MORNINGTON PENINSULA Shire

ATTACHMENTS

PLANNING SERVICES COMMITTEE MEETING

MONDAY, 20 JUNE 2022

5.30PM

MUNICIPAL OFFICES
BESGROVE STREET, ROSEBUD

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REPORT

Tonkin+Taylor

Mount Eliza Village

Geotechnical Investigation Report

Prepared for
Ryman Healthcare (Australia) Pty Ltd
Prepared by
Tonkin & Taylor Pty Ltd
Date
March 2017
Job Number
1001289

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1 Introduction

Tonkin & Taylor Pty Ltd (T+T) has been engaged by Ryman Healthcare (Australia) Pty Ltd (Ryman) to undertake a geotechnical, environmental and groundwater investigation for a proposed development located at 70 Kunyung Road in Mount Eliza, Victoria.

This report presents the findings of the geotechnical investigation and provides recommendations for foundations and basement excavation. The finding of environmental and groundwater assessments carried out in conjunction with the geotechnical investigation are provided in a separate report.

2 Project understanding

2.1 Site description

The site which is located at 70 Kunyung Road in Mount Eliza, encompasses an area of approximately 120 Ha (Figure 2.1) and is currently occupied by the Melbourne Business School. The site is bounded by Kunyung Road to the east, Kunyung Primary School to the north, a vacant private land to the south and Moondah Beach to the west.

The site is currently used by the Melbourne Business School (a division of the University of Melbourne) Executive Education campus. The site generally slope towards the west from an approximate maximum elevation of 65 m AHD at the eastern boundary and grades to 30 m AHD at the western developable area. Several permanent structures are located towards the western and northern areas of the site with isolated gateway and residential structures located at the eastern areas. Recreational facilities are also located within the centre of the site including a vineyard and a beach volleyball and tennis courts.

It is understood that the site is proposed to be developed into a comprehensive retirement village. Based on the preliminary design of the development, the village will comprise 12 multi-storey apartments and a multi-purpose building which forms the village centre, assisted living suites and care units. At the time of writing this report, up to 3-level basements are envisaged although these are yet to be finalised.

A geotechnical investigation was required to provide a preliminary feasibility assessment of the site ground conditions for the proposed development.

2.2 Regional geology and hydrogeology

The geological map of the area[1] shows central part of the site is underlain by the Neogene age Red Bluff Sandstone Formation (part of the Brighton Group Formation). This geological unit typically comprises of massive to well bedded, cross-bedded, conglomerate sandstone and minor ironstone.

During the site investigation, strata consistent with the Red Bluff Sandstone Formation were encountered in all boreholes.

Published groundwater mapping[2] indicates that groundwater is likely to be present at depths between 10 and 50 m below the ground surface.

[1] Department of Economic Development, Jobs, Transport and Resources (2015) Online 1:250,000 scale geological map (http://er-info.dpi.vic.gov.au/sd_weave/registered.htm). State Government of Victoria.
[2] Visualising Victoria's Groundwater. www.vvg.org.au.

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Figure 2.1: Approximate site location (Source: Google Maps) – Not to scale.

3 Scope of Work

3.1 Site Investigation

The site investigation carried out between 10 and 20 January 2017 comprised the following:

- 18 boreholes, drilled using a spiral auger method to depths ranging between 5.2 and 7 m below ground level (bgl) within the proposed apartment buildings footprints
- Five (5) boreholes, drilled using a combination of spiral auger and diamond coring methods to depths ranging between 14.6 and 15 m bgl within the proposed village centre, assisted living suites and care units footprints
- In-situ testing comprising Standard Penetration Test (SPT) at approximately 1.5 m intervals and Dynamic Cone Penetrometer (DCP)
- Retrieval of representative disturbed soil samples for laboratory testing.

The boreholes, numbered from BH01 to BH23, were drilled using a Comacchio 305 and AMS Powerprobe drill rigs supplied and operated by Chadwick Geotechnics. All fieldwork was carried out under the direction and full time presence of an experienced T+T geotechnical engineer who was responsible for positioning the borehole locations, determining the extent of sampling and testing, logging the ground conditions encountered and monitoring the groundwater levels wherever possible. Following the completion of drilling, all boreholes were backfilled with the excavated materials and care was undertaken to minimise any visual disturbance associated with the drilling process.

The borehole locations shown on Figure 1 in Appendix A were recorded using a handheld GPS accurate to approximately +/- 5 m. The coordinates of the locations are provided on the engineering logs in Appendix B together with an explanation of the terminology used.

3.2 Field and laboratory testing

Field testing comprised SPT at approximately 1.5 m intervals in each borehole and DCP within the upper 1.5 m bgl were carried out to assess the subsoil in-situ strength.

Laboratory testing of soil undertaken by a NATA-accredited laboratory, Chadwick Geotechnics comprised the following:

- Eight (8) moisture content test
- Nine (9) particle size distribution test
- Six (6) Atterberg Limits test
- Two (2) laboratory compaction test
- Two (2) 4-day soaked Californian Bearing Ratio (CBR) test
- Six (6) Emerson Class Number test.

A summary of the test results are presented in Table 3.1 and the laboratory test certificates are attached in Appendix C.

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Table 3.1: Summary of field and laboratory tests

Test Site	Material	Layer Depth (m bgl)	DCP (Blows/100 mm)	SPT (N)	CBR (%)	Swell (%)	MDD (t/m³)	OMC (%)	Plasticity Index (%)	Liquid Limit (%)	Linear Shrinkage (%)	(%) Passing			Emerson Class	Moisture Content (%)
												0.075 mm	0.425 mm	2.36 mm		
BH01	Fill (Silty Sand) CLAY/SAND	0 – 0.8 0.8 – 7		 13 – 39												
BH02	Fill (Silty Sand) CLAY/ SAND	0 – 1.9 1.9 – 7		 23 – 43												
BH03	Fill (Silty Sand) Fill (Gravelly Clay) CLAY/ SAND	0 – 0.8 0.8 – 3.3 3.3 – 7		 8 – 18 11 – 21												
BH04	Fill (Silty Sand) CLAY/ SAND	0 – 0.7 0.7 – 5.2		 11 – 46												
BH05	Fill (Silty Sand) CLAY/ SAND	0 – 0.8 0.8– 7	1 – R	 15 – 36												
BH06	Fill (Sandy Clay) Clayey SAND CLAY / SAND	0 – 0.7 0.7– 4.0 4.0 – 6.4		 35 – 41 > 50	6	0	1.84	17.5	15	32	6	33 36	92 87	96 94	6	17.8 - 20.6 11.3
BH07	Fill (Sandy Clay) CLAY/SAND	0 – 0.3 0.3 – 6.5		 45 – >50												
BH08	Fill (Silty Sand) CLAY/ SAND	0 – 0.9 0.9 – 6	4 – R	 24 – >50												 17.2
BH09	Fill (Silty Sand)	0 – 0.7	2 – R													

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Test Site	Material	Layer Depth (m bgl)	DCP (Blows/100 mm)	SPT (N)	CBR (%)	Swell (%)	MDD (t/m³)	OMC (%)	Plasticity Index (%)	Liquid Limit (%)	Linear Shrinkage (%)	(%) Passing			Emerson Class	Moisture Content (%)
												0.075 mm	0.425 mm	2.36 mm		
	CLAY/ SAND	0.7 – 5.7		19 – >50								28	73	77		14.1
BH10	Fill (Gravelly Clay) CLAY/SAND	0 – 0.5 0.5 – 7	7 – 10 9 – R	29 – >50												18
BH11	Fill (Gravelly Clay) CLAY/SAND	0 – 1.1 1.1 – 6.2		44 – >50												
BH12	Fill (Silty Sand) CLAY/SAND	0 – 0.7 0.7 – 7	1 – 8 5 – 8	11 – 20												
BH13	Fill (Silty Sand) CLAY	0 – 0.6 0.6 – 7	2 – 15 R	17 – 34	2	1.5	1.7	22.5	33	53	12	75	91	94		22.8
BH14	Fill (Silty Sand) CLAY/SAND	0 – 0.7 0.7 – 7	2 – 7 5 – 8	16 – >50												
BH15	Fill (Silty Sand) CLAY/SAND	0 – 0.6 0.6 – 7	6 – 22 6 – R	19 – 46												
BH16	Fill (Gravelly Silt) CLAY/SAND	0 – 0.7 0.7 – 7	7 – 18 R	22 – 36												
BH17	Fill (Gravelly Silt) CLAY/SAND	0 – 0.8 0.8 – 7	8 –R	24 – 38												
BH18	Fill (Gravelly Silt) CLAY/ SAND	0 – 1 1 – 6.5	8 – R	17 – >50												
BH19	Fill (Sandy Clay) CLAY/SAND	0 – 0.7 0.7 – 15.5		16 – 37												

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Test Site	Material	Layer Depth (m bgl)	DCP (Blows/100 mm)	SPT (N)	CBR (%)	Swell (%)	MDD (t/m³)	OMC (%)	Plasticity Index (%)	Liquid Limit (%)	Linear Shrinkage (%)	(%) Passing			Emerson Class	Moisture Content (%)
												0.075 mm	0.425 mm	2.36 mm		
BH20	Fill (Silty Sand)	0 – 0.7	8 – 10													
	Sandy CLAY	0.7 – 2.5	3 – 13	12											5	19.9
	Sandy CLAY	2.5 – 5.0		17 -30					30	53	12	56	75	80	5	23.1
	CLAY	5.0 – 8.0		9 – 10					48	75	15	84	89	95	2	30.2 - 32.2
	CLAY	8.0 – 11.0		10 – 11					51	81	19.5	90	97	100	2	51.0
	Sandy SILT	11.0 – 15.0		16 – 20					56	107	20	55	83	96	2	50 - 57
	Clayey gravelly SAND	15.0 – 15.5		28								34	49	71		53.3
BH21	ASPHALT	0 – 0.03														
	Fill (Crushed Rock)	0.03 – 0.9														
	CLAY/SAND	0.9 – 15.5		9 – 38												
BH22	Fill (Silty Sand)	0 – 0.6	1 – 5													
	CLAY/SAND	0.6 – 15	5 – 9	13 – 26												
BH23	Fill (Silty Sand)	0 – 0.5	1 – 6													
	CLAY/SAND	0.5 – 14.6	6 – R	11 – 23												

DCP: Dynamic Cone Penetrometer resistance; SPT: Standard Penetration Test; CBR: California Bearing Ratio; R: Refusal.

4 Geotechnical discussion

4.1 Stratigraphy

The following summary of stratigraphy is inferred from the available site investigation data, and as such only represents the conditions at the locations of the boreholes. Variations to the ground conditions are possible and allowance must be made in the design and construction work for potential vertical and lateral variability in the extent of the subsoil conditions.

Material classification and logging were carried out in accordance with explanatory notes and correlation with the results of laboratory testing, where possible. It must be noted that field classification is a subjective assessment by the site engineer and therefore may differ from the interpretation derived from laboratory test results.

The subsurface materials encountered at the site have been categorised into two stratigraphic units discussed below. Further detailed information are provided on the Engineering Logs (Appendix B) together with an explanation of the terminology used.

Unit 1 – Fill

Fill comprising various materials including clay, silt, sand and gravel were encountered in all boreholes to depths typically ranging from 0.3 m to 1.1 m. Fill thickness locally greater within the western part of the site where BH2 and BH3 indicate fill up to 3.3 m bgl. Pavement composition encountered in a borehole located within the road (i.e BH21) consisted of a 30 mm asphalt, overlying 220 mm of crushed rock pavement base, overlying 100 mm of sandy clay and 550 mm of gravelly silty sand.

Based on the results of in situ testing (i.e DCP), the density and consistency of the fill layers generally ranging from very loose to very dense / very soft to hard. The in-situ moisture condition of the fill was generally dry to moist.

Unit 2 – Red Bluff Sandstone Formation

Red Bluff Sandstone sediments were encountered underlying Unit 1 in all boreholes to termination depths of up to 15 m bgl. The Red Bluff Sandstone sediments, part of the Brighton Group sediments, comprised predominantly sands and clays in varying proportion. Generally this formation is associated with increasing grain size and permeability (i.e clay becoming sand) with depth. However, during the boreholes investigation, no apparent trend in grain size and depth was observed. Relatively thin bedding was observed within the sandier part of the Formation.

Red Bluff Sandstone sediments encountered within the boreholes were generally described as sandy clay and clayey sand with gravel, with low to medium plasticity, red brown mottled pale grey and orange. The sands were typically fine to coarse grained, sub rounded to sub angular and quartzitic. The gravels were predominantly fine to medium grained, comprising sandstone and ironstone and of very low to medium strength.

DCP results within the upper 1.5 m bgl of this unit ranging from 3 blows/100 mm to refusal and SPT N-values were ranging from 9 blows to greater than 50 blows, which is indicative of a variably stiff to hard consistency soils. The SPT N-values does not display an apparent increase in material strength with depth.

A layer of cemented sand was encountered in most boreholes at depths between 1.5 and 6 m bgl, with thicknesses ranging between 1 m and 6 m. SPT-N values within this layer were greater than 30, indicating very stiff to hard or very dense layer. This finding is consistent with the Red Bluff

Sandstone Formation geology where cemented material may be present within the upper part of the deposit.

Atterberg Limits testing on this unit recorded Liquid Limits between 32 and 107 %, Plasticity Index between 15 and 56 %, and Linear Shrinkage values between 6 and 20 %. Laboratory 4-day soaked CBR tests recorded CBR values between 6 and 2 %, with corresponding swell values between 0 and 1.5 %.

4.2 Groundwater

Groundwater was encountered in one of the boreholes (BH23) located to the south of the existing main building at 6.2 m bgl. The groundwater level was measured a day after the completion of the borehole. Wet soils were encountered within the deeper boreholes (BH19 to BH23) at depths approximately between 6.5 and 9 m bgl. Given our experience with the regional groundwater conditions and water bore installation, the groundwater and wet soil conditions encountered were likely due to perched groundwater table.

Additional information on site groundwater conditions are provided in our separate groundwater report.

4.3 Foundation systems

4.3.1 Site classification

It must be noted that the proposed redevelopment comprises multi-storey buildings with basements. Therefore, site classification in accordance with AS 2870-2011[3] discussed herein serves as an indicative only as the standard generally applies to a single dwelling house, townhouse or similar structure.

Taking into consideration the soil profiles encountered during the investigation, local environmental features, climatic zone and laboratory test results, the natural soils at the site are generally considered to be 'moderately' reactive. In accordance with AS2870-2011, the site can be classified as **Class P**. This classification is attributed to the depth of uncontrolled fill generally greater than 0.4 m across the site.

The effects of changes to the soil profile by additional cutting and filling and the effects of past and future trees should be considered in the selection of the design parameters for differential movement. Where fill is to be constructed to elevate ground levels, the affected site will require re-classification once the depth and type of fill are known and the degree of earthwork control has been established.

4.3.2 Earthquake rating

Seismic accelerations to be resisted by a structure are dependent upon the stiffness of the underlying soil and rock. Soft soils have the potential to amplify ground accelerations, requiring structures built upon them to be designed to resist a higher seismic coefficient.

Based on the results of this geotechnical investigation and in accordance with AS 1170.4-2004, the site can be classified as Class C_e (Shallow Soil) with a hazard Factor (Z) of 0.08 and 1/500 annual probability of exceedance (P).

[3] AS 2870-2011 Residential Slabs and Footings.

4.3.3 Shallow footings

Shallow footings may be suitable for the proposed development, subject to the following risks:

- Bearing capacity failure
- Punching shear failure through surficial dense or stiff material
- Excessive total and differential settlement (particularly for rafts).

In addition to subsoil and groundwater conditions, the allowable bearing capacity and expected settlements are also dependent upon the size of the footing (B), embedment depth (D_f), load eccentricity and interaction between adjacent footings. On the basis of the geotechnical data, shallow footing founded on Unit 2 with an embedment depth of at least 0.5 m bgl is anticipated to have an Allowable Bearing Capacity of 100 kPa. Unit 1 is not suitable to support foundations.

While the cemented layer within the upper parts of Unit 2 was generally hard and/or dense to very dense, the engineering properties of this layer is not representative of the overall unit. In addition, the lateral and vertical distributions of the cemented layer are highly variable. Where footings are founded within the stronger cemented layer, the strength of the underlying lower strength soils are considered to govern the bearing capacity. Hence, a more conservative allowable soil bearing capacity of 100 kPa is recommended for the entire Unit 2.

Given the heterogeneity of Unit 2, it is recommended that the footings are founded on similar ground conditions to minimise the risk of potential differential settlements in particular for raft foundation. The total and differential settlements of a shallow foundation will depend on the footing size and applied loads and therefore to be assessed separately.

It must be noted that clayey soils of Unit 2 can suffer softening and degradation on exposure and wetting. It is therefore recommended that exposed surfaces are protected as soon as practicable with compacted granular fill or blinding.

It is recommended that all footing excavations are inspected by a suitably experienced geotechnical engineer during construction to confirm that the founding conditions are consistent with those on which the design recommendations are based. The base of the footing should be free from any localised soft areas, organic and deleterious materials prior to placing blinding concrete/footing.

4.3.4 Pile foundation

A pile foundation system will be required if a shallow footing system is deemed not adequate to support lateral loading, overturning bending moment or high tensile load. In this instance, both driven and bored cast in situ piles can be used subject to suitability and cost-benefit analysis.

Bored piles are preferred over driven pile due to the presence of cemented layer within Unit 2, with potential to cause resistance to driving, damage to the pile and the driving equipment.

For preliminary design piles, pile axial capacity can be obtained using ultimate shaft and base resistance values recommended in Table 4.1.

Table 4.1: Preliminary Ultimate End Bearing and Ultimate Skin Friction (Bored Pile)

Founding material	Approximate depth to top of unit (m bgl)	Ultimate End Bearing $q_{b,ult}$ (kPa) (See Notes 1 & 2)	Ultimate Shaft Resistance $q_{s,ult}$ (kPa) (See Notes 1, 2)
Unit 2 (Cemented layer)	0.3 – 1.9	---	70
Unit 2	6.0 - 7.5	700	30

Note 1: The ultimate geotechnical end-bearing and skin friction capacities assume:

i. The total pile length is greater than 6D ('D'=Pile diameter)

ii. The pile toe is embedded a minimum 3D into the appropriate material

iii. The pile centre to centre spacing is greater than or equal to 3D.

Note 2: The ultimate geotechnical pile capacities are to be used in conjunction with an appropriate strength reduction factor as stipulated in AS2159-2009. For preliminary purposes a reduction factor of 0.5 may be considered.

The design geotechnical strength of pile ($R_{d.g}$) can be estimated in accordance with AS 2159-2009[4] by applying a geotechnical strength reduction factor (ϕ_g) to the ultimate end bearing and shaft resistance presented in Table 4.1.

The appropriate ϕ_g value will depend on many factors associated with the site, design, installation and testing, some of which are not known at the time of preparing this report. The various factors to be considered include the following:

- Geological complexity of the site;
- Extent of geotechnical investigation with consideration of pile founding levels;
- Available geotechnical data and method of assessment of geotechnical parameters;
- Design experience and methods adopted;
- Level of construction control and performance monitoring; and
- Pile testing undertaken.

Based on some typical broad assumptions regarding the use of bored on this site, it is considered that a ϕ_g of 0.5 may be adopted for preliminary pile design purposes, assuming no load testing of constructed piles is to be undertaken.

It is recommended that bored pile excavations be assessed by a geotechnical engineer during construction to ensure that founding conditions are consistent with those on which the design recommendations are based. Care should be taken to ensure that the base and side of any pile excavations are clean of loose material, water and clay smear prior to pouring concrete. Depending on the degree of cleanliness achieved, some reduction in the base bearing area for the calculation of the pile capacity may be applied.

[4] AS 2159-2009, *Piling – Design and Installation*

4.4 Excavation conditions

4.4.1 Excavatability

It is understood that the proposed redevelopment may comprise excavation of a 1-level basement for apartments and up to 3-level basement for the village centre. Based on the results of the site investigation, it is anticipated that the basement excavation will encounter hard and/or very dense soils.

It is envisaged that free digging to the proposed basement depth can be achieved using conventional earthmoving plants such as large excavator or bulldozer. Ripping may be required at areas where cemented layers with bands of sandstone and ironstone were encountered. Excavations through this material may be slower and should be considered in managing on-site construction risks.

4.4.2 Groundwater control

It is envisaged that water inflows from perched groundwater table may be encountered where the excavation is deeper than 6 m bgl. However, due to high fines content, the permeability of the subsoil is likely to be low and groundwater recharge is anticipated to be relatively slow.

It is recommended that the depth of basement excavation is maintained at least 1 m above the observed groundwater level to allow for seasonal fluctuations. Where the depth of excavation is below the groundwater level, localised groundwater control during construction such as sump pumping is recommended to assist construction and minimise softening of soils exposed at the base of excavations.

4.4.3 Temporary batters

The face of unsupported excavations are to be battered at gradients not stepper those shown in Table 4.2. The recommended batter slope are based on temporary dry condition.

If groundwater seepage is encountered, the angles should be reduced (i.e gentler). It is possible that localised slumping of the excavated faces may still occur and it is essential that the stability of unsupported faces be closely monitored during construction for any signs of instability.

Table 4.2: Cut and fill batter slopes (in dry conditions)

Material	Short Term (1 – 2 Weeks)
Unit 1 – Fill	1V : 1.75H or gentler
Unit 2 – Red Bluff Sandstone Formation	1V : 2.0H or gentler

Any load on the slope (e.g. surcharge, traffic load, excavated spoil) shall be kept away from the crest at a minimum distance equal to the height of the temporary cut. Where excavations are to remain open for longer periods (>1-2 weeks), it is recommended that further geotechnical advice is sought.

The ground around the excavation should be graded to fall away from the excavation to minimise surface water runoff over the unprotected batters.

Where underground services are present within the vicinity of the excavation, care must be taken to ensure that any potential settlement and/or displacement of the services due to removal of adjacent soils are addressed.

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4.4.4 Retaining wall design

It is understood that the project may require both temporary and permanent retention systems to support the basement excavation and other cut or fill. Depending on design factors such as retention height, permissible deformation of wall, interaction with adjacent structures and the magnitude of surcharge loading, retention systems for this site may include soldier pile wall, contiguous piles, or reinforced concrete cantilever wall.

On the basis of the results of fieldwork, laboratory tests and our experience with similar soils, the design parameters for retaining wall for Unit 2 are presented in Table 4.3.

Table 4.3: Recommended design parameters for retaining wall

Material	Approximate depth to top of unit (m bgl)	Unit Weight (kN/m^3)	Coefficient of Lateral Earth Pressure (1)		
			Active earth pressure (K_a)	At rest (K_0)	Passive Earth Pressure (K_p)
Unit 2 (Cemented layer)	0.3 – 3.2	20	0.35	0.50	3.0
Unit 2	7.5	19	0.40	0.55	2.5

(1) Minimum wall displacement would be required to mobilise the relevant earth pressure coefficient

No allowance has been made for sloping backfill, wall friction, compaction pressures or surcharge effects. The groundwater level is anticipated to be deeper than the excavation, but drainage should be installed behind the wall to prevent hydrostatic pressures developing from water seepage. The design of the retaining walls should also include an assessment of potential wall deformation.

Retention systems will need to consider the surcharge effects of any proposed adjacent structures on the retaining wall where high level footings are proposed at the site, as well as the magnitude of deflections that can be tolerated.

4.5 Re-use of site materials

AS 3798[5] provides the following guidance with respect to unsuitable materials:

> "*Unsuitable materials may include –*
>
> *(a) Organic soils, such as many topsoils, severely root affected subsoils and peat;*
>
> *(b) Materials contaminated through past site usage which may contain toxic substances or soluble compounds harmful to water supply or agriculture;*
>
> *(c) Materials containing substances that can be dissolved or leached out in the presence of moisture (e.g. gypsum), or which undergo volume change or loss of strength when disturbed and exposed to moisture (e.g. some shales and sandstones), unless these matters are specifically addressed in the design;*
>
> *(d) Silts, or materials that have the deleterious engineering properties of silt;*
>
> *(e) Other materials with properties that are unsuitable for the forming of structural fill; and*
>
> *(f) Fill that contains wood, metal, plastic, boulders or other deleterious material, in sufficient proportion to affect the required performance of the fill."*

[5] AS3798 (2007) Guidelines on earthworks for commercial and residential developments

As there was no formal record on how the existing fill was placed (i.e QC record), the existing fill could not be classified as engineered fill. Where the fill doesn't contain any unsuitable material it could be reused as fill material.

The natural Red Bluff Sandstone Formation soils (Unit 2) encountered during the investigation are likely to be suitable for reuse as general fill for general earthworks construction, although sieving of oversized materials may be required to produce suitable fill. Emerson class number tests undertaken on the Red Bluff Sandstone Formation soils (Unit 2) indicate that the soils are generally slightly dispersive within the upper 5 m whereas deeper subsoil has been indicated to be highly dispersive. Soil stabilisation by adding lime or gypsum would be required for soil sourced below 5 m bgl to ensure its suitability as structural fill. Further laboratory tests are recommended to determine the optimum quantity of lime/gypsum required to stabilise the soils.

The soils within the upper 3.5 m have been measured to have a maximum dry density (MDD) between 1.70 and 1.84 t/m^3 corresponding to optimum moisture content (OMC) between 17.5 and 22.5 %. The natural moisture content of soils within the upper 3.5 m were measured between 17.2 and 20.6 %, indicating similar order of OMC, therefore extensive moisture conditioning is not anticipated. It is noted that the natural moisture content increases with depths as observed in BH20.

Notwithstanding the fill, the natural soils are not considered to be affected by a significant organic content.

The design compactive effort and moisture content of the fill would be dependent on the proposed use of the fill and type of fill material. Any structural fill should be constructed under 'level 1' inspection and testing regime as detailed in AS3798-2007.

4.6 Design subgrade CBR value

Based on the ground conditions encountered and assuming that any new pavements will be placed at or near the existing surface level, it is likely that the existing fill and Red Bluff Sandstone Formation soils (Unit 2) will form the subgrade over most of the site. Given the variability of the existing fill material, it is recommended that either the fill is replaced or treated prior to the construction of the pavement.

By considering the variability of the ground conditions, the drainage conditions, plasticity of the soils, correlation with in situ testing and laboratory soaked CBR values, a design CBR value of 2% can been adopted for the Red Bluff Sandstone Formation soils (Unit 2) subgrade.

5 Implication and recommendations

Recommendations and opinions presented in this report are based on the available information and the results of the geotechnical investigation. It must be noted that the ground conditions encountered in the borehole locations may not represent the actual ground conditions of the entire footprints of the structures.

During construction, onsite inspection by an experience engineer or engineering geologist is recommended to verify the actual ground conditions to those assumed in the design. We would be pleased to provide this service to you and believe your project would benefit from such continuity. However, it is important that we be contacted if there is any significant variation in subsoil conditions from those described in the report.

6 Applicability

This report has been prepared for the exclusive use of our client Ryman Healthcare (Australia) Pty Ltd, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Pty Ltd

Report prepared by:	Authorised for Tonkin & Taylor Pty Ltd by:
	
.....	.....
Abraham Prawira	Chris Boyd
Geotechnical Engineer	Project Director

AAP/ATIN
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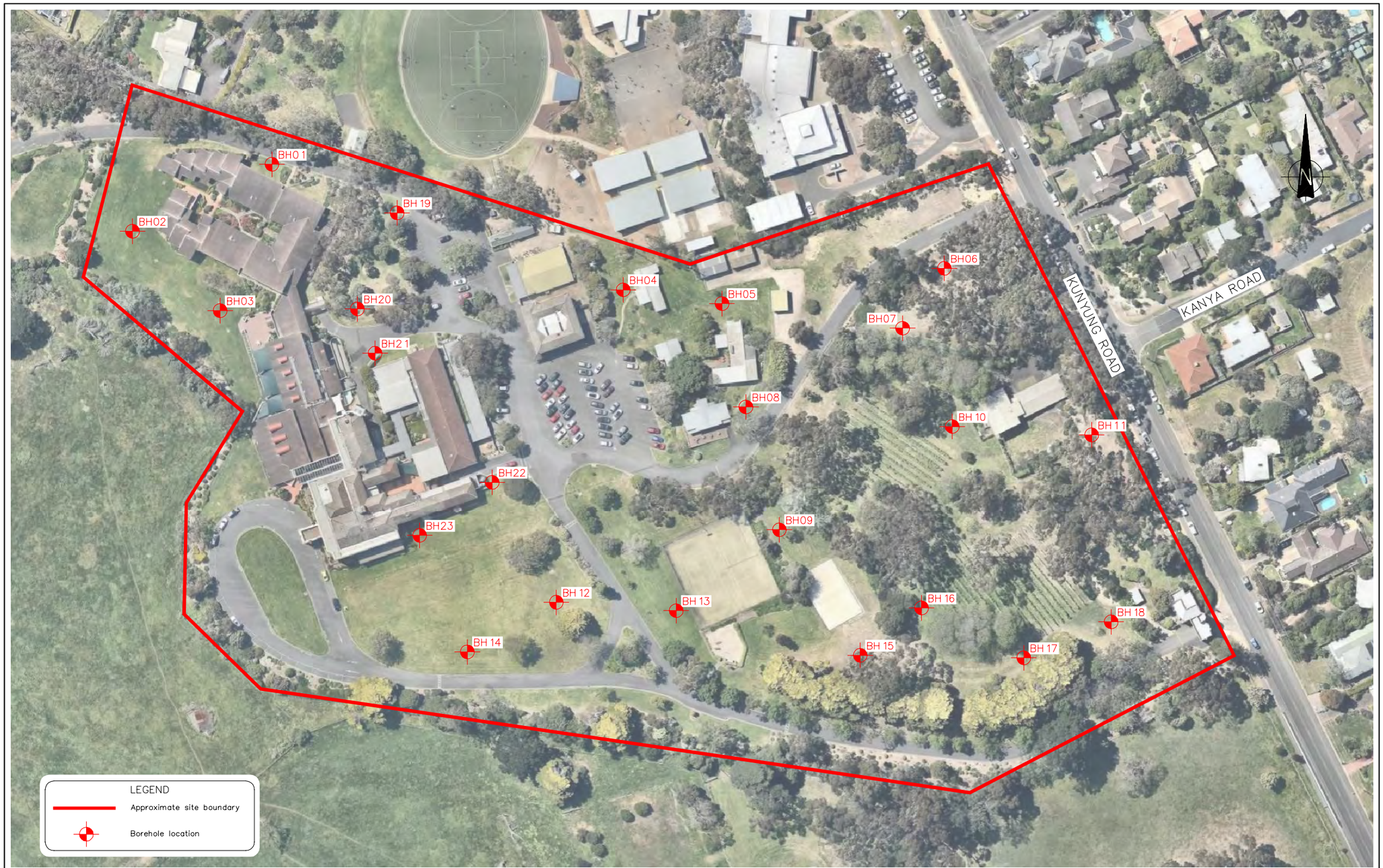
Appendix A: Site investigation plan



SCALE 1: 1,250
0 10 20 30 40 50 60 70 80 (m)

Aerials sourced from NearMaps data (Copyright: 2012).
Imagery Date: December 2016.

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DRAWN	LJD	Jan. 17
DRAFTING CHECKED		
APPROVED		
CADFILE : \\ 100 1289–F 1.dwg		
SCALES (AT A3 SIZE) AS SHOWN		
PROJECT No. 100 1289		

RYMAN HEALTHCARE LIMITED
70 KUNYUNG RD, MT ELIZA, VIC
PRELIMINARY SITE INVESTIGATION
Test Location Plan

FIG. No. Figure 1 REV. 0

Appendix B: Engineering logs

- Engineering logs

Tonkin & Taylor
Environmental & Engineering Consultants

ENGINEERING LOG TERMINOLOGY

SHEET 1 of 2

DRILLING OR EXCAVATION

WATER

Water level on date shown

Water inflow

Water outflow

CORE RECOVERY

Core recovered expressed as percentage of the length of the core run

METHOD/CASING

Shows drilling method and depth of casing

SA - Solid Auger
HA - Hollow Auger
TR - Terrier
W - Wash Boring
NQ3 - NQ triple tube coring

FIELD TEST

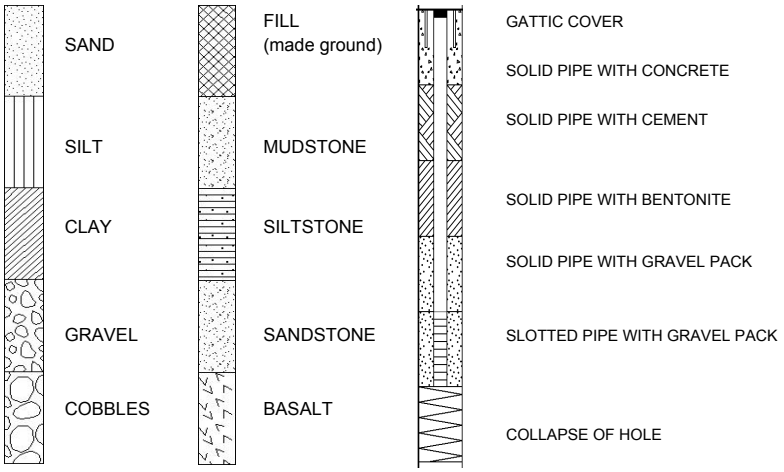
SPT	Standard Penetration Test
U63	Undisturbed Sample 63mm diameter
SV	Undrained Shear Strength as measured by field vane
PP	Twice Undrained Shear Strength as measured by pocket penetrometer
DCP	Dynamic Cone Penetrometer blows per 100mm
Field CBR	Field CBR under existing pavement

LABORATORY TEST

U63	Undisturbed Sample - 63mm
DS	Disturbed Sample
MC	Moisture Content % AS 1289.2.1.1
LL	Liquid Limit (%) AS 1289.3.1.2
PI	Plasticity Index AS 1289.3.3.1
LS	Linear Shrinkage (%) AS 1289.3.4.1
PID	Photoionization Detector (ppm)
CBR	California Bearing Ratio AS 1289.6.1.1

GRAPHIC LOG

(The graphic logs shows soil and rock substances, significant defects, and core loss. Soil and rock substances represented clear contrasting symbols consistant for each project.



SOIL DESCRIPTIONS

CLASSIFICATION SYMBOL

Based on USCS Unified Soil Classification Symbol Visual Method field identification. Classification symbols based on the Laboratory Method may differ

Soil and rock descriptions generally follow the "Guide to the Description Identification and Classification of Soils" and the the field guides as given in AS1726 - 1993 Geotechnical Site Investigations. When describing the soils the soils are described in terms of the Engineering properties.

MOISTURE CONTENT

D	Dry, look and feels dry
M	Moist, no free water on hand when remoulding
VM	Very Moist
W	Wet, free water on hand when remoulding

STRENGTH

		Cu (kPa)
VS	Very Soft	<10
S	Soft	10 - 25
F	Firm	25 - 50
St	Stiff	50 - 100
VSt	Very Stiff	100 - 200
H	Hard	>200
Fb	Friable	

DENSITY

VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

EASE OF EXCAVATION

E	Easy
M	Moderate
D	Difficult
ER	Effective Refusal

ROCK DESCRIPTIONS

WEATHERING

RS	Residual Soil
XW	Extremely Weathered Rock
HW	Highly Weathered Rock
MW	Moderately Weathered Rock
DW	Distinctly Weathered Rock
SW	Slightly Weathered Rock
FR	Fresh Rock

FIELD STRENGTH

		Point Load Index (MPa) - Is(50)	Field Guide (50mm Core)
EL	Extremely Low	< 0.03	Easily remoulded by hand crumbles
VL	Very Low	> 0.03 < 0.1	Crumbles under firm blows with sharp end of pick
L	Low	> 0.1 < 0.3	A 150mm long piece may be broken hand
M	Medium	> 0.3 < 1.0	A 150mm long piece may be broken hand with difficulty
H	High	> 1 < 3	Core breaks after one blow
VH	Very High	> 3 < 10	Core breaks after more than blow
EH	Extremely High	> 10	Core breaks after many blows with pick

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Environmental & Engineering Consultants

ENGINEERING LOG TERMINOLOGY

SHEET 2 of 2

ROCK DESCRIPTIONS

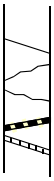
(Continued)

CLASSIFICATION OF ROCK

RQD	Rock Quality Designation	100 x Length of Core in pieces > 100mm / Length of run
	Core Recovery	Recovery of Core per drilling run

DEFECTS

Significant defects may be shown graphically



B	BEDDING
J	JOINT
SZ	SHEARED ZONE
CZ	CRUSHED SEAM / ZONE
IF	INFILLED SEAM / ZONE
XD	EXTREMELY WEATHERED SEAM

CODING

Typical Example:

30.0m, J, 60°, PL, SM, VT, CV, stiff green clay

Depth of Defect ↑ | Type ↑ | Angle to Core Axis ↑ | Shape ↑ | Roughness ↑ | Apeture ↑ | Infill / Coating Type ↑ | Infill Description (as per soil description) ↑

SHAPE

CODE	TERM
PL	Planar
SC	Slightly Curved
CV	Curved
IR	Irregular
ST	Stepped
WV	Wavy

ROUGHNESS

DESCRIPTION OF JOINT SURFACE	
SL	Slickensided
SM	Smooth
DR	Defined Ridges
ST	Small Steps
R	Rough
VR	Very Rough

APERTURE

SYMBOL	TERM	DESCRIPTION (Separation)
VT	Very Tight	< 0.1mm
T	Tight	0.1mm - 1.0mm
O	Open	1.0mm - 10.0mm
VO	Very Open	> 10mm

INFILLINGS AND COATINGS

CG	Clay Gouge	Joints have openings between opposing faces of intact rock substance in excess of 1.0mm filled with clay gouge.
CV	Clay Veneers	Joints contain clay coatings whose maximum thickness does not exceed 1mm. Note: Clay described in terms of soil properties
PL	Penetrative Limestone	Joint traces are marked in terms of well defined zones of slightly to moderately weathered ferrugunised rock - substance within the adjacent rock.
FeSt	Limonite Stained	Joint surfaces are stained or coated with limonite, although the rock substance immediately adjacent rock is fresh.
CT SC	Coated	Joints exhibit Coatings other than clay or limonite. Eg. Carbonate (CT) or silica (SC)
CL CS CC	Cemented	Joints are cemented with limonite (CL), silica (CS), or carbonates (CC).
CN	Clean	Joint Surfaces show no trace of clay, limonite, or other coatings.
ST	Stain	No visible sign of infill or coating but surfaces are discoloured by mineral staining.
V	Veneer	A visible coating or infilling of soil or mineral substance but usually unable to be measured (less than 1mm).
C	Coating	A visible coating or infilling of soil or mineral substance, greater than 1mm thick

CEMENTATION CLASSIFICATION

Uc	Uncemented	Clean grains exhibiting soil properties
Vwk	Very Weakly cemented	Cement on some grains, collapsing feel under very light finger pressure
Wk	Weakly cemented	Cement on many grains, collapsing feel under finger pressure, breaks down to individual grains
Mwk	Moderately weakly cemented	Cement on most grains, breaks down to lumps under finger pressure, can crush to individual grains under knife blade
Mo	Moderately cemented	Cement on most grains, can break fragments off by hand and crush to small lumps
We	Well cemented	Practically all grains cemented together, cannot break fragments off by hand, dull sound under hammer
Vwe	Very well cemented	Most primary pores filled with cement, requires firm blow with hammer to break off fragments, rings when struck

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BOREHOLE LOG

BOREHOLE NO: ***BH01***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***19.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***19.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331318	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771567	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m													
										Env Sample @ 0.8 m													
		1			CL	Sandy CLAY, dark grey mottled brown, low plasticity; sand: fine to medium grained.	D-M	St															
			Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	VSt		SPT 6,9,12 N=21													
		2					D-M	H														Inferred as cemented layer (possibly duricrust).	
						Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.				SPT 10,19,20 N=39													
		3																					
						Increasing proportion of Clay.	D-M	St															
		4								SPT 6,5,8 N=13													
		5																					
		6								SPT 5,6,8 N=14													
		7																					
						End of BH01 at 7.00m																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH02***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***19.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***19.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331268	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771543	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		1	Fill			FILL; Silty SAND, pale brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm. Contains medium to coarse grained gravel, angular, basalt and bricks.	D	L-MD		Env Sample @ 0.1 m													
		2	Red Bluff Sandstone		CH	Sandy CLAY, dark brown mottled grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic.	D-M	VSt		Env Sample @ 1.9 m												No SPT test at this depth due to presence of coarse gravel.	
		3				Grades to Sandy CLAY with Gravel, red brown mottled pale grey and orange; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M	VSt-H		SPT 13,16,27 N=43												Inferred as cemented layer (possibly duricrust).	
		4																					
		5								SPT 6,10,13 N=23													
		6																					
		7								SPT 9,14,21 N=35													
		8				**End of BH02 at 7.00m**																	
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH03***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***20.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***20.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331306	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771510	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m														
										Env Sample @ 0.8 m														
		1				FILL; Gravelly CLAY with Sand, dark grey mottled brown, low plasticity; gravel: fine grained, angular, basalt and crushed bricks; sand: fine to coarse grained.	D-M	F-St		SPT 5,5,3 N=8														
		2																					
						Grades to brown mottled minor grey.																	
		3								SPT 4,9,9 N=18													
		4	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone. Becoming predominantly CLAY with trace Sand and Gravel; grades to pale grey mottled minor orange.	D-M	St-VSt															
		5								SPT 5,8,13 N=21													
		6																					
		7								SPT 3,5,6 N=11													
		8				**End of BH03 at 7.00m**																	
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH04***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***19.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***19.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331444	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771522	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m													
										Env Sample @ 0.7 m													
		1	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	St-VSt		SPT 3,5,6 N=11													
		2																					
		3				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M	H		SPT 9,14,22 N=36												Inferred as cemented layer (possibly duricrust).	
		4																					
		5								SPT 7,18,28 N=46													
		6				**Refusal of BH04 at 5.20m on hard or cemented material.**																	
		7																					
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH05***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***18.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331481	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771512	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND with Gravel, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; gravel: fine grained; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m		1 1 4 8 12 14 18 22 R	2 2 8 18 28 33 44 55 55										
		1	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	St-VSt		Env Sample @ 0.8 m SPT 2,7,8 N=15													
		2				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.																	
		3								SPT 5,10,12 N=22													
		4						H														Inferred as cemented layer (possibly duricrust).	
		5								SPT 9,16,17 N=33													
		6								SPT 7,15,21 N=36													
		7				**End of BH05 at 7.00m**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH06***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***10.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***10.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331556	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771518	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Sandy CLAY with Gravel, brown, low plasticity; sand: fine to medium grained; gravel: medium to coarse grained, angular, basalt; contains rootlets within the top 200 mm.	D	St		Env Sample @ 0.1 m													
					SC	Clayey SAND, red brown mottled orange, fine to coarse grained, subrounded to subangular, quartzitic; clay: low plasticity; trace gravel, fine grained, sandstone and ironstone.	D-M	D-VD		Env Sample @ 0.7 m					20.6						Inferred as cemented layer (possibly duricrust).	
		1								SPT 10,15,20 N=35													
		2	Red Bluff Sandstone														32	17	6.0	0.0	6		
		3								SPT 8,18,23 N=41													
		4				Grades to red brown mottled orange and minor pale grey.																	
						Grades to Clayey SAND with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M																
		5								SPT 12,30+,-													
		6								SPT >25,-,-													
						Refusal of BH06 at 6.40m on hard or cemented material.																	
		7																					
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH07***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***10.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***10.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331551	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771516	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Sandy CLAY with Gravel, brown, low plasticity; sand: fine to medium grained; gravel: medium to coarse grained, angular, basalt; contains rootlets within the top 200 mm.	D	St		Env Sample @ 0.1 m													
					CH		D-M	VSt		Env Sample @ 0.5 m													
		1	Red Bluff Sandstone			Sandy CLAY, red brown, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.		H		SPT 10,18,27 N=45												Inferred as cemented layer (possibly duricrust).	
		2																					
		3				Grades to Sandy CLAY with Gravel, red brown mottled pale grey and orange; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M			SPT >25,-,-													
		4																					
		5								SPT >25,-,-													
		6								SPT >25,-,-													
		7				**Refusal of BH07 at 6.50m on hard or cemented material.**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH08***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***18.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331488	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771480	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m		4 4 6 14 R	8 8 13 33 55										
		1	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	VSt		Env Sample @ 0.9 m SPT 6,9,15 N=24													
		2						H								17.2						Inferred as cemented layer (possibly duricrust).	
		3				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M			SPT 12,25,26 N=51													
		4																					
		5								SPT 16,25,R												Very slow drilling advance rate from 4.5 m bgl (below ground level).	
		6				**Refusal of BH08 at 6.00m on hard or cemented material.**																No SPT testing at 6 m bgl due to hole collapse to 4.8 m bgl.	
		7																					
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH09***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***18.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331500	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771436	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND with Gravel, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; gravel: fine grained; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m		2 4 11 15 18 R	4 8 25 36 44 55										
					CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	VSt		Env Sample @ 0.7 m SPT 6,8,11 N=19											
		1																					
		2	Red Bluff Sandstone			Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.		H														Inferred as cemented layer (possibly duricrust).	
		3								SPT 10,17,21 N=38													
		4				Grades to Gravelly SAND.																	
		5								SPT 13,22,29 N=51													
		6				**Refusal of BH09 at 5.70m on hard or cemented material.**																	
		7																					
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH10***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***11.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***11.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331562	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771473	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Gravelly CLAY, brown mottled grey and orange, low plasticity; gravel: fine to medium grained, angular, basalt; contains rootlets within the top 200 mm.	D	St-VSt		Env Sample @ 0.1 m		7 8 8 9	15 18 18 20										
					CH	Sandy CLAY with Gravel, red brown, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel, fine to medium grained, sandstone and ironstone.	D-M	VSt		Env Sample @ 0.5 m		10 9 22 20 19	23 20 55 50 47			18							High DCP value from 0.6 m bgl due to presence of gravel.
		1								SPT 8,12,17 N=29		R	55										
		2	Red Bluff Sandstone					H														Inferred as cemented layer (possibly duricrust).	
						Grades to red brown mottled pale grey and orange.																	
		3								SPT 10,14,25 N=39													
		4																					
		5								SPT 4,23,26 N=49													
		6																				Very slow drilling advance rate from 4.5 m bgl (below ground level).	
										SPT 4,22,29 N=51													
		7				**End of BH10 at 7.00m**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH11***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***10.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***10.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331612	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771470	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		1	Fill			FILL; Gravelly CLAY, red brown mottled pale grey and orange, low plasticity; gravel: fine to medium grained, angular, basalt; contains rootlets within the top 200 mm.	D	St		Env Sample @ 0.1 m														
										Env Sample @ 1.1 m														
		2	Red Bluff Sandstone		CH	Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel, fine to medium grained, sandstone and ironstone.	D-M	H		SPT 8,15,29 N=44													Inferred as cemented layer (possibly duricrust).	
		3								SPT 12,20,24 N=44													
		4																					
		5								SPT 17,22,29 N=51													
		6																					
						Refusal of BH11 at 6.40m on hard or cemented material.				SPT >25,-,-													
		7																					
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH12***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***12.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331420	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771410	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm. 200 mm band of crushed rock between 0.15 and 0.35 m bgl, medium to coarse grained, approximately 20 to 40 mm nominal size, angular, basalt and granite.	D	VL-MD		Env Sample @ 0.7 m Env Sample @ 0.1 m		1 2 5 6 8 6 6 7 7 8 7 6 6 5 5	2 4 10 13 18 13 13 15 15 18 15 13 13 10 10									
		1	Red Bluff Sandstone		CH	Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	St-VSt		SPT 5,7,10 N=17													
		2																					
		3								SPT 2,4,7 N=11													
		4																					
		5								SPT 3,8,10 N=18													
		6																					
		7								SPT 7,10,10 N=20													
		7				**End of BH12 at 7.00m**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH13***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***12.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331463	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771407	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m		2	4										
												2	4										
												8	18										
										Env Sample @ 0.6 m		15	36										
												12	28										
												R	55										
		1	Red Bluff Sandstone		CH	CLAY with Sand, red brown mottled pale grey and orange, high plasticity; sand: fine to medium grained, subangular to subrounded, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	VSt		SPT 4,7,10 N=17													
		2				Grades to brown orange mottled minor pale grey and red brown.											53	33	12.0	1.5	2.0		
		3								SPT 4,10,10 N=20													
		4				Grades to Gravelly CLAY; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.																Inferred as cemented layer (possibly duricrust).	
		5								SPT 11,17,13 N=30													
		6						H		SPT 7,16,18 N=34													
		7																					
		8				**End of BH13 at 7.00m**																	
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH14***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***12.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331390	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771384	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.7 m Env Sample @ 0.1 m		2 3 3	4 6 6										
		1	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to medium grained, subrounded to subangular, quartzitic; trace gravel: fine grained, sandstone and ironstone.	D-M	F-St		SPT 4,7,9 N=16		6 7 6 4 5 6 6 8 6 6 8 6	13 15 13 8 10 13 13 18 13 13 18 13										
		2				Grades to pale grey mottled minor orange.		VSt															
		3								SPT 7,11,12 N=23													
		4						H														Inferred as cemented layer (possibly duricrust).	
		5				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M			SPT 14,28,28 N=56												Very slow drilling advance rate from 5 m bgl (below ground level).	
		6								SPT <25,-,-													
		7																					
						End of BH14 at 7.00m																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH15***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***12.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331529	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771391	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND with Gravel, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; gravel: fine grained, angular, basalt and bricks; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.6 m		8	18										
										Env Sample @ 0.1 m		8	18									High DCP value at 0.2 and 0.7 m bgl due to presence of gravel.	
			Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to medium grained, subrounded to subangular, quartzitic; trace gravel: fine to medium grained, sandstone and ironstone.	D-M	St-VSt				22	55										
		1										12	28										
												10	23										
												6	13										
												6	13										
												18	44										
												7	15										
										SPT 4,9,10 N=19		8	18										
		2										R	55										
		3								SPT 3,10,17 N=27													
		4																					
										SPT 5,17,12 N=29													
		5				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.		H														Inferred as cemented layer (possibly duricrust). Very slow drilling advance rate from 5 m bgl (below ground level).	
		6								SPT 5,22,24 N=46													
		7																					
						End of BH15 at 7.00m																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH16***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***11.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***11.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331551	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771408	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL: Gravelly SILT, pale grey brown, low plasticity; gravel: fine grained; contains rootlets within the top 200 mm.	D	St		Env Sample @ 0.1 m		7	15										
												7	15									High DCP value at 0.3 and 0.7 m bgl due to presence of gravel.	
										Env Sample @ 0.7 m		8	18										
		1	Red Bluff Sandstone		CH	Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine to medium grained, sandstone and ironstone.	D-M	VSt				18	44										
										SPT 2,10,12 N=22		9	20										
		2										8	18										
								H				8	18										
												R	55									Inferred as cemented layer (possibly duricrust).	
		3								SPT 5,17,19 N=36													
		4																					
										SPT 4,12,14 N=26													
		5																					
		6								SPT 7,14,11 N=25													
		7																					
						End of BH16 at 7.00m																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH17***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***11.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***11.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331569	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771389	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL: Gravelly SILT, pale grey brown, low plasticity; gravel: fine grained; contains rootlets within the top 200 mm.	D	St-VSt		Env Sample @ 0.8 m Env Sample @ 0.1 m		8 9 12 12 18 R	18 20 28 28 44 55									High DCP value at 0.4 m bgl due to presence of gravel.	
		1	Red Bluff Sandstone		CH	Sandy CLAY with Gravel, red brown, high plasticity; sand: fine to coarse grained, subangular to subrounded, quartzitic; gravel: fine grained, sandstone and ironstone.	D-M	VSt		SPT 6,12,12 N=24													
		2				Grades to red brown mottled pale grey and orange.																	
		3						H		SPT 7,17,21 N=38												Inferred as cemented layer (possibly duricrust).	
		4																					
		5								SPT 8,19,14 N=33													
		6								SPT 5,12,22 N=34													
		7				**End of BH17 at 7.00m**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH18***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***11.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***11.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331619	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771403	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		1	Fill			FILL: Gravelly SILT, pale grey brown, low plasticity; gravel: fine grained; contains rootlets within the top 200 mm.	D	St-VSt		Env Sample @ 0.1 m		8 7 8 22 24 R	18 15 18 55 55 55									High DCP value from 0.3 m bgl due to presence of gravel.	
										Env Sample @ 1.0 m													
		2	Red Bluff Sandstone		CH	Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine grained, sandstone and ironstone; wood fragments.	D-M	VSt		SPT 3,8,9 N=17													
		3						H		SPT 4,20,30+ N=50												Inferred as cemented layer (possibly duricrust).	
		4																					
		5								SPT 4,18,26 N=44												Very slow drilling advance rate from 5 m bgl (below ground level).	
		6								SPT >25,-,-													
		7				**Refusal of BH18 at 6.50m on hard or cemented material.**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH19***
SHEET: 1 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***19.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***20.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331360	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771563	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Sandy CLAY, dark brown, low plasticity; sand: fine to medium grained; contains rootlets within the top 200 mm.	D-M	St-VSt		Env Sample @ 0.1 m														
					CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained; trace gravel: fine grained, sandstone and ironstone.	D-M	St-VSt		Env Sample @ 0.7 m													
		1								SPT 5,10,11 N=21													
		2																					
		3								SPT 4,8,13 N=21													
			Red Bluff Sandstone			At 3.5 m bgl, grades to pale grey mottled minor orange.																	
		4																					
										SPT 3,6,10 N=16													
		5																					
		6				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	M			SPT 8,16,13 N=29													
		7																					
							M-W			SPT 5,10,13 N=23													
		8																					
		9				Increasing proportion of CLAY.	W			SPT 6,9,9 N=18													
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH19***
SHEET: 2 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***19.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***20.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331360	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771563	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		11	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained; trace gravel: fine grained, sandstone and ironstone. *(continued)*	W	St-VSt		SPT 3,3,6 N=9													
		12						St		SPT 2,4,6 N=10													
		13								SPT 5,7,7 N=14													
		14																					
		15				Increasing proportion of Sand.		H		SPT 6,22,15 N=37													
						End of BH19 at 15.50m																	
		16																					
		17																					
		18																					
		19																					
		20																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH20***
SHEET: 1 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***18.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331345	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771512	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, dark brown, fine to medium grained, quartzitic; silt: low plasticity; contains rootlets within the top 200 mm.	D	MD		Env Sample @ 0.1 m		10	23										
												10	23										
										Env Sample @ 0.7 m		8	18										
												10	23										
												8	18										
		1			CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel: fine grained, sandstone and ironstone.	D-M	St				10	23										
												9	20										
												13	31										
										SPT 4,6,6 N=12		12	28										
												8	18										
												3	6										
												3	6										
		2										5	10			19.9							
												3	6										
												3	6										
		3				At 3.1 to 3.6 m bgl, grades to CLAY with Sand and Gravel, high plasticity, pale grey mottled minor orange.	D-M			SPT 5,7,10 N=17							53	30	12.0				
							D-M	H														Inferred as cemented layer (possibly duricrust).	
		4								SPT 9,15,15 N=30													
																23.1							
		5	Red Bluff Sandstone			Grades to CLAY, trace sand and gravel, high plasticity, pale brown.	M	St															
		6								SPT 3,4,6 N=10							75	48	15.0				
		7																					
						Grades to CLAY with Sand and Gravel; high plasticity; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	M-W			SPT 4,4,5 N=9														
		8														32.2							
		9				Increasing proportion of CLAY, high plasticity.	W	St		SPT 3,4,6 N=10							80	51	19.5				
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH20***
SHEET: 2 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***18.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331345	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771512	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		11	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel: fine grained, sandstone and ironstone. *(continued)*	W	St		SPT 3,4,7 N=11						51.0							
		12				At 12 m bgl, 1.5 m band of Sandy SILT, high plasticity.		St-VSt		SPT 6,7,9 N=16							107	56	20.0				
		13								SPT 7,10,10 N=20						57.0							
		14						MD															
		15				Grades to Clayey Gravelly SAND.				SPT 7,12,16 N=28													
						End of BH20 at 15.50m																	
		16																					
		17																					
		18																					
		19																					
		20																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH21***
SHEET: 1 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***19.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331356	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771498	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			ASPHALT, Size 10 mm nominal size, 30 mm thickness.	D-M			Env Sample @ 0.1 m													
						CRUSHED ROCK; Sandy GRAVEL, grey brown, fine to medium grained, angular, basalt, 20 mm nominal size; sand: fine to coarse grained.	M	St-VSt														
							M	MD		Env Sample @ 0.5 m													
		1			CH	FILL; Sandy CLAY, dark grey, low plasticity; sand: fine to medium grained.	D-M	St-VSt		Env Sample @ 0.9 m													
						FILL; Gravelly Silty SAND, pale grey brown, fine to medium grained; silt: low plasticity; gravel: fine grained, angular, basalt.				SPT 3,6,7 N=13													
		2				Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel: fine grained, sandstone and ironstone.																	
						Grades to grey.				SPT 5,6,10 N=16													
		3																					
		4					D-M	H		SPT 5,15,22 N=37												Inferred as cemented layer (possibly duricrust).	
		5	Red Bluff Sandstone				D-M	VSt															
		6				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.				SPT 6,12,14 N=26													
							W	St-VSt															
		7								SPT 6,10,8 N=18													
		8																					
		9				Increasing proportion of CLAY.				SPT 3,5,7 N=12													
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH21***
SHEET: 2 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***19.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331356	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771498	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		11	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel: fine grained, sandstone and ironstone. *(continued)*	W	St-VSt		SPT 4,4,5 N=9													
		12								SPT 6,9,10 N=19													
								MD-D															
		13				Grades to Clayey SAND with Gravel.																	
										SPT 9,15,23 N=38													
		14																					
		15								SPT 7,14,15 N=29													
						End of BH21 at 15.50m																	
		16																					
		17																					
		18																					
		19																					
		20																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH22***
SHEET: 1 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***16.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***17.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331397	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	Water	**Bearing:**		**Northing:**	5771453	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Tests: DCP	Tests: SV (kPa)	Tests: PP (kPa)	Tests: MC (%)	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	VS-F		Env Sample @ 0.1 m	1 1 4 4					
					CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	St-VSt		Env Sample @ 0.6 m	4 5 9 9 9 7					
		1	Red Bluff Sandstone							SPT 4,6,7 N=13	8 8 6 6 5					
		2														
		3								SPT 4,9,11 N=20						
		4					D-M	H							Inferred as cemented layer (possibly duricrust).	
		5								SPT 8,15,18 N=33						
							D-M	VSt								
		6								SPT 3,11,15 N=26						
						Borehole BH22 continued as Cored Borehole										
		7														
		8														
		9														
		10														

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

CORED BOREHOLE LOG

BOREHOLE NO: ***BH22***
SHEET: 2 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***16.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***17.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:** 331397	**Surface R.L.:**
Drill Model:	Comacchio 305	**Drill Fluid:**	Water	**Bearing:**		**Northing:** 5771453	**Offset:**

Method	Casing	Drill Rate (min)	RL (m)	Depth (m)	Geological Unit	Graphic Log	Material Description	Weathering / Cementation	Estimated Strength	Defect Spacing (mm) Crushed / 10 / 50 / 100 / 500	Lift & Core Recovery (%)	RQD %	PLI (MPa)	Field Records / Comments and Defect Description	Drilling Fluid Loss (%) 25 / 50 / 75	Water
							BH22 continued from non-cored borehole at 6.30m									
Diamond Coring				7	Red Bluff Sandstone		Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.									
							CORE LOSS									
				8			Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel. Increasing proportion of CLAY.				85	0				
				9			CORE LOSS									
				10			Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.				95	0				
							CORE LOSS									
				11			Clayey SAND with Gravel, red brown mottled pale grey and orange, fine to coarse grained, subrounded to subangular, quartzitic; clay: high plasticity; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.				90	0				
				12												
				13							100	0				
				14							100	0				
				15												
				16			End of BH22 at 15m									

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH23***
SHEET: 1 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***13.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331371	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	Water	**Bearing:**		**Northing:**	5771434	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Tests: DCP	Tests: SV (kPa)	Tests: PP (kPa)	Tests: MC (%)	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	VL-L		Env Sample @ 0.1 m	1 2 6					
			Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subangular to subrounded, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	St-VSt		Env Sample @ 0.5 m	6 5 6 12 15 R					
		1								SPT 3,5,6 N=11						
		2														
		3								SPT 6,10,13 N=23						
		4														
		5				Grades to orange; increase in proportion of SAND.	M			SPT 8,9,9 N=18						
		6								SPT 4,7,11 N=18						
						Borehole BH23 continued as Cored Borehole										Inferred as perched water level
		7														
		8														
		9														
		10														

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

CORED BOREHOLE LOG

BOREHOLE NO: ***BH23***
SHEET: 2 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***13.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331371	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	Water	**Bearing:**		**Northing:**	5771434	**Offset:**	

