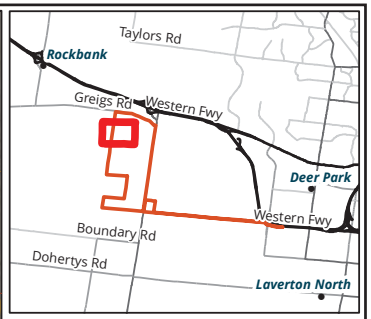

Legend

- Activity Area
- Component Extent
- Requires artefact recording after controlled burn - 4.5 ha
- 250m buffer

Map 30 Condition 8 Component Plan Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson cone
VAHR No. 7822-4109-2

0 30 60 90 120 150

Metres
Scale: 1:3,750 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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Date: 27 July 2017,
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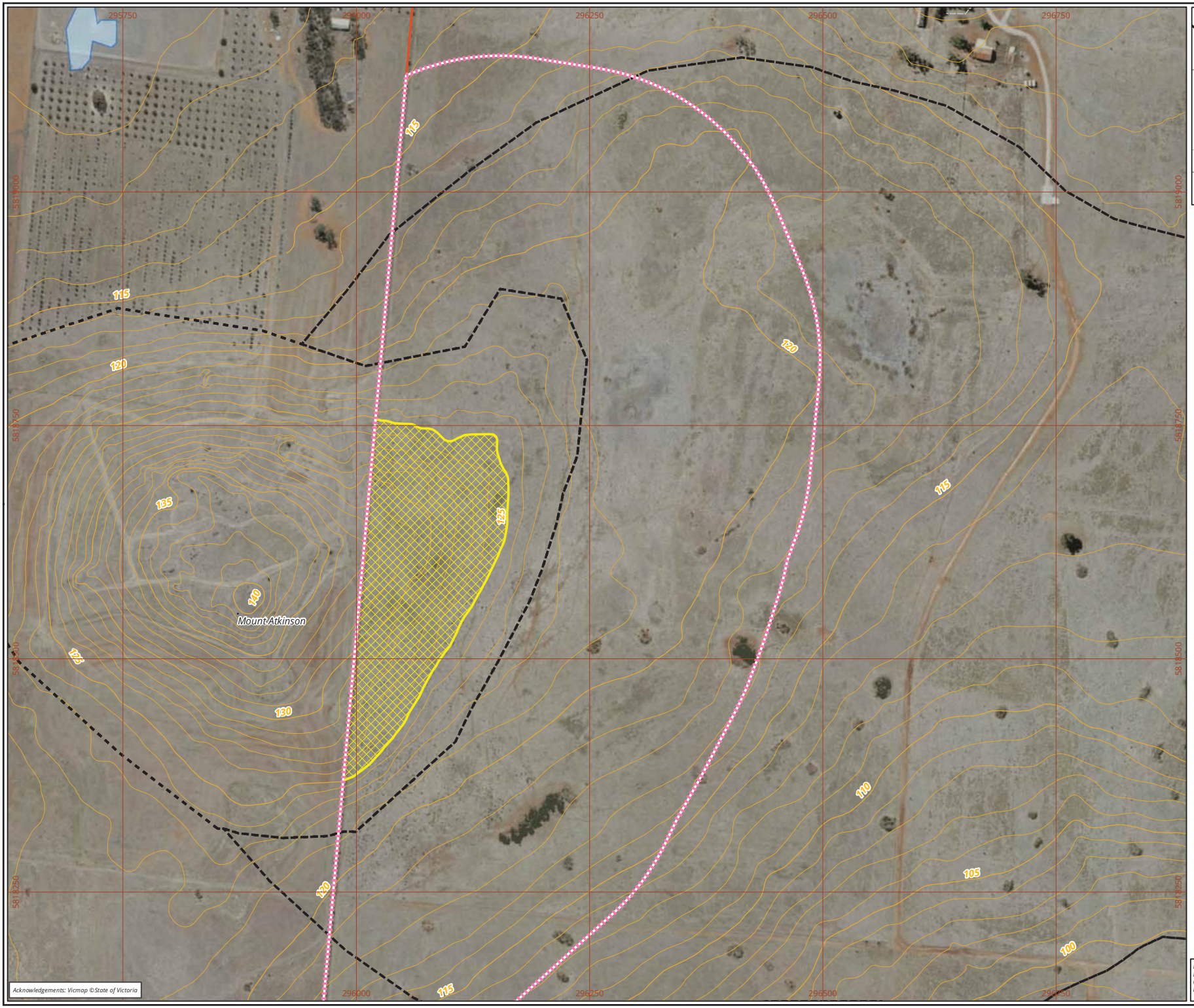

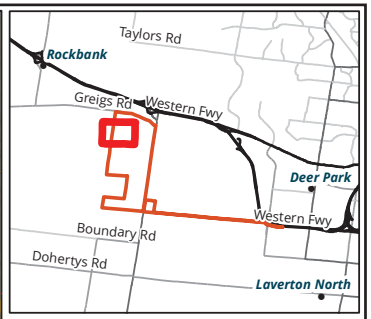

Legend

- Activity Area
- Component Extent
- Requires salvage by excavation - all impact zones
- 250m buffer

Map 31 Condition 9 Component Plan Aboriginal Archaeological Place: Mt Atkinson Landscape,

Component feature type: Mt Atkinson cone
VAHR No. 7822-4109-2

0 30 60 90 120 150

Metres
Scale: 1:3,750 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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19337_Conditions

11 Contingency plans

11.1 Dispute resolution

Where the Secretary, DPC is evaluating the CHMP, this requirement has no application.

11.2 Reviewing compliance

Compliance with the conditions of an approved CHMP is a requirement of the *Aboriginal Heritage Act 2006*. A compliance checklist is included in Appendix 8. Any action carried out contrary to the recommendations and provisions of an approved CHMP, which causes harm to Aboriginal cultural heritage is an offence.

In the instance that the reconditions of a CHMP have been contravened resulting in harm being caused to Aboriginal cultural heritage, the Minister for Aboriginal Affairs may order a Cultural Heritage Audit under Section 80 of the *Aboriginal Heritage Act 2006*. Should a Cultural Heritage Audit be ordered, a Stop Order requiring the activity to cease immediately will also be issued to the Sponsor (under Section 88 of the *Aboriginal Heritage Act 2006*). A Stop Order can be issued in any instance where an activity is harming, is likely to harm, or may harm Aboriginal cultural heritage, regardless of whether the Minister has ordered a Cultural Heritage Audit (under Section 87 of the *Aboriginal Heritage Act 2006*).

Should any and all parties have any concerns regarding non-compliance with the CHMP they will consult with the Sponsor's heritage advisor in the first instance. If it appears that there is a breach of the CHMP, then notification should be made to Aboriginal Victoria. Under Section 81 of the *Aboriginal Heritage Act 2006*, a Cultural Heritage Audit can be ordered by the Minister if non-compliance is suspected. If the Secretary, DPC directs a Sponsor to engage a heritage advisor to conduct a Cultural Heritage Audit, the Sponsor must comply with the direction. The report of a Cultural Heritage Audit may:

- identify non-compliance with an approved CHMP
- recommend amendments to the recommendations in the approved CHMP
- recommend arrangements for the access of Authorised Officers to the location at which the activity is being carried out
- recommend other measures in relation to the conduct of the activity to avoid or minimise harm to Aboriginal cultural heritage.

It should be noted that under Sections 27 and 28 of the *Aboriginal Heritage Act 2006*, harming, or doing an act likely to harm, Aboriginal cultural heritage is unlawful, except under the authority of a Cultural Heritage Permit or a CHMP. A range of penalties apply.

Where non-compliance with the CHMP is identified, the following actions must be taken:

- Where the non-compliance harms or is likely to harm Aboriginal cultural heritage, the Sponsor shall provide notice of the non-compliance to Aboriginal Victoria within 24 hours of identifying the non-compliance. A copy of the proposed and/or implemented actions for any non-compliance shall be provided to the relevant heritage advisor and Aboriginal Victoria within one week of identifying the non-compliance
- Where the non-compliance has not and will not harm Aboriginal cultural heritage, the Sponsor shall provide a copy of the proposed and/or implemented actions for the non-compliance to the relevant heritage advisor within two weeks of identifying the non-compliance.

11.3 Management of Aboriginal cultural heritage found during the activity

The processes outlined below include the notification of the identification of Aboriginal cultural heritage found during the activity.

11.3.1 Unexpected discovery of human remains

If suspected human remains are discovered, you must contact the Victoria Police and the State Coroner's Office immediately. If there are reasonable grounds to believe that the remains are Aboriginal, the Coronial Admissions and Enquiries hotline must be contacted on 1300 888 544. This advice has been developed further and is described in the following five-step contingency plan. Any such discovery at the activity area must follow these steps.

1. Discovery
   - If suspected human remains are discovered, all activity in the vicinity must stop.
   - The remains must be left in place, and protected from harm or damage.
2. Notification
   - Once suspected human remains have been found, the Coroner's Office and Victoria Police must be notified immediately.
   - If there is reasonable grounds to believe that the remains are Aboriginal Ancestral Remains, the Coronial Admissions and Enquiries hotline must be contacted on 1300 888 544.
   - All details of the location and nature of the human remains must be provided to the relevant authorities.
   - If it is confirmed by these authorities that the discovered remains are Aboriginal Ancestral Remains, the person responsible for the activity must, as soon as practicable, report the existence of the Aboriginal Ancestral Remains to the Victorian Aboriginal Heritage Council in accordance with Section 17 of the *Aboriginal Heritage Act 2006.*
3. Impact mitigation or salvage
   - The Victorian Aboriginal Heritage Council, after taking reasonable steps to consult with any Aboriginal person or body with an interest in the Aboriginal Ancestral Remains, will determine the appropriate course of action as required by Section 18(2)(b) of the *Aboriginal Heritage Act 2006*.
   - An appropriate impact mitigation or salvage strategy as determined by the Victorian Aboriginal Heritage Council must be implemented by the Sponsor.
4. Curation and further analysis
   - The treatment of salvaged Aboriginal Ancestral Remains must be in accordance with the direction of the Victorian Aboriginal Heritage Council.
5. Reburial
   - Any reburial site(s) must be fully documented by an experienced and qualified archaeologist, clearly marked and all details provided to the VAHR.
   - Appropriate management measures must be implemented to ensure that the remains are not disturbed in the future.

11.3.2 Unexpected discovery of other Aboriginal cultural heritage

If Aboriginal cultural heritage material is found, works must stop in the relevant area and the following process be followed:

1. Discovery
    - If suspected Aboriginal cultural heritage is identified, all activity within a 20 metre buffer must stop. The activity can proceed outside the buffer.
    - The Aboriginal cultural heritage must be left in place, and protected from harm or damage.
2. Notification
    - The person in charge of the activity must notify a heritage advisor of the identification of Aboriginal cultural heritage within 24 hours if its discovery.
    - The heritage advisor will notify the Secretary, DPC of the identification of Aboriginal cultural heritage material in accordance with Section 24 of the *Aboriginal Heritage Act 2006*.
    - All details of the location and nature of the Aboriginal cultural heritage must be provided to the VAHR.
3. Impact mitigation or salvage
    - An appropriate impact mitigation or salvage strategy as determined by the RAP or Secretary, DPC in accordance with relevant Aboriginal Victoria guidelines and practice notes must be implemented by the Sponsor.
4. Curation and further analysis
    - The treatment of salvaged Aboriginal cultural heritage must be in accordance with the direction of the RAP or Secretary, DPC and relevant Aboriginal Victoria guidelines and practice notes.
5. Reburial
    - Any reburial site(s) must be fully documented by an experienced and qualified archaeologist, clearly marked and all details provided to the VAHR.
    - Appropriate management measures must be implemented to ensure that the Aboriginal cultural heritage is not disturbed in the future.

11.4 Custody of Aboriginal cultural heritage discovered during works

The custody of all Aboriginal cultural heritage material found during the activity must be assigned to the RAP (in accordance with Section 12 of the *Aboriginal Heritage Act 2006*). Where there is no RAP it should be assigned to the following in order of priority:

6. any relevant registered native title holder for the land from which the Aboriginal heritage is salvaged

any relevant native title party (as defined in the *Aboriginal Heritage Act 2006*) for the land from which the Aboriginal heritage is salvaged

any relevant Traditional Owner of the land from which the Aboriginal heritage is salvaged

any relevant Aboriginal body or organisation which has historical or contemporary interests in Aboriginal heritage relating to the land from which the Aboriginal heritage is salvaged

the owner of the land from which the Aboriginal heritage is salvaged

Museum Victoria.

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Appendices

Appendix 1 Notice of intention to prepare a CHMP

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 1800-726-003.

SECTION 1 - Sponsor information

Sponsor:	Mount Atkinson Holdings Pty Ltd		
ABN/ACN:	23 162 247 798		
Contact Name:	Anthony Caligiuri		
Postal Address	PO Box 7411, St Kilda VIC 8004		
Business Number:	03 9036 1969	Mobile:	
Email Address:	anthony@califam.com		

Sponsor's agent (if relevant)

Company:			
Contact Name:			
Postal Address			
Business Number:		Mobile:	
Email Address:			

SECTION 2 - Description of proposed activity and location

Project Name:	Mount Atkinson Development. Greigs Road, Truganina
Municipal district:	Melton Shire Council

Clearly identify the proposed activity for which the cultural heritage managment plan is to be prepared (ie. Mining, road construction, housing subivision)

Subdivision

SECTION 3 - Cultural Heritage Advisor

Kasey Robb	Biosis	krobb@biosis.com.au
Name	*Company*	*Email address*

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

Start Date:	02-Aug-2015	Finish Date:	31-Jul-2017

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?

