



Hastings Generation Project: Cultural Heritage Assessment

Sponsor: Esso Australia Pty. Ltd

Date: November 10th, 2021

Heritage Advisor and Author: Matthew Barker

Title Page

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Assessment
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HERITAGE ADVISOR: Matthew Barker
AUTHOR: Matthew Barker
DATE OF COMPLETION: November 10th, 2021

Acknowledgements

Benchmark Heritage Management Pty Ltd (BHM P/L) wishes to acknowledge the following people for their assistance and participation in the production of this Cultural Heritage Assessment (CHA).

Disclaimer

The information contained in this CHA references information contained in government heritage databases and similar sources and is, to the best knowledge of BHM P/L, true and correct at the time of report production. While this CHA contains a summary of information it does not provide, nor does it intend to provide, an in-depth summary and assessment of all available research materials in relation to the Activity Area. BHM P/L does not accept liability for errors or omissions referenced in primary or secondary sources.

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Abbreviations

ACHP: Aboriginal Cultural Heritage Place
BHM P/L: Benchmark Heritage Management Pty Ltd
CHA: Cultural Heritage Assessment
CHMP: Cultural Heritage Management Plan
EVC: Ecological Vegetation Community
HA: Heritage Advisor
LDAD: Low Density Artefact Distribution
MYA: Million Years Ago
AV: Aboriginal Victoria
PAD: Potential Archaeological Deposit
PAS: Potential Archaeological Sensitivity
RAP: Registered Aboriginal Party
VAHR: Victorian Aboriginal Heritage Register

Executive Summary

Activity, Location and Level of Assessment Undertaken

This Cultural Heritage Assessment (CHA) has been prepared for the proposed Hastings Generation Project, Hastings, Victoria. The Activity Area is located at, and is comprised of, the property known as 2 Long Island Drive Hastings, Mornington Peninsula Shire, being part Lot 39 on LP3732. A glossary of terms is shown in Appendix 1.

Results of Assessment: Desktop

European activities that would have impacted on Aboriginal archaeological sites within the Activity Area include:

- Initial clearing of native vegetation.
- Excavation and levelling for preparation of the current land use.
- Construction of a gravel pad.

Results of Assessment: Site Inspection

A systematic inspection of the Activity Area was undertaken on the 8th of October 2021 by Matthew Barker of BHM P/L (see Plates 1-6). No artefact scatters, scarred trees, rock shelters, caves or cave entrances were noted within the Activity Area.

Implications for Development

Aboriginal Heritage

A mandatory CHMP is not required as the following conditions have been not been triggered under the Aboriginal Heritage Regulations 2018 (r5, Division 1, 6);

- a) all or part of the activity area for the activity is within an area of cultural heritage sensitivity and;
- b) all or part of the activity is a high impact activity

Specifically, the activity area is not located within an area of cultural heritage sensitivity.

The proposed activity is a high impact activity under r.46 Buildings and works for specified uses

R 46 Buildings and works for specified uses

(xxvii) a utility installation, other than a telecommunications facility, if—

(D) the works affect an area exceeding 25 square metres.

1. Significant Ground Disturbance

Can significant ground disturbance be established?

Yes.

The use of land and construction of a gravel handstand indicates that the upper soil profile has been subject to significant ground disturbance by machine thus destroying any intact cultural heritage.

If part of an area of cultural sensitivity has been subject to significant ground disturbance, that part is not an area of cultural heritage sensitivity.

Significant ground disturbance means:

Disturbance of –

- (a) the topsoil or surface rock layer of the ground; or
- (b) a waterway –

by machinery in the course of grading, excavating, digging, dredging or deep ripping, but does not include ploughing other than deep ripping. The property has demonstrably undergone significant ground disturbance as outlined in the land use history contained in this report and from the geotechnical investigation which shows that the upper soils to the underlying rock are significantly disturbed.

2. Is a CHMP required for the proposed Activity?

No

1. The proposed activity is not within an area of cultural heritage sensitivity.
2. A CHMP is not required for this activity, as the property has demonstrably undergone significant ground disturbance as defined in the Aboriginal Heritage Regulations 2018 and has been subject to grading, excavating, digging by machine as per the AV Practice note on Significant Ground Disturbance. This conclusion has been reached by the following levels of inquiry as noted in the Aboriginal Heritage Act 2006 Practice Note: Significant Ground Disturbance: Level 1 – Common knowledge.

Therefore, in the opinion of Matthew Barker, Director Benchmark Heritage Management a mandatory CHMP is not required.

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1.0 Introduction

1.1 Location of the Activity Area and Current Landowner

This CHA has been prepared for the proposed Hastings Generation Project, Hastings, Victoria. The Activity Area is located at, and is comprised of, the property known as 2 Long Island Drive Hastings, Mornington Peninsula Shire, being part Lot 39 on LP3732. The Activity Area is approximately 1ha in size.

1.2 Name of the Sponsor

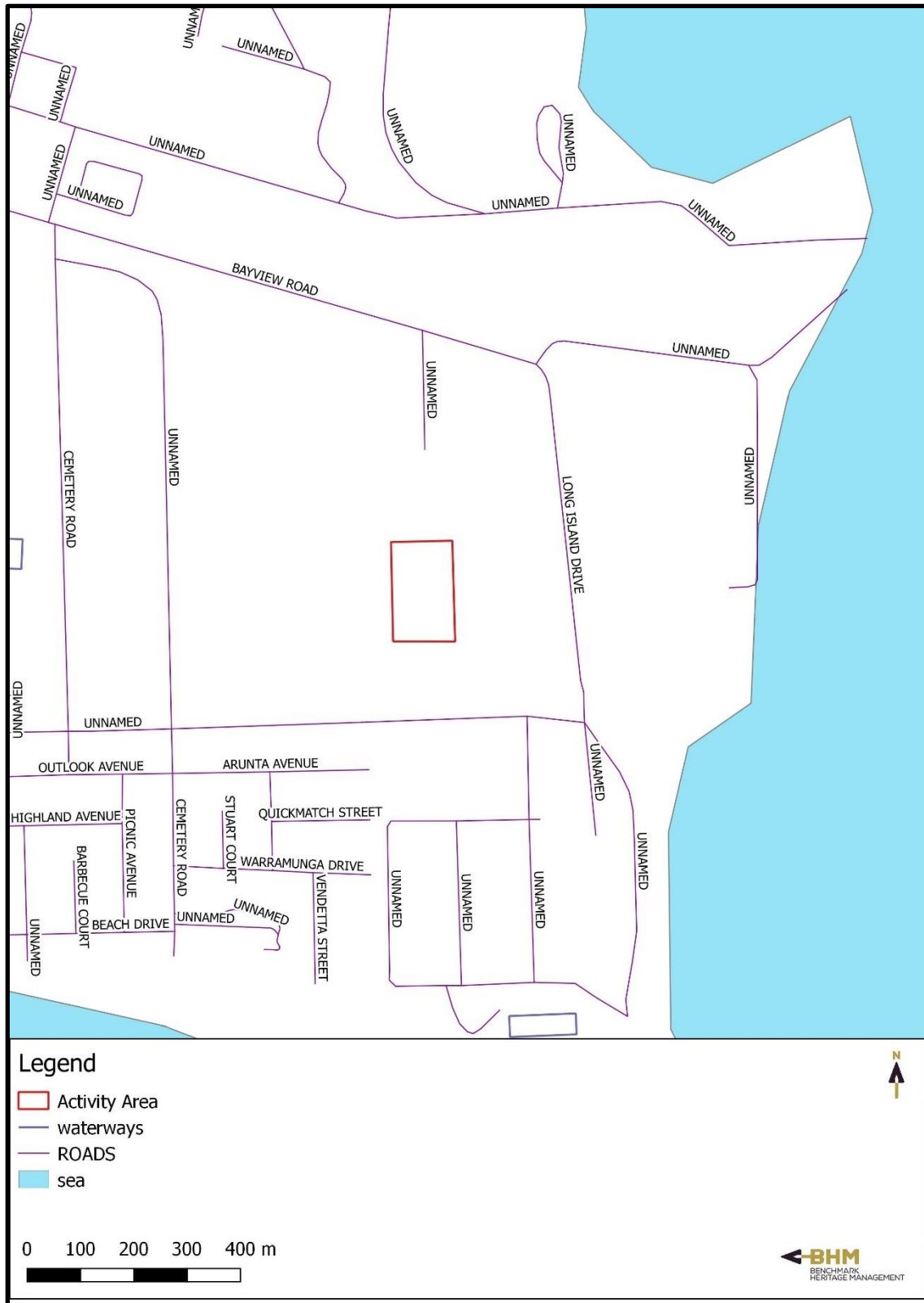
The Sponsor for this CHA is Esso Australia Pty. Ltd.

1.3 Details of Heritage Advisor

The heritage advisor who has completed this CHA is Matthew Barker. Matthew has a Bachelor of Archaeology (2004) with Honours (2005) from La Trobe University. Matthew has over fifteen years' experience in the field of Aboriginal Archaeology and Cultural Heritage Management.

1.4 Registered Aboriginal Party (RAP) with Responsibility for the Activity Area

The Registered Aboriginal Party (RAP) with responsibility for the Activity Area is the Bunurong Land Council Aboriginal Corporation (BLCAC).