Method	Casing	Drill Rate (min)	RL (m)	Depth (m)	Geological Unit	Graphic Log	Material Description	Weathering / Cementation	Estimated Strength	Defect Spacing (mm) Crushed / 10 / 50 / 100 / 500	Lift & Core Recovery (%)	RQD %	PLI (MPa)	Field Records / Comments and Defect Description	Drilling Fluid Loss (%) 25 / 50 / 75	Water
							BH23 continued from non-cored borehole at 6.30m									▼
Diamond Coring				7	Red Bluff Sandstone		Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.				100	0				Inferred as perched water level
				8							100	0				
				9							100	0				
				10							100	0				
				11							100	0				
				12			At 12 m bgl, becoming Gravelly CLAY, increasing proportion of GRAVEL.				100	0				
				13			Grades to Clayey SAND with Gravel.				100	0				
				14							100	0				
				15			End of BH23 at 14.6m									
				16												

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

Library Template: T+T AUS.GLB; Report Template: TTAUS CORED BOREHOLE LOG; I:\AUSCORPORATE\SOUTH MELBOURNE\PROJECTS\1001289\WORKINGMATERIAL\LOGS\1001289 LOGS.GPJ

Appendix C: NATA laboratory test certificates

Head Office
25 Metcalf Drive
DANDENONG SOUTH VIC 3175

Ph: +61 3 8796 7900

CHADWICK GEOTECHNICS

MOISTURE CONTENT REPORT

Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967 - 1**
Report Date: 08/03/17
Request No: -
Test Method: AS 1289 2.1.1
Page: 1 of 1

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	1701670	1701672	1701674	1701676	1701678	1701680	1701682	1701684		
ID No.:	2	4	6	8	10	12	14	16		
Lot No.:	-	-	-	-	-	-	-	-		
Date Sampled:	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017		
Time Sampled:	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm		
Date Tested:	17/02/2017	17/02/2017	17/02/2017	17/02/2017	17/02/2017	17/02/2017	17/02/2017	17/02/2017		
Material Source:	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu		
Material Description:	sandy CLAY	sandy CLAY	sandy CLAY	sandy CLAY	sandy CLAY	sandy CLAY w gravel	sandy CLAY w gravel	sandy CLAY w gravel		
To Be Used As:	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis		
Sample Location :	- BH06 1.0m -	- BH08 2.0m -	- BH10 1.0m -	- BH20 1.5 - 1.95m -	- BH20 4.5 - 4.95m -	- BH20 7.5 - 7.95m -	- BH20 10.5 - 10.95m -	- BH20 13.5 - 13.95m -		
Layer Depth (mm):	-	-	-	-	-	-	-	-		
Test Depth (mm):	-	-	-	-	-	-	-	-		
Sampling Procedure:	by Client	by Client	by Client	by Client	by Client	by Client	by Client	by Client		
Moisture Content (%):	**20.6**	**17.2**	**18.0**	**19.9**	**23.1**	**32.2**	**51.0**	**57.0**		

Remarks:

ilac-MRA NATA

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Form No.: **CG.319.001**
Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

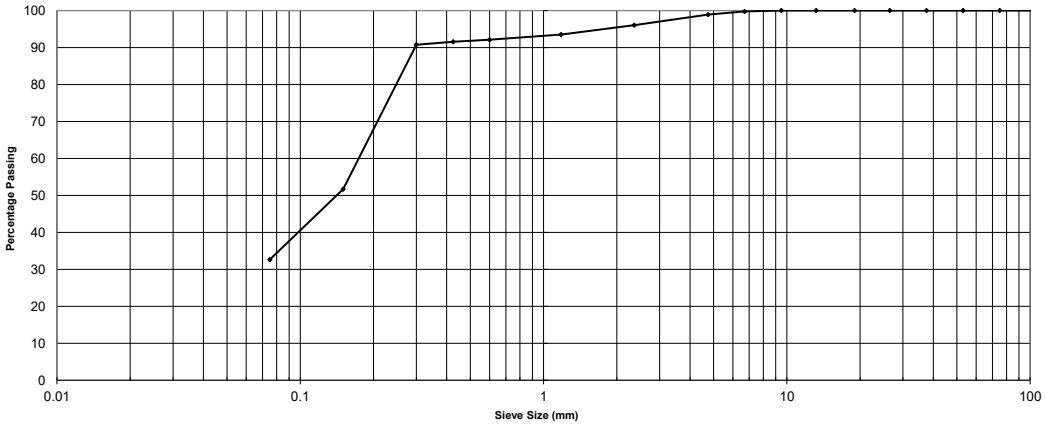
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 2 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701671**
ID No.:	3
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	6/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY
To Be Used As	Material Analysis
Sample Location :	- BH06 1.5 3.0m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	17.8
Liquid Limit (%) AS 1289.3.1.2	32
Plastic Limit (%) AS 1289.3.2.1	17
Plasticity Index AS 1289.3.3.1	15
Linear Shrinkage (%) AS 1289.3.4.1	6.0
Cracking, Curling, Crumbling (1,2,3)	1
P.I. x % Passing 0.425mm	1373
L.S. x % Passing 0.425mm	549
Ratio of % Passing (0.075/0.425)	0.36

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
								100	100	99	96	94	92	92	91	52	33

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC SC Grading Specification:

Remarks:

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

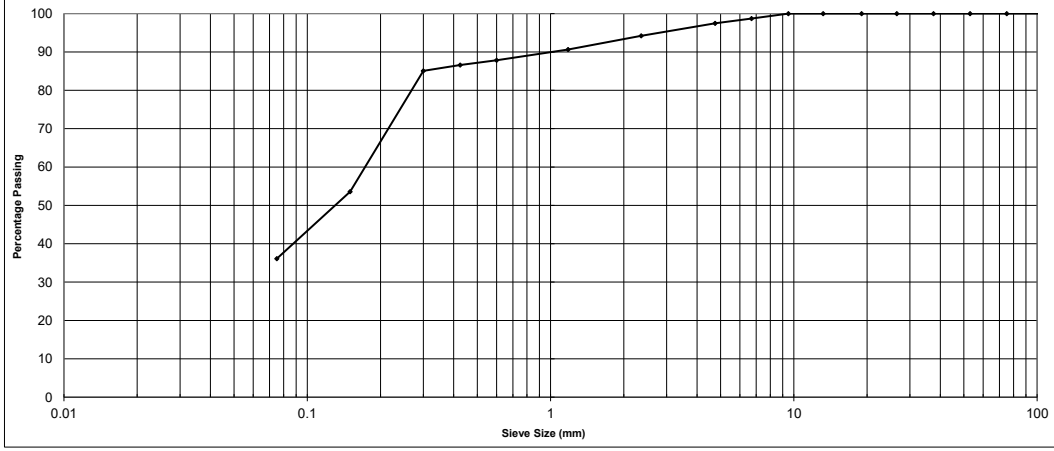
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 1 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701669**
ID No.:	1
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	7/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY w gravel
To Be Used As	Material Analysis
Sample Location :	- BH06 4.5 - 4.95m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	11.3
Liquid Limit (%) AS 1289.3.1.2	-
Plastic Limit (%) AS 1289.3.2.1	-
Plasticity Index AS 1289.3.3.1	-
Linear Shrinkage (%) AS 1289.3.4.1	-
Cracking, Curling, Crumbling (1,2,3)	
P.I. x % Passing 0.425mm	-
L.S. x % Passing 0.425mm	-
Ratio of % Passing (0.075/0.425)	0.42

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
								100	99	97	94	91	88	87	85	54	36

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC - Grading Specification:

Remarks:

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

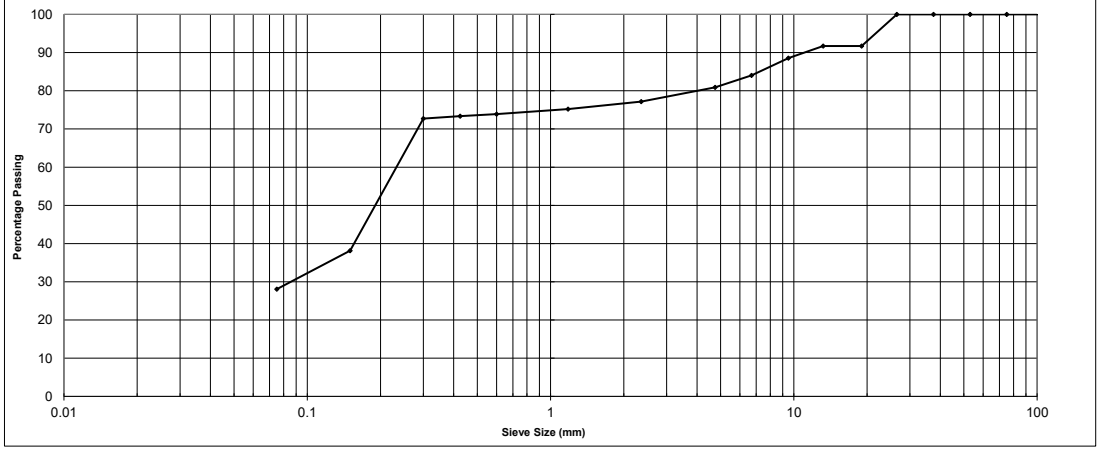
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 3 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701673**
ID No.:	5
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	7/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY w gravel
To Be Used As	Material Analysis
Sample Location :	- BH09 4.5 - 4.95m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	14.1
Liquid Limit (%) AS 1289.3.1.2	-
Plastic Limit (%) AS 1289.3.2.1	-
Plasticity Index AS 1289.3.3.1	-
Linear Shrinkage (%) AS 1289.3.4.1	-
Cracking, Curling, Crumbling (1,2,3)	
P.I. x % Passing 0.425mm	-
L.S. x % Passing 0.425mm	-
Ratio of % Passing (0.075/0.425)	0.38

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
					100	92	92	89	84	81	77	75	74	73	73	38	28

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC - Grading Specification:

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

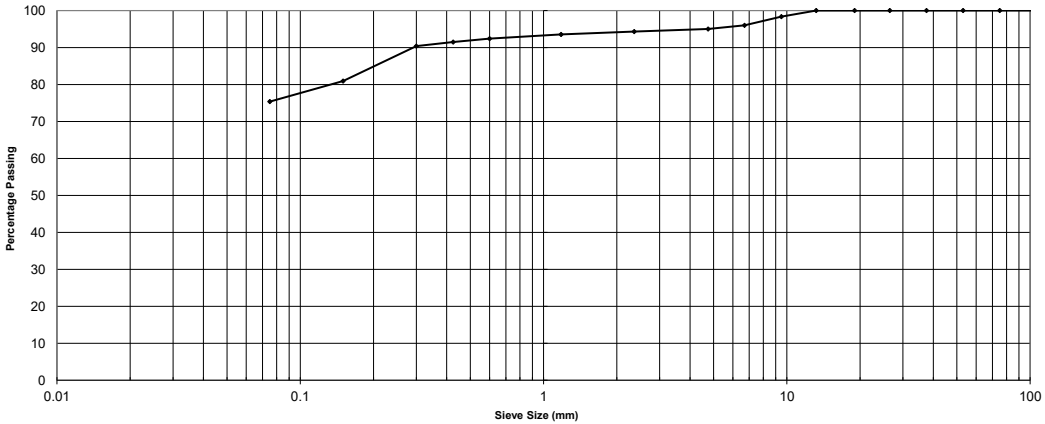
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 4 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701675**
ID No.:	7
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	6/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY
To Be Used As	Material Analysis
Sample Location :	- BH13 2.0 - 3.5m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	22.8
Liquid Limit (%) AS 1289.3.1.2	53
Plastic Limit (%) AS 1289.3.2.1	20
Plasticity Index AS 1289.3.3.1	33
Linear Shrinkage (%) AS 1289.3.4.1	12.0
Cracking, Curling, Crumbling (1,2,3)	2
P.I. x % Passing 0.425mm	3019
L.S. x % Passing 0.425mm	1098
Ratio of % Passing (0.075/0.425)	0.82

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
							100	98	96	95	94	94	92	91	90	81	75

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC: CH Grading Specification:

Remarks:

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

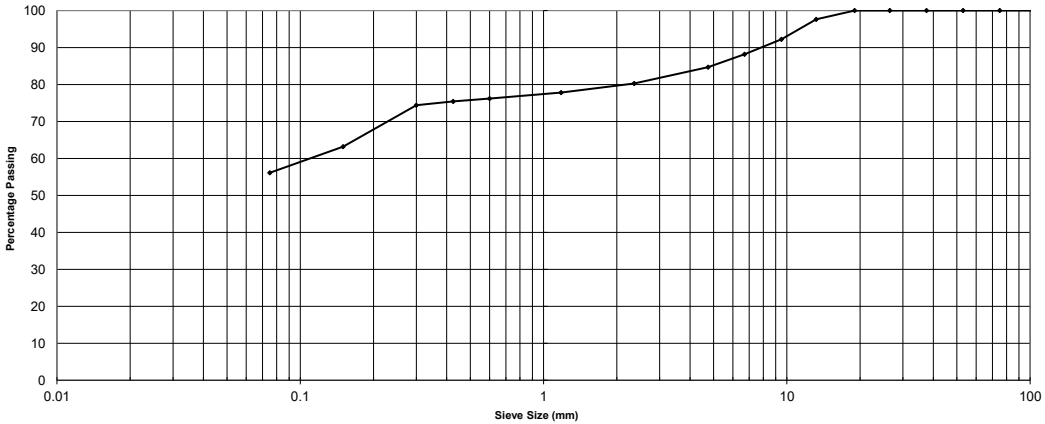
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 5 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701677**
ID No.:	9
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	3/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY
To Be Used As	Material Analysis
Sample Location :	- BH20 3.0 - 3.45m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	34.1
Liquid Limit (%) AS 1289.3.1.2	53
Plastic Limit (%) AS 1289.3.2.1	23
Plasticity Index AS 1289.3.3.1	30
Linear Shrinkage (%) AS 1289.3.4.1	12.0
Cracking, Curling, Crumbling (1,2,3)	2
P.I. x % Passing 0.425mm	2263
L.S. x % Passing 0.425mm	905
Ratio of % Passing (0.075/0.425)	0.74

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
						100	98	92	88	85	80	78	76	75	74	63	56

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC CH Grading Specification:

Remarks:

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

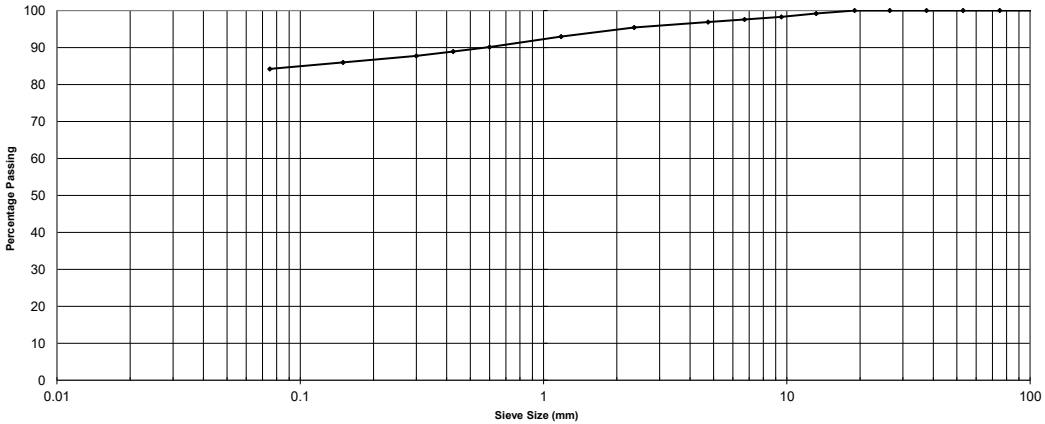
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 6 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701679**
ID No.:	11
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	3/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY
To Be Used As	Material Analysis
Sample Location :	- BH20 6.0 - 6.45m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	30.2
Liquid Limit (%) AS 1289.3.1.2	75
Plastic Limit (%) AS 1289.3.2.1	27
Plasticity Index AS 1289.3.3.1	48
Linear Shrinkage (%) AS 1289.3.4.1	15.0
Cracking, Curling, Crumbling (1,2,3)	1, 2
P.I. x % Passing 0.425mm	4268
L.S. x % Passing 0.425mm	1334
Ratio of % Passing (0.075/0.425)	0.95

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
						100	99	98	98	97	95	93	90	89	88	86	84

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC CH Grading Specification:

Remarks:

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

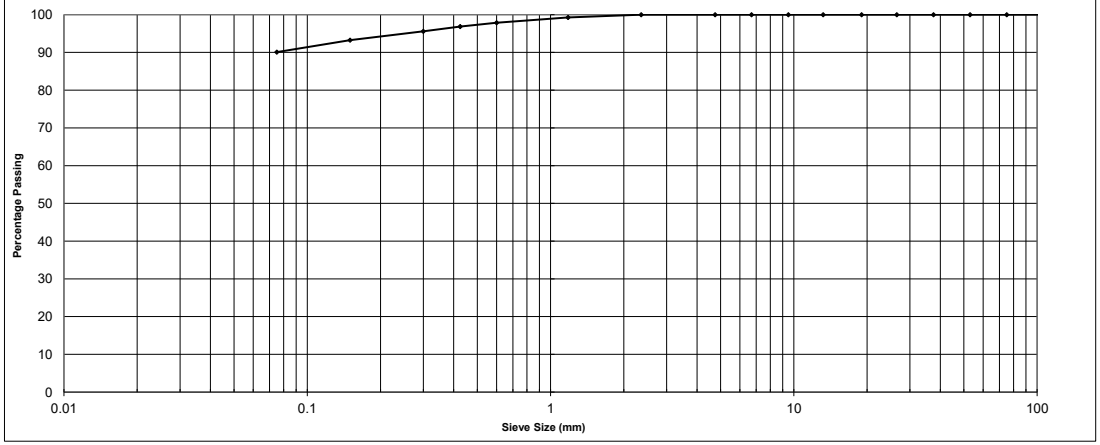
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 7 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701681**
ID No.:	13
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	3/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY w gravel
To Be Used As	Material Analysis
Sample Location :	- BH20 9.0 - 9.45m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	34.2
Liquid Limit (%) AS 1289.3.1.2	81
Plastic Limit (%) AS 1289.3.2.1	30
Plasticity Index AS 1289.3.3.1	51
Linear Shrinkage (%) AS 1289.3.4.1	19.5
Cracking, Curling, Crumbling (1,2,3)	2
P.I. x % Passing 0.425mm	4940
L.S. x % Passing 0.425mm	1889
Ratio of % Passing (0.075/0.425)	0.93

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
											100	99	98	97	96	93	90

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC CH Grading Specification:

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

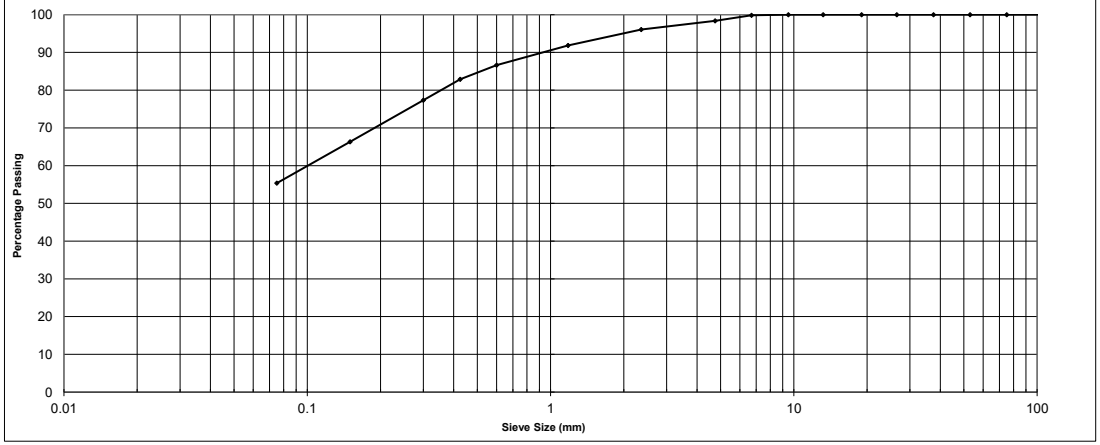
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 8 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701683**
ID No.:	15
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	6/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY w gravel
To Be Used As	Material Analysis
Sample Location :	- BH20 12.0 - 12.45m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	49.6
Liquid Limit (%) AS 1289.3.1.2	107
Plastic Limit (%) AS 1289.3.2.1	51
Plasticity Index AS 1289.3.3.1	56
Linear Shrinkage (%) AS 1289.3.4.1	20.0
Cracking, Curling, Crumbling (1,2,3)	1
P.I. x % Passing 0.425mm	4642
L.S. x % Passing 0.425mm	1658
Ratio of % Passing (0.075/0.425)	0.67

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
								100	100	98	96	92	87	83	77	66	55

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC MH Grading Specification:

Remarks:

Accredited for compliance with ISO/IEC 17025. The results of tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

APPROVED SIGNATORY

J Lamont

Form No: CG.329.002

Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

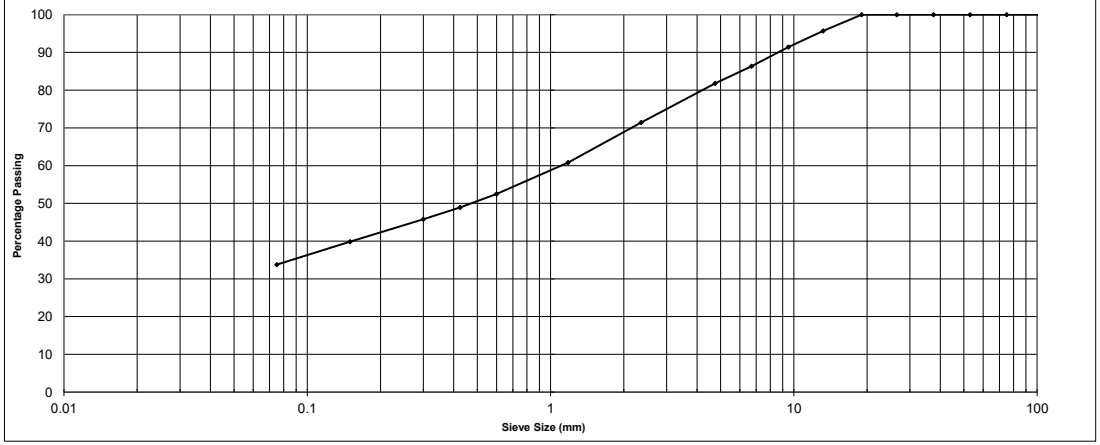
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 9 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701685**
ID No.:	17
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	7/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY w gravel
To Be Used As	Material Analysis
Sample Location :	- BH20 15.0 - 15.45m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	53.3
Liquid Limit (%) AS 1289.3.1.2	-
Plastic Limit (%) AS 1289.3.2.1	-
Plasticity Index AS 1289.3.3.1	-
Linear Shrinkage (%) AS 1289.3.4.1	-
Cracking, Curling, Crumbling (1,2,3)	
P.I. x % Passing 0.425mm	-
L.S. x % Passing 0.425mm	-
Ratio of % Passing (0.075/0.425)	0.69

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
						100	96	91	86	82	71	61	52	49	46	40	34

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC - Grading Specification:

Remarks:

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CHADWICK GEOTECHNICS

EMERSON CLASS NUMBER

Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **-2**
Report Date: 08/03/17
Request No: -
Test Method: AS 1289.3.8.1
Page: 1 of 2

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701671**	**1701676**	**1701678**	**1701680**	**1701682**
ID No.:	3	8	10	12	14
Lot No.:	-	-	-	-	-
Date Sampled:	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017
Time Sampled:	am/pm	am/pm	am/pm	am/pm	am/pm
Date Tested:	22/02/2017	22/02/2017	22/02/2017	22/02/2017	22/02/2017
Material Source:	Insitu	Insitu	Insitu	Insitu	Insitu
Material Description:	sandy CLAY	sandy CLAY	sandy CLAY	sandy CLAY w gravel	sandy CLAY w gravel
To Be Used As	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis
Sample Location :	- BH06 1.5 3.0m -	- BH20 1.5 - 1.95m -	- BH20 4.5 - 4.95m -	- BH20 7.5 - 7.95m -	- BH20 10.5 - 10.95m -
Layer Depth (mm):	-	-	-	-	-
Test Depth (mm):	-	-	-	-	-
Sampling Procedure:	by Client	by Client	by Client	by Client	by Client
Distilled Water:	✓	✓	✓	✓	✓
Reservoir Water:					
Water Temperature:	22 ° C	20 ° C	20 ° C	20 ° C	21 ° C
Air Dried Crumbs:					
Start Time:	2:44pm	8:30am	8:31am	8:30am	8:30am
Time Dispersion Commences:	N/A	N/A	N/A	8:35am	8:35am
Time Dispersion Completed:	N/A	N/A	N/A	11:00am	11:00am
Remoulded Material:					
Start Time:	3:18pm	9:05am	9:00am		
Time Dispersion Commences:	N/A	N/A	N/A		
Time Dispersion Completed:	N/A	N/A	N/A		
Immersion of Air Dried Crumbs:					
Slakes:	✓	✓	✓	✓	✓
Swell:					
Complete Dispersion:					
Partial Dispersion:				✓	✓
Immersion of Remoulded Material:					
Disperses:					
Calcite or Gypsum:					
Present:					
Vigorous Shaking:					
Disperses:		✓	✓		
Flocculates:	✓				
Emerson Class Number:	**6**	**5**	**5**	**2**	**2**

Remarks: **None**

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APPROVED SIGNATORY
J Lamont

Form No.: **CG.313.001**
Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

EMERSON CLASS NUMBER

Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **-2**
Report Date: 08/03/17
Request No: -
Test Method: AS 1289.3.8.1
Page: 2 of 2

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701684**				
ID No.:	16				
Lot No.:	-				
Date Sampled:	10 - 20/01/2017				
Time Sampled:	am/pm				
Date Tested:	22/02/2017				
Material Source:	Insitu				
Material Description:	sandy CLAY w gravel				
To Be Used As	Material Analysis				
Sample Location :	- BH20 13.5 - 13.95m -				
Layer Depth (mm):	-				
Test Depth (mm):	-				
Sampling Procedure:	by Client				
Distilled Water:	✓				
Reservoir Water:					
Water Temperature:	20 ° C				
Air Dried Crumbs:					
Start Time:	8:31am				
Time Dispersion Commences:	8:36am				
Time Dispersion Completed:	11:00am				
Remoulded Material:					
Start Time:					
Time Dispersion Commences:					
Time Dispersion Completed:					
Immersion of Air Dried Crumbs:					
Slakes:	✓				
Swell:					
Complete Dispersion:					
Partial Dispersion:	✓				
Immersion of Remoulded Material:					
Disperses:					
Calcite or Gypsum:					
Present:					
Vigorous Shaking:					
Disperses:					
Flocculates:					
Emerson Class Number:	**2**				

Remarks: **None**

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APPROVED SIGNATORY
J Lamont

Form No.: **CG.313.001**
Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

CALIFORNIA BEARING RATIO REPORT

Customer: Tonkin + Taylor Pty Ltd
Report Number: **1001967 - 3**
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Report Date: 08/03/17
Project: Mt Eliza Village
CG Request No: -
Location: Mt Eliza
Test Method: AS 1289.6.1.1
Customer Order No.: 1001289.1
Page: 1 of 1

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701671**	**1701675**			
ID No.:	3	7			
Lot No.:	-	-			
Date Sampled:	10 - 20/01/2017	10 - 20/01/2017			
Time Sampled:	am/pm	am/pm			
Date Tested:	6/03/2017	6/03/2017			
Material Source:	Insitu	Insitu			
Material Description:	sandy CLAY	sandy CLAY			
To Be Used As:	Material Analysis	Material Analysis			
Sample Location :	- BH06 1.5 3.0m -	- BH13 2.0 - 3.5m -			
Layer Depth (mm):	-	-			
Sampling Procedure:	by Client	by Client			
MDD (t/m3) AS1289.5.1.1 :	1.84	1.70			
OMC (%) AS1289.5.1.1 :	17.5	22.5			
Compactive Effort :	Standard	Standard			
Nominated % MDD Compaction :	98	98			
Nominated % OMC Compaction :	100	100			
Achieved Density Ratio (%) :	98	98			
Achieved Moisture Ratio (%) :	98	98			
Test Condition (Soaked/Unsoaked) :	Soaked	Soaked			
Test Condition Soaking Period (Days) :	4	4			
Swell (%)	0.0	1.5			
Surcharge (kg) :	4.5	4.5			
Achieved Dry Density before Soak (t/m^3) :	1.81	1.67			
Dry Density after Soak (t/m^3) :	1.80	1.65			
Density Ratio after Soak (%) :	98	97			
Moisture Content AS1289.2.1.1					
Initial Moisture Content (%):	17.8	22.8			
Achieved Moisture Content (%) :	17.2	21.9			
Moisture Content after Soak (%) :	19.2	24.0			
Moisture Content (Top) after Penetration (%) :	18.3	24.5			
% retained on 19mm:	0	0			
CBR Penetration (mm) :	5	2.5			
CBR Value (%) :	**6**	**2.0**			

Remarks: **All oversize was excluded**
If the specimen was soaked, then an additional 1kg surcharge weight was added at the penetration stage as per AS1289.6.1.1 8(a)

ilac-MRA NATA

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APPROVED SIGNATORY
J Lamont

Form No.: **CG.304.004**
Issue Date: 19/02/2015

www.tonkintaylor.com.au

60-70 KUNYUNG ROAD, MT ELIZA

LANDSCAPE AND VISUAL IMPACT ASSESSMENT

18TH NOVEMBER 2021
MA11393
FINAL REPORT

URBIS

URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

Director	Peter Haack
Lead Visual Technologies Consultant	Ashley Poon
Project Code	MA11393
Report Number	20211118_60-70 Kunyung Rd_LVIA

TABLE OF CONTENTS

INTRODUCTION

Ryman Healthcare (Australia) Pty Ltd has submitted a planning permit application for the development of a Residential Aged Care Facility and Retirement Village, in association with a Place of Worship (the Project), on a 8.943 hectare (ha) site 60-70 Kunyung Road, Mt Eliza (the subject site), which is located on the Port Phillip Bay side of the Mornington Peninsula, approximately 42 kilometres (km) southeast of Melbourne (***Figure 1***).

The Project includes the retention and restoration of key heritage assets and demolition of most of the existing structures and the subsequent construction of seven buildings ranging in height from one to four storeys.

This report has been prepared by Urbis Pty Ltd (Urbis) to provide a landscape and visual impact assessment (LVIA) in response to a Request for Information (RFI) to support the Development Application (DA)

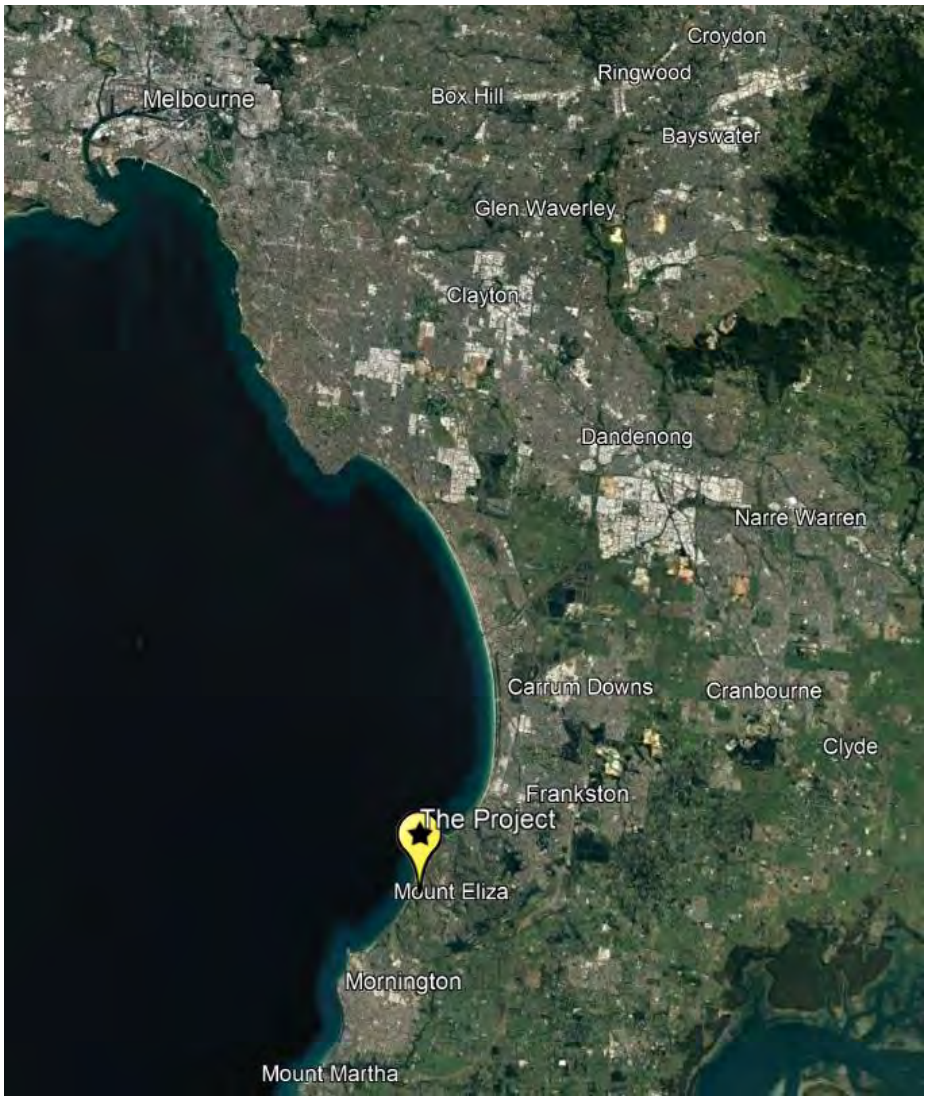

Figure 1 – Project location (Source: Google Earth).

1. APPROACH

While there are no specific legislative requirements for the methodology of an assessment such as this in Victoria, the profession typically refers to the guidance offered by:

- Guidance for Landscape and Visual Impact Assessment (GLVIA), Third Edition, Landscape Institute and Institute of Environmental Management & Assessment (2013).

The methodology used for this Project is described below and conforms generally to the direction offered by the above guidelines as well as other proven assessment methodologies.

This preliminary assessment report assesses the landscape and visual impact of the Project, that is the day-to-day visual effects on people's views.

The method to measure visual impacts is based on the combination of the sensitivity of viewers to the proposed change and the magnitude of the Project on that visual setting or view.

The following study components were included as part of this assessment:

- Review the Project with regards to potential visual impacts.
- Characterisation of the existing landscape and visual setting.
- Qualitatively assess:
  - Visual modification at key viewpoints – How would the Project contrast with the landscape character of the surrounding setting?
  - Visual sensitivity at key viewpoints – How sensitive would viewers be to the Project?
- Propose visual impact mitigation and management measures, if required.

1.1. ASSESSMENT OF LANDSCAPE AND VISUAL IMPACTS

The landscape and visual impact assessment is based on a detailed analysis of the landscape and visual setting and an assessment of the potential impacts of the Project on its viewshed.

The critical issues considered for this LVIA were:

- The number and location of highly sensitive viewing locations;
- The duration of the view – either static (generally long term - > 1 hour) and mobile (generally short term continually moving and static for no longer than 5 minutes);
- The degree to which the proposed works would be visible;
- The quality of the landscape setting; and
- The degree to which the Project contrasts or is compatible with the visual character of the setting – the visual modification level.

The assessment method assumed that if the Project would not be seen, there is no impact.

Level of Visual Impact N/A = Not Apparent, VL = Very Low, L = Low, M = Moderate, H = High		Viewer Sensitivity		
		H	M	L
Level of Visual Modification	H	H	H	M
	M	H	M	L
	L	M	L	L
	VL	L	VL	VL
	N/A	N/A	N/A	N/A

Table 1 – Visual Impact Matrix.

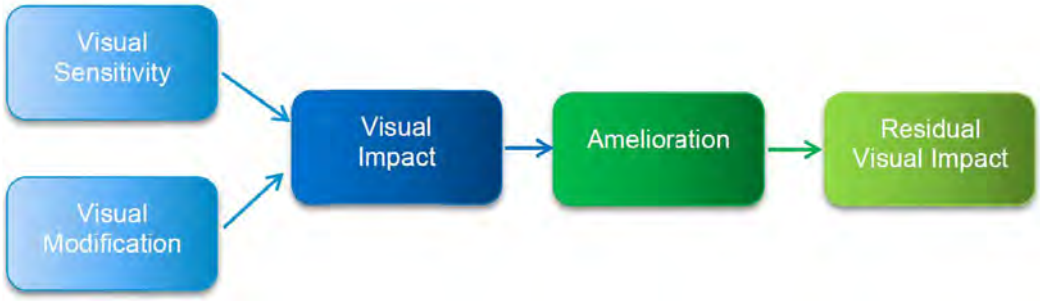

Diagram 1 – Visual assessment process.

1.1.1. Visual sensitivity

In this report, the approach to the visual sensitivity is consistent with the visual management system (United States Department of Agriculture Forest Service, 1995), Landscape Aesthetics – A Handbook for Scenery Management, Agricultural Handbook No. 701.

The visual sensitivity of development depends on a range of viewer characteristics. The primary characteristics used in this report include:

- Land use;
- Distance of the development from viewers; and
- Visibility from sensitive land use areas.

Visual sensitivity is a measure of how critically a change to the existing environment would be viewed from various land uses (refer to ***Table 2***). Different activities have different sensitivity levels. For example, tourists on holiday would generally view changes to a landscape more critically than industrial workers in the same area. Similarly, individuals would view changes to the visual setting of their homes more critically than changes to the broader area in which they travel or work.

The next critical component to rating the visual sensitivity is the distance of the development from the identified visual use area. There are three viewing situations to consider within the suburban setting:

- foreground (0 - .0.5 km);
- middleground (0.5 km – 2 km); and

- background (> 2 km).

As the distance increases from a proposed development to a sensitive land use area, the level of viewer sensitivity decreases based on a perceptual dis-association based on a reduction in relative proximity.

VISUAL USE AREA	FOREGROUND		MIDDLEGROUND		BACKGROUND
	Local Setting		Sub–Regional Setting		Regional Setting
	0 – 0.25 km	0.25 – 0.5 km	0.5 – 1 km	1 – 2 km	> 2 km
Residences/Townships	H	H	H	M	L
Coastal Reserves	H	H	H	M	L
Tourist/Recreation Areas	H	M	M	L	L
Highways/Tourist Routes	H	M	M	L	L
Offshore Coastal Areas	M	M	M	L	L
Education	M	M	L	L	VL
Secondary Roads	M	M	L	L	VL
Local Roads	L	L	L	VL	VL
Agricultural Areas	L	L	L	VL	VL
Legend - H = High, M = Moderate, L = Low, VL = Very Low					

Table 2 – Typical viewer (visual) sensitivity.

1.1.2. Visual modification to the existing setting

The level of visual modification resulting to a setting from a proposed development, or the degree to which the setting is modified, can be best measured as an expression of the visual interaction, or the level of visual contrast between the project and the existing visual environment.

A high level of magnitude, or a high degree of visual modification, will result if the major components of the project contrast strongly with the existing landscape.

A low level of magnitude, or a low degree of visual modification, will occur if there is little or minimal visual contrast and a high level of integration of form, line, shape, pattern, colour or texture values between the proposed development and the environment in which it sits. In this situation, the proposed development may be noticeable, but does not markedly contrast with the existing, already modified landscape.

If a project is barely discernible or not visible, it is considered visually not apparent in views of the setting.

The degree of magnitude or modification would generally decrease as the distance from the Project to various viewing locations increases.

In the context of the Proposal proximate to an existing developed suburban setting, a key consideration will be the degree to which the Project contrasts or assimilate within the existing urban setting.

1.1.3. Amelioration

The negative influences of a project on its setting can be ameliorated through a range of measures. Some of these, such as changes to a designs massing or colour, will have an immediate effect. Landscape measures are highly effective but are not immediate, often taking a number of years to reduce the level of impact.

With regards to built-form siting and design, of particular relevance is Siting and Design Guidelines for Structures on the Victorian Coast (2020).

The assessment of initial visual impact assumes that best practice siting and design, as well as materiality and colour selection, has been incorporated into the design, as these are immediately apparent in views. Longer term ameliorative actions, such as planting, are only considered in the assessment of residual impact.

1.1.4. Residual impact

The effectiveness of the landscape measures proposed in mitigating the landscape and visual impacts resulting from the Project are demonstrated by comparing the visual impact during initial operation with the residual impact when the proposed landscape measures have mostly matured, which is typically ten (10) years following initial establishment.

Generally, residual impacts would be reduced by at least on level where landscape measures have been proposed and matured due to filtering or inhibiting views to the Project.

1.2. LIMITATIONS OF THE ASSESSMENT

There are the following limitations associated with this assessment:

- The LVIA process aims to be objective and, as such, seeks to describe any changes factually. Potential changes resulting from the project have been defined. However, the significance of these changes requires qualitative (subjective) judgements to be made. Therefore, the conclusions to this assessment combine both objective measurement and subjective professional interpretation. This assessment has attempted to be objective, however it is recognised that visual assessment can be subjective and that individuals are likely to experience different visual experiences to the project and the landscape of the broader study area.
- The LVIA does not critique the architectural merit of the Project. However, it does consider scale and massing, colour, contrast and basic articulation of form.

2. SITE CONTEXT AND APPRAISAL

2.1. SITE CONTEXT

The Project is located on the site of the former Melbourne Business School, approximately 800 metres (m) to the north of the Nepean Highway. The subject site extends to the foreshore of Port Phillip Bay at Moondah Beach.

The Mt Eliza town centre is located approximately 1.3 km to the east and the Mornington town centre approximately 4.6 km to the southwest (refer to ***Figure 2***).

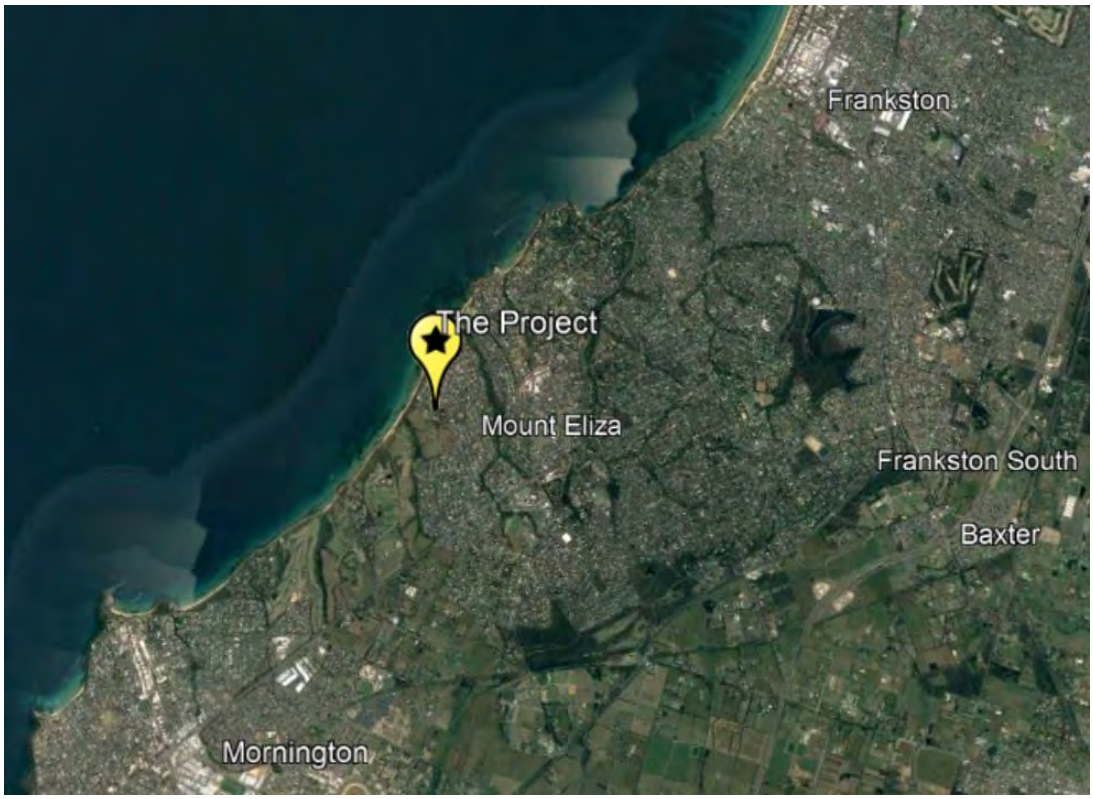

Figure 2 – Project context (Source: Google Earth).

2.2. LAND USE AND ZONING

2.2.1. Land use

The subject site is currently comprised of a number of significant heritage buildings, Moondah Mansion and Moondah Gatehouse, with infill buildings relating to its more recent educational use.

Residential uses and the Kunyung Primary School adjoin the subject site to the north and east, with predominately open grazing land to the south and west.

The coastal zone to the west of the Project provides for recreational activities, albeit at a lower level of use than the areas adjacent to the townships or main roads.

2.2.2. Local Planning Policy Framework

Mornington Peninsula Shire's Municipal Strategic Statement (MSS) and Local Planning Policy Framework (LPPF) build on the broader policy directions provided by the State Planning Policy Framework.

Of relevance to landscape and visual matters, are:

- Clause 21.08 'Foreshores and Coastal Areas' recognises that Peninsula's coastal and foreshore areas are a major tourism and recreational resource, but care is needed to ensure they aren't overused. The policy seeks to protect and enhance the natural ecosystems and landscapes of the coast and achieve coordinated development of public and private facilities for the benefit and enjoyment of present and future generations.
- Clause 22.04 'Heritage Places and Abutting Land' seeks to conserve and appropriately manage identified heritage places by ensuring development respects the heritage values of the place.

2.2.3. Zoning

The Project is located within the Mornington Peninsula Shire Council and zoned Special Use Zone Schedule 3 (SUZ3) within the local planning scheme (refer to ***Figure 3***).

Land immediately adjoining to the south is zoned Green Wedge Zone Schedule 3 (GWZ3)

The coastal strip to the west of the subject site is zoned Public Conservation and Resource Zone (PCRZ).

A number of overlays exist over the subject site. Although not directly related to landscape and visual values, they provide objective for components of the setting which contribute to the landscape and built-form character. These are:

- Heritage Overlay Schedule 110 (HO110); and
- Heritage Overlay Schedule 111 (HO111).

Additionally, a number of Environmental Significance Overlays exist for adjoining land and, while not directly related to the development of the site or landscape or visual values, they can include contributing elements and provide an understanding of the objectives for the adjoining land. These are:

- Environmental Significance Overlay Schedule 1 (ESO1): and
- Environmental Significance Overlay Schedule 25 (ESO25).

2.2.4. Purpose of HO110 and HO111

The landscape character related objectives of HO110 and HO111 are (refer to ***Figure 4***):

- To conserve and enhance heritage places of natural or cultural significance.
- To conserve and enhance those elements which contribute to the significance of heritage places.
- To ensure that development does not adversely affect the significance of heritage places.
- To conserve specified heritage places by allowing a use that would otherwise be prohibited if this will demonstrably assist with the conservation of the significance of the heritage place.

While HO110 relates to the entire subject site, HO111 relates to the Moondah Gatehouse.

2.2.5. Purpose of ESO1

- The visual and landscape character related objectives to be achieved are (refer to ***Figure 5)***:
- To ensure that subdivision and development density is compatible with maintaining the long term natural, agricultural and landscape values of this area;
- To promote siting and design of buildings and works which is responsive to the open rural landscape character and vistas of the Moorooduc Plain and the contrasting visual character of the Balcombe Valley and Mt Eliza escarpment, and that maintains the scenic value of roads and recreation routes;
- To protect the landscape values of the area, especially west of Moorooduc Road or north of Baxter Tooradin Road, Moorooduc.

2.2.6. Purpose of ESO25

The visual and landscape character related objectives to be achieved (refer to ***Figure 6***):

- To protect and enhance the natural features, vegetation, ecological diversity, landscape quality, heritage values and recreation opportunities of the Port Phillip Bay coastal area and associated intertidal and marine habitats; and
- To promote excellence in design of buildings, facilities and structures in the coastal area.

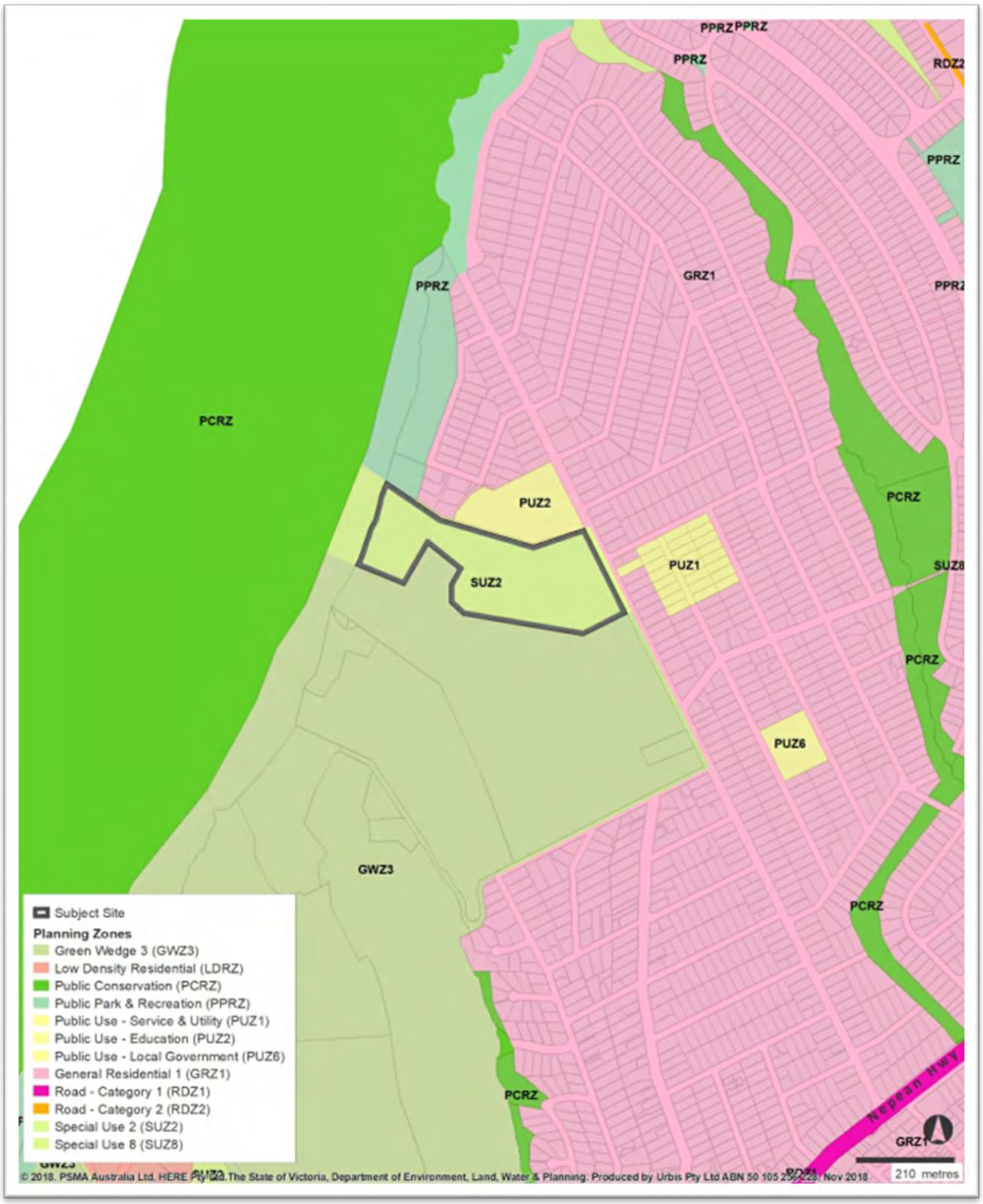

Figure 3 – Planning zones.

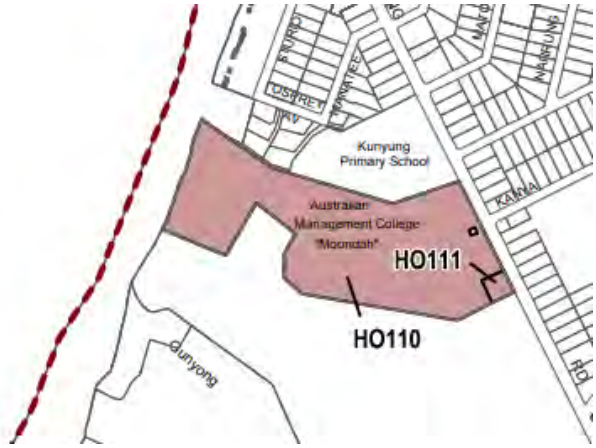

Figure 4 – Planning overlay zone - 110 and 111.

Figure 5 – Planning overlay zone – ESO1.

Figure 6 – Planning overlay zone – ESO25.

2.3. EXISTING VEGETATION AND LANDSCAPE FORM

The subject site is located on the western flank of a north to south aligned ridgeline which separates Earimil Creek, to the east, and Gunyong Creek, to the west (refer to ***Figure 7***).

The subject site rises steeply from sea level at the Port Phillip Bay coastline, initially up to approximately 30 m in elevation at the top of the escarpment, before rising more gradually up to approximately 71 m at its south-eastern corner adjoining Kunyung Road. The ridgeline continues to increase in elevation to a height of approximately 103 m at the point at which it intersects the Nepean Highway.

Both Gunyong and Earimil Creek are densely tree-lined and sit within moderately incised gullies, with Earimil Creek and its associated open space reserve bisecting the Mt Eliza residential area and Gunyong Creek traversing open pasture.

The face of the coastal escarpment is densely vegetated with primarily indigenous species (refer to ***Figure 8***). The dense vegetation abruptly transitions to cleared pasture to the inland side of the break in slope.

Moondah Beach is accessed via a track from the central car parking area within the subject site. The coastal escarpment results in the beach being visually compartmentalised from development on areas inland. Earimil Reserve is located on the foreshore immediately to the north of the beach adjacent to the subject site (refer to ***Figure 8***).

The pasture area to the south and west of the Subject Site has a rectilinear pattern of windrows, comprised primarily of Eucalypts and coniferous species, along roads and paddock boundaries (refer to ***Figure 9***).

The residential area adjacent to the subject site, extending northeast from Kunyung Road, is mostly densely vegetated with a mixture of native and exotic species, with the canopy predominantly comprised of small to medium sized trees (refer to ***Figure 10***).

The subject site comprises mature vegetation, transitioning from taller and denser Eucalypts and coniferous species along Kunyung Road, to lower and less dense exotic and native species lining internal roads and boundaries and scattered in spaces between buildings (refer to ***Figure 11***).

Figure 7 – Setting of the subject site (Source: Google Earth).

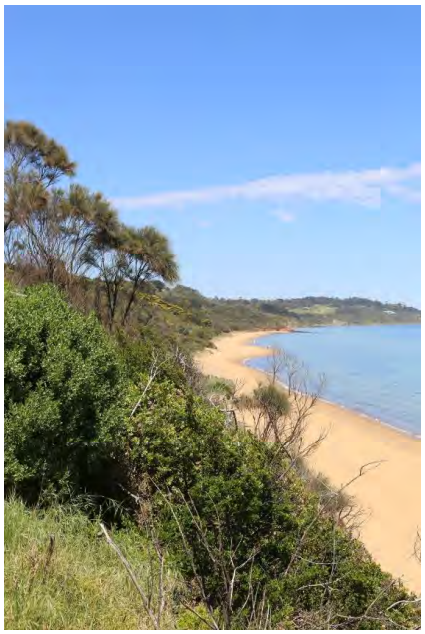

Figure 8 - View over Moondah Beach and the densely vegetated coastal escarpment of the subject site.

Figure 9 - View north from Albatross Avenue over open pasture with distant windrow vegetation.

Figure 10 - Vegetated residential interface east of Kunyung Road (Source: Google Earth).

Figure 11 - Vegetation cover on the subject site (Source: Google Earth).

2.4. EXISTING BUILT FORM

The built form of adjacent residential area is comprised of freestanding, single to double storey dwellings (refer to ***Figure 12***)

Kunyung Primary School is comprised of a number of single storey buildings with large footprints, stepping down the slope from Kunyung Road, with a playing field downslope on the lowest part of the school site (refer to ***Figure 13***).

To the north of the Project area, a number of large, light-coloured, double storey contemporary residences are located along the top of the coastal escarpment, designed and oriented to take advantage of the view to Port Phillip Bay (refer to ***Figure 14***).

The existing buildings on the subject site step down the slope are well integrated within the existing vegetation. The majority of buildings are located in a cluster, well away from Kunyung Road and to the west of the primary school and not readily visible from Kunyung Road (refer to ***Figure 15***).

The most historically significant buildings on the subject site are Moondah Gatehouse and Moondah Mansion. The castellated Moondah Gatehouse is the most prominent element of the existing development visible from Kunyung Road, with the remainder of the buildings set away from the road, with vegetation providing varying degrees of screening of them (refer to ***Figure 16***).

Moondah Mansion, a double storey building in the Italian Renaissance Revival style, is located near the centre of the subject site (refer to ***Figure 17***). Subsequent single and double storey wings have been added to the manor over time. The main cluster of buildings have been designed and sited to take advantage of views to the bay.

Moondah Mansion has an interesting visual relationship with Norman Lodge (1862), located on a prominent rise approximately 800 m to the southwest. Views between them are possible over the Gunyong Creek valley.

Figure 12 - Residences on Kunyung Road north of the subject site (Source: Google Streetview).

Figure 13 - Kunyung Primary School as viewed from Kunyung Road.

Figure 14 - Residence at 8 Osprey Avenue, northwest of the subject site.

Figure 15 – Existing site and buildings (Source: Ryman Healthcare).

Figure 16 – The castellated Moondah Gatehouse is a significant element within the streetscape of Kunyung Road.

Figure 17 – Moondah Mansion, built in the Italian Renaissance Revival style, is the focal point within the subject site.

3. COMPONENTS OF THE PROJECT

3.1. KEY FEATURES

As illustrated in ***Figure 18***, the Project primarily involves the development of an aged care facility and retirement village, in association with a Place of Worship, on an 8.943 ha property. The works and components associated with the Project include:

- Site clearing and preparation, including the removal of approximately 156 trees, of which 104 were classified as being of low worthiness of retention (WOR).
- The retention of the Moondah Gatehouse and Moondah Mansion.
- A total of seven buildings comprising:
  - 1 existing Moondah Mansion with B03 extension.
  - 5 new buildings (B01, B02, B04, B05 and B06).
  - 1 new Place of Worship.
- New site entrances and access driveways.
- 347 car parking spaces.
- 3 external illuminated business identification signs at vehicular access points and central pedestrian access points on Kunyung Road.
- A bowling green.
- Entry walls and gates to Kunyung Road with a 1.8 m high black palisade style fence to all boundaries.
- The establishment of landscaping.

3.2. DETAIL OF PROJECT COMPONENTS

As previously mentioned, Moondah Mansion will be retained and restored. The later twentieth century additions will be demolished and replaced with new building wings varying in height from one to four storeys, which will extend from the mansion to the north and east.

New standalone buildings of two to four storeys will be located to the east between the mansion and Kunyung Road. One new standalone building of two to three storeys, will be located to the northwest of the mansion.

The proposed Place of Worship will be located centrally within the development. It will vary in height between approximately 5.5 m to 10.19 m above natural ground level (NGL).

Apart from the central cluster adjoining Moondah mansion, the other buildings are arranged “campus style” within a landscaped setting, taking advantage of retained tall canopy trees.

The built-form is well articulated vertically and horizontally, resulting in an apparent reduction in massing.

The proposed buildings step down the hill, with each varying in height, and associated number of levels, to suit the fall in topography (refer to ***Figure 19*** and ***20***).

The new buildings around the mansion are effectively a replacement of the demolished existing buildings on a similar footprint. The new buildings between the mansion and Kunyung Road are effectively a southward extension of the massing of the primary school, albeit with a higher degree of articulation.

Materials with be natural and muted and non-reflective wherever possible (refer to ***Section 6.3***).

Of the trees to be removed, most are located centrally within the site with few being located along property boundaries (refer to ***Figure 21*** and ***22***).

The proposed landscape response is comprised of a predominately informal native garden with pockets of formal garden surrounding Moondah Mansion and the proposed chapel (refer to ***Figure 23***).

A key design feature includes the drainage line running through the centre of the site, which could be designed as a semi-naturalised feature watercourse, similar to that in the Fitzroy Gardens.

The landscape is terraced to accommodate grading between buildings and carparks and includes a path system for easy access.

Buffer planting is proposed to all boundaries and the Sugar Gums along the Kunyung Road frontage are to be retained.

Over time as the landscape establishes, it will create a visually interesting landscape character which will provide additional screening of views to the new components of the Project.

Figure 18 – Building storey plan – proposed development (Source: Ryman Healthcare).