Subdivision

Is any part of the activity an area of cultural heritage sensitivity, as listed in the regulations? Yes

☐ Other Reasons (Voluntary)

☐ An Environmental Effects Statement is required

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

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

This section is to be completed where there are registered Aboriginal parties in relation to the management plan.

SECTION 7 - Notification checklist

Ensure that any relevant registered Aboriginal party/s is also notitifed. A copy of this notice with a map attached 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 registerd 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 with a map attached may be used for this purpose.

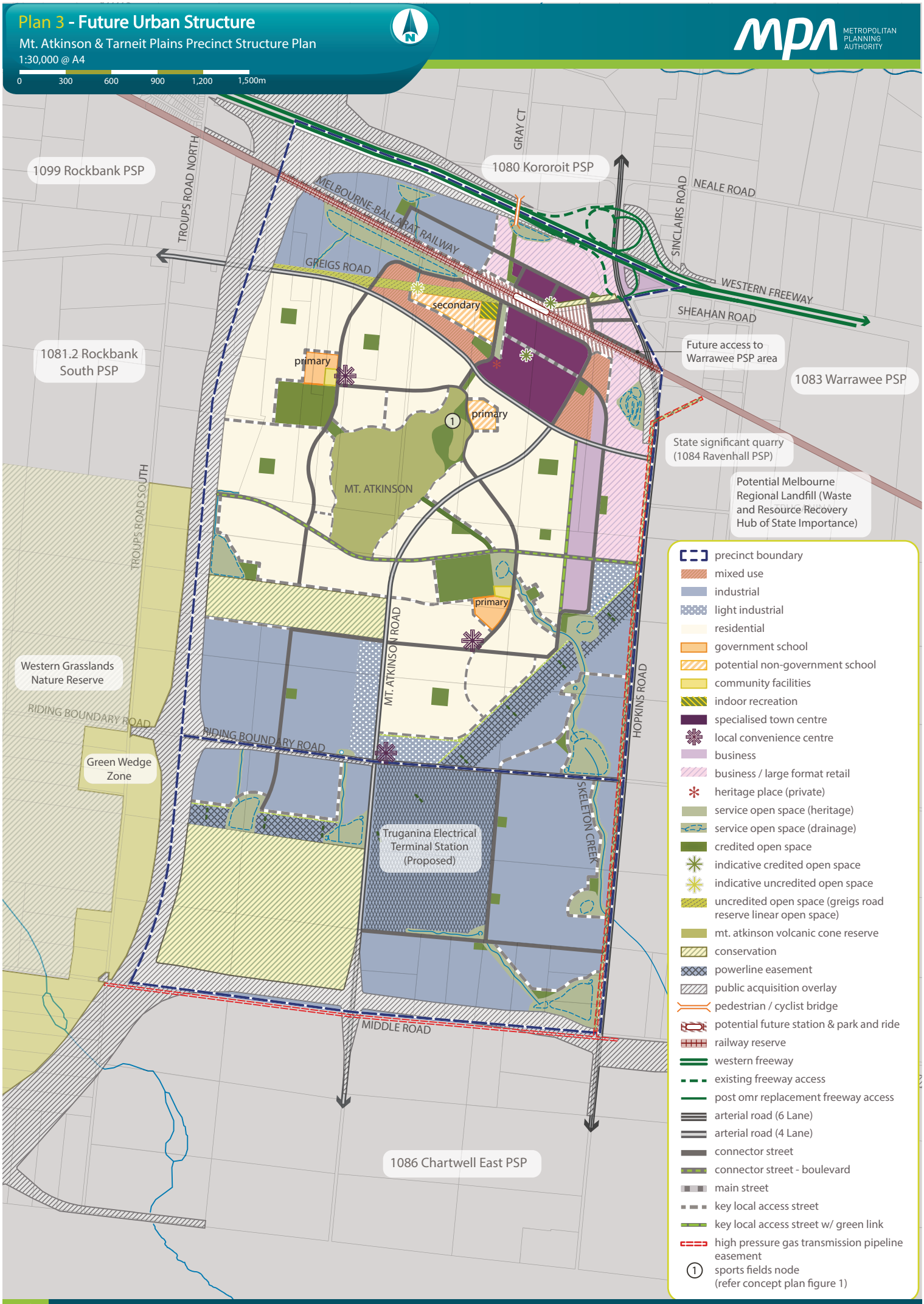
Appendix 2 Precinct structure plan

Plan 3 - Future Urban Structure

Mt. Atkinson & Tarneit Plains Precinct Structure Plan

1:30,000 @ A4

0 300 600 900 1,200 1,500m



Appendix 3 Glossary

Aboriginal place: Aboriginal place is defined under Section 5 of the *Aboriginal Heritage Act* 2006 as follows:

5 What is an Aboriginal place?

(1) For the purposes of this Act, an Aboriginal place is an area in Victoria or the coastal waters of Victoria that is of cultural heritage significance to the Aboriginal people of Victoria.

(2) For the purposes of subsection (1), *area* includes any one or more of the following—

(a) an area of land;

(b) an expanse of water;

(c) a natural feature, formation or landscape;

(d) an archaeological place, feature or deposit;

(e) the area immediately surrounding anything referred to in paragraphs (c) and (d), to the extent that it cannot be separated from the thing without diminishing or destroying the cultural heritage significance attached to the thing by Aboriginal people;

(f) land set aside for the purpose of enabling Aboriginal human remains to be re-interred or otherwise deposited on a permanent basis;

(g) a building or structure.

Alluvial terrace: a platform created from deposits of alluvial material along river banks.

Angular fragment: a piece of stone that is blocky or angular, not flake-like.

Archaeology: the study of the remains of past human activity.

Artefact scatter: a surface scatter of cultural material. Aboriginal artefact scatters are defined as being the occurrence of five or more items of cultural material within an area of about 100 square metres. Artefact scatters are often the only physical remains of places where people have lived camped, prepared and eaten meals and worked.

Backed piece: a flake or blade that has been abruptly retouched along one or more margins opposite an acute (sharp) edge. Backed pieces include backed blades and geometric microliths. They are thought to have been hafted onto wooden handles to produce composite cutting tools. Backed pieces are a feature of the 'Australian small tool tradition', dating from between 5,000 and 1,000 BP in southern Australia (Holdaway & Stern, 2004).

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

Burial place: usually a subsurface pit containing human remains and sometimes associated artefacts.

Contact place: see 'Aboriginal historical archaeological place'.

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

Cortex: original or natural (unflaked) surface of a stone.

Cortical: refers to the cortex.

Flake: a stone piece removed from a core by percussion (striking it) or pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Flaked piece: a piece of stone with definite flake surfaces, which cannot be classified as a flake or core.

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 and axes.

Geocentric Datum of Australia 1994 (GDA94): a system of latitudes and longitudes, or east and north coordinates, centred at the centre of the earth's mass. GDA94 is compatible with modern positioning techniques such as the Global Positioning System (GPS). It supersedes older coordinate systems (AGD66, AGD84). GDA94 is based on a global framework, the IERS Terrestrial Reference Frame (ITRF), but is fixed to a number of reference points in Australia. GDA94 is the Victorian Government Standard and spatial coordinates for excavations, transects and places in CHMP documents.

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.

Grindstones: upper (handstone) and lower (basal) stones used to grind plants for food and medicine and/or ochre for painting. A handstone sometimes doubles as a hammerstone and/or anvil.

Hearth: usually a subsurface 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 a 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 within a hearth.

Isolated artefact: the occurrence of less than five items of cultural material within an area of about 100 square 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.

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

Map Grid of Australia (MGA): The official coordinate projection for use with the Geocentric Datum of Australia 1994 (GDA94).

Mound: these places, 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 build-up of debris resulting from earth-oven cooking; although some may have been formed by the collapse of sod or turf structures.

Percussion: the act of hitting a core with a hammerstone to strike off flakes.

Platform preparation: 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.

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

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

Quarry (stone/ochre source): 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.

Rejuvenation flake: 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 the angle between platform and core surface.

Retouch: a flake, flaked piece or core with intentional secondary flaking along one or more edges.

Rock art: 'paintings, engravings and shallow relief work on natural rock surfaces' (Rosenfeld, 1988, p. 1). 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. Rock engravings were made by incising, pounding, pecking or chiselling a design into a rock surface. Rare examples of carved trees occasionally survive.

Rock shelter: may contain the physical remains of camping places where people prepared meals, flaked stone, etc. They are often classed as a different type of place due to their fixed boundaries and greater likelihood of containing subsurface deposits. Rock shelters may also contain rock art.

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.

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

Significance: the importance of a heritage place or place for aesthetic, historic, scientific or social values for past, present or future generations.

Striking platform: the surface of a core, which is struck by a hammerstone to remove flakes.

Stratified deposit: material that has been laid down, over time, in distinguishable layers.

Transect: A fixed path along which one records archaeological remains.

Utilised artefact: a flake, flaked piece or core that has irregular small flake scarring along one or more margins that does not represent platform preparation.

Appendix 4 Gazetteer

Table 134 Aboriginal place gazetteer

Aboriginal place	Location	Type	Landform	Scientific significance
Mt Atkinson Landscape (VAHR 7822-4109)	E296047 N5818665 E297338 N5817975 E297212 N5818243 E296167 N5819021 E297480 N5817801	Multi-component artefact scatter	Volcanic plain	Moderate
Mt Atkinson LDAD 1 (VAHR 7822-4092)	E295914 N5817468 E296623 N5817871 E296646 N5817854 E296627 N5817784 E296614 N5817790 E296548 N5815319 E295926 N5817635 E295925 N5817634 E296902 N5819219 E296166 N5819661 E297583 N5818856 E296463 N5819550 E296394 N5819323 E296182 N5819380 E296488 N5818066 E296034 N5817303 E297484 N5814988	Low density artefact distribution	Volcanic plain	Low
Mt Atkinson AS 10 (VAHR 7822-1549)	E296222 N5817134	Artefact scatter	Volcanic plain	Low
Mt Atkinson AS 11 (VAHR 7822-1550)	E295921 N5817470	Artefact scatter	Volcanic plain	Low
Mt Atkinson AS 12 (VAHR 7822-1551)	E296231 N5816925	Artefact scatter	Volcanic plain	Low
Peppercorn Rise 1 (VAHR 7822-3798)	E296579 N5819220 E296557 N5819222 E296673 N5819251 E296698 N5819222 E296697 N5819222 E296697 N5819222 E296555 N5819219 E296678 N5819371 E296681 N5819407 E296683 N5819408	Low density artefact distribution	Volcanic plain	Low

Aboriginal place	Location	Type	Landform	Scientific significance
	E296684 N5819423 E296702 N5819542 E296699 N5819554 E296639 N5819294 E296676 N5819336 E296694 N5819551			
Mt Atkinson PSP LDAD (VAHR 7822-3802-5, 7822-3802-6, 7822-3802-7, 7822-3802-8, 7822-3802-9, 7822-3802-10, 7822-3802-11, 7822-3802-12, 7822-3802-13, 7822-3802-15, 7822-3802-16)	E296218 N5818666 E296021 N5818678 E296029 N5818684 E296651 N5818629 E296654 N5818632	Low density artefact distribution		Low

Appendix 5 Significance assessment criteria

Assessing the heritage significance of an Aboriginal place is undertaken to make decisions about the best way to protect and manage the place. The assessment of significance can be complex and include a range of heritage values. The heritage values are broadly defined in the Burra Charter, the set of guidelines on cultural heritage management and practice prepared by the Australia International Council on Monuments and Places. The Burra Charter defines heritage values as the 'aesthetic, historic, scientific or social values for past, present or future generations' (Marquis-Kyle & Walker, 1992, p. 21). Many Aboriginal places also have significance to a specific Aboriginal community.

Although there are no formal guidelines for the assessment of significance of Aboriginal archaeological places in Victoria, the definition of 'cultural heritage significance' under Section 4 of the *Aboriginal Heritage Act 2006* includes:

- archaeological, anthropological, contemporary, historical, scientific, social or spiritual significance
- significance in accordance with Aboriginal tradition.

Scientific significance is based on the capacity of Aboriginal places to provide us with historical, cultural or social information. The following evaluation will assess the scientific significance of the Aboriginal places recorded during this CHMP. The scientific significance assessment methodology outlined below is based on scores for research potential (divided into place contents and place condition) and for representativeness. This system is derived from Bowdler (1981).

'Place contents' refer to all cultural materials and organic remains associated with human activity at a place. 'Place condition' refers to the degree of disturbance to the contents of a place at the time it was recorded. The representativeness of an Aboriginal place is assessed by whether the place is common, occasional, or rare in a given region. It is noted that assessments of representativeness are subjectively biased by our current knowledge of the distribution and number of Aboriginal places, and varies from place to place depending on the extent of archaeological research completed.

The determination of cultural significance for an Aboriginal place is expressed as a statement of significance. Nomination of the level of value — high, moderate, low or not applicable — for each relevant category is presented in Table 135.