Map 1: Location of Activity Area in a Local Context

2.0 Activity Description

The sequence of activities that will occur during the course of any subsequent development is likely to be as follows:

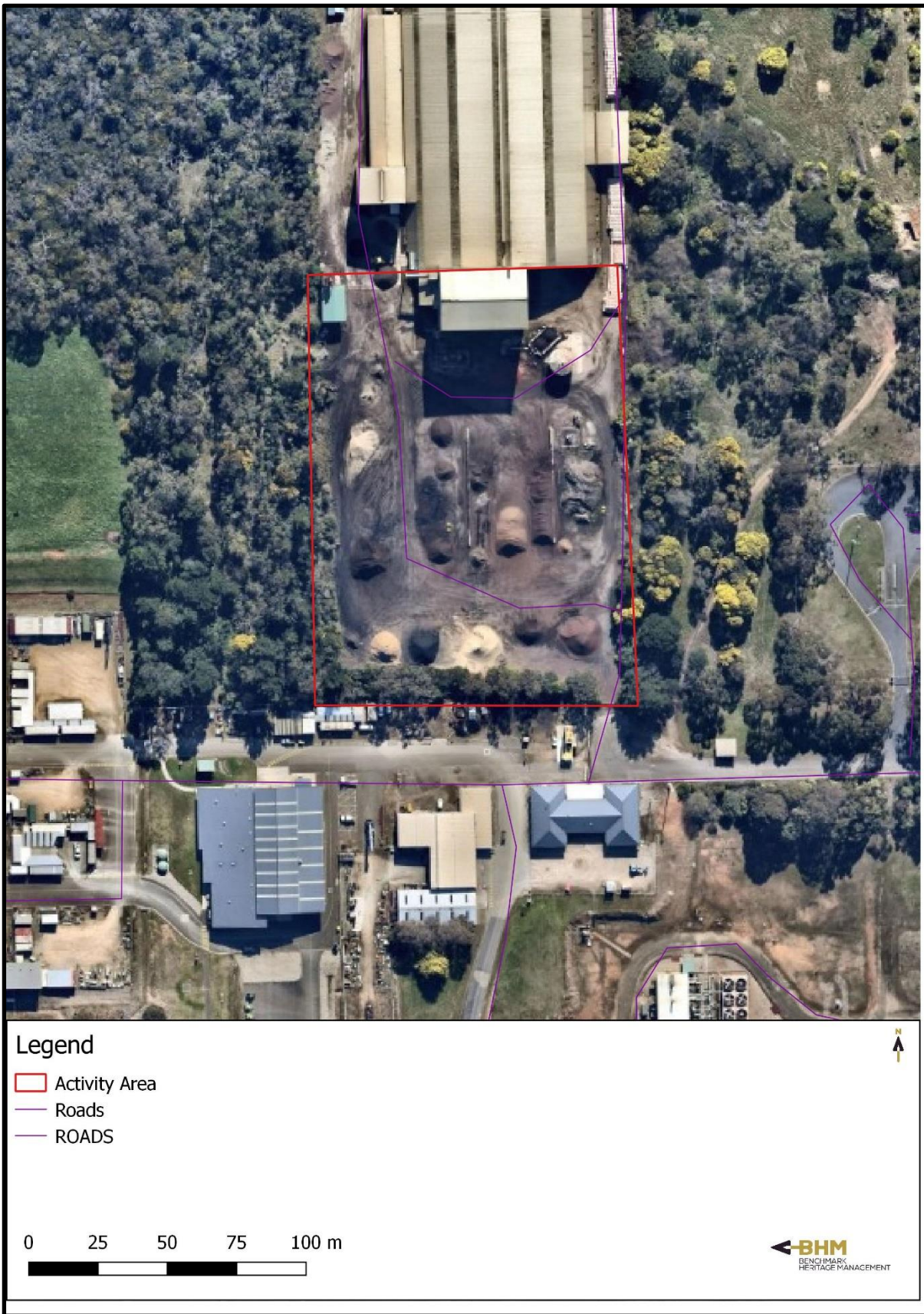
- Install 3 x Titan 130 Solar Generators (13.5 MW each).
- Install 1 x 40 MVA transformer, 1 x 72.5 kV switchgear.
- Minimal soil movement to install pipeline supports and equipment installation.
- Soil will be kept on site and reused as far as possible. Off-site disposal is planned to be minimised.

3.0 Extent of the Activity Area

The Activity Area is located at, and is comprised of, the property known known as 2 Long Island Drive Hastings, Mornington Peninsula Shire, being part Lot 39 on LP3732 (Map 2).

The existing conditions of the Activity Area are shown in Map 2.

The Activity Area is located in MGA Zone 55. The full extent of the Activity Area covered by the CHA is shown in Map 2.



Map 2: Aerial Overview

4.0 Aboriginal Cultural Heritage Assessment

4.1 Desktop Assessment

The Desktop Assessment involved a review of:

- Standard ethnographic sources to identify the likely traditional owners and a review of any written and oral local history regarding Aboriginal people in the geographic area;
- Environmental resources available to Aboriginal people within the region of the Activity Area;
- The land-use history of the Activity Area, particularly evidence for the extent and nature of past land disturbance; and
- The landforms or geomorphology of the Activity Area and identification and determination of the geographic region of which the Activity Area forms a part that is relevant to the Aboriginal cultural heritage that may be present in the Activity Area.

This information was used to produce an ACHP prediction model (Section 4.1.6). The site prediction model assists in determining the type of ACHPs which may potentially occur within the Activity Area, the possible contents of these sites, the possible past use of the landscape by Aboriginal people and the likely extent of ground disturbance to ACHPs. The information provided by the site prediction model is used constructively in designing the survey strategy, by, for example, allowing the field team to target areas which have a high probability of containing ACHPs. No obstacles were encountered during the preparation of this Desktop Assessment.

The geographic region in which the Activity Area is located is defined by the locality of Hastings. This area had been identified as the geographic region for the purposes of this CHA as it is considered to be of relevance to predicting the nature, extent and significance of any Aboriginal cultural heritage located in the Activity Area. Specifically, the geographic region as defined samples a variety of landforms, environmental determinants, and resources that likely influenced Aboriginal occupation of, and near to the Activity Area.

4.1.1 Previous Works in the Geographic Region Relevant to the Activity Area

The Activity Area has been subject to a previous high level desktop assessment for the Port of Hastings Development Project (Feldman et al). The location of the Activity Area was rated as being of potential archaeological sensitivity based on land form, geology and distance from water; however local conditions in terms of disturbance and built infrastructure were not assessed.

Regional Investigations

Sullivan conducted a thorough survey of the foreshores of the Mornington Peninsula over a two-year period between 1979 and 1981. The survey was undertaken in response to the increasingly noticeable effects of natural erosion, and urban and recreational development on coastal ACHPs along the Port Phillip Bay coastline. Sullivan (1981) surveyed a wide strip of the coast back to between 100 to 300 metres inland (Sullivan 1981: 45). Sullivan's Study Area was divided into three zones: the northern hills and plains, the uplands, and the south west Mornington Peninsula.

Time constraints meant that survey work was focused along coastal areas and much of the coastline was surveyed. The second year of fieldwork included surveys of inland areas. Sullivan recorded the

presence of three ACHP in this area: shell middens, artefact scatters and base camps. It was noticed that coastal ACHPs had been affected by wide erosion and many were totally deflated.

The current Activity Area falls within Sullivan's Northern Hills and Plains Unit at the boundary of Inland Unit 1 (Northern Plains) and Coastal Unit 10 (Sandy Pt to Quail Island). A total of 289 new ACHPs were recorded during the survey, but the report also analysed previously recorded ACHPs and other ACHPs reported in literature references, bringing the total of analysed ACHPs to 378. 316 of these ACHPs were found on the Port Phillip and Bass Strait coastlines, while 12 ACHPs were found on the Western Port coast and 50 ACHPs found in the inland units. Sullivan (1981: 71-73) discussed the northern Western Port hinterland in detail, noting that 10 ACHPs had been recorded in this area, all of which were located within a short distance of either creeks flowing into Western Port or freshwater swamps or waterholes such as Tyabb Waterholes (located 5.3km northeast of the current Activity Area) and Bunguyan Waterholes (located 4.8km northeast of the current Activity Area). Sullivan stated that there was very little tangible evidence of exploitation of the coastal mangroves in the area, with only one site at Bunguyan Waterholes containing shell. Sullivan argued however, that the archaeological origin of this shell was not certain. In concluding, Sullivan reiterated that the evidence pointed to a more extensive use of the hinterland in the northern Western Port region.

Smaller Scale Investigations

Localised archaeological investigations have established the general character of ACHPs located within the same geographic region as the Activity Area. This information, together with an environmental context, histories of land use and, historical and ethnohistorical sources, can be used to form the basis for a site prediction statement. A review of those located within the geographic region of Hastings, Tyabb, Bittern and Crib Point are presented below.

Muir 2002 (Report Number 2273) undertook a Cultural Heritage Survey of the Frankston – Flinders Road and Denham Road intersection, Tyabb, Victoria, located approximately 4.3km northwest of the current Activity Area. An archaeological survey was undertaken for the land surrounding the proposed two-lane roundabout at the intersection of Frankston – Flinders Road and Denham Road, Tyabb. One Aboriginal Place (VAHR 7921-0463), comprising an isolated artefact, was identified as a result of the survey despite generally poor ground surface visibility and the heavily disturbed nature of much of the proposed alignment (within the road reserve).