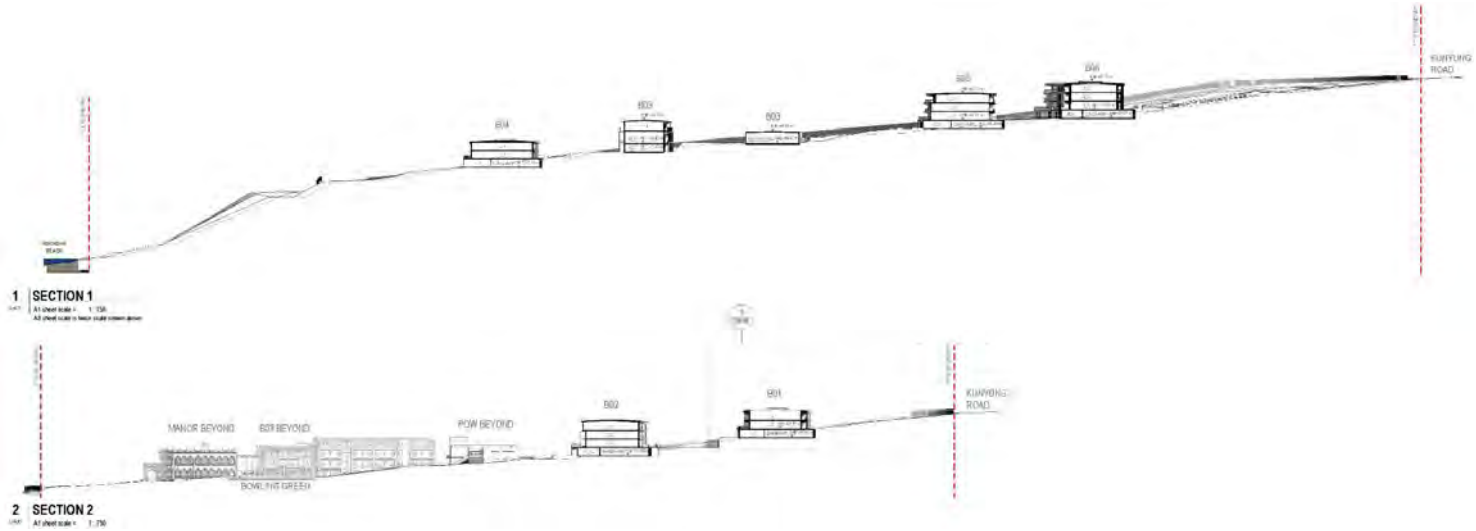

Figure 19 – East – West sections (Source: Ryman Healthcare).

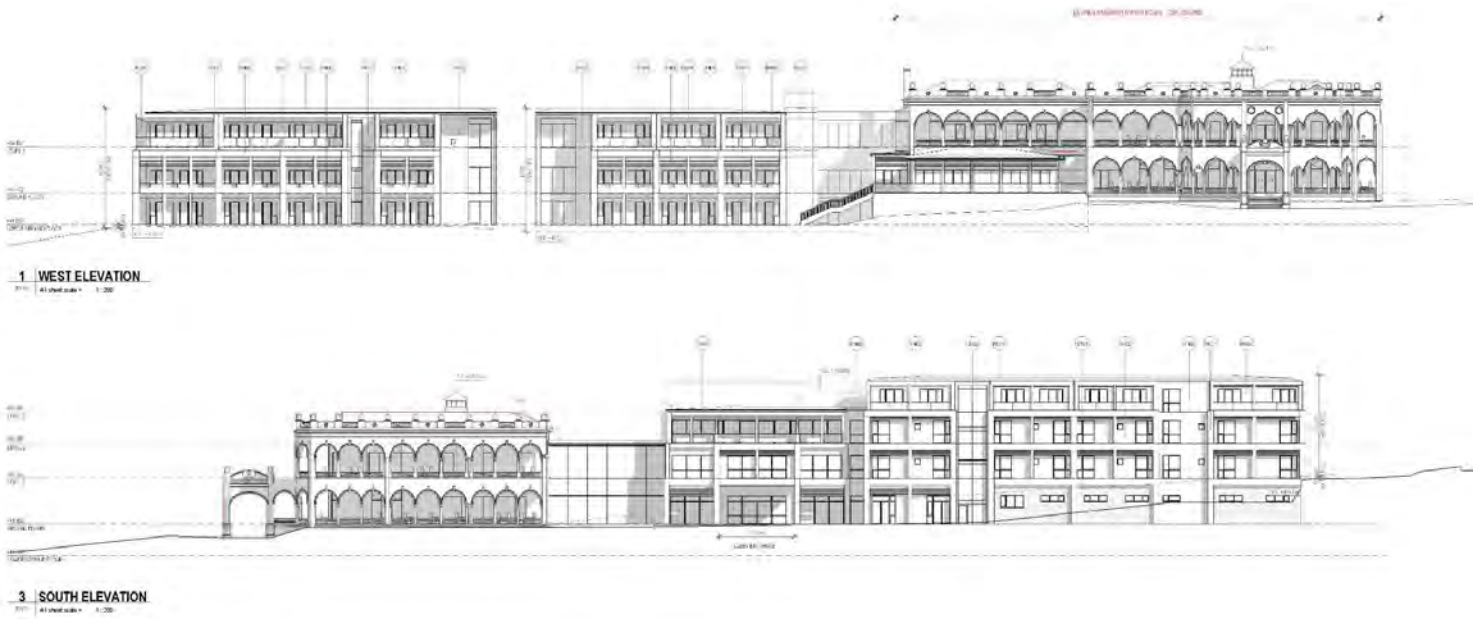

Figure 20 – West and South elevations (Source: Ryman Healthcare).

Figure 21 – Trees to be removed (Source: Ryman Healthcare).

22 COMPONENTS OF THE PROJECT

URBIS

Figure 22 – Trees to be retained (Source: Ryman Healthcare).

Figure 23 – Project Landscape Concept Plan (Source: Urbis)

4. LANDSCAPE IMPACTS

4.1. LANDSCAPE CHARACTER TYPE

4.1.1. Natural and Agricultural areas

Landscape character is the relationship between geology, topography, vegetation, water bodies and other natural features, combined with the effects of land use and built form, where present. Assessing the landscape character of an area provides the basis for understanding the features and views that are important and how different types of development sit within the landscape.

Leonard and Hammond (1984) [1] defines principles of what constitutes landscape and scenic quality. Scenic quality is somewhat subjective, but typically is a combination of a range of factors that have been found to contribute to the human appreciation of landscape. These factors are:

- Topographic variation and ruggedness;
- Strong patterning of vegetation; and
- The presence of water.

Agricultural landscapes are particularly subject to divergent opinions as to what constitutes scenic values. However, basic principles relating to diversity of topography, patterning of vegetation and the presence of water remain contributing factors to a higher level of scenic quality.

Within the regional setting of the Project the landscape character type of non-urban areas has been identified using the classification system devised by Leonard and Hammond. The landscape character types are described below:

Coastline

The landscape type is extensive, extending for approximately 1,200 km from Mallacoota in the east to the Nelson in the west. The landscape type comprises a zone of varying width that reflects the extent of penetration of marine influence. It includes landforms that varying from shallow dune systems to dramatic rocky headlands.

Agricultural

The landscape type of the Green Wedge area to the south and southwest of the Subject Site is comprised of clearings between roadside windrows with dense vegetation lining Gunyong Creek and smaller areas of trees scattered throughout the strongly patterned areas of open pasture.

4.1.2. Urban Areas

For the definition of urban landscape character types, guidance is provided by Council's Neighbourhood Character Study [2] which defines the adjacent residential areas as (refer to ***Figure 24***):

Garden Residential 1

The preferred character statement for Garden Residential 1 is:

New development is consistent with the predominantly small scale dwellings of 1-2 storeys, using simple building and pitched roof forms with eaves.

Consistent front and side setbacks create a sense of openness, and space around dwellings. Formal garden settings are enhanced by canopy trees, bushes, shrubs and garden beds.

Absent, or low and permeable front fences allow for views through to dwellings and front garden areas with little separation between public and private realm, creating an open streetscape.

[1] Leonard, M., Hammond, R., (1984). Landscape Character Types of Victoria.
[2] Mornington Peninsula Neighbourhood Character Study and Guidelines (2019).

Bush Coastal Contemporary 2.

The preferred character statement for Garden Residential 1 is:

New development reflects the larger scale of existing dwellings, using contemporary façade articulation and a consistent palette of muted or natural materials. Generous front and side setbacks are provided to allow for the increased planting of native vegetation.

New development retains public views to the water and makes reasonable effort to ensure view sharing between neighbouring properties.

Front fencing is often solid, but incorporates permeable elements or vegetation to soften the appearance.

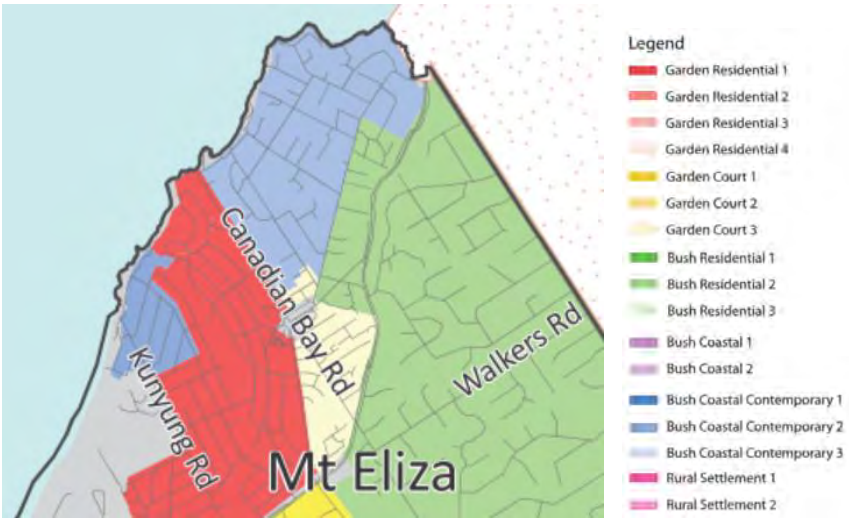

Figure 24 – Neighbourhood Character Precincts.

4.2. SCENIC QUALITY

The scenic quality of the landscape character types of the Project area and its surrounds, as described by Leonard and Hammond, is outlined below in ***Table 3***.

COASTLINE	
Description	**Moderate to High Scenic Quality**
Landforms	▪ Irregular coast edges with steep cliffs and sandy beaches. ▪ Visually distinctive dissected steeper slopes interspersed with rounded hills and ridges and peaks which are not as visually dominant. ▪ Broad slopes which may be steep but stable, with broad valleys that are occasionally defined by adjacent landforms.
Vegetation	▪ Predominately forest, woodland or scrub cover, combined with natural openings and streamside vegetation that offers some visual relief.
Waterforms	▪ Irregular ocean shoreline character and motion characteristics. ▪ Occasional streams present.

AGRICULTURAL	
Description	**Moderate Scenic Quality**
Pattern	▪ Variation in vegetative pattern created by landscape uses evident. ▪ Patchwork effects of colour, texture and form evident over relatively small rural properties.
Transition	▪ Transition between agricultural uses as well as wooded areas include gradual and sharp edge contrast, but seldom occurring as unbroken straight lines.
Structure	▪ Buildings rarely borrow from the landscape character and contrast with the character of the setting.
Roadside	▪ Expanses of roadside vegetation are similar in spacing form and character throughout the broader landscape setting type, which create moderate visual interest.

Table 3 - Scenic quality of the landscape character types

4.3. ABSORPTIVE CABABILITY

The definition of landscape absorptive quality is closely related to that of visual modification levels. It is generally applied at a broader scale than visual modification and is an assessment of how well a landscape setting is able to accommodate change or a development.

The key factors considered in determining absorptive capability are topography and vegetation. In areas of flatter topography, overlooking is not possible and a low and thin band of vegetation is able to screen views to a development from a given viewpoint. In areas of undulating or elevated topography, overlooking can occur and vegetation needs to be higher and denser to achieve effective screening. However, intervening undulating topography also has the potential to block views in certain landscapes.

The topography of the setting of the Project is regular, with variation and steepness of slopes increasing with proximity to the coast.

Vegetation patterning is irregular but is typically dense along property boundaries roads and along water courses. Larger blocks of vegetation are also scattered throughout the broader landscape.

Within this landscape, overlooking is possible from elevated locations devoid of vegetation. However, where present, even relatively low vegetation (up to eye-height) is effective at screening views.

The abrupt rise within the landform from the coastline results in views being compartmentalised from foreshore areas, which is particularly effective given the form and scale of the Project and the distance it is set back from the escarpment.

Topography – Moderate capability due to limited opportunities for overlooking and the ability of the rising coastal escarpment to screen views from foreshore areas.

Existing Vegetation – Generally low for cleared agricultural areas. Moderate to high capability where vegetation exists.

Overall Absorptive Capability – Moderate.

5. VISUAL IMPACT ASSESSMENT

5.1. VISIBILITY OF THE PROJECT

The viewshed is the area from which views of a proposed development may be possible. Given the relatively low profile of the of the Project above ground level and its location on the side of a ridgeline, the visual catchment will be limited in its extent.

Figure 25 indicates the viewshed of the existing development and ***Figure 26*** indicates the viewshed of the Project. The overall change in viewshed is minor, with the primary difference relating to theoretical increase in visibility in residential areas, approximately 1 km to the east of the Subject Site.

It should be noted that the viewshed analysis is based on topography only and does not take into account the screening effects of vegetation. As a result, it is essentially demonstrating a worst-case scenario. In reality, bands vegetation throughout the landscape and residential areas will further contribute to the screening of views towards the Project from most on land viewpoints.

The locations selected for photography and assessment are within the public realm, proximate to sensitive, privately owned land use areas.

5.1.1. Photosimulations

Photosimulations have been prepared by the client, for views to the Project, from five sensitive viewpoints. The photosimulations show the Project without any ameliorating vegetation as well as with mature vegetation. Photo simulations have been prepared for representative sensitive viewpoints, these being:

- VP1 – Mornington Pier;
- VP2 – Port Phillip Bay;
- VP5 – Albatross Avenue;
- VP7 - 91 Kunyung Road; and
- VP11 – Kunyung Primary School.

5.2. SENSITIVE VIEWPOINTS

The viewpoint (VP) locations that are included in this assessment are from land uses considered to be of higher sensitivity, such as Port Phillip Bay and its foreshore reserve, residences and Mornington Pier (refer to ***Table 2*** and ***Figure 27 and Figure 28***). Due to the generally low-profile form of the Project and the visual containment provided by topography and vegetation, the detailed assessment of viewpoints is mostly confined to a limited number of sensitive locations within 1 km of the Project, which is also the area within which the Project would be most visible.

5.3. VISUAL IMPACT

This section includes a detailed assessment of the Project from the selected, highest sensitivity viewpoints, with a rating given for the level of visual modification and sensitivity which, when combined, result in a determination of the degree of overall visual impact for each viewing location.

The following assessment has focussed on potentially high sensitivity viewpoints located with the visual catchment of the Project. These being:

- Fronting residential areas along Kunyung Road and Albatross Avenue.
- Residences on intersecting or more distant streets which may have views to the Project
- Mornington Pier, which although distant, is one of the few locations from where “land based” views to the Project are possible.
- Port Phillip Bay and its foreshore to the west of the Project.

- Kunyung Primary School, although it should be noted that educational uses are considered to be of a lower level of visual sensitivity than the other assessed uses.

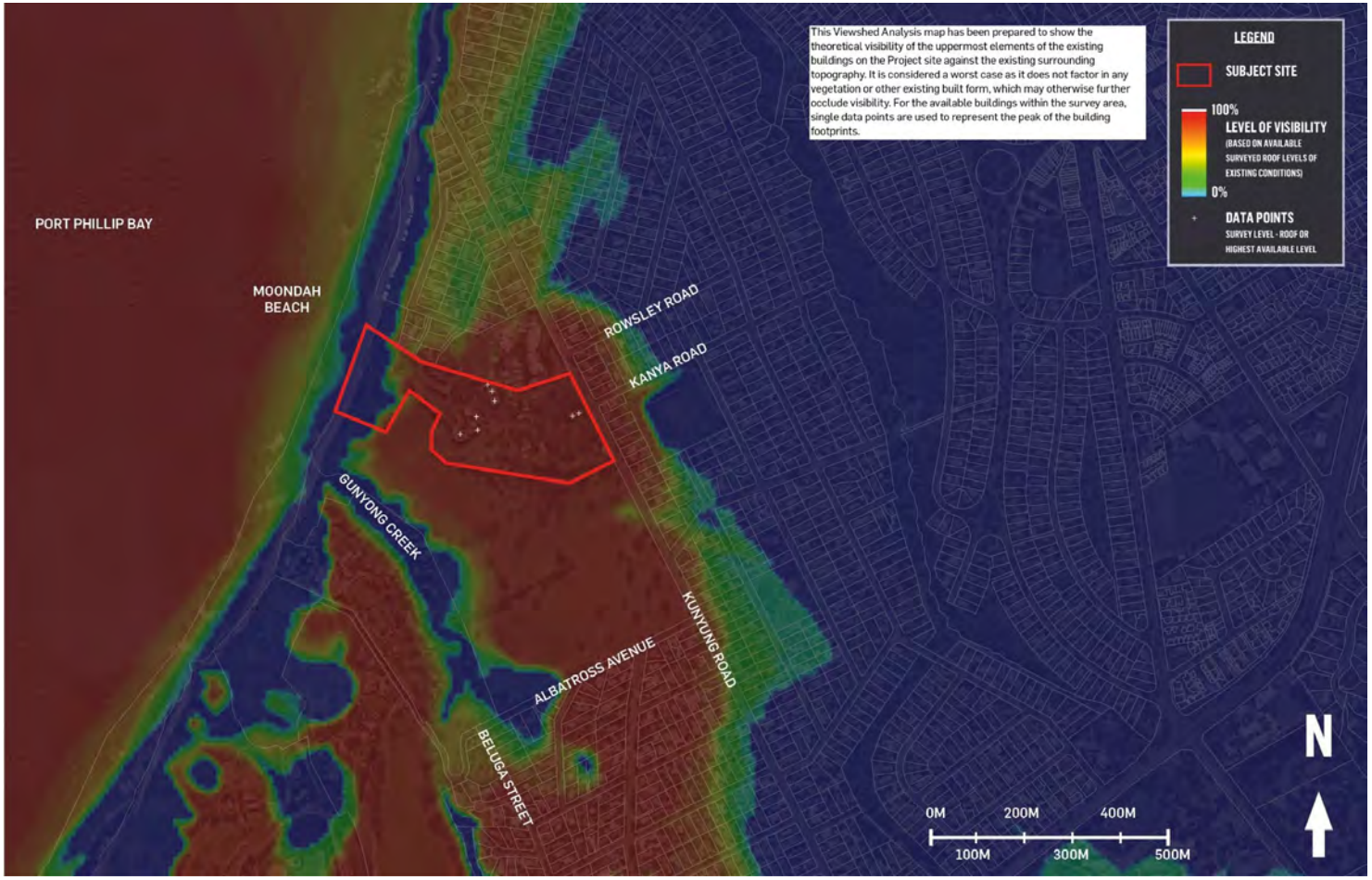

Figure 25 – Viewshed of the existing development (Source: Urbis).

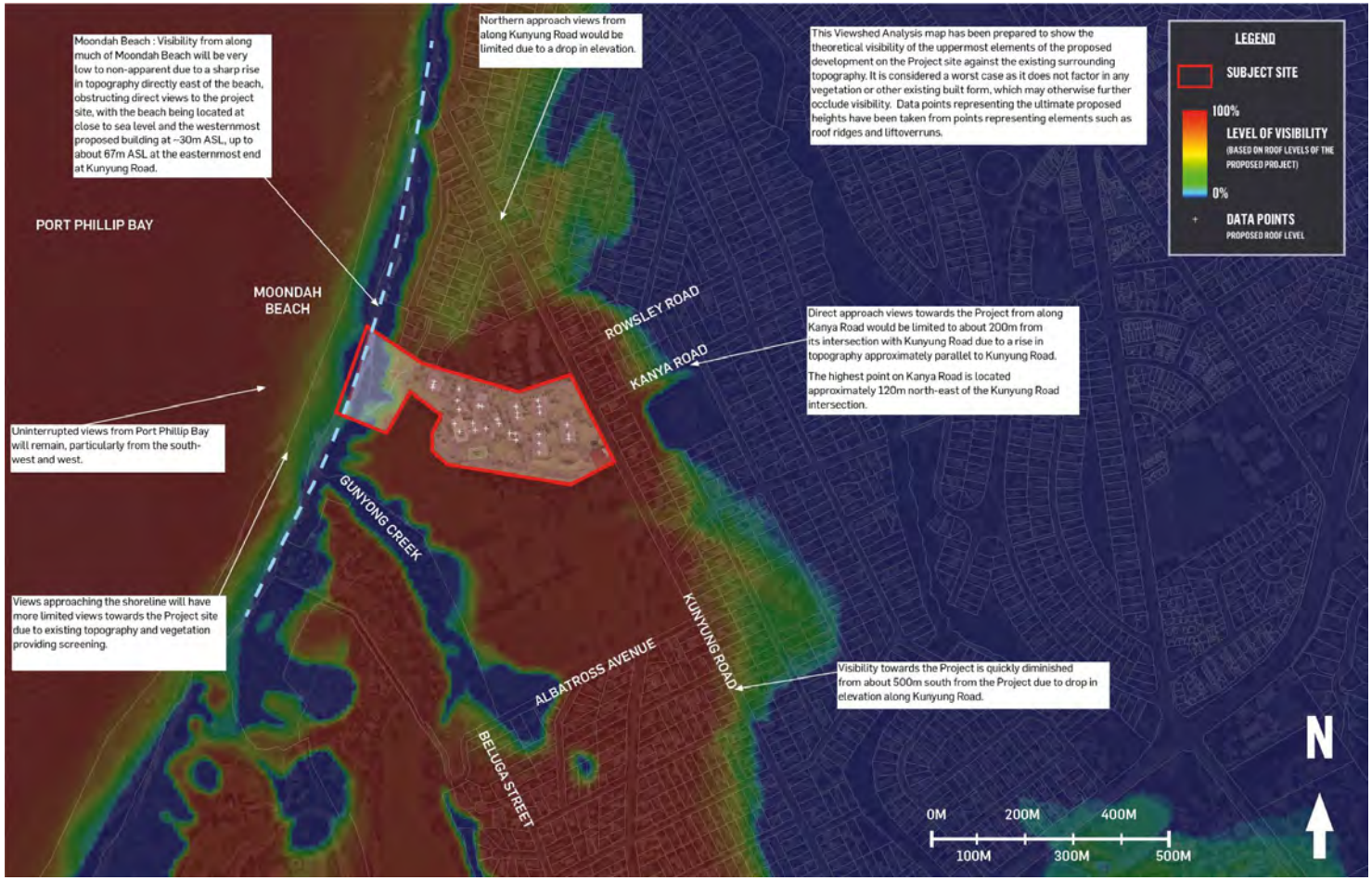

Figure 26 – Viewshed of the Project (Source: Urbis).

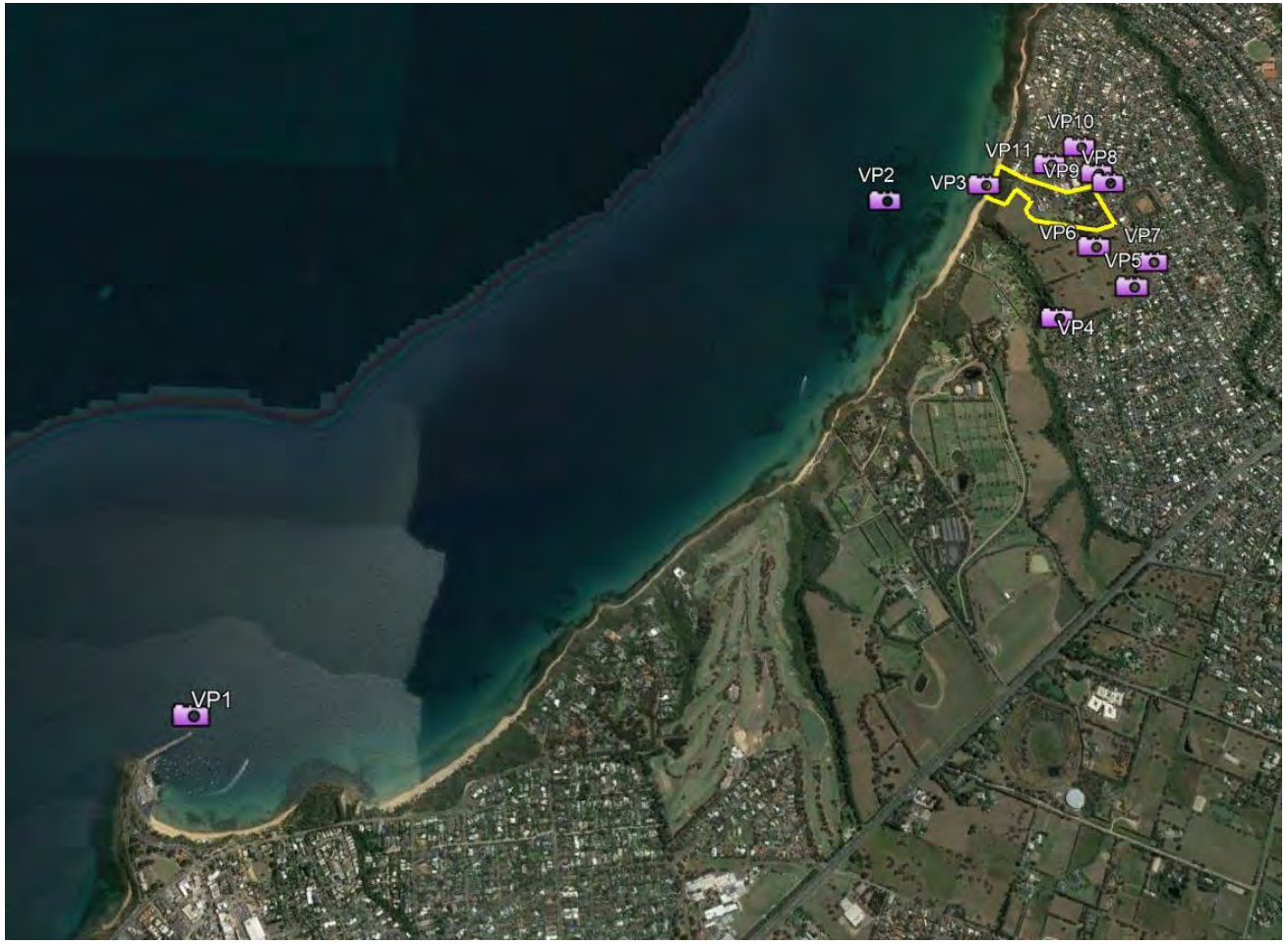

Figure 27 – Sensitive viewpoint locations (Source: Google Earth).

Figure 28 – Extract - Sensitive viewpoint locations (Source: Google Earth).

VIEWPOINT 1 – MORNINGTON PIER

Photo Location	The most northern extent of the pier (refer to ***Figure 27***).
Viewing Distance	4.2 km to the Project (Moondah Mansion).
Duration of View and Frequency of View	Duration: Stationary - Short. Frequency: Moderate.
Visual Use Area	Tourism and recreation in a coastal zone.
Visual Sensitivity	**Low** – based on significant distance from the Project.
Visual Modification	**Very Low** – From this viewpoint Moondah Manor will remain the most visually prominent element of the Project, and with the new buildings on the southern edge of the Project effectively being like-for-like replacements of existing buildings, the visual modification level experienced from this viewpoint will be very low (refer to ***Figure 29*** and ***Figure 30***).
Visual Impact	**Very Low** – Given the low level of visual sensitivity, and the very low visual modification level resulting from the similarity between the existing setting and the Project, the visual impact for this viewpoint will be very low.
Visual Amelioration	Proposed buildings to the west and southeast of Moondah mansion will be set behind intervening vegetation. This will be reinforced with additional canopy and tall shrub planting proximate to the buildings.
Residual Impact	**Very Low –** Proposed buildings will be set behind intervening vegetation, reinforced with additional planting. Moondah Mansion, most visible element within the Project, is not proposed to be screened by planting. As a result of the already very low level of visual impact, amelioration measures will not have any effect on the further reduction of visual impact.

Figure 29 – View from VP1 towards the existing development from the northern end of Mornington Pier (Source: Ryman Healthcare).

Figure 30 – Photosimulation of view from VP1 towards Project from the northern end of Mornington Pier (Source: Ryman Healthcare).

VIEWPOINT 2 – PORT PHILLIP BAY

Photo Location	Port Phillip Bay as experienced by a boating user (refer to ***Figure 28***).
Viewing Distance	640 m to the Project (Building 04).
Duration of View and Frequency of View	Duration: Mobile and Static. Frequency: Low.
Visual Use Area	Offshore Coastal.
Visual Sensitivity	**Moderate** - Sensitivity of users is moderate based on the water-based activity use.
Visual Modification	**Low** –Although the new buildings on the western edge of the Project are effectively a like-for-like replacement of the existing building footprint, they will appear more articulated with colours and materials that are more recessive. As a result, the visual modification level experienced from this viewpoint will be low (refer to ***Figure 31*** and ***Figure 32***).
Visual Impact	**Low** – Given the moderate level of visual sensitivity and the moderate visual modification level, the visual impact for this viewpoint will be low.
Visual Amelioration	Proposed buildings to the west of Moondah Mansion will be partially set behind intervening vegetation. This will be reinforced with additional canopy and tall shrub planting proximate to the buildings.
Residual Impact	**Low –** Proposed native, evergreen canopy planting will be effective at reducing the overall massing effect of the built form and will provide screening of the lower levels of buildings B03 and B04. As a result, the amelioration measures reduce the level of residual impact to low.

Figure 31 – View from VP2 towards the existing development from Port Phillip Bay.

Figure 32 – Photosimulation of view from VP2 towards the Project (Source: Ryman Healthcare).

VIEWPOINT 3 – MOONDAH BEACH

Photo Location	Moondah Beach proximate to the Subject Site's southwest boundary (refer to ***Figure 28***).
Viewing Distance	200 m to the Project (Building 04).
Duration of View and Frequency of View	Duration: Static and Mobile. Frequency: Low.
Visual Use Area	Coastal reserve.
Visual Sensitivity	**High** - Sensitivity of users is high based on the tourism and recreational use.
Visual Modification	**Not Apparent** – From this viewpoint, the Project will not be visible due to the steeply rising, heavily vegetated coastal escarpment (refer to ***Figure 33***).
Visual Impact	**Not Apparent** – The Project is not visible for this viewpoint. As a result, there is no visual impact.
Visual Amelioration	Visual amelioration is not required for this or adjacent viewpoints on the coastal reserve.
Residual Impact	**Not Apparent –** As there is no visual impact, amelioration will not have any influence on the level of residual impact.

Figure 33 – View from VP3 on Moondah Beach towards the adjacent boundary of the Subject Site.

VIEWPOINT 4 – BELUGA STREET

Photo Location	Beluga Street at the intersection of Albatross Avenue (refer to ***Figure 28***).
Viewing Distance	600 m to the Project (Moondah Mansion).
Duration of View and Frequency of View	Duration: Mobile (road) and Static (residential). Frequency: Moderate (road) and Low (residential).
Visual Use Area	Local road through residential area.
Visual Sensitivity	**High** - Sensitivity of users is high based on the residential use.
Visual Modification	**Not Apparent** – From this viewpoint, and locations to the northwest for approximately 200 m along Albatross Avenue, the Project will be screened from view by either intervening rising topography, vegetation or a combination of both (refer to ***Figures 34***). As a result, it is anticipated that the project will be not apparent in views.
Visual Impact	**Not Apparent** – The Project is not visible for this viewpoint. As a result, there is no visual impact.
Visual Amelioration	Visual amelioration is not required for this or adjacent viewpoints on Beluga Street, or for approximately 200 m of Albatross Avenue.
Residual Impact	**Not Apparent –** As there is no visual impact, amelioration will not have any influence on the level of residual impact.

Figure 34 – View northwest from VP4 towards the existing development. Intervening vegetation and rising topography screen views.

VIEWPOINT 5 – ALBATROSS AVENUE

Photo Location	Albatross Avenue, 60 m west of Volitans Avenue (refer to ***Figure 28***).
Viewing Distance	440 m to the Project (Building 02).
Duration of View and Frequency of View	Duration: Mobile (road) and Static (residential). Frequency: Moderate (road) and Low (residential).
Visual Use Area	Local road through residential area.
Visual Sensitivity	**High** - Sensitivity of users is high based on the residential use.
Visual Modification	**Not Apparent** – From this viewpoint, and locations to the southeast and northwest along Albatross Avenue, the Project will be screened from view primarily by retained vegetation along the full extent of the Project's southern boundary (refer to ***Figure 35***). ***Figure 36*** shows the upper parts of the Project, as defined by the 3D modelling and photosimulation process, as a red line. The entire extent of the Project is located behind the vegetation. As a result, it is anticipated that the project will be not apparent in views.
Visual Impact	**Not Apparent** – The Project is not visible for this viewpoint. As a result, there is no visual impact.
Visual Amelioration	Visual amelioration is not required for this or adjacent viewpoints on Albatross Avenue.
Residual Impact	**Not Apparent –** As there is no visual impact, amelioration will not have any influence on the level of residual impact.

Figure 35 – View west from VP5 towards the existing development.

Figure 36 – Wireframe outline of 3D model view from VP5 to the Project indicating the upper levels of the project as a red line, screened by dense, retained boundary vegetation (Source: Ryman Healthcare).

VIEWPOINT 6 – 90 KUNYUNG ROAD

Photo Location	Southern footpath adjacent to 90 Kunyung Road (refer to ***Figure 28***). Note: The property was not able to be accessed and, as result, publicly accessible proximate locations were chosen to represent views from the southeast and south.
Viewing Distance	20 m to the Project (Building 03).
Duration of View and Frequency of View	Duration: Static. Frequency: Low.
Visual Use Area	Agriculture.
Visual Sensitivity	**Low** - Sensitivity of users is low based on the agricultural use.
Visual Modification	**Low** – The property at 90 Kunyung Road wraps around the southern and western sides of the subject site. From locations to the southeast and south, the Project will be screened by dense retained vegetation (refer to ***Figure 37*** and ***Figure 36*** [VP5]). The upper parts of the Project will be visible is views from the west. However, the closest buildings are effectively a like-for-like replacement on the existing building footprint, but they will appear more articulated with colours and materials that are more recessive. As a result, it is anticipated that the degree of visual modification to the visual setting from viewpoint on the 90 Kunyung Road property will be low.
Visual Impact	**Low** – Given the low modification level of the Project within the existing built form setting, combined with a low visual sensitivity level, the potential visual impact for this viewpoint will be low.
Visual Amelioration	Proposed buildings to the west of Moondah Mansion will be partially set behind intervening vegetation. This will be reinforced with additional canopy and tall shrub planting proximate to the buildings.
Residual Impact	**Low –** Proposed native, evergreen canopy planting may be effective at reducing the overall massing effect of the more elevated elements of built form of buildings B03 and B04. As a result, it is not anticipated that the amelioration measures will significantly reduce the already low level of visual impact.

Figure 37 – Wireframe outline of 3D model view from VP6 to the Project (Source: Ryman Healthcare).

VIEWPOINT 7 – 91 KUNYUNG ROAD

Photo Location	The footpath proximate to 91 Kunyung Road (refer to ***Figure 28***).
Viewing Distance	360 m to the Project (Building 02).
Duration of View and Frequency of View	Duration: Mobile (road) and Static (residential). Frequency: Moderate (road) and Low (residential).
Visual Use Area	Local road through residential area.
Visual Sensitivity	**High**- Sensitivity of users is high based on the residential use.
Visual Modification	**Not Apparent** – From this viewpoint, and locations to the southeast along Kunyung Road, the Project will be screened from view primarily by a combination of intervening vegetation retained vegetation along the full extent of the Project's southern boundary, as well as rising topography (refer to ***Figure 38***). The view is very similar to that shown in viewpoint 6 for 90 Kunyung Road. Refer to ***Figure 37*** which shows the upper parts of the Project, as defined by the 3D modelling and photosimulation process, as a red line. The entire extent of the Project is located behind the vegetation. As a result, it is anticipated that the project will be not apparent in views.
Visual Impact	**Not Apparent** – The Project is not visible for this viewpoint. As a result, there is no visual impact.
Visual Amelioration	Visual amelioration is not required for this or adjacent viewpoints to the southeast on Kunyung Road.
Residual Impact	**Not Apparent –** As there is no visual impact, amelioration will not have any influence on the level of residual impact.

Figure 38 – View from VP7 to existing development.

VIEWPOINT 8 – KANYA ROAD

Photo Location	Kanya Road carriageway to the east of the Project (refer to ***Figure 28***).
Viewing Distance	85 m to the Project (Building B01).
Duration of View and Frequency of View	Duration: Mobile (road) and Static (residential). Frequency: Low (road) and Low (residential).
Visual Use Area	Local road through residential area.
Visual Sensitivity	**HIGH** - Sensitivity of users is high based on the residential use.
Visual Modification	**VERY LOW** – From this viewpoint, the Project will occupy a similar amount of the field of view to the existing building visible on the subject site (refer to ***Figure 39***). The proposed building (B02) will be a similar height but will be comprised of more muted, natural colours. Existing vegetation will be retained along the Project's boundary with Kunyung Road. As a result, it is anticipated that the degree of visual modification to the visual setting from this viewpoint will be very low.
Visual Impact	**LOW** – Given the very low visual modification level of the Project within the existing landscape and built form setting, combined with a high visual sensitivity level, the potential visual impact will be low.
Visual Amelioration	Proposed buildings to the west of Moondah Mansion will be partially set behind intervening vegetation. This will be reinforced with additional canopy and tall shrub planting proximate to the buildings.
Residual Impact	**VERY LOW** – Additional planting is proposed to be established along eastern boundary of the Project. As a result, the residual visual impact will reduce to very low as vegetation establishes over time.

Figure 39 – View west from VP8 of the existing development.

VIEWPOINT 9 – 49 KUNYUNG ROAD

Photo Location	Kunyung road eastern carriageway (refer to ***Figure 28***).
Viewing Distance	70 m to the Project (Building B06).
Duration of View and Frequency of View	Duration: Mobile (road) and Static (residential). Frequency: Moderate (road) and Low (residential).
Visual Use Area	Local road through residential area.
Visual Sensitivity	**High** - Sensitivity of users is high based on the residential use.
Visual Modification	**Low to Moderate** – This viewpoint is directly opposite the existing northern accessway into the subject site, which will be upgraded as part of the Project. It is the only location on Kunyung Road with long distance views into the existing development (refer to ***Figure 40***). From this viewpoint, the Project will occupy a similar amount of the field of view to the existing buildings visible on the subject site. The proposed buildings visible along the access road clearing (B03, B04, B05 and B06) will be a similar height but will be comprised of more muted, natural colours than the existing buildings which are a highly visible light colour. Existing vegetation will be retained along the Project's boundary with Kunyung Road providing significant screening of building B02 (refer to ***Figure 41***). As a result, it is anticipated that the degree of visual modification to the visual setting from this viewpoint will be low to moderate.
Visual Impact	**Moderate to High** – Given the low to moderate visual modification level of the Project within the existing landscape and built form setting, combined with a high visual sensitivity level, the potential visual impact will be moderate to high.
Visual Amelioration	Existing retained vegetation will be reinforced with additional canopy and tall shrub planting proximate to the northern access way and proposed buildings.
Residual Impact	**Low** – Additional planting is proposed to be established along the eastern boundary of the Project as well as the northern access way and around and between buildings. As a result, the residual visual impact will reduce to low as vegetation establishes over time.

Figure 40 – View west from VP9 of the existing development (Source: Google Earth).

Figure 41 – View south from VP9 of the existing development.

VIEWPOINT 10 – KUNYUNG PRIMARY SCHOOL

Photo Location	Playing fields to the west of the school property (refer to ***Figure 28***).
Viewing Distance	60 m to the Project (Building B03).
Duration of View and Frequency of View	Duration: Mobile. Frequency: Low to moderate.
Visual Use Area	Sporting use in an educational facility.
Visual Sensitivity	**Moderate** - Sensitivity of users is moderate based on the educational use.
Visual Modification	**Low to Moderate** – From this viewpoint, the Project will be taller and wider than the extent of existing building visible on the subject site (refer to ***Figure 42*** and ***Figure 43***). The proposed buildings (B03 and B04) will be comprised of more muted, natural colours than the existing buildings and will appear as an extension of the horizontal and angular built form that occupies the foreground of the view within the school grounds. As a result, it is anticipated that the degree of visual modification to the visual setting from this viewpoint will be low to moderate.
Visual Impact	**Low to Moderate** – Given the low to moderate visual modification level of the Project within the existing landscape and built form setting, combined with a moderate visual sensitivity level, the potential visual impact will be low to moderate.
Visual Amelioration	Existing retained vegetation will be reinforced with additional canopy and tall shrub planting proximate to the northern access way boundary with the school, as well as around proposed buildings.
Residual Impact	**Low** – As a result of proposed planting, the residual visual impact will reduce to low as vegetation establishes over time.

Figure 42 – View south from VP10 of the existing development (Source: Ryman Healthcare).

Figure 43 – Photosimulation of view south from VP10 of the Proposal (Source: Ryman Healthcare).

6. AMELIORATION STRATEGIES

Actions exist to ameliorate the landscape and visual impacts of the Project. These are outlined in the following sections.

As an overarching guideline for development within coastal settings, The Victorian Coastal Strategy 2014, Siting and Design Guidelines for Structures on the Victorian Coast (May 1998) and background document Landscape Setting Types for the Victorian Coast (May 1998) should be reflected in the design wherever possible.

6.1. SITING

Along the coastal interface, the Project is located within the footprint of the existing development and does not encroach additionally on the foreshore zone. The setback from the foreshore provides visual separation as well as allowing for adequate space for the retention of buffering and screening vegetation.

6.2. BUILT FORM

The horizontal, steeped form of the Project is of a character which complements the landform and the coastal landscape character.

The height of the Project allows it to sit comfortably adjacent to Moondah Manor. By contrast, the previous buildings on site, that will be replaced, as well as adjacent existing residences, are visually prominent on the coastal escarpment.

The built form of the Project responds to the topography through changes in level as well as partial immersion within the ground plane.

Additionally, the horizontal and vertical articulation of the built form results in a reduction in the overall perception of bulk or massing.

6.3. COLOURS AND MATERIALS

The surface finishes of the Project will be comprised of materials, textures and colours that are natural and muted (refer to ***Figure 45***).

In conjunction with the articulation of the built form, the overall effect will be of a visually recessive structure that is compatible with the agricultural and coastal landscape of the setting.

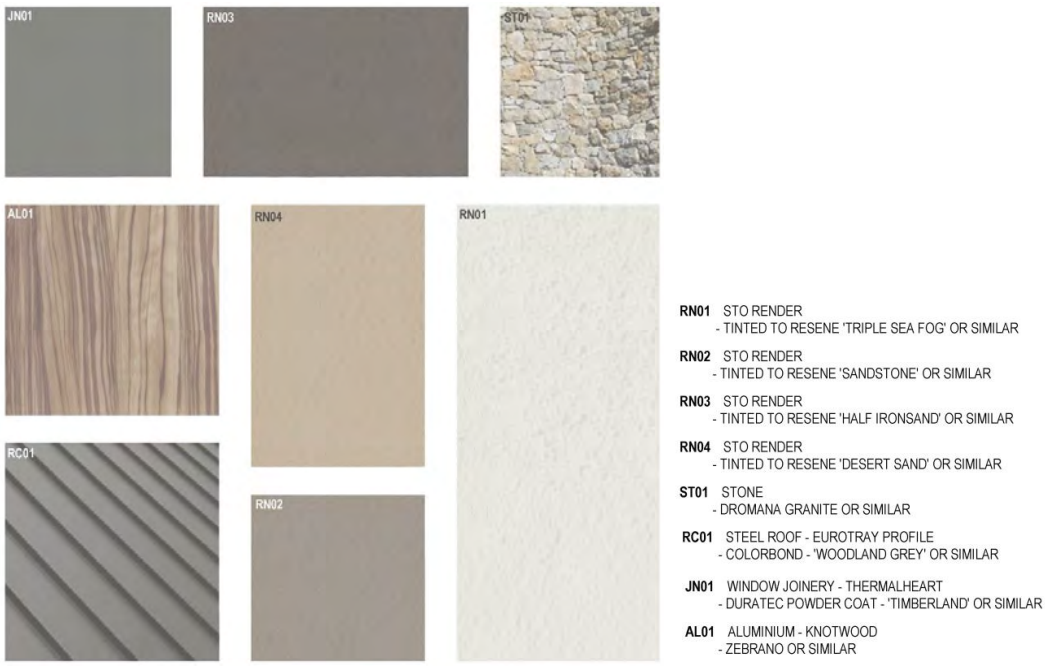

Figure 44 – Proposed exterior materials and colours (Source: Ryman Healthcare).

6.4. SCREEN PLANTING

The most effective way to ameliorate views from high sensitivity viewpoints is to establish screen planting between those viewpoints and the Project.

Although the overall visual and landscape impacts of the Project are assessed as low, establishment of landscaping will further integrate the project within the landscape of the setting as well as reduce its visibility.

Figure 46 shows the proposed landscape approach to the entire Project property. The establishment of an integrated landscape response over the entire property, rather than relying on a thin band of vegetation, will result in highly effective landscape-based amelioration.

Figure 45 – Landscape Master Plan

7. CONCLUSION

7.1. LANDSCAPE CHARACTER IMPACTS

Although the Project is of scale that is consistent with both the existing buildings on the subject site which are to be replaced, as well as adjacent residential buildings, it is of a form, colour and materiality that is more compatible with the coastal landscape character.

The abrupt rise within the landform from the coastline results in views being compartmentalised from foreshore areas, which is particularly effective given the form and scale of the Project and the distance it is set back from the escarpment.

The landscape of the Project setting has a generally moderate level of landscape absorptive capacity, as the undulating topography, which results in views being highly compartmentalised, does not allow for a significant number of opportunities for overlooking and the scattered, and occasionally dense vegetation in the area surrounding the Project, provides visual screening, with the extent of screening increasing with distance from the Project.

7.2. VISUAL IMPACTS

The key consideration in the assessment of the visual impact of the Project is the degree to which the Project alters the existing visual setting.

The most visible components of the Project, buildings B04 and B03, are effectively like for like replacements of existing buildings with a similar setback from the coast. However, the existing buildings with their light colours and flat façades will be replaced with new buildings of a slightly increased height with significant vertical and horizontal articulation of form and with more muted, natural materials and colours.

Although some vegetation within the central part of the subject site will be removed, the photosimulations demonstrate that the form and materiality of the Project, screened by retained surrounding vegetation and intervening topography, will result in a very low to low level of visual modification when considered in the context of views from Kunyung Road and Albatross Avenue.

The Project will not be visible from Moondah Beach due the topographic form of the coastal escarpment and existing dense vegetation.

7.2.1. Residual Visual Impact

The low to moderate visual impact levels will be further reduced to a low to very low level of residual impact after the establishment of ameliorative landscape measures.

DISCLAIMER

This report is dated 18th November 2021 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd's (**Urbis**) opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of Ryman Healthcare (**Instructing Party**) for the purpose of a Development Application (**Purpose**) and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

In preparing this report, Urbis was required to make judgements which may be affected by unforeseen future events, the likelihood and effects of which are not capable of precise assessment.

All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

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This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

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Viewpoint 017
Viewpoint 207
Viewpoint 206
Viewpoint 204
Viewpoint 001
Viewpoint 015
Viewpoint 016
Viewpoint 201

Viewpoint 001 **Kunyung Primary School (Oval)** - *Existing*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 001
Kunyung Primary School (Oval)

Easting (MGA94)	331391.62
Northing (MGA94)	5771603.88
Elevation (m)	45.04
Height of Camera (m)	1.65
Date & Time of Photography	24/01/2020 11:00am
Camera Used	Canon EOS 6D 50mm
Orientation of View	SSE

Visual Simulation is to be printed and viewed at following sizes in compliance with NZILA Best Practice Guide 10.2

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At this scale the image to to be viewed at 430mm from the viewer's eyes.

RYMAN HEALTHCARE

105-RCT-RevC

Viewpoint 001 **Kunyung Primary School (Oval)** - *Proposed*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 001
Kunyung Primary School (Oval)

Easting (MGA94)	331391.62
Northing (MGA94)	5771603.88
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Viewpoint 015 91 Kunyung Rd - *Existing*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 015
91 Kunyung Rd

Easting (MGA94)	331801.01
Northing (MGA94)	5771127.53
Elevation (m)	78.13
Height of Camera (m)	1.65
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Camera Used	Canon EOS 6D 50mm
Orientation of View	NW

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Viewpoint 015 91 Kunyung Rd - *Proposed*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 015
91 Kunyung Rd

Easting (MGA94)	331801.01
Northing (MGA94)	5771127.53
Elevation (m)	78.13
Height of Camera (m)	1.65
Date & Time of Photography	9/11/2016 11:27am
Camera Used	Canon EOS 6D 50mm
Orientation of View	NW

Red outline indicates building profile obscured by existing vegetation

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Viewpoint 016 Albatross Ave, across the road from 2 Volitans Ave - *Existing*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 016
Albatross Ave, across the road from 2 Volitans Ave

Easting (MGA94)	331675.85
Northing (MGA94)	5770980.87
Elevation (m)	70.84
Height of Camera (m)	1.65
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Camera Used	Canon EOS 6D 50mm
Orientation of View	NNW

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RYMAN HEALTHCARE

105-RCT-RevC

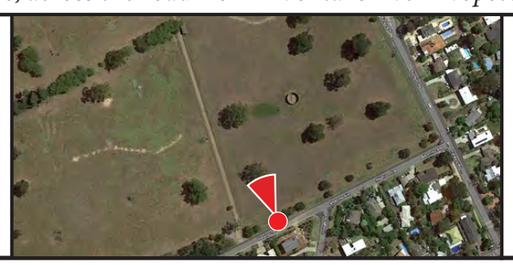
Viewpoint 016 Albatross Ave, across the road from 2 Volitans Ave - *Proposed*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 016
Albatross Ave, across the road from 2 Volitans Ave

Easting (MGA94)	331675.85
Northing (MGA94)	5770980.87
Elevation (m)	70.84
Height of Camera (m)	1.65
Date & Time of Photography	9/11/2016 11:14am
Camera Used	Canon EOS 6D 50mm
Orientation of View	NNW



Red outline indicates building profile obscured by existing vegetation

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RYMAN HEALTHCARE

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Viewpoint 017 Mornington Pier - *Existing*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 017
Mornington Pier

Easting (MGA94)	327987.64
Northing (MGA94)	5768894.19
Elevation (m)	2.96
Height of Camera (m)	1.65
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Camera Used	Canon EOS 6D 50mm
Orientation of View	NE

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RYMAN HEALTHCARE

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Viewpoint 017 Mornington Pier - *Proposed*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 017
Mornington Pier

Easting (MGA94)	327987.64
Northing (MGA94)	5768894.19
Elevation (m)	2.96
Height of Camera (m)	1.65
Date & Time of Photography	05/08/2019 2.30pm
Camera Used	Canon EOS 6D 50mm
Orientation of View	NE

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Viewpoint 201 Sea View - *Existing*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 201
Sea View

Easting (MGA94)	329874.12
Northing (MGA94)	5770397.98
Elevation (m)	0.49
Height of Camera (m)	1.65
Date & Time of Photography	05/08/2019 1:24 pm
Camera Used	Canon EOS 6D 50mm
Orientation of View	NE

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RYMAN HEALTHCARE

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Viewpoint 201 Sea View - *Proposed*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 201
Sea View

Easting (MGA94)	329874.12
Northing (MGA94)	5770397.98
Elevation (m)	0.49
Height of Camera (m)	1.65
Date & Time of Photography	05/08/2019 1:24 pm
Camera Used	Canon EOS 6D 50mm
Orientation of View	NE

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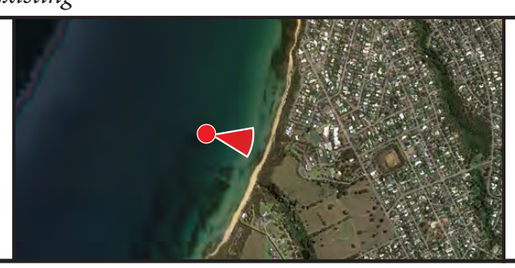
Viewpoint 204 Sea View - *Existing*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 204
Sea View

Easting (MGA94)	330787.04
Northing (MGA94)	5771626.85
Elevation (m)	0.48
Height of Camera (m)	1.65
Date & Time of Photography	05/08/2019 1:38 pm
Camera Used	Canon EOS 6D 50mm
Orientation of View	E



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Viewpoint 204 Sea View - *Proposed*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 204
Sea View

Easting (MGA94)	330787.04
Northing (MGA94)	5771626.85
Elevation (m)	0.48
Height of Camera (m)	1.65
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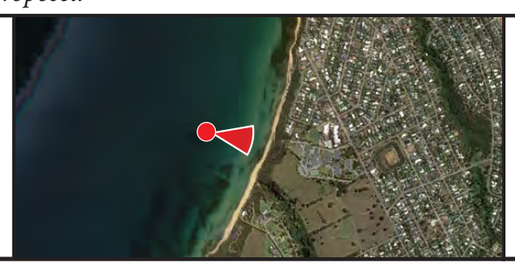
Camera Used	Canon EOS 6D 50mm
Orientation of View	E



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Viewpoint 206 Sea View - *Existing*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 206
Sea View

Easting (MGA94)	331014.81
Northing (MGA94)	5771954.04
Elevation (m)	0.56
Height of Camera (m)	1.65
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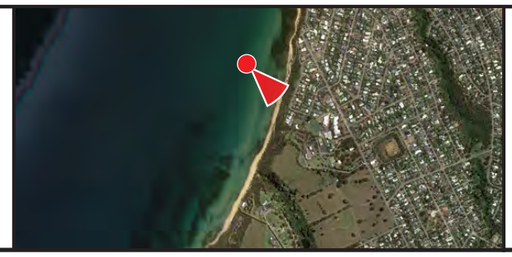
Camera Used	Canon EOS 6D 50mm
Orientation of View	SE



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RYMAN HEALTHCARE

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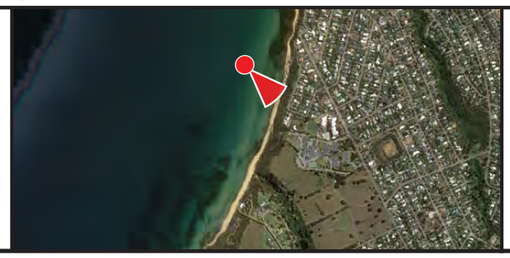
Viewpoint 206 Sea View - *Proposed*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 206
Sea View

Easting (MGA94)	331014.81
Northing (MGA94)	5771954.04
Elevation (m)	0.56
Height of Camera (m)	1.65
Date & Time of Photography	05/08/2019 1:42 pm
Camera Used	Canon EOS 6D 50mm
Orientation of View	SE



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Viewpoint 207 Sea View - *Existing*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 207
Sea View

Easting (MGA94)	330395.12
Northing (MGA94)	5772394.05
Elevation (m)	0.56
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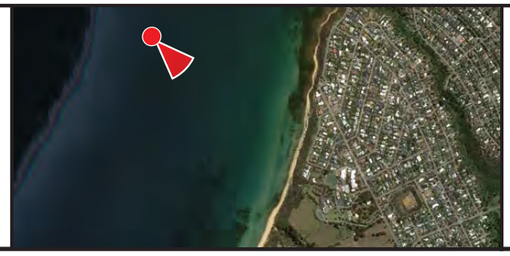
Orientation of View	SE



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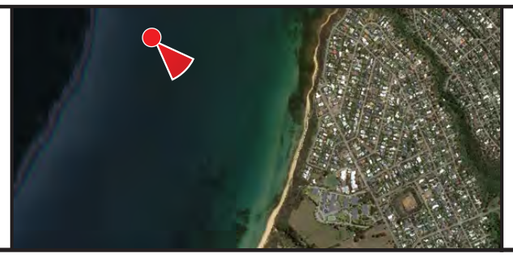
Viewpoint 207 Sea View - *Proposed*

View at 430mm when printed at 100%

Ryman Healthcare
Mt Eliza Retirement Village
Visual Simulation

Viewpoint 207
Sea View

Easting (MGA94)	330395.12
Northing (MGA94)	5772394.05
Elevation (m)	0.56
Height of Camera (m)	1.65
Date & Time of Photography	05/08/2019 1:49 pm
Camera Used	Canon EOS 6D 50mm
Orientation of View	SE



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RYMAN HEALTHCARE

105-RCT-RevC

Adams
DESIGNING THE FUTURE

Stormwater Management Report

for

Ryman Healthcare Australia Pty Ltd

at

60-70 Kunyung Road, Mount Eliza

Adams Consulting Engineers Pty Ltd
60-70 Kunyung Road, Mount Eliza, VIC

REVISION HISTORY

Revision	Prepared By	Description	Date
1	BH	Draft Issue	08/11/2019
2	BH	Revised Permeability	15/11/2019
3	JL	Draft Preliminary Issue	14/01/2021
4	JL	Preliminary Issue	20/01/2021
5	JL	Updated Site Layout	17/11/2021

DOCUMENT ACCEPTANCE

Action	Name	Signed	Date
Prepared by	Jacob Lane	JL	17/11/2021
Reviewed by	Chris White	CW	17/11/2021
Approved by	Chris White	CW	17/11/2021
On behalf of	Adams Consulting Engineers Pty Ltd		

This report is of a defined scope and only for this commission. Adams should be consulted where any questions regarding the interpretation or completeness of our report arise.

Adams Consulting Engineers Pty Ltd
60-70 Kunyung Road, Mount Eliza, VIC

CONTENTS

1 INTRODUCTION

Adams Consulting Engineers Pty Ltd (Adams) has been engaged by Ryman Healthcare Australia Pty Ltd to prepare a Stormwater Management Report for the proposed development of an aged care and retirement village in association with a Place of Worship, at 60-70 Kunyung Road Mount Eliza (Site).

This report will outline the requirements and associated results of:

- Pre and post development stormwater runoff flow from the Site.
- Existing and proposed Legal Point of Discharge.
- Overland flow paths through the site.
- Requirements and volumes of on-site detention.
- Water Sensitive Urban Design measures for stormwater treatment.
- Investigate the impact of climate change on the site hydrology.

It is understood that this report will be utilised in the Town Planning submission and will also inform the basis of the next phases of design works to ensure continuity through the project.

2 EXISTING SCENARIO

2.1 Existing Site Description

The Site is located approximately 42km to the south east of Melbourne's CBD, and is located within the suburb of Mount Eliza, as part of the Mornington Peninsula Shire (Council). The total area of the Site is approximately 8.94 hectares. The Site is surrounded by Kunyung Primary School to the north, Kunyung Road to the east, undeveloped land to the south, Gunyung Creek to the south west and Port Phillip Bay (Moondah Beach) to the west. The Mount Eliza shopping precinct is located approximately 1km to the northeast of the Site.

The Site is currently comprised of several buildings and roads which formed the Melbourne Business School Mt Eliza campus, however much of the Site is undeveloped and consists of grass land / heavy vegetation. It is estimated that the total pervious area (vegetation and soft landscaping) across the Site is approximately 74% coverage of the total area. Refer to Figure 1 which provides an aerial image of the existing Site.

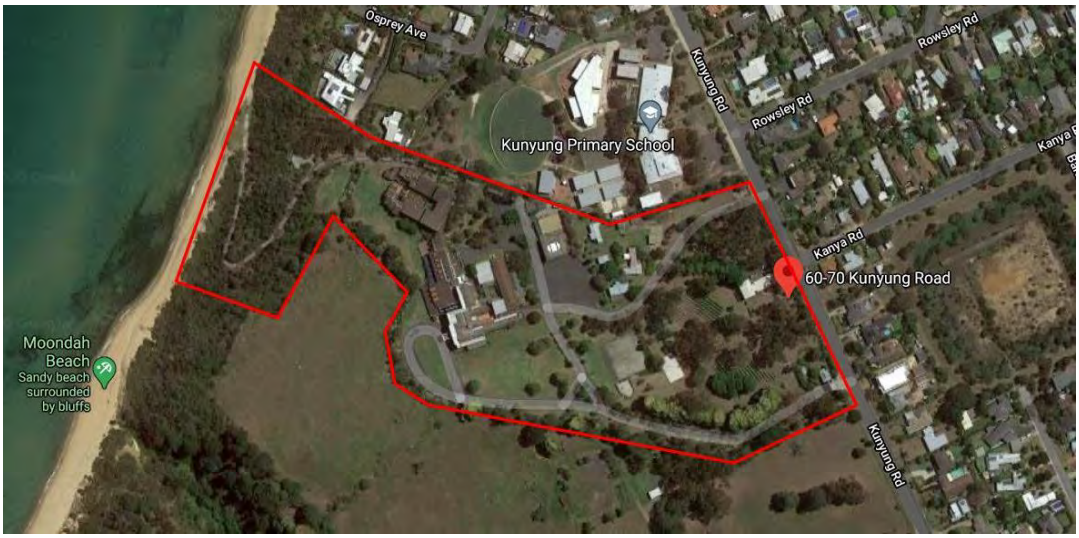


***Figure 1** - Site Aerial Image (Google Maps, 2020)*

2.2 Existing Authority Stormwater Pipe Infrastructure

A review of the Dial Before You Dig (DBYD) information indicates that there are the following Council stormwater assets near the Site:

- A 150mm stormwater pipe to the north west of the Site which appears to drain the properties along Osprey Avenue.
- A 675 / 750mm stormwater pipe to the east of the Site on the southern side of Kunyung Road.