Table 135 Scientific significance assessment criteria

Place contents	Place condition	Representativeness	Overall significance
0 No cultural material remaining.	**0** Place destroyed.		
1 Place contains a small number (e.g. 0–10 artefacts) or limited range of cultural materials with no evident stratification.	**1** Place in a deteriorated condition with a high degree of disturbance; some cultural materials remaining.	**1** Common occurrence	**1–3** = Low
2 Place contains a larger number, but limited range of cultural materials; and/or some intact stratified deposit remains; and/or rare or unusual example(s) of a particular artefact type.	**2** Place in a fair to good condition, but with some disturbance.	**2** Occasional occurrence	**4–6** = Moderate
3 Place contains a large number and diverse range of cultural materials; and/or largely intact stratified deposit; and/or surface spatial patterning of cultural materials that still reflect the way the cultural materials were deposited.	**3** Place in an excellent condition with little or no disturbance. For surface artefact scatters, this may mean that the spatial patterning of cultural materials still reflects the way the cultural materials were deposited.	**3** Rare occurrence	**7–9** = High

Appendix 6 Catalogues

Table 136 Mt Atkinson cone AS 1 component (VAHR 7822-4109-2) artefact catalogue

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal Tool	Secondary Modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296083.9	5818604			0	Silcrete	Angular Fragment	None	None							22	8	7	22
296031.7	5818665			0	Silcrete	Blade - Proximal	None	None	Plain						8	10	2	12
296033.8	5818647			0	Silcrete	Flake - Complete	None	None	Flaked	Step					26	32	12	37
296035.2	5818652			0	Quartzite	Flake - Complete	None	None	Plain	Step					15	13	4	16
296031.4	5818665			0	Quartz	Flake - Complete	None	None	Plain	Step					15	11	3	17
296022.5	5818677			0	Quartz	Flake - Complete	None	None	Plain	Feather					4	3	1	5
296021.2	5818679			0	Silcrete	Flake - Complete	None	1-32%	Flaked	Step					16	14	3	17
296021.1	5818679			0	Silcrete	Flake - Complete	None	None	Plain	Step					11	9	2	13
296020.7	5818680			0	Quartzite	Flake - Complete	None	None	Plain	Feather					21	22	4	25
296028.6	5818683			0	Quartz	Flake - Complete	1-32%	None	Crushed	Crushed					17	22	9	24
296029.7	5818687			0	Silcrete	Flake - Complete	None	33-66%	Facetted	Feather			Backed - Geometric Microlith		22	11	8	28
296029.6	5818686			0	Quartz	Flake - Complete	None	None	Plain	Feather					11	9	3	12
296030.6	5818687			0	Silcrete	Flake - Complete	None	None	Crushed	Feather					13	10	5	14
296029.1	5818687			0	Silcrete	Flake - Complete	None	33-66%	Plain	Feather			Scraper - Round-edged		33	31	7	36
296025	5818691			0	Quartzite	Flake - Complete	None	67-99%	Crushed	Step			Scraper - Amorphous		26	24	6	28
296033.8	5818698			0	Silcrete	Flake - Complete	None	None	Cortex	Step					11	15	2	16
296034.1	5818699			0	Quartzite	Flake - Complete	None	None	Cortex	Feather					7	9	3	15
296087.3	5818714			0	Silcrete	Flake - Complete	None	1-32%	Plain	Feather					15	11	4	16
296090	5818716			0	Silcrete	Flake - Complete	None	33-66%	Plain	Feather			Backed - Geometric Microlith		11	6	2	11
296090	5818715			0	Silcrete	Flake - Complete	1-32%	None	Plain	Step					15	15	4	21
296086.3	5818601			0	Silcrete	Flake - Complete	None	None	Plain	Step					16	14	5	17
296081.3	5818595			0	Basalt	Flake - Complete	None	None	Flaked	Feather					18	20	3	23
296046.6	5818642			0	Silcrete	Flake - Complete	67-99%	None	Plain	Step					20	42	12	46
296043.3	5818643			0	Silcrete	Flake - Complete	None	None	Plain	Feather					14	8	6	18
296041.6	5818642			0	Silcrete	Flake - Complete	None	None	Plain	Feather					9	11	3	14
296223.4	5818748			0	Quartz	Flake - Complete	None	None	Crushed	Step					24	20	8	29
296024.5	5818673			0	Quartz	Flake - Distal	1-32%	None		Step					10	11	3	13

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal Tool	Secondary Modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296021.7	5818677			0	Silcrete	Flake - Distal	None	None		Feather					5	8	1	11
296037.2	5818702			0	Silcrete	Flake - Distal	None	None		Hinge					5	9	1	9
296083.5	5818604			0	Silcrete	Flake - Distal	None	None		Step					16	10	1	19
296085.3	5818602			0	Quartz	Flake - Distal	33-66%	None		Feather					9	9	3	14
296043.4	5818643			0	Silcrete	Flake - Distal	None	None		Hinge					11	10	2	12
296041.6	5818642			0	Silcrete	Flake - Distal	None	None		Step					10	10	5	15
296031.5	5818665			0	Silcrete	Flake - Longitudinal Split	None	None	Cortex	Step					19	10	2	20
296031.4	5818665			0	Quartzite	Flake - Longitudinal Split	None	None	Crushed	Step					15	9	3	15
296021.7	5818677			0	Quartzite	Flake - Longitudinal Split	None	None	Plain	Step					5	5	1	7
296021.1	5818679			0	Silcrete	Flake - Longitudinal Split	None	None	Crushed	Feather					13	11	4	14
296028.8	5818681			0	Quartz	Flake - Longitudinal Split	1-32%	None	Plain	Step					9	5	3	10
296028	5818685			0	Silcrete	Flake - Longitudinal Split	None	1-32%	Plain	Hinge					16	6	4	18
296030.5	5818687			0	Silcrete	Flake - Longitudinal Split	None	None	Plain	Step					14	8	2	16
296036.2	5818700			0	Silcrete	Flake - Longitudinal Split	None	33-66%	Plain	Feather			Backed - Geometric Microlith		24	15	4	25
296036	5818701			0	Quartz	Flake - Longitudinal Split	None	None	Plain	Feather					8	6	2	10
296089.9	5818715			0	Quartzite	Flake - Longitudinal Split	None	None	Plain	Step					12	10	3	16
296083.3	5818604			0	Quartzite	Flake - Longitudinal Split	None	None	Crushed	Feather					12	5	2	12
296083.7	5818604			0	Quartz	Flake - Longitudinal Split	None	None	Plain	Feather					15	10	4	19
296083.6	5818604			0	Quartz	Flake - Longitudinal Split	None	None	Crushed	Feather					6	4	3	7
296084.6	5818606			0	Quartz	Flake - Longitudinal Split	1-32%	None	Crushed	Crushed					42	18	11	42
296052	5818638			0	Quartz	Flake - Longitudinal Split	None	None	Plain	Feather					16	11	4	18
296040.9	5818684			0	Quartz	Flake - Longitudinal Split	None	None	Plain	Feather					10	5	3	11
296040.8	5818685			0	Quartzite	Flake - Longitudinal Split	None	None	Plain	Feather					22	11	4	28
296040.2	5818685			0	Silcrete	Flake - Longitudinal Split	None	None	Plain	Step					17	13	4	25
296034.5	5818655			0	Quartz	Flake - Medial	None	None							8	20	5	21
296034.7	5818653			0	Quartzite	Flake - Proximal	None	None	Crushed						8	11	2	13
296021.9	5818678			0	Silcrete	Flake - Proximal	None	None	Plain						5	5	1	6
296021.9	5818678			0	Silcrete	Flake - Proximal	None	33-66%	Facetted				Backed - Geometric Microlith		8	8	2	13
296030.6	5818687			0	Silcrete	Flake - Proximal	None	None	Flaked						6	10	4	12

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal Tool	Secondary Modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296035	5818699			0	Quartz	Flake - Proximal	None	None	Crushed						5	4	1	5
296035.5	5818699			0	Quartz	Flake - Proximal	None	None	Crushed						5	6	3	8
296036.6	5818702			0	Quartz	Flake - Proximal	None	None	Plain						8	6	2	11
296084.1	5818603			0	Silcrete	Flake - Proximal	None	None	Plain						8	10	2	13
296044	5818643			0	Silcrete	Flake - Proximal	None	None	Plain						13	19	3	20
296047.8	5818666	Test Pit	27A	0-100	Silcrete	Flake - Complete	None	None	Plain	axial					31.46	29.97	8.81	32.77
296047.8	5818666	Test Pit	27A	0-100	Quartz	Flake - Complete	1-32%	None	Crushed	axial					12.28	6.45	4	12.33
296047.8	5818666	Test Pit	27A	0-100	Silcrete	Flake - Proximal	None	None	Flaked						11.06	11.84	5.45	15.26
296047.8	5818666	Test Pit	27A	100-200	Silcrete	Blade - Complete	1-32%	None	Flaked	Plunge					33.28	11.72	5.24	40.53
296047.8	5818666	Test Pit	27A	100-200	Silcrete	Flake - Complete	None	None	Flaked	axial					32.53	29.2	13.02	42.4
296047.8	5818666	Test Pit	27A	100-200	Quartz	Flake - Proximal	None	None	Crushed						12.55	15.85	7.53	21.51
296047.8	5818666	Test Pit	27A	200-300	Silcrete	Blade - Complete	None	None	Plain	Feather			Backed - Geometric Microlith		11.24	7.25	2.05	14.19
296047.8	5818666	Test Pit	27A	200-300	Quartz	Flake - Longitudinal Split	None	None	Plain	Feather					13.42	5.32	2.55	16.61
296047.8	5818666	Test Pit	27B	0-100	Silcrete	Blade - Complete	None	None	Flaked	Feather					35.31	21.17	3.9	36.09
296047.8	5818666	Test Pit	27B	0-100	Silcrete	Blade - Complete	None	None	Flaked	Step					23.65	11.56	2.69	24.83
296047.8	5818666	Test Pit	27B	0-100	Silcrete	Flake - Complete	None	None	Flaked	Feather					18.79	10.3	1.2	21.01
296047.8	5818666	Test Pit	27B	0-100	Silcrete	Flake - Complete	None	None	Flaked	Step					11.62	8	2.67	11.97
296047.8	5818666	Test Pit	27B	0-100	Quartz	Flake - Complete	1-32%	None	Cortex	Feather					27.22	23.13	8.87	29.66
296047.8	5818666	Test Pit	27B	0-100	Silcrete	Flake - Distal	None	None		Feather					11.04	15.45	1.77	18.83
296047.8	5818666	Test Pit	27B	0-100	Quartz	Flake - Longitudinal Split	1-32%	None	Cortex	Step					23.09	14.61	6.33	26.23
296047.8	5818666	Test Pit	27B	0-100	Silcrete	Flake - Proximal	None	None	Flaked						10.36	10.3	2.08	14.63
296047.8	5818666	Test Pit	27B	100-200	Silcrete	Flake - Complete	33-66%	None	Flaked	Feather					31.43	19.41	9.95	37.89
296047.8	5818666	Test Pit	27B	100-200	Silcrete	Flake - Complete	None	None	Flaked	Feather					20.97	11.61	3.31	26.01
296047.8	5818666	Test Pit	27B	100-200	Silcrete	Flake - Complete	None	None	Flaked	Feather					15.89	16.76	5.09	21.68
296047.8	5818666	Test Pit	27B	100-200	Silcrete	Flake - Complete	None	None	Flaked	Feather					14.15	22.54	9.81	24.14
296047.8	5818666	Test Pit	27B	100-200	Silcrete	Flake - Complete	None	None	Plain	Feather					11.38	16.38	6.5	25.22
296047.8	5818666	Test Pit	27B	100-200	Silcrete	Flake - Distal	None	None		Feather					9.59	15.58	3.85	16.5
296047.8	5818666	Test Pit	27B	100-200	Quartzite	Flake - Distal	None	None		Feather					10.62	20.47	4.92	25.7
296047.8	5818666	Test Pit	27B	100-200	Silcrete	Flake - Proximal	None	None	Plain						7.31	8.16	1.35	12.24
296047.8	5818666	Test Pit	27B	200-300	Quartzite	Flake - Complete	None	None	Plain	Feather					14.65	7.98	2.19	15.18

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal Tool	Secondary Modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296047.8	5818666	Test Pit	27B	200-300	Silcrete	Flake - Distal	None	None		Feather					9.23	8.08	0.87	11.43

Table 137 Mt Atkinson raised volcanic plateau AS 1 (VAHR 7822-4109-8) component artefact catalogue

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296745.3	5818933			0	Quartzite	Angular Fragment	33-66%	None							29	20	10	29
296745.9	5818931			0	Quartz	Angular Fragment	None	None							14	12	7	14
296757.2	5818895			0	Quartz	Angular Fragment	1-32%	None							16	9	6	16
296767.3	5818825			0	Silcrete	Angular Fragment	None	None							10	12	4	12
296720.6	5818738			0	Quartz	Angular Fragment	None	None							22	14	9	22
296657.9	5818645			0	Quartz	Angular Fragment	None	None							10	6	3	10
296623.5	5818580			0	Quartz	Angular Fragment	None	None							10	6	3	10
296584.7	5818412			0	Quartz	Angular Fragment	33-66%	None							20	20	5	20
296754.3	5818789			0	Silcrete	Blade - Medial	None	1-32%					Backed - Geometric Microlith		13	8	2	18
296589.4	5818472			0	Quartz	Blade - Complete	1-32%	None	Flaked	Feather					19	8	5	19
296582	5818313			0	Silcrete	Blade - Medial	None	None							13	6	2	13
296700.6	5818704			0	Quartz	Core - Multidirectional	None				3	14			22	19	15	22
296235.4	5818892			0	Silcrete	Core - Multidirectional	None				> 6	46			57	46	45	67
296753.8	5818916			0	Quartz	Core - Unidirectional	None				4	25			37	34	17	37
296753.4	5818906			0	Quartz	Core - Unidirectional	None				4	21			30	29	17	30
296612.1	5818560			0	Quartz	Core - Unidirectional	None				2	13			16	13	11	16
296802.2	5818175			0	Quartz	Core - Unidirectional	1-32%				3	10			13	10	7	13
296753.3	5818904			0	Silcrete	Flake - Complete	None	None	Flaked	Feather					19	8	3	19
296762.4	5818874			0	Quartz	Flake - Complete	None	None	Flaked	Step					19	15	9	19
296767.8	5818863			0	Quartz	Flake - Complete	None	None	Flaked	Feather					12	9	3	12
296767.2	5818824			0	Quartz	Flake - Complete	33-66%	None	Flaked	Feather					27	17	6	27
296744.1	5818771			0	Silcrete	Flake - Complete	None	None	Flaked	Step					19	12	4	19
296737	5818759			0	Silcrete	Flake - Complete	None	None	Flaked	Feather					16	9	2	16
296656	5818638			0	Quartz	Flake - Complete	None	None	Flaked	Feather					14	10	5	14