Thomson and Matthews (2003) conducted an archaeological assessment for Biosis (Report Number 2484) on a property located on Railway Road in Tyabb, situated approximately 4.45km northwest of the current Activity Area. The eastern side of the property faced onto Railway Road, 50m from the Frankston Railway line. The Study Area in question consisted of two adjacent allotments that together are approximately 4ha in size. The property had been used for grazing since being cleared by Europeans and was then used as an apple orchard and as such the Study Area was considered highly disturbed. A survey was undertaken where the team walked over 80 linear transects across the Study Area. No Aboriginal cultural material was located.

Minos et al (2008a) undertook a CHMP (10316) for a proposed industrial subdivision of 260 Marine Parade, Hastings located 2.48km northwest of the current Activity Area. No new ACHPs were identified during the ground surface survey conducted during the Standard Assessment. A Complex Assessment was undertaken and included a total of three Shovel Test Pit holes excavated 15m apart, along a line 45m in length; each measuring approximately 300x300mm. On average, test holes were excavated to a depth of 400mm; excavation stopped when sterile clay was reached. The testing did not reveal any Aboriginal cultural heritage. It was concluded that the combined impact of natural

erosion and heavy industrial use of the activity area, as well as the straightening of nearby Olivers Creek, are potential factors for the lack of cultural material.

Minos et al (2008b) undertook a CHMP (10317) for a proposed factory development 24 Barclay Crescent, Hastings located 1.98km northwest of the current Activity Area. The Standard Assessment concluded that there was some potential for sub-surface Aboriginal cultural heritage to occur, because of the presence of Olivers Creek on the boundary of the activity area and because it was not possible to observe the natural ground surface over most of the activity area. No new ACHPs were identified during the ground surface survey conducted during the Standard Assessment. A Complex Assessment was undertaken and included the excavation of nine 300mm (diameter) auger holes. The authors concluded that the lack of Aboriginal cultural material was as a result of significant ground disturbance caused by 50-60 years of industrial use.

Minos et al (2008c) undertook a CHMP (10536) for a proposed industrial subdivision of 290 Marine Parade, Hastings located 2.5km northwest of the current Activity Area. No new ACHPs were identified during the ground surface survey conducted during the Standard Assessment. A Complex Assessment was undertaken and included seventeen 40cm x 40cm Shovel Test Pits (no 1x1m Test Pit was excavated). The testing did not reveal any Aboriginal cultural heritage. It was concluded that the combined impact of natural erosion and heavy industrial use of the activity area, as well as the straightening of nearby Olivers Creek, were potential factors contributing to the lack of cultural material.

Tucker and Jacobs (2008) prepared a CHMP for proposed storage units on 5 Bray Street, Hastings (CHMP 10420) located 2.86km southwest of the current Activity Area. A Desktop Assessment was undertaken, and it was found that there were four low density artefact scatters and one earth feature close to the activity area (VAHR 7921-0359, VAHR 7921-0360, VAHR 7921-0367, VAHR 7921-0368 and VAHR 7921-0419). A Standard Assessment was undertaken across the entire activity area; however, no cultural heritage places were found. A Complex Assessment, consisting of two 1m x 1m Test Pits and eleven 50x50cm Shovel Test Pits did not identify any new ACHPs.

Patton and Vines (2008a) completed a CHMP (10369) for a proposed commercial development at 160 Marine Parade, Hastings located 2.32km northwest of the current Activity Area. The assessment included both survey and archaeological testing – which involved excavation of three Backhoe Pits measuring 2x2m. The testing revealed that the surface sediments consisted of fill to depths of between 0.9m and 1.2m, overlying sterile marine sediments. No Aboriginal heritage was located, and Vines and Patton argued that the result could be attributed to either the substantial disturbance caused by filling and dumping of rubbish on the property, or to the fact that the low-lying and swampy nature of the area made it unsuitable as a location for Aboriginal habitation. They concluded that either scenario was likely to be applicable.

Patton and Vines (2008b) also prepared a CHMP (10368) for a proposed commercial development on a property at 166 Marine Parade located 2.32km northwest of the current Activity Area. This assessment included survey and testing – involving the excavation of two Backhoe Pits measuring 2x2m. This assessment was undertaken at the same time as that for 160 Marine Parade (discussed above), and the results were virtually identical, with deep layers of fill found across the whole property, overlying sterile marine sediments. Once again, no Aboriginal heritage was found and again the authors argued that the result could be attributed to either disturbance or the unsuitability of the area for habitation.

Mitchell and Loizou (2009) completed a CHMP (10915) for a proposed residential subdivision to be located at 22 Morrah Street, Hastings located 2.13km northwest of the current Activity Area. A

pedestrian survey of the entire activity area was conducted as part of the Standard Assessment. Visibility during the survey was average, with up to 40% of the ground surface exposed due to sparse vegetation. The activity area was found to be highly disturbed, with an existing homestead having been demolished to make way for the current dwelling, sheds and carport which exist within the activity area. It had also been used as a junk and scrap metal yard for years and is currently used as a hobby farm. No ACHPs were found during the survey and no areas of potential were identified. A Complex Assessment was not considered necessary and no further cultural heritage works or recommendations were required.

Matic (2009) undertook a voluntary CHMP for a proposed Koori Youth Drug and alcohol healing service on Henderson Road in Hastings, Victoria located approximately 3.65km southwest of the current Activity Area (CHMP 10834). Attempted systematic surveying of the activity area was hindered by dense blackberry thickets and other vegetation. The Standard Assessment resulted in no new Aboriginal cultural heritage places being recorded. Even though the activity area was considered both disturbed and as having only low to moderate potential for the presence of Aboriginal archaeological material, a Complex Assessment was deemed appropriate, due to the presence of previously recorded places in the wider area. The Complex Assessment included thirty 30x30cm Shovel Test Pits and four hand excavated 50x50cm Test Pits. No Aboriginal places were recorded as a result of the Complex Assessment, and the area was deemed to have no further potential for cultural heritage values.

In 2009, Wheeler et al. (2009) prepared a CHMP (10200) for the proposed Westernport industrial subdivision in Hastings located 1.21km north of the current Activity Area. The Desktop Assessment identified two previously recorded artefact scatters within the boundaries of the activity area; VAHR 7921-0036 (Lysaght 1) and VAHR 7921-0037 (Lysaght 2). The Standard Assessment found that most of the activity area had been cleared of native vegetation and replaced with exotic tree plantings and pasture grasses. Although visibility was low, two surface artefact scatters were identified. A Complex Assessment consisting of manual and mechanical excavation of 5x 1.2m trenches evenly spaced along linear transects oriented to cover the landforms within the activity area. A total of forty-two trenches were excavated. In addition, four 1x1m Test Pits were excavated in the immediate vicinity of the surface scatters. A total of 265 artefacts were recovered from the test excavations and it was determined that a continuous low density artefact scatter of low archaeological significance exists over the majority of the activity area. The ACHP was registered as VAHR 7921-0036 (BlueScope Westernport 1) and incorporated two previously recorded surface ACHPs VAHR 7921-0036 (Lysaght 1) and VAHR 7921-0037 (Lysaght 2).

Two of these places were located within the activity area itself (VAHR 7921-0036 & 0037). A Standard Assessment was undertaken across the activity area, and identified two new stone artefact scatters. One of these, located near Olivers Creek, had been exposed by erosion along a linear cattle track, and the second was identified in disturbed soils, comprising three flakes. The Complex Assessment involved the machine excavation of 42 trenches, 5m x 1.2m in size, in areas of potential sensitivity. In addition, five 1m x 1m pits were placed near the two surface scatters to examine the extent of these places. Through the Complex Assessment, a further 265 stone artefacts were located in 69% of the test trenches. The artefacts were predominately made of silcrete (75%) with chert, quartz and quartzite material also represented. Complete and broken flakes made up the majority of the assemblage while cores and formal tool types were also found in small quantities. Re-use and retouch of some 6% of flake pieces was also noted. Artefact density was found to be higher in proximity to water and on sloping ground. The artefacts were considered part of a continuous low density artefact scatter across the entire activity area, and were added to the existing registered place: VAHR 7921-0036, incorporating 7921-0037. This place was renamed Bluescope Westernport 1. The authors concluded that the lack of intact or stratified archaeological deposits made accurate absolute dating highly improbable. The recommendations make provision for small sections of Bluescope Westernport

1 to be retained within wetland reserve, while salvage was also recommended for two parts of the activity area.