Refer to Figure 2 for the stormwater information obtained from the Dial Before You Dig map of Mornington Peninsula Council drainage assets.

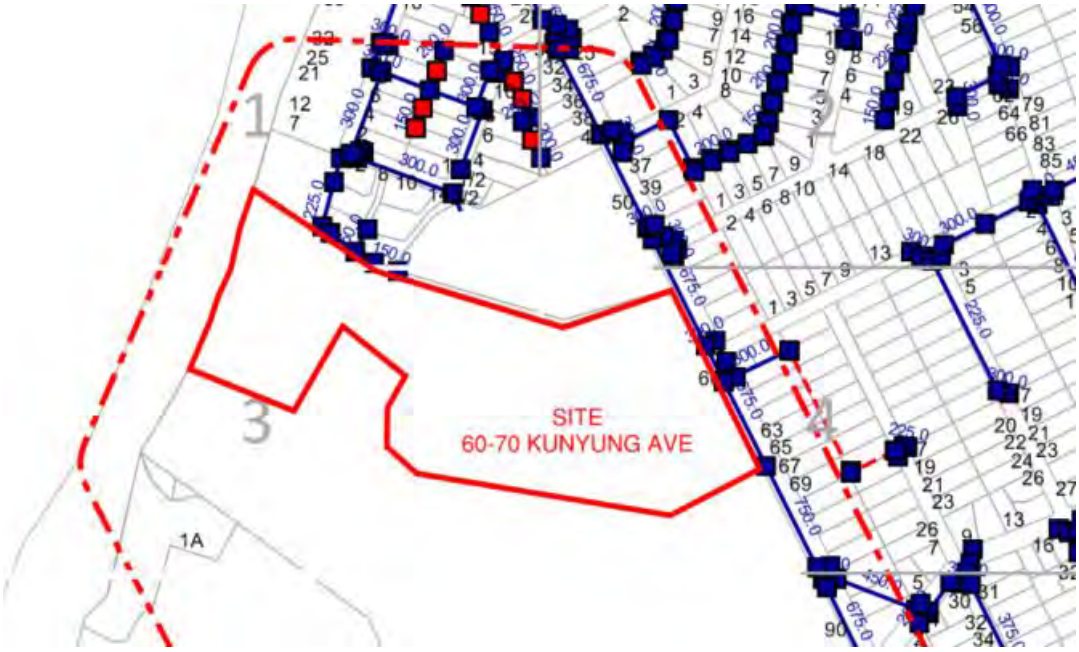


***Figure 2** - Dial Before You Dig – Stormwater Maps (Mornington Peninsula Shire, July 2019)*

2.3 Existing Land Flooding Overlays

A review was undertaken of the VicPlan tool provided by the Department of Environment, Land, Water and Planning to determine if the Site is subject to flooding overlays.

Refer to Figure 3 which indicates that the Site is not within any Melbourne Water flood zones, nor within any Special Building Overlays (SBO).

Adams undertook consultation with Council to confirm if there are any known localised flooding issues within or near the Site. Council indicated that there are localized flooding areas within and adjacent to the Site as shown on Map 22 of Council's Flood Prone Maps (https://www.mornpen.vic.gov.au/Building-Planning/Building/Flood-Prone-Maps).

Refer to Figure 4 which indicates that the Site has flooding within the property boundaries.

Council provided further details of the overland flow entering the site from Kunyung Road, as represented in their flood modelling. Figure 5 below shows that the average depth of flow is between 0.02-0.03m. This modelling is of a 100yr storm intensity event and is representative of flow from the Kunyung Road drainage system when the Council system is over capacity.

***Figure 3** - Land Management Overlays – Planning Maps Online (Victoria State Government – Environment, Land, Water and Planning, November 2020)*

***Figure 4** - Land Inundation – Flood Prone Map 22 (Mornington Peninsula Shire Council, Dated Oct 2017)*

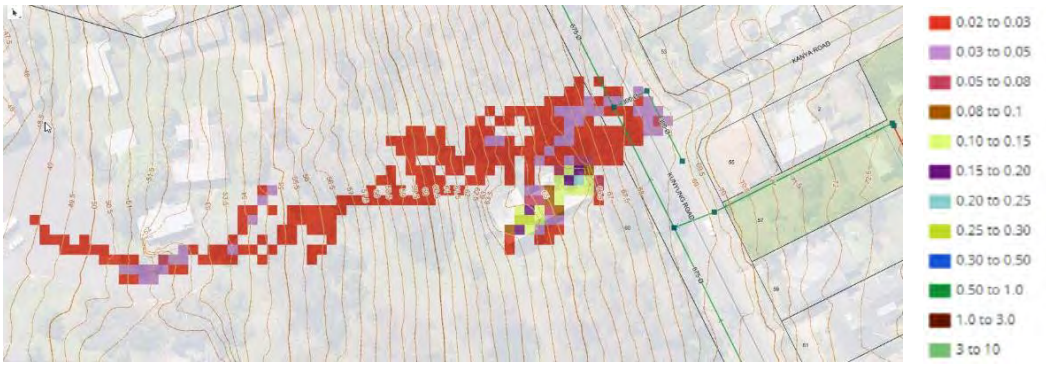


***Figure 5** - Land Inundation – Flow depth in metres (Mornington Peninsula Shire Council, Feb 2020)*

2.4 Existing Site Drainage Description

An initial feature survey of the Site was completed by Aurecon on 24/02/2017. The survey indicates that the Site falls from east to west (towards Moondah Beach), at a grade of approximately 11%. The Site stormwater drainage system was also surveyed – including pit cover levels, pipe invert levels and pipe sizes – and indicated that the site stormwater is currently being discharged to Moondah Beach via a 450mm concrete pipe and a headwall. Refer Figure 5 below for headwall outlet on Moondah Beach.

Full surveying of the stormwater system on the western side of the Site was not possible in the original survey due to dense coastal vegetation, so further investigation and surveying was required and conducted by Aurecon on 06/11/20. This investigation confirmed the alignment, sizes and invert levels of the drainage system discharging from the Site. This formed critical information in modelling the site discharge flows rates exiting the headwall.

Due to the naturally steep gradient between the development and the discharge point, the Site's stormwater runoff flows into a 'drop structure' prior to being discharged onto Moondah Beach. The existing drop structure slows the velocity of stormwater before discharging onto the beach by reducing the gradient of the final length of stormwater pipe, as well as partially dissipating hydraulic energy as the water hits the base of the drop structure.

Reducing the flow velocity is intended to minimise the erosion of the beach from stormwater discharge.

***Figure 6 & 7** – Existing site discharge headwall at Moondah Beach (November 2020)*

Figure 8 & 9 *– Existing drainage 'drop structure' (November 2020)*

The existing site headwall appears to be in good condition without evidence of significant beach erosion.

3 PROPOSED DEVELOPMENT

3.1 Proposed Site Description

The proposed development of the Site will consist of multiple multistorey buildings comprising Independent Living Units (ILU), Assisted Living Suites (ALS), and residential aged care suites. In addition, a Place of Worship building will be positioned in the centre of the Site. Refer to Figure 10 which indicates the proposed layout of the development.

Figure 10 *- Proposed Village – Site Plan (Ryman Healthcare Pty Ltd, July 2021)*

A review of the most recent architectural schedule indicates that the proposed development is intended to have a total impervious area of 32% of the total Site area.

3.2 Proposed Point of Discharge

The Legal Point of Discharge report received from Council on 30th July 2019 (see attached in Appendix A) states to utilise the existing stormwater disposal system, while also incorporating Water Sensitive Urban Design principles to treat and reuse stormwater on site prior to discharging from the site.

It is proposed that the Site continues to use the existing discharge point, which is the 450mm pipe and headwall at Moondah Beach on the western boundary of the site, as outlined in section 2.4.

Based on initial discussions with The Department of Environment, Land, Water & Planning (DELWP), it is understood that the Site's stormwater runoff flow rate and velocity discharging from the headwall is not to exceed that of pre-development conditions. On-site detention is necessary to restrict post development flow rates to pre-development conditions.

3.3 Proposed Overland Flow Path

An overland flow path is proposed to flow through the middle of the Site between the northern and southern buildings (i.e. between B02 & B06, POW & B05, Bowling Green & B03) in a formed

channel. This will also collect overland flow that enters the site from Kunyung Road during an extreme storm event when the Council drainage system is over capacity.

Overland flow paths on the northern and southern boundaries of the site will be along the roadways, which will be appropriately formed to direct water towards the western side of the site and around buildings.

Overland flow will then be collected in the drainage system. Any overland flow caused by extreme rainfall events or blocked drainage system will follow the natural topography falling from east to west towards the bay.

Refer to Appendix D for concept sketch of the drainage system, which includes preliminary overland flow paths and a formed channel running through the site.

4 ANALYSIS INPUTS

4.1 Council Requirements

As part of the discussions undertaken with Mornington Peninsula Shire Council, Council requires that post-development stormwater runoff flows be limited to the pre-development 1 in 2 Year ARI flow rate for all ARI storm events up to the 1 in 10 Year ARI storm event. Council also confirmed that on-site detention volumes can be calculated using the application OSD4W.

4.2 IFD Data

Rainfall intensity and duration data was obtained from the Bureau of Meteorology (2016 data).

AEP (%)	50%	20%	10%	5%	2%	1%
ARI (Yrs)	2	5	10	20	50	100
1 min	103.0	136.0	160.0	185.0	220.0	249.0
2 min	85.9	111.0	130.0	147.0	169.0	185.0
3 min	77.4	101.0	117.0	134.0	154.0	171.0
4 min	71.1	92.9	109.0	124.0	145.0	161.0
5 min	66.0	86.6	102.0	117.0	137.0	154.0
10 min	49.4	65.5	77.2	89.6	107.0	122.0
30 min	40.1	53.3	62.9	73.0	87.7	99.8
1 hr	26.7	35.2	41.4	47.9	57.2	64.7
2 hrs	17.0	22.1	25.9	29.7	35.0	39.2
3 hrs	10.6	13.7	15.9	18.2	21.2	23.5
6 hrs	8.1	10.4	12.1	13.7	16.0	17.7
12 hrs	5.1	6.6	7.7	8.7	10.2	11.4
24 hrs	3.2	4.2	5.0	5.7	6.8	7.6
48 hrs	2.0	2.7	3.2	3.7	4.5	5.1
120 hrs	1.2	1.7	2.0	2.4	2.9	3.2

***Table 1** – Current BOM data – Rainfall Intensity (mm/hr)*

As part of development planning advice from The Department of Environment, Land, Water & Planning (DELWP), the appropriate impacts of climate change are to be applied to the hydrological parameters of the development, for the duration of the design life. For the purpose of this calculation, the design life of this development is 50 years.

According to DELWP's document 'Guidelines for Assessing the Impacts of Climate Change on Water Supplies in Victoria 2016', section '*4.5.1 – Adjustments to GCM* Projections for Changes in Rainfall Intensity'* which outlines that a 5% increase in rainfall intensity should be applied for each degree of local warming for rainfall events with an annual exceedance probability (AEP) of 50% to 1%.

The expected rise in temperature over 50 years is represented in Figure 11 of the above-mentioned document, which plots a graph of historical and projected time series for Victorian annual average surface air temperature in degrees Celsius. The worst-case approximate rise in temperature is 2.8°C from the datum 0°C.

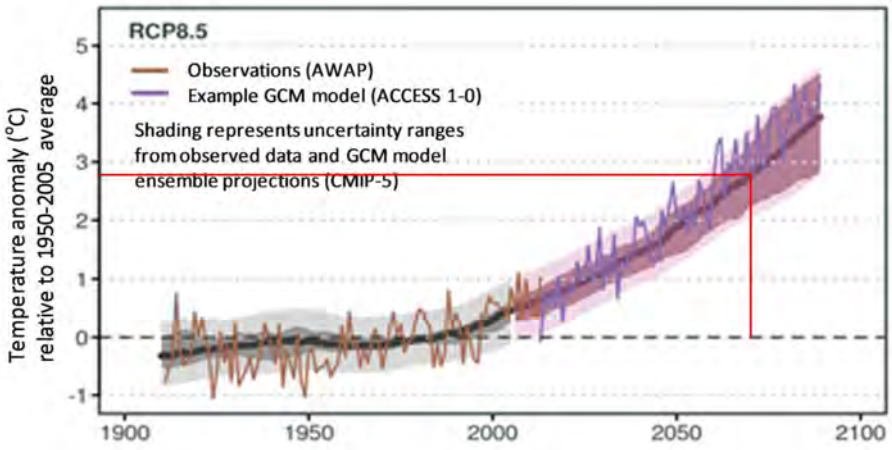


Figure 11 *– Historical and projected time series for Victorian annual average surface air temperature anomaly (°C) (DELWP, 2016)*

Therefore, the 14% is to be added to the rainfall IDF^ data. Refer to Table 1 below for adjusted rainfall data for the Site.

** Global Climate Models ^ Intensity-Duration-Frequency*

AEP (%)	50%	20%	10%	5%	2%	1%
ARI (Yrs)	2	5	10	20	50	100
1 min	117.4	155.0	182.4	210.9	250.8	283.9
2 min	97.9	126.5	148.2	167.6	192.7	210.9
3 min	88.2	115.1	133.4	152.8	175.6	194.9
4 min	81.1	105.9	124.3	141.4	165.3	183.5
5 min	75.2	98.7	116.3	133.4	156.2	175.6
10 min	56.3	74.7	88.0	102.1	122.0	139.1
30 min	30.4	40.1	47.2	54.6	65.2	73.8
1 hr	19.4	25.2	29.5	33.9	39.9	44.7
2 hrs	12.1	15.6	18.1	20.7	24.2	26.8
3 hrs	9.2	11.9	13.8	15.6	18.2	20.2
6 hrs	5.8	7.5	8.7	9.9	11.6	13.0
12 hrs	3.7	4.8	5.7	6.5	7.7	8.7
24 hrs	2.3	3.1	3.7	4.3	5.1	5.8
48 hrs	1.4	1.9	2.3	2.7	3.2	3.7
120 hrs	0.7	0.9	1.1	1.3	1.5	1.7

Table 2 *– Adjusted BOM data due to climate change – Rainfall Intensity (mm/hr)*

4.3 Total Site Area

The title boundary site area is 8.94 hectares.

4.4 Existing Site Permeability

The existing Site is approximately 74% pervious areas (vegetation and soft landscaping), and 26% impervious areas (roofs and paving).

4.5 Proposed Site Permeability

The latest architectural plans indicate that the Site is to consist of approximately 68% pervious areas, and 32% impervious areas after development is completed.

4.6 Detention Requirements

As the new development is increasing the total impervious area, additional stormwater runoff will be generated, therefore an On-Site Detention (OSD) system will be required to limit the discharge rate to pre-development levels. This volume is proposed to be created in underground tanks under landscaping.

The detention volume required is to be sized using the application OSD4W.

4.7 Water Sensitive Urban Design

The development is to comply with the recommendations of *Water Sensitive Urban Design Guidelines 2009, Urban Stormwater – Best Practice Environmental Management Guidelines*, and Melbourne Water's recommendations to achieve the following water quality planning objectives:

- 80% retention of the typical urban annual load for Total Suspended Solids (TSS)
- 45% retention of the typical urban annual load for Total Phosphorus (TP)
- 45% retention of the typical urban annual load for Total Nitrogen (TN)
- 70% retention of the typical urban annual load for gross pollutants (litter)

Methods to achieve the above treatment targets can include the use of proprietary products, rainwater reuse, raingardens, or detention basins. Treatment further downstream by Council is not viable for this Site, as the Site currently discharges directly to the beach.

Council has confirmed that the minimum objective requirements outlined above are satisfactory.

4.8 Catchment Areas

For detention and treatment analysis, the site has been split into 2 main catchment areas. The western side of the site was not included as no development will be undertaken in this area and the existing vegetation and drainage system is to be retained (this has been denoted as Catchment Area 3).

Catchment Area 1 is comprised of the northern buildings (B03, B04, B05, B06) and the surrounding roads and pavements. The total area of this catchment is approximately 3.3Ha.

Catchment Area 2 is comprised of the southern buildings (B01, B02, POW, Bowling Green) and the surrounding roads and pavements. The total area of this catchment is approximately 3.6Ha.

Adams Consulting Engineers Pty Ltd
60-70 Kunyung Road, Mount Eliza, VIC

Figure 12 *– Proposed Catchment Areas – Master Plan (Ryman Healthcare Pty Ltd, July 2021)*

5 ANALYSIS RESULTS

5.1 Existing Stormwater Flow

The existing stormwater drain system between the existing development and Moondah Beach was surveyed and modelled on the civil software 12d to determine the existing peak flow rates and water velocities that exit the headwall on Moondah Beach. The outputs from the modelling (estimated from the whole site runoff) have been collated into the table below.

Storm ARI (5min Tc)	Velocity (m/s)	Flow (m^3/s)	Flow (L/s)
2yr	6.36	0.650	650
5yr	6.66	0.847	847
10yr	6.55	1.005	1005
20yr	7.25	1.153	1153
100yr	9.57	1.522	1522

Table 3 *- Site flows discharging from the Moondah Beach headwall*

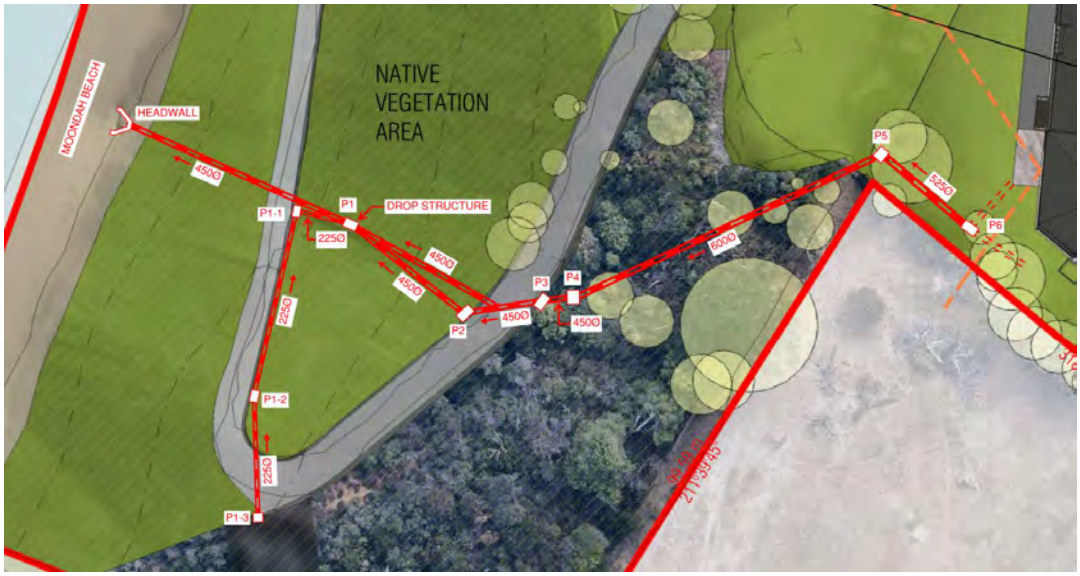


Figure 13 *- Sketch of the existing stormwater outfall drain system. Not to scale.*

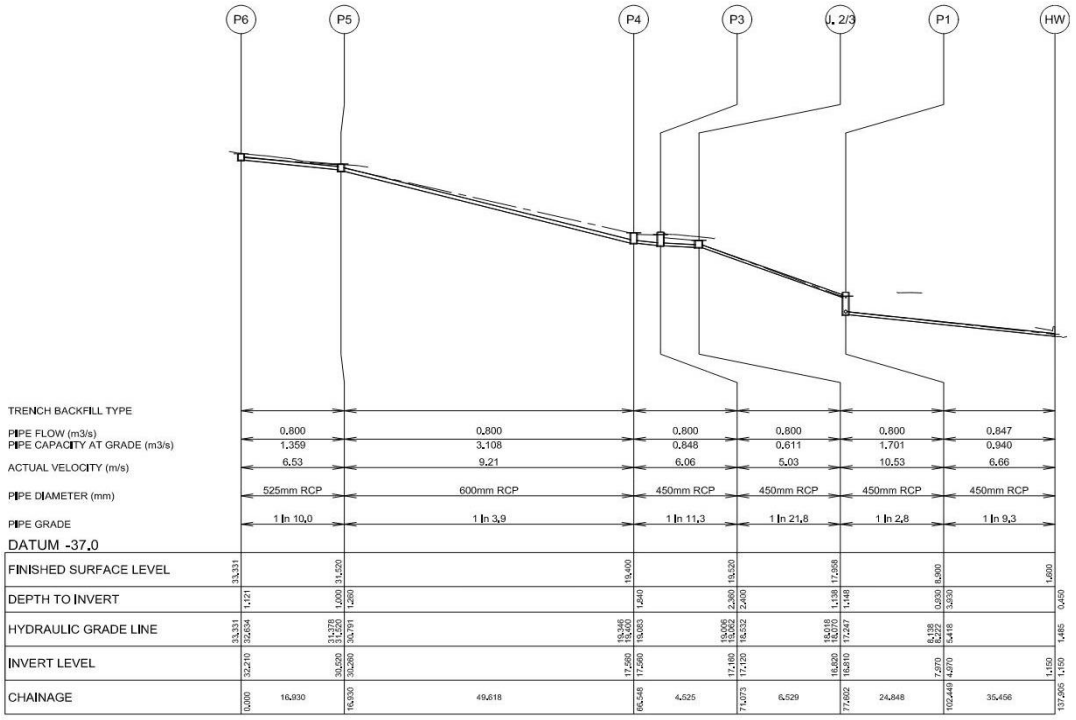


Figure 14 *- Stormwater outfall drain long-section model for a 5yr ARI existing conditions flow. Not to scale.*

5.2 On-Site Detention and Permissible Site Discharge

Detention volumes and permissible discharge rates were calculated using the software application OSD4W. The rainfall intensities provided in OSD4W are set values in the program sourced from BOM data, therefore the adjusted rainfall intensities due to climate change impact could not be applied to the program. In lieu of this, the 14% increase as stated in section 4.2 will be applied to the catchment detention volumes.

Catchment 1 required storage volume is 215m^3, with a permissible discharge rate of 270L/s. (The calculated volume from OSD4W was 188m^3).

Catchment 2 required storage volume is 226m^3, with a permissible discharge rate of 222L/s. (The calculated volume from OSD4W was 198m^3).

Catchment 3 has not been calculated in the detention assessment as it is downstream of the development catchments and is intended to remain as per existing conditions.

Refer to Appendix 1 & 2 for OSD4W detailed outputs.

5.3 Water Sensitive Urban Design Implementation

MUSIC modelling was used for site stormwater runoff and treatment analysis in order to achieve the best practise treatment targets to satisfy Council requirements. The Site catchment areas and relevant impervious ratios were input into the MUSIC model.

The primary strategy for stormwater treatment is to capture all possible clean roof runoff from the buildings and store this water in large tanks onsite and reused for toilet flushing. As there is a large amount of vegetation on the site, an allowance for using this captured water for irrigation has been used also been included in the MUSIC Model.

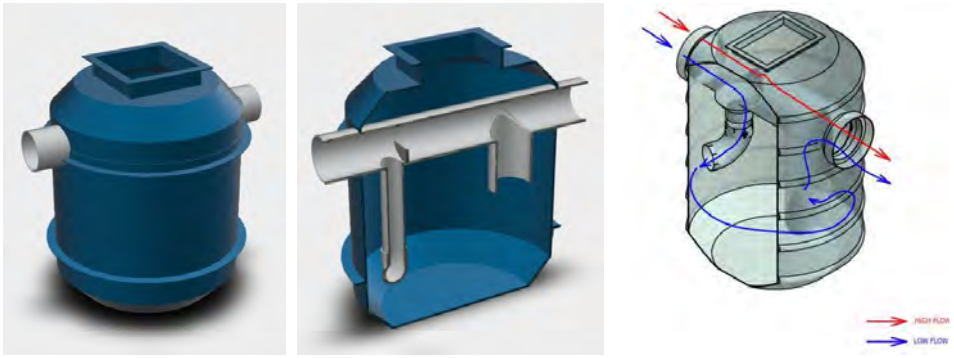
Due to the size and nature of the Site, the best practice treatment targets cannot be achieved by capture and reuse of roof runoff in rainwater tanks only. For this reason, the surface water runoff from hardstands (roads, footpaths, pavements) is proposed to be treated via end of line proprietary products.

Adams consulted with SPEL Environmental Melbourne for their review and further analysis of the model by appropriately applying some of their products into the MUSIC model to achieve the best practice targets.

SPEL recommend that the following products be incorporated into the stormwater treatment system:

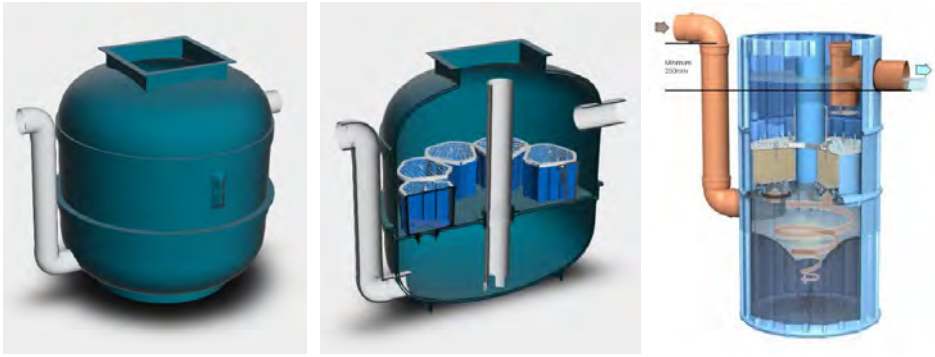
- 2 x SPEL Ecoceptor 2000 (Primary Treatment)

  Designed to capture sediment, heavy refuse, and gross pollutants, all stormwater captured in each catchment area is to pass through the Ecoceptor, with it being positioned between all surface drainage/rainwater tanks and the detention tank.



- 1 x SPEL Hydrosystem HS.1000 (Tertiary Treatment)

  Designed to remove total suspended solids, phosphorus, nitrogen and silts, the Hydrosystem is to be installed after the detention tanks, prior to the site stormwater being discharged to Moondah Beach.



- 2 x SPEL StormChambers (Detention Storage)

  An example of an underground stormwater detention, the prefabricated chambers come in a variety of configurations to suit the underground area available on site.

A screenshot of the MUSIC Model (as shown in figure 15 below) can be found below with the treatment train effectiveness of the whole site system displayed. Adams can provide the relevant MUSIC .sqz file if required.

Figure 15 *- MUSIC Model (November 2021)*

6 CONCLUSION

Adams Consulting Engineers Pty Ltd (Adams) has been engaged by Ryman Healthcare (Australia) Pty Ltd to prepare a Stormwater Management Report for the proposed aged care and retirement village in association with a place of Worship at 60-70 Kunyung Road, Mount Eliza.

This report outlined the required inputs and associated results of:

- Pre and post development stormwater runoff flow from the Site.
- Existing and proposed Legal Point of Discharge.
- Overland flow paths through the site.
- Requirements and volumes of on-site detention.
- Water Sensitive Urban Design measures for stormwater treatment.
- Investigate the impact of climate change on the site hydrology.

This report identifies initial findings and strategies, it is anticipated that close liaison and design approvals with all relevant authorities will occur during detailed design phase prior to construction, if a Planning Permit is granted.

The key design factors in the stormwater methodology are to improve the stormwater management on the existing site, meet Best Practice Pollution Reduction targets, provide Onsite Detention to restrict discharge flowrates to protect the existing site discharge to via the existing headwall as well as managing overland flow through the site. The following key items have been identified:

- The Site has a total area of approximately 8.94Ha and falls from Kunyung Road towards Moondah Beach to the west at an average grade of approximately 11%.

  The post development runoff flows are expected to be slightly increased, coinciding with an increase in impervious areas on Site. However, through the incorporation of stormwater detention systems, the post development discharge rates are not to exceed the flowrate of the existing conditions.
- The Site currently discharges stormwater runoff directly to Port Phillip Bay on Moondah Beach via a 450mm stormwater pipe / headwall. This arrangement is proposed to be retained post development. The peak discharge rate and velocity from the site is not to exceed the existing conditions, to ensure there is no impact on beach erosion due to the development.
- Overland flows generated by and entering the Site is proposed to be managed by dedicated flow paths within the site that follow the natural topography of the land. A formed channel in the middle of the site will collect any runoff from adjacent areas, as well as any flow that may enter the site from Kunyung Rd. The internal access roads on the north and south sides of the Site will also act as flow paths. This will allow safe flow through the Site and protect the buildings and residents.
- The proposed site is assessed in 3 main catchments due to the site topography and layout each with their own stormwater treatment and detention systems as relevant.
- On-site detention is required as part of the development. Council requires that the captured runoff be retained in storage for a post-development 1 in 10-year storm event, with the discharge flow rate being limited to a 1 in 2-year pre-development storm event.

  Due to climate change impact, an additional 14% of the storage volume is allowed for.

  Volumes were calculated using the application OSD4W which produced a volume of 215m^3 for Catchment Area 1, and 226m^3 for Catchment Area 2.
- The proposed On-Site Detention systems have been increased in size to allow for additional storage volume generated by an increase of peak storm intensities generated by climate

change in line with advice from the Department of Environment, Land, Water and Planning (DELWP)

- The Site's catchment areas and respective impervious area ratios were modelled on the application MUSIC to determine the effectiveness of stormwater treatment on Site. It was determined that a combination of rainwater reuse tanks and SPEL Environmental products should be incorporated into the stormwater drainage system to achieve the best practice targets required for stormwater treatment.

  It is recommended that the stormwater treatment system incorporates the following elements:

  2 x 120kL Rainwater Reuse tanks to store roof runoff to be reused for toilet flushing onsite and irrigation purposes.

  2 x SPEL Ecoceptor 2000 to act as a gross pollutant trap upstream of the detention system.

  2 x SPEL StormChambers for the detention storage.

  1 x SPEL Hydrosystem HS.1000 to act as further pollutant treatment downstream of the detention tanks, prior to the connection to the existing site drainage.

APPENDIX A – Legal Point of Discharge Letter

Asset Information

MORNINGTON PENINSULA Shire

Property File Number: 71169
Land Number: 62060
Property Address: 60-70, (Lot 2) Kunyung Road, Mount Eliza

Telephone/Mobile: **Fax:**
Email:

JACOB LANE
ADAMS ENGINEERING
LEVEL 10, 620 BOURKE STREET
MELBOURNE VIC 3000

Tick information Requested

- ☐ Building over easements (proposal attached to this application)
- ☑ Point of drainage discharge
- ☐ Underground drainage pipe information (Shire drains only)
- ☐ Special Asset Information request (Detail below. Charge to be confirmed)

Preferred Reply Method

☐ Post ☐ Fax ☑ Email ☐ Collect

Details:

Utilize existing stormwater drainage disposal system

And/or Dispose of stormwater on site, utilizing forms of Water Sensitive Urban Design principles, (eg, Rainwater tank/s), with overflow from tank/s to be retained on site.
Care shall be taken to ensure that no runoff is directed towards abutting properties.

Council records indicate there are no underground Council drains located on the property.

Important:
The information provided is advisory only and it is the responsibility of the recipient to prove the information as to location and depth.
In receiving this information the recipient undertakes to indemnify Council from any and all claims and actions howsoever arising from the conduct of works arising from the information supplied.

Responsibility for stormwater drainage systems
The relevant Building Surveyor is responsible for approval of the design and inspection of the stormwater drainage system prior to issuing a Certificate of Occupancy for building works.

Diagram:

Report prepared by: Greg Dietzel Telephone 5950 1317 30-Jul-19

private bag 1000
Seaford 3939
phone 1300 850 600
fax 03 5986 6694
DX 30059
ABN 53 159 850 000
www.mornpen.vic.gov.au