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296646.4	5818621			0	Quartz	Flake - Complete	None	None	Flaked	Feather					12	10	6	12
296598.7	5818526			0	Quartz	Flake - Complete	None	None	Flaked	Crushed					15	8	5	15
296585.2	5818417			0	Quartzite	Flake - Complete	1-32%	None	Flaked	Step					22	9	5	22
296581.8	5818313			0	Quartz	Flake - Complete	None	None	Flaked	Feather					23	15	6	23
296578.5	5818234			0	Quartz	Flake - Complete	None	None	Flaked	Feather					10	7	2	10
296702	5818181			0	Silcrete	Flake - Complete	None	None	Flaked	Feather					11	16	5	16
296710	5818180			0	Quartz	Flake - Complete	None	None	Flaked	Feather					25	13	6	25
296710.2	5818180			0	Quartz	Flake - Complete	None	None	Flaked	Feather					20	17	10	20
296522.5	5818197			0	Silcrete	Flake - Complete	None	33-66%	Plain	Feather			Backed - Geometric Microlith		20	8	3	21
296445.8	5818202			0	Quartz	Flake - Complete	None	None	Crushed	Step					14	11	3	16
296404	5818207			0	Quartz	Flake - Complete	None	None	Plain	Feather					8	9	4	10
296274.3	5818223			0	Quartz	Flake - Complete	None	None	Plain	Axial					23	20	11	30
296237.8	5818218			0	Quartz	Flake - Complete	None	None	Crushed	Feather					27	17	6	29
296746.7	5818947			0	Quartz	Flake - Distal	None	None		Feather					19	15	7	19
296763.6	5818877			0	Quartz	Flake - Distal	None	None		Feather					15	15	4	15
296770.4	5818842			0	Silcrete	Flake - Distal	None	None		Feather					19	15	7	
296759.4	5818798			0	Silcrete	Flake - Distal	None	None		Feather					8	8	2	8
296654	5818636			0	Quartz	Flake - Distal	None	None		Hinge					13	14	6	14
296586.4	5818386			0	Quartzite	Flake - Distal	None	None		Feather					21	16	8	21
296581.9	5818318			0	Quartz	Flake - Distal	None	None		Feather					8	7	3	8
296581.3	5818281			0	Quartz	Flake - Distal	1-32%	None		Feather					14	10	4	14
296784.5	5818166			0	Quartz	Flake - Distal	1-32%	None		Hinge					12	10	4	12
296746	5818931			0	Quartz	Flake - Longitudinal Split	None	None	Flaked	Step					14	9	4	14
296655.5	5818638			0	Quartz	Flake - Longitudinal Split	None	None	Flaked	Feather					10	6	3	10
296623.6	5818580			0	Quartz	Flake - Longitudinal Split	None	None	Flaked	Feather					9	4	1	9
296750.9	5818178			0	Quartz	Flake - Longitudinal Split	None	None	Flaked	Feather					29	13	6	29
296807.5	5818173			0	Quartz	Flake - Longitudinal Split	None	None	Flaked	Feather					18	9	6	18
296443	5818207			0	Quartz	Flake - Longitudinal Split	1-32%	None	Crushed	Crushed					16	9	5	16
296770.3	5818832			0	Silcrete	Flake - Medial	None	None							8	9	3	9

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296756.5	5818901			0	Quartz	Flake - Proximal	None	None	Flaked						10	7	2	10
296762.2	5818873			0	Quartz	Flake - Proximal	None	None	Flaked						18	10	5	18
296658	5818645			0	Quartz	Flake - Proximal	None	None	Flaked						8	8	3	8
296656	5818636			0	Quartz	Flake - Proximal	None	None	Flaked						7	6	2	7
296644.5	5818622			0	Quartz	Flake - Proximal	1-32%	None	Flaked						17	15	6	17
296627.1	5818590			0	Quartzite	Flake - Proximal	None	None	Plain						34	26	7	34
296788.7	5818174			0	Quartz	Flake - Proximal	None	None	Flaked						23	15	7	23
296174.3	5818339			0	Quartz	Flake - Proximal	None	None	Plain						7	9	2	11
296181.6	5818335			0	Sandstone	Slab	67-99%	None					Grinding Slab		100	62	51	100
296169.1	5819022	Test Pit	34A	0-100	Quartz	Flake - Complete	None	None	Flaked	Feather					8.18	5.85	2.11	8.75
296169.1	5819022	Test Pit	34A	0-100	Quartz	Flake - Complete	67-99%	None	Flaked	Feather					10.04	3.7	1.16	11.02
296169.1	5819022	Test Pit	34A	0-100	Quartz	Flake - Complete	None	None	Flaked	Feather					5.51	7.41	1.28	8.89
296169.1	5819022	Test Pit	34A	0-100	Quartz	Flake - Complete	None	None	Crushed	Feather					5.66	4.67	0.89	7.2
296169.1	5819022	Test Pit	34A	0-100	Quartz	Flake - Complete	67-99%	None	Flaked	Feather					7.04	6.95	1.16	8.27
296169.1	5819022	Test Pit	34A	0-100	Quartz	Flake - Complete	None	None	Crushed	Feather					11.8	9.58	3.89	13.35
296169.1	5819022	Test Pit	34A	0-100	Quartz	Flake - Complete	None	None	Crushed	Feather					9.85	12.46	3.71	14.05
296169.1	5819022	Test Pit	34A	0-100	Quartz	Flake - Distal	1-32%	None		Feather					10.71	14.89	4.49	19.68
296169.1	5819022	Test Pit	34A	0-100	Quartz	Flake - Longitudinal Split	None	None	Crushed	Feather					6.23	2.57	1.83	6.28
296169.1	5819022	Test Pit	34A	100-200	Quartz	Flake - Complete	None	None	Flaked	Feather					22.87	11.16	6.16	25.11
296169.1	5819022	Test Pit	34A	100-200	Silcrete	Flake - Distal	None	None		Hinge					7.74	4.47	1.71	9.21
296169.1	5819022	Test Pit	34A	100-200	Quartz	Flake - Longitudinal Split	None	None	Flaked	Hinge					11.01	9.29	4.96	15.8
296169.1	5819022	Test Pit	34B	0-100	Quartz	Flake - Longitudinal Split	None	1-32%	Flaked	Feather					32.01	14.65	8.79	33.71
296169.1	5819022	Test Pit	34B	100-200	Quartz	Flake - Complete	1-32%	None	Flaked	Feather					23.32	18.63	7.14	28.5
296169.1	5819022	Test Pit	34B	100-200	Quartz	Flake - Complete	1-32%	None	Flaked	Feather					19.37	18.57	4.93	22.41
296169.1	5819022	Test Pit	34B	100-200	Quartz	Flake - Distal	None	None		Feather					10.92	6.99	5.61	13.07
296477.5	5818746	Test Pit	79A	0-100	Quartz	Flake - Complete	None	None	Flaked	Feather					7.29	6.39	1.7	8.8
296477.5	5818746	Test Pit	79A	0-100	Quartz	Flake - Complete	None	None	Crushed	Hinge					21.02	18.22	3.56	23.38
296477.5	5818746	Test Pit	79A	0-100	Quartz	Flake - Longitudinal Split	None	None	Crushed	Feather					35.87	11.65	7.67	36.9
296477.5	5818746	Test Pit	79A	0-100	Quartz	Flake - Proximal	None	None	Flaked						8.94	11.21	3.85	13.17
296704.2	5818602	Test Pit	16B	0-80	Basalt	Flake - Proximal	33-66%	None	Plain						40.42	18.9	5.06	42.54

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296174.2	5818340	Test Pit	28B	0-100	Quartzite	Flake - Complete	None	None	Flaked	Hinge					30.38	28.09	7.19	39.29
297341.8	5817532	Test Pit	73B	0-100	Quartz	Flake - Complete	None	None	Flaked	Feather					15.65	10.07	4.54	18.82
297341.8	5817532	Test Pit	73B	0-100	Quartz	Flake - Complete	1-32%	None	Cortex	Step					23.2	24.53	9.94	43.29

Table 138 Mt Atkinson steep-edged terrace AS 1 (VAHR 7822-4109-6) component artefact catalogue

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297145.8	5818230			0	Quartz	Angular Fragment	None	None							22	8	13	23
297289.2	5818225			0	Quartz	Core - Unidirectional	33-66%				1	12			45	36	26	46
297225.9	5818258			0	Quartz	Flake - Complete	None	None	Plain	Feather					20	20	8	23
297231	5818264			0	Quartz	Flake - Complete	1-32%	1-32%	Crushed	Feather					36	27	11	42
297231.4	5818254			0	Quartz	Flake - Complete	None	None	Plain	Crushed					36	24	11	38
297251.7	5818241			0	Quartz	Flake - Complete	None	None	Plain	Feather					15	11	3	15
297296.4	5818203			0	Quartz	Flake - Complete	None	None	Plain	Crushed					23	21	10	25
297202.1	5818187			0	Quartz	Flake - Complete	33-66%	None	Flaked	Axial					22	12	5	22
297208.1	5818269			0	Silcrete	Flake - Distal	None	None		Feather					32	23	6	36
297201.4	5818188			0	Quartz	Flake - Longitudinal Split	1-32%	None	Flaked	Feather					23	18	9	24
297238.6	5818151			0	Quartzite	Flake - Longitudinal Split	None	1-32%	Plain	Crushed					24	14	6	24
297207.7	5818181			0	Quartzite	Flake - Proximal	None	None	Flaked						20	19	7	25
297212.9	5818243	Test Pit	74B	0-100	Quartz	Flake - Complete	None	None	Flaked	Feather					7.2	7.48	2.19	10.65
297212.9	5818243	Test Pit	74B	0-100	Quartz	Flake - Longitudinal Split	None	None	Crushed	Feather					6.29	4.46	1.99	6.72
297212.9	5818243	Test Pit	74B	0-100	Quartz	Flake - Distal	33-66%	None		Feather					17.3	10.83	4.96	18.55

Table 139 Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-4) artefact catalogue

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297332	5817971			0	Quartzite	Angular Fragment	1-32%	None							12	7	2	13
297335	5817976			0	Silcrete	Angular Fragment	None	None							7	4	2	7
297335	5817976			0	Quartz	Angular Fragment	None	None							11	4	3	11

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297333	5817973			0	Silcrete	Core - Multidirectional	None				> 6	19			37	18	11	37
297332	5817971			0	Silcrete	Flake - Complete	None	33-66%	Crushed	Feather			Backed - Bondi Point		19	9	2	19
297332	5817971			0	Silcrete	Flake - Complete	None	33-66%	Facetted	Feather			Backed - Geometric Microlith		16	11	2	17
297332	5817971			0	Silcrete	Flake - Complete	1-32%	None	Plain	Step					13	7	1	15
297332	5817971			0	Silcrete	Flake - Complete	None	None	Plain	Hinge					12	6	1	12
297332	5817971			0	Quartzite	Flake - Complete	None	None	Plain	Feather					15	15	3	21
297332	5817971			0	Silcrete	Flake - Complete	None	None	Plain	Step					20	10	4	22
297332	5817971			0	Quartzite	Flake - Complete	None	None	Plain	Plunge					17	12	5	18
297332	5817971			0	Quartzite	Flake - Complete	None	1-32%	Plain	Feather					17	31	5	32
297332	5817971			0	Quartz	Flake - Complete	None	None	Crushed	Crushed					22	18	5	25
297332	5817971			0	Quartz	Flake - Complete	None	None	Plain	Feather					10	6	2	12
297332	5817971			0	Quartz	Flake - Complete	None	1-32%	Plain	Feather					14	13	8	25
297332	5817971			0	Quartz	Flake - Complete	None	None	Plain	Step					10	7	2	11
297329	5817968			0	Silcrete	Flake - Complete	33-66%	None	Plain	Step					19	18	6	24
297329	5817968			0	Silcrete	Flake - Complete	None	1-32%	Plain	Step			Backed - Geometric Microlith		9	7	1	11
297336	5817973			0	Quartz	Flake - Complete	None	None	Plain	Feather					5	4	1	6
297338	5817978			0	Quartzite	Flake - Complete	33-66%	None	Flaked	Step					24	32	9	34
297333	5817973			0	Silcrete	Flake - Complete	1-32%	1-32%	Plain	Step					37	29	12	43
297333	5817973			0	Basalt	Flake - Complete	None	None	Plain	Feather					15	14	5	19
297332	5817972			0	Silcrete	Flake - Complete	1-32%	None	Plain	Step					25	12	9	31
297332	5817973			0	Silcrete	Flake - Complete	None	None	Plain	Feather					35	17	7	35
297332	5817973			0	Quartzite	Flake - Complete	None	1-32%	Plain	Feather					26	14	4	31
297332	5817973			0	Quartzite	Flake - Complete	None	None	Cortex	Step					12	11	5	19
297337	5817980			0	Quartzite	Flake - Complete	33-66%	None	Plain	Feather					24	22	8	34
297337	5817979			0	Quartz	Flake - Complete	None	None	Crushed	Crushed					22	13	8	22
297334	5817977			0	Quartz	Flake - Complete	1-32%	None	Crushed	Crushed					40	23	14	40
297335	5817976			0	Silcrete	Flake - Complete	None	None	Plain	Hinge					15	6	3	16
297335	5817976			0	Quartzite	Flake - Complete	None	None	Plain	Step					5	5	2	7