In 2009 Walther and Wheeler undertook a CHMP (10678) for the proposed development of a recycled water and sewer rising main from the Somers Water Treatment Plant, to the BlueScope Steel plant located north of Hastings, located 1.1km east of the current Activity Area. A total of thirty-six excavated pits were excavated comprising twenty-two 2x1m Backhoe Pits excavated by controlled mechanical excavation with 100% sieving of all original A horizon topsoil and alluvial deposits; and fourteen 40x40cm Shovel Test Pits which were assessed as having high levels of prior ground disturbance on the basis of clear surface evidence. The majority of the activity area had been heavily disturbed by past land use, particularly road construction, establishment of services in road reserves and orcharding. These activities were considered to have effectively removed potentially artefact-bearing deposits. In total, twenty-one of the test locations (60%) had no original topsoil deposits. Furthermore, 77% (twenty-seven test locations) did not have an A1 (topsoil) horizon. The soils across the activity area consisted primarily of soils developed on Baxter Sandstone, characterised by a sandy loam A horizon overlying an orange clay B horizon subsoil. In the majority of trenches, portions of the A horizon topsoil profile had been removed by past land use disturbances and in some cases covered by imported fills. On floodplain landforms, dark brown clay gradational profiles indicated the presence of former wetlands. No Aboriginal cultural material was located during the Standard or Complex Assessments.

Walther and Wheeler (2010) prepared a CHMP (11144) for a residential subdivision at 94 Hodgins Road, Hastings, 2.55km west of the current Activity Area. Thirteen 2x1m pits were excavated comprising four 2x1m hand excavated Test Pits and nine 2x1m Backhoe Pits. No Aboriginal cultural material was located during the Standard or Complex Assessments, and Walther and Wheeler considered it unlikely that any was present. While the land had not undergone substantial disturbance in the past, the authors concluded that the activity area had probably not been utilised by Aboriginal people beyond transient usage due to the waterlogged nature and dense vegetation on the flood plains, and the distance to potable water on the elevated drier rises.

Jakovljevic and Prideaux (2010) undertook a CHMP (11231) for the proposed Thornhill Street sewerage pump station upgrade, Tyabb, located within the road reserves of Thornhill and Lyall Streets and Mayne Avenue, Tyabb, located 3.5km northwest of the current Activity Area. A pedestrian survey of the activity area was undertaken, during which it was noted that the area around Thornhill Street had undergone significant prior disturbance. However, a small rise in the east of the activity area was assessed as having archaeological potential. Two Test Pits were excavated, one 1x1m Test Pit on the small rise in the Mayne Avenue reserve and a 50x50cm Shovel Test Pit in the Lyall St reserve. The stratigraphy of these holes consisted of either greyish brown clayey loam or sandy loam overlying sandy clay. The maximum depth of the holes excavated was 30cm, as the ground water level was reached preventing further digging. The testing did not reveal any Aboriginal cultural heritage.

Chamberlain (2011) undertook a CHMP (11809) for a proposed boat storage facility at 15 Ellery Street, Hastings, located 1.59km northwest of the current Activity Area. The Desktop Assessment concluded that the archaeological potential of the property was very low and limited to isolated artefacts or low density stone artefact scatters. Chamberlain concluded that it was not likely that any Aboriginal cultural heritage would be found within the activity area, and that a Complex Assessment of 15 Ellery Street was not warranted.

Albrecht (2011) authored a CHMP for the proposed residential subdivision of 20-24 Skinner Street, Hastings (CHMP 10636), located 1.64km southwest of the current Activity Area. The activity area was located within a declared Ramsar wetland. A Standard Assessment was undertaken across the entire

activity area and no cultural heritage places were found. A Complex Assessment was also undertaken, comprising a 1x1m Test Pit and twenty-five 40x40cm Shovel Test Pits. No Aboriginal cultural heritage materials, places or deposits were uncovered, and the results showed that there was a high level of disturbance across the property. It was determined that no further investigations were required.

Mitchell & McFarlane (2011) undertook a CHMP for a proposed residential subdivision at 277 Marine Parade, Hastings, Victoria (CHMP 11511), located approximately 2.5km northwest of the current Activity Area. The Desktop Assessment concluded that there was a low potential for Aboriginal cultural heritage to be present. The Standard Assessment noted one slight rise in the activity area that may have been a natural landform. No Aboriginal heritage was identified during the Standard Assessment. No Aboriginal heritage was identified during the Complex Assessment. The sub-surface testing identified silty clay over a very compact clay base to a depth of 320-570mm with European rubbish and introduced fill throughout the majority of the Test Pit. The CHMP concluded that it was unlikely that Aboriginal cultural heritage would be found within the activity area.

In 2011 Hislop undertook a CHMP (11457) for a proposed warehouse at 6 Thornhill Street, Hastings, located approximately 2.38km northwest of the current Activity Area. The Desktop Assessment indicated that there was some potential for Aboriginal cultural heritage to be present. No cultural heritage was identified in the Standard and Complex Assessments. The soils were silty (marine sediment) to a depth of approximately 200mm, over basal clay. The activity area was located on the edge of the flood zone associated with Western Port Bay. It was considered that the activity area would most likely have been underwater or in amongst marginal mangroves during much of the pre-contact history. It was considered unlikely that Aboriginal cultural heritage would be present within the activity area.

Murphy and Morris (2012) conducted a CHMP at Padua College, 1585 Frankston-Flinders Road, Tyabb (CHMP 12030), located approximately 3.8km northwest of the current Activity Area. The 16.5ha activity area comprised a former apple orchard site. The Desktop Assessment revealed that one previously registered ACHP was located within the activity area (VAHR 7921-0463). The Standard Assessment concluded that the ground surface visibility was close to 0% and as such no Aboriginal surface artefacts were located during this part of the assessment. Previously registered ACHP VAHR 7921-0463 could not be relocated. A total of one 1x1m Test Pit and thirty-nine 40x40cm Shovel Test Pits were excavated within the activity area. The Complex Assessment revealed soil conditions typical of the eastern Mornington Peninsula; Holocene alluvial sediments underlain by orange and grey clays derived from Baxter Sandstones. These deposits varied only in depth and degree of disturbance, however, were generally shallow. No new Aboriginal cultural places were discovered during the course of the CHMP.

McAlister and Barker (2012) undertook a CHMP (12224) for a proposed industrial development at 2153 Frankston-Flinders Road and Lot 103, 76 Reid Parade, Hastings, located 2.5km southwest of the current Activity Area. The Complex Assessment comprised one 1x1m Test Pit, eleven 200x60cm Backhoe Transects and ten 40x40cm Shovel Test Pits. The Complex Assessment confirmed the results of the Standard Assessment and identified that the north, south, eastern, and central sections of the activity area had all been subject to significant ground disturbance. These areas were full of fill, construction rubble and modern rubbish. The western section of the activity area contained areas of introduced fill and was also disturbed, however not to the extent of the rest of the activity area. This area was ploughed and furrowed. Two isolated artefacts were located in the top 10cm of soil and registered as separate ACHPs; VAHR 7921-1427 and VAHR 7921-1428. These artefacts were not considered to be in-situ due to the disturbed nature of the area.

Hislop (2012) completed a Desktop CHMP (12441) for a residential development at 30 Skinner Street, Hastings, 1.58km southwest of the current Activity Area. Previously completed CHMPs in the Hastings area had indicated that the coastline was formerly mangrove, and the coast subject to inundation. She concluded that the activity area was unlikely to contain Aboriginal cultural material for the following reasons:

- Lack of recorded Aboriginal Places located in the area of sensitivity around Hastings;
- Land formation processes associated with mangrove coastlines and the likelihood of water erosion on the property and being involved in new land formations in recent history, and
- The significant impact to the soils as a result of construction and demolition of two dwellings and associated infrastructure and services, over the last 170 years.

In 2012 Dugay-Grist et al undertook a CHMP (11835) for a proposed residential subdivision at 134 Salmon Street, Hastings, located approximately 1.45km southwest of the current Activity Area. A 1x1m Test Pit and six 40x40cm Shovel Test Pits were excavated. Sub-surface testing was conducted in the activity area in areas of potential sensitivity that were to be impacted by the proposed activity. Although the Standard Assessment revealed areas of the activity area to be disturbed, the results of the sub-surface testing indicated that there were also sections of the activity area that were undisturbed. No Aboriginal cultural heritage materials, features, or potentially sensitive deposits were identified in any of the excavation areas within the activity area.

Falvey and Hislop (2014) completed a CHMP (12956) for a residential development at 28 Skinner Street, Hastings, 1.52km southwest of the current Activity Area. A total of one 1x1m Test Pit and four 40x40cm Shovel Test Pits were excavated in order to establish the soil stratigraphy of the activity area which comprised highly disturbed silty clay fill overlying undisturbed blocky clay subsoils. No Aboriginal cultural material was located during the Standard or Complex Assessments, and Falvey and Hislop considered it likely that the original sandy clay soils had been removed during cut and fill prior to construction of the existing house, garage, and other infrastructure. They considered it unlikely that any cultural material remained on the property.

In 2014 Hislop undertook a CHMP (12880) for the proposed construction of two 25ML flammable liquid storage tanks and associated plant works located approximately 1.66km northwest of the current Activity Area at 5 Barclay Crescent, Hastings. No Aboriginal cultural heritage was located during the sub-surface testing program and it was considered unlikely that Aboriginal cultural heritage would be present within the activity area. A 1x1m Test Pit, fourteen 2x0.6m Backhoe Transects and fourteen 40x40cm Shovel Test Pits were excavated. Sub-surface testing was conducted in the activity area in areas of potential sensitivity that are to be impacted by the proposed activity. No Aboriginal cultural material was located during the Standard or Complex Assessments, and Hislop considered it likely that the original sandy clay soils had been removed during cut and fill prior to the construction of the existing tanks and infrastructure. They considered it unlikely that any cultural material remained on the property.