APPENDIX B – OSD Catchment 1

```
        ***  SUMMARY OSD DESIGN REPORT  ***
             ========================

Printed from  *OSD4W*  version 1.09.1    S/N #  W0-07091
Licensed to :
Prepared by : User1
=====================================================================

1. CLIENT DETAILS
   Name           : Adams Consulting Engineers Pty Ltd
   Address line 1 : Level 10, 620 Bourke Street
   Address line 2 : Melbourne, Vic, 3000
   Address line 3 :

2. JOB NAME AND REFERENCE
   Job Reference  : OSD4W-2008-001
   Job Name       : Ryman - Mt Eliza
   Job Detail  1  : 60-70 Kunyung Rd, Mt Eliza
   Job Detail  2  : Catchment 1
   Job Detail  3  :

3. AREAS (sq.m.)  &  RUN-OFF COEFFICIENTS
   Total Site area  :   32724

4. EXISTING SITE DETAILS
   Aes1  : 7900        Ces1   : 0.90
   Aes2  : 6500        Ces2   : 0.90
   Aes3  : 18324       Ces3   : 0.30
   Aes4  : 0          Ces4   : 0.12
   Weighted C - site     Cew    : 0.56

5. PROPOSED SITE DETAILS
   Aps1  : 16106       Cps1   : 0.90
   Aps2  : 16618       Cps2   : 0.30
   Aps3  : 0          Cps3   : 0.15
   Aps4  : 0          Cps4   : 0.12
   Weighted C - site     Cpw    : 0.60
   Uncontrolled portion(s)  UPfrac  : 0.00

6. CATCHMENT TIMES (minutes)
   Time of concentration          : 10.00
   Travel time from discharge point
           to catchment outlet  : 5.00

7. OSD DESIGN
   Flow Control Device            : Orifice
   Storage type                   : Tank
   Rainfall zone                  : MORNINGTON
   ARI for OUTFLOW        (years)  :  2
   ARI for STORAGE        (years)  :  10
   Qptot             (L/s)     : 259.62
   Qu                (L/s)     :  0.00
   Qp                (L/s)     :  0.00
   Calculated PSD       (L/s)     : 269.82
   Nominated PSD        (L/s)     :  -----
   Adopted PSD          (L/s)     : 269.82

8. STORAGE DETAILS
   Volume             (cub.m.)  : 188.58
   Time to fill storage    (mins)   :  13.7
   Time to empty storage   (mins)   :  38.3
   Critical storm duration  (mins)   :  19.3

9. STORM DURATIONS & RAINFALL INTENSITIES
   PSD ..... Duration :  10.0 min.    Intensity :  50.6 mm/hr
   MAX. STORAGE ..... Duration :  19.3 min.    Intensity :  57.6 mm/hr

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APPENDIX C – OSD Catchment 2

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        ***  SUMMARY OSD DESIGN REPORT  ***
             ========================

Printed from  *OSD4W*  version 1.09.1     S/N #  W0-07091
Licensed to :
Prepared by : User1
======================================================================

1. CLIENT DETAILS
    Name           : Adams Consulting Engineers Pty Ltd
    Address line 1 : Level 10, 620 Bourke Street
    Address line 2 : Melbourne, Vic, 3000
    Address line 3 :

2. JOB NAME AND REFERENCE
    Job Reference  : OSD4W-2008-001
    Job Name       : Ryman - Mt Eliza
    Job Detail  1  : 60-70 Kunyung Rd, Mt Eliza
    Job Detail  2  : Catchment 2
    Job Detail  3  :

3. AREAS (sq.m.)  &  RUN-OFF COEFFICIENTS
    Total Site area  :   36278

4. EXISTING SITE DETAILS
   Aes1  : 6350        Ces1   : 0.90
   Aes2  : 29928       Ces2   : 0.30
   Aes3  : 0           Ces3   : 0.15
   Aes4  : 0           Ces4   : 0.12
   Weighted C - site      Cew     : 0.41

5. PROPOSED SITE DETAILS
   Aps1  : 12372       Cps1   : 0.90
   Aps2  : 23906       Cps2   : 0.30
   Aps3  : 0           Cps3   : 0.15
   Aps4  : 0           Cps4   : 0.12
   Weighted C - site      Cpw     : 0.50
   Uncontrolled portion(s)  UPfrac  : 0.00

6. CATCHMENT TIMES (minutes)
   Time of concentration          : 10.00
   Travel time from discharge point
           to catchment outlet  : 5.00

7. OSD DESIGN
    Flow Control Device              : Orifice
    Storage type                     : Tank
    Rainfall zone                    : MORNINGTON
    ARI for OUTFLOW         (years)  :  2
    ARI for STORAGE         (years)  :  10
    Qptot                   (L/s)    : 206.68
    Qu                      (L/s)    :  0.00
    Qp                      (L/s)    :  0.00
    Calculated PSD          (L/s)    : 222.26
    Nominated PSD           (L/s)    : -----
    Adopted PSD             (L/s)    : 222.26

8. STORAGE DETAILS
    Volume                  (cub.m.) : 198.09
    Time to fill storage    (mins)   :  16.7
    Time to empty storage   (mins)   :  48.0
    Critical storm duration (mins)   :  23.1

9. STORM DURATIONS & RAINFALL INTENSITIES
    PSD ..... Duration :  10.0 min.    Intensity :  50.6 mm/hr
    MAX. STORAGE ..... Duration :  23.1 min.    Intensity :  52.2 mm/hr

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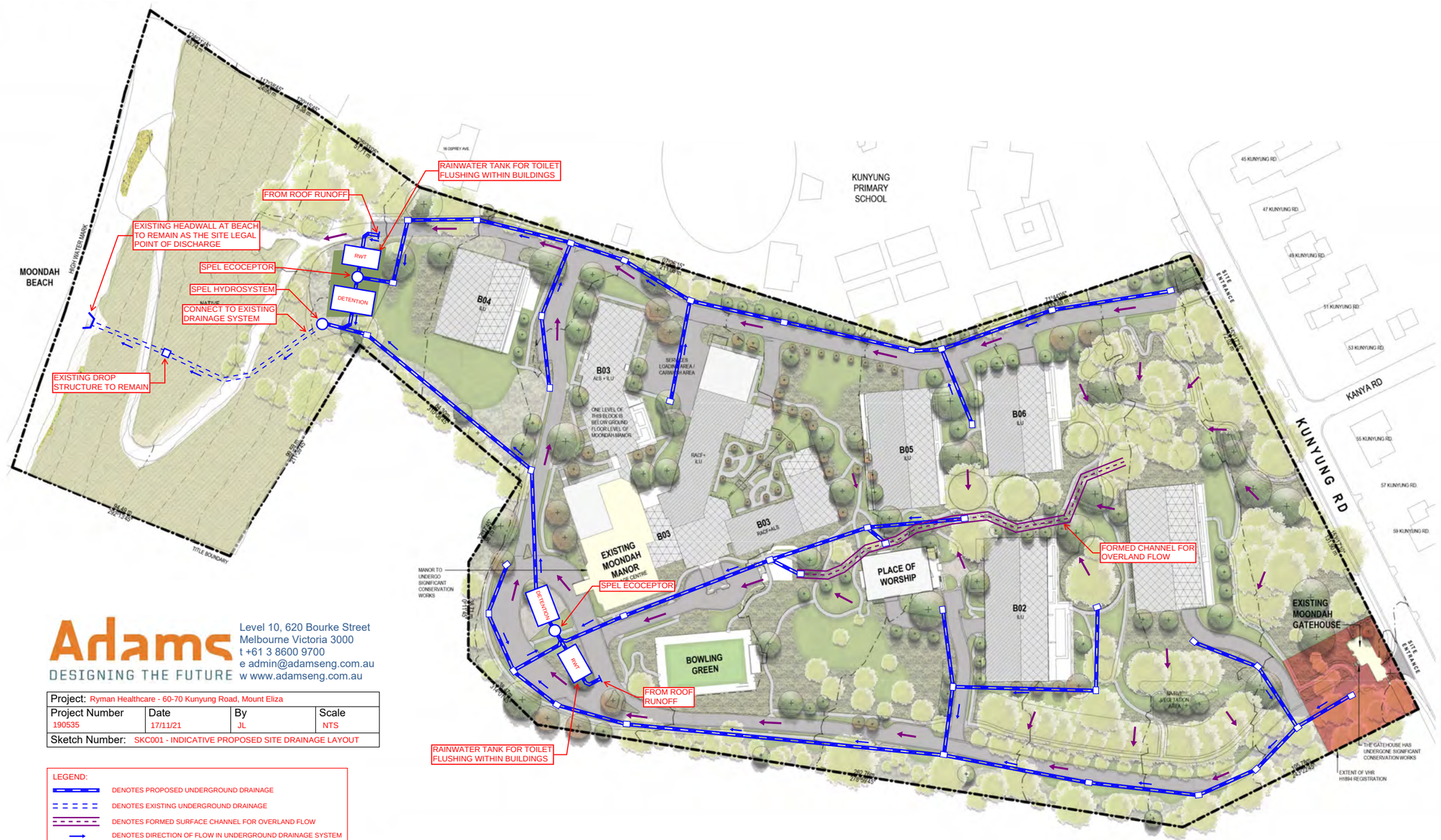
APPENDIX D - INDICATIVE PROPOSED SITE DRAINAGE LAYOUT



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Project: Ryman Healthcare - 60-70 Kunyung Road, Mount Eliza			
Project Number	Date	By	Scale
190535	17/11/21	JL	NTS
Sketch Number: SKC001 - INDICATIVE PROPOSED SITE DRAINAGE LAYOUT			

LEGEND:

- DENOTES PROPOSED UNDERGROUND DRAINAGE
- DENOTES EXISTING UNDERGROUND DRAINAGE
- DENOTES FORMED SURFACE CHANNEL FOR OVERLAND FLOW
- DENOTES DIRECTION OF FLOW IN UNDERGROUND DRAINAGE SYSTEM
- DENOTES DIRECTION OF OVERLAND FLOW PATHS
- DENOTES DRAINAGE PIT TYPICAL

Mt Eliza

Place of Worship Operational Management Plan

Ryman Healthcare

Contents

1. Purpose of the Operational Management Plan

A feature of living in our Mt Eliza Aged Care and Retirement Village (Village) is the opportunity to incorporate the practice of faith, worship and spirituality within the village and for its families. The Village includes a formal building which is flexible enough to meet multi faith needs but also adaptable where possible to meet the needs for specific religious services. Incoming residents will be consulted as to their needs and the Village will work to achieve outcomes that suit residents on an occasional or more regular basis depending on demand and availability of religious leaders. Consultation will also occur directly with religious organisations to provide services within the Village including virtual attendances where appropriate. The Village will strive to assist with faith and worship within a secure and safe environment.

This Plan provides preliminary information about the proposed operations and adopts the phrase Place of Worship in preference to a specific label although the facility is basically formatted to function as a church, chapel or temple.

This Plan will form part of the information pack available to prospective residents and will be updated from time to time as specific services are scheduled or planned. Residents will be kept informed of upcoming services and will be welcome to attend regardless of faith.

This Place of Worship Operational Management Plan (the plan) provides the base outline of the procedures and responsibilities for the operation of the Place of Worship (PoW).

Based on constant review with residents and changing needs, this plan will be amended from time to time as required.

2. Operation of the PoW

2.1 Hours of Operation

The PoW will generally be open from 9:00am – 5:00pm per day, seven days a week, for the full calendar year. It, or dedicated areas, will be available for reflection at all times when services are not being conducted.

On occasion and/or at request of residents, special feasts, services/events may be held outside these hours.

The PoW will be open to residents and their visitors. Access to the PoW for the general public will be at request or by invitation and subject to discretion of management based on health and safety protocols and patron practicalities.

2.2 Capacity

The PoW has multiple spaces to accommodate congregations/groups of various sizes and has a maximum overall capacity of 120 persons. (Figure 1).

Space	Capacity
Main Worship Area	100-120 persons
Partition Worship Area	50-60 persons per room
Foyer	30 persons
Meeting Room	8-10 persons
Religious Leader's Room	2-3 persons

Multiple services/activities can be held at the same time depending on anticipated attendance.

Female and male amenities (including an accessible bathroom) have been provided based on full capacity of the PoW.

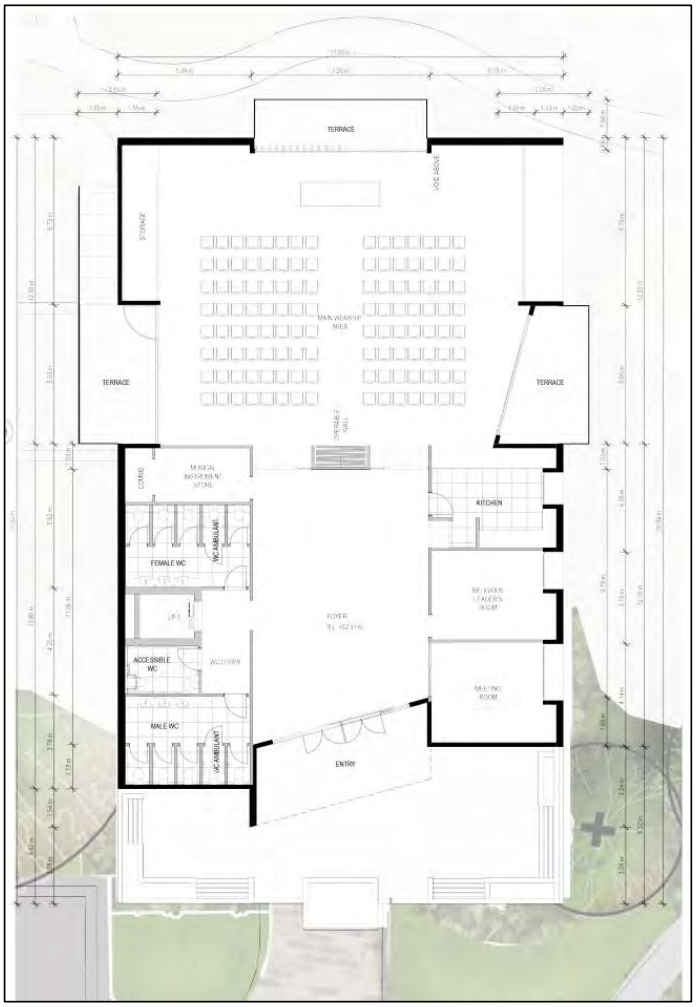

Figure 1: PoW Floor Plan

2.3 Frequency and times of services

Regular services

Weekly services will be conducted by various religious organisations and will be organised for residents by village staff. Capacity, room configuration and service type will be coordinated based on worship and resident requirements.

A minimum of two (2) services including a Sunday service and a mid-week service, and one (1) study group will be conducted each week.

Additional services will be organised based on demand. Village residents may also organise services and study groups with their select denomination as well as individual blessings. Residents may also use the PoW for individual or group prayers sessions.

All denominations will be welcomed within the PoW for all services and, over time it is anticipated that the PoW will accommodate a range of religious denominations accordingly to community demand.

Special Services

On occasion village staff may organise special services for residents (and their visitors). These services may have a higher attendance than regular weekly services.

Special services may be held for important religious events such as Christmas, Easter, Greek Orthodox Easter and Passover, depending on the religious affiliation of village residents. They may also be held for significant events such weddings and funerals, and commemorative days such as Anzac Day, All Saints Day and Remembrance Day.

Over time, the demand and timing of special services will vary to accommodate the range of religious denominations.

2.4 Ancillary uses

When the PoW is not being used for religious services or other related activities it may be made available for use by residents and their visitors for meetings or group activities such as choir practice or Probus, Rotary & Lions Club meetings.

3. Management of the PoW

3.1 Management

The PoW will be managed by village staff.

The village Activities & Leisure Co-ordinator/s will be responsible for organising the weekly services and study sessions. Residents may also request and organise additional services, prayer sessions, study classes and choir practice etc. These will need to be organised through the village A&L Coordinators.

A 'booking' system will be used to manage operations of the PoW and its various spaces, and priority will be given to religious services and associated activities.

A village staff member will also be responsible for locking and unlocking the PoW on a daily basis.

3.2 Noise

Noise will be managed by the religious leader of the service and village staff.

Services which include gospel or choir performances will generally be held between the hours of 9am and 5pm to limit noise impacts on surrounding residents. Noise from events/services held outside these hours will be managed by village staff.

3.3 Cleaning and maintenance

Village staff will be responsible for the cleaning and maintenance of the PoW (including kitchen and bathroom facilities). The PoW will be cleaned twice a week or more frequently as required.

The kitchen will be cleaned after each use and will need to be 'left as found'.

It will be the responsibility of the A&L Co-ordinator or religious leader to ensure the POW is set up prior to each service/use and tidied after each use.

Village staff will also be responsible for maintaining the PoW building including gardening, external cleaning, repairs and air-conditioning.

3.4 Waste removal

Rubbish bins will be provided within the PoW for daily use. Village cleaning staff will be responsible for emptying the rubbish bins into the building's main basement bin store for weekly collection by a private waste contactor.

Weekly rubbish collection will occur within the PoW basement.

3.5 Security

Village management will monitor the PoW building via CCTV and or via inspections by staff throughout the day. The PoW will be locked before and after opening hours and security guards will monitor the PoW during their nightly village circuits.

4. Access and Car Parking

4.1 Resident access

The PoW has been located centrally within the village and in proximity to the main village centre to facilitate convenient access for all.

Pedestrian access will be available to the PoW from all buildings within the village via a network of accessible pathways.

In the event of poor weather, village staff may organise for residents to be transported to the PoW in the village van.

The village van may also be used to transport residents with limited mobility to the PoW as required. A dedicated drop off zone/ambulance bay is provided in proximity to the main entrance.

4.2 Live streaming of services

Services conducted within the PoW may also be live streamed directly to individuals in their accommodation (independent living units, assisted living suites or aged care room) upon request. They may also be streamed to the village centre or care lounge facilities, enabling the entire village to attend a single service. From time to time it may be appropriate for the religious leaders to conduct a service virtually and screens are provided in the PoW for this purpose.

4.3 Visitor access & car parking

16 visitor car parking spaces will be provided in the PoW basement. These car parks will be for use by visitors to the PoW and visitors to the village generally. A lift has been provided from the basement to allow for music/other equipment to be easily transferred to the PoW and to provide access for visitors and residents with limited mobility.

One (1) accessible parking space will also be located directly adjacent to the PoW's main entrance.

An additional 40 visitor parking spaces are provided throughout the village, with access to the PoW from these spaces available via the network of footpaths.

4.4 Van, Ambulance and Hearse parking

A drop off zone and ambulance bay will be located to the PoW's frontage for short stay pick up and drops offs. No long-term parking will occur in this space.

In the event of a funeral at the PoW, this zone will be left clear for Hearse access.

4.5 Traffic Management

Village staff will be responsible for traffic management.

5. Key Personnel

Contact details for the relevant Ryman staff and visiting religious leaders are provided in the following table:

Name	Position	Contact Details
Paul Sutton	Victorian Operations Manager	Paul.sutton@rymanhealthcare.com
Eileen Kielty	Regional Operations Manager	Eileen.kietly@rymanhealthcare.com
TBC	Village Manager	TBC
TBC	Village Activities and Leisure Co-ordinator	
TBC	Resident Coordinator	TBC
TBC	Religious leader 1	TBC
TBC	Religious leader 2	TBC

This table will be updated on a yearly basis or as frequently as needed to capture key personnel changes.

Aged Care & Retirement Village in association with a Place of Worship at 60-70 Kunyung Road, Mt Eliza

Cultural Heritage Management Plan
Number: 16147

Sponsor: Ryman Healthcare (Australia) Pty Ltd

Heritage Advisor: Jodie Mitchell

Authors: Jodie Mitchell and Edward East

Date: 18 November 2019

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Aged Care & Retirement Village in association with a Place of Worship at 60-70 Kunyung Road, Mt Eliza

Cultural Heritage Management Plan Number: 16147

Registered Aboriginal cultural heritage is not present in the activity area

Activity Size: Medium

Assessment: Complex

Sponsor: Ryman Healthcare (Australia) Pty Ltd

Heritage Advisor: Jodie Mitchell

Authors: Jodie Mitchell and Edward East

Date: 18 November 2019

EXECUTIVE SUMMARY

Compliance requirements are set out in Part 1 of the Cultural Heritage Management Plan.

The proposed activity is the development of an Aged Care & Retirement Village in association with a Place of Worship (Map 2). The development will comprise a number of residential unit blocks, with underground car parking, access roads and driveways, underground utilities, walking paths, leisure amenities (for example lawn bowling green) and landscaping. Almost all of the activity area will be impacted, except the far western section as shown in Map 6. A full description of the activity area is contained in Section 4. The location of the activity area is 60-70 Kunyung Road, Mt Eliza, Victoria (Map 1).

A desktop, standard and complex assessment has been undertaken. The desktop assessment concluded that there is moderate potential for Aboriginal archaeological sites to occur within the activity area, likely to be shell middens and flaked stone artefacts. The desktop assessment also revealed the activity area contains significant amounts of introduced fill and underground services throughout.

The standard assessment revealed dense grass cover, buildings, sports courts, driveways and parking areas, trees, bushes and landscaping covered the ground surface. The standard assessment concluded that the activity area had been subject to ground disturbance, however recommended a complex assessment to investigate the level of disturbance.

The complex assessment comprised 16 mechanically excavated pits, each measuring 1x2 metres, excavated opportunistically throughout the activity area (Map 7). The complex assessment revealed all of the activity area has been subject to ground disturbance, with introduced fill in all the pits. It is considered unlikely that Aboriginal cultural material is present in the activity area.

There is no Aboriginal cultural heritage in the activity area.

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PART 1 - CULTURAL HERITAGE MANAGEMENT CONDITIONS

These conditions become compliance requirements once the Cultural Heritage Management Plan is approved. Failure to comply with a condition is an offence under section 67A of the *Aboriginal Heritage Act 2006*.

The Cultural Heritage Management Plan must be readily accessible to the sponsor and their employees and contractors when carrying out the activity.

1. GENERAL CULTURAL HERITAGE MANAGEMENT CONDITIONS

1.1 Cultural Heritage Induction

A cultural heritage induction must be conducted with all site workers/contractors by a BLCAC HA and BLCAC representative prior to the commencement of ground disturbance works.

This session must include a brief history of the Aboriginal occupation of the activity area and broader region; a summary of the archaeological investigations conducted within the activity area; specific details of all Aboriginal places and cultural material located during the CHMP assessment; a summary of the conditions and contingencies contained within the CHMP; and the obligations of site workers/contractors and Sponsors under the Act.

The BLCAC HA and BLCAC representative must be provided with at least two weeks' notice of the requirement to present a cultural heritage induction. This procedure must be paid for and organised by the Sponsor

1.2 Copy of CHMP to be Kept Onsite

The Sponsor must ensure that an approved hard copy of CHMP 16147 is kept onsite at all times during the activity.

2. CONTINGENCY PLANS

2.1 Section 61 matters

Under Section 61(d) of the Act all CHMPs must incorporate contingency plans to manage Aboriginal cultural heritage issues that may affect the conduct of the activity. These contingency plans must be kept on site during the construction works and are to be read in conjunction with the management plan.

2.2 Dispute Resolution

Any disputes arising during the course of the activity which are directly relevant to Aboriginal cultural heritage should be dealt with as follows:

- All disputes must be jointly investigated;
- Where a breach of the CHMP conditions or contingency plans occurs, the RAP and the Sponsor must agree to the best course of action;
- Any correction or mitigation activities required must be overseen by a representative of the RAP and must take place in accordance with the instructions given by the RAP;
- The Sponsor and its contractors must not undertake any such activities without the consent of the RAP;
- Representatives from the RAP and the Sponsor must attempt to negotiate a resolution to any dispute within two business days;
- If an agreement cannot be reached then new representatives should be appointed to negotiate an agreement; and
- These arrangements do not preclude any relevant legal action being undertaken, however the Sponsor and the RAP must exhaust the above avenues of action prior to any relevant legal action being pursued.

2.3 Discovery of Aboriginal Cultural Heritage during works

2.3.1 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 5 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; and
   - 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 s.17 of the Act.

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 human remains, will determine the appropriate course of action as required by s.18(2)(b) of the Act;
   - 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 AV;
   - Appropriate management measures must be implemented to ensure that the remains are not disturbed in the future.

2.3.2 Unexpected Discovery of Aboriginal cultural heritage other than Ancestral remains

There is low potential for any unknown Aboriginal cultural heritage to be found within the activity area. Any Aboriginal cultural heritage that may be found is likely to be flaked stone artefacts. To aid in the identification of the type of Aboriginal cultural heritage which may be discovered in the activity area covered by this CHMP, fact sheets are provided in Appendix E. However, a suitably qualified and experienced Heritage Advisor (HA) must always be consulted in instances where a person discovers or suspects they have discovered Aboriginal cultural heritage.

The Sponsor must at all times avoid unlawful harm to Aboriginal cultural heritage. The following contingency must be followed by the Sponsor if previously unrecorded Aboriginal cultural heritage is identified during the activity. If suspected Aboriginal

cultural heritage is identified within the activity area during the activities, the following process applies:

a) All works within 10 metres of the location of suspected Aboriginal cultural heritage must be immediately suspended and the extent of the suspected Aboriginal Place isolated from further disturbance by safety webbing and star pickets. The suspected Aboriginal cultural heritage must not be removed.

b) The Site Supervisor must be immediately notified and a Heritage Advisor (HA) and the BLCAC must be notified within 24 hours of the discovery of suspected Aboriginal cultural heritage.

c) A HA and a representative of the BLCAC must inspect the suspected Aboriginal cultural heritage as soon as is practical. First and foremost it will be necessary to determine if the suspected Aboriginal cultural heritage is indeed Aboriginal cultural heritage. If the suspected Aboriginal cultural heritage is determined not to be Aboriginal cultural heritage by the HA and the representative of the BLCAC, works may recommence.

d) If the suspected Aboriginal cultural heritage is determined to be Aboriginal cultural heritage by the HA and the representative of the BLCAC, a decision or condition as to the management of the Aboriginal cultural heritage must be made by the HA and the BLCAC.

e) Section 61 matters relating to harm avoidance or minimisation measures must be explored by the HA in consultation with the BLCAC and the Sponsor. If agreement is not able to be reached between the BLCAC and the Sponsor in regards to the management of the Aboriginal cultural heritage this will be classed as a dispute and the procedure detailed in Section 2.2 will be followed. Resolution of any disputes between the Sponsor and the BLCAC in relation to the implementation of the CHMP or the conduct of the activity must be followed.

f) The HA and the BLCAC will consult with the Sponsor and discuss options to avoid harm to the Aboriginal cultural heritage found during the activity. If harm to the Aboriginal cultural heritage cannot be avoided, then options to minimise harm will be discussed.

g) If the BLCAC are satisfied that harm to a site cannot be avoided or minimised, then the following processes will apply:

    1. If an isolated artefact or small dispersed artefact scatter site is discovered a full scientific significance assessment will be undertaken. If the site is

deemed to be of low scientific significance then no conditions for the salvage, removal or further works regarding the site will be required. The HA must record the artefact scatter as an Aboriginal cultural heritage site, complete the appropriate VAHR site card forms and lodge them with AV prior to the site being destroyed. Work in the excluded area may recommence provided:

- The discovered Aboriginal cultural heritage has been identified, inspected and recorded by a HA;
- The HA has identified the discovered cultural heritage as being an isolated or dispersed scatter and the scientific significance has been assessed as low; and
- New or updated VAHR site record cards have been completed and forwarded to AV; and
- Where the HA, the BLCAC and the Sponsor agree there is no other prudent or feasible course of action; and
- Where relevant the Sponsor and the HA will ensure that the above steps are followed and that legal obligations and requirements are complied with at all times.

2. If Aboriginal cultural heritage other than an isolated artefact or small dispersed artefact scatter site of low scientific significance is discovered, including but not limited to a surface or sub surface scatter of more than five artefacts, a stratified deposit, a mound, a shell midden or a scarred tree is discovered, the HA must fully record the site, assess the scientific significance, and lodge the appropriate site cards with AV. The HA must then arrange for the salvage of the site(s).

   The salvage methodology will be decided upon on a case-by-case basis by the HA in conjunction with the BLCAC. The salvage methodology employed must be appropriate to the type(s) of site(s) and the nature, extent and significance of the site(s). Any salvage collection or excavation undertaken must meet the following minimum standards:

   - The salvage must abide by Regulation 65 of the Regulations;
   - The salvage must abide by the *Aboriginal Heritage Act 2006 Practice Note: Salvage Excavation* (produced by AV);

- The salvage must be undertaken in accordance with proper archaeological practice;
- The salvage must be supervised by an appropriately qualified and experienced archaeologist and heritage advisor;
- BLCAC representatives must participate in any salvage excavations;
- Any excavation trenches must be excavated in either stratigraphic layers and/or in controlled arbitrary spits of 5cm maximum, to base sterile layer or to bedrock as appropriate;
- 100% of the excavated material must be sieved through 5mm or less mesh;
- Each trench must be fully recorded, including the establishment of, or use of a previously established site datum, recording of levels, mapping of location using a differential GPS unit, recording of spits, stratigraphic layers and features, including soil description, Munsell colour and pH levels, drawing of site plans and section profiles, recording of artefacts and labelling/cataloguing of all Aboriginal cultural heritage with reference to provenance;
- Should any *in-situ* cultural deposits be discovered during excavation in direct association with datable material, then the dating of these materials using an appropriate dating technique must be conducted;
- Any salvage excavation must be carried out in accordance with proper archaeological practice and standards;
- An archaeological report detailing the methods, analysis and results of the excavation must be prepared within six months of completion of salvage excavations and a copy provided to AV, BLCAC and the Sponsor; and
- The extent of the salvage excavation must be to the satisfaction of the BLCAC.

h) Agreement as to the process to be followed to manage the Aboriginal cultural heritage and how to proceed with works must be made within a period not exceeding three working days by the BLCAC, the HA and the Sponsor.

i) Aboriginal Victoria must be notified of the discovery of Aboriginal cultural heritage through the submission of the appropriate Victorian Aboriginal Heritage Registry forms and (if applicable) a salvage excavation report.

j) The BLCAC may notify the HA who may then advise the Site Supervisor when suspended construction works can proceed. In general, works may recommence:

- When the discovered Aboriginal cultural heritage has been identified, inspected and recorded by a HA and all appropriate protective measures have been taken;
- When the relevant Aboriginal cultural heritage records have been updated and/or completed with AV;
- When all parties agree there is no other prudent or feasible course of action; and/or
- Once any relevant dispute has been resolved.

The Heritage Advisor, the Sponsor and the BLCAC must ensure that the above steps are followed and that legal obligations and requirements are complied with at all times.

Following completion, a report detailing the results of the salvage excavation and subsequent analysis of Aboriginal cultural material must be lodged with AV and the BLCAC within 120 days of fieldwork. The cost of BLCAC and HA attendance at any on-site inspections or meetings and/or any other involvement in this process must be met by the Sponsor.

2.4 Reporting discovery of Aboriginal cultural heritage during works

Where Aboriginal cultural heritage is identified during an activity, the Sponsor is responsible for notifying the HA of the discovery in accordance with S.24 of the Victorian *Aboriginal Heritage Act* 2006. The HA must investigate and report the Aboriginal cultural heritage, notify AV of discovery by lodging either a new or updated VAHR site record card within a timely manner, and facilitate an appropriate outcome in accordance with these contingency plans.

2.5 Management of Aboriginal cultural heritage discovered during works

Should any Aboriginal cultural heritage be discovered during the course of the activity, the custody of the Aboriginal cultural heritage must comply with the *Aboriginal Heritage Act 2006* and be assigned in the following order of priority:

- Any relevant RAP for the land from which the Aboriginal cultural heritage has been salvaged;
- Any relevant registered native title holder for the land from which the Aboriginal cultural heritage has been salvaged;
- Any relevant native title party (as defined in the *Aboriginal Heritage Act 2006*) for the land from which the Aboriginal cultural heritage has been salvaged;
- Any relevant Aboriginal person or persons with traditional or familial links with the land from which the Aboriginal cultural heritage has been salvaged;
- Any relevant Aboriginal body or organisation which has historical or contemporary interests in Aboriginal heritage relating to the land from which the Aboriginal cultural heritage has been salvaged;
- The owner of the land from which the Aboriginal cultural heritage has been salvaged;
- The Museum of Victoria.

It is noted that any HA engaged to investigate any Aboriginal cultural heritage should be able to retain initial custody of Aboriginal cultural heritage for up to twelve months for the purposes of analysis. In accordance with the *Aboriginal Heritage Act 2006,* during the period that the HA has custody of the Aboriginal cultural heritage, the HA must:

- Label and package collected artefactual material with reference to provenance; and
- Arrange temporary storage of the material in a secure location together with copies of the catalogue, assessment documentation, CHMP and results of the analysis.

2.6 Contingency for reburial of cultural material

Aboriginal cultural material recovered/collected during the course of the assessment, salvage program or activity must be reburied within the activity area and the following must occur:

- a reburial location within the protected area in the north west section of the activity area is to be selected by the RAP and the Sponsor, and this location must be an area which is protected from future development of disturbance;
- once reburied, the reburial location must be recorded to sub-metre accuracy by a HA and be relocatable;
- flagging tape should be laid within the hole, at a depth of 30cm above the reburied cultural material to identify that cultural material is buried below the flagging tape;
- the relevant VAHR site record must be updated and a 'collection' component form must be completed by the HA and lodged with AV;
- cultural material to be reburied must be placed in a durable container;
- the contents of the container must include the cultural material to be reburied, a catalogue of the cultural material to be reburied both on paper and on an archive quality storage medium, and a copy of the relevant section of the CHMP under which the reburial is being performed;
- a smoking ceremony must be performed prior to the reburial of cultural material;
- the reburial must be conducted by BLCAC representatives;
- the cost of the container, the analysis and preparation of the cultural material for reburial, smoking ceremony, HA and BLCAC attendance at the reburial must be borne by the Sponsor.

2.7 Reviewing compliance

Compliance with the conditions and provisions of an approved Cultural Heritage Management Plan (CHMP) is a requirement of the *Aboriginal Heritage Act 2006*. Any action carried out contrary to the conditions and provisions of an approved CHMP which causes harm to Aboriginal cultural heritage is an offence.

In the instance that the conditions of a CHMP or the conditions of a cultural heritage permit have been contravened resulting in harm being caused to Aboriginal cultural heritage, the Minister for AV may order a cultural heritage audit (Section 80). Should a cultural heritage audit be ordered a stop order requiring the activity to cease immediately must also be issued to the Sponsor (Section 88). 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 (Section 87).

To ensure that the proposed activity is undertaken with full compliance with the conditions and provisions of the approved CHMP, a compliance review checklist has been formulated to assist the Sponsor to ensure that the proposed activity remains compliant with the conditions and provisions of the approved CHMP. The checklist is included in Appendix F.

2.8 Procedure for Non-Compliance

All non-compliance issues must result in a stop works until such a time as a meeting can be held between the RAP, Sponsor and HA to discuss the process moving forward. A stop works must be implemented even if the non-compliance has not resulted in harm to Aboriginal cultural heritage.

PART 2 – ASSESSMENT

3. INTRODUCTION

Alpha Archaeology Pty Ltd (Alpha) has been commissioned by Ryman Healthcare (Australia) Pty Ltd (the Sponsor) to prepare this complex Cultural Heritage Management Plan (CHMP) for an activity area known as 60-70 Kunyung Road, Mt Eliza, Victoria (Map 1). The Sponsor is proposing to develop Ryman Healthcare Aged Care & Retirement Village in association with a place of worship within the activity area (Map 2).

3.1 Reasons for Preparing the CHMP

This CHMP has been prepared in accordance with Part 4 of the Victorian *Aboriginal Heritage Act 2006* (the Act). The Act specifies that the Victorian *Aboriginal Heritage Regulations 2018* (the Regulations) determines when a CHMP is required. As per Part 2 (7) of the Regulations:

A cultural heritage management plan is required for an activity if—

(a) all or part of the activity area for the activity is an area of cultural heritage sensitivity; and

(b) all or part of the activity is a high impact activity.

The specific Regulations which require this CHMP are:

1) Area of Cultural Heritage Sensitivity:-

- R.31 Coastal land - (1) Subject to subregulation (2), land within 200 metres of the high water mark of the coastal waters of Victoria or any sea within the limits of Victoria is an area of cultural heritage sensitivity;

- R.25 Registered cultural heritage places – (2) Subject to subregulation (3), land within 50 metres of a registered cultural heritage place is an area of cultural heritage sensitivity.

2) High Impact Activity:

- R.46 Buildings and works for specified uses – (1) The construction of a building or the construction or carrying out of works on land is a high impact activity if the construction of the building or the construction or carrying out of the works – (a) would results in significant ground disturbance; and (b) is for, or

associated with, the use of the land for any one or more of the following purposes – (xxiv) a retirement village.

3.2 Notice of Intention to Prepare a Cultural Heritage Management Plan

Under Section 54 of the Act, a Notice of Intention to Prepare a Management Plan (NOI) must be submitted by the Sponsor to Aboriginal Victoria (AV) and to the BLCAC before the preparation of a CHMP can commence. A NOI was submitted by the Sponsor to the BLCAC on 24 October 2018. The BLCAC submitted an acknowledgement letter of this notice on 26 October 2018. A NOI was submitted by the Sponsor to AV on 24 October 2018. AV submitted an acknowledgement letter of this notice to the Sponsor on 24 October 2018. A copy of the NOI was sent to the Mornington Peninsula Shire Council on 24 October 2018. A copy of these notices are attached in Appendix A. The AV Management Plan Identifier Number for this CHMP is 16147.

3.3 Location of Activity Area

The activity area is located at 60-70 Kunyung Road, Mt Eliza, Victoria (Map 1). The activity area is approximately 8.9 hectares in size and is bounded by Kunyung Road to the east, Kunyung Primary School and residential dwellings to the north, the Port Phillip Bay foreshore to the west and private residential property to the south. The cadastral details of the activity area are Lot 1 on TP813402 in the Parish of Moorooduc. A more detailed description of the activity area is contained within Section 4.

3.4 The Name of the Sponsor

The name of the Sponsor is Ryman Healthcare (Australia) Pty Ltd, ABN 44 142 241 110.

3.5 The Name and Qualification of the Heritage Advisors

This CHMP was prepared by Alpha Heritage Advisor Jodie Mitchell and Edward East. The project management and quality assurance review was undertaken by Mitchell. The fieldwork was undertaken by Alpha Heritage Advisors Jodie Mitchell and Edward East, and Archaeologist Jason Gay. The fieldwork was supervised by Mitchell.

Jodie Mitchell has been the Director of Alpha Archaeology Pty Ltd since 2004, and has extensive experience in cultural heritage management through working on a variety of projects throughout Australia. She has also worked on projects overseas in Thailand and Georgia. Her skills include project management, historical and Indigenous archaeological survey and excavation, significance assessments, archival recording, consultation with Aboriginal communities, stakeholders and clients, heritage management conditions, recording historical and Indigenous sites, stone tool residue

analysis, artefact analysis and computer illustrations. Her specialist area is the excavation and analysis of human skeletal remains. Her formal qualifications include a Bachelor of Archaeology, La Trobe University, Victoria (2004), and Maritime Archaeology Certificate: Part 1, AIMA and NAS (U.K.). Jodie has a number of professional affiliations and registrations with relevant associations including full membership with the Australian Association of Consulting Archaeologists Inc. (MAACAI), Life Member Australasian Society for Historical Archaeologists (ASHA), Life Member Egyptology Society of Victoria, current Vice President of Archaeological and Anthropological Society of Victoria (AASV), and is a registered Heritage Advisor with Aboriginal Victoria.

Edward East has worked as a consultant archaeologist since 2007. He has worked in many parts of Victoria, across Queensland, New South Wales, Western Australia and in Papua New Guinea and Kuwait. Close and amicable relationships with Indigenous groups was a critical part of all his Australian and Papuan Indigenous focused projects. Edward is a registered Heritage Advisor with Aboriginal Victoria. He has participated in and directed many Victorian Aboriginal and historic focused field archaeology projects. As part of this work he has authored a diverse array of reports and documents including detailed historic background studies, cultural heritage due diligences, remote area survey reports, archaeological salvage reports, Heritage Impact Statements, Cultural Heritage Management Plans and Aboriginal Victoria site cards. In addition to his writing experience Edward also has strong abilities in historic artefact analysis, faunal remains analysis, lithic analysis and complex GIS mapping.

3.6 The Name of Owner and Occupier of the Activity Area

The owner of the activity area is Ryman Healthcare (Australia) Pty Ltd.

3.7 The Name of the Registered Aboriginal Party (RAP)

Under Sections 54 and 55 of the Act, a formal consultation process must take place with any relevant Registered Aboriginal Party (RAP) in order for a CHMP to be approved. If there is no RAP for the activity area, the CHMP will be evaluated by the Secretary of the Department of Premier and Cabinet (DPC). The RAP for the activity area is the Bunurong Land Council Aboriginal Corporation (BLCAC). Details of all consultation undertaken with the BLCAC are contained in Section 6. There are currently no Native Title claims extending over the activity area and the activity area comprises privately owned land, therefore Native Title has been extinguished.

3.8 Evaluate Management Plan

The BLCAC has elected to evaluate this CHMP.

3.9 Activity Advisory Group

No Activity Advisory Group was appointed by the Secretary in relation to the CHMP.

3.10 Protocols for the Handling of Sensitive Information

Some of the information contained in this CHMP is culturally sensitive. Before releasing the contents of this report to parties other than AV, the BLCAC, Alpha or the Sponsor written permission is to be obtained from the Bunurong Land Council Aboriginal Corporation.

4. EXTENT OF ACTIVITY AREA

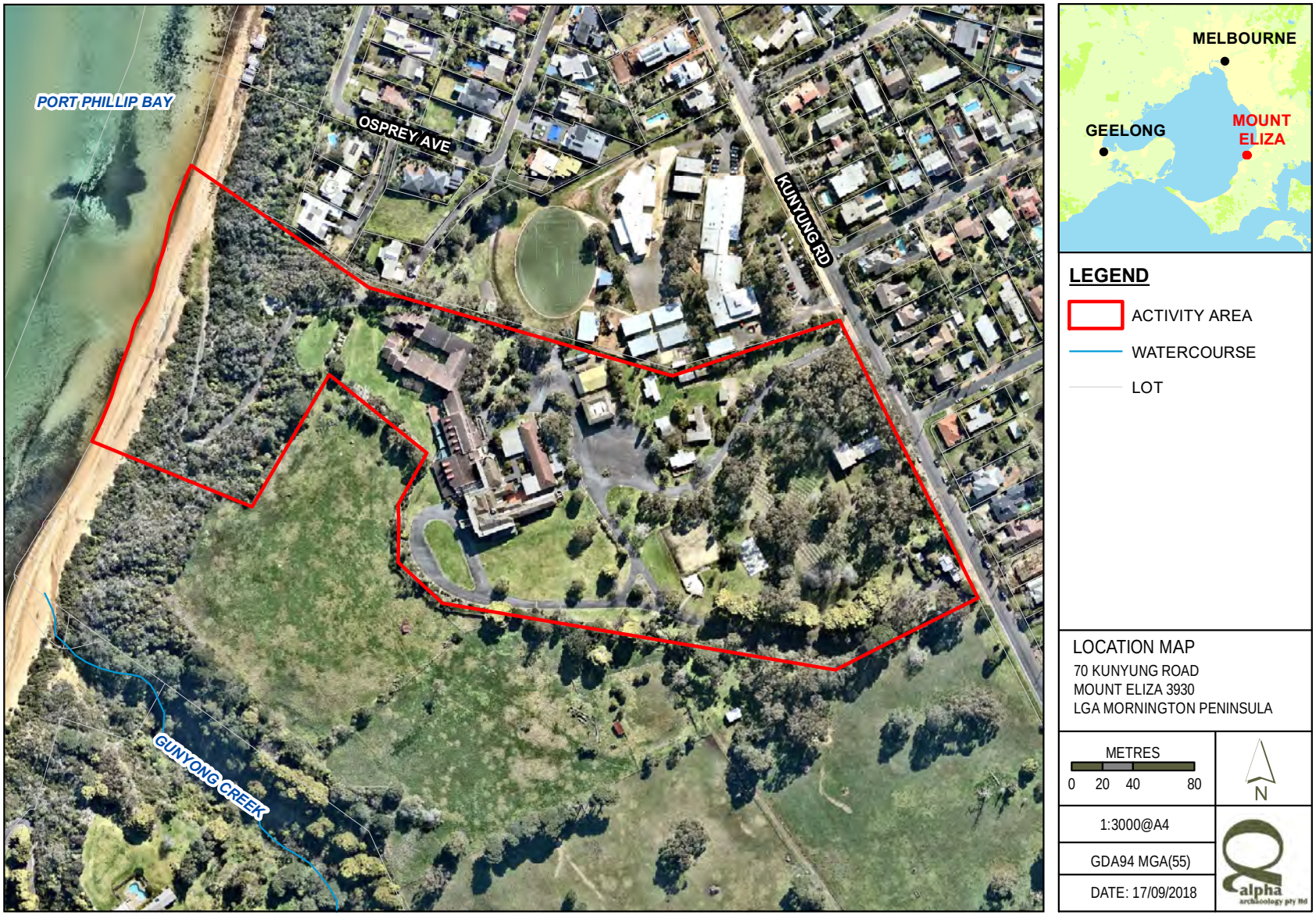
The activity area is located at 60-70 Kunyung Road, Mt Eliza, Victoria in the Mornington Peninsula Shire local government area (Map 1).

The activity area is approximately 8.9 hectares in size and is bounded by Kunyung Road to the east, Kunyung Primary School and residential dwellings to the north, the Port Phillip Bay foreshore to the west and private residential property to the south. The cadastral details of the activity area are Lot 1 on TP813402 in the Parish of Moorooduc.

The activity area comprises an irregular parcel of land on the west side of Kunyung Road in Mt Eliza (Map 1). The activity area slopes downhill from Kunyung Road towards the west. There is a heavily treed area in a rectangular section of the activity area that comprises a very steep slope down to the Port Phillip Bay shoreline. The activity area contains multiple buildings throughout, together with two vineyards, access roads and paths, extensive landscaping, grassed areas and trees throughout (Map 1).

The Port Phillip Bay shoreline is a prominent natural feature within the activity area.

Map 1: Extent of Activity Area



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5. ACTIVITY DESCRIPTION

The proposed activity is the development of an Aged Care & Retirement Village in association with a Place of Worship (Map 2). The development will comprise a number of residential unit blocks, with basement car parking, access roads and driveways, underground utilities, walking paths, leisure amenities (for example lawn bowling green) and landscaping.

It will involve the demolition and removal of some of the existing structures, retention and re-use of the existing manor house, and construction of the new buildings with associated amenities mentioned above. Earthworks will be required to prepare the ground surface, using earthmoving machinery such as graders, bobcats and excavators where necessary.

The proposed activity is a high impact activity as it will directly impact upon the surface of the land and any buried former land surfaces, and it is therefore likely that the activity will impact any Aboriginal cultural heritage that is present within the activity area

The activity area is zoned by the Mornington Peninsula Shire Council as Special Use Zone – Schedule 2 (SUZ 2). This zoning sets out requirements which must be met by any development within the activity area. A description of the use or development of the activity area permitted by the relevant planning scheme is provided in Appendix C. Future use of the activity area may include any use permitted under the SUZ 2 of the Mornington Peninsula Planning Scheme.

Map 2: Proposed Activity Development Plan

MASTER PLAN

AMENDMENTS:
A 08/05/19 DEVELOPMENT APPLICATION ISSUE

AMENDMENT: A
SCALE: 1 : 750

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6. DOCUMENTATION OF CONSULTATION

Under Sections 54 and 55 of the Act, a formal consultation process must take place with the Registered Aboriginal Party (RAP) in order for a CHMP to be approved. If there is no RAP for the activity area, the CHMP will be evaluated by the Secretary of the Department of Premier and Cabinet (DPC). The RAP for the activity area is the Bunurong Land Council Aboriginal Corporation (BLCAC).

6.1 Consultation in Relation to the Assessment

The following representatives of the BLCAC participated in consultation in relation to the assessment during a Project Inception Meeting held at the Bunurong office on 14 November 2018:

- Bradley Ward (Senior Archaeologist and Heritage Advisor)
- Elizabeth Toohey (Archaeologist and Heritage Advisor)

Jodie Mitchell of Alpha Archaeology attended the meeting as Heritage Advisor and James Weight of Ryman Health Care attended on behalf of the Sponsor.

6.2 Participation in the Conduct of the Assessment

The following representatives of the BLCAC participated in the conduct of field work undertaken as part of the assessment during the complex subsurface testing undertaken from 10 to 13 December 2018:

- Billy Maher
- Danika Corcoran

The field representatives were involved in all facets of the fieldwork, except the recording, and their thoughts, ideas and concerns with regards to fieldwork were listened to and accommodated where possible, including location of the test pits and amount of testing conducted.

6.3 Consultation in Relation to the Recommendations

The following representatives of the BLCAC participated in consultation in relation to the conditions during a meeting held at the BLCAC office on 23 January 2019:

- Bradley Ward (Senior Archaeologist and Heritage Advisor)
- Elizabeth Toohey (Archaeologist and Heritage Advisor)

- David Tutchener (Archaeologist and Heritage Advisor)

Jodie Mitchell of Alpha Archaeology attended the meeting as Heritage Advisor and on behalf of the Sponsor

6.4 Summary of outcomes of consultation

During the inception meeting the location and extent of the activity area was discussed, as well as the proposed activity (including showing development map and plans), the nature of the activity area and surrounding landscape, location and type of nearby archaeological sites, results of the desktop assessment including a geotechnical report that showed fill over the property, and the proposed survey and subsurface testing methodology.

BLCAC agreed to Alpha undertaking a pedestrian survey of the activity area prior to any subsurface testing being undertaken. During the survey any areas of archaeological potential would be recorded, together with any Aboriginal cultural material found. It was agreed that although the far west side of the activity area will not be impacted by the activity (the heavily treed steep slope leading down to the beach) that the area would be surveyed to determine the current state of the area, and the presence of any Aboriginal cultural material that may be present.

Following the completion of the survey the complex assessment would then be undertaken. It was agreed that sub-surface testing comprise mechanically excavated pits, with spoil to be sieved through a mechanical sieve. Due to the amount of fill present throughout the activity area it was agreed that a hand excavated 1x1m test pit would not be undertaken as part of the complex assessment. The HA and BLCAC Representatives would make a decision on-site as to the best locations for the subsurface testing.

The subsurface testing was completed over 4 days, and a total of 16 test pits were excavated, each pit measuring 2x1m. The subsurface testing revealed extensive ground disturbance throughout the activity area, with the presence of fill in all of the pits. Prior to subsurface testing Alpha had obtained Dial Before You Dig information, together with plans provided by the Sponsor, of all known underground utilities and overlaid these on a map of the activity area. During subsurface testing additional underground utilities and footings of previous buildings and landscaping features were also uncovered. No Aboriginal cultural material was found during the subsurface testing.

Following completion of the subsurface testing, a meeting was held at the BLCAC office in Frankston on 23 January 2019 to discuss the results of the subsurface testing and agree upon appropriate management conditions. It was agreed that sufficient

subsurface testing had been conducted across the activity area, and due to the significant amount of prior disturbance and presence of fill throughout the activity area, no further testing was required.

The BLCAC required the inclusion of two general management conditions in the CHMP; a cultural heritage induction conducted by a BLCAC representative and BLCAC heritage advisor prior to any site works commencing, and a copy of the approved CHMP is to be kept on site during construction works. The standard Contingency plan is to be included in the CHMP.

All consultation regarding this CHMP is summarised in Table 1.

Table 1: Consultation Regarding the CHMP

Date	Name and Organisation	Details
24.10.18	Jodie Mitchell, HA Alpha on behalf of Sponsor to Robert Ogden, Heritage Manager BLCAC & Bradley Ward, HA on behalf of BLCAC	Notice of Intent to Prepare a Cultural Heritage Management Plan sent to the RAP.
24.10.18	Jodie Mitchell, HA Alpha on behalf of Sponsor to AV	Notice of Intent to Prepare a Cultural Heritage Management Plan sent to AV.
24.10.18	AV Sponsor, Alpha & RAP	Acknowledgement of NOI to Sponsor, Alpha and RAP.
26.10.18	Robert Ogden, Heritage Manager BLCAC to Jodie Mitchell, HA Alpha Andrew Gifford, Sponsor, & VAHR	Acknowledgement of NOI to VAHR, Sponsor and Alpha, electing to evaluate CHMP.
14.11.18	Jodie Mitchell, HA Alpha James Weight, Sponsor Elizabeth Toohey & Bradley Ward, HA on behalf of BLCAC	Project inception meeting held.
10.12.18	Jodie Mitchell & Edward East, HA Alpha, Jason Gay, archaeologist Alpha Billy Maher, Danika Corcoran of BLCAC	Standard assessment undertaken.
10-13.12.18	Jodie Mitchell & Edward East, HA Alpha, Jason Gay, archaeologist Alpha Billy Maher, Danika Corcoran of BLCAC	Sub surface testing undertaken.

Date	Name and Organisation	Details
23.01.19	Jodie Mitchell, HA Alpha & on behalf of Sponsor Elizabeth Toohey, Bradley Ward & David Tutchener, HA on behalf of BLCAC	Post-excavation meeting held, results discussed, management conditions agreed upon.

7. ABORIGINAL CULTURAL HERITAGE ASSESSMENT

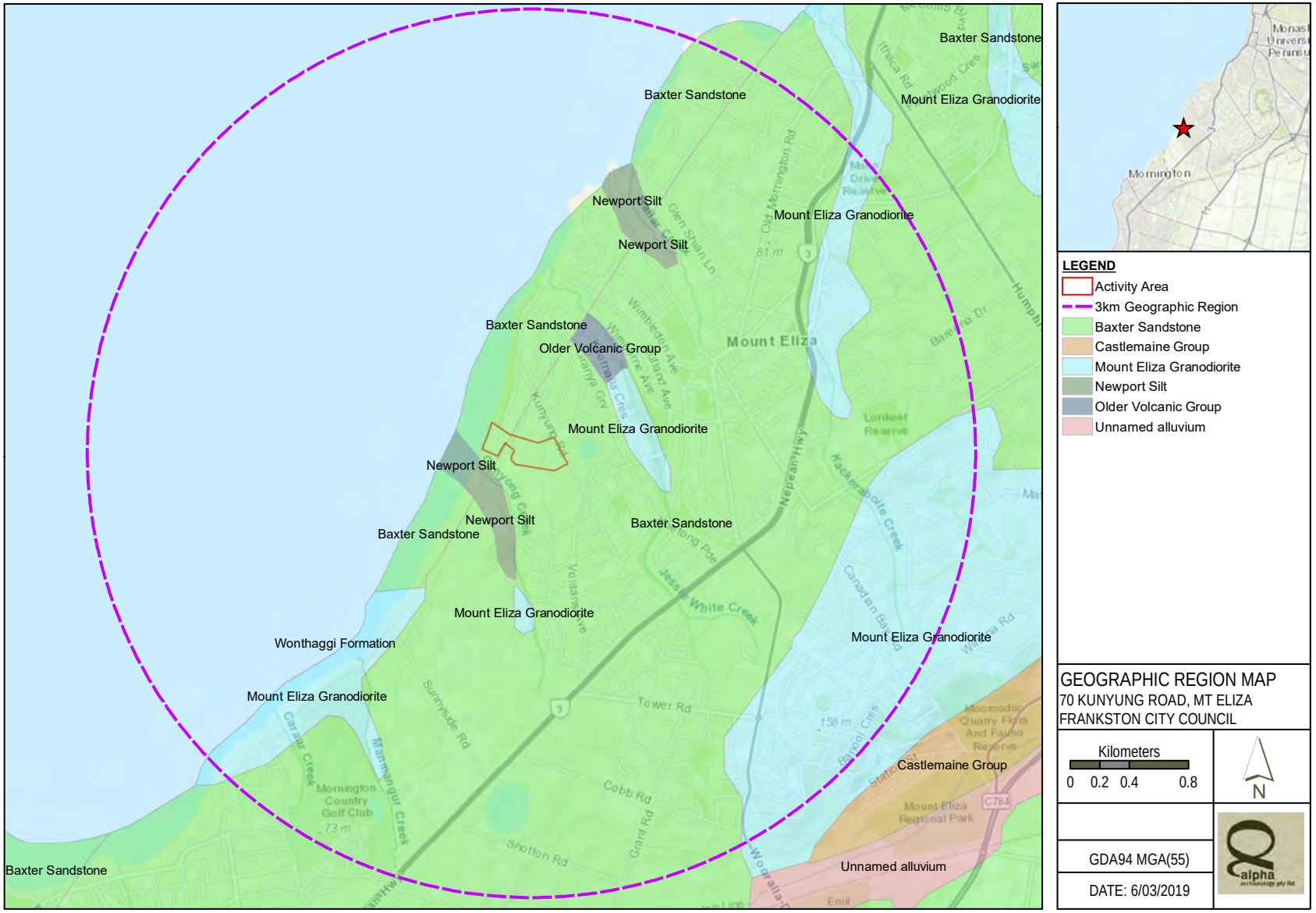
7.1 Desktop assessment

7.1.1 The Geographic Region

The desktop assessment must include the identification of the geographic region of which the activity area forms a part of that is relevant to the Aboriginal cultural heritage that may be present. Geographic and environmental factors affect how the land may have been used in the past and are therefore useful in helping to interpret the Aboriginal way of life prior to European contact.

The activity area is located within the suburb of Mt Eliza. Mt Eliza is located at the northern end of the Mornington Peninsula, approximately 47km south-east of Melbourne's CBD. The major geomorphic feature of the Mornington Peninsula is the Selwyn Fault, located along the coast of the Mornington Peninsula near Mornington. The area south of the Selwyn Fault lies in the South Victorian Coastal Plains that comprises all of the Mornington Peninsula (LCC 1991). For the purposes of this report, and in order to generate a site prediction model, the geographic region has been determined as an arbitrary 3km from the activity area (Map 3). This incorporates both the coastline and hinterland of the local region allowing an adequate sampling of relevant cultural heritage data for the project.

Map 3: The Geographic Region



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7.1.2 Environmental Context

7.1.2.1 Geology and Soils

A review of the geology and geomorphology of the activity area provides a context for our understanding of the pre-contact Aboriginal land use and occupation patterns that led to the formation of archaeological sites, and also for our understanding what subsequent processes have affected the integrity and contents of any sites present.

Victoria experienced a warm and wet tropical type climate throughout much of the Tertiary period, and temperate rainforest was widespread over much of the state. During the Tertiary period, (from approximately 65 million years ago) Australia continued to drift away from Antarctica (at rates of up to 6 cm per year). Three interconnected marine basins (Otway, Gippsland and Bass) formed along the southern edge of Victoria's continental plate and significant marine sediments were laid down in shallow seas. Some parts of these basins now lie onshore but most are to be found beneath Bass Strait where commercial oil and gas reserves have been found within these sediments. During the Tertiary period, significant earth movements occurred along fault lines. Subsidence between fault lines resulted in the formation of the Port Phillip and Westernport sunklands. Port Phillip and Westernport Bays were formed within these sunklands as sea levels rose. The sea level fluctuated significantly during Tertiary times (Douglas and Ferguson 1988).

The oldest outcropping rocks in the broader region are from the Silurian period (approximately 440–410 million years ago). During this period, primitive plant life had evolved on land and animal life existed only in oceans. Australia was part of a much larger continent ('Gondwana') and did not lie in its present position, but closer to the equator. Throughout the Silurian period, hundreds of metres of sediments (mainly mudstone, siltstone and shale) were laid down within a deep ocean trench which extended from Tasmania into New South Wales. These rocks are now exposed on hilly country near Pakenham, Langwarrin and Pearcedale (Douglas and Ferguson 1988).

Following the uplift of the South-Eastern highlands in the late Tertiary period (approximately 5 million years ago), extensive river systems developed over dry land areas. These rivers formed deep channels which were filled with coarse gravels. Some of these have been preserved as river terraces along present day streams. As the uplands eroded away, the rivers draining them became reduced in size. These slower flowing streams then deposited only finer grained sediments.

The bay is a sunk land, which is a depression formed by land subsidence during the Tertiary Period (about 65–2.6 million years ago). The subsidence occurred along the Selwyn Fault to the east and the Rowsley Fault to the west (Bird 1993:124-125). Since these Tertiary earth movements, further subsidence and uplift have formed the

principal structural regions of the bay. The major uplift movement that impacted the area north of the activity area is the one that created the Mornington Peninsula. The boundary between the Mornington Peninsula and the Port Phillip Sunkland, which contains the bay, is formed by the Selwyn Fault, which extends between Frankston and Cape Schanck. The fault is visible as a steep cliff escarpment coastline between Frankston and Dromana (Jenkin 1974:33).

The current nearby shoreline was created at the end of the last ice age when the sea level rose, inundating Port Phillip Bay and cutting the link between Victoria and Tasmania. Around 6,000–5,000 years ago, the coastline stabilised to the present conditions (Bird 1993). Prior to inundation the coastline was approximately 100 kilometres distant, with Port Phillip Bay being low-lying grassland. Inundation occurred over several thousand years, with French Island and Phillip Island not formed until the highest sea level of 5–6,000 years ago (Coutts 1976:68).

7.1.2.2 Geomorphology and Landform

The underlying geomorphological deposit of the activity area comprises Red Bluff Sandstone. This geology was laid down between the Miocene epoch (approximately 23.03 million to 5.332 million years ago) and the Pliocene epoch (approximately 5.332 million to 2.588 million years ago) of the Neogene Period. The Red Bluff Sandstone consists of lithostratigraphic channelled stream deposits including sandstone and conglomerate with local ironstone (GeoScience 2018).

7.1.2.3 Climate

The last world glacial period, which began c. 80,000 years before present (BP), lowered temperatures and sea levels. This cooling period peaked c. 18,000 BP when the sea level receded to 120 metres below its present level and the temperature dropped to between six and ten degrees Celsius colder than present temperatures (Kershaw 1995). During this phase, Tasmania was joined to the mainland by an isthmus of land, and semi-arid grasslands covered large areas of Victoria (Kershaw 1995). As conditions ameliorated, climatic conditions became milder, although wetter. At approximately 5,000 BP, conditions became slightly cooler and drier, similar to the present climate (Kershaw 1995). Vast grasslands continued to dominate Victoria until recently (Kershaw 1995).

These changes in climatic conditions suggest that the flora and fauna of Victoria, and therefore of the activity area, went through substantial changes during the same period. The changes must have impacted on Aboriginal subsistence and patterns of exploitation in the activity area and the surrounding region. During cooler and windier periods, especially between 18,000 and 5,000 BP, the region was exposed to strong, cold, westerly winds. It can be assumed that if the region was occupied during this

period, areas with some protection from those winds were favoured during the colder periods. The generally mild but seasonably variable climate of the past 5,000 years was conducive to Aboriginal occupation throughout the year with possible seasonal movements to more sheltered locations in winter months (Hiscock 2007:183-198).

The Port Phillip Bay region has a temperate climate with warm summers and cold to mild winters. The mean temperatures in Melbourne vary between a maximum of 25.8°C and minimum of 14°C in summer and a maximum of 13.3°C and minimum of 7.5°C in winter. Modern records record that the average rainfall ranges between 600 and 700 mm per year (LCC 1991).

7.1.2.4 Fauna

Prior to European arrival, nearby Gunyong Creek and Earimil Creek would have supported a wide range of faunal species hunted by Aboriginal people. Larger species, such as kangaroos, possums and wallabies were common. Other species recorded at the time of early European Contact, which have since largely or wholly disappeared, included quolls, pademelons, potoroos, fat-tailed dunnart and eastern barred bandicoot (LCC 1991:107). There is likely to have been seasonal variation, with higher numbers in summer. Aboriginal subsistence activities would have been focused on waterways and coastline areas in the geographic region. Fresh water bodies would have provided a wider range of resources for Aboriginal people with freshwater mussels, fish, eels, waterbirds, lizards, and small marsupials a reliable food source throughout most of the year. The nearby shoreline of Port Phillip Bay would also have provided an abundance of faunal species for Aboriginal peoples. Marine fish, gastropods, bird and molluscs species would have also been important for local Aboriginal subsistence practices.

7.1.2.5 Flora

According to Department of Sustainability of Environment (DSE 2013) Ecological Vegetation Class (EVC) information from pre-1750, the activity area had two distinct ecological classes present, with another directly bordering the activity area.

The majority of the activity area would have consisted of Grassy Woodland (EVC 175) (Department of Environment 2016). This consisted of open, grassy eucalypt woodland with an understorey that consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer. Typically dominated by Forest Red Gum (Eucalyptus tereticornis), the understorey may include shrubs of Lightwood Acacia (Implexa), Creeping Bossiaea (Bossiaea prostrata) and Cranberry Heath (Astroloma humifusum). Common grasses include Weeping Grass (Microlaena stipoides) and Kangaroo Grass (Themeda triandra).

Along the banks of nearby creeks comprised Gully Woodland (EVC 902). Distinguished by prominent ground layer species Common Tussock Grass and rich fern flora; Sweet Bursaria and Maidenhair Fern may be abundant. On creek and river banks, terrestrial plant species such as spiny flat-sedge (Cyperus gymnocaulos) can be found (Cochrane 1968:88-95).

The activity area also borders the shoreline of Port Phillip Bay. Here Coastal Headland Scrub is present (EVC 161).

This land unit was restricted to coastal localities on secondary or tertiary dunes behind the Coastal Dune Scrub land unit. The Coast Banksia Woodlands were dominated by their namesake (scientific name *Banksia integrifolia*) which grew to heights of fifteen metres. The understorey consisted of a medium shrub layer and a number of herbs, sedges and scramblers (DSE 2013). Burning activity by Aboriginal people may also have increased the biodiversity in the region (Kershaw 1995:78).

Since European settlement and the development of the Mt Eliza area, most of the original native flora and fauna has been eliminated. The species that remain do not accurately represent the diversity of resources that were once available to Aboriginal people.

7.1.3 Land Use History

The first attempt to establish a permanent settlement in the region was at Mount Martha in October 1803, by Colonel David Collins, who reached Sullivan Bay in HMS Calcutta. The area was part of a survey conducted by Lieutenant J. H. Tuckey later that same year. The settlement was abandoned, however, most likely because of the Europeans' fear of the local Aboriginal people. Apart from the occasional sealer, the area was not revisited by Europeans until 1834 when Batman and Fawkner's party arrived from Launceston (Calder 2002:22).

The major period of pastoral expansion in the district began between 1830 and 1840. During this time, European settlers began moving into the Portsea area, with additional settlements at Arthur's Seat, Mount Martha, Mount Eliza, Merricks and Flinders. It was during this decade that the McRae, Jamieson and Hobson families began taking up landholdings in the region, with Andrew Murison McCrae taking up the Arthur's Seat run to the north of the activity area and Edward William Hobson taking up the 'Tootgarook' run (Spreadborough and Anderson 1983:191).

The Arthur's Seat run was the largest holding on the entire Mornington Peninsula. McCrae ran the selection from 1844 – 1845 to 1851 and had 12,800 acres on the run with a capacity of 300 cattle (Hollinshed 1982:33, 70). During this period, a small number of homesteads were built from locally available materials such as wattle and

daub, planks from shipwrecks and limestone (Hollinshed 1982).