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297335	5817976			0	Quartz	Flake - Complete	None	None	Plain	Feather					8	5	2	9
297335	5817976			0	Quartz	Flake - Complete	None	None	Crushed	Feather					6	8	2	8
297335	5817976			0	Silcrete	Flake - Complete	None	None	Crushed	Step					7	7	1	11
297326	5817972			0	Silcrete	Flake - Complete	1-32%	None	Plain	Axial					17	34	10	36
297326	5817972			0	Quartzite	Flake - Complete	None	None	Plain	Feather					22	16	9	26
297326	5817972			0	Silcrete	Flake - Complete	1-32%	None	Plain	Feather					15	12	5	19
297326	5817972			0	Quartzite	Flake - Complete	None	None	Flaked	Feather					15	20	4	34
297326	5817972			0	Quartzite	Flake - Complete	None	None	Flaked	Feather					17	12	10	23
297326	5817972			0	Quartzite	Flake - Complete	None	None	Flaked	Feather					18	20	3	22
297326	5817972			0	Silcrete	Flake - Complete	None	None	Flaked	Axial					13	9	8	18
297326	5817972			0	Silcrete	Flake - Complete	None	None	Plain	Step					8	9	2	11
297326	5817972			0	Quartzite	Flake - Complete	None	None	Plain	Axial					9	5	3	10
297326	5817972			0	Quartz	Flake - Complete	None	None	Flaked	Feather					9	7	2	11
297325	5817972			0	Quartzite	Flake - Complete	None	None	Flaked	Feather					24	15	4	25
297325	5817972			0	Quartzite	Flake - Complete	None	None	Plain	Feather					36	24	9	38
297337	5817977			0	Silcrete	Flake - Distal	None	None		Step					12	9	2	16
297332	5817971			0	Silcrete	Flake - Distal	None	None		Hinge					9	11	2	14
297332	5817971			0	Basalt	Flake - Distal	None	None		Step					7	9	1	10
297332	5817971			0	Silcrete	Flake - Distal	None	None		Step					5	13	2	15
297335	5817976			0	Quartzite	Flake - Distal	None	None		Feather					11	17	3	18
297335	5817976			0	Quartz	Flake - Distal	None	1-32%		Feather					9	7	2	9
297335	5817976			0	Silcrete	Flake - Distal	None	None		Feather					4	6	1	7
297326	5817972			0	Silcrete	Flake - Distal	None	None		Hinge					11	15	4	21
297332	5817971			0	Quartzite	Flake - Longitudinal Split	None	None	Plain	Feather					29	6	4	20
297332	5817971			0	Quartzite	Flake - Longitudinal Split	None	None	Plain	Feather					16	10	2	23
297332	5817971			0	Quartz	Flake - Longitudinal Split	None	None	Crushed	Feather					14	6	3	14
297329	5817968			0	Quartzite	Flake - Longitudinal Split	None	None	Plain	Step					13	6	3	13
297337	5817980			0	Silcrete	Flake - Longitudinal Split	None	None	Crushed	Step					27	10	6	27
297332	5817973			0	Quartzite	Flake - Longitudinal Split	None	None	Plain	Feather					29	15	6	34
297337	5817979			0	Silcrete	Flake - Longitudinal Split	None	None	Plain	Feather					16	10	2	18

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297337	5817979			0	Quartzite	Flake - Longitudinal Split	None	None	Plain	Step					15	9	4	15
297334	5817976			0	Quartzite	Flake - Longitudinal Split	None	1-32%	Plain	Step			Notched Tool		27	11	7	27
297335	5817976			0	Quartz	Flake - Longitudinal Split	None	None	Cortex	Feather					8	4	1	8
297335	5817976			0	Quartz	Flake - Longitudinal Split	None	None	Plain	Feather					10	5	2	10
297326	5817972			0	Quartzite	Flake - Longitudinal Split	None	None	Flaked	Step					30	17	4	31
297326	5817972			0	Quartz	Flake - Longitudinal Split	None	None	Plain	Feather					30	12	5	37
297326	5817972			0	Quartz	Flake - Longitudinal Split	None	None	Crushed	Crushed					28	14	7	31
297326	5817972			0	Silcrete	Flake - Longitudinal Split	None	None	Flaked	Feather					18	15	3	21
297326	5817972			0	Quartz	Flake - Longitudinal Split	None	None	Crushed	Step					14	9	6	16
297332	5817971			0	Quartzite	Flake - Medial	None	None							7	11	2	13
297337	5817980			0	Silcrete	Flake - Medial	None	None							5	9	1	10
297337	5817979			0	Quartzite	Flake - Medial	None	None							3	6	1	7
297332	5817971			0	Silcrete	Flake - Proximal	None	None	Facetted						9	10	2	11
297332	5817971			0	Quartz	Flake - Proximal	None	None	Plain						11	13	3	18
297337	5817978			0	Silcrete	Flake - Proximal	None	None	Plain						7	8	2	10
297332	5817973			0	Silcrete	Flake - Proximal	None	None	Crushed						14	19	4	23
297332	5817973			0	Quartzite	Flake - Proximal	None	None	Plain						8	13	5	18
297338	5817979			0	Silcrete	Flake - Proximal	None	None	Flaked						8	8	2	10
297337	5817979			0	Quartz	Flake - Proximal	None	None	Plain						9	7	2	11
297336	5817976			0	Quartz	Flake - Proximal	None	None	Plain						11	9	2	12
297336	5817976			0	Silcrete	Flake - Proximal	None	1-32%	Plain						10	18	4	22
297335	5817976			0	Silcrete	Flake - Proximal	1-32%	None	Plain						15	6	5	17
297336	5817976			0	Quartzite	Flake - Proximal	None	None	Plain						7	10	4	11
297326	5817972			0	Silcrete	Flake - Proximal	None	None	Flaked						17	20	5	29
297326	5817972			0	Quartz	Flake - Proximal	None	None	Plain						13	15	10	19
297326	5817972			0	Quartz	Flake - Proximal	None	None	Plain						7	10	3	11
297325	5817972			0	Quartzite	Flake - Proximal	None	None	Flaked						11	2	1	12
297325	5817972			0	Quartzite	Flake - Proximal	None	None	Plain						14	7	3	14
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							8.28	6.71	1.84	8.28
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	1-32%	None							9.9	8.11	3.47	9.9

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							11.73	9.91	2.6	11.73
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							9.64	6.5	4.41	9.72
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							10.82	7.26	4.4	10.82
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							10.89	7.57	2.93	10.89
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							18.33	6.21	4.6	18.33
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							11.32	7.45	3.28	11.32
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							6.76	5.35	1.76	6.76
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							5.9	4.97	2.21	5.9
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							6.43	4.67	2.39	6.43
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	1-32%	None							6.47	6.21	3.87	6.47
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	1-32%	None							11.37	7.7	3.71	11.37
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	None	None							10.08	5.78	4.21	10.08
297339	5817976	Test Pit	6A	0-50	Quartz	Angular Fragment	1-32%	None							12.96	6.22	5.29	12.96
297339	5817976	Test Pit	6A	0-50	quartz	Core - Bidirectional	1-32%				4	13.67			18.81	14.9	9.98	18.81
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Complete	1-32%	None	Plain	Feather					7.6	6.71	2.21	9.23
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Complete	None	None	Flaked	Feather					10.98	6.58	2.52	10.98
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Complete	None	None	Plain	Feather					8.05	8.84	3.73	10.8
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Complete	None	None	Plain	Feather					9.76	7.81	2.7	10.43
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Complete	None	None	Flaked	Feather					12.66	8.44	3.79	13.75
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Complete	1-32%	None	Plain	Feather					16.28	12.32	4.61	17.83
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Complete	None	None	Flaked	Feather					13.76	16.2	2.54	16.36
297339	5817976	Test Pit	6A	0-50	Quartzite	Flake - Complete	None	None	Flaked	Feather					7.21	7.5	1.61	8.19
297339	5817976	Test Pit	6A	0-50	Silcrete	Flake - Complete	None	1-32%	Crushed	Feather					22.34	21.1	5.42	25.6
297339	5817976	Test Pit	6A	0-50	Quartz	Flake - Complete	1-32%	None	Cortex	Feather					7.16	9.34	4.99	9.79
297339	5817976	Test Pit	6A	0-50	Quartz	Flake - Complete	None	None	Plain	Feather					12.93	6.61	4.45	13.6
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Distal	None	None		Feather					7.99	6.85	1.7	9.61
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Distal	None	None		Feather					7.56	9	4.49	9.4
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Distal	None	None		Feather					12.2	10.24	3.05	12.2
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Distal	33-66%	None		Feather					11.52	9.53	3.48	12.73
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Distal	1-32%	None		Feather					15.68	19.68	6.68	20.02

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297339	5817976	Test Pit	6A	0-50	Quartzite	Flake - Distal	1-32%	None		Feather					7.27	9.37	2.23	9.37
297339	5817976	Test Pit	6A	0-50	Quartz	Flake - Distal	1-32%	None		Feather					5.8	7.77	2.61	7.77
297339	5817976	Test Pit	6A	0-50	Silcrete	Flake - Longitudinal Split	None	None	Flaked	Step					16.6	9.98	3.58	16.6
297339	5817976	Test Pit	6A	0-50	Quartz	Flake - Longitudinal Split	1-32%	None	Plain	Feather					5.59	5.27	1.99	5.73
297339	5817976	Test Pit	6A	0-50	Quartz	Flake - Longitudinal Split	None	None	Flaked	Feather					7.2	5.41	2.23	7.2
297339	5817976	Test Pit	6A	0-50	Quartz	Flake - Longitudinal Split	None	None	Plain	Feather					7.18	5.84	4.79	8.88
297339	5817976	Test Pit	6A	0-50	Quartz	Flake - Longitudinal Split	1-32%	None	Cortex	Feather					11.61	7.46	3.89	11.61
297339	5817976	Test Pit	6A	0-50	Quartz	Flake - Medial	None	None							6.18	8.36	3.2	8.46
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Proximal	1-32%	None	Plain						7.42	16.06	4.14	16.51
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Proximal	None	None	Flaked						13.31	20.74	9.3	22.27
297339	5817976	Test Pit	6A	0-50	quartz	Flake - Proximal	33-66%	None	Facetted						14.07	20.55	6.25	20.9
297339	5817976	Test Pit	6A	0-50	Quartz	Flake - Proximal	None	None	Flaked						5.39	8.18	2.44	8.25
297339	5817976	Test Pit	6A	0-50	Quartz	Flake - Proximal	1-32%	None	Cortex						3.9	7.19	3.01	8.04
297339	5817976	Test Pit	6A	0-80	Silcrete	Angular Fragment	None	None							16.05	10.27	6.9	16.05
297339	5817976	Test Pit	6A	0-80	Quartz	Angular Fragment	1-32%	None							12.75	9.56	4.81	12.75
297339	5817976	Test Pit	6A	0-80	Quartz	Angular Fragment	None	None							12.91	7.67	3.48	12.91
297339	5817976	Test Pit	6A	0-80	Quartzite	Core - Multidirectional	None				> 6	25.78			50.71	32.09	21.38	50.71
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	1-32%	None	Flaked	Step					8.64	14.93	4.23	15.03
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	1-32%	None	Plain	Feather					11.71	11.64	3.8	13.01
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	None	None	Plain	Feather					8.97	17.29	7.06	17.88
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	None	None	Plain	Feather					14.78	21.87	8.2	21.89
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					14.89	25.76	3.97	26.71
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	1-32%	None	Plain	Feather					25.51	16.31	5.6	28.54
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	None	None	Plain	Feather					14.91	19.42	7.68	19.42
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	33-66%	None	Flaked	Hinge					25.61	27.26	11.66	29.83
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					23.44	18.18	6.86	23.82
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	1-32%	None	Crushed	Feather					25.41	20.43	9.5	26.04
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	None	None	Abraded (ground)	Feather					25.55	19.39	8.81	26.73
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	1-32%	1-32%	Flaked	Feather			Scraper - Thumbnail		16.27	15.57	3.62	16.66

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					10.95	8.94	4.53	12.24
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Complete	None	None	Plain	Feather					5.26	6.26	2.18	7.42
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Distal	None	None		Feather					13.73	10.24	2.67	14.1
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Distal	None	None		Feather					8.74	7.82	2.54	9.52
297339	5817976	Test Pit	6A	0-80	quartzite	Flake - Distal	None	None		Feather					9.68	24.3	3.83	24.3
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Distal	None	None		Feather					7.44	12.06	3.38	12.26
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Distal	None	None		Feather					6.52	12.62	4.16	12.62
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Longitudinal Split	33-66%	None	Flaked	Feather					19.95	14.27	9.8	22.55
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Medial	None	None							15.82	15.05	5.6	22
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Proximal	None	None	Flaked						10.44	13.55	3.92	13.45
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Proximal	None	None	Crushed						10.38	13.61	4.05	13.7
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Proximal	1-32%	None	Flaked						16.32	16.05	9.36	20.7
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Proximal	None	None	Flaked						19.73	14.95	8.73	19.99
297339	5817976	Test Pit	6A	0-80	Quartzite	Flake - Proximal	None	None	Plain						15.9	29.24	11.42	30.21
297339	5817976	Test Pit	6A	0-80	Quartz	Flake - Proximal	None	None	Flaked						8.96	12.54	4.62	12.68
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							11	9.35	3.74	11
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							11.9	5.31	3.57	11.9
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							10.42	9.86	4.04	10.42
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							13	10.85	3.52	13
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							29.44	18	9	29.44
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							29.97	21.65	15.73	29.89
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							10.04	5.86	4.05	10.04
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							16.3	11.05	7.36	16.3
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							13.78	9.8	6.21	13.78
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							13.33	7.02	2.17	13.33
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							6.66	4.57	1.73	6.66
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							9.93	2.93	3.01	9.93
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							9.47	6.6	1.66	9.61
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							9.9	4.8	3	9.9
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							10.23	6.79	5.94	10.23