In 2014 Barker undertook a CHMP (13329) for a proposed residential subdivision at 108 Salmon Street in Hastings, located approximately 1.67km southwest of the current Activity Area. The Standard Assessment did not locate any new Aboriginal cultural heritage places or any areas of archaeological sensitivity. A 1x1m Test Pit and six 40x40cm Shovel Test Pits were excavated, to establish the soil stratigraphy of the activity area and to assess the likelihood of Aboriginal cultural material being located within the activity area. No Aboriginal cultural material was located in the Test Pit or Shovel Test Pits. In general, the Complex Assessment revealed that the activity area was of low potential sensitivity for Aboriginal cultural deposits. The results were considered to reflect the nature of prior land use of the activity area by Aboriginal people. The activity area was considered unlikely to have

been favoured as a long or short-term occupation place due to the low-lying nature of the landscape, and the lack of permanent water sources or other resources nearby. Areas of elevation in close proximity to water and associated resources were considered more likely to have been chosen as occupation and camping sites.

Barker and Barker (2015) prepared a CHMP (13725) for a proposed residential subdivision at 105 Marine Parade, Hastings, approximately 1.65km west of the current Activity Area. The results of the Standard Assessment indicated that the lack of any new ACHPs might relate to the previous ground disturbance at the site, including the clearance of native vegetation across the entire activity area. However, the Standard Assessment concluded that only 50% of the activity area had been disturbed. A Complex Assessment was deemed appropriate and was undertaken. This involved the excavation of one 1x1m Test Pit and nine 40x40cm Shovel Test Pits. No Aboriginal Cultural Heritage was recorded in the activity area. The Complex Assessment did not locate any ACHPs and concluded that it was unlikely that any was present due to the poor land use qualities of the activity area, due to the low-lying nature of the landscape, and the lack of permanent water sources or other resources nearby (Barker and Barker 2015: 40).

In 2015 Patton undertook a CHMP (13463) at 123 Victoria Street, Hastings, for a residential subdivision, located approximately 1.8m west of the current Activity Area. The results of the Desktop Assessment indicated that it was possible that Aboriginal cultural heritage could be present within the activity area. Therefore, a field survey (Standard Assessment) was carried out over the activity area. The Standard Assessment did not locate any new Aboriginal cultural heritage places or any areas of archaeological sensitivity. A Complex Assessment was deemed appropriate and was undertaken. This involved the excavation of one 1x1m Test Pit and six 40x40cm Shovel Test Pits. No Aboriginal Cultural Heritage was recorded in the activity area.

Ward (2015) undertook a CHMP (13767) for proposed maintenance shed additions at 33 McKirdys Road, Tyabb, located approximately 4.8km northeast of the current Activity Area. The survey confirmed the landforms identified during the Desktop Assessment, with one main landform present, being a gently sloping sandy rise. The Standard Assessment determined that the vast majority of the activity area had been heavily disturbed and was therefore not likely to contain intact archaeological deposits. Ground disturbance was noted as a result of an overhead transmission line corridor, a water pipeline corridor, drainage cuts and ditches; bitumen driveways and gravel tracks, previously constructed buildings/structures, areas of cut, levelling and fill, septic tank locations and services (gas, water, electricity, and telecommunications). No ACHPs were located as a result of the Standard Assessment. One 1x1m Test Pit and eight 40x40cm Shovel Test Pits were excavated. No ACHPs were located as a result of the Complex Assessment.

Ward et al. (2015) conducted a CHMP (13355) for the proposed fibre optic cable between the AusNet terminal and BlueScope Steel works, located approximately 1.1km northeast of the current Activity Area. The Desktop Assessment identified six previously recorded Aboriginal Places within the 3km search area, one of which (VAHR 7921-0036 [BlueScope Western Port 1{Lysaght 1}]) was located within the activity area. The Standard Assessment did not identify any cultural material associated with this site nor any additional ACHPs and this was primarily due to the very small activity area size (0.358ha) and the poor ground surface visibility noted during the assessment (4%). The Complex Assessment comprised one 1x1m stratigraphic Test Pit and twenty 40x40cm Shovel Test Pits. No cultural material was identified as a result of the sub-surface testing. It was concluded that this was due to the small size of the activity area and the arbitrary nature of the previously recorded place (VAHR 7921-0036) which was further investigated as a result of the assessment.

Walther (2015) undertook a CHMP (13707) for a proposed residential development at 2-4 Edward Street Hastings, located approximately 1.81km southwest of the current Activity Area. The Desktop Assessment determined that there was a moderate likelihood for low to very low density or isolated occurrences of stone artefacts to occur on the plain landform. It was considered likely that any shallow sub-surface archaeological deposits would not be located in well-stratified (in-situ) contexts, owing to previous land use such as grazing, farming practices and land clearance. More recent residential development within the activity area was also likely to have caused disturbance to any cultural heritage. The Complex Assessment consisted of the excavation of one 1x1m Test Pit and three 50x50cm Shovel Test Pits. These excavated units revealed a natural sandy silt - clay profile typical of the Hastings area. No Aboriginal cultural heritage was located as a result of the Complex Assessment. This is likely due to the naturally sparse nature of the archaeological record in this area (due to the distance to fresh water, and despite the proximity to the mangrove swamp), and the lack of sensitive landforms within the activity area.

Jones (2016) undertook a CHMP (13785) at 51 Bayview Road, Hastings, for the proposed Hastings fuel import terminal and pipeline located approximately 1.09km northeast of the current Activity Area. Desktop, Standard and Complex Assessments were undertaken for this CHMP which is located on the eastern side of Olivers Creek. The Desktop Assessment concluded that there was moderate potential for Aboriginal cultural heritage to be present as there was a place extent for a previously registered Aboriginal Place (VAHR 7921-0036) within 18m of the activity area boundary. The Standard Assessment field survey noted two principal landforms: a small rise and an alluvial floodplain. No Aboriginal heritage was identified during the Standard Assessment and the activity area was reassessed as having low to moderate potential for Aboriginal heritage. The Complex Assessment consisted of the excavation of two 1x1m Test Pits and nineteen 50x50cm Shovel Test Pits. No Aboriginal heritage was identified during the Complex Assessment. The sub-surface testing identified shallow basal clay at approximately 300-400mm with some regions containing evidence of extensive ground disturbance. The CHMP concluded that it was extremely unlikely that Aboriginal cultural heritage would be found within the activity area.

In 2017(a) Barker and Young undertook a CHMP (14913) for a proposed subdivision at 8 Peach Grove, Tyabb, located approximately 5.61km northwest of the current Activity Area. The results of the Standard Assessment indicated that the activity area comprised land that had been disturbed directly by land clearance, orcharding and the removal of the orchard and as such this would likely have resulted in the removal of topsoils; and the destruction of any surface or near surface Aboriginal cultural materials. Two 1x1m Test Pits and sixty-three 50x50cm Shovel Test Pits were excavated, to establish the soil stratigraphy of the activity area and to assess the likelihood of Aboriginal cultural material being located within the activity area. Aboriginal cultural material was located in Test Pit 1 in the form of a single silcrete artefact located at a depth of 200mm; VAHR 7921-1664 (8 Peach Grove LDAD1).

In 2017(b) Barker and Young undertook a CHMP (14811) for a proposed subdivision at 3 Carpenters Lane North, Hastings, located approximately 4.3km southwest of the current Activity Area. The results of the Standard Assessment indicated that the activity area comprised land that had been disturbed directly by land clearance, orcharding and the removal of the orchard and as such this would likely have resulted in the removal of topsoils; and the destruction of any surface or near surface Aboriginal cultural materials. Two 1x1m Test Pits and one hundred and fifty-one 50x50cm Shovel Test Pits were excavated, to establish the soil stratigraphy of the activity area and to assess the likelihood of Aboriginal cultural material being located within the activity area. Two Aboriginal places were located during the sub-surface testing; VAHR 7921-1659 (3 Carpenters Lane North LDAD1) and VAHR 7921-1660 (3 Carpenters Lane North AS1). ACHP VAHR 7921-1659 (3 Carpenters Lane North LDAD1) comprised a low density artefact deposit of 4 stone artefacts identified in disturbed soils deposits

between 0-100/200mm in depth. The artefacts were made from silcrete (4) and comprised a complete flake, a longitudinal split blade and two angular fragments. ACHP VAHR 7921-1660 (3 Carpenters Lane North AS1) comprised an undisturbed artefact scatter of 36 stone artefacts identified in Test Pit 1 on the floodplain of Warrangine Creek between 0-200mm in depth. The artefacts were all made from silcrete and comprised six complete flakes, seven complete blades, fourteen angular fragments, four proximal flakes, three distal flakes and two medial flakes.

In 2018 Patton undertook a CHMP (15635) at 9 Hodgins Road Hastings, located approximately 2.53km west of the current Activity Area. The results of the Desktop Assessment indicated that it was possible that Aboriginal cultural heritage could be present within the activity area. Therefore, a field survey (Standard Assessment) was carried out over the activity area. The Standard Assessment did not locate any new ACHPs or any areas of archaeological sensitivity. A Complex Assessment was deemed appropriate and was undertaken. This involved the excavation of a 1x1m Test Pit and three 50x50cm Shovel Test Pits. The stratigraphic profile consisted of dark brown loam topsoil to a depth of 10cm, overlying disturbed brown to light brown silty clay to 30cm, which overlaid a light brown extremely compact clay and culturally sterile deposit. No ACHPs were recorded in the activity area.