Around the same time, lime-burning industries were established on the Southern Mornington Peninsula, in and around the location of the activity area, working to supply cement for the Melbourne building industry (Sullivan 1981:12). The lime-burning period lasted from the 1840s to the 1890s and during this time the Southern Mornington Peninsula was extensively cleared of vegetation in order to provide fuel for this industry (Hollinshed 1982:36). The area became popular for well-established Melbourne families to build summer beachside houses for use in the summer months.

Until the 1920s there were few permanent residents at Mount Eliza. Electrification of the train service to Frankston in 1922 and the wider availability of motor cars brought Mount Eliza in closer touch with Melbourne. A suburban style estate, Ranelagh, was designed in the 1920s by Sir Walter Burley Griffin and his wife (Mornington & District Historical Society Inc 2018). A girls' school, Toorak College, moved to Mount Eliza in 1928, and remains open to the present day. Residential subdivisions were established around Mount Eliza in the early to mid-twentieth century. The increased ease of access to Carrum Downs, and the large number of immigrants to Melbourne following World War Two, changed the isolated seaside summer houses to a more suburban aspect, with thousands of permanent residents, and a great increase in tourists during summer.

The specific land use of the history begins when James Grice bought 251 acres of land for the construction of a grand house in 1888. The building work for Grice's estate, Moondah, cost £35,000, money which he later professed to have made as a windfall from investment in trams. The Moondah mansion was executed in an Italian Renaissance style on a site facing the ocean, where it stands today. The impressive gatehouse, located on Kunyung Road, is constructed of red brick in a Tudor style, with an asymmetric plan, battlemented parapets, stair turret, four-centred arches for coaches and pedestrian entrances. Sir Reginald Ansett purchased Moondah in 1947 and turned the building into a 5-star luxury hotel. This was called Manyung Hotel and, at the time, was the most luxurious hotel on the Mornington Peninsula (Heritage Council Victoria 2018). Ansett sold Manyung Hotel to the Australian Administrative Staff College in 1957, where it became the Mt Eliza Business School. It merged with the University of Melbourne in 2004.

7.1.4 Aerial Photographs

Aerial photographs of the activity area were obtained from the Department of Environment, Land, Water and Planning (DELWP) from 1958 and 2003 to give a visual account of the land use history within recent decades. These photographs are summarised in Table 2 and shown in Figure 1 and Figure 2.

Table 2: Summary of Aerial Photographs

Date	Activity Area	Surrounding Land
1958 Figure 1	The activity area has been cleared of most of its vegetation.	Areas of natural dune and dune vegetation are extant along the west side of the activity area. Land to the south has been cleared for agricultural paddocks. To the north a small residential subdivision is evident. To the east natural vegetation is still present, though paddocks are also evident. The large-scale manor and its grounds are evident in the photograph.
2003 Figure 2	The activity area remains unchanged; the surrounding area is now a fully urban suburb.	Areas of natural dune and dune vegetation are extant along the west side of the activity area. The paddocks directly to the south remain unchanged. The areas to the east are now completely suburban in character.

Figure 1: Aerial photograph from 1957. General location of activity area marked in red (DELWP Online Resource: 2018).

Figure 2: Aerial photograph from 2003. General location of activity area marked in red (Google Earth: 2018).

7.1.5 Aboriginal Context

7.1.5.1 Historical and Ethnohistorical Accounts

Archaeological evidence suggests that Aboriginal peoples have occupied Victoria as early as 35,000 BP. This date was produced during the 'Bend Road' excavations in southeastern Melbourne (Hewitt and De Lange 2007). A few surviving early ethnohistorical accounts provide us with some detail on the Aboriginal people at the time of European settlement. From these, their way of life prior to this settlement can be inferred.

European expansion into the region progressed at a relatively slow pace and was restricted to access by the sea for many decades. Even this form of access had its problems, as Port Phillip Bay proved to be exceedingly treacherous and difficult to navigate. As it was, Lieutenant John Murray and his crew aboard the Lady Nelson entered the bay in February 1802.

The first European sailing ships anchored between the modern-day towns of Rye and Sorrento, with the first recorded Europeans to make contact with the Bunurong. In April of the same year the Investigator, commanded by Matthew Flinders, entered the bay as part of his expedition to chart the Australian coastline.

Flinders observed that the Aboriginals appeared to know what firearms and their effects were which suggests that they had had prior contact with unknown Europeans. In January 1803, the crew of the Cumberland became the first to survey the Mornington region (Calder 2002:21).

Over the coming decades, pastoral expansion saw Europeans begin to settle in the region, which had a profound effect on the Bunurong people. Already affected by diseases, especially venereal, and the raids on their camps by violent sealers, the settlers began to encroach on their traditional hunting grounds, driving away game and limiting access to other resources. Many Bunurong were murdered by the settlers, died in jail or at the hands of authorities, or succumbed to alcohol abuse (Byrne 1932:183).

The Bunurong population declined rapidly and by 1839 Thomas estimated that no more than eighty-three adult Bunurong had survived. Around the same time, the McCrae family estimated that no more than two hundred Bunurong continued to camp around Arthur's Seat (Smyth 1878, cited in Calder 2002:13).

Some of the best accounts of the Victorian Aboriginal people come from William Thomas, who served as the Chief Protector of Aborigines from Western Port to Gippsland, from 1838 to 1849. During this time, Thomas lived amongst and travelled with Aboriginal groups, observing and recording their practices.

He spent most of his time with a group known as the 'Bunurong', whose territory he defined as being within the country lying to the south of the southern run of the Yarra basin, eastwards from Tarwin River to Port Phillip Bay and south to the sea (Smyth 1878, cited in Calder 2002:12). The current activity area lies within these boundaries.

The 'Bunurong', consisted of at least six localized groups who spoke the 'Bun wurrung' language. The Bun wurrung language group formed part of the Kulin 'nation' which included four other groups; the Woi wurrung, Taung wurrung, Jajo wurrung, and the Watha wurrung (Presland 1994:40). The specific Bun wurrung clan that is thought to have occupied the activity area was the Bun wurrung balug (Clark 1990:365). Their territory probably stretched across the lower part of Mornington Peninsula, around Point Nepean and Cape Schank (Clark 1990:365, 367).

The Port Phillip Protectorate included three Protectorate stations on the Mornington Peninsula: Tubberubbabel, located on Tubba Rubba Creek, approximately 8 kilometres northeast of the current activity area (Fels 2010:119-120), Kangerong, approximately 6 kilometres northeast of the current activity area (Fels 2010:173-174), and Buckkermitterwarrer, located approximately 2 kilometres west-northwest of the current activity area.

Buckkermitterwarrer, the closest protectorate station to the current activity area, was located at the station of Edward William Hobson. Thomas described the station as a model station and Bunurong people were there most days (Fels 2010:195-196). It appears that relationships between European settlers and Bunurong people at the station were perhaps more caring than those elsewhere, as indicated by the concern shown by two gentlemen, including Mr Hobson, for the safety and wellbeing of an Aboriginal girl, Barebun (Mary) who was assaulted (Fels 2010:196).

Buckkermitterwarrer is also known as the site of a pre-contact massacre, where a large proportion of the Bunurong people were killed by their enemies the Kurnai (Fels 2010:196). This massacre reportedly took place in approximately 1820 or 1822, and took the form of a dawn raid by the Kurnai on the Bunurong (Fels 2010:260-262). This massacre was one in a series of attacks and counter-attacks between the Bunurong and Kurnai.

Thomas provided accounts on Bunurong social organization, noting that it was a patriarchal society whereby two or three senior males directed the clan's movements. Thomas also observed that camp life was peaceable and that despite the fact that men often engaged in 'debauchery and [the] exchanging of wives, …are as constant and domesticated…as in any civil society' (Thomas 1838-1839:10).

Orphaned children were happily adopted by their nearest kin and were seen as proud additions to the family unit (Thomas 1838-1839:8). He found that they were 'truly generous amongst themselves' and found it surprising that received items were not seen as gifts but as a right. Thomas would spent weeks at a time in the bush with the Aboriginal people and often ran low on rations. He detailed one particular night whereby, short on food, a number of Bunurong visited his tent, leaving behind damper, raw meat, sugar, tea and tobacco and then left before he could offer his thanks (Thomas 1838-1839:6).

Thomas remarked that the Aboriginal people were an 'erratic race' and found it difficult to convince them to settle down and embark on a more stationary existence. He soon came to the conclusion however, that they travelled from encampment to encampment out of necessity, and that they moved on whenever food resources where temporarily exhausted within an area (Thomas 1838-1839:1).

He also provided details on how the Bunurong hunted and gathered food. Thomas observed that hunting parties usually consisted of groups of five or seven men, who every morning were sent out in a different direction, under instruction of a chief. If a hunt was successful and a kangaroo or possum was killed, the Aboriginal people would cure the meat by taking out the entrails and drying it in the sun (Thomas 1838-1839:4). Women and children, both male and female as young as four, also helped to procure

food such as roots, gum and bandicoots (Thomas 1838-1839:8). In areas which were rich in food resources, the Aboriginal people took it in turns to hunt and gather. Those who foraged one day would be allowed to spend the next day in camp, essentially having a day off (Thomas 1838-1839:10).

Thomas built up a detailed account of weapons used by the Western Port Aboriginals, describing the Wonguim, Kud-gee-ron and Lee-on-elle implements which were used as clubs. He also described a variety of spears including the Mone-eile, and the Mul-ka and Gee-am shields (Thomas 1838-1839:13-21).

He observed that the Aboriginal people, both adults and children, amused themselves with a variety of games and sports. One example of these is Marn-grook, a game played by males, whereby a ball of opossum skin tied together with kangaroo sinew was kicked up in the air and caught, repeatedly. Females played a version of Marn-grook too, however they usually only threw the ball in the air, as opposed to kicking it (Thomas 1838-1839:28). Thomas noted that the females where fond of dancing, particularly in the spring and autumn seasons. They would decorate their heads and wrists with flowers and bracelets (Thomas 1838-1839:44).

In 1840 and 1841 or 1842, Thomas and a surveyor, George Smyth, both drew a number of maps outlining the Aboriginal tracks which ran throughout the Mornington Peninsula region. The main thoroughfare across the region passed inland, roughly close to the current lines of the Nepean Highway and Mornington Peninsula Freeway. No tracks were observable along the coastline. Calder (2002:16) makes the argument that the higher numbers of tracks inland, means that the Aboriginal people probably preferred to travel or camp inland and that treks to the coastline would only have been made to procure specific resources.

7.1.5.2 Aboriginal Places in the Geographic Region

The Victorian Aboriginal Heritage Register (VAHR) was searched for information relating to Aboriginal cultural heritage within the geographic region. This search was undertaken by Alpha Heritage Advisor Edward East on 31 October 2018.

A total of 146 Aboriginal cultural heritage places are listed on the VAHR within the geographic region. Site types represented include 6 artefact scatters, 7 low density artefact distributions (LDAD), 98 object collections, 1 scarred tree, 1 Aboriginal burial and 33 shell middens (Table 3). This site pattern indicates the importance of Port Phillip Bay for Aboriginal people as a subsistence location, with the high percentage of shell middens. The number of artefact scatters and low-density artefact distributions provides further evidence of this. However, a number of these are located along creeks in the area, also providing evidence for the exploitation of freshwater resources.

Two previously registered Aboriginal places are located within 200 metres of the activity area; VAHR 7921-0555 *Ansett St 1* and VAHR 7921-0556 *Ansett IA 1* (Map 4 and Table 4).

VAHR 7921-0555 *Ansett St 1* is an Aboriginal scar tree, recorded as being in fair condition and comprising a single scar on a 'Manna' tree. The function of the bark removal was recorded as being for a container, the scar measuring 40cm wide by 190cm long. Nearby VAHR 7921-0556 *Ansett IA 1* is registered as an isolated artefact comprising a flaked scraper tool made from glass raw material.

Table 3: Summary of VAHR Site types within geographic region

Aboriginal Place Type	Place Amount	Percentage
Object Collection	98	67.1%
Shell Midden	33	22.6%
LDAD	7	4.8%
Artefact Scatter	6	4.1%
Scarred Tree	1	0.7%
Aboriginal burial	1	0.7%
TOTAL	**146**	**100%**

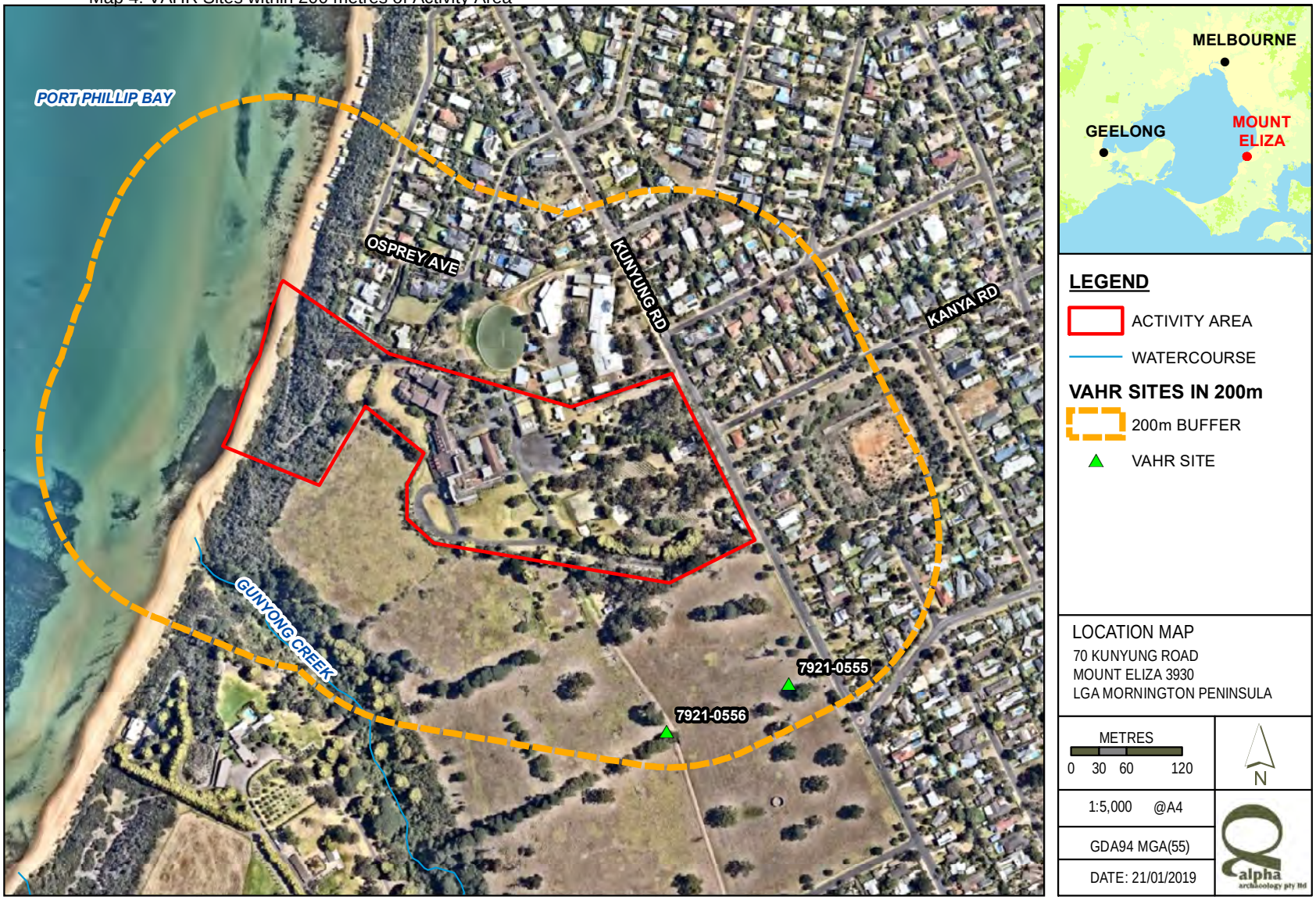
Table 4: Summary of VAHR Sites within 200 metres of activity area.

Aboriginal Place Name	Place Number	Site Type
Ansett St 1	7921-0555	Scarred Tree
Ansett IA 1	7921-0556	Artefact Scatter

The activity area is located within the Mornington Peninsula Shire and is governed by the Mornington Peninsula Shire Planning Scheme.

The Heritage Overlay of the Mornington Peninsula Shire Planning Scheme was reviewed. No Aboriginal heritage places listed on the Heritage Overlay are present within the activity area.

Map 4: VAHR Sites within 200 metres of Activity Area



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7.1.6 Previous Work in the Geographic Region

A number of archaeological studies have been undertaken within the geographic region in recent years, the most relevant of which have been summarised below. It is from these reports that a supposition of the archaeological potential of the activity area can be made.

7.1.6.1 Regional Studies

Sullivan (1981) undertook an archaeological survey of the Mornington Peninsula, incorporating the Mornington, Flinders and Hastings Shire Councils. The study area was defined as the 15–20 km wide division between Port Phillip and Western Port Bays and incorporated 70,000 hectares. 289 sites were recorded during her study, with 90% of those identified within 100 metres of the shoreline. Sullivan considered that the proportionally low number of inland sites recorded during her study may be a result of low ground surface visibility in these areas. The majority of sites recorded were middens and midden/surface stone artefact scatter sites. Less frequently located were surface scatter sites (Sullivan 1981: 82).

From the conclusion presented in Sullivan's study (1981: 95), general predictive statements can be made about Aboriginal site distribution and site contents on the Mornington Peninsula. Sullivan states that the lack of sites along the central spine of the Peninsula may be due to richer alluvial environments in the Port Phillip and Western Port Sunklands. The most likely site types in the region are shell middens, followed by stone artefact scatters; these are mostly located along the shoreline, along freshwater sources and in raised dune areas around swampy land. According to Sullivan, since most coastal sites are located within 100m of the coastline, the presence of coastal reserves generally ensures that this sensitive area is protected and residential development is kept approximately 300m from the coastline.

Ellender & Weaver (1991) conducted an Aboriginal heritage study of the Port Phillip Bay foreshore. The area was divided into the east coast, the west coast and the west coast hinterland. The east coast unit extended from the Yarra River to Frankston, just north of the current geographic region. A 20m wide transect was surveyed by two people with survey ground surface visibility between 20 and 40%. Thirty-eight Aboriginal archaeological sites were recorded along the east coast, including twenty-eight shell middens, six rock wells and four scarred trees.

The recorded sites were all associated with specific landforms. The scarred trees recorded were all located in association with Kananook Creek and the former Carrum Swamp, and the rock wells were located along the rocky shorelines. The shell midden sites were recorded on rocky and sandy shore coasts, although the majority (75%) were associated with rocky shores.

Ellender and Weaver proposed a pattern of coastal exploitation involving inland base camps located along watercourses, with coastal visits to exploit shellfish resources. The rock wells were interpreted as features that enhanced the exploitation of coastal resources. The site prediction model developed by Ellender and Weaver highlights the fact that shell middens are generally associated with rocky shorelines and other site types such as artefact scatters and scarred trees are likely to occur close to freshwater bodies, such as creeks and swamps, and slightly inland.

Marshall (1998) conducted an Aboriginal Cultural Heritage Assessment for Frankston City Council to assist in the development of local policies on the conservation and protection of places of Aboriginal cultural heritage, especially archaeological sites. Marshall identified eighteen previously recorded Aboriginal sites within the broader Frankston area. Ten of the sites were scarred trees that were potentially natural in origin, four were surface artefact scatters and four were shell middens. Several of the previously recorded sites were reported by amateur archaeologists and were noted as being probably destroyed.

No new archaeological sites were recorded during the field survey, which focused on areas that had not been subject to prior ground survey. The results were interpreted as reflecting the survey's limited scope in terms of area and landform and the limited ground surface visibility. Three zones of archaeological sensitivity were identified. Zone 1, including land along the undulating slopes of the prominent east-west ridgeline, was identified as moderately sensitive. Zone 2, the remainder of the grassed area, was identified as having low sensitivity, and Zone 3, within all areas of significant prior disturbance, was identified as having very low or negligible sensitivity.

7.1.6.2 Local studies

Porch (1996) conducted the excavation of two shell middens at Davey Point, Mt Eliza. Shell midden VAHR 7921-0151 was to be excavated prior to stabilisation of the cliff in which it was located, which would involve destruction of the site. The second, VAHR 7921-0254, had been located on the beach below the first midden, and the excavations determined that it was created by material that had collapsed from the midden on the cliff above. Excavation showed that VAHR 7921-0151 extended inland from the cliff edge by about 10m, decreasing in thickness across its extent. Porch noted considerable variation in the lateral boundaries of the midden, leading to the conclusion that the remains represented the edges of the deposit, and that the midden had already been removed by erosion of the cliff face. Charcoal samples were taken from the midden and dated to between 180±50 and 230±50 BP (c. 1660 to 1850 CE).

Cekalovic (1999) conducted an archaeological desktop study and survey of Ballar Creek, Mt Eliza, which flows into the sea to the south-east of the current activity area. Nicolson's desktop study located nine shell middens within 1km of the study area, and concluded that the clifftops and floodplains of the creek were archaeologically sensitive. Cekalovic's survey transects covered 100m inland along the creek banks, and 50m along cliffs on either side of the creek mouth, including a section along the eastern boundary of the current activity area. Ground surface visibility was generally poor, although the previously recorded middens were visible in the eroded cliff face. No new Aboriginal cultural heritage places were located, but the cliff tops were identified as having potential for Aboriginal archaeological sites such as shell middens, possibly with in situ material, and stone artefact scatters.

Bell (2007) conducted a CHMP (10026) in response to the construction of a sewage storage tank at Ranelagh Beach, Mt Eliza, approximately 1.5km north of the current activity area. An Aboriginal burial and shell midden (VAHR 7921-0845) had been located at the site during earlier construction works, shortly before the implementation of the Aboriginal Heritage Act in 2007. A 1m x 1m test pit was excavated in the undisturbed part of the activity area. Lenses of the previously recorded shell midden were identified at depths up to 82cm. No other Aboriginal cultural heritage material was located. Analysis indicated that the burial had been placed at the site after the midden deposits accumulated, as the burial pit had been dug through the midden remains.

Lane et al (2008) conducted a CHMP (10450) in response to a proposed residential subdivision at 78 and 80 Beluga Street, Mt Eliza. No new Aboriginal places were located during the standard assessment, disturbance and poor ground visibility was recorded. A complex assessment was conducted which comprised six 1m x 1m test pits and one 50cm x 50cm test pit. One new Aboriginal place was located, a subsurface stone artefact scatter (VAHR 7921-0955).

Wheeler & Walther (2008) conducted a CHMP (10582) in response to proposed realignment of a boundary at Norman Lodge, 1225 Nepean Highway, Mt Eliza. No new Aboriginal places were located during the standard assessment, poor ground visibility was recorded. A complex assessment was conducted which comprised four 1m x 1m and one 50cm x 50cm test pits. One new Aboriginal heritage place was located (VAHR 7921- 0985) a subsurface stone artefact scatter of three artefacts. It was concluded by this CHMP that a low-density, disturbed artefact scatter exists across the upper part of a dune crest landform within the CHMP area.

Barker (2010) conducted a CHMP (10976) in response to the proposed construction of caravan and camping park at 1308 Nepean Highway, Mt Eliza. No new Aboriginal places were located during the standard assessment, disturbance and poor ground

visibility was recorded. T A complex assessment was conducted which comprised one 1m x 1m test pit and ten shovel probe transects. One new Aboriginal place (VAHR 7921-1168) was located within the activity area; an isolated subsurface silcrete flake, located in a disturbed context at the highest point of a low rise.

Kurpiel & Magennis (2013) conducted a CHMP (12696) assessment along the Pelican Point Coastal Walking Track Mt Eliza, located north of the current activity area. A previously registered shell midden, VAHR 7921-0299 (Pelican Point Shell Midden) was located within the activity area. During the standard assessment the site was relocated; some disturbance of the place was noted due to the construction of a walking track, vegetation clearance and erosion. A complex assessment was not conducted.

Matic (2014) conducted a CHMP (13175) in response to a proposed subdivision at 3 Tintagel Court Mt Eliza. A previously registered place comprising a shell midden (VAHR 7921-0299-1) was located within the activity area. No new Aboriginal places were located during the standard assessment. A complex assessment was conducted which identified 6 lithic artefacts, a previously unidentified component, in association with the midden deposit.

Dugay & Wisniowiecka (2017b) conducted a CHMP (14964) in response to a proposed residential and retail premises at 54 to 64 Mount Eliza Way, Mount Eliza. The activity area was located in an existing retail precinct that has been substantially modified. No new Aboriginal places were located during the standard assessment. A complex assessment was conducted which comprised one 1m x 1m TP and two 50cm STPs. A high level of subsurface disturbances was noted across the activity area. No Aboriginal places were located.

Dugay (2017a) conducted a CHMP (15328) in response to a proposed residential subdivision at 7 – 11 Ti-Tree Lane, Mt Eliza. The standard assessment conducted did not locate any new Aboriginal places, areas of disturbance were noted in association with a residential dwelling. A complex assessment was conducted which consisted of two hand excavated 1x1m test pits and seventeen 50x50cm test pits. One new Aboriginal Place VAHR 7921-1692 was recorded within the north-eastern section of the activity area. This LDAD comprised seven stone artefacts located within TP 1B, STP 7 and STP 9.

Burch (2018) conducted a CHMP (15608) in response to drainage upgrade works at Sunnyside Road, Mount Eliza, which is located adjacent to the Port Phillip Bay shoreline. A standard assessment was conducted which recorded a high degree of disturbance, associated with the ongoing use of part of the activity area as a car park. A complex assessment was conducted which consisted of a hand excavated 1x1m test

pits. No Aboriginal cultural heritage material was located, a high degree of subsurface disturbance was noted.

7.1.7 Geotechnical Report within Activity Area

A geotechnical investigation was undertaken by Tonkin & Taylor Pty Ltd (2017) within the activity area (Appendix G). A total of 23 bore holes were drilled throughout the activity area. No bore holes were located in the far west of the activity area, on the heavily treed, steeply sloped section, as this are will not be impacted by the development.

The engineering logs reveal that introduced fill is present in all of the bore holes, varying in depth from 30cm down to 190cm. In all of the bore holes the fill overlaid a sandy clay. The only exception to this was BH06 that had fill down to 70cm depth, overlying a clayey sand that continued down to 640cm depth (end of the bore hole).

The results of the geotechnical investigation revealed that all areas of the activity area that are to be developed contain introduced fill, indicating the activity area has been subject to significant amounts of past disturbance. This is likely due to the previous land use of the activity area throughout many decades (Section 7.1.3).

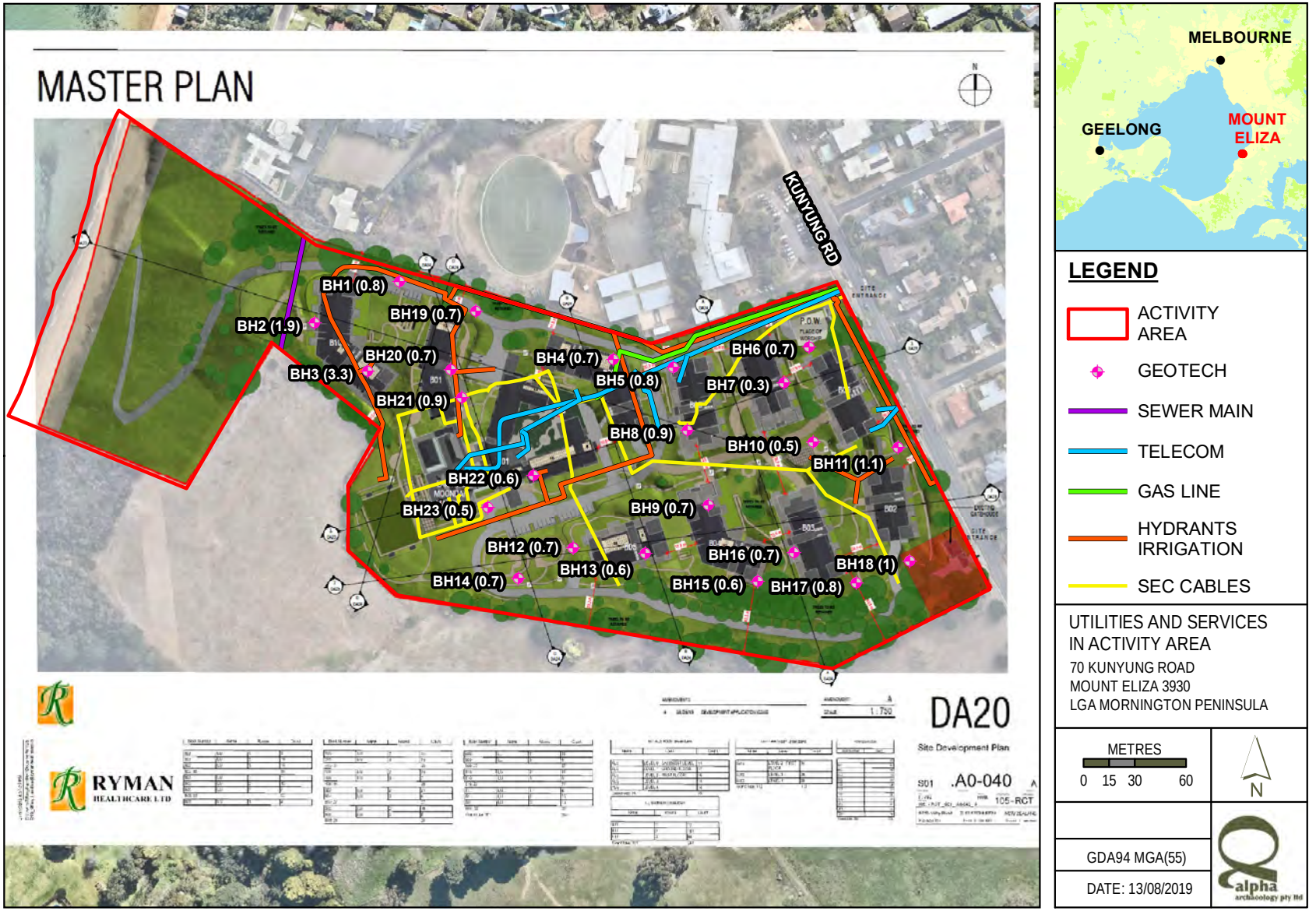
7.1.8 Underground Services and Utilities

A 'Dial Before You Dig' search was undertaken for the activity area. The results show that various underground services are present throughout the activity area. The Sponsor also provided copies of old services maps showing irrigation pipes, hydrants and SEC cable locations.

All of these maps were overlaid onto a current map of the activity area and this provides a good visual account of the location of underground services and utilities that run throughout the activity area (Map 5). It also serves to further highlight the amount of subsurface disturbance that is present throughout the activity area.

It is noted that due to the extensive use and re-use of the activity area over a number of decades, dating back to the late 1800s, there are likely a number of undocumented underground services and utilities present.

Map 5: Utilities and Services within Activity Area



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7.1.9 Site Prediction Model

Shell middens are the most common site type in the geographic region, located along the foreshore of Port Phillip Bay. A lower number of artefact scatters and LDADs have been recorded, although these are significantly fewer in number (Table 3). Previous subsurface testing conducted in the Mt Eliza region have revealed low density artefact distributions and shell middens, predominantly closer to the foreshore where dunes are present.

One burial site was uncovered in 2006 during construction works for a sewerage tank (refer Bell 2007 in Section 7.1.6.2). This was located in the dunes at Ranelegh Beach, approximately 1.5km north of the activity area.

As the activity area encompasses a section of beach along the western boundary, there could be potential for an Aboriginal burial site down on the beach if dunes are present. The remainder of the activity area sits high on a cliff, therefore other site types that may be present are shell middens, LDADs and artefact scatters.

7.1.10 Desktop Assessment Conclusion

From the analysis of the above desktop assessment, it can be concluded that the activity area has moderate potential to contain Aboriginal cultural material. The western section of the activity area encompasses a heavily treed, steeply sloped section leading down to the beach. Although the far western section of the activity area will not be impacted by the activity, a survey of this area must be undertaken to identify and record any Aboriginal cultural material that may be present, such as a shell midden or Aboriginal burial site on the beach.

The land use history, geotechnical report and underground services and utilities information reveal that the activity area has been subject to ground disturbance over many decades. The depth of fill across the activity area is at depths down to 190cm, with the geotechnical bore logs indicating there is no natural soil layer remaining between the fill and the underlying clay base (Section 7.1.7).

It is recommended that the investigation continues to a standard and complex assessment to investigate the potential for surface sites present along the beach, and any subsurface cultural deposits and/or the level of ground disturbance throughout the remainder of the activity area.

7.2 Standard Assessment

7.2.1 Introduction

The standard assessment was undertaken on 10 December 2018 by Alpha Archaeology heritage advisors Jodie Mitchell and Edward East, archaeologist Jason Gay and BLCAC cultural heritage field representatives Billy Maher and Danika Corcoran.

7.2.2 Aim of the standard assessment

The aim of the standard assessment was to determine the cultural heritage sensitivity of the activity area by identifying the presence of any previously unrecorded surface Aboriginal cultural heritage places, identifying areas of ground disturbance and areas of archaeological potential.

7.2.3 Standard assessment methodology

A pedestrian survey of the activity area was undertaken for the standard assessment. The survey team traversed the entire activity area by walking in approximately 2 metre wide transects. The methodology was designed to maximise the opportunity for locating any surface Aboriginal cultural heritage material, identifying areas of disturbance and areas of archaeological potential.

Detailed notes and photographs were taken in the field to assist in the assessment of the activity area, ground conditions, landform details and the assessment of areas of disturbance.

7.2.4 Standard assessment results

The standard assessment was undertaken in good conditions with the weather clear and sunny. The survey team commenced surveying down along the beach in the far western side of the activity area (Map 6). This area comprises a natural sandy beach with small, low dunes along the base of the steep slope (Photo 1). The dunes to the rear of the beach area were covered with grass clumps and low, scrubby bushes (Photo 2). Approximately the southern two thirds of the beach area appears to be relatively undisturbed, with the exception of a large concrete stormwater outfall drain approximately half way along the beach area (Photo 3).

The northern third of the beach area has been subject to modification at the base of the steep slope (Map 6). In this section an asphalt path leads down the slope and onto the beach (Photo 4). A raised flat area has been created at the base of the path, with introduced fill to create the raised platform and large rocks lining the edge of the platform to prevent erosion (Photo 5, Photo 6).

The ground surface visibility in the beach area was good, with an estimated 80% ground surface visibility. Closer to the base of the steep slope the visibility was significantly reduced due to dense scrubby bush cover, down to approximately 5% ground surface visibility. The survey team inspected all of the beach area in detail, however no Aboriginal cultural material was found.

Photo 1 Beach and low dunes, north aspect from the SW boundary of activity area.
Taken by Jodie Mitchell on 10 December 2018.

Photo 2 Low dune along beach area with grass and bushes, east aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 3 Concrete storm water outfall drain in beach area, east aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 4 Looking uphill towards path from the beach. south aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 5 Raised platform created on the beach at base of path, east aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 6 Large rocks edging raised platform on the beach, north aspect.
Taken by Jodie Mitchell on 10 December 2018.

The survey team then proceeded to walk up the steeply sloped area, along the asphalt path which winds up the hill and ends at a lookout (Map 6). The slope of the hill is approximately 60 degrees and is has a dense bush and tree cover (Photo 7). The path has been cut into the side of the hill, revealing the underlying rock base (Photo 8).

The top of the path branches off into a man-made lookout area near the top of the slope (Map 6, Photo 9, Photo 10). From the lookout the land slopes gently uphill towards the narrow neck that separates the western section of the activity area from the remainder of the activity area. This area has grass and leaf ground cover, with a few immature gum trees scattered throughout (Photo 11). A high wire fence with an access gate runs across the narrow section from north to south, separating the steeply sloped area in the west from the rest of the activity area (Map 6). No Aboriginal cultural material was found in this section of the activity area.

Trees along the path of the steeply sloped hill and in the lookout area were inspected for Aboriginal cultural scarring, however none was found.

Photo 7 Looking uphill from the base of the steeply sloped area, east aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 8 Exposed rock face half way up path in steeply sloped area, east aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 9 Path leading downhill from near top of slope, west aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 10 Lookout area near top of slope, west aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 11 Grassed area at top of steep slope, east aspect.
Taken by Jodie Mitchell on 10 December 2018.

From the wire fence towards the east the remainder of the activity area contains numerous buildings, including the original Moondah mansion with extensive additional buildings (Section 7.1.3) that take up a large portion of the centre of the activity area (Map 1). Numerous standalone buildings are also scattered throughout the northern half of the activity area (Photo 12, Photo 13). The activity area slopes downhill from Kunyung Road towards the west, with the slope being steeper in the eastern third and becoming gentler in the central section of the activity area (Map 6).

A grassed strip of land runs from the north east corner of the activity area downhill along the north boundary towards the buildings (Photo 14). Although this section of the activity area appears to be a natural, grassed slope, it contains a large number of underground utilities and has been subject to a large amount of disturbance subsurface (Map 5).

The steeper eastern third of the activity area features numerous trees, landscaping, two established vineyards, a dwelling and a gatehouse building fronting Kunyung Road (Photo 15, Photo 16, Photo 17).

Photo 12 Sheds and demountable buildings along northern boundary, north west aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 13 Demountable building north side of activity area, north aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 14 From NE corner of activity area downslope along northern boundary, west aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 15 Vineyard near gatehouse, south east aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 16 Trees and dwelling near Kunyung Road, north aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 17 Gatehouse entrance from Kunyung Road, east aspect.
Taken by Jodie Mitchell on 10 December 2018.

A driveway leads from the gatehouse downhill through the landscaped grounds to the Moondah mansion and buildings (Photo 18, Photo 19). A tennis court and a sand volley ball court have been cut into the slope just west of the vineyards (Photo 20, Photo 21).

The eastern section of the activity area has been extensively developed over many years and contains numerous buildings, landscaping, vineyards, sports courts, underground utilities, drive ways, and car parks. The ground surface visibility in the eastern section of the activity area is very poor, estimated to be 2% in small areas of exposed bare ground.

All areas of the ground surface were inspected for the presence of Aboriginal cultural material, and all mature native trees were inspected for cultural scarring, however none was found.

No areas of the activity area were considered having higher potential than other areas to contain Aboriginal cultural material. No caves, cave entrances or rock shelters are present within the activity area.

Photo 18 Drive way along south boundary, west aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 19 Grassed area south side of mansion, north west aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 20 Tennis court cut into slope, east aspect.
Taken by Jodie Mitchell on 10 December 2018.

Photo 21 Volley ball court cut into slope, north aspect.
Taken by Jodie Mitchell on 10 December 2018.

7.2.5 Conclusions from the Standard assessment

The western section of the activity area, past the high wire fence at the narrow section, comprises a steeply sloped, heavily treed area leading down to the beach. No works will be undertaken in this section as part of the activity and the treed slope is considered to be of low archaeological potential. The low sand dunes abutting the base of the slope are considered to be of higher potential to contain Aboriginal cultural material subsurface, however the beach section will also not be impacted as part of the development. In light of this no subsurface testing will be undertaken in the western section of the activity area past the high wire fence.

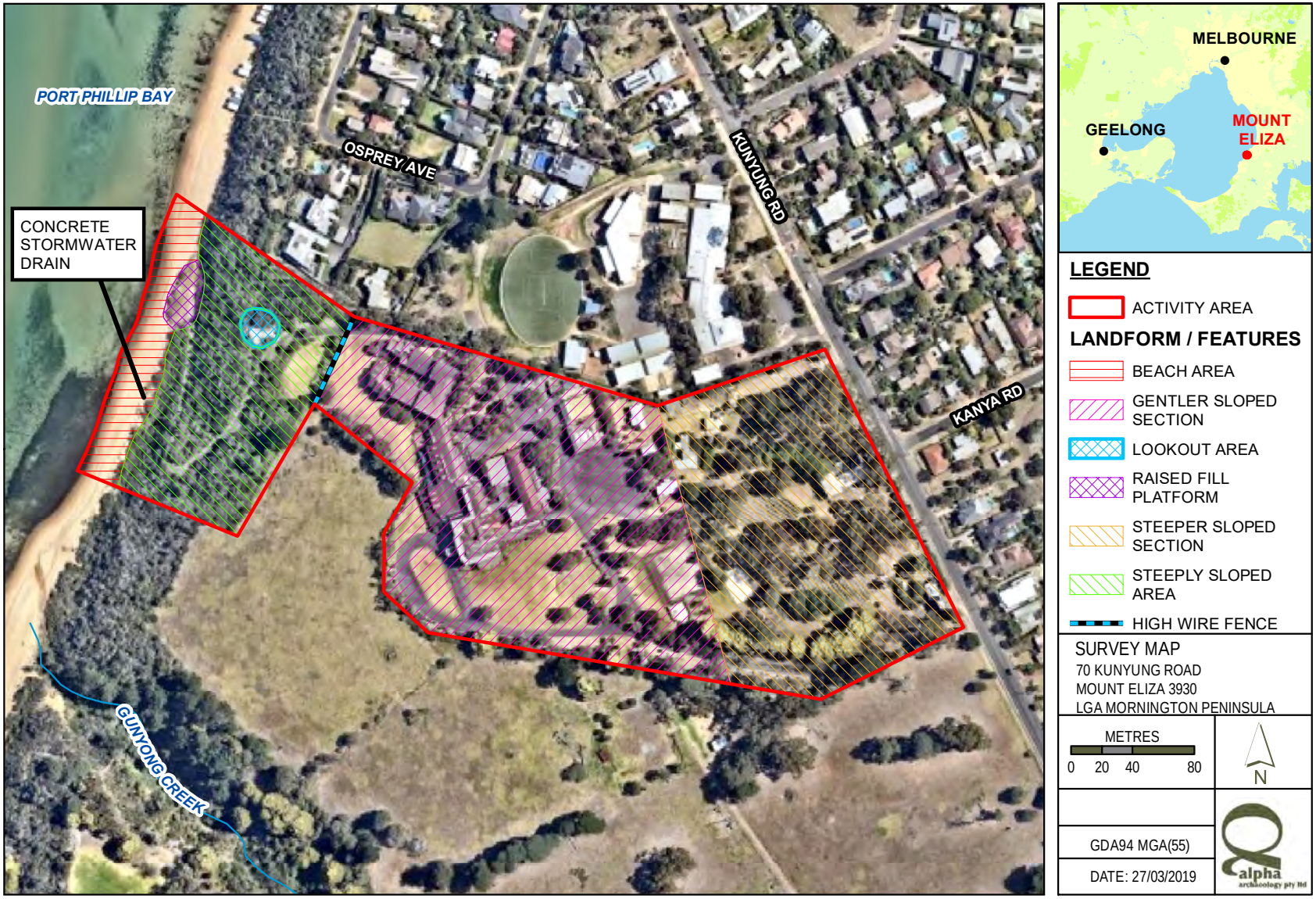
The desktop assessment and ground survey revealed that the remaining eastern section of the activity area has been extensively developed over a number of decades. The eastern third of the activity area slopes downhill from Kunyung Road and the majority of this area has been landscaped and contains a dwelling, introduced and native trees, underground utilities, and sports courts cut into the slope.

The central part of the activity area contains the original Moondah mansion building, with large buildings extensions constructed later, and contains many demountable buildings and sheds.

In light of the results of the desktop assessment, which revealed the activity area has had multiple uses over the years, comprises introduced fill throughout the eastern section, has many underground utilities and services running throughout to service the various buildings and landscaping, it is considered that the activity area is of low potential to contain Aboriginal cultural material.

The standard assessment did not highlight any sections of the activity area as having higher archaeological potential than the others. Fill is present throughout the activity area at various depths, and much of the ground surface is covered in buildings, asphalt, trees, and a large number of underground utilities run throughout. Therefore it was agreed between the heritage advisors and BLCAC field representatives that mechanical testing was to be conducted throughout the activity area opportunistically in areas where ground surface was accessible, whilst avoiding the marked underground utilities from Map 5.

Map 6 Results of Standard Assessment



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7.3 Complex assessment

The complex assessment was undertaken over four days from 10 to 13 December 2018 by Alpha heritage advisors Jodie Mitchell and Edward East, archaeologist Jason Gay and BLCAC cultural heritage field representatives Billy Maher and Danika Corcoran. Mitchell and East supervised the excavations.

7.3.1 Complex Assessment Methodology

The aim of the subsurface excavation program was to investigate the soil type and stratigraphy of the activity area and to investigate the presence of Aboriginal cultural heritage within the area of Aboriginal archaeological potential within the activity area.

The desktop assessment and standard assessment revealed the activity area is covered in substantial amounts of fill, and available space for subsurface testing was limited to any open areas with no underground services marked. Therefore it was agreed that the subsurface testing methodology would involve mechanical excavations using an excavator with a 1 metre wide mud bucket, in spits of no more than 10cm, and running any natural soils through the mechanical sieve. Any removed spoil that was obviously introduced fill would not be sieved. The geotechnical report had revealed that the natural base was a sandy clay, and it was agreed that when the clay base was reached that would be the depth of excavations. Excavations would be conducted in areas that will be subject to disturbance during the activity.

Stratigraphic profiles were drawn, photographs were taken, pH levels were tested and Munsell colours were determined for all contexts of the pits. The location of the pits and any other features present within the activity area were recorded using a Trimble differential GPS unit and mapped on a plan of the activity area (Map 7). All GPS coordinates were recorded in GDA94 Zone 55. Ranging poles were used in all photographs of the pits to help illustrate the depth and width of the pits. Increments on the ranging poles are 20 centimetres.

7.3.2 Complex Assessment Limitations

In total 16 pits, each measuring 1x2m, were excavated throughout the activity area using the above methodology. Limitations encountered included large amounts of fill in all of the pits, unmarked underground services being uncovered, and limited areas available for testing due to buildings and trees. However, as all of these pits were spread across the activity area, the landforms present were well sampled.

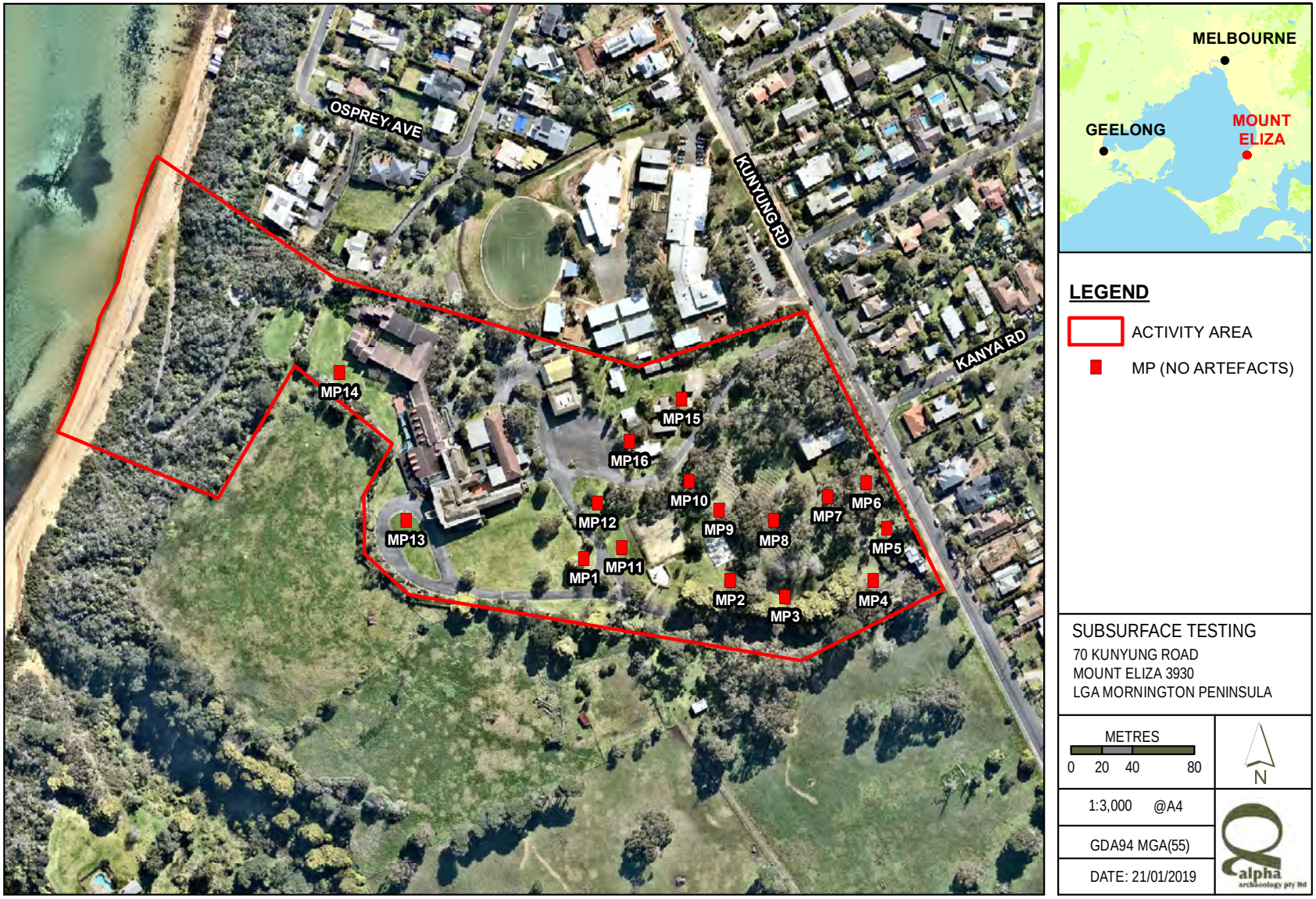
In spite of the limitations defined above, the sampling method used was still able to provide an excellent picture of the stratigraphy, features and depth of the disturbance within the activity area.

7.3.3 Complex Assessment Results

A total of 16 pits, each measuring 1x2m, were mechanically excavated throughout the activity area (Map 7). The excavation location, process, stratigraphy, base and depth of a sample of the mechanical pits are provided in Section 7.3.3.1 to 7.3.3.3.

The results of all the mechanical pits are summarised in Table 5. It was evident that the activity area comprised large amounts of introduced non-natural fill and subsurface ground disturbance has occurred throughout the activity area.

Map 7: Location of Excavations within the Activity Area



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7.3.3.1 MP1

GPS CO-ORDINATES (GDA94, Zone 55):

NW	331431.700	5771405.702
NE	331432.700	5771405.702
SE	331432.700	5771403.702
SW	331431.700	5771403.702

AREA TESTED: Centre south of activity area
DIMENSIONs: 100cm x 200cm
DEPTH REACHED: 90cm
NO. OF ABORIGINAL ARTEFACTS: 0 **NO. OF MODERN INCLUSIONS:** Numerous

Depth (cm)	Soil description
Surface	Thick grass cover.
1: 0-18	Brown introduced topsoil/fill.
2: 18-32	Light grey introduced fill.
3: 32-50	Brown introduced fill, tree root holes at base of layer.
4: 50-55/90	White clayey silt, some pebbles, loose compaction, undulating. Munsell 8/1 (10YR) White. pH 6
5: 55-90	Compact clay base, undulating. Munsell 4/6 (10YR) Dark yellowish brown. pH 6

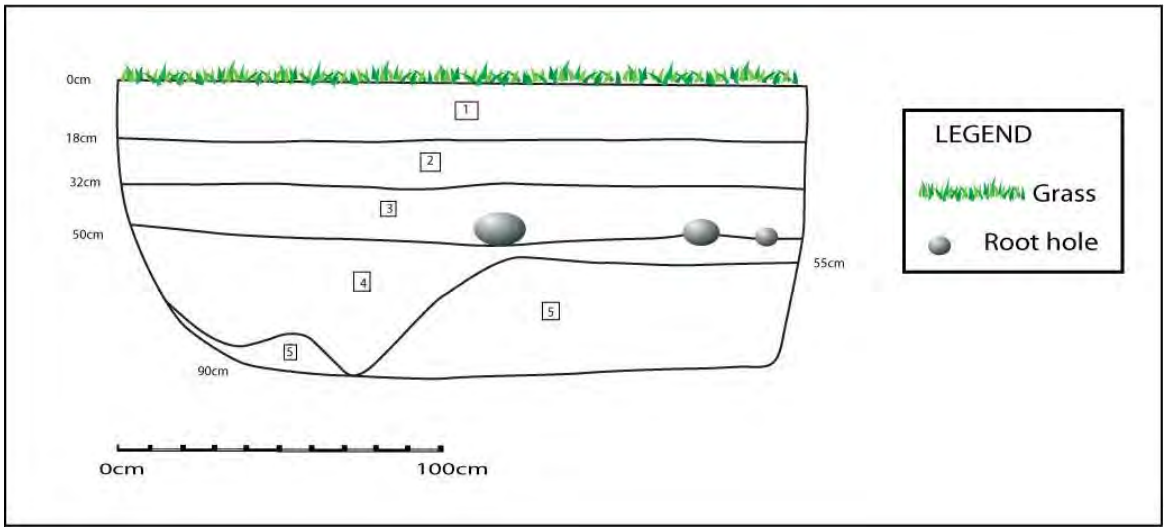

Figure 3: East profile drawing of MP1.

Photo 22: Location of MP1, north west aspect
Taken by Jodie Mitchell, 10 December 2018

Photo 23: East profile of MP1, east aspect.
Taken by Jodie Mitchell, 10 December 2018

7.3.3.2 MP11

GPS CO-ORDINATES (GDA94, Zone 55):

NW	331456.174	5771412.846
NE	331457.174	5771412.846
SE	331457.174	5771410.846
SW	331456.174	5771410.846

AREA TESTED: Centre south of activity area
DIMENSIONs: 100cm x 200cm
DEPTH REACHED: 104cm
NO. OF ABORIGINAL ARTEFACTS: 0 **NO. OF MODERN INCLUSIONS:** Numerous

Depth (cm)	Soil description
Surface	Thick grass cover.
1: 0-14	Brown introduced fill.
2: 14-48	Light grey introduced fill.
3: 48-65	Brown introduced fill.
4: 65-104	Dark brown mottled fill.
5: 65-84	White clayey silt, some pebbles, loose compaction. Munsell 8/1 (10YR) White. pH 6 Note this layer has been truncated by a pipe trench.
6: 84-104	Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6

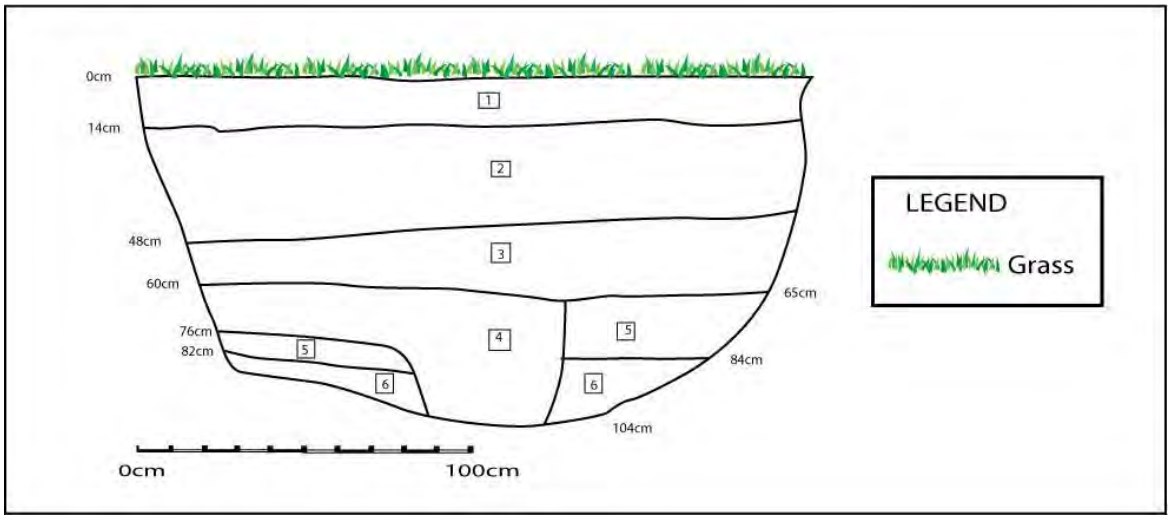

Figure 4 East profile drawing of MP2

Photo 24 Location shot of MP11, north west aspect.
Taken by Jason Gay, 12 December 2018

Photo 25 East profile of MP11, east aspect.
Taken by Jason Gay, 12 December 2018

7.3.3.3 MP15

GPS CO-ORDINATES (GDA94, Zone 55):

NW	331495.067	5771509.618
NE	331496.067	5771509.618
SE	331496.067	5771507.618
SW	331495.067	5771507.618

AREA TESTED: North east section of activity area
DIMENSIONs: 100cm x 200cm
DEPTH REACHED: 80cm
NO. OF ABORIGINAL ARTEFACTS: 0 **NO. OF MODERN INCLUSIONS:** Numerous

Depth (cm)	Soil description
Surface	Thick grass cover.
1: 0-20	Brown introduced fill.
2: 20-30	Grey introduced fill.
3: 30-80	Brown mottled introduced fill – very large old pipe in base of trench.
4: 30-80	Compact clayey silt, angular inclusions throughout. Munsell 6/4 (5YR) Light reddish brown. pH 6.

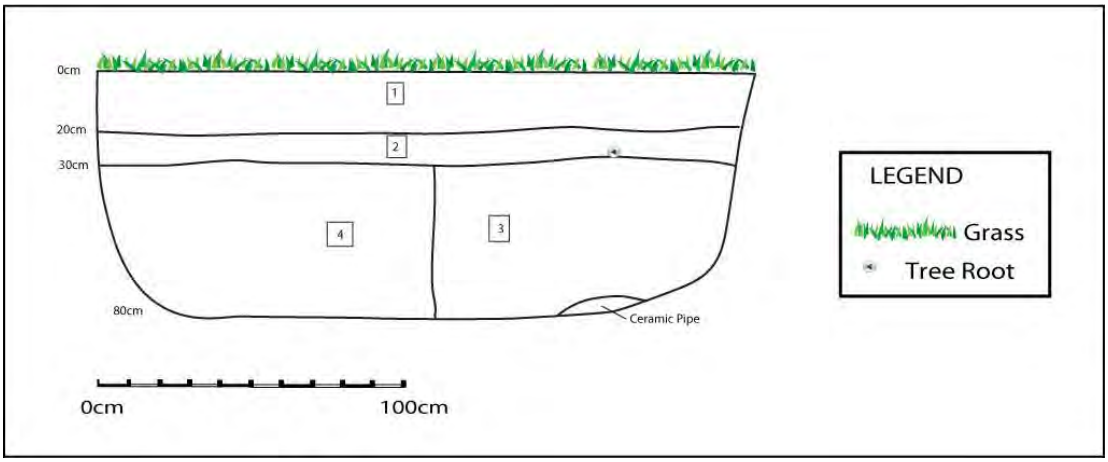

Figure 5 East profile drawing of MP15.

Photo 26 Location shot of MP15, north west aspect.
Taken by Jason Gay, 12 December 2018

Photo 27 East profile of MP15, east aspect.
Taken by Jason Gay, 12 December 2018

Table 5: Summary information of test pits located within activity area (GDA94 MGA, Zone 55).

MP No.	Depth (cm)	E	N	Stratigraphy description
1	90	331431.700	5771405.702	Refer Section 7.3.3.1
2	104	331526.950	5771391.415	0-74cm: Layers of introduced fill with modern inclusions throughout. 74-100cm: White clayey silt, some pebbles, loose compaction. Munsell 8/1 (10YR) White. pH 6 100-104cm: 55/90cm: Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6
3	56	331562.536	5771380.831	0-50cm: Introduced fill with modern inclusions throughout. 50-56cm: Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6
4	60	331620.216	5771391.150	0-56cm: Introduced fill with modern inclusions throughout. 56-60cm: Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6
5	62	331628.947	5771425.281	0-26cm: Layers of introduced fill with modern inclusions throughout. 26-56cm: White clayey silt, some pebbles, loose compaction. Munsell 8/1 (10YR) White. pH 6 56-62cm: Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6
6	65	331615.718	5771454.650	0-24cm: Introduced fill with modern inclusions throughout. 24-52cm: White clayey silt, some pebbles, loose compaction. Munsell 8/1 (10YR) White. pH 6 52-65cm: Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6
7	56	331590.582	5771445.919	0-24cm: Introduced fill with modern inclusions throughout, frequent tree roots. 24-48cm: White clayey silt, some pebbles, loose compaction. Munsell 8/1 (10YR) White. pH 6 48-56cm: Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6
8	65	331555.393	5771430.309	0-15cm: Introduced fill with modern inclusions throughout, frequent tree roots. 15-54cm: White clayey silt, some pebbles, loose compaction. Munsell 8/1 (10YR) White. pH 6 54-65cm: Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6
9	55	331519.674	5771437.452	0-15cm: Introduced fill with modern inclusions throughout, frequent small roots. 15-50cm: White clayey silt, some pebbles, loose compaction, some clay inclusions coming through near base. Munsell 8/1 (10YR) White. pH 6 50-55cm: Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6

MP No.	Depth (cm)	E	N	Stratigraphy description
10	52	331500.094	5771455.973	0-10cm: Introduced fill with modern inclusions throughout, frequent small roots. 10-46cm: White clayey silt, some pebbles, loose compaction. Munsell 8/1 (10YR) White. pH 6 - Note this layer has been truncated by a pipe trench, with the trench being filled with clay and gravel. 46-52cm: Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6
11	104	331456.174	5771412.846	Refer Section 7.3.3.2
12	76	331440.299	5771441.686	0-35cm: Layers of introduced fill with modern inclusions throughout. 35-70cm: White clayey silt, some pebbles, loose compaction. Munsell 8/1 (10YR) White. pH 6 70-76cm: Compact clay base. Munsell 4/6 (10YR) Dark yellowish brown. pH 6
13	106	331315.812	5771430.838	0-106cm: Layers of introduced fill with modern inclusions throughout. An old copper pipe was located near the base of this pit. No natural deposits encountered.
14	40	331272.499	5771526.868	0-40cm: Extremely compacted clay fill, very difficult to excavate (even with machine).
15	80	331495.067	5771509.618	Refer Section 7.3.3.3
16	72	331461.201	5771482.365	0-72cm: Layers of introduced fill with modern inclusions throughout. Uncovered old brick footings, concrete pieces, copper pipe, and white plastic pipe in trench. No natural deposits encountered.

7.3.4 Complex Assessment Conclusions

Results of the complex assessment revealed all of the activity area has been subject to ground disturbance, with introduced fill present in all of the test pits. Five of the test pits had no natural deposits present, comprising introduced fill directly overlying the natural clay base (MP3, MP4, MP13, MP14, MP15 and MP16). A white clayey silt layer was present in those pits that contained some natural deposits under the fill, and this layer overlay the natural clay base (MP1, MP2, MP5, MP6, MP7, MP8, MP9, MP10, MP11, and MP12). This layer could have lime content, as the area was well known for the lime burning industry in the 1800s.

Some of the trenches contained pipes at various depths (MP10, MP11, MP13, MP15, and MP16) and MP16 contained brick footings and pipes.

Testing was conducted in areas where excavation was possible, and where impact will be taking place for the proposed development. No Aboriginal cultural material was uncovered during subsurface testing, and there is very low potential for the activity area to contain Aboriginal cultural material.

7.4 Areas Likely to Contain Aboriginal Cultural Heritage Not to be Impacted Upon

One area of the activity area is likely to contain Aboriginal cultural heritage; the low dunes on the beach abutting the base of the steep slope (Map 6). This area will not be impacted during the activity.

8. CONSIDERATION OF SECTION 61 MATTERS – IMPACT ASSESSMENT

8.1 Cumulative Impact on Aboriginal Cultural Heritage

As there is no Aboriginal cultural heritage in the activity area, there is no cumulative impact from the activity within the activity area. The activity area is located in the suburb of Mt Eliza that has been intensively developed by residential neighbourhoods over many decades. The cumulative impact of this would have directly affected any Aboriginal cultural heritage that may have been present within the region, greatly reducing the surface visibility of any Aboriginal heritage sites and disturbance and/or removal of such sites during construction of houses, roads, parklands and associated works over the years.

The paucity of sites found within close proximity to the activity area no doubt reflects the cumulative impact of previous ground disturbance from the development of the area over a number of years, rather than being a reflection of the actual number of Aboriginal cultural sites that may have once existed.

The current assessment and prior CHMP assessments in the region demonstrate that areas already subject to prior disturbance are unlikely to contain Aboriginal cultural material, and if they do they would be in a disturbed context. Areas that have had less disturbance, such as along creek banks or the foreshore, would be considered more likely to contain Aboriginal cultural material. Therefore any future works in areas that have had minimal ground disturbance would be more likely to contain Aboriginal cultural material.

To mitigate the cumulative impact of any future regional development in those areas, it is recommended that complex CHMP assessments be undertaken. Should any Aboriginal cultural material be found during those assessments, all efforts should be made to retain such heritage where possible, to reduce the cumulative impact of future developments in the region.

8.2 General Requirements

No Aboriginal cultural heritage was found within the activity area during the assessment. Accordingly, there are no general or specific cultural heritage management requirements.

8.3 Are there Contingency Plans that might be necessary?

Under Clause 13(1) Schedule 2 of the Regulations, the CHMP must contain contingency plans for:

1(a) the matters referred to in Section 61 of the Act;

1(b) the resolution of any disputes between the Sponsor and BLCAC in relation to the implementation of the CHMP or the conduct of the activity;

1(c) reviewing compliance with the cultural heritage management plan and mechanisms for remedying non-compliance;

1(d) the management of Aboriginal cultural heritage found during the activity;

1(e) the notification, in accordance with the Act, of the discovery of Aboriginal cultural heritage during the carrying out of the activity.

These contingency plans are contained in Section 2.

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Appendix A: Notice of Intention to Prepare a Cultural Heritage Management

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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:	Ryman Healthcare (Australia) Pty Ltd		
ABN/ACN:	44 142 241 110		
Contact Name:	James Weight		
Postal Address	Suite 10.03, Level 10, 420 St Kilda Road, Melbourne VIC 3004		
Business Number:	0434 003588	Mobile:	
Email Address:	james.weight@rymanhealthcare.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:	Proposed Retirement Village at 70 Kunyung Road, Mt Eliza
Municipal district:	Mornington Peninsula Shire Council

Clearly identify the proposed activity for which the cultural heritage managment plan is to be prepared (ie. Mining, road construction, housing subivision)

Retirement Village

SECTION 3 - Cultural Heritage Advisor

Name	Company	Email address
Jodie Mitchell	Alpha Archaeology Pty Ltd	jodie@alphaarc.com

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

Start Date:	24-Oct-2018	Finish Date:	02-Oct-2019

Submitted on: 24 Oct 2018

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?

Retirement Village

Is any part of the activity an area of cultural heritage sensitivity, as listed in the regulations? Yes

☐ Other Reasons (Voluntary)

☐ An Environment Effects Statement is required

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

☐ An Impact Management Plan or Comprehensive Impact Statement is required for the activity

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.

BUNURONG LAND COUNCIL ABORIGINAL CORPORATION

SECTION 7A - List the relevant Aboriginal groups or Aboriginal people with whom the Sponsor intends to consult (if any)

*This section is to be completed only if the proposed activity in the management plan is to be carried out in an area where there is **no Registered Aboriginal Party.***

SECTION 7B - Describe the intended consultation process (if any)

*This section is to be completed only if the proposed activity in the management plan is to be carried out in an area where there is **no Registered Aboriginal Party.***

SECTION 8 – State who will be evaluating this plan (mandatory)

The plan is to be evaluated by:

☑ A Registered Aboriginal Party **AND / OR**

If checked, list the relevant Registered Aboriginal Party Evaluating: BUNURONG LAND COUNCIL ABORIGINAL CORPORATION

☐ The Secretary **AND / OR**

☐ The Council

SECTION 9 – Preliminary Aboriginal Heritage Tests (PAHTs)

List the Reference Number(s) of any PAHTs conducted in relation to the proposed activity:

SECTION 10 - Notification checklist

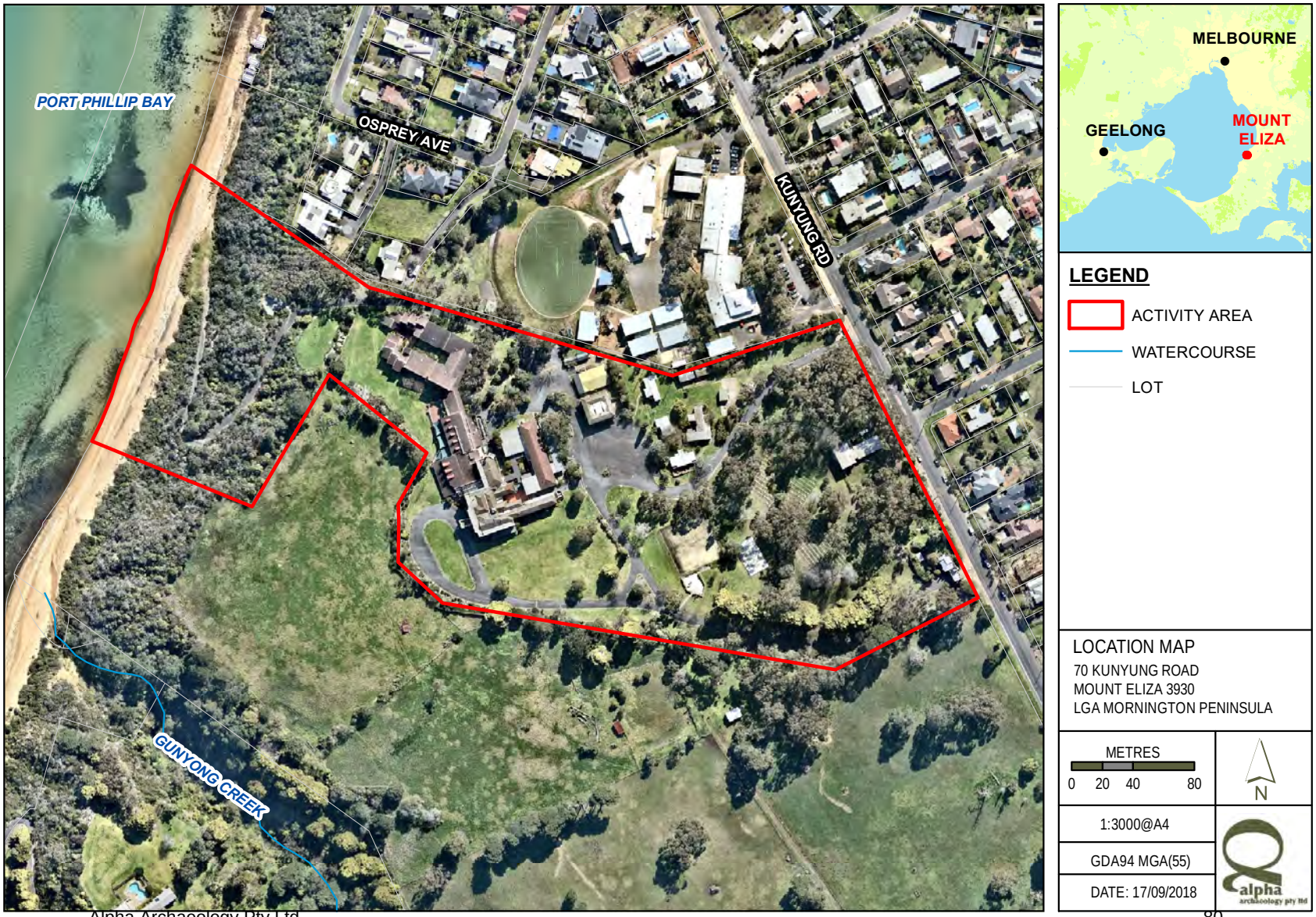
Ensure that any relevant registered Aboriginal party/ies is also notified. A copy of this notice with a map attached may be used for this purpose.
(A registered Aboriginal party is allowed up to 14 days to provide a written response to a notification specifying whether or not it intends to evaluate the management plan.)

Submitted on: 24 Oct 2018

In addition to notifying the Deputy Director and any relevant registerd Aboriginal party/ies, 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.

Ensure any municipal council, whose municipal district includes an area to which the cultural heritage management plan relates, is also notified. A copy of this notice, with a map attached, may also be used for this purpose.

Submitted on: 24 Oct 2018



Alpha Archaeology Pty Ltd

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Jodie Mitchell <jodie@alphaarc.com>

CHMP 16147 - 70 Kunyung Rd, Mt Eliza

1 message

Jodie Mitchell <jodie@alphaarc.com> Wed, Oct 24, 2018 at 5:33 PM
To: Robert Ogden <heritagemanager@bunuronglc.org.au>
Cc: Heritage Advisor <heritageadvisor@bunuronglc.org.au>, admin@bunuronglc.org.au, Edward East <eeast.arch@gmail.com>

Hi Robert,

Please find attached a copy of the Notice of Intent lodged with AV today, together with a copy of the map of activity area. Could you please advise within 14 days if the RAP will evaluate the CHMP.

Could you also advise your next available meeting date for the inception meeting for this one? Many thanks,

Regards,
Jodie

Jodie Mitchell *(B.Arch, MAACAI)*
Director / Principal Heritage Consultant
Alpha Archaeology Pty Ltd
Mob: 0418 579543

Suite 11, 902 Mt Alexander Road, Essendon VIC 3040
PO Box 480, Essendon VIC 3040
Ph: 03 9372 3350

www.alphaarc.com

2 attachments

herNoticeOfIntentForm_-24Oct2018-052429.pdf
157K

Activity Area - 70 KUNYUNG ROAD MOUNT ELIZA.pdf
1784K

Jodie Mitchell <jodie@alphaarc.com>

Notice of Intent to Prepare CHMP 16147

VAHR@dpc.vic.gov.au <VAHR@dpc.vic.gov.au> Wed, Oct 24, 2018 at 5:24 PM
To: james.weight@rymanhealthcare.com, jodie@alphaarc.com, heritagemanager@bunuronglc.org.au, heritageadvisor@bunuronglc.org.au

To whom it may concern,

This is a formal automated response indicating that, on 24-Oct-2018, the Secretary, Department of Premier and Cabinet received a Notice of Intent to Prepare a Cultural Heritage Management Plan (CHMP) for:

Ryman Healthcare (Australia) Pty Ltd - Proposed Retirement Village at 70 Kunyung Road, Mt Eliza

The notification has been allocated the AV Project Number:

CHMP Plan ID. 16147

Please quote this number when making any future enquiries to AV regarding this project.

If your activity lies within the boundaries of a registered Aboriginal party you must also notify this organisation of your intention to prepare the CHMP (if you have not already done so). Further information about registered Aboriginal parties can be found at:

http://www.dpc.vic.gov.au/index.php/aboriginal-affairs/registered-aboriginal-parties

THE INFORMATION RELATING TO YOUR DEVELOPMENT HAS BEEN ENTERED BY YOUR HERITAGE ADVISOR. If you detect an error in the information, please email VAHR@dpc.vic.gov.au with the correct information and quoting the CHMP five digit number.

Please provide additional notification provisions (as set out below) to VAHR@dpc.vic.gov.au.

Additional Notification Provisions:

1. Ensure any municipal council, whose municipal district includes an area to which the cultural heritage management plan relates, is notified. You may provide a copy of your Notice of Intent for this CHMP, to the relevant municipal council, for this purpose.

2. List the relevant Aboriginal groups or Aboriginal people with whom the Sponsor intends to consult (if any). This section is to be completed only if the proposed activity in the management plan is to be carried out in an area where there is no Registered Aboriginal Party. Consultation is for the purpose of obtaining an adequate assessment of the existence and significance of Aboriginal cultural heritage. Traditional Owner groups, inclusively representing individual Traditional Owners, are more likely to be the relevant bodies with which to consult in preparing a CHMP. Sponsors should endeavour to consult accordingly. This information may also assist the Secretary in determining whether to appoint an Activity Advisory Group for the activity and who to appoint to that group.

Gmail by Google

Jodie Mitchell <jodie@alphaarc.com>

CHMP Evaluation Response template

Robert Ogden <heritagemanager@bunuronglc.org.au> Fri, Oct 26, 2018 at 12:27 PM
To: jodie <jodie@alphaarc.com>
Cc: VAHR <vahr@dpc.vic.gov.au>

Bunurong Land Council ABORIGINAL CORPORATION

Date 26/10/18

To whom it may concern,

CHMP 16147 - 70 Kunyung Rd, Mt Eliza

Your notification has been accepted and the Bunurong Land Council Aboriginal Corporation (BLCAC) advises that it intends to evaluate this plan when complete, in accordance with Division 4, Section 55 of the *Aboriginal Heritage Act 2006.* We also advise that during the preparation of this plan, the BLCAC wishes to:

- Consult with you in relation to the assessment of the area for the purposes of the plan
- Participate in the conduct of the assessment
- Consult with the sponsor in relation to the conditions to be included in the plan

Please note that before any fieldwork program commences it will be necessary for your heritage advisor to participate in a Project Inception Meeting to discuss the project. It is preferable for the project sponsor to attend the Project Inception Meeting. As the Project Inception Meeting provides an opportunity for all parties to clarify the aims of the CHMP and methodology for any fieldwork program, it is helpful if you and/or your heritage advisor can bring along the following information to expedite these discussions:

- A clear map of the Activity Area
- Aboriginal site location data within the geographic region
- Site cards of any sites already recorded in the Activity Area

To organise a Project Inception Meeting please contact the office on 0455559727

Please ensure that when sending this CHMP to BLCAC for evaluation that it **must** be accompanied with proof of the evaluation fee (receipt of payment) and a hard copy of the CHMP. Failure to do so will mean the evaluation period can not and will not commence.

If you require any additional information about this advice, please contact Angela Thompson on 0425 308 256.

We look forward to meeting with you soon to discuss the project.

Yours sincerely,

Robert Ogden
Heritage Manager
BLCAC

Rob Ogden
Cultural Heritage Officer | Bunurong Land Council Aboriginal Corporation

Mobile: 0455 559 727
Phone: (03) 9770 1273
Email: heritagemanager@bunuronglc.org.au
Web: www.bunuronglc.org