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							10.26	8.17	4.63	10.26
297339	5817976	Test Pit	6B	0-80	Quartz	Angular Fragment	None	None							14	10.55	3.04	14
297339	5817976	Test Pit	6B	0-80	Quartz	Core - Bidirectional	1-32%				2	9.29			17	14.91	6.95	17
297339	5817976	Test Pit	6B	0-80	Quartz	Core - Multidirectional	None				5	19.99			25.55	22.28	11.14	25.55
297339	5817976	Test Pit	6B	0-80	Quartz	Core - Unidirectional	1-32%				4	27.29			25.88	25.41	22.12	37.65
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					10.92	8.1	2.78	12.2
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					12.7	8.66	4.97	15.67
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					14.4	12.22	3.6	17.56
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	1-32%	None	Flaked	Feather					23.81	12.27	3.8	24.74
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					37.47	11.8	5.35	38.25
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	1-32%	None	Facetted	Feather					20.84	18.4	6.89	21.39
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	1-32%	None	Cortex	Feather					24.6	24.11	12.45	28.9
297339	5817976	Test Pit	6B	0-80	Quartzite	Flake - Complete	None	None	Flaked	Feather					17.08	16.81	6.44	21.37
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					9.05	8.36	1.66	10.48
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					10.62	8.93	1.88	10.63
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					10.16	9.46	2.85	10.72
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	1-32%	None	Plain	Feather					11.35	9.61	2.73	13.16
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					14.82	5.83	4.67	14.96
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					14.99	17.99	3.45	19.3
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					15.68	16.06	5.03	16.55
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					20.92	13.27	5.33	21.31
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	33-66%	None	Flaked	Feather					29.09	13.17	8.03	29.09
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Facetted	Feather					28.97	28.4	8.7	30.04
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Complete	None	None	Flaked	Feather					13.17	11.99	4.44	13.17
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	None	None		Feather					6.21	10.97	3.12	10.97
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	None	None		Feather					12.77	14.84	5.02	16
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	None	None		Feather					16.48	8.47	6.51	19.06
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	None	None		Hinge					15.21	14.25	7.72	20.53
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	1-32%	None		Feather					16.31	22.22	6.8	22.22
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	33-66%	None		Feather					22.6	21.64	7.21	28.22

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	1-32%	None		Feather					9.21	9.22	2.29	12
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	None	None		Feather					6.66	14.05	6.45	14.14
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	None	None		Feather					13.17	21.2	4.25	21.49
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	None	None		Feather					18.2	19.07	7.14	22.14
297339	5817976	Test Pit	6B	0-80	Quartzite	Flake - Distal	None	None		Feather					12.74	17.3	4.6	17.45
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	None	None		Feather					3.7	7.83	1.7	7.88
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Distal	None	None		Feather					7.9	8.27	3.05	11.14
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Longitudinal Split	None	None	Flaked	Feather					15.69	5.72	2.85	15.69
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Longitudinal Split	None	None	Flaked	Feather					13.41	11.14	2.61	14.93
297339	5817976	Test Pit	6B	0-80	Silcrete	Flake - Longitudinal Split	None	None	Plain	Feather					15.35	10.1	4.92	22.04
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Medial	None	None							8.1	9.66	5.96	11.52
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Medial	None	None							8.53	12.3	3.61	13.79
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Medial	None	None							5.97	11.65	3.18	11.88
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Proximal	None	None	Flaked						13.06	12.6	3.65	13.8
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Proximal	None	None	Flaked						12.39	11.47	3.48	13.41
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Proximal	None	None	Flaked						6.85	5.99	1.73	7.56
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Proximal	None	None	Flaked						8.11	7.91	2.4	10.55
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Proximal	None	None	Flaked						13.12	9.63	4.81	16.33
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Proximal	None	None	Flaked						15.8	8.01	2.48	15.8
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Proximal	None	None	Plain						8.51	13.67	9.51	16.93
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Proximal	None	None	Flaked						18.17	12.65	9.28	25.49
297339	5817976	Test Pit	6B	0-80	Quartz	Flake - Proximal	None	None	Plain						6.23	9	2.16	9

Table 140 Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-10) artefact catalogue

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297001	5817242			0	Quartz	Angular Fragment	None	None							15	12	6	15
297022	5817265			0	Silcrete	Angular Fragment	None	None							11	7	4	11
297065	5817304			0	Quartz	Angular Fragment	None	None							8	5	4	8
296856	5818166			0	Quartz	Angular Fragment	None	None							21	8	8	21

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296856	5818166			0	Quartz	Angular Fragment	None	None							16	12	7	16
297202	5817430			0	Quartz	Angular Fragment	None	None							11	6	6	11
297257	5817486			0	Quartz	Angular Fragment	None	None							8	6	4	8
297411	5817651			0	Quartzite	Angular Fragment	None	None							13	10	4	13
297114	5817347			0	Silcrete	Blade - Proximal	None	1-32%	Flaked						17	8	3	17
297533	5817885			0	Quartz	Core - Bifacial	1-32%				3	19			25	19	14	25
296762	5817897			0	Quartzite	Core - Multidirectional	1-32%				> 6	22			23	43	29	43
297234	5817460			0	Silcrete	Core - Multidirectional	1-32%				5	24			28	23	18	28
297338	5817555			0	Quartz	Core - Multidirectional	1-32%				4	37			50	63	38	63
297025	5817267			0	Quartz	Core - Unidirectional	None				3	11			20	22	14	22
297060	5817298			0	Quartz	Core - Unidirectional	None				1	15			19	15	17	19
297068	5817306			0	Silcrete	Core - Unidirectional	None				> 6	18			20	34	16	34
297530	5817870			0	Quartz	Core - Unidirectional	None				2	19			22	18	9	22
296768	5817964			0	Quartz	Core - Unidirectional	1-32%				2	43			46	25	14	46
297114	5817347			0	Silcrete	Core - Unidirectional	None				2	11			18	10	8	18
296950	5817203			0	Quartz	Flake - Complete	1-32%	None	Flaked	Plunge					36	40	14	40
296968	5817216			0	Quartz	Flake - Complete	33-66%	None	Flaked	Feather					22	12	6	22
297001	5817242			0	Quartz	Flake - Complete	33-66%	None	Flaked	Feather					30	20	8	30
297005	5817244			0	Quartz	Flake - Complete	None	None	Flaked	Feather					25	25	13	33
297017	5817260			0	Silcrete	Flake - Complete	None	1-32%	Flaked	Feather					33	17	12	33
297017	5817260			0	Quartzite	Flake - Complete	None	None	Flaked	Step					38	25	11	38
297019	5817262			0	Quartzite	Flake - Complete	None	None	Flaked	Feather					30	18	6	30
297048	5817288			0	Silcrete	Flake - Complete	None	None	Flaked	Feather					14	7	2	14
297058	5817295			0	Quartz	Flake - Complete	None	None	Plain	Step					13	11	4	13
297061	5817302			0	Silcrete	Flake - Complete	None	None	Flaked	Feather					11	7	3	11
297064	5817302			0	Silcrete	Flake - Complete	None	None	Flaked	Feather					9	6	1	9
297066	5817304			0	Quartz	Flake - Complete	None	None	Flaked	Feather					23	19	11	23
297069	5817306			0	Silcrete	Flake - Complete	None	None	Flaked	Feather					17	13	6	22
297077	5817313			0	Silcrete	Flake - Complete	1-32%	None	Flaked	Feather					12	5	1	12
297527	5817873			0	Silcrete	Flake - Complete	1-32%	None	Flaked	Feather					31	18	7	31

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297527	5817872			0	Quartzite	Flake - Complete	None	None	Flaked	Feather					11	8	3	11
297527	5817871			0	Quartz	Flake - Complete	1-32%	None	Cortex	Feather					28	11	5	28
297530	5817870			0	Quartz	Flake - Complete	None	None	Flaked	Feather					17	8	4	17
297528	5817868			0	Quartz	Flake - Complete	None	None	Flaked	Feather					9	7	3	9
297526	5817862			0	Quartz	Flake - Complete	1-32%	None	Cortex	Crushed					28	15	8	28
296855	5818169			0	Quartz	Flake - Complete	None	None	Flaked	Hinge					13	8	3	13
296710	5817236			0	Quartz	Flake - Complete	None	None	Flaked	Feather					9	6	3	9
297086	5817313			0	Silcrete	Flake - Complete	None	None	Flaked	Feather					20	11	5	20
297085	5817315			0	Quartz	Flake - Complete	None	None	Flaked	Feather					26	13	7	26
297099	5817329			0	Quartz	Flake - Complete	1-32%	None	Flaked	Crushed					15	11	6	15
297200	5817433			0	Silcrete	Flake - Complete	None	None	Flaked	Step					17	10	4	17
297203	5817433			0	Silcrete	Flake - Complete	None	None	Flaked	Step					13	7	4	13
297213	5817443			0	Silcrete	Flake - Complete	None	None	Flaked	Feather					22	26	6	38
297242	5817469			0	Quartz	Flake - Complete	None	None	Flaked	Step					9	9	5	9
297248	5817475			0	Quartz	Flake - Complete	33-66%	None	Flaked	Feather					19	14	6	19
297255	5817486			0	Quartzite	Flake - Complete	1-32%	None	Cortex	Feather					10	12	4	12
297257	5817486			0	Quartz	Flake - Complete	1-32%	None	Cortex	Feather					19	11	9	19
297281	5817507			0	Silcrete	Flake - Complete	None	1-32%	Flaked	Feather					26	24	5	26
297327	5817548			0	Quartz	Flake - Complete	1-32%	None	Flaked	Feather					21	13	6	21
297427	5817688			0	Quartz	Flake - Complete	1-32%	None	Cortex	Feather					33	28	8	33
296370	5816646			0	Silcrete	Flake - Complete	None	1-32%	Flaked	Feather			Notched Tool		27	22	7	28
296567	5816832			0	Quartz	Flake - Complete	1-32%	None	Crushed	Feather					25	21	11	31
296619	5816879			0	Silcrete	Flake - Complete	None	None	Plain	Step					25	21	10	31
296620	5816883			0	Quartzite	Flake - Complete	None	1-32%	Plain	Feather			Notched Tool		9	26	10	36
296621	5816882			0	Silcrete	Flake - Complete	None	33-66%	Facetted	Feather			Backed - Geometric Microlith		11	10	2	13
296653	5816915			0	Basalt	Flake - Complete	None	1-32%	Flaked	Feather					14	18	4	21
296914	5817173			0	Quartz	Flake - Distal	None	None		Feather					26	13	8	26
296915	5817175			0	Quartz	Flake - Distal	None	None		Feather					21	17	8	21
297078	5817312			0	Silcrete	Flake - Distal	None	None		Feather					16	15	6	24

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297076	5817314			0	Quartz	Flake - Distal	None	None		Feather					8	12	2	12
296770	5818003			0	Quartz	Flake - Distal	None	None		Feather					18	13	4	18
296768	5817951			0	Quartz	Flake - Distal	None	None		Feather					17	20	4	20
297128	5817363			0	Silcrete	Flake - Distal	None	1-32%		Feather					12	15	4	15
297202	5817429			0	Quartz	Flake - Distal	None	None		Feather					10	12	6	12
297254	5817484			0	Silcrete	Flake - Distal	None	None		Feather					6	7	2	7
296406	5816681			0	Silcrete	Flake - Distal	None	None		Feather					9	9	3	13
296559	5816827			0	Quartzite	Flake - Distal	1-32%	None		Feather		13			13	9	4	18
296615	5816877			0	Quartz	Flake - Distal	None	None		Step					3	8	3	9
297077	5817314			0	Quartz	Flake - Longitudinal Split	None	None	Flaked	Feather					11	7	3	11
296770	5818003			0	Quartz	Flake - Longitudinal Split	None	None	Flaked	Step					22	13	6	22
297116	5817349			0	Silcrete	Flake - Longitudinal Split	None	None	Flaked	Feather					14	6	3	14
296654	5816916			0	Silcrete	Flake - Longitudinal Split	None	1-32%	Crushed	Step					10	6	3	11
296672	5816936			0	Silcrete	Flake - Longitudinal Split	None	1-32%	Flaked	Step					19	14	5	22
296672	5816936			0	Quartzite	Flake - Longitudinal Split	None	None	Crushed	Step					18	10	4	20
296340	5816619			0	Silcrete	Flake - Medial	None	None							30	30	8	32
296340	5816619			0	Silcrete	Flake - Medial	None	None							28	12	6	29
296340	5816619			0	Quartz	Flake - Medial	None	None							16	10	4	16
297201	5816562			0	Quartz	Flake - Medial	None	None							26	33	9	35
297052	5816571			0	Quartzite	Flake - Medial	None	None							27	20	11	29
297053	5817291			0	Silcrete	Flake - Proximal	None	None	Flaked						5	7	1	7
297532	5817876			0	Quartzite	Flake - Proximal	None	None	Flaked						20	20	2	24
297233	5817463			0	Quartzite	Flake - Proximal	None	None	Flaked						30	24	15	46
297239	5817465			0	Quartz	Flake - Proximal	None	None	Flaked						12	12	4	12
296406	5816681			0	Silcrete	Flake - Proximal	None	1-32%	Flaked						17	12	4	19
296409	5816681			0	Silcrete	Flake - Proximal	None	None	Plain						21	20	8	29
296567	5816833			0	Basalt	Flake - Proximal	None	None	Plain						16	16	4	22
296614	5816875			0	Silcrete	Flake - Proximal	None	None	Flaked						9	8	2	10
296615	5816877			0	Quartz	Flake - Proximal	None	None	Crushed						4	7	2	10
296644	5816906			0	Silcrete	Flake - Proximal	None	None	Plain						10	9	3	12