In 2018 Burch undertook a CHMP (15410) for the proposed pavilion and playground upgrade and fire service pipeline, Bunguyan Reserve, 1475 Frankston-Flinders Road, Tyabb, Victoria, located approximately 4.75km northwest of the current Activity Area. No Aboriginal places or areas of Aboriginal archaeological sensitivity were identified during the Standard Assessment as the activity area generally comprised highly modified flat and unnaturally undulating land and parts of the activity area had been substantially disturbed by the construction of a playground, sporting facility clubrooms and associated infrastructure. However, in order to confirm the nature of sub-surface deposits within the activity area, a Complex Assessment was undertaken. A total of one 1x1m Test Pit and nine 50x50cm Shovel Test Pits were excavated. The Complex Assessment revealed that sub-surface deposits within the eastern portion of the activity area comprised introduced fill over clayey sands, over clay at a maximum depth of 78cm. Sub-surface deposits within the western, linear portion of the activity area comprised extremely disturbed sandy silts and clayey silts or introduced fill over clayey silts over clay at a maximum depth of 70cm, or a base of sandstone at a maximum depth of 63cm. No Aboriginal Cultural Heritage was recorded in the activity area.

In 2019 Barker undertook a CHMP at 160 Marine Parade, Hastings, located approximately 2.32km northwest of the current Activity Area. The results of the Desktop Assessment indicated that it was possible that Aboriginal cultural heritage could be present within the activity area. Therefore, a Standard Assessment was carried out over the activity area. The Standard Assessment did not locate any new ACHPs. A Complex Assessment was deemed appropriate and was undertaken. This involved the excavation of a 1x1m Test Pit and five 50x50cm Shovel Test Pits. The stratigraphy comprised:

- Context 1: 0-50mm: Very dark greyish brown very damp organic silty loam (2.5 YR 3/2, pH 6) with brick and gravel. Medium granular structure. The transition was indeterminate.
- Context 2: 50-200mm+: Damp and sticky yellowish brown sandy clay (10 YR 5/6, pH 5) with white clay inclusions (10 YR 8/1). The clay had a sub-angular blocky structure.

4.1.2 Historical and Ethno-historical Accounts of the Geographic Region

No specific oral history has been provided in relation to the Activity Area from the BLCAC.

A review of the historical and ethnohistorical accounts of Aboriginal occupation within the geographic region has been undertaken.

The Activity Area is located in the traditional lands of the Bunurong language group (Clark 1990: 365). Language groups were comprised of collections of neighbouring clans who shared a common dialect as well as mutual economic and political interests. They were also communally connected to specific areas of land through their spirituality, including an association with topographic features linked to deities and other mythical beings (Clark 1990).

The ethnographic record of the Mornington Peninsula is scant and predominantly contained in writings by Bunce (1858), Jamieson (1853), Haydon (1846) and G. McCrae (1911 and 1934). Each of these people recorded some details about the Mornington Peninsula's Bunurong people, such as language, traditions, and customs. However, the majority of information is derived from papers and Journals of the Assistant Protector of Aborigines, William Thomas, and Chief Protector George Augustus Robinson.

The Bunurong tribe formed part of the larger East Kulin language group, along with their northern and eastern neighbours the Woi wurrung. The Activity Area lies within the traditional territory of the Bunurong balug clan (Clark 1990: 366).

The Bunurong people are among the first of the Victorian tribes to come into contact with Europeans, due to their coastal location. From 1798, whalers and sealers were active in locations offshore and along the southern coast of Victoria (Ellender and Weaver 1994: 12) and a number of sealers lived year-round on Phillip Island, exploiting a colony of furs seals (Weatherall 1826 in Gunson 1974:3). The early explorer Hovell noted that sealers on Phillip Island had taken several hundred Aboriginal women for domestic chores, seal hunting and sex. Although a large proportion of those women taken were Tasmanian (Gaughwin and Sullivan 1984: 46), according to an unpublished diary of one such woman taken by sealers to Tasmania, some were also Bunurong (Robert Ogden pers. comm. 2008). The presence and actions of the sealers caused considerable tension with Bunurong populations, leading to at least two altercations (Ellender and Weaver 1994: 12).

Additionally, William Thomas, Assistant Protector of Aborigines, reported that the Bunurong populations were suffering significantly from repeated raids and attacks from Gippsland Aborigines (most likely Gunai/Kurnai, see Clark 1990: 364; Thomas 1840 in Gaughwin and Sullivan 1984: 83).

William Thomas was appointed Assistant Protector in 1839, in charge of the welfare of Aboriginal people in the Westernport and Gippsland districts. From 1839 to 1841 Thomas worked from a hut near Arthurs Seat. The journals Thomas kept during his period at Arthurs Seat (Tubbarubba) are of particular interest, as the Aborigines in this area were then still practising aspects of their traditional lifestyle. In 1839, Thomas counted 83 members of the Bunurong tribe remaining. Therefore, even at this early stage, Aborigines had already been severely affected by European settlement (Sullivan 1981: 17). As a result of granting grazing licences, Aborigines became dispossessed of their land and were forced to rely on handouts of food from Thomas and other settlers. Once guns were introduced, traditional methods of hunting were no longer practised, with some Aboriginal people selling ducks and eels to Europeans. Some Bunurong members joined the Native Police Corps based at Narre Warren (Murphy 1997).

European settlement from the 1830s and the consequent urban development of Melbourne, resulted in the loss of traditional lands, foods, and resources for the many tribes around Melbourne, including the Bunurong people (Thomas no date in Gaughwin and Sullivan 1984: 83). This proved to be devastating for Aboriginal people, particularly coupled with the spread of European introduced diseases and social turmoil and breakdown due to the relocation of individuals and groups to reserves and mission stations (Clark 1990).

This upheaval is one of the major reasons why the ethnohistory and post-contact history of specific clans and tribes in the Melbourne area, such as the Bunurong, has been so sparsely documented. In an attempt to offset the devastating effects of European settlement and entice the Aboriginal population into agriculture, Thomas, as Protectorate, established several Aboriginal stations on the Mornington Peninsula in 1839-40 (Gaughwin and Sullivan 1984: 84).

4.1.3 The Landforms and Geomorphology of the Activity Area

The Activity Area lies within the Southern Uplands geomorphic unit (DEDJTR 2020a). The Victorian Uplands and sunklands system was formed through past volcanic activity as well as through changes in the sea level. Geological evidence suggests that the Port Philip and Western Port areas were probably not inundated before 10,000 years before present (BP)(Coutts et al. 1976:68). Further evidence suggests that Port Philip did not begin to fill until 9,000 years BP and Western Port not until 8,000 years BP (Sullivan 1981:3).

The Activity Area forms part of a low relief coastal landscape that occupies the western fringe of Western Port. It is characterised by gently undulating rises with broadly spaced and shallow-incised drainage lines. The drainage lines have broad floodplains that would have originally formed seasonally waterlogged wetlands (Walther and Wheeler 2010: 46).

The earliest Tertiary sediments on the Mornington Peninsula are found near the top of Arthurs Seat (located 20km southwest of the current Activity Area), where there are quartz pebbles and stones in the surface soil and the clay subsoil (Ward 2015). Most of the Tertiary sediments date from the Miocene epoch (23 to 5 mya) to early Pliocene epoch (about 5 mya) and comprise ferruginous gravel, sand, and clays. These sediments mantle earlier rocks and sediments, and where the Tertiary sediments are shallow; it is often difficult to make decisions on the geology on which the soils have developed. In some instances, the sediments are mantled with a layer of wind-blown sand (Ward 2015, DEDJTR 2020a).

Soil/landform mapping for the Mornington Peninsula Shire indicates that the Activity Area comprises red bluff sandstone (DEDJTR 2020b) comprising grey Dermosols with surface soils of dark brownish grey clay loams or light clays overlying brownish grey mottled with light grey and rusty brown clay loams or light clays at about 200mm. Dermosols do not have strong texture contrast. They have a well-structured B2 horizon containing low levels of free iron. The soils are found in imperfectly drained sites (yellow and grey dermosols).

In terms of pH levels, CHMPs within the Hastings region have noted a range of pH values from acidic to alkaline which most likely reflects the underlying parent material and former agricultural activity. The latter causes either:

1. An increase in soil acidity. Soil acidification is a natural process accelerated by agriculture. Soil acidifies because the concentration of hydrogen ions in the soil increases. Ammonium based fertilisers are major contributors to soil acidification. Ammonium nitrogen is readily converted to nitrate and hydrogen ions in the soil. If nitrate is not taken-up by plants, it can leach away from the root zone leaving behind hydrogen ions thereby increasing soil acidity (Soil Quality 2018).
2. A reduction in soil acidity. Acidity can be reduced by the addition of lime. Liming is necessary if the sub-surface pH is below 4.8 (Soil Quality 2018).

4.1.4 The Environmental Determinants of the Activity Area

The Desktop Assessment included a review of the physical context and natural resources present within the Activity Area. These environmental variables can determine how people used the landscape in the past. This information is used to gain an understanding of past human behaviours and provides an indication of where ACHPs may be located within the landscape. These environmental factors are summarised below.