Address: 16/395 Nepean Hwy, Frankston VIC 3199
PO BOX 4128, Frankston Heights VIC 3199

Appendix B: Consultation Correspondence

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Jodie Mitchell <jodie@alphaarc.com>

Inception Meeting CHMP 16147

Jodie Mitchell <jodie@alphaarc.com> Tue, Oct 30, 2018 at 4:30 PM
To: Robert Ogden <heritagemanager@bunuronglc.org.au>

Hi Rob,

Further to our recent correspondence, please find attached a booking form for an Inception Meeting for CHMP 16147, to take place on Wednesday 14th November at 2.30pm. If you have any queries please do not hesitate to contact me.

Regards,

Jodie Mitchell *(B.Arch, MAACAI)*
Director / Principal Heritage Consultant
Alpha Archaeology Pty Ltd
Mob: 0418 579543

Suite 11, 902 Mt Alexander Road, Essendon VIC 3040
PO Box 480, Essendon VIC 3040
Ph: 03 9372 3350

www.alphaarc.com

BLCAC Meet Booking CHMP 16147 - 301018.docx
45K

Bunurong Land Council
ABN: 66 129 413 297 ICN: 3630
16/395 Nepean Hwy, Frankston VIC 3199
Ph:03 9770 1273 www.bunuronglc.org

REQUEST FOR BUNURONG CULTURAL HERITAGE MEETING

Organisation/Company Making Request	Principal Contact: Jodie Mitchell Organisation: Alpha Archaeology Pty Ltd Phone: 03 9372 3350 Mobile: 0418 579543 Email: jodie@alphaarc.com				
Meeting Contact	Name:	Mobile: As Above			
Meeting Location	BLCAC Office				
Project Details	Name of Project:	CHMP Number: 16147 Proposed Retirement Village at 70 Kunyung Rd, Mt Eliza			
Type of Meeting (please circle or highlight)	CHMP Inception Meeting CHMP Standard Assessment Results Meeting CHMP Complex Results Meeting CHMP Salvage Meeting CHMP Non-RAP Area Meeting CHMP Compliance Meeting Due Diligence Assessment Non-CHMP Heritage Assessment Cultural Heritage Permit Meeting Other:……				
Meeting Times (please circle or highlight)	Date Requested: 14th November 2018				
	Tuesday	10:30am-11:30am	12:00pm-1:00pm	2pm-3pm	
	Wednesday	10:30am-11:30am	12:00pm-1:00pm	2pm-3pm	2.30pm
	Thursday	10:30am-11:30am	12:00pm-1:00pm	2pm-3pm	
Billing Details					
Attention	Ryman Healthcare (Australia) Pty Ltd, Att: James Weight				
Address	Suite 10.3, Level 10, 420 St Kilda Road, Melbourne VIC 3004				
Email	james.weight@rymanhealthcare.com				
Phone	1800 288 299				
Mobile	0434 003588				

Please send bookings for BLCAC meetings to Rob Ogden at heritagemanager@bunuronglc.org.au or you you can contact Rob on **0455 559 727** for anything relating to rep bookings, cancellations, alterations, postponements, changes to invoicing details/start times or meeting places, booking forms and confirmations.

Gmail by Google

Jodie Mitchell <jodie@alphaarc.com>

CHMP 16147 - field booking form

Jodie Mitchell <jodie@alphaarc.com> Thu, Nov 1, 2018 at 12:20 PM
To: Robert Ogden <heritagemanager@bunuronglc.org.au>

Hi Rob,

Please find attached a booking form for field work for the above CHMP. It is for 5 days from 10 to 14 December 2018 for 2 reps at 70 Kunyung Rd, Mt Eliza. If you have any queries please do not hesitate to contact me. Thanks,

Best,
Jodie

Jodie Mitchell *(B.Arch, MAACAI)*
Director / Principal Heritage Consultant
Alpha Archaeology Pty Ltd
Mob: 0418 579543

Suite 11, 902 Mt Alexander Road, Essendon VIC 3040
PO Box 480, Essendon VIC 3040
Ph: 03 9372 3350

www.alphaarc.com

BLCAC Rep Booking Form CHMP 16147- 011118.docx
249K

Bunurong Land Council
ABN: 66 129 413 297 ICN: 3630
PO Box 4128, Frankston Heights VIC 3199
Ph:03 9770 1273 Fax: 02 6921 9455
www.bunuronglc.org

REQUEST FOR BUNURONG REPRESENTATIVE

Project Number	
CHMP No	16147
Organisation/Company Making Request	Alpha Archaeology Pty Ltd
Onsite Contact Details	Jodie Mitchell - 0418 579543
Job Location/Meeting Place	Out the front of 70 Kunyung Rd, Mt Eliza
Project Type (please highlight or circle)	CHMP Standard Assessment **CHMP Complex Assessment** CHMP Salvage Other…… Cultural Heritage Induction RAP Inspection Cultural Heritage Permit
Number of Reps Required	2
Date(s) Required	10 to 14 December 2018 (5 days)
Daily Reporting Time	8am
OHS and PPE Requirements	Sun protection, sturdy shoes, leather gloves, water, snacks and lunch.
Billing Details	
Attention	Ryman Healthcare (Australia) Pty Ltd, Att: James Weight
Address	Suite 10.3, Level 10, 420 St Kilda Road, Melbourne VIC 3004
Email	james.weight@rymanhealthcare.com
Phone	1800 288 299
Mobile	0434 003588

Please send bookings for BLCAC field reps to Rob Ogden at heritagemanager@bunuronglc.org.au or you can contact Rob on **0455559727** for anything relating to rep bookings, cancellations, alterations, postponements, changes to invoicing details/start times or meeting places, booking forms and confirmations. Cancelations within 24 hours of fieldwork will be charged at a full day rate.

Gmail by Google

Jodie Mitchell <jodie@alphaarc.com>

CHMP 16147 - Meeting booking form

Jodie Mitchell <jodie@alphaarc.com> Tue, Jan 8, 2019 at 11:26 AM
To: Robert Ogden <heritagemanager@bunuronglc.org.au>

Hi Robert,

Please find attached a booking form for the post-excavation meeting of the above CHMP, relating to 70 Kunyung Road, Mt Eliza, on 23rd January 2019 at 3pm.

If you have any questions please let me know.

Kind regards,
Jodie

Jodie Mitchell *(B.Arch, MAACAI)*
Director / Principal Heritage Consultant
Alpha Archaeology Pty Ltd
Mob: 0418 579543

Suite 11, 902 Mt Alexander Road, Essendon VIC 3040
PO Box 480, Essendon VIC 3040
Ph: 03 9372 3350

www.alphaarc.com

BLCAC Meet Booking CHMP 16147 - 080119.docx
45K

Bunurong Land Council
ABN: 66 129 413 297 ICN: 3630
16/395 Nepean Hwy, Frankston VIC 3199
Ph:03 9770 1273 www.bunuronglc.org

REQUEST FOR BUNURONG CULTURAL HERITAGE MEETING

Organisation/Company Making Request	Principal Contact: Jodie Mitchell Organisation: Alpha Archaeology Pty Ltd Phone: 03 9372 3350 Mobile: 0418 579543 Email: jodie@alphaarc.com				
Meeting Contact	Name:	Mobile: As Above			
Meeting Location	BLCAC Office				
Project Details	Name of Project:	CHMP Number: 16147 Proposed Retirement Village at 70 Kunyung Rd, Mt Eliza			
Type of Meeting (please circle or highlight)	CHMP Inception Meeting CHMP Standard Assessment Results Meeting CHMP Complex Results Meeting CHMP Salvage Meeting CHMP Non-RAP Area Meeting CHMP Compliance Meeting Due Diligence Assessment Non-CHMP Heritage Assessment Cultural Heritage Permit Meeting Other:……				
Meeting Times (please circle or highlight)	Date Requested: 23rd January 2019				
	Tuesday	10:30am-11:30am	12:00pm-1:00pm	2pm-3pm	
	Wednesday	10:30am-11:30am	12:00pm-1:00pm	2pm-3pm	3pm
	Thursday	10:30am-11:30am	12:00pm-1:00pm	2pm-3pm	
Billing Details					
Attention	Ryman Healthcare (Australia) Pty Ltd, Att: James Weight				
Address	Suite 10.3, Level 10, 420 St Kilda Road, Melbourne VIC 3004				
Email	james.weight@rymanhealthcare.com				
Phone	1800 288 299				
Mobile	0434 003588				

Please send bookings for BLCAC meetings to Rob Ogden at heritagemanager@bunuronglc.org.au or you you can contact Rob on **0455 559 727** for anything relating to rep bookings, cancellations, alterations, postponements, changes to invoicing details/start times or meeting places, booking forms and confirmations.

Appendix C: Planning Zone SUZ

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37.01 SPECIAL USE ZONE

31/07/2018
VC148

Shown on the planning scheme map as **SUZ** with a number.

Purpose

To implement the Municipal Planning Strategy and the Planning Policy Framework.

To recognise or provide for the use and development of land for specific purposes as identified in a schedule to this zone.

37.01-1 Table of uses

19/01/2006
VC37

Section 1 - Permit not required

Use	Condition
Any use in Section 1 of the schedule to this zone	Must comply with any condition in Section 1 of the schedule to this zone

Section 2 - Permit required

Use	Condition
Any use in Section 2 of the schedule to this zone	Must comply with any condition in Section 2 of the schedule to this zone.
Any other use not in Section 1 or 3 of the schedule to this zone	

Section 3 - Prohibited

Use
Any use in Section 3 of the schedule to this zone

37.01-2 Use of land

31/07/2018
VC148

Any requirement in the schedule to this zone must be met.

Application requirements

An application to use land must be accompanied by any information specified in the schedule to this zone.

Exemption from notice and review

The schedule to this zone may specify that an application is exempt from the notice requirements of Section 52(1)(a), (b) and (d), the decision requirements of Section 64(1), (2) and (3) and the review rights of Section 82(1) of the Act.

Decision guidelines

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

- The Municipal Planning Strategy and the Planning Policy Framework.
- Any guidelines in the schedule to this zone.

37.01-3 **Subdivision**

31/07/2018
VC148

Permit requirement

A permit is required to subdivide land.

Any requirement in the schedule to this zone must be met.

VicSmart applications

Subject to Clause 71.06, an application under this clause for a development specified in Column 1 is a class of VicSmart application and must be assessed against the provision specified in Column 2.

Class of application	Information requirements and decision guidelines
Subdivide land to realign the common boundary between 2 lots where: ▪ The area of either lot is reduced by less than 15 percent. ▪ The general direction of the common boundary does not change.	Clause 59.01
Subdivide land into lots each containing an existing building or car parking space where: ▪ The buildings or car parking spaces have been constructed in accordance with the provisions of this scheme or a permit issued under this scheme. ▪ An occupancy permit or a certificate of final inspection has been issued under the Building Regulations in relation to the buildings within 5 years prior to the application for a permit for subdivision.	Clause 59.02
Subdivide land into 2 lots if: ▪ The construction of a building or the construction or carrying out of works on the land: – Has been approved under this scheme or by a permit issued under this scheme and the permit has not expired. – Has started lawfully. ▪ The subdivision does not create a vacant lot.	Clause 59.02

Application requirements

An application to subdivide land must be accompanied by any information specified in the schedule to this zone.

Exemption from notice and review

The schedule to this zone may specify that an application is exempt from the notice requirements of section 52(1)(a), (b) and (d), the decision requirements of section 64(1), (2) and (3) and the review rights of section 82(1) of the Act.

Decision guidelines

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

- The Municipal Planning Strategy and the Planning Policy Framework.
- Any guidelines in the schedule to this zone.

37.01-4 **Buildings and works**

31/07/2018
VC148

Permit requirement

A permit is required to construct a building or construct or carry out works unless the schedule to this zone specifies otherwise.

Any requirement in the schedule to this zone must be met.

An apartment development must meet the requirements of Clause 58.

VicSmart applications

Subject to Clause 71.06, an application under this clause for a development specified in Column 1 is a class of VicSmart application and must be assessed against the provision specified in Column 2.

Class of application	Information requirements and decision guidelines
Construct a building or construct or carry out works with an estimated cost of up to $500,000 and the land is not: ▪ Within 30 metres of land (not a road) which is in a residential zone. ▪ Used for a purpose listed in the table to Clause 53.10.	Clause 59.04

Transitional provisions

Clause 58 does not apply to:

- An application for a planning permit lodged before the approval date of Amendment VC136.
- An application for an amendment of a permit under section 72 of the Act, if the original permit application was lodged before the approval date of Amendment VC136.

Application requirements

An application to construct a building or construct or carry out works must be accompanied by any information specified in the schedule to this zone.

An application to construct or extend an apartment development, or to construct or extend a dwelling in or forming part of an apartment development, must be accompanied by an urban context report and design response as required in Clause 58.01.

Exemption from notice and review

The schedule to this zone may specify that an application is exempt from the notice requirements of section 52(1)(a), (b) and (d), the decision requirements of section 64(1), (2) and (3) and the review rights of section 82(1) of the Act.

Decision guidelines

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

- The Municipal Planning Strategy and the Planning Policy Framework.
- For an apartment development, the objectives, standards and decision guidelines of Clause 58.
- Any guidelines in the schedule to this zone.

37.01-5 **Signs**

31/07/2018
VC148

Sign requirements are at Clause 52.05. This zone is in Category 3 unless a schedule to this zone specifies a different category.

19/01/2006
VC37

SCHEDULE 2 TO THE SPECIAL USE ZONE

Shown on the planning scheme map as **SUZ2**

PRIVATE SPORTSGROUNDS, RELIGIOUS, HEALTH AND EDUCATIONAL ESTABLISHMENTS

Purpose

To recognise strategic sites that contain recreational, religious, health or educational facilities that performs a significant community function.

1.0 Table of uses

19/01/2006
VC37

Section 1 - Permit not required

USE	CONDITION
Apiculture	Must meet the requirements of the Apiary Code of Practice, May 1997.
Mineral exploration	
Mining	Must meet the requirements of clause 52.08-2.
Place of worship	
Railway	
Road	
Search for stone	Must not be costeaning or bulk sampling.

Section 2 - Permit required

USE	CONDITION
Agriculture (other than Apiculture, Animal keeping and Intensive animal husbandry)	
Caretaker's house	Must be used in association with an Education centre, Minor sports and recreation facility or Place of worship.

Section 2 - Permit required continued

USE	CONDITION
Community market	
Convenience shop	
Education centre	
Leisure and recreation facility (other than Motor racing track)	
Medical centre	
Minor utility installation	
Office (other than a Medical Centre)	The leasable floor area must not exceed 500 square metres.
Place of assembly (other than Amusement parlour and Night club)	
Plant nursery	
Residential building	Must be used in association with an Education centre, Minor sports and recreation facility or Place of worship.
Retirement village	Must be used in association with a Place of worship.
Any other use not in Section 1 or 3	

Section 3 - Prohibited

USE
Accommodation (other than Caretaker's house, Residential building and Retirement village)
Amusement parlour
Animal keeping
Brothel
Cemetery
Cinema based entertainment facility
Crematorium
Display home
Extractive industry
Industry (other than Car wash)
Intensive animal husbandry
Motor racing track
Night club

USE
Retail premises (other than Community market, Convenience shop)
Food and drink premises, and Plant nursery)
Service station
Transport terminal
Utility installation
Warehouse

2.0 Use of land

19/01/2006
VC37

Amenity of the neighbourhood

A use must not detrimentally affect the amenity of the neighbourhood, including through the:

- Transport of materials, goods or commodities to or from the land.
- Appearance of any building, works or materials.
- Emission of noise, artificial light, vibration, dust, waste water, or waste products.

Application requirements

An application to use land must be accompanied by the following information, as appropriate:

- The purpose of the use and the types of activities which will be carried out.
- The likely effects, if any, on adjoining land including noise levels, traffic, hours of operation and light spill, affect on the privacy of adjoining properties, solar access and glare.
- Maintenance of areas not required for immediate use.

Decision guidelines

Before deciding on an application to use land, the responsible authority must consider, as appropriate:

- The State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
- The effect that existing uses may have on the proposed use.
- The drainage of the land.
- The availability of and connection to services.
- The effect of traffic to be generated on roads.
- The interim use of those parts of the land not required for the proposed use.

3.0 Subdivision

19/01/2006
VC37

Permit requirement

A permit is required to subdivide land.

Decision guidelines

Before deciding on an application to subdivide land, the responsible authority must consider, as appropriate:

- The State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
- The interface with adjoining zones especially the relationship with residential areas.
- The effect the subdivision will have on the potential of the land to accommodate existing and potential future uses in accordance with the purpose of this zone.

4.0 Buildings and works

19/01/2006
VC37

Permit requirement

A permit is required to construct a building or construct or carry out works.

This does not apply to a building or works which:

- Alter electrical or gas services or telephone lines.
- Alter plumbing services which do not affect the drainage of other land.
- Install a temporary shed or temporary structure for construction purposes.
- Provide for fire protection under the relevant legislation.

Application requirements

An application to construct a building or construct or carry out works must be accompanied by the following information, as appropriate:

- A plan drawn to scale which shows:
  - The boundaries and dimensions of the site.
  - Adjoining roads.
  - The location, height and purpose of buildings and works on adjoining land.
  - Relevant ground levels.
  - The layout of existing and proposed buildings and works.
  - All driveway, car parking and loading areas.
  - Proposed landscape areas.
  - Areas not required for immediate use.
- Elevation drawings to scale showing the colour and materials of all buildings and works.
- Construction details of all drainage works, driveways, vehicle parking and loading areas.
- A landscape layout which includes the description of vegetation to be planted, the surfaces to be constructed, site works specification and method of preparing, draining, watering and maintaining the landscape area.

Decision guidelines

Before deciding on an application to construct a building or construct or carry out works, the responsible authority must consider, as appropriate:

- The State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
- The effect of the proposed buildings and works on the amenity of the neighbouring properties.
- The provision of landscaping.
- The provision of access and car parking, including pick up and drop off areas where appropriate.
- The interface with adjoining zones especially the relationship with residential areas.
- The streetscape, access from the street front, the treatment of the fronts and backs of buildings and their appurtenances, illumination of buildings or their immediate spaces and landscaping of land adjoining a road.
- The storage of rubbish and materials for recycling.
- Defining the responsibility for the maintenance of buildings, landscaping and paved areas.
- The availability of and connection to services.
- The design of buildings to provide for solar access.

Maintenance

All buildings and works must be maintained in good order and appearance to the satisfaction of the responsible authority.

5.0 Advertising signs

19/01/2006
VC37

Advertising sign requirements are at Clause 52.05. This zone is in Category 3.

Appendix D: Glossary

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Angular fragment - an artefact which has technologically diagnostic features but has no discernible ventral or dorsal surface and hence is unidentifiable as either a flake or a core.

Artefact scatter - consist of more than one stone artefact. Activities associated with this site type include stone tool production, hunting and gathering or domestic sites associated with campsites. Stone artefacts may be flakes of stone, cores or tools. Some scatters may also contain other material such as charcoal, bone, shell and ochre.

Blades - flakes that are at least twice as long as they are wide, with parallel edges.

Burials - Aboriginal communities strongly associate burial sites with a connection to country and are opposed to disturbance of burials or their associated sites. General considerations for the presence of burial sites are the suitability of subsurface deposits for digging purposes; with soft soil and sand being the most likely. They are more likely near water courses or in dunes near old lake beds or near the coast. Burials are often located near other sites such as oven mounds, shell middens or artefact scatters.

Core - an artefact which has technologically diagnostic features. Generally this class of artefact has only negative scars from flake removal, and thus no ventral surface, however, for the purposes of this research core has been employed to encompass those artefacts which were technically flakes but served the function of a core (i.e. the provider of flakes).

Flake - an artefact which has technologically diagnostic features and a ventral surface.

Holocene - the latter geological epoch of the Quaternary Period, beginning approximately 10,000 years ago and including the present. Characterized by warm weather and a rise in sea levels in the early part of the epoch, when the ice sheets formed during the Pleistocene melted.

Isolated finds or artefacts - isolated finds refer to a single artefact. These artefacts may have been dropped or discarded by its owner once it was of no use. This site type can also be indicative of further subsurface archaeological deposits. These site types can be found anywhere within the landscape, however, they are more likely to occur within contexts with the same favourable characteristics for stone artefact scatter sites.

Low density artefact distribution – refers to the occurrence of stone artefacts at densities of up to 10 in an area of approximately 10m x 10m.

Quartz – a crystalline form of silica

Quartzite – a hard rock formed from the metamorphism of quartz sandstone.

Retouch – the removal of a series of small, contiguous flakes from the edges of a larger flake and is responsible for altering the shape or angle of a flake edge.

Scarred trees - it is known that the wood and bark of trees have been used for a variety of purposes, such as carrying implements, shield or canoes. The removal of this raw material from a tree produces a 'scar'. The identification of a scar associated with Aboriginal custom as opposed to natural scarring can be difficult. The scar should be of a certain size and shape to be identifiable with its product; the tree should also be mature in age, from a time that Aboriginal people were still active in the area.

Silcrete - a silicified sedimentary stone, often with fine inclusions or grains in a cryptocrystalline matrix. Because of the nature of the grains in silcrete (a hindrance in knapping/flaking predictability) the stone is sometimes heat treated. This exposure to heat can be identified by the presence of pot-lidding as well as 'lustre' to the stone which is otherwise absent in the stones' natural state.

Tool - flakes that were used in exactly the form they came off the core (without modification), or flakes that were modified for use by the removal of a series of small contiguous flakes from their edges

Appendix E: Identification of Aboriginal Sites

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ABORIGINAL FLAKED STONE TOOLS

Site Identification
Mini Poster 4

A group of artefacts of different size, shape and material

What are Aboriginal Flaked Stone Tools?

Flaked stone tools were made by hitting a piece of stone, called a core, with a 'hammerstone', often a pebble. This would remove a sharp fragment of stone called a flake.

Both cores and flakes could be used as stone tools. New flakes were very sharp, but quickly became blunt during use and had to be sharpened again by further flaking, a process called 'retouch'. A tool that was retouched has a row of small flake scars along one or more edges. Retouch was also used to shape a tool.

Not all types of stone could be used for making tools. The best types of stone are rich in silica, hard and brittle. These include quartzite, chert, flint, silcrete and quartz. Aboriginal people quarried such stone from outcrops of bedrock, or collected it as pebbles from stream beds and beaches. Many flaked stone artefacts found on Aboriginal sites are made from stone types that do not occur naturally in the area. This means they must have been carried long distances.

Where are Stone Tools Found?

Stone tools are the most common evidence of past Aboriginal activities in Australia. They occur in many places and are often found with other remains from Aboriginal occupation, such as shell middens and cooking hearths. They are most common near rivers and creeks. It is easier to find them where there is not much vegetation or where the ground surface has been disturbed, for example by erosion.

Characteristics

General

- Sharp edges.
- Retouch along one or more edges.
- Stone rich in silica.
- Stone type often different to the natural rock in the area.

Flakes

- Usually less than 50 mm long.
- A 'striking platform' (see diagram) visible.
- Impact point often present on the striking platform.
- A 'bulb of percussion' often present below the striking platform.
- May have been shaped into a recognisable tool form, such as a point or scraper.

Cores

- May be fist-sized or smaller.
- May have one or more scars where flakes have been removed.

Not all of these features can be seen on each stone tool and some require an experienced eye to identify them. Breakage can remove some key features.

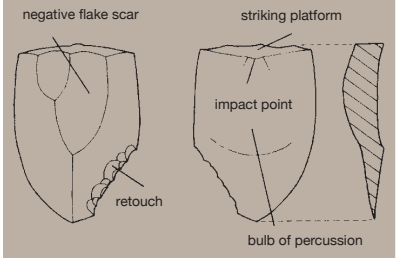
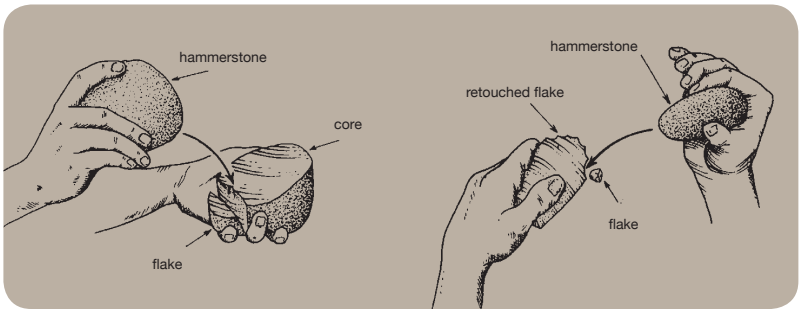


Diagram showing basic flake characteristics



How flaked stone tools were made

What to Do if You Find a Flaked Stone Tool

Do not remove any material from the area. If you pick up a stone to examine it, make sure that you put it back where it came from. Check whether it has some of the key characteristics. Record the location, noting roughly how many stones there are. Note whether the area is under threat of disturbance.

What Were Flaked Stone Tools Used For?

Flaked stone tools could be made quickly, and were used for many everyday tasks, including shaping objects made of wood, bark and bone. They were used as spear-tips in hunting weapons and as knives to butcher game. They were also used to scrape and prepare animal skins for making cloaks, containers and decorative items.

How Else can Stone be Flaked?

Many natural processes can break stone. These include rockfall and extreme changes in temperature. Modern machines, such as ploughs, can also fracture stone. It is important to be able to distinguish stone that has been naturally or accidentally fractured from stone that was deliberately flaked by Aboriginal people. Some of the characteristics of Aboriginal flaked stone artefacts may occasionally occur on naturally fractured stone. However, it is very rare for two or more of these characteristics to occur on the same piece of stone as the result of a natural process.

Why are Flaked Stone Tools Important?

Because stone artefacts do not rot or rust, they are often the only evidence of Aboriginal occupation in a particular area. Stone artefacts can provide information about where Aboriginal people lived, how they made other tools, hunted and prepared food. Sometimes traces of wood, plant food, or animal blood can survive on the edges of flaked stone tools. Specific marks and damage on a tool from use can help tell us what it was used for. This is because different tasks, such as wood carving or scraping animal skins, damaged the edge in different ways.

By finding the original source of stone that was used to make tools, it is sometimes possible to trace the movement of stone within an area. This tells us about Aboriginal systems of trade, exchange and social alliances.

There were a number of changes to the stone tools used by Aboriginal people over time. Because of this, stone tools can help provide an approximate age for the Aboriginal occupation of an area. Flaked stone tools are one of a range of artefacts that provide Aboriginal people today with an important link to their culture and past.

Threats to Aboriginal Stone Tools

Because stone artefacts are found in many different places, and are usually small, they can be difficult to protect. They are sometimes collected by people who do not understand the importance of leaving Aboriginal cultural materials where they are found. Erosion and weathering and activities such as ditch digging and ploughing can disturb flaked stone artefacts. They can also be broken when trampled by animals such as cows, or when run over by vehicles.

Aboriginal Affairs Victoria records flaked stone artefacts so that we will have a permanent photographic and written record of this important part of the heritage of all Australians. Some particularly good examples of sites containing flaked stone artefacts may require active conservation so that they can be preserved for future generations.

Are Flaked Stone Artefacts Protected?

All Aboriginal cultural places in Victoria are protected by law. Aboriginal artefacts are also protected.

It is against the law to disturb or destroy an Aboriginal place. Artefacts should not be removed from sites.

Please help to preserve Aboriginal cultural places by reporting their presence to Aboriginal Affairs Victoria.

Contact:

The Heritage Registrar
Aboriginal Affairs Victoria
PO Box 2392
Melbourne VIC 3001

Telephone: 1800 762 003
Website: www.dpcd.vic.gov.au/aav

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Victoria The Place To Be
Department of Planning and Community Development

ABORIGINAL SURFACE SCATTERS

Site Identification
Mini Poster 6

A typical surface scatter found when an older land surface has been exposed

What are Aboriginal Surface Scatters?

Surface artefact scatters are the material remains of past Aboriginal people's activities. Scatter sites usually contain stone artefacts, but other material such as charcoal, animal bone, shell and ochre may also be present. No two surface scatters are exactly the same.

Where are They Found?

Surface scatters can be found wherever Aboriginal occupation has occurred in the past.

Aboriginal campsites were most frequently located near a reliable source of fresh water, so surface scatters are often found near rivers or streams where erosion or disturbance has exposed an older land surface.

What to do if You Find an Aboriginal Surface Scatter?

Do not disturb the site or remove any material. Check whether the site has the characteristics of an Aboriginal surface scatter. If it does, record its location and write a brief description of its condition. Note whether it is under threat of disturbance.

Please help to preserve Aboriginal cultural places by reporting their presence to Aboriginal Affairs Victoria.

Contact:

The Heritage Registrar
Aboriginal Affairs Victoria
PO Box 2392
Melbourne VIC 3001

Telephone: 1800 762 003
Website: www.dpcd.vic.gov.au/aav

Characteristics

- The size of scatters may vary from one square metre to one hectare.
- Scatters may contain a few artefacts or many thousands.
- They generally consist of chipped stone artefacts (see Mini Poster 4), but sometimes contain animal bone, shell, charcoal, hearth stones, clay balls and ochre.
- Surface scatters are most visible where erosion, roadwork, ploughing or earthworks have disturbed the ground.
- They can be exposed as a concentration of material on the ground, or as a thin layer (or layers) of material in the side of a bank or cutting.

This Aboriginal camp shows how surface scatters were created
State Library of Victoria

What Produced Surface Scatters?

Surface scatters are the remains of past Aboriginal campsites and other activities. Aboriginal people produced and left the scatter material in the course of their daily life. Activities that produced surface scatters include:

- manufacture of stone implements for a range of everyday tasks;
- production and maintenance of weapons, tools and other items made of wood and bone;
- construction of shelters and huts;
- preparation and consumption of meals;
- preparation of clothes and blankets from animal skins;
- social and spiritual activities.

Away from the camp, activities that produced surface scatters include:

- wood chopping and the removal of bark from trees;
- preparation of large items such as canoes;
- hunting and game processing;
- gathering and processing fruit and vegetables.

Scatters may be the remains from a number of activities in a camp, or from just one activity away from the main camp site.

Large surface scatters with many types of artefacts indicate favoured camping areas. These were often resource-rich areas such as swamps, lakes or riverine environments. Aboriginal people returned to these locations repeatedly, stayed for longer periods, and undertook a wider range of activities. A large scatter may have many thousands of artefacts and cover more than a hectare. The repeated use of an area may have left a dense deposit that is many layers thick, or a huge scatter consisting of artefacts from many overlapping occupations.

Smaller sites generally resulted from single, short occupations such as overnight camps and dinner camps. Some consist of debris at an activity area away from the main camp. Small scatters may cover only a few square metres, consist of only one layer and comprise only a few artefacts. They can be found anywhere, whereas larger scatters are rarer in resource-poor areas such as coastal plains, highlands and deserts.

What Other Factors Produce Surface Scatters?

Scatters of naturally occurring gravel, particularly quartz, may be mistaken for Aboriginal surface scatters. Gravel usually has rounded edges and originates in the immediate area. Imported gravel, particularly from roadwork or building construction, can also be mistaken for surface scatters. Imported gravel has sharp edges and a narrow size range, and it is usually found around earthworks.

Why are Aboriginal Surface Scatters Important?

Surface scatters of artefacts are one of the most common types of Aboriginal site. They provide important information about past Aboriginal people's settlement patterns and lifestyles.

Some organic materials (such as charcoal, bone and shell) found in scatters can be dated by radiocarbon dating. These dates tell us when people were living in a particular area. Artefacts in the surface scatters can show how Aboriginal culture changed over time. The presence of stone from other areas can indicate trade, exchange and contact between different groups that lived many kilometres apart.

Surface scatters are an important link for Aboriginal people today with their culture and past.

Are Aboriginal Surface Scatters under Threat?

Aboriginal surface scatters can be disturbed or destroyed by people or natural processes such as wind and water. Weathering and erosion can damage or disperse artefacts, as can trampling by hard-hoofed animals and rabbit burrowing. Human activities such as mining, road building, damming, clearing and construction can disturb and destroy artefact sites.

Stone Artefacts like these are commonly found in Victorian surface scatters

Aboriginal Affairs Victoria records the location, dimensions and condition of Aboriginal scatters. The aim is to have a permanent photographic and written record of this important part of the heritage of all Australians. Management works around Aboriginal surface scatters, such as the eradication of rabbits and erosion control, help preserve the sites for future generations.

Are Aboriginal Surface Scatters Protected?

All Aboriginal cultural places in Victoria are protected by law. Aboriginal artefacts are also protected.

It is illegal to disturb or destroy an Aboriginal place. Artefacts should not be removed from sites.

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Victoria
The Place To Be
Department of Planning and Community Development

ABORIGINAL BURIALS

Site Identification
Mini Poster 5

Source-bordering dune. Aboriginal burials often occur in sand dunes near rivers and lakes

What are Aboriginal Burials?

Aboriginal burials are normally found as clusters of human bones eroding from the ground, or exposed during ground disturbance.

Aboriginal customs for honouring and disposing of the dead varied greatly across Victoria, but burial was common. Aboriginal burial sites normally contain the remains of one or two people, although cemeteries that contain the remains of hundreds of people buried over thousands of years have been found. Sometimes the dead person was buried with personal ornaments and artefacts. Charcoal and ochre are also often found in burial sites.

Where are they Found?

Although Aboriginal burials are quite rare in Victoria, they have been found in almost every kind of landscape, from coastal dunes to mountain valleys. They tend to be near water courses or in dunes surrounding old lake beds. Many burials have been found on high points, such as dune ridges, within surrounding flat plains. They are often near or within Aboriginal occupation sites such as oven mounds, shell middens or artefact scatters.

What to Do if You Find a Burial Site

Do not disturb the site or remove any material. You should immediately report any discovery of human remains to the police. Also check whether the site has the characteristics of an Aboriginal burial. If it does, record its location and write a brief description of its condition.

Note whether it is under threat of disturbance.

Characteristics

- Aboriginal burials are normally found as concentrations of human bones or teeth, exposed by erosion or earth works.
- Remains may be scattered over a wide area, but well-preserved remains occur as tight clusters about the size of a human body.
- Burials tend to be in soft soils and sand, although some burials also occur in rock shelters and caves.
- Recently exposed bones look ‘fresh’, and may be spotted or stained the colour of surrounding soil. Older remains may be covered by a smooth, cement-like substance and be weathered grey or white in colour.
- Soil or sand around the bones may be stained with charcoal or ochre.
- Shell, animal bone and stone tools may sometimes be present.

Please help to preserve Aboriginal cultural sites by reporting their presence to Aboriginal Affairs Victoria.

Contact:

The Heritage Registrar
Aboriginal Affairs Victoria
PO Box 2392
Melbourne VIC 3001

Telephone: 1800 762 003
Website: www.dpcd.vic.gov.au/aav

How were Aboriginal Burial Sites Produced?

Aboriginal people honoured and disposed of their dead in many different ways. The dead were usually buried in the ground, sometimes accompanied by possessions such as stone tools or personal ornaments. In some areas, special clothes were made for the deceased. Small fires were often lit inside or near the grave, and sometimes ochre was sprinkled over the body. In some places, the grave was covered by a special structure such as a small hut or an earth mound, and its location was marked by other earthworks or by cutting bark from surrounding trees.

Other customs included placing the dead person on a wooden platform above the ground, sometimes in a tree, or wrapping the body in bark. After many months, the remains were collected for burial or deposited in a cave or rock crevice.

Aboriginal people were buried in the ground in a variety of positions. Some were placed lying flat on their backs, legs fully extended or lying on their side in a crouched, or 'foetal' position. Others were buried in an upright sitting position.

The dead were buried either singly or in small numbers. The place of burial was either near the place where they happened to be camping at the time, or in cemeteries to which their relatives and descendants returned over hundreds, or even thousands, of years.

Why are Aboriginal Burials Important?

Aboriginal burials have a particular significance for Aboriginal people today and provide important physical and spiritual connections with the land, culture and their past.

The places where the dead are laid to rest have always been important to humans. Burials provide an important link to the ancestral past, for they are physical evidence of a set of spiritual beliefs that lasted many thousands of years. Burials also provide us with valuable information about past Aboriginal ways of life, including diet, health, population, economy and social structures. We can even trace changes in the ways Aboriginal people perceived and related to their environment by looking at the development of large-scale cemeteries.

Threats to Aboriginal Burials

Although human bone can survive for a long time if buried, it deteriorates rapidly once exposed. Many burials are found on the edges of lakes and rivers, or in sand dunes that once lay near fresh water. Wind and water can readily expose and eventually destroy these sites.

Because many burials are found in loose soil or sand, they are often disturbed by burrowing animals such as rabbits.

Human activities such as sand mining, stock grazing, ripping rabbit warrens, ploughing and even trail bike riding can devastate burial sites.

Aboriginal Affairs Victoria records the location, dimensions, and context of Aboriginal burials so that we will have a permanent record of this important part of the heritage of all Australians. Management works, such as the eradication of rabbits, fencing and erosion control, are carried out so that Aboriginal burial locations can be preserved for future generations.

Is it against the Law to Possess Aboriginal Skeletal Remains?

Yes. It is illegal to possess or display Aboriginal skeletal remains without a permit.

Anyone who has such remains is advised to contact Aboriginal Affairs Victoria, so that arrangementscan be made for their appropriate treatment.

Are Aboriginal Burials Protected?

All Aboriginal cultural places in Victoria are protected by law. Aboriginal artefacts are also protected.

It is against the law to disturb or destroy an Aboriginal place. Artefacts should not be removed from sites.

In general, the presence of Aboriginal cultural places on private land will not affect ownership, or stop existing land use from continuing.

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Appendix F: Compliance and Review Checklist

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The Compliance Review Checklist allows the Sponsor to ensure full compliance with the recommendations and provisions of the approved CHMP. If, at any point prior to or during the proposed activity, any of the questions below cannot be answered positively, it is possible that the Sponsor may be contravening the CHMP and the Act. Should this occur, the Sponsor is advised to seek the advice of a HA.

Compliance Review Checklist	**Yes**	**No**
Prior to the commencement of the activity		
Has the CHMP been approved?	□	□
Is a hard copy of the approved relevant CHMP provided on site in accordance with Section 1.2?	□	□
Changes to the activity		
If any changes have been made to the proposed activity:		
If required, has the Sponsor submitted a new CHMP for approval?	□	□
Discovery of Aboriginal cultural heritage during the activity		
1. If any actual or suspected Aboriginal cultural heritage (e.g. isolated artefact, artefact scatter, earth feature, midden) has been discovered during the activity, have the following been undertaken:		
Have all works ceased within 10 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 HA been engaged to evaluate the Aboriginal cultural heritage?	□	□
Has the HA involved a representative(s) of the RAP(s) (or RAP applicant(s)) in the assessment of the discovered Aboriginal cultural heritage?	□	□

Has the HA completed new or updated site record(s) for the Victorian Aboriginal Heritage Register?	□	□
If harm to the discovered Aboriginal cultural heritage could not be avoided, have the HA and representative(s) of the RAP(s) (or RAP applicant(s)) undertaken a salvage excavation?	□	□
2. If salvage excavations are conducted:		
Has the HA involved representative(s) of the RAP(s) (or RAP applicant(s)) in the fieldwork and management discussions?	□	□
Has the salvage excavation taken place in accordance with Regulation 61 of the Aboriginal Heritage Regulations 2007?	□	□
Following the salvage excavation, has the HA completed new or updated site record(s) for the Victorian Aboriginal Heritage Register?	□	□
Following the salvage excavation, has the HA catalogued and analysed the Aboriginal cultural heritage?	□	□
Following the salvage excavation, has the HA labelled and packaged the Aboriginal cultural heritage with reference to provenance?	□	□
Following the salvage excavation, has the HA arranged for the custody of the Aboriginal cultural heritage to be passed to the most appropriate person, persons, groups or organisations as listed in Section 2.5?	□	□
Following custody of the Aboriginal cultural heritage being passed to the relevant party, has the reburial of the Aboriginal cultural heritage been arranged, if required by the BLAC?	□	□

Has a report detailing the results of the salvage excavation and subsequent analysis of Aboriginal cultural material been lodged with AV and the RAP(s) (or RAP applicant(s)) within 120 days of fieldwork?	□	□

Discovery of human remains during the activity

If any actual or suspected human remains has been discovered during the activity, have the following actions been taken:		
Has all activity in the vicinity of the discovery ceased immediately?	□	□
Have the remains been left in place and protected from harm?	□	□
Have Victoria Police and the Coroner's Office been notified?	□	□
If there are reasonable grounds to believe that the remains may be Aboriginal, has the DSE Emergency Co-ordination Centre been notified?	□	□
If it is confirmed by these authorities that the remains are Aboriginal ancestral remains, has the Secretary of DPC been notified?	□	□
Has the appropriate impact mitigation or salvage strategy (as determined by the Secretary of DPC) been implemented?	□	□
Have the salvaged Aboriginal human remains been treated in accordance with the direction of the Secretary of DPC?	□	□
Has a suitable experienced and qualified Archaeologist been engaged to document any reburial site(s) and have all details of the reburial been provided to AV?	□	□
Is the reburial site(s) clearly marked?	□	□
Have appropriate management recommendations been implemented to ensure that the remains are not disturbed in the future?	□	□

Appendix G: Geotechnical Report

REPORT

Tonkin+Taylor

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1 Introduction

Tonkin & Taylor Pty Ltd (T+T) has been engaged by Ryman Healthcare (Australia) Pty Ltd (Ryman) to undertake a geotechnical, environmental and groundwater investigation for a proposed development located at 70 Kunyung Road in Mount Eliza, Victoria.

This report presents the findings of the geotechnical investigation and provides recommendations for foundations and basement excavation. The finding of environmental and groundwater assessments carried out in conjunction with the geotechnical investigation are provided in a separate report.

2 Project understanding

2.1 Site description

The site which is located at 70 Kunyung Road in Mount Eliza, encompasses an area of approximately 120 Ha (Figure 2.1) and is currently occupied by the Melbourne Business School. The site is bounded by Kunyung Road to the east, Kunyung Primary School to the north, a vacant private land to the south and Moondah Beach to the west.

The site is currently used by the Melbourne Business School (a division of the University of Melbourne) Executive Education campus. The site generally slope towards the west from an approximate maximum elevation of 65 m AHD at the eastern boundary and grades to 30 m AHD at the western developable area. Several permanent structures are located towards the western and northern areas of the site with isolated gateway and residential structures located at the eastern areas. Recreational facilities are also located within the centre of the site including a vineyard and a beach volleyball and tennis courts.

It is understood that the site is proposed to be developed into a comprehensive retirement village. Based on the preliminary design of the development, the village will comprise 12 multi-storey apartments and a multi-purpose building which forms the village centre, assisted living suites and care units. At the time of writing this report, up to 3-level basements are envisaged although these are yet to be finalised.

A geotechnical investigation was required to provide a preliminary feasibility assessment of the site ground conditions for the proposed development.

2.2 Regional geology and hydrogeology

The geological map of the area[1] shows central part of the site is underlain by the Neogene age Red Bluff Sandstone Formation (part of the Brighton Group Formation). This geological unit typically comprises of massive to well bedded, cross-bedded, conglomerate sandstone and minor ironstone.

During the site investigation, strata consistent with the Red Bluff Sandstone Formation were encountered in all boreholes.

Published groundwater mapping[2] indicates that groundwater is likely to be present at depths between 10 and 50 m below the ground surface.

[1] Department of Economic Development, Jobs, Transport and Resources (2015) Online 1:250,000 scale geological map (http://er-info.dpi.vic.gov.au/sd_weave/registered.htm). State Government of Victoria.
[2] Visualising Victoria's Groundwater. www.vvg.org.au.

2

Figure 2.1: Approximate site location (Source: Google Maps) – Not to scale.

3 Scope of Work

3.1 Site Investigation

The site investigation carried out between 10 and 20 January 2017 comprised the following:

- 18 boreholes, drilled using a spiral auger method to depths ranging between 5.2 and 7 m below ground level (bgl) within the proposed apartment buildings footprints
- Five (5) boreholes, drilled using a combination of spiral auger and diamond coring methods to depths ranging between 14.6 and 15 m bgl within the proposed village centre, assisted living suites and care units footprints
- In-situ testing comprising Standard Penetration Test (SPT) at approximately 1.5 m intervals and Dynamic Cone Penetrometer (DCP)
- Retrieval of representative disturbed soil samples for laboratory testing.

The boreholes, numbered from BH01 to BH23, were drilled using a Comacchio 305 and AMS Powerprobe drill rigs supplied and operated by Chadwick Geotechnics. All fieldwork was carried out under the direction and full time presence of an experienced T+T geotechnical engineer who was responsible for positioning the borehole locations, determining the extent of sampling and testing, logging the ground conditions encountered and monitoring the groundwater levels wherever possible. Following the completion of drilling, all boreholes were backfilled with the excavated materials and care was undertaken to minimise any visual disturbance associated with the drilling process.

The borehole locations shown on Figure 1 in Appendix A were recorded using a handheld GPS accurate to approximately +/- 5 m. The coordinates of the locations are provided on the engineering logs in Appendix B together with an explanation of the terminology used.

3.2 Field and laboratory testing

Field testing comprised SPT at approximately 1.5 m intervals in each borehole and DCP within the upper 1.5 m bgl were carried out to assess the subsoil in-situ strength.

Laboratory testing of soil undertaken by a NATA-accredited laboratory, Chadwick Geotechnics comprised the following:

- Eight (8) moisture content test
- Nine (9) particle size distribution test
- Six (6) Atterberg Limits test
- Two (2) laboratory compaction test
- Two (2) 4-day soaked Californian Bearing Ratio (CBR) test
- Six (6) Emerson Class Number test.

A summary of the test results are presented in Table 3.1 and the laboratory test certificates are attached in Appendix C.

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Table 3.1: Summary of field and laboratory tests

Test Site	Material	Layer Depth (m bgl)	DCP (Blows/100 mm)	SPT (N)	CBR (%)	Swell (%)	MDD (t/m³)	OMC (%)	Plasticity Index (%)	Liquid Limit (%)	Linear Shrinkage (%)	(%) Passing			Emerson Class	Moisture Content (%)
												0.075 mm	0.425 mm	2.36 mm		
BH01	Fill (Silty Sand) CLAY/SAND	0 – 0.8 0.8 – 7		 13 – 39												
BH02	Fill (Silty Sand) CLAY/ SAND	0 – 1.9 1.9 – 7		 23 – 43												
BH03	Fill (Silty Sand) Fill (Gravelly Clay) CLAY/ SAND	0 – 0.8 0.8 – 3.3 3.3 – 7		 8 – 18 11 – 21												
BH04	Fill (Silty Sand) CLAY/ SAND	0 – 0.7 0.7 – 5.2		 11 – 46												
BH05	Fill (Silty Sand) CLAY/ SAND	0 – 0.8 0.8– 7	1 – R	 15 – 36												
BH06	Fill (Sandy Clay) Clayey SAND CLAY / SAND	0 – 0.7 0.7– 4.0 4.0 – 6.4		 35 – 41 > 50	6	0	1.84	17.5	15	32	6	33 36	92 87	96 94	6	17.8 - 20.6 11.3
BH07	Fill (Sandy Clay) CLAY/SAND	0 – 0.3 0.3 – 6.5		 45 – >50												
BH08	Fill (Silty Sand) CLAY/ SAND	0 – 0.9 0.9 – 6	4 – R	 24 – >50												 17.2
BH09	Fill (Silty Sand)	0 – 0.7	2 – R													

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Test Site	Material	Layer Depth (m bgl)	DCP (Blows/100 mm)	SPT (N)	CBR (%)	Swell (%)	MDD (t/m³)	OMC (%)	Plasticity Index (%)	Liquid Limit (%)	Linear Shrinkage (%)	(%) Passing			Emerson Class	Moisture Content (%)
												0.075 mm	0.425 mm	2.36 mm		
	CLAY/ SAND	0.7 – 5.7		19 – >50								28	73	77		14.1
BH10	Fill (Gravelly Clay) CLAY/SAND	0 – 0.5 0.5 – 7	7 – 10 9 – R	29 – >50												18
BH11	Fill (Gravelly Clay) CLAY/SAND	0 – 1.1 1.1 – 6.2		44 – >50												
BH12	Fill (Silty Sand) CLAY/SAND	0 – 0.7 0.7 – 7	1 – 8 5 – 8	11 – 20												
BH13	Fill (Silty Sand) CLAY	0 – 0.6 0.6 – 7	2 – 15 R	17 – 34	2	1.5	1.7	22.5	33	53	12	75	91	94		22.8
BH14	Fill (Silty Sand) CLAY/SAND	0 – 0.7 0.7 – 7	2 – 7 5 – 8	16 – >50												
BH15	Fill (Silty Sand) CLAY/SAND	0 – 0.6 0.6 – 7	6 – 22 6 – R	19 – 46												
BH16	Fill (Gravelly Silt) CLAY/SAND	0 – 0.7 0.7 – 7	7 – 18 R	22 – 36												
BH17	Fill (Gravelly Silt) CLAY/SAND	0 – 0.8 0.8 – 7	8 –R	24 – 38												
BH18	Fill (Gravelly Silt) CLAY/ SAND	0 – 1 1 – 6.5	8 – R	17 – >50												
BH19	Fill (Sandy Clay) CLAY/SAND	0 – 0.7 0.7 – 15.5		16 – 37												

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Test Site	Material	Layer Depth (m bgl)	DCP (Blows/100 mm)	SPT (N)	CBR (%)	Swell (%)	MDD (t/m³)	OMC (%)	Plasticity Index (%)	Liquid Limit (%)	Linear Shrinkage (%)	(%) Passing			Emerson Class	Moisture Content (%)
												0.075 mm	0.425 mm	2.36 mm		
BH20	Fill (Silty Sand)	0 – 0.7	8 – 10													
	Sandy CLAY	0.7 – 2.5	3 – 13	12											5	19.9
	Sandy CLAY	2.5 – 5.0		17 -30					30	53	12	56	75	80	5	23.1
	CLAY	5.0 – 8.0		9 – 10					48	75	15	84	89	95	2	30.2 - 32.2
	CLAY	8.0 – 11.0		10 – 11					51	81	19.5	90	97	100	2	51.0
	Sandy SILT	11.0 – 15.0		16 – 20					56	107	20	55	83	96	2	50 - 57
	Clayey gravelly SAND	15.0 – 15.5		28								34	49	71		53.3
BH21	ASPHALT	0 – 0.03														
	Fill (Crushed Rock)	0.03 – 0.9														
	CLAY/SAND	0.9 – 15.5		9 – 38												
BH22	Fill (Silty Sand)	0 – 0.6	1 – 5													
	CLAY/SAND	0.6 – 15	5 – 9	13 – 26												
BH23	Fill (Silty Sand)	0 – 0.5	1 – 6													
	CLAY/SAND	0.5 – 14.6	6 – R	11 – 23												

DCP: Dynamic Cone Penetrometer resistance; SPT: Standard Penetration Test; CBR: California Bearing Ratio; R: Refusal.

4 Geotechnical discussion

4.1 Stratigraphy

The following summary of stratigraphy is inferred from the available site investigation data, and as such only represents the conditions at the locations of the boreholes. Variations to the ground conditions are possible and allowance must be made in the design and construction work for potential vertical and lateral variability in the extent of the subsoil conditions.

Material classification and logging were carried out in accordance with explanatory notes and correlation with the results of laboratory testing, where possible. It must be noted that field classification is a subjective assessment by the site engineer and therefore may differ from the interpretation derived from laboratory test results.

The subsurface materials encountered at the site have been categorised into two stratigraphic units discussed below. Further detailed information are provided on the Engineering Logs (Appendix B) together with an explanation of the terminology used.

Unit 1 – Fill

Fill comprising various materials including clay, silt, sand and gravel were encountered in all boreholes to depths typically ranging from 0.3 m to 1.1 m. Fill thickness locally greater within the western part of the site where BH2 and BH3 indicate fill up to 3.3 m bgl. Pavement composition encountered in a borehole located within the road (i.e BH21) consisted of a 30 mm asphalt, overlying 220 mm of crushed rock pavement base, overlying 100 mm of sandy clay and 550 mm of gravelly silty sand.

Based on the results of in situ testing (i.e DCP), the density and consistency of the fill layers generally ranging from very loose to very dense / very soft to hard. The in-situ moisture condition of the fill was generally dry to moist.

Unit 2 – Red Bluff Sandstone Formation

Red Bluff Sandstone sediments were encountered underlying Unit 1 in all boreholes to termination depths of up to 15 m bgl. The Red Bluff Sandstone sediments, part of the Brighton Group sediments, comprised predominantly sands and clays in varying proportion. Generally this formation is associated with increasing grain size and permeability (i.e clay becoming sand) with depth. However, during the boreholes investigation, no apparent trend in grain size and depth was observed. Relatively thin bedding was observed within the sandier part of the Formation.

Red Bluff Sandstone sediments encountered within the boreholes were generally described as sandy clay and clayey sand with gravel, with low to medium plasticity, red brown mottled pale grey and orange. The sands were typically fine to coarse grained, sub rounded to sub angular and quartzitic. The gravels were predominantly fine to medium grained, comprising sandstone and ironstone and of very low to medium strength.

DCP results within the upper 1.5 m bgl of this unit ranging from 3 blows/100 mm to refusal and SPT N-values were ranging from 9 blows to greater than 50 blows, which is indicative of a variably stiff to hard consistency soils. The SPT N-values does not display an apparent increase in material strength with depth.

A layer of cemented sand was encountered in most boreholes at depths between 1.5 and 6 m bgl, with thicknesses ranging between 1 m and 6 m. SPT-N values within this layer were greater than 30, indicating very stiff to hard or very dense layer. This finding is consistent with the Red Bluff

Sandstone Formation geology where cemented material may be present within the upper part of the deposit.

Atterberg Limits testing on this unit recorded Liquid Limits between 32 and 107 %, Plasticity Index between 15 and 56 %, and Linear Shrinkage values between 6 and 20 %. Laboratory 4-day soaked CBR tests recorded CBR values between 6 and 2 %, with corresponding swell values between 0 and 1.5 %.

4.2 Groundwater

Groundwater was encountered in one of the boreholes (BH23) located to the south of the existing main building at 6.2 m bgl. The groundwater level was measured a day after the completion of the borehole. Wet soils were encountered within the deeper boreholes (BH19 to BH23) at depths approximately between 6.5 and 9 m bgl. Given our experience with the regional groundwater conditions and water bore installation, the groundwater and wet soil conditions encountered were likely due to perched groundwater table.

Additional information on site groundwater conditions are provided in our separate groundwater report.

4.3 Foundation systems

4.3.1 Site classification

It must be noted that the proposed redevelopment comprises multi-storey buildings with basements. Therefore, site classification in accordance with AS 2870-2011[3] discussed herein serves as an indicative only as the standard generally applies to a single dwelling house, townhouse or similar structure.

Taking into consideration the soil profiles encountered during the investigation, local environmental features, climatic zone and laboratory test results, the natural soils at the site are generally considered to be 'moderately' reactive. In accordance with AS2870-2011, the site can be classified as **Class P**. This classification is attributed to the depth of uncontrolled fill generally greater than 0.4 m across the site.

The effects of changes to the soil profile by additional cutting and filling and the effects of past and future trees should be considered in the selection of the design parameters for differential movement. Where fill is to be constructed to elevate ground levels, the affected site will require re-classification once the depth and type of fill are known and the degree of earthwork control has been established.

4.3.2 Earthquake rating

Seismic accelerations to be resisted by a structure are dependent upon the stiffness of the underlying soil and rock. Soft soils have the potential to amplify ground accelerations, requiring structures built upon them to be designed to resist a higher seismic coefficient.

Based on the results of this geotechnical investigation and in accordance with AS 1170.4-2004, the site can be classified as Class C_e (Shallow Soil) with a hazard Factor (Z) of 0.08 and 1/500 annual probability of exceedance (P).

[3] AS 2870-2011 Residential Slabs and Footings.

4.3.3 Shallow footings

Shallow footings may be suitable for the proposed development, subject to the following risks:

- Bearing capacity failure
- Punching shear failure through surficial dense or stiff material
- Excessive total and differential settlement (particularly for rafts).

In addition to subsoil and groundwater conditions, the allowable bearing capacity and expected settlements are also dependent upon the size of the footing (B), embedment depth (D_f), load eccentricity and interaction between adjacent footings. On the basis of the geotechnical data, shallow footing founded on Unit 2 with an embedment depth of at least 0.5 m bgl is anticipated to have an Allowable Bearing Capacity of 100 kPa. Unit 1 is not suitable to support foundations.

While the cemented layer within the upper parts of Unit 2 was generally hard and/or dense to very dense, the engineering properties of this layer is not representative of the overall unit. In addition, the lateral and vertical distributions of the cemented layer are highly variable. Where footings are founded within the stronger cemented layer, the strength of the underlying lower strength soils are considered to govern the bearing capacity. Hence, a more conservative allowable soil bearing capacity of 100 kPa is recommended for the entire Unit 2.

Given the heterogeneity of Unit 2, it is recommended that the footings are founded on similar ground conditions to minimise the risk of potential differential settlements in particular for raft foundation. The total and differential settlements of a shallow foundation will depend on the footing size and applied loads and therefore to be assessed separately.

It must be noted that clayey soils of Unit 2 can suffer softening and degradation on exposure and wetting. It is therefore recommended that exposed surfaces are protected as soon as practicable with compacted granular fill or blinding.

It is recommended that all footing excavations are inspected by a suitably experienced geotechnical engineer during construction to confirm that the founding conditions are consistent with those on which the design recommendations are based. The base of the footing should be free from any localised soft areas, organic and deleterious materials prior to placing blinding concrete/footing.