Easting	Northing	SST type	Number	Depth (mm)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
297026	5817267			0	Greenstone	Slab	67-99%%	None							102	57	36	102
297071	5817308			0	Quartz	Slab	67-99%%	None							94	77	58	94
297072	5817309			0	Quartz	Slab	67-99%%	None							79	52	50	79
297266	5817494			0	Silcrete	Flake - Medial	None	67-99%%					Scraper - Thumbnail		16	16	5	16
297439	5817265	Test Pit	21A	0-100	Quartz	Flake - Complete	None	None	Plain	Feather					10.6	9.1	1.7	12.5
296934	5816292	Test Pit	44A	0-100	Silcrete	Flake - Complete	None	33-66%	Indet	Indet			Backed - Bondi Point		13.04	10.5	2.92	16.3
297350	5816275	Test Pit	80A	0-100	Quartz	Flake - Medial	None	None							6.76	13.47	4.86	14.32

Table 141 Mt Atkinson LDAD 1 (VAHR 7822-4092) artefact catalogue

Easting	Northing	SST type	Number	Depth (m)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296623	5817871			0	Silcrete	Core - Unidirectional	None				1	13			16	19	18	19
296646	5817854			0	Quartz	Flake - Complete	None	None	Plain	Feather					26	12	7	26
296627	5817784			0	Quartz	Flake - Complete	1-32%	None	Flaked	Feather					26	14	7	26
296614	5817790			0	Quartz	Flake - Complete	1-32%	1-32%	Facetted	Crushed					31	18	12	33
296548	5815319			0	Quartz	Flake - Complete	1-32%	1-32%	Flaked	Crushed					23	14	11	25
295926	5817635			0	Silcrete	Flake - Complete	None	1-32%	Plain	Feather					15	23	6	28
295925	5817634			0	Silcrete	Flake - Proximal	None	None	Plain						9	15	4	19
296902	5819219	Test Pit	8A	0.1	Quartzite	Flake - Proximal	None	None	Flaked						8.16	11.72	3.32	12.4
296166	5819661	Test Pit	11A	0.1	Silcrete	Core - Multidirectional	1-32%				3	17.95			28.54	29.14	18.07	28.54
296166	5819661	Test Pit	11B	0.1	Quartzite	Core - Bidirectional	None				> 6	38.85			46.5	50.74	42.66	53.8
297583	5818856	Test Pit	15A	0.1	Quartz	Angular Fragment	None	None							18.85	10.02	7.5	18.85
296463	5819550	Test Pit	25B	0.1	Quartz	Flake - Complete	None	None	Crushed	Crushed					24	17.6	5.4	28.9
296463	5819550	Test Pit	25B	0.1	Quartzite	Flake - Complete	33-66%	None	Plain	Step					8.9	9.2	3.5	10.7
296394	5819323	Test Pit	26B	0.2	Silcrete	Flake - Complete	1-32%	None	Plain	axial					13.1	12.3	3.5	19.5
296182	5819380	Test Pit	94A	0.2	Silcrete	Core - Multidirectional	1-32%				3	14.62			25.1	15.89	10.55	30.97
296182	5819380	Test Pit	94A	0.2	Silcrete	Flake - Distal	None	None		Feather					10.62	10.72	3.06	18.87
296182	5819380	Test Pit	94A	0.2	Quartz	Flake - Longitudinal Split	None	None	Flaked	Feather					12.19	8.94	4.95	14.9
296182	5819380	Test Pit	94B	0.2	Quartz	Flake - Complete	33-66%	None	Crushed	axial					24.2	22.18	12.68	29.95

Easting	Northing	SST type	Number	Depth (m)	Raw material	Primary form	Cortex %	Retouch/ usewear %	Flake platform	Flake termination	No. of complete scars	Longest scar (mm)	Formal tool	Secondary modification	Length (mm)	Width (mm)	Thickness (mm)	Maximum dimension (mm)
296182	5819380	Test Pit	94B	0.2	Quartz	Flake - Complete	1-32%	None	Cortex	Feather					14.77	11.91	2.92	14.88
296182	5819380	Test Pit	94B	0.2	Quartz	Flake - Complete	None	None	Crushed	Feather					17.31	6.54	4.6	17.69
296182	5819380	Test Pit	94B	0.2	Silcrete	Flake - Complete	None	1-32%	Flaked	Feather					40.37	32.09	10.07	45.39
296182	5819380	Test Pit	94B	0.2	Quartz	Flake - Distal	None	None		Feather					5.51	11.91	1.8	14.2
296488	5818066	Test Pit	39A	0.1	Quartz	Flake - Complete	1-32%	None	Cortex	Axial					27.42	24.42	12.7	34.25
296034	5817303	Test Pit	37A	0.1	Silcrete	Flake - Complete	None	None	Flaked	Feather					20.69	11.13	3.3	26.57
296034	5817303	Test Pit	37A	0.1	Silcrete	Flake - Distal	1-32%	None		Feather					7.8	11.66	2.56	15.65
296034	5817303	Test Pit	37B	0.1	Basalt	Flake - Complete	None	None	Flaked	Step					18.92	21.69	3.94	23.69
296034	5817303	Test Pit	37B	0.1	Silcrete	Flake - Proximal	None	None	Flaked						11.36	9.51	3.87	13.39
297484	5814988	Test Pit	88B	0.1	Silcrete	Flake - Medial	None	33-66%					Backed - Geometric Microlith		11.62	8.29	2.11	13.01

Appendix 7 Geomorphology at Mt Atkinson (Joyce 2015)

Mount Atkinson Report

18th December 2015

Geological and Geomorphological Survey of the Mount Atkinson volcano area:

Mt Atkinson Biosis Activity Area 2015

18th December 2015

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Introduction

Following a field inspection with Kasey Robb and Martin Lawler on the 11th September 2015, I have consulted published and unpublished reports and maps, available imagery and online information, and now present the following comments.

You asked the following questions:

How the landscape was formed, including features that may have been altered by modern practices, and the time periods associated with any changes.

Your goal is to develop a prediction model for Aboriginal occupation in conjunction with the LiDAR data we have access to.

Understanding sediment formation will also help with site formation processes and develop standardised requirements for works in different areas.

You have also asked if there is any recorded information about where the silcrete, quartz and quartzite artefacts identified in the study area may have been sourced (and we then agreed that such materials are likely to be not very far away from Mount Atkinson, considering the abundance in the study area and materials identified in neighbouring project studies including student mapping projects at the University of Melbourne).

You have made available several images and other materials about Mt Atkinson and the Activity Area:

- Sketch map showing the route taken on the field day
- Two contour maps
- LiDAR image
- Field photos taken by Martin Lawler.

I have looked at the study area on your images, and several maps and images I have, and note the rises and former drainage channels you mention.

Regarding silcrete, it is most commonly found directly below basalt flows, as we saw at the Taylor Creek cave. (However silcrete can sometimes be present in geological settings other than below basalt flows.) Several geological studies and student projects including Honours Records have recorded silcrete widely across the local area, from Meredith and Bacchus Marsh in the west to Keilor in the east (e.g. the silcrete cave on Taylors Creek at Keilor). It seems likely that the silcrete and other artefact materials found in the study area have been carried in by the aboriginal people for nearby areas.

I have reviewed my photos and my notes from the field discussions, the LiDAR image of the area, the sketch of the route we took on the day, and the photographs Martin kindly took as my phone ran down.

As this is largely an area of lava flows and related soils there is little in the way of recent *sediment* formation, apart from the wetland areas and the shallow creeks, and the later discussion of soils must suffice.

Since our field visit I have collected several geological maps and early geological reports of the area and adjacent areas.

It believe that it is useful to make a comparison of Mt Atkinson with adjacent older and in some ways similar volcanoes such **Mt Cottrell**.

Landscape features of Mount Atkinson:

- lava flow directions (lobes) and state of preservation
- surface drainage
- an erosion model – understanding the processes of weathering of the volcanic materials, followed by minor erosion, accretion and sediment movement on the volcanic slopes, gullies and plains (and see soils below).
- lava flows as a control of surface water flow and also within the lava flows themselves
- wetlands and springs
- soil types and ages, and their relation to landscape, the Mount Atkinson volcano and its lava flows
- influence on past occupation and land use by indigenous people
- evidence of recent cultivation and other European land use such as quarrying, roads and stone walls
- a short discussion - are there any other eruption points in the study area?

Two major flows from Mount Atkinson could be seen in the past in the walls of the Boral Resources (Vic.) Ltd quarry face, just north of Clarke Road (Stewart, 1977, p.11). These may still visible and showing the flows at depth, and could be worth further study in the field.

Lava flows and resultant stony material across the landscape:

Lava flow stony material once existed across much of the landscape.

Such material has been partly cleared during European settlement.

Today's large stone piles may be marking in their cores bigger pre-existing natural lava flow rises – and such pre-European landscape features may have been used as indigenous shelters.

Meanwhile many small rises, particularly this to the east and south easy of Mount Atkinson, have been built up by the addition of stones cleared from elsewhere across the flows.

Landform map:

After reference to your artefact map, and making use of Martin's photographs, I have sketched some boundaries and comments using Neville Rosengren's Near Map image. (His original image and my annotated image are in the attached files for you to download separately.)

I have marked lava flow boundaries and use arrows to show directions of flows, and also provided comments brief .

The earlier flows are to the east and south of the Mount, and the Mount itself is built up of later flows of a different type.

On the upper slopes of Mount Atkinson we examined large blocks of red-weathered ropy and vesicular basalt, many lying approximately horizontal on a broad slope down to the east. Similar large blocks are also present in the man-made stone piles lower down the slope. The lava flow material is largely red, and different to the grey basalt found to the south of the study area and around the small "quarry" area we visited to the southeast.

This can be considered with the comment of Stewart that the old quarry to the southeast of the study area, across the Hopkins Road, consists of two separate flows. The upper flow is a light grey basalt 6m to 15m thick whereas the exposed part of the lower flow is composed of a dark green gray basalt

Downslope and just east from the Mount we inspected a grassy, level area with spiny rush and thistles, and a cracking grey clay soil. This can be identified as being a wetland from time to time, developed on earlier flows as they leveled out on the plain below the Mount, and perhaps being related to the grey basalt of the quarry, with the redder lava flows coming down the slope of the Mount later, and stopping before covering the earlier flows which run southward across the study area to the small "quarry" site we visited.

Cavities or bowls were seen on the surface of the basalt in several areas and these would have been useful sources of small amounts of water (one indeed contained water on our visit) and might be checked for evidence of enlargement by the indigenous people.

Grasslands beyond main flows

To the south of the area the surface slope is gentler, and shows fewer stony areas and can be described as a broad grassland.

Water and groundwater

Much of the water from regional rainfall moves southward within the lava flows, and emerges as springs into the small creeks, and to depressions within the stony rises, and also reaches near the surface in the southern grasslands.

There are several immature creek lines in the areas to the east and south, and further wetlands have probably existed from time to time on the southwest of the study area, as suggested by Kasey.

Along the pylons lines the windmill is pumping groundwater within flows, presumably in lava flows.

Basalt soils northwest of Melbourne

"The Werribee Plains west of Melbourne and the Sunbury area north of the city are part of the Newer Volcanic Province of central and western Victoria, with around thirty extinct volcanoes, including well-preserved scoria cones such as The Anakies, and broad low lava shields such as Mount Cottrell. The flows range in age from 4 million to less than 2 million years, and on the Werribee Plains brown clay soils with subsoil calcrete (calcium carbonate nodules) reflect the low rainfall of the area." (see Joyce 2015).

David Rees of the Department of Economic Development, Jobs, Transport and Resources provided this recent summary (pers. com):

"Basically shallow to mod deep Ferrosols (Iron rich gradational soils) on the upper and mid slopes with Red Sodosols on the lower slopes. There may be some black variants as well depending on drainage."

Soils are found on both volcanoes and their lava flows.

Red-Brown Earth soils have been described at Mount Derrimut (Diarmuid Hill), a cinder-cone with scoria overlying basalt lava, 9 km to the east of Mount Atkinson. (Stace et al. 1968. A handbook of Australian soils. Rellim & CSIRO, South Australia. pp. 225-227).

Profile summary:

Surface to a depth of 12 cm: reddish brown silty clay loam.

From 12 cm: abrupt change to yellowish red light clay.

Below 30 cm: dark reddish brown clay.

Below 60 cm: dark reddish brown heavy clay, with soft carbonate at depth.

Weathering of basalt soils commonly releases iron (giving red clays and 'buckshot' iron oxide concretions), calcium carbonate (seen as coatings on soil pads) and semiotic (??) montmorillonitic clay (resulting in swelling and shrinking red clay soils), and often *gilgai* depressions and ridges are also formed (see Stace et al. 1968 pp. 415-420).

On the Werribee Plains to the south brown clay soils with subsoil calcrete reflect the low rainfall of the area.

On weathered plains flows the soils may be darker in colour, where there has been greater moisture and vegetation content. Local depressions may be areas of accumulation of moisture, either in ponded depressions or along initially simple drainage lines. Salts from weathering may accumulate under dry conditions, often formed from airborne marine salts.

Soils and clays produced by weathering may be eroded from higher areas such as volcanoes and flow ridge, and accumulate in depressions and also streamlines.

Gravel and quartz sand, and clays from the weathering of adjacent outcrops of bedrock and granite may add to the soil and stream material.

Indigenous activity can also add material to the landscape, and in the Mount Atkinson area silcrete and other materials has been carried in, and probably concentrated in the parts of the landscape more regularly used by indigenous people.

In additions windblown fine sand and silt has been added to the volcanic plains north of Werribee and Melbourne in the past, particularly during the cold conditions of the Last Glacial, 20 to 30,000 years ago when winds were more active and stream activity more irregular, and with vegetation reduced, and trees likely to be absent for much of that period, allowing wind and water reworking of topsoils. (See discussion in Joyce 2015).