1. Climate

The climate of the Hastings area is characterised by cool, wet winters and moderate summers with short dry periods. Average winter temperatures range from 7°C to a maximum of 14°C. Average summer temperatures range from 14°C to 26°C. Annual rainfall is approximately 700-750mm (LCC 1991: 60).

In the past however, the climatic conditions have fluctuated considerably. The late Pleistocene and early Holocene environment within the geographic region was one of gradual and continuous change (Murphy 2011). The changing environmental conditions provided different sets of resources (access to freshwater, flora, and fauna) for the Aboriginal populations inhabiting the region. During the Pleistocene, sea levels were in general much lower than present. A broad model of climatic change in the region is as follows (Dodson, Fullager & Head 1992, following Murphy 2011):

- 20,000 – 15,000 years ago the climate was cooler, drier, and windier than present. There was reduced vegetation and less water;
- 15,000 – 12,000 years ago the climate was more arid, but temperatures were warmer;
- 12,000 – 8,000 years ago the climate was becoming wetter and milder;
- 8,000 – 5,000 years ago the climate was warmer and moister than present;
- 5,000 years ago, to present, the temperatures have cooled, and conditions are drier.

2. Water Sources

Watsons, Olivers, Kings and Warrangine Creeks are all located within the geographic region and flow into Western Port Bay. The nearest is Olivers Creek located 860m west of the Activity Area.

3. Description of Existing and Pre-Contact Vegetation

The Activity Area lies within a single Ecological Vegetation Community (EVC) within the Activity Area prior to 1750; Swamp Scrub: EVC 53 (DELWP 2020a).

Grassy woodland comprises scrub to 5m tall over a diverse ground layer of grasses and herbs. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground. It is widespread along watercourses of the Mornington Peninsula and occurs fertile floodplains. It is distinguished by dominant Swamp Paperbark with little or no cover from Swamp Gum.

Plant foods were extensively exploited and included berries, fungi, roots, tubers, bulbs, leaves, and pith from fleshy plants, seeds, and sap. Gum was also collected from the wattle and stored in known locations for seasons when food was less abundant (Thomas cited in Sullivan 1981: 25).

4. Information on Fauna of the Activity Area

The Mornington Peninsula has a diversity of intertidal and beach habitats which, prior to European exploitation, supported large communities of molluscs, crustacean, fish, and bird life (Luebbers 1998: 6). Molluscs are by far the most abundant shellfish (Luebbers 1998: 6). Seal and mutton bird populations have been important commercial resources on the Mornington Peninsula and were undoubtedly exploited in prehistoric times (Luebbers 1998: 6).

Several inland animals would have been present within the geographic region, these include the Eastern Grey Kangaroo (*Macropus giganteus*), Common Brushtail Possum (*Trichosurus vulpecula*), Common Ringtail Possum (*Pseudocheirus peregrinus*), Short Beaked Echidna (*Tachyglossus aculeatus*) and the Wombat (*Vomatus ursinus*) (Luebbers 1998). Birds, bird eggs and reptiles may have also been utilised (Luebbers 1998). Birds, such as Emu and Bustards, were also eaten, as were bird eggs. Birds were caught with throwing sticks or in traps. Fish and eels were important resources and were speared in rivers or caught in nets (Thomas cited in Sullivan 1981: 24). Although use of the hook and line was observed, it is likely that this was a practice resulting from contact with sealers (Sullivan 1981: 24).

Along the coastline, spears and nets would have been used to catch fish and marine mammals, and shellfish were easily gathered from rock outcrops along the coast. The area would have supported a mobile Aboriginal population year-round due to the rich variety of food resources, the main drawback being access to potable water. Water sources would have been kilometres upstream of rivers and creeks away from the tidal range (Gauthwin 1983:14).

Shellfish gathering was observed by Thomas in Port Phillip Bay, near Melbourne, when he reported that a group of women went at least three times a week to collect shellfish (Thomas cited in Sullivan 1981: 25). Cockle and Mussel shells were observed in Aboriginal huts on the Mornington Peninsula. Rough waves pound the Bass Strait coastline of the Mornington Peninsula, particularly during winter, and this may have made the collection of shellfish difficult at this time of year and restricted activities to the warmer months (Sullivan 1981: 8). Thomas also observed shellfish being collected by women diving in creeks and rivers (Thomas cited in Sullivan 1981: 28).

Spillane (1974) says that at the time [Lt Col] Collins arrived [in the district in 1803], traditional sources of food would have been in abundance for the 'Bunurong' people, including emus, kangaroos, and lots of sea food.

5. Stone Resources

No stone resources and outcrops suitable for the manufacture of stone tools are found within the Activity Area. Chert, silcrete and quartz are available inland on the Mornington Peninsula, while marine flint is commonly found on beaches as large nodules washed ashore from an unknown source on the Bass Strait ocean floor. Steven Compton (former cultural representative) of the Bunurong Land Council advised Williamson in 2008 that red silcrete derived from reefs off the tip of Point Nepean washes up on beaches in the area (Williamson 2008: 60). George McCrae recounted finding outcrops of milky quartz and quartz crystals 'several inches in length' in the southern-facing gullies on the southern Mornington Peninsula in the 1840s and 1850s (McCrae 1911: 20). Locally available robust and sharpened shell edges may have been used for some cutting functions and calcarenite may serve as an abrasive, pounder or as a grinding stone. Ochre used for decorating objects and for body paint was reputed by Protector Thomas to have been obtained from an unknown source near Mount Eliza (Thomas cited in Sullivan 1981: 9).

Flakeable stone from which to make tools was available within the surrounding region. Reef quartz may have been quarried from areas on the Mornington Peninsula, including Devilbend Creek (Ellender 1991:10), where sedimentary deposits interface with intrusive volcanics (granite). Chert could be found at Devilbend. Sandstone and slate could be found at Baxter on the Mornington Peninsula (Weaver 1992). Marine flint in the form of nodules is found washed up along the Bass Strait coastline (Sullivan 1981:9-10).

Stone sources include basalt, east of Cape Schanck, as well as marine chert and quartz located in granitic areas of Cape Woolamai, on Flinders Island (Cekalovic 1999). Chert, silcrete and quartz are available inland on the Mornington Peninsula while sandstone, slate and hornfels are associated with sites of Tootgarook granite (Jenkin 1974).

4.1.5 Land Use History Relevant to the Activity Area

The Mornington Peninsula was one of the first areas in Victoria to be explored and settled by Europeans. In 1802, John Murray on the *Lady Nelson* briefly visited the area, as did Mathew Flinders and Robert Brown on the *Investigator* (Sutherland 1888). Brown's botanical collections and descriptions were some of the earliest from Victoria (Willis 1955). Late in 1803, the first European settlement in Victoria was established in Sorrento, only to be abandoned four months later (Shaw 2003).

The region in which the Activity Area is located was originally known as Kings Creek (Bennett et al. 2004: 1). The earliest industry in the Hastings region was fishing. Government Zoologist William Blandowski reported in 1854 that "Oysters were obtained near King's Station in great abundance" (Bennett et al. 2004: 1). In 1845, Martha Jane King leased a newly released pastoralist run (Bunguyan) and established herself there with a cattle station. At this time Bunguyan Run covered 15,000 acres (Spreadborough & Anderson 1983: 155). The original lease for Bunguyan Run expired in 1859 and a new lease was taken by Vaughan and Wild. Their lease was forfeited in 1864 and purchased by John Watson in 1865. John Watson held the property until 1870. In 1872, William Brown Junior of Melbourne purchased the lease and two years later subdivided the run into Bunguyan North and Bunguyan South. He owned Bunguyan North until it was forfeited in 1879. Bunguyan South was then listed under the name John Watson of Frankston until 1877. The final purchaser of the lease on Bunguyan South was Eliza Selina Sadlier of No. 130 Toorak Rd, South Yarra. The run was forfeited in 1882 (Spreadborough & Anderson 1983: 155).

The township in which the Activity Area is located was originally surveyed in 1858 by Michael Callanan and called Tyab (one 'b'). The township of Hastings was originally known as Old Tyabb, located to the north of the Hastings primary school. It was renamed Hastings c.1860 after the Marquis of Hastings, a former Governor General of India (Blake 1977: 119). The old township was eventually incorporated into the current day Hastings in 1968 (Butler, G. & Associates 2001: Vol 1: 212). The name Tyabb is believed to have originated from the Aboriginal work 'tyaba' meaning mud hole or land of waterholes (Blake 1977: 262).

Settlement of the Hastings area dates to the 1840s, with fishing being the dominant industry for the local community. The township developed through the late 1800s, particularly boosted by the construction of the railway line during the 1880s and 1890s and the development of the orchards across the Mornington Peninsula during the early twentieth century (Shaw 1998). The township of Hastings developed significantly during the 1960s and 1970s with the establishment and growth of public housing and industrial development.

The land use history of the Activity Area shows that the Activity Area has been subject to previous ground disturbance to some degree and includes:

- Removal of native vegetation. As the Activity Area was in an EVC in which eucalypts were the dominant species, the removal of this native vegetation would have caused a great deal of ground disturbance. Impacts to the land will have involved burning, clearing, and grubbing of the original vegetation and associated disturbance of the upper soil layers, erosion following vegetation clearance and levelling to create a flat surface.
- Construction of the existing facility, gravel pads and levelling/



Figure 1: 1957 Aerial Photograph (DELWP 2020b)

Figure 2 shows the general location of the Activity Area in 1957. The location of the Activity Area is clearly undeveloped and still covered by open woodland.

4.1.6 Conclusions from the Desktop Assessment

The conclusions from the Desktop Assessment and the basis for the Aboriginal Cultural Heritage Place prediction model are as follows:

- The Activity Area has been subject to previous high level desktop archaeological assessment for the Port of Hastings Development Project (Feldman et al 2014);
- There are no ACHP's located within 200m of the Activity Area;
- The distribution of ACHPs in the geographic region is associated with watercourses (predominately Olivers, Warrangine and Kings Creeks);

- Previous archaeological assessments in the geographic region have indicated that ACHPs are likely to be located on high ground (sandy dunes) adjacent to swamps and watercourses;
- There still exists a potential for sub-surface archaeological deposits in areas that have experienced minimal disturbance;
- There would have been a range of plant, animal, and mineral resources available for Aboriginal people living in, or in the region of the Activity Area;
- The Activity Area contains gravel hardstands and is highly disturbed.
- Given the disturbance that has occurred from land clearance, construction of existing infrastructure including a pipe, entry and uncton pits, driveways and fencing potential for Aboriginal cultural heritage is low.

4.2 Site Inspection

4.2.1 Site Inspection

The aims of the site Inspection were to:

- Attempt to identify Aboriginal cultural heritage;
- Identify any areas of potential archaeological sensitivity (that may require sub-surface testing); and
- Document the extent of significant ground disturbance in the Activity Area.

4.2.2 Site Inspection Methodology

A systematic inspection of the Activity Area was undertaken on the 8th of October 2021 by Matthew Barker of BHM P/L (see Plates 1-5).

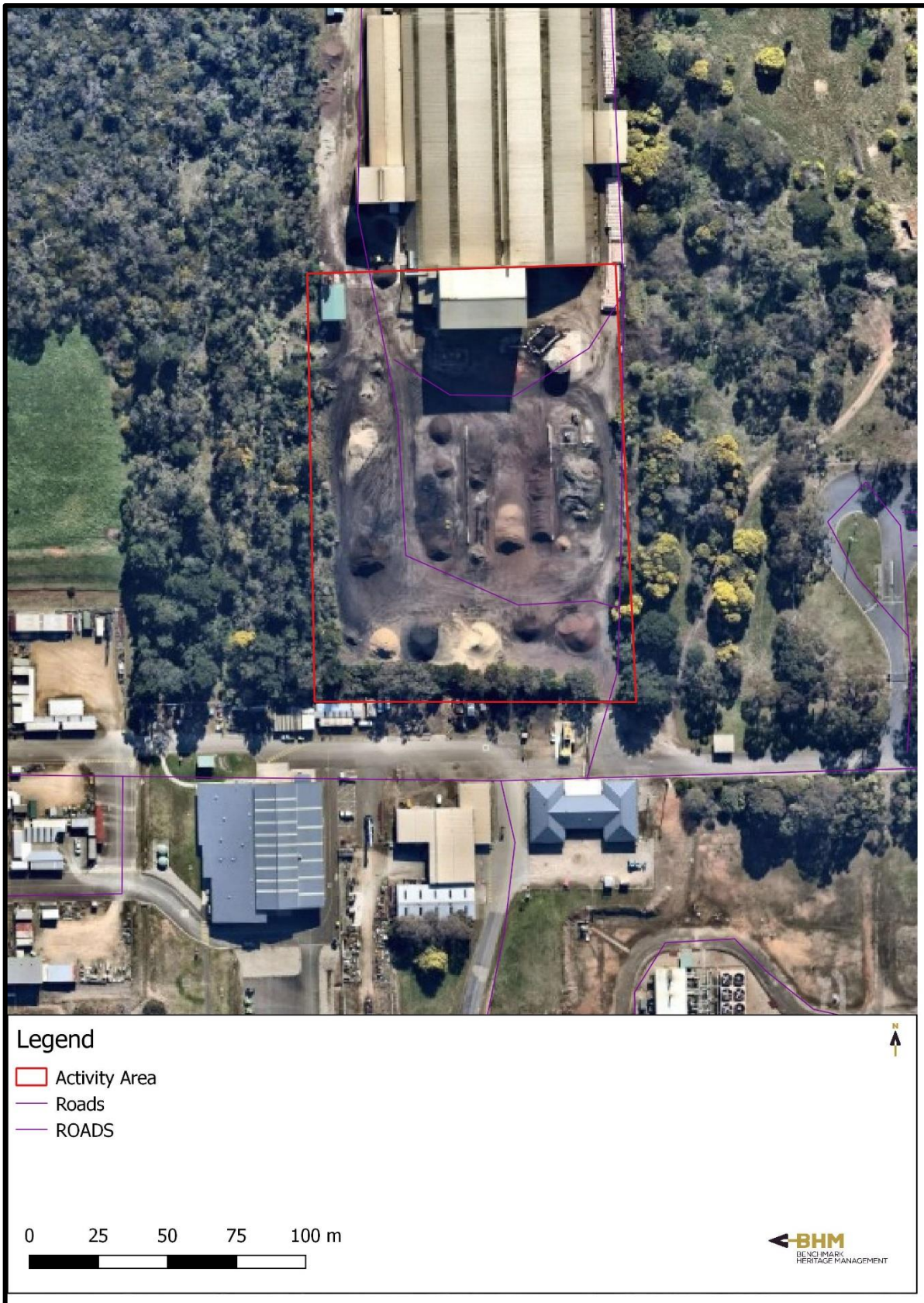
4.2.3 Results of Ground Survey

- In terms of ground surface visibility, the majority of the Activity Area was covered in gravel and mounded soils therefore ground surface visibility was low.
- No artefact scatters, scarred trees, rock shelters, caves or cave entrances were noted within the Activity Area.
- Gravel fill was noted throughout the surveyed area with clay and gravel distributed in surface exposures.
- Water was noted pooling on the surface indicating the presence of an impermeable clay layer immediately beneath the surface.

4.2.4 Land Disturbance

Land disturbance has been caused within the Activity Area through the following:

- The Activity Area would have been cleared of native vegetation in the 19th century. This would have contributed to soil erosion and the movement of any Aboriginal cultural material that may have existed on the ground surface; thus, the removal of topsoils and the destruction of any surface or near surface Aboriginal cultural materials. Vegetation clearance is not considered to be significant ground disturbance.
- Stripping of the ground surface and construction of a gravel pad.



Map 3: Aerial

Plate 1: View of gravel pad and piles of soils and sand (Matthew Barker 8/10/21), facing south



Plate 2: View of gravel pad and piles of soils and sand (Matthew Barker 8/10/21) facing northwest



Plate 3: View of pooling water along the western edge of the gravel pad (Matthew Barker 8/10/21) facing southwest



Plate 4: View of pooling water (Matthew Barker A. Millar 8/10/21), facing west.



Plate 5: View of gravel pad (Matthew Barker 8/10/21), facing north



Table 1: Survey Photographs

5.0 Specific Cultural Heritage Management Requirements

5.1 Aboriginal Heritage

A mandatory CHMP is not required as the following conditions have been not been triggered under the Aboriginal Heritage Regulations 2018 (r5, Division 1, 6);

- a) all or part of the activity area for the activity is within an area of cultural heritage sensitivity and;
- b) all or part of the activity is a high impact activity

Specifically, the activity area is not located within an area of cultural heritage sensitivity.

The proposed activity is a high impact activity under r.46 Buildings and works for specified uses

R 46 Buildings and works for specified uses

(xxvii) a utility installation, other than a telecommunications facility, if—

(D) the works affect an area exceeding 25 square metres.

1. Significant Ground Disturbance

Can significant ground disturbance be established?

Yes.

The use of land and construction of a gravel handstand indicates that the upper soil profile has been subject to significant ground disturbance by machine thus destroying any intact cultural heritage.

If part of an area of cultural sensitivity has been subject to significant ground disturbance, that part is not an area of cultural heritage sensitivity.

Significant ground disturbance means:

Disturbance of –

- (a) the topsoil or surface rock layer of the ground; or
- (b) a waterway –

by machinery in the course of grading, excavating, digging, dredging or deep ripping, but does not include ploughing other than deep ripping. The property has demonstrably undergone significant ground disturbance as outlined in the land use history contained in this report and from the geotechnical investigation which shows that the upper soils to the underlying rock are significantly disturbed.

2. Is a CHMP required for the proposed Activity?

No

1. The proposed activity is not within an area of cultural heritage sensitivity.
2. A CHMP is not required for this activity, as the property has demonstrably undergone significant ground disturbance as defined in the Aboriginal Heritage Regulations 2018 and has been subject to grading, excavating, digging by machine as per the AV Practice note on Significant Ground Disturbance. This conclusion has been reached by the following levels of inquiry as noted in the Aboriginal Heritage Act 2006 Practice Note: Significant Ground Disturbance: Level 1 – Common knowledge.

Therefore, in the opinion of Matthew Barker, Director Benchmark Heritage Management a mandatory CHMP is not required.