Stewart's 1997 report provides some useful discussions of the Mount Atkinson volcano and flows:

On page 4 Stewart states:

"Mt Atkinson Flows.

“The basalts for Mt. Atkinson differ from those from Mt. Cottrell in that they contain fewer olivine phenocrysts and usually have a slightly finer grain size.

“Towards the end of the vent’s eruptive phase, the normally fluid nature of the lava changed and became more viscous. The viscous lava built up a ridge which extends two kilometers east of the vent.”

“The Pywheitjorrk 7 bore revealed that a 3.2 in (metre?) thick flow of Mt Atkinson basalt overlies Mt. Cottrell basalt and is, theref ?, younger.” (note: his typing!).

On p.5 Stewart provides a discussion of nearby Darley Gravels which include ‘milky quartz pebbles’.

On his page 7 Stewart states:

“e. Mt. Atkinson”

“Lava from this vent extended mainly to the north, east and south in broad, thin flows; the longest of them extending to the south-east.”

“The southerly flows lapped onto basalts from Mt. Cottrell, Greek Hill and Cowie Hill.”

“The courses of several small present-day streams have been controlled by the boundaries common to the southerly flows and flows from the above three vents.”

On page 8, he says (speaking generally about the drainage of the plains):

“There are many depressions in the top of individual flows, most less than a hectare, where drainage is internal. In some cases, the land owner has deepened the depression to form a dam.”

On p.9 he says:

“Just prior to the arrival of Europeans to the area, many flows had rough stony surfaces. In order to cultivate the land, basalt boulders were removed from large tracts of the study area. Thus, many of the basalt flows now appear to be smooth-surfaced components of a gently undulating land surface. Erosion has smoothed the flow surfaces to a greater or lesser degree throughout the study area.”

On p.11 Stewart says:

“The quarry owned by Boral Resources (Vic.) Ltd just north of Clarke Road is the only major quarry in the area. The quarry face is in two basalt flows extruded from Mt. Atkinson. The upper flow is a light grey basalt 6m to 15m thick whereas the exposed part of the lower flow is composed of a dark green gray basalt.”

These quarry exposures may still be visible and could be worth further study in the field to help understand the lava flows within the current study area.

(Note: A full scan of Stewart’s 1997 report has been provided separately).

I have had discussions with Neville Rosengren about the Mount Atkinson area.

In his report on p. 374 (Rosengren 1994) a map shows Mount Atkinson - marked as **15**, and to the west Cottrell as **16**.

Cottrell is identified as a lava shield (Rosengren 1994 p.162).
Atkinson is identified as a lava hill (Rosengren 1994 p.316).

In the area between these two volcanoes his report shows a further point numbered 21 which is identified in his report on p.373 as OBRIEN HILL 7822-4-1 9464183.

In discussion with Neville we have now agreed that this is an error made during the assembly of his report, and that a third volcano does **not** exist at his number 21.

His index (p. 386) also gives a further link to his p. 318 where it says “BULLA Type 4: Lava hill UNASSIGNED. However the Geological Survey 1:63 3360 sheet does not show a volcano here.

However that sheet does show a **red dot** (i.e. volcano, unnamed) south of Mount Atkinson and NE of Greek Hill, which may just be in the area under discussion (see 63 “63 360 geology map extract 1” (attached).

This could be the depression we examined, where we noted minor quarrying and dumped sheets of iron.

Stewart (on his p.9) mentions an “eruptive centre … shown 5 km SSW of Mt Atkinson” (i.e. he is describing a feature to the SSW whereas the red dot on the Geological Survey 1:63 3360 sheet is SOUTH of Mount Atkinson). (Is this the same feature? Probably not).

(Note that the “1:63 3360 geology maps” use lines with short “points” to show flows and their edges.)

The Lidar image suggests this feature (i.e. the depression we examined) is a discrete area

of lava, possibly a small eruption point, but more likely a tongue of lava flow running south, and then stopping, which would fit Stewart's description.

I have also had discussions with Mel Mitchell about the Mount Atkinson area.

Her honours thesis has a chapter on Mt Atkinson (Mitchell, 1990).

Mitchell says:

"The geochemistry was compared with the suite of sites prepared by Dick Price and Chris Gray at the time and the samples were found to be similar petrographically to Mt Cottrell, but geochemically distinguishable. The topographic features in this region show the alteration of drainage lines as a result of volcanic flows."

She also discussed the ages of Mount Cotterill and Mount Atkinson.

"The date of 1.44 Ma was know prior to my work and is younger than Mt Cottrell which has a date of 2.24 Ma. I noted that the basalts seemed a lot less weathered at Mt Atkinson than the material I saw at Mt Cottrell."

Some K-Ar dates supplied by Mitchell:

1.6 Ma south of Spring Hill near Werribee delta

1.4 Ma southeast of Mt Atkinson (probably sampled from the quarry south east of the eruption point)

2.24 Ma north west and on the apron of Mt Cottrell

2.5 Ma Williamstown flow

"I have attached a scan of the map I prepared for the Werribee Plain (and this shows the provinces of each volcano from my petrographic work) including Mt Atkinson and the relevant chapter in my Honours thesis."

(Mitchell's useful map is one of the figures attached to this report and provides a general view of the basalt plains around Mount Atkinson area.)

Final comments:

I have read your comments in response to my questions about how you think the indigenous people may have related to the Mount Atkinson area.

I have prepared a sketch map to help show landform relationships within the study area.

To understand the Mount Atkinson area I have used in particular your *Figure 8 artefact distribution map*, and also the map of the nearby Mount Cotterill volcano and flows by Condon (1951), one of the figures attached to this report.

In the north-west of the area the top of Mount Atkinson is an exposed area with good views in all directions, and particularly the steep and irregular surface of the volcano itself and its main flows, extending to the south and east.

Several areas which might be identified as wetlands are found to the east and south of Mount Atkinson, in area where the general slope decreases, and water is likely to emerge as springs from within the lava flows.

To the south and southeast of Mount Atkinson the flows have gentler slopes, although still having irregular surfaces and slopes. These provide a choice of aspects for possible camps and protected shelters.

This seems to be where silcrete and quartzite artefacts may have accumulated, having been carried in from nearby available surface localities (for silcrete likely to be where the base of a flow has been exposed by erosion, as at Taylor's Creek, Keilor. (Interesting to note that Mt William axe material has not been found.)

The area we visited and identified as a possible past quarry and recent dump site is a high area further down the flows, and volcanologists might called it a 'tumuli' a geological/volcanological term for a roughly circular mound or rise on a lava flow, perhaps due to internal pressure forcing up/inflating the original lava flow surface. (copying the archaeological term 'tumulus' for a high rise or mound, generally used by European archaeologists for a human-built feature).

The area of lava flows sloping southeast from Mount Atkinson is also the regional drainage direction on the surrounding plains, with much of the water moving within the highly permeable lava itself. Downslope from the Mount several identifiable drainage lines can be identified, seen well on your Figure 8 artefact distribution map.

These drainage lines may have been largely fed in the past, and are also fed today, by water moving downslope within the lava flows, and emerging into the creeks further to the south and southeast.

Finally, my memory of the area we visited to the southwest of your boundary map area is of a gentle slope to the south and west, with a grassy cover, and less of the stony lava outcrops, and with occasional areas showing the remains of stone fences, perhaps indicating that more elevated areas of lava flow surfaces were present when European settlement was beginning (see comments of changes in such area subject to European settlement in the detailed "Dry Stone Wall" report attached).

You say:

"We are too early in the investigation to have any real conclusions for the study area but the general trend is high density scatters focussed around water, on rises adjacent to water and on Mt Atkinson. Low density scatters seem to be on what I am calling the mid and lower slopes extending from Mt Atkinson. No artefacts have been identified in the south of the study area which is slightly lower and farther away from those key features. In saying that I suspect one of the landforms in the south might have held water (*and I agree!*). I wonder if the condition and depth of the soil benefitted certain plants which were then targeted for exploitation."

(We discussed the possibility of more grass and wetlands in the past before European settlement – see comment in my *AACAI (VIC) Workshop May 2015.)*

"A detailed survey for the entire study area is not yet completed, this is due to poor ground surface visibility. I suspect there will be many more artefacts out there and some of my thoughts on occupation patterns will change."

I hope this report may help you in your aim to:

"think how they may have used the landscape, its various landforms such as the Mount Atkinson hilltop, the stony ridges, depressions and mounds, the grasslands and wetlands, and the minor creeks."

AND

"We are hoping to use your information to assist in building a model for the whole study area. The model will guide future investigation and development."

E. B. Joyce.

References

Condon, M. A, 1951. The Geology of the Lower Werribee River, Victoria. Proceedings of the Royal Society of Victoria, 63:1-24.
See his figure of Mount Cottrell lava flows, copied from Rosengren 1994 p.162 and provided in the material supplied.)

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Hare A. G. & Cas R. A. F. 2005. Volcanology and evolution of the Werribee Plains intraplate

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Mitchell, M. M. 1990. The geology and geochemistry of the Werribee Plains Newer Volcanics. BSc (Hons) thesis, La Trobe University (unpub.).

Rosengren, N. J. 1986. Sites of geological and geomorphological significance in the western region of Melbourne. Department of Geography, University of Melbourne, 271pp.
See Mount Cottrell p. 119 & 120.

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See Mount Cottrell in Rosengren (1994), p. 162-164.

Stace et al. 1968. A handbook of Australian soils. Rellim & CSIRO, South Australia.

Stewart, G. 1977. The Newer Volcanic Lava Field between Deer Park and the Werribee River. Unpublished Report, Geological Survey of Victoria, 1977/26.
(A scan of Stewart's 1997 report has already been provided separately.)

VandenBerg, A.H.M. 1973. Geology of the Melbourne District. Chapter 2, Regional Guide to Victorian Geology, School of Geology, University of Melbourne, pp.14-30 (esp. p.24 and 26-28).

Additional files containing maps and images, and material downloaded from local web sites, are attached to this report – they include:

- A map of the Werribee Plain. From Mitchell, M. M. 1990. The geology and geochemistry of the Werribee Plains Newer Volcanics. BSc (Hons) thesis, La Trobe University (unpub.).

- Extract from Geological Survey of Victoria. Geology map sheets, 1:63,360 Melbourne and Sunbury, showing an unamed volcano marked by a red dot south of Mt Atkinson.

- From Condon, 1951 a useful map of Mount Cotterill (copied from Rosengren 1992 p.162.).

- Landform sketch map of Mount Atkinson study area.

- Also provided as separate files are downloads from several web sites which relate to the Mount Atkinson area, including a detailed “Dry Stone Wall” study which covers the study area.

5874_Draft-AHIA_Mt-Atkinson-PSP_Final_20102014

Mt Atkinson ** D-15-1843-PSP-1082-TaMt-Atkinson-Melton-Finalised-Post-Contact-Heritage-Report-Ecology-and-Heritage-Partners-7-April-2016

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Citation No 04 Mount Atkinson Dry Stone Wall Precinct.pdf

Etc.

Appendix 8 Compliance checklist

Table 142 Compliance checklist

Compliance review checklist		Yes	No
Prior to the commencement of the activity			
Has the CHMP been approved?			
Have all personnel involved in ground disturbing works been inducted or trained in the requirements contained within the CHMP, particularly the conditions and contingency plans?			
Has the ploughing and surface salvage been completed before works commence with 500 metres of Peppercorn Rise (VAHR 7822-3798)?			
Has the ploughing and surface salvage been completed before works commence with 500 metres of the nominated salvage area at Mt Atkinson raised volcanic plateau AS 1 component (VAHR 7822-4109-4)?			
Has the surface salvage been completed before works commence with 500 metres of Mt Atkinson Landscape (VAHR 7822-4109)?			
Has the controlled burn and surface salvage been completed before works commence with 500 metres of the nominated salvage area at Mt Atkinson drainage plain AS 1 component (VAHR 7822-4109-5)?			
Has the controlled burn and surface salvage been completed before works commence with 500 metres of Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-2)?			
Has the subsurface salvage been completed before works commence with 500 metres of Mt Atkinson stony rise AS 1 component (VAHR 7822-4109-2)?			
Has the controlled burn and surface artefact recording been completed before works commence with 500 metres of Mt Atkinson cone AS 1 component (VAHR 7822-4109-1)?			
Has the subsurface salvage been completed before works commence with 500 metres of Mt Atkinson cone AS 1 component (VAHR 7822-4109-1)?			
Discovery of Aboriginal cultural heritage during the activity			
Has any Aboriginal cultural heritage been discovered during the activity? If yes, have the following been undertaken:			
	Have all works ceased within 20 metres of the discovery location(s)?		
	If required, has the exposed Aboriginal cultural heritage been protected by a suitable barrier (e.g. fencing)?		
	Has a heritage advisor been notified within 24 hours of the discovery?		
	Has the heritage advisor notified the RAP and/or Secretary, DPC of the discovery?		
	Has the heritage advisor completed new or updated Aboriginal place record(s) for the VAHR?		

Compliance review checklist		Yes	No
	Has an appropriate mitigation or salvage strategy been developed and implemented?		
Discovery of human remains during the activity			
Have any actual or suspected human remains been discovered during the activity? If yes, have the following been taken:			
	Has all works ceased within vicinity of the discovery location?		
	If required, have the human remains been protected by a suitable barrier (e.g. fencing)?		
	Have Victoria Police and the Coroner's Office been notified?		
	If there are reasonable grounds to believe that the remains may be Aboriginal Ancestral Remains, have the Coronial Admissions and Enquiries hotline been contacted?		
	If it is confirmed by these authorities that the remains are Aboriginal Ancestral Remains, has the Victorian Aboriginal Heritage Council been contacted?		
	Has an appropriate mitigation or salvage strategy been developed and implemented?		