4.3.4 Pile foundation

A pile foundation system will be required if a shallow footing system is deemed not adequate to support lateral loading, overturning bending moment or high tensile load. In this instance, both driven and bored cast in situ piles can be used subject to suitability and cost-benefit analysis.

Bored piles are preferred over driven pile due to the presence of cemented layer within Unit 2, with potential to cause resistance to driving, damage to the pile and the driving equipment.

For preliminary design piles, pile axial capacity can be obtained using ultimate shaft and base resistance values recommended in Table 4.1.

10

Table 4.1: Preliminary Ultimate End Bearing and Ultimate Skin Friction (Bored Pile)

Founding material	Approximate depth to top of unit (m bgl)	Ultimate End Bearing $q_{b,ult}$ (kPa) (See Notes 1 & 2)	Ultimate Shaft Resistance $q_{s,ult}$ (kPa) (See Notes 1, 2)
Unit 2 (Cemented layer)	0.3 – 1.9	---	70
Unit 2	6.0 - 7.5	700	30

Note 1: The ultimate geotechnical end-bearing and skin friction capacities assume:

i. The total pile length is greater than 6D ('D'=Pile diameter)

ii. The pile toe is embedded a minimum 3D into the appropriate material

iii. The pile centre to centre spacing is greater than or equal to 3D.

Note 2: The ultimate geotechnical pile capacities are to be used in conjunction with an appropriate strength reduction factor as stipulated in AS2159-2009. For preliminary purposes a reduction factor of 0.5 may be considered.

The design geotechnical strength of pile ($R_{d.g}$) can be estimated in accordance with AS 2159-2009[4] by applying a geotechnical strength reduction factor (ϕ_g) to the ultimate end bearing and shaft resistance presented in Table 4.1.

The appropriate ϕ_g value will depend on many factors associated with the site, design, installation and testing, some of which are not known at the time of preparing this report. The various factors to be considered include the following:

- Geological complexity of the site;
- Extent of geotechnical investigation with consideration of pile founding levels;
- Available geotechnical data and method of assessment of geotechnical parameters;
- Design experience and methods adopted;
- Level of construction control and performance monitoring; and
- Pile testing undertaken.

Based on some typical broad assumptions regarding the use of bored on this site, it is considered that a ϕ_g of 0.5 may be adopted for preliminary pile design purposes, assuming no load testing of constructed piles is to be undertaken.

It is recommended that bored pile excavations be assessed by a geotechnical engineer during construction to ensure that founding conditions are consistent with those on which the design recommendations are based. Care should be taken to ensure that the base and side of any pile excavations are clean of loose material, water and clay smear prior to pouring concrete. Depending on the degree of cleanliness achieved, some reduction in the base bearing area for the calculation of the pile capacity may be applied.

[4] AS 2159-2009, *Piling – Design and Installation*

4.4 Excavation conditions

4.4.1 Excavatability

It is understood that the proposed redevelopment may comprise excavation of a 1-level basement for apartments and up to 3-level basement for the village centre. Based on the results of the site investigation, it is anticipated that the basement excavation will encounter hard and/or very dense soils.

It is envisaged that free digging to the proposed basement depth can be achieved using conventional earthmoving plants such as large excavator or bulldozer. Ripping may be required at areas where cemented layers with bands of sandstone and ironstone were encountered. Excavations through this material may be slower and should be considered in managing on-site construction risks.

4.4.2 Groundwater control

It is envisaged that water inflows from perched groundwater table may be encountered where the excavation is deeper than 6 m bgl. However, due to high fines content, the permeability of the subsoil is likely to be low and groundwater recharge is anticipated to be relatively slow.

It is recommended that the depth of basement excavation is maintained at least 1 m above the observed groundwater level to allow for seasonal fluctuations. Where the depth of excavation is below the groundwater level, localised groundwater control during construction such as sump pumping is recommended to assist construction and minimise softening of soils exposed at the base of excavations.

4.4.3 Temporary batters

The face of unsupported excavations are to be battered at gradients not stepper those shown in Table 4.2. The recommended batter slope are based on temporary dry condition.

If groundwater seepage is encountered, the angles should be reduced (i.e gentler). It is possible that localised slumping of the excavated faces may still occur and it is essential that the stability of unsupported faces be closely monitored during construction for any signs of instability.

Table 4.2: Cut and fill batter slopes (in dry conditions)

Material	Short Term (1 – 2 Weeks)
Unit 1 – Fill	1V : 1.75H or gentler
Unit 2 – Red Bluff Sandstone Formation	1V : 2.0H or gentler

Any load on the slope (e.g. surcharge, traffic load, excavated spoil) shall be kept away from the crest at a minimum distance equal to the height of the temporary cut. Where excavations are to remain open for longer periods (>1-2 weeks), it is recommended that further geotechnical advice is sought.

The ground around the excavation should be graded to fall away from the excavation to minimise surface water runoff over the unprotected batters.

Where underground services are present within the vicinity of the excavation, care must be taken to ensure that any potential settlement and/or displacement of the services due to removal of adjacent soils are addressed.

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4.4.4 Retaining wall design

It is understood that the project may require both temporary and permanent retention systems to support the basement excavation and other cut or fill. Depending on design factors such as retention height, permissible deformation of wall, interaction with adjacent structures and the magnitude of surcharge loading, retention systems for this site may include soldier pile wall, contiguous piles, or reinforced concrete cantilever wall.

On the basis of the results of fieldwork, laboratory tests and our experience with similar soils, the design parameters for retaining wall for Unit 2 are presented in Table 4.3.

Table 4.3: Recommended design parameters for retaining wall

Material	Approximate depth to top of unit (m bgl)	Unit Weight (kN/m^3)	Coefficient of Lateral Earth Pressure (1)		
			Active earth pressure (K_a)	At rest (K_0)	Passive Earth Pressure (K_p)
Unit 2 (Cemented layer)	0.3 – 3.2	20	0.35	0.50	3.0
Unit 2	7.5	19	0.40	0.55	2.5

(1) Minimum wall displacement would be required to mobilise the relevant earth pressure coefficient

No allowance has been made for sloping backfill, wall friction, compaction pressures or surcharge effects. The groundwater level is anticipated to be deeper than the excavation, but drainage should be installed behind the wall to prevent hydrostatic pressures developing from water seepage. The design of the retaining walls should also include an assessment of potential wall deformation.

Retention systems will need to consider the surcharge effects of any proposed adjacent structures on the retaining wall where high level footings are proposed at the site, as well as the magnitude of deflections that can be tolerated.

4.5 Re-use of site materials

AS 3798[5] provides the following guidance with respect to unsuitable materials:

> "*Unsuitable materials may include –*
>
> *(a) Organic soils, such as many topsoils, severely root affected subsoils and peat;*
>
> *(b) Materials contaminated through past site usage which may contain toxic substances or soluble compounds harmful to water supply or agriculture;*
>
> *(c) Materials containing substances that can be dissolved or leached out in the presence of moisture (e.g. gypsum), or which undergo volume change or loss of strength when disturbed and exposed to moisture (e.g. some shales and sandstones), unless these matters are specifically addressed in the design;*
>
> *(d) Silts, or materials that have the deleterious engineering properties of silt;*
>
> *(e) Other materials with properties that are unsuitable for the forming of structural fill; and*
>
> *(f) Fill that contains wood, metal, plastic, boulders or other deleterious material, in sufficient proportion to affect the required performance of the fill."*

[5] AS3798 (2007) Guidelines on earthworks for commercial and residential developments

As there was no formal record on how the existing fill was placed (i.e QC record), the existing fill could not be classified as engineered fill. Where the fill doesn't contain any unsuitable material it could be reused as fill material.

The natural Red Bluff Sandstone Formation soils (Unit 2) encountered during the investigation are likely to be suitable for reuse as general fill for general earthworks construction, although sieving of oversized materials may be required to produce suitable fill. Emerson class number tests undertaken on the Red Bluff Sandstone Formation soils (Unit 2) indicate that the soils are generally slightly dispersive within the upper 5 m whereas deeper subsoil has been indicated to be highly dispersive. Soil stabilisation by adding lime or gypsum would be required for soil sourced below 5 m bgl to ensure its suitability as structural fill. Further laboratory tests are recommended to determine the optimum quantity of lime/gypsum required to stabilise the soils.

The soils within the upper 3.5 m have been measured to have a maximum dry density (MDD) between 1.70 and 1.84 t/m^3 corresponding to optimum moisture content (OMC) between 17.5 and 22.5 %. The natural moisture content of soils within the upper 3.5 m were measured between 17.2 and 20.6 %, indicating similar order of OMC, therefore extensive moisture conditioning is not anticipated. It is noted that the natural moisture content increases with depths as observed in BH20.

Notwithstanding the fill, the natural soils are not considered to be affected by a significant organic content.

The design compactive effort and moisture content of the fill would be dependent on the proposed use of the fill and type of fill material. Any structural fill should be constructed under 'level 1' inspection and testing regime as detailed in AS3798-2007.

4.6 Design subgrade CBR value

Based on the ground conditions encountered and assuming that any new pavements will be placed at or near the existing surface level, it is likely that the existing fill and Red Bluff Sandstone Formation soils (Unit 2) will form the subgrade over most of the site. Given the variability of the existing fill material, it is recommended that either the fill is replaced or treated prior to the construction of the pavement.

By considering the variability of the ground conditions, the drainage conditions, plasticity of the soils, correlation with in situ testing and laboratory soaked CBR values, a design CBR value of 2% can been adopted for the Red Bluff Sandstone Formation soils (Unit 2) subgrade.

5 Implication and recommendations

Recommendations and opinions presented in this report are based on the available information and the results of the geotechnical investigation. It must be noted that the ground conditions encountered in the borehole locations may not represent the actual ground conditions of the entire footprints of the structures.

During construction, onsite inspection by an experience engineer or engineering geologist is recommended to verify the actual ground conditions to those assumed in the design. We would be pleased to provide this service to you and believe your project would benefit from such continuity. However, it is important that we be contacted if there is any significant variation in subsoil conditions from those described in the report.

6 Applicability

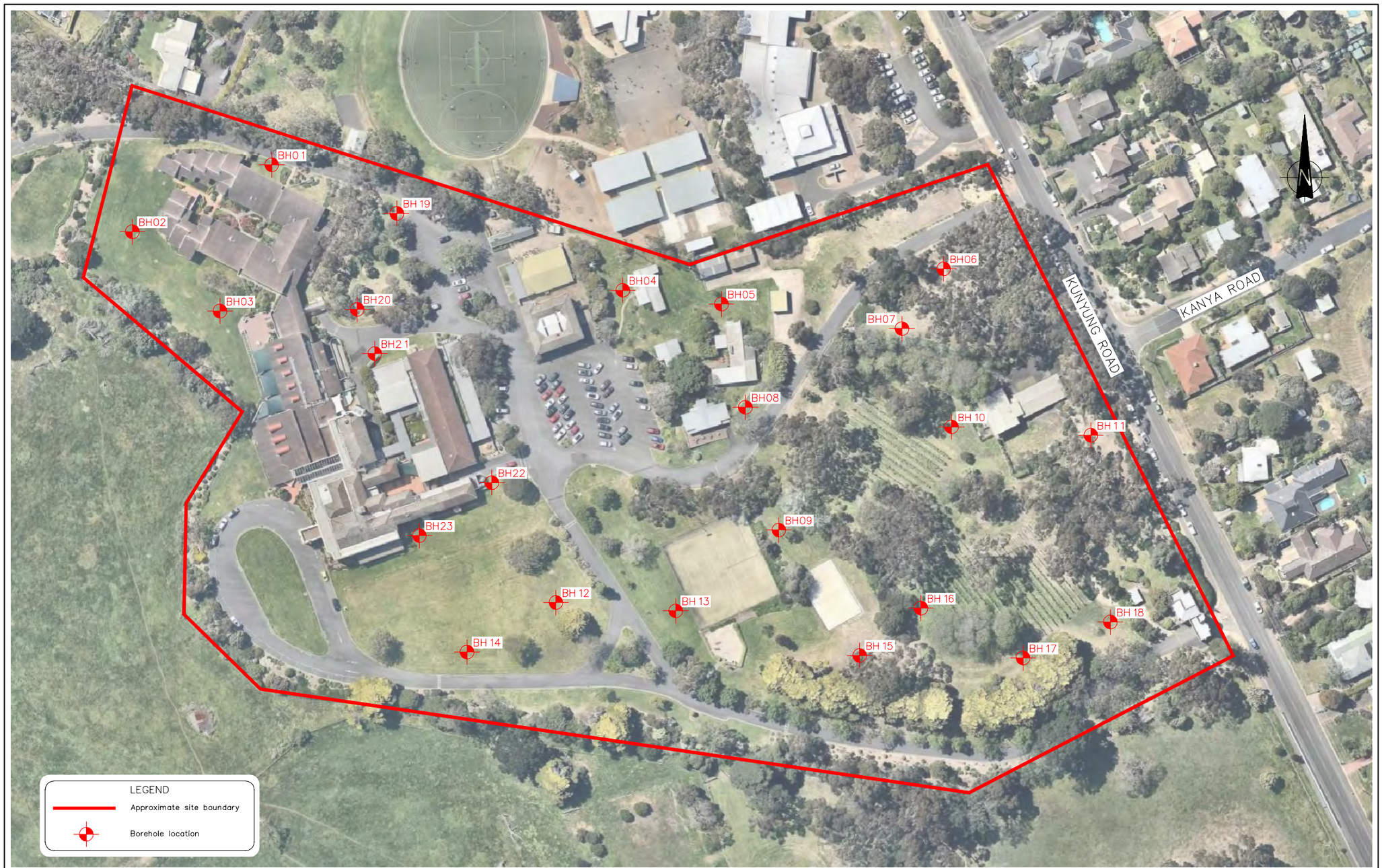
This report has been prepared for the exclusive use of our client Ryman Healthcare (Australia) Pty Ltd, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Pty Ltd

Report prepared by:	Authorised for Tonkin & Taylor Pty Ltd by:
	
.....	.....
Abraham Prawira	Chris Boyd
Geotechnical Engineer	Project Director

AAP/ATIN
\\meldc1\data\rep\live\tt\projects\1001289\workingmaterial\1001289.geo.r1.docx

Appendix A: Site investigation plan



SCALE 1: 1,250
0 10 20 30 40 50 60 70 80 (m)

Aerials sourced from NearMaps data (Copyright: 2012).
Imagery Date: December 2016.

Tonkin+Taylor
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DRAWN	LJD	Jan. 17
DRAFTING CHECKED		
APPROVED		
CADFILE : \\ 100 1289–F 1.dwg		
SCALES (AT A3 SIZE) AS SHOWN		
PROJECT No. 100 1289		

RYMAN HEALTHCARE LIMITED
70 KUNYUNG RD, MT ELIZA, VIC
PRELIMINARY SITE INVESTIGATION
Test Location Plan

FIG. No. Figure 1 REV. 0

P:\100 1289\WorkingMaterial\CAD\100 1289-F1.dwg, Layout1, 24/01/2017 1:51:56 p.m., ljd

Appendix B: Engineering logs

- Engineering logs

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ENGINEERING LOG TERMINOLOGY

SHEET 1 of 2

DRILLING OR EXCAVATION

WATER

Water level on date shown

Water inflow

Water outflow

CORE RECOVERY

Core recovered expressed as percentage of the length of the core run

METHOD/CASING

Shows drilling method and depth of casing

SA - Solid Auger
HA - Hollow Auger
TR - Terrier
W - Wash Boring
NQ3 - NQ triple tube coring

FIELD TEST

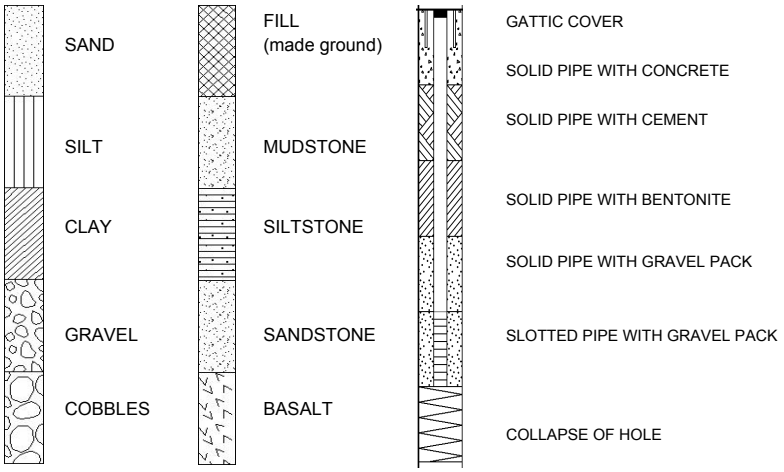
SPT	Standard Penetration Test
U63	Undisturbed Sample 63mm diameter
SV	Undrained Shear Strength as measured by field vane
PP	Twice Undrained Shear Strength as measured by pocket penetrometer
DCP	Dynamic Cone Penetrometer blows per 100mm
Field CBR	Field CBR under existing pavement

LABORATORY TEST

U63	Undisturbed Sample - 63mm
DS	Disturbed Sample
MC	Moisture Content % AS 1289.2.1.1
LL	Liquid Limit (%) AS 1289.3.1.2
PI	Plasticity Index AS 1289.3.3.1
LS	Linear Shrinkage (%) AS 1289.3.4.1
PID	Photoionization Detector (ppm)
CBR	California Bearing Ratio AS 1289.6.1.1

GRAPHIC LOG

(The graphic logs shows soil and rock substances, significant defects, and core loss. Soil and rock substances represented clear contrasting symbols consistant for each project.



SOIL DESCRIPTIONS

CLASSIFICATION SYMBOL

Based on USCS Unified Soil Classification Symbol Visual Method field identification. Classification symbols based on the Laboratory Method may differ

Soil and rock descriptions generally follow the "Guide to the Description Identification and Classification of Soils" and the the field guides as given in AS1726 - 1993 Geotechnical Site Investigations. When describing the soils the soils are described in terms of the Engineering properties.

MOISTURE CONTENT

D	Dry, look and feels dry
M	Moist, no free water on hand when remoulding
VM	Very Moist
W	Wet, free water on hand when remoulding

STRENGTH

		Cu (kPa)
VS	Very Soft	<10
S	Soft	10 - 25
F	Firm	25 - 50
St	Stiff	50 - 100
VSt	Very Stiff	100 - 200
H	Hard	>200
Fb	Friable	

DENSITY

VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

EASE OF EXCAVATION

E	Easy
M	Moderate
D	Difficult
ER	Effective Refusal

ROCK DESCRIPTIONS

WEATHERING

RS	Residual Soil
XW	Extremely Weathered Rock
HW	Highly Weathered Rock
MW	Moderately Weathered Rock
DW	Distinctly Weathered Rock
SW	Slightly Weathered Rock
FR	Fresh Rock

FIELD STRENGTH

		Point Load Index (MPa) - Is(50)	Field Guide (50mm Core)
EL	Extremely Low	< 0.03	Easily remoulded by hand crumbles
VL	Very Low	> 0.03 < 0.1	Crumbles under firm blows with sharp end of pick
L	Low	> 0.1 < 0.3	A 150mm long piece may be broken hand
M	Medium	> 0.3 < 1.0	A 150mm long piece may be broken hand with difficulty
H	High	> 1 < 3	Core breaks after one blow
VH	Very High	> 3 < 10	Core breaks after more than blow
EH	Extremely High	> 10	Core breaks after many blows with pick

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ENGINEERING LOG TERMINOLOGY

SHEET 2 of 2

ROCK DESCRIPTIONS

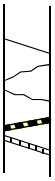
(Continued)

CLASSIFICATION OF ROCK

RQD	Rock Quality Designation	100 x Length of Core in pieces > 100mm / Length of run
	Core Recovery	Recovery of Core per drilling run

DEFECTS

Significant defects may be shown graphically



B	BEDDING
J	JOINT
SZ	SHEARED ZONE
CZ	CRUSHED SEAM / ZONE
IF	INFILLED SEAM / ZONE
XD	EXTREMELY WEATHERED SEAM

CODING

Typical Example:

30.0m, J, 60°, PL, SM, VT, CV, stiff green clay

Depth of Defect ↑ | Type ↑ | Angle to Core Axis ↑ | Shape ↑ | Roughness ↑ | Apeture ↑ | Infill / Coating Type ↑ | Infill Description (as per soil description) ↑

SHAPE

CODE	TERM
PL	Planar
SC	Slightly Curved
CV	Curved
IR	Irregular
ST	Stepped
WV	Wavy

ROUGHNESS

	DESCRIPTION OF JOINT SURFACE
SL	Slickensided
SM	Smooth
DR	Defined Ridges
ST	Small Steps
R	Rough
VR	Very Rough

APERTURE

SYMBOL	TERM	DESCRIPTION (Separation)
VT	Very Tight	< 0.1mm
T	Tight	0.1mm - 1.0mm
O	Open	1.0mm - 10.0mm
VO	Very Open	> 10mm

INFILLINGS AND COATINGS

CG	Clay Gouge	Joints have openings between opposing faces of intact rock substance in excess of 1.0mm filled with clay gouge.
CV	Clay Veneers	Joints contain clay coatings whose maximum thickness does not exceed 1mm. Note: Clay described in terms of soil properties
PL	Penetrative Limestone	Joint traces are marked in terms of well defined zones of slightly to moderately weathered ferrugunised rock - substance within the adjacent rock.
FeSt	Limonite Stained	Joint surfaces are stained or coated with limonite, although the rock substance immediately adjacent rock is fresh.
CT SC	Coated	Joints exhibit Coatings other than clay or limonite. Eg. Carbonate (CT) or silica (SC)
CL CS CC	Cemented	Joints are cemented with limonite (CL), silica (CS), or carbonates (CC).
CN	Clean	Joint Surfaces show no trace of clay, limonite, or other coatings.
ST	Stain	No visible sign of infill or coating but surfaces are discoloured by mineral staining.
V	Veneer	A visible coating or infilling of soil or mineral substance but usually unable to be measured (less than 1mm).
C	Coating	A visible coating or infilling of soil or mineral substance, greater than 1mm thick

CEMENTATION CLASSIFICATION

Uc	Uncemented	Clean grains exhibiting soil properties
Vwk	Very Weakly cemented	Cement on some grains, collapsing feel under very light finger pressure
Wk	Weakly cemented	Cement on many grains, collapsing feel under finger pressure, breaks down to individual grains
Mwk	Moderately weakly cemented	Cement on most grains, breaks down to lumps under finger pressure, can crush to individual grains under knife blade
Mo	Moderately cemented	Cement on most grains, can break fragments off by hand and crush to small lumps
We	Well cemented	Practically all grains cemented together, cannot break fragments off by hand, dull sound under hammer
Vwe	Very well cemented	Most primary pores filled with cement, requires firm blow with hammer to break off fragments, rings when struck

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BOREHOLE LOG

BOREHOLE NO: ***BH01***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***19.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***19.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331318	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771567	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m													
										Env Sample @ 0.8 m													
		1			CL	Sandy CLAY, dark grey mottled brown, low plasticity; sand: fine to medium grained.	D-M	St															
			Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	VSt		SPT 6,9,12 N=21													
		2					D-M	H														Inferred as cemented layer (possibly duricrust).	
						Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.				SPT 10,19,20 N=39													
		3																					
		4				Increasing proportion of Clay.	D-M	St															
										SPT 6,5,8 N=13													
		5																					
		6								SPT 5,6,8 N=14													
		7																					
						End of BH01 at 7.00m																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

Library Template: T+T AUS.GLB; Report Template: TTAUS BOREHOLE LOG.GPJ; G:\AUSTRALIA\CORPORATE\SOUTH MELBOURNE\PROJECTS\1001289\WORKINGMATERIAL\LOGS\1001289 LOGS.GPJ

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BOREHOLE LOG

BOREHOLE NO: ***BH02***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***19.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***19.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331268	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771543	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		1	Fill			FILL; Silty SAND, pale brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm. Contains medium to coarse grained gravel, angular, basalt and bricks.	D	L-MD		Env Sample @ 0.1 m													
		2	Red Bluff Sandstone		CH	Sandy CLAY, dark brown mottled grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic.	D-M	VSt		Env Sample @ 1.9 m												No SPT test at this depth due to presence of coarse gravel.	
		3				Grades to Sandy CLAY with Gravel, red brown mottled pale grey and orange; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M	VSt-H		SPT 13,16,27 N=43												Inferred as cemented layer (possibly duricrust).	
		4																					
		5								SPT 6,10,13 N=23													
		6																					
		7								SPT 9,14,21 N=35													
		8				**End of BH02 at 7.00m**																	
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

Library Template: T+T AUS.GLB; Report Template: TTAUS BOREHOLE LOG.GDT; C:\USERS\CORPORATE\SOUTH MELBOURNE\PROJECTS\1001289\WORKINGMATERIAL\LOGS\1001289 LOGS.GPJ

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BOREHOLE LOG

BOREHOLE NO: ***BH03***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***20.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***20.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331306	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771510	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m														
										Env Sample @ 0.8 m														
		1				FILL; Gravelly CLAY with Sand, dark grey mottled brown, low plasticity; gravel: fine grained, angular, basalt and crushed bricks; sand: fine to coarse grained.	D-M	F-St		SPT 5,5,3 N=8														
		2																					
						Grades to brown mottled minor grey.																	
		3								SPT 4,9,9 N=18													
		4	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone. Becoming predominantly CLAY with trace Sand and Gravel; grades to pale grey mottled minor orange.	D-M	St-VSt															
		5								SPT 5,8,13 N=21													
		6																					
										SPT 3,5,6 N=11													
		7																					
						End of BH03 at 7.00m																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH04***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***19.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***19.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331444	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771522	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m													
					CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	St-VSt		Env Sample @ 0.7 m													
		1								SPT 3,5,6 N=11													
		2																					
			Red Bluff Sandstone					H														Inferred as cemented layer (possibly duricrust).	
		3				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M			SPT 9,14,22 N=36													
		4																					
										SPT 7,18,28 N=46													
		5																					
						Refusal of BH04 at 5.20m on hard or cemented material.																	
		6																					
		7																					
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH05***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***18.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331481	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771512	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND with Gravel, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; gravel: fine grained; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m		1 1 4 8 12 14 18 22 R	2 2 8 18 28 33 44 55 55										
		1	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	St-VSt		Env Sample @ 0.8 m SPT 2,7,8 N=15													
		2				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.																	
		3								SPT 5,10,12 N=22													
		4						H														Inferred as cemented layer (possibly duricrust).	
		5								SPT 9,16,17 N=33													
		6																					
		7								SPT 7,15,21 N=36													
		7				**End of BH05 at 7.00m**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH06***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***10.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***10.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331556	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771518	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Sandy CLAY with Gravel, brown, low plasticity; sand: fine to medium grained; gravel: medium to coarse grained, angular, basalt; contains rootlets within the top 200 mm.	D	St		Env Sample @ 0.1 m													
					SC	Clayey SAND, red brown mottled orange, fine to coarse grained, subrounded to subangular, quartzitic; clay: low plasticity; trace gravel, fine grained, sandstone and ironstone.	D-M	D-VD		Env Sample @ 0.7 m					20.6						Inferred as cemented layer (possibly duricrust).	
		1								SPT 10,15,20 N=35													
		2	Red Bluff Sandstone														32	17	6.0	0.0	6		
		3								SPT 8,18,23 N=41													
		4				Grades to red brown mottled orange and minor pale grey.																	
		5				Grades to Clayey SAND with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M			SPT 12,30+,-													
		6								SPT >25,-,-													
		7				**Refusal of BH06 at 6.40m on hard or cemented material.**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH07***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***10.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***10.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331551	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771516	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Sandy CLAY with Gravel, brown, low plasticity; sand: fine to medium grained; gravel: medium to coarse grained, angular, basalt; contains rootlets within the top 200 mm.	D	St		Env Sample @ 0.1 m													
					CH		D-M	VSt		Env Sample @ 0.5 m													
		1	Red Bluff Sandstone			Sandy CLAY, red brown, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.		H		SPT 10,18,27 N=45												Inferred as cemented layer (possibly duricrust).	
		2																					
		3				Grades to Sandy CLAY with Gravel, red brown mottled pale grey and orange; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M			SPT >25,-,-													
		4																					
		5								SPT >25,-,-													
		6								SPT >25,-,-													
		7				**Refusal of BH07 at 6.50m on hard or cemented material.**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH08***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***18.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331488	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771480	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		1	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m		4 4 6 14 R	8 8 13 33 55										
										Env Sample @ 0.9 m													
		2	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	VSt		SPT 6,9,15 N=24						17.2							Inferred as cemented layer (possibly duricrust).
								H															
		3				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M			SPT 12,25,26 N=51													
		4																					
										SPT 16,25,R												Very slow drilling advance rate from 4.5 m bgl (below ground level).	
		5																					
		6																				No SPT testing at 6 m bgl due to hole collapse to 4.8 m bgl.	
						Refusal of BH08 at 6.00m on hard or cemented material.																	
		7																					
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH09***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***18.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331500	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771436	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND with Gravel, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; gravel: fine grained; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m		2 4 11 15 18 R	4 8 25 36 44 55										
					CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	VSt		Env Sample @ 0.7 m SPT 6,8,11 N=19											
		1																					
		2	Red Bluff Sandstone			Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.		H														Inferred as cemented layer (possibly duricrust).	
		3								SPT 10,17,21 N=38													
		4				Grades to Gravelly SAND.																	
		5								SPT 13,22,29 N=51													
		6				**Refusal of BH09 at 5.70m on hard or cemented material.**																	
		7																					
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Alpha Archaeology Pty Ltd 152

Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH10***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***11.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***11.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331562	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771473	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Gravelly CLAY, brown mottled grey and orange, low plasticity; gravel: fine to medium grained, angular, basalt; contains rootlets within the top 200 mm.	D	St-VSt		Env Sample @ 0.1 m		7 8 8 9	15 18 18 20										
					CH	Sandy CLAY with Gravel, red brown, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel, fine to medium grained, sandstone and ironstone.	D-M	VSt		Env Sample @ 0.5 m		10 9	23 20										High DCP value from 0.6 m bgl due to presence of gravel.
		1	Red Bluff Sandstone							SPT 8,12,17 N=29		22 20 19 R	55 50 47 55			18							
		2						H														Inferred as cemented layer (possibly duricrust).	
		3				Grades to red brown mottled pale grey and orange.				SPT 10,14,25 N=39													
		4								SPT 4,23,26 N=49													
		5																					
		6								SPT 4,22,29 N=51												Very slow drilling advance rate from 4.5 m bgl (below ground level).	
		7				**End of BH10 at 7.00m**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH11***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***10.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***10.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331612	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771470	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		1	Fill			FILL; Gravelly CLAY, red brown mottled pale grey and orange, low plasticity; gravel: fine to medium grained, angular, basalt; contains rootlets within the top 200 mm.	D	St		Env Sample @ 0.1 m														
										Env Sample @ 1.1 m													Inferred as cemented layer (possibly duricrust).	
		2	Red Bluff Sandstone		CH	Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel, fine to medium grained, sandstone and ironstone.	D-M	H		SPT 8,15,29 N=44														
		3								SPT 12,20,24 N=44														
		4																						
		5								SPT 17,22,29 N=51														
		6																						
						Refusal of BH11 at 6.40m on hard or cemented material.				SPT >25,-,-														
		7																						
		8																						
		9																						
		10																						

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH12***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***12.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331420	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771410	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm. 200 mm band of crushed rock between 0.15 and 0.35 m bgl, medium to coarse grained, approximately 20 to 40 mm nominal size, angular, basalt and granite.	D	VL-MD		Env Sample @ 0.7 m Env Sample @ 0.1 m		1 2 5 6 8 6 6 7 7 8 7 6 6 5 5	2 4 10 13 18 13 13 15 15 18 15 13 13 10 10									
		1	Red Bluff Sandstone		CH	Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	St-VSt		SPT 5,7,10 N=17													
		2																					
		3								SPT 2,4,7 N=11													
		4																					
		5								SPT 3,8,10 N=18													
		6																					
		7								SPT 7,10,10 N=20													
		7				**End of BH12 at 7.00m**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH13***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***12.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331463	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771407	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.1 m		2	4										
												2	4										
												8	18										
										Env Sample @ 0.6 m		15	36										
												12	28										
												R	55										
		1	Red Bluff Sandstone		CH	CLAY with Sand, red brown mottled pale grey and orange, high plasticity; sand: fine to medium grained, subangular to subrounded, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	VSt		SPT 4,7,10 N=17													
		2				Grades to brown orange mottled minor pale grey and red brown.											53	33	12.0	1.5	2.0		
		3								SPT 4,10,10 N=20													
		4				Grades to Gravelly CLAY; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.																Inferred as cemented layer (possibly duricrust).	
		5								SPT 11,17,13 N=30													
		6						H		SPT 7,16,18 N=34													
		7				End of BH13 at 7.00m																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH14***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***12.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331390	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771384	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.7 m Env Sample @ 0.1 m		2 3 3 6 7 6	4 6 6 13 15 13										
		1	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to medium grained, subrounded to subangular, quartzitic; trace gravel: fine grained, sandstone and ironstone.	D-M	F-St		SPT 4,7,9 N=16		4 5 6 6 8 6	8 10 13 13 18 13										
		2				Grades to pale grey mottled minor orange.		VSt				6 6 8 6	13 18 13 18										
		3								SPT 7,11,12 N=23													
		4						H														Inferred as cemented layer (possibly duricrust).	
		5				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	D-M			SPT 14,28,28 N=56												Very slow drilling advance rate from 5 m bgl (below ground level).	
		6								SPT <25,-,-													
		7				**End of BH14 at 7.00m**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH15***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***12.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331529	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771391	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND with Gravel, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; gravel: fine grained, angular, basalt and bricks; contains rootlets within the top 200 mm.	D	L-MD		Env Sample @ 0.6 m Env Sample @ 0.1 m		8 8	18 18									High DCP value at 0.2 and 0.7 m bgl due to presence of gravel.	
			Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to medium grained, subrounded to subangular, quartzitic; trace gravel: fine to medium grained, sandstone and ironstone.	D-M	St-VSt				22 12 10 6 6 18 7 8	55 28 23 13 13 44 15 18										
		1								SPT 4,9,10 N=19													
		2																					
		3								SPT 3,10,17 N=27													
		4																					
		5				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.		H		SPT 5,17,12 N=29												Inferred as cemented layer (possibly duricrust). Very slow drilling advance rate from 5 m bgl (below ground level).	
		6								SPT 5,22,24 N=46													
		7																					
						End of BH15 at 7.00m						R	55										
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH16***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***11.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***11.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331551	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771408	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL: Gravelly SILT, pale grey brown, low plasticity; gravel: fine grained; contains rootlets within the top 200 mm.	D	St		Env Sample @ 0.1 m		7	15										
										Env Sample @ 0.7 m		7	15									High DCP value at 0.3 and 0.7 m bgl due to presence of gravel.	
		1	Red Bluff Sandstone		CH	Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine to medium grained, sandstone and ironstone.	D-M	VSt		SPT 2,10,12 N=22		8	18										
												18	44										
		2						H				9	20										
												8	18										
												8	18									Inferred as cemented layer (possibly duricrust).	
		3								SPT 5,17,19 N=36		R	55										
		4																					
										SPT 4,12,14 N=26													
		5																					
		6								SPT 7,14,11 N=25													
		7																					
						End of BH16 at 7.00m																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH17***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***11.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***11.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331569	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771389	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL: Gravelly SILT, pale grey brown, low plasticity; gravel: fine grained; contains rootlets within the top 200 mm.	D	St-VSt		Env Sample @ 0.8 m Env Sample @ 0.1 m		8 9 12 12 18 R	18 20 28 28 44 55									High DCP value at 0.4 m bgl due to presence of gravel.	
		1	Red Bluff Sandstone		CH	Sandy CLAY with Gravel, red brown, high plasticity; sand: fine to coarse grained, subangular to subrounded, quartzitic; gravel: fine grained, sandstone and ironstone.	D-M	VSt		SPT 6,12,12 N=24													
		2				Grades to red brown mottled pale grey and orange.																	
		3						H		SPT 7,17,21 N=38												Inferred as cemented layer (possibly duricrust).	
		4																					
		5								SPT 8,19,14 N=33													
		6								SPT 5,12,22 N=34													
		7				**End of BH17 at 7.00m**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH18***
SHEET: 1 OF 1

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***11.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***11.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331619	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771403	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		1	Fill			FILL: Gravelly SILT, pale grey brown, low plasticity; gravel: fine grained; contains rootlets within the top 200 mm.	D	St-VSt		Env Sample @ 0.1 m		8 7 8 22 24 R	18 15 18 55 55 55									High DCP value from 0.3 m bgl due to presence of gravel.	
										Env Sample @ 1.0 m													
		2	Red Bluff Sandstone		CH	Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine grained, sandstone and ironstone; wood fragments.	D-M	VSt		SPT 3,8,9 N=17													
		3						H		SPT 4,20,30+ N=50												Inferred as cemented layer (possibly duricrust).	
		4																					
		5								SPT 4,18,26 N=44												Very slow drilling advance rate from 5 m bgl (below ground level).	
		6								SPT >25,-,-													
		7				**Refusal of BH18 at 6.50m on hard or cemented material.**																	
		8																					
		9																					
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH19***
SHEET: 1 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***19.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***20.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331360	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771563	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Sandy CLAY, dark brown, low plasticity; sand: fine to medium grained; contains rootlets within the top 200 mm.	D-M	St-VSt		Env Sample @ 0.1 m														
										Env Sample @ 0.7 m														
		1	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained; trace gravel: fine grained, sandstone and ironstone.	D-M	St-VSt		SPT 5,10,11 N=21														
		2																					
		3								SPT 4,8,13 N=21													
						At 3.5 m bgl, grades to pale grey mottled minor orange.																	
		4																					
										SPT 3,6,10 N=16													
		5																					
		6								SPT 8,16,13 N=29													
						Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	M																
		7																					
							M-W			SPT 5,10,13 N=23													
		8																					
		9				Increasing proportion of CLAY.	W			SPT 6,9,9 N=18													
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH19***
SHEET: 2 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***19.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***20.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331360	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771563	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		11	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained; trace gravel: fine grained, sandstone and ironstone. *(continued)*	W	St-VSt		SPT 3,3,6 N=9													
		12								SPT 2,4,6 N=10													
		13																					
		14								SPT 5,7,7 N=14													
		15				Increasing proportion of Sand.		H		SPT 6,22,15 N=37													
						End of BH19 at 15.50m																	
		16																					
		17																					
		18																					
		19																					
		20																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH20***
SHEET: 1 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***18.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331345	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771512	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, dark brown, fine to medium grained, quartzitic; silt: low plasticity; contains rootlets within the top 200 mm.	D	MD		Env Sample @ 0.1 m		10	23										
												10	23										
										Env Sample @ 0.7 m		8	18										
												10	23										
												8	18										
		1			CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel: fine grained, sandstone and ironstone.	D-M	St				10	23										
												9	20										
												13	31										
										SPT 4,6,6 N=12		12	28										
												8	18										
												3	6										
												3	6										
		2										5	10			19.9							
												3	6										
												3	6										
		3				At 3.1 to 3.6 m bgl, grades to CLAY with Sand and Gravel, high plasticity, pale grey mottled minor orange.	D-M			SPT 5,7,10 N=17							53	30	12.0				
							D-M	H														Inferred as cemented layer (possibly duricrust).	
		4								SPT 9,15,15 N=30													
		5	Red Bluff Sandstone			Grades to CLAY, trace sand and gravel, high plasticity, pale brown.	M	St								23.1							
		6								SPT 3,4,6 N=10							75	48	15.0				
		7				Grades to CLAY with Sand and Gravel; high plasticity; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.	M-W																
		8								SPT 4,4,5 N=9						32.2							
		9				Increasing proportion of CLAY, high plasticity.	W	St		SPT 3,4,6 N=10							80	51	19.5				
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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BOREHOLE LOG

BOREHOLE NO: ***BH20***
SHEET: 2 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***18.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331345	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771512	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		11	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel: fine grained, sandstone and ironstone. *(continued)*	W	St		SPT 3,4,7 N=11						51.0						
		12				At 12 m bgl, 1.5 m band of Sandy SILT, high plasticity.		St-VSt		SPT 6,7,9 N=16							107	56	20.0				
		13																					
		14						MD		SPT 7,10,10 N=20						57.0							
		15				Grades to Clayey Gravelly SAND.				SPT 7,12,16 N=28													
		16				**End of BH20 at 15.50m**																	
		17																					
		18																					
		19																					
		20																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH21***
SHEET: 1 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***19.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331356	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771498	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	FIELD CBR	PP (kPa)	SV (kPa)	MC (%)	LL (%)	PI	LS	SWELL	CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			ASPHALT, Size 10 mm nominal size, 30 mm thickness.	D-M			Env Sample @ 0.1 m													
						CRUSHED ROCK; Sandy GRAVEL, grey brown, fine to medium grained, angular, basalt, 20 mm nominal size; sand: fine to coarse grained.	M	St-VSt		Env Sample @ 0.5 m													
							M	MD															
		1			CH	FILL; Sandy CLAY, dark grey, low plasticity; sand: fine to medium grained.	D-M	St-VSt		Env Sample @ 0.9 m													
						FILL; Gravelly Silty SAND, pale grey brown, fine to medium grained; silt: low plasticity; gravel: fine grained, angular, basalt.				SPT 3,6,7 N=13													
		2				Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel: fine grained, sandstone and ironstone.																	
						Grades to grey.				SPT 5,6,10 N=16													
		3																					
		4					D-M	H		SPT 5,15,22 N=37												Inferred as cemented layer (possibly duricrust).	
		5	Red Bluff Sandstone				D-M	VSt															
		6				Grades to Sandy CLAY with Gravel; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.				SPT 6,12,14 N=26													
							W	St-VSt															
		7								SPT 6,10,8 N=18													
		8																					
		9				Increasing proportion of CLAY.				SPT 3,5,7 N=12													
		10																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

Library Template: T+T AUS.GLB; Report Template: TTAUS BOREHOLE LOG.GDT J:\CORPORATE\SOUTH MELBOURNE\PROJECTS\1001289\WORKINGMATERIAL\LOGS\1001289 LOGS.GPJ

Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH21***
SHEET: 2 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***18.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***19.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331356	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	-	**Bearing:**		**Northing:**	5771498	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Sample Type	Tests: DCP (per 100mm)	Tests: FIELD CBR	Tests: PP (kPa)	Tests: SV (kPa)	Tests: MC (%)	Tests: LL (%)	Tests: PI	Tests: LS	Tests: SWELL	Tests: CBR	Field Records / Comments	Water
Solid Auger - Rock Bit		11	Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel: fine grained, sandstone and ironstone. *(continued)*	W	St-VSt		SPT 4,4,5 N=9												
		12								SPT 6,9,10 N=19													
								MD-D															
		13				Grades to Clayey SAND with Gravel.				SPT 9,15,23 N=38													
		14																					
		15								SPT 7,14,15 N=29													
						End of BH21 at 15.50m																	
		16																					
		17																					
		18																					
		19																					
		20																					

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH22***
SHEET: 1 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***16.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***17.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331397	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	Water	**Bearing:**		**Northing:**	5771453	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Tests: DCP	Tests: SV (kPa)	Tests: PP (kPa)	Tests: MC (%)	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	VS-F		Env Sample @ 0.1 m	1					
											1					
											4					
											4					
					CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	St-VSt		Env Sample @ 0.6 m	4					
		1									5					
											9					
											9					
											9					
										SPT 4,6,7 N=13	7					
											8					
		2									8					
											6					
											6					
											5					
		3	Red Bluff Sandstone							SPT 4,9,11 N=20						
		4					D-M	H		SPT 8,15,18 N=33					Inferred as cemented layer (possibly duricrust).	
		5					D-M	VSt								
		6								SPT 3,11,15 N=26						
						Borehole BH22 continued as Cored Borehole										
		7														
		8														
		9														
		10														

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Alpha Archaeology Pty Ltd 168

Tonkin+Taylor

CORED BOREHOLE LOG

BOREHOLE NO: ***BH22***
SHEET: 2 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***16.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***17.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331397	**Surface R.L.:**
Drill Model:	Comacchio 305	**Drill Fluid:**	Water	**Bearing:**		**Northing:**	5771453	**Offset:**

Method	Casing	Drill Rate (min)	RL (m)	Depth (m)	Geological Unit	Graphic Log	Material Description	Weathering / Cementation	Estimated Strength	Defect Spacing (mm) Crushed 10 50 100 500	Lift & Core Recovery (%)	RQD %	PLI (MPa)	Field Records / Comments and Defect Description	Drilling Fluid Loss (%) 25 50 75	Water
							BH22 continued from non-cored borehole at 6.30m									
Diamond Coring				7	Red Bluff Sandstone		Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.									
							CORE LOSS									
				8			Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel. Increasing proportion of CLAY.				85	0				
				9			CORE LOSS									
				10			Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.				95	0				
							CORE LOSS									
				11			Clayey SAND with Gravel, red brown mottled pale grey and orange, fine to coarse grained, subrounded to subangular, quartzitic; clay: high plasticity; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.				90	0				
				12												
				13							100	0				
				14							100	0				
				15												
				16			End of BH22 at 15m									

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

BOREHOLE LOG

BOREHOLE NO: ***BH23***
SHEET: 1 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***13.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331371	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	Water	**Bearing:**		**Northing:**	5771434	**Offset:**	

Method	RL (m)	Depth (m)	Geological Unit	Graphic Log	Classification Symbol	Material Description	Moisture Condition	Consistency / Strength	Cementation / Weathering	Sample / Test	Tests: DCP	Tests: SV (kPa)	Tests: PP (kPa)	Tests: MC (%)	Field Records / Comments	Water
Solid Auger - Rock Bit		0	Fill			FILL; Silty SAND, pale grey brown, fine to medium grained, quartzitic; silt: low plasticity; trace fine gravel; contains rootlets within the top 200 mm.	D	VL-L		Env Sample @ 0.1 m	1 2 6					
			Red Bluff Sandstone		CH	Sandy CLAY, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subangular to subrounded, quartzitic; trace gravel, fine grained, sandstone and ironstone.	D-M	St-VSt		Env Sample @ 0.5 m	6 5 6					
		1									12 15 R					
										SPT 3,5,6 N=11						
		2														
		3								SPT 6,10,13 N=23						
		4														
										SPT 8,9,9 N=18						
		5				Grades to orange; increase in proportion of SAND.	M									
		6								SPT 4,7,11 N=18						
						Borehole BH23 continued as Cored Borehole										Inferred as perched water level
		7														
		8														
		9														
		10														

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Tonkin+Taylor

CORED BOREHOLE LOG

BOREHOLE NO: ***BH23***
SHEET: 2 OF 2

CLIENT:	***Ryman Healthcare Limited***	DATE COMMENCED:	***12.1.2017***
PROJECT:	***Mt. Eliza Village***	DATE COMPLETED:	***13.1.2017***
LOCATION:	***Refer to location plan***	LOGGED BY:	***AAP***
JOB NUMBER:	***1001289***	CHECKED BY:	***ATIN***

Drill Contractor:	CG	**Bore Size:**	150mm	**Hole Angle:**	-90°	**Easting:**	331371	**Surface R.L.:**	
Drill Model:	Comacchio 305	**Drill Fluid:**	Water	**Bearing:**		**Northing:**	5771434	**Offset:**	

Method	Casing	Drill Rate (min)	RL (m)	Depth (m)	Geological Unit	Graphic Log	Material Description	Weathering / Cementation	Estimated Strength	Defect Spacing (mm) Crushed / 10 / 50 / 100 / 500	Lift & Core Recovery (%)	RQD %	PLI (MPa)	Field Records / Comments and Defect Description	Drilling Fluid Loss (%) 25 / 50 / 75	Water
							BH23 continued from non-cored borehole at 6.30m									▼
Diamond Coring				7	Red Bluff Sandstone		Sandy CLAY with Gravel, red brown mottled pale grey and orange, high plasticity; sand: fine to coarse grained, subrounded to subangular, quartzitic; gravel: fine to medium grained, sandstone and ironstone, very low to medium strength gravel.				100	0				Inferred as perched water level
				8							100	0				
				9							100	0				
				10							100	0				
				11							100	0				
				12			At 12 m bgl, becoming Gravelly CLAY, increasing proportion of GRAVEL.				100	0				
				13			Grades to Clayey SAND with Gravel.				100	0				
				14							100	0				
				15			End of BH23 at 14.6m									
				16												

This log should be read in conjunction with the T&T Pty Ltd Log Summary Sheet and the Project Plan

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Appendix C: NATA laboratory test certificates

Head Office
25 Metcalf Drive
DANDENONG SOUTH VIC 3175

Ph: +61 3 8796 7900

CHADWICK GEOTECHNICS

MOISTURE CONTENT REPORT

Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967 - 1**
Report Date: 08/03/17
Request No: -
Test Method: AS 1289 2.1.1
Page: 1 of 1

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	1701670	1701672	1701674	1701676	1701678	1701680	1701682	1701684		
ID No.:	2	4	6	8	10	12	14	16		
Lot No.:	-	-	-	-	-	-	-	-		
Date Sampled:	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017		
Time Sampled:	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm		
Date Tested:	17/02/2017	17/02/2017	17/02/2017	17/02/2017	17/02/2017	17/02/2017	17/02/2017	17/02/2017		
Material Source:	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu		
Material Description:	sandy CLAY	sandy CLAY	sandy CLAY	sandy CLAY	sandy CLAY	sandy CLAY w gravel	sandy CLAY w gravel	sandy CLAY w gravel		
To Be Used As:	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis		
Sample Location :	- BH06 1.0m -	- BH08 2.0m -	- BH10 1.0m -	- BH20 1.5 - 1.95m -	- BH20 4.5 - 4.95m -	- BH20 7.5 - 7.95m -	- BH20 10.5 - 10.95m -	- BH20 13.5 - 13.95m -		
Layer Depth (mm):	-	-	-	-	-	-	-	-		
Test Depth (mm):	-	-	-	-	-	-	-	-		
Sampling Procedure:	by Client	by Client	by Client	by Client	by Client	by Client	by Client	by Client		
Moisture Content (%):	**20.6**	**17.2**	**18.0**	**19.9**	**23.1**	**32.2**	**51.0**	**57.0**		

Remarks:

ilac-MRA NATA

Accredited for compliance with ISO/IEC 17025. The results of tests, calibrations and/or measurements included in this document are

APPROVED SIGNATORY

J Lamont

Form No.: **CG.319.001**
Issue Date: 19/02/2013

Head Office
25 Metcalf Drive
DANDENONG SOUTH VIC 3175

Ph: +61 3 8796 7900
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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

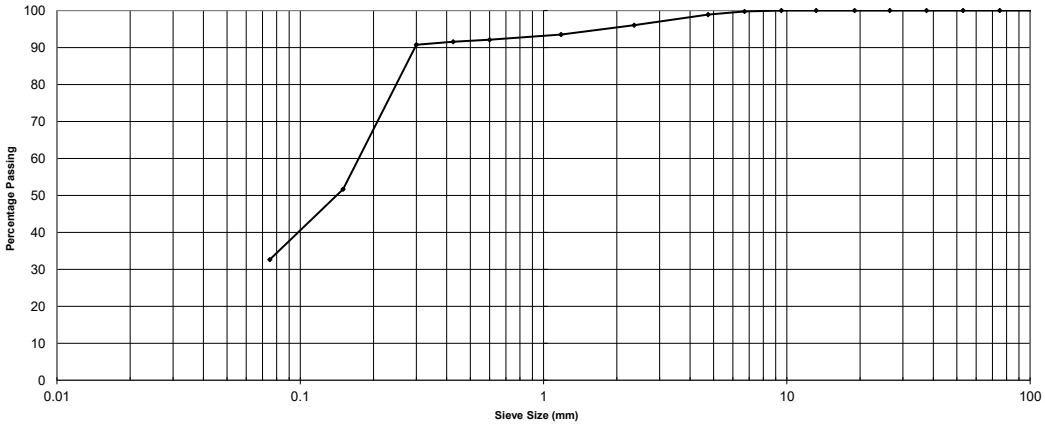
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 2 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701671**
ID No.:	3
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	6/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY
To Be Used As	Material Analysis
Sample Location :	- BH06 1.5 3.0m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	17.8
Liquid Limit (%) AS 1289.3.1.2	32
Plastic Limit (%) AS 1289.3.2.1	17
Plasticity Index AS 1289.3.3.1	15
Linear Shrinkage (%) AS 1289.3.4.1	6.0
Cracking, Curling, Crumbling (1,2,3)	1
P.I. x % Passing 0.425mm	1373
L.S. x % Passing 0.425mm	549
Ratio of % Passing (0.075/0.425)	0.36

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
								100	100	99	96	94	92	92	91	52	33

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC SC Grading Specification:

Remarks:

Accredited for compliance with ISO/IEC 17025. The results of tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

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J Lamont

Form No: CG.329.002

Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

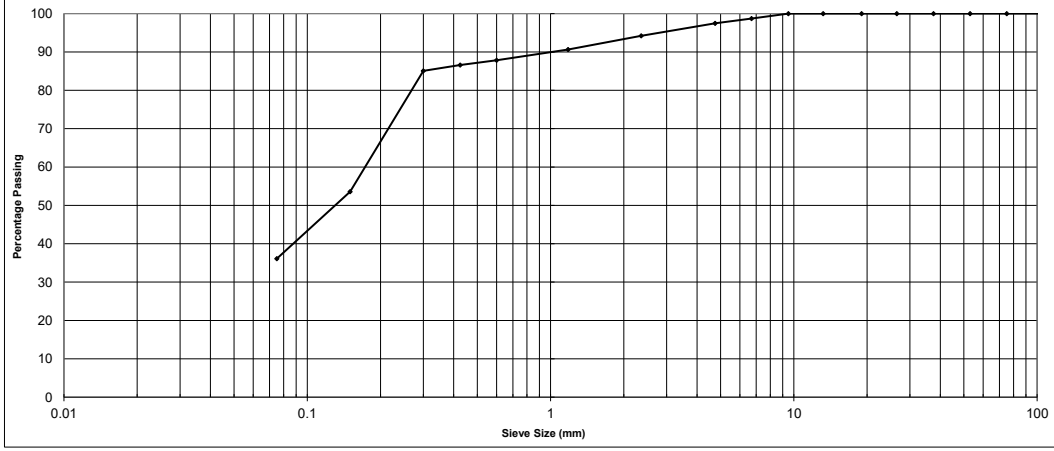
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 1 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701669**
ID No.:	1
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	7/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY w gravel
To Be Used As	Material Analysis
Sample Location :	- BH06 4.5 - 4.95m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	11.3
Liquid Limit (%) AS 1289.3.1.2	-
Plastic Limit (%) AS 1289.3.2.1	-
Plasticity Index AS 1289.3.3.1	-
Linear Shrinkage (%) AS 1289.3.4.1	-
Cracking, Curling, Crumbling (1,2,3)	
P.I. x % Passing 0.425mm	-
L.S. x % Passing 0.425mm	-
Ratio of % Passing (0.075/0.425)	0.42

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
								100	99	97	94	91	88	87	85	54	36

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC - Grading Specification:

Remarks:

Accredited for compliance with ISO/IEC 17025. The results of tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

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J Lamont

Form No: CG.329.002

Issue Date: 19/02/2013

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Fax: +61 3 8796 7944

CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

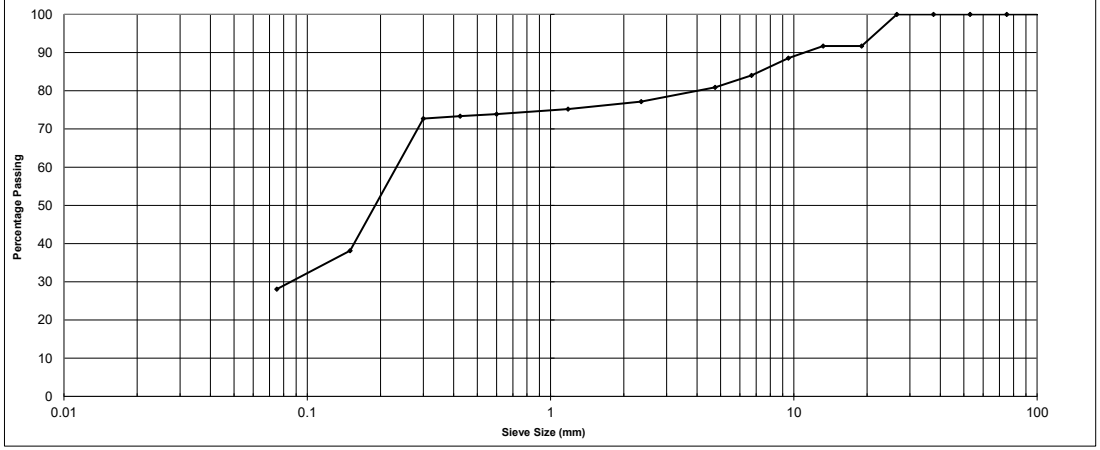
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 3 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701673**
ID No.:	5
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	7/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY w gravel
To Be Used As	Material Analysis
Sample Location :	- BH09 4.5 - 4.95m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	14.1
Liquid Limit (%) AS 1289.3.1.2	-
Plastic Limit (%) AS 1289.3.2.1	-
Plasticity Index AS 1289.3.3.1	-
Linear Shrinkage (%) AS 1289.3.4.1	-
Cracking, Curling, Crumbling (1,2,3)	
P.I. x % Passing 0.425mm	-
L.S. x % Passing 0.425mm	-
Ratio of % Passing (0.075/0.425)	0.38

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
					100	92	92	89	84	81	77	75	74	73	73	38	28

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC - Grading Specification:

Remarks:

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APPROVED SIGNATORY

J Lamont

Form No: CG.329.002

Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

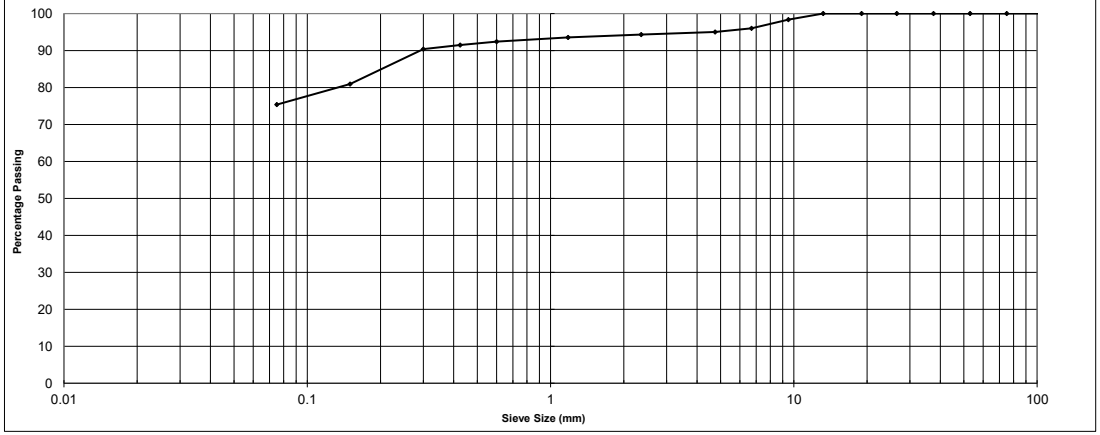
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 4 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701675**
ID No.:	7
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	6/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY
To Be Used As	Material Analysis
Sample Location :	- BH13 2.0 - 3.5m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	22.8
Liquid Limit (%) AS 1289.3.1.2	53
Plastic Limit (%) AS 1289.3.2.1	20
Plasticity Index AS 1289.3.3.1	33
Linear Shrinkage (%) AS 1289.3.4.1	12.0
Cracking, Curling, Crumbling (1,2,3)	2
P.I. x % Passing 0.425mm	3019
L.S. x % Passing 0.425mm	1098
Ratio of % Passing (0.075/0.425)	0.82

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
							100	98	96	95	94	94	92	91	90	81	75

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC CH Grading Specification:

Remarks:

Accredited for compliance with ISO/IEC 17025. The results of tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

APPROVED SIGNATORY

J Lamont

Form No: CG.329.002

Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

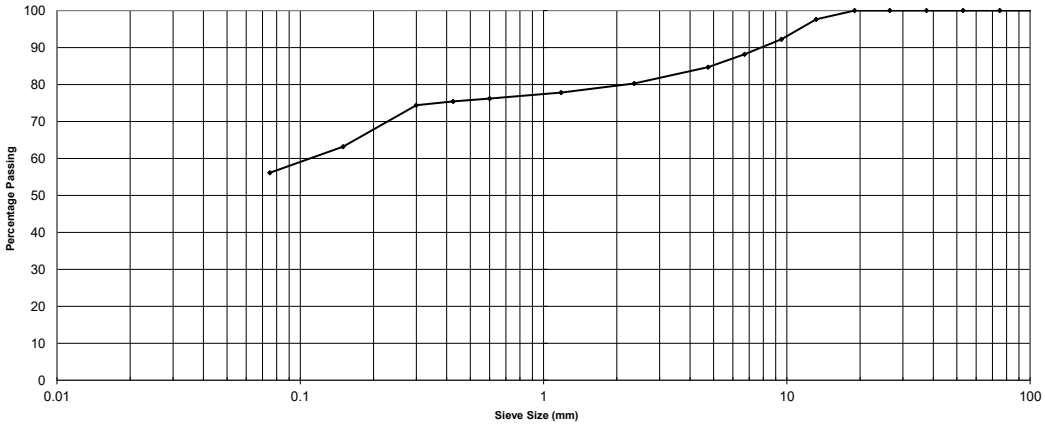
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 5 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701677**
ID No.:	9
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	3/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY
To Be Used As	Material Analysis
Sample Location :	- BH20 3.0 - 3.45m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	34.1
Liquid Limit (%) AS 1289.3.1.2	53
Plastic Limit (%) AS 1289.3.2.1	23
Plasticity Index AS 1289.3.3.1	30
Linear Shrinkage (%) AS 1289.3.4.1	12.0
Cracking, Curling, Crumbling (1,2,3)	2
P.I. x % Passing 0.425mm	2263
L.S. x % Passing 0.425mm	905
Ratio of % Passing (0.075/0.425)	0.74

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
						100	98	92	88	85	80	78	76	75	74	63	56

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC CH Grading Specification:

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

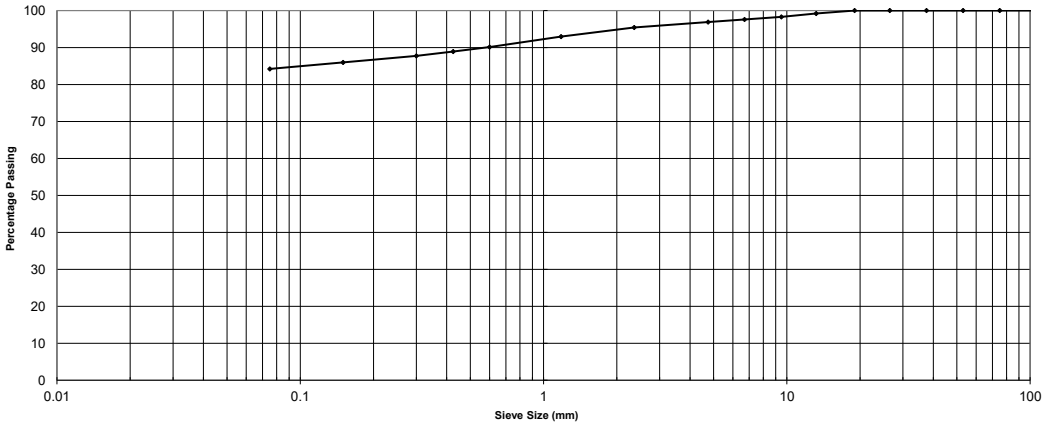
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 6 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701679**
ID No.:	11
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	3/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY
To Be Used As	Material Analysis
Sample Location :	- BH20 6.0 - 6.45m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	30.2
Liquid Limit (%) AS 1289.3.1.2	75
Plastic Limit (%) AS 1289.3.2.1	27
Plasticity Index AS 1289.3.3.1	48
Linear Shrinkage (%) AS 1289.3.4.1	15.0
Cracking, Curling, Crumbling (1,2,3)	1, 2
P.I. x % Passing 0.425mm	4268
L.S. x % Passing 0.425mm	1334
Ratio of % Passing (0.075/0.425)	0.95

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
						100	99	98	98	97	95	93	90	89	88	86	84

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC CH Grading Specification:

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

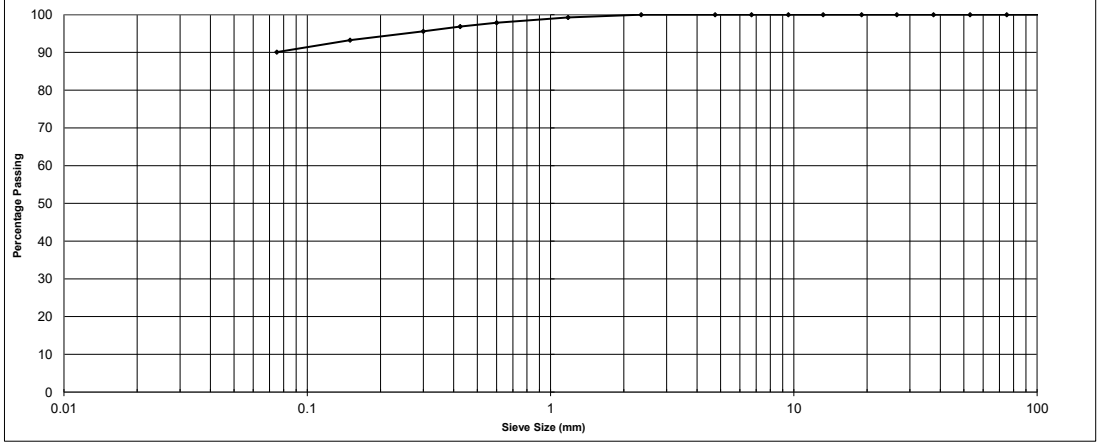
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 7 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701681**
ID No.:	13
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	3/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY w gravel
To Be Used As	Material Analysis
Sample Location :	- BH20 9.0 - 9.45m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	34.2
Liquid Limit (%) AS 1289.3.1.2	81
Plastic Limit (%) AS 1289.3.2.1	30
Plasticity Index AS 1289.3.3.1	51
Linear Shrinkage (%) AS 1289.3.4.1	19.5
Cracking, Curling, Crumbling (1,2,3)	2
P.I. x % Passing 0.425mm	4940
L.S. x % Passing 0.425mm	1889
Ratio of % Passing (0.075/0.425)	0.93

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
											100	99	98	97	96	93	90

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC CH Grading Specification:

Remarks:

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

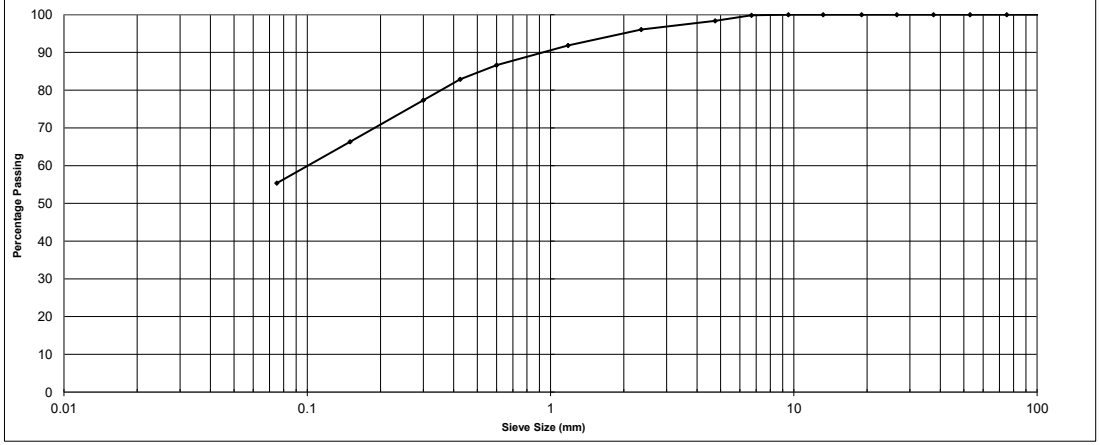
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 8 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701683**
ID No.:	15
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	6/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY w gravel
To Be Used As	Material Analysis
Sample Location :	- BH20 12.0 - 12.45m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	49.6
Liquid Limit (%) AS 1289.3.1.2	107
Plastic Limit (%) AS 1289.3.2.1	51
Plasticity Index AS 1289.3.3.1	56
Linear Shrinkage (%) AS 1289.3.4.1	20.0
Cracking, Curling, Crumbling (1,2,3)	1
P.I. x % Passing 0.425mm	4642
L.S. x % Passing 0.425mm	1658
Ratio of % Passing (0.075/0.425)	0.67

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
								100	100	98	96	92	87	83	77	66	55

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC MH Grading Specification:

Remarks:

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Form No: CG.329.002

Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

QUALITY OF MATERIALS REPORT

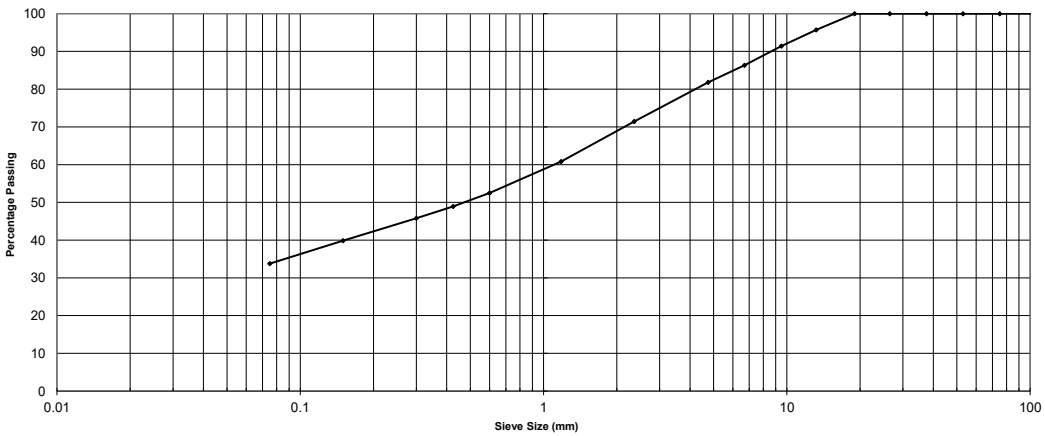
Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **- 4**
Report Date: 08/03/17
Request No: -
Sieve Analysis Test Method: AS 1289.3.6.1
Page: 9 of 9

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701685**
ID No.:	17
Lot No.:	-
Date Sampled:	10 - 20/01/2017
Time Sampled:	am/pm
Date Tested:	7/03/2017
Material Source:	Insitu
Material Type:	sandy CLAY w gravel
To Be Used As	Material Analysis
Sample Location :	- BH20 15.0 - 15.45m -
Layer Depth (mm)	-
Test Depth (mm)	-
Sampling Method	by Client
Moisture Content (%) AS 1289 2.1.1	53.3
Liquid Limit (%) AS 1289.3.1.2	-
Plastic Limit (%) AS 1289.3.2.1	-
Plasticity Index AS 1289.3.3.1	-
Linear Shrinkage (%) AS 1289.3.4.1	-
Cracking, Curling, Crumbling (1,2,3)	
P.I. x % Passing 0.425mm	-
L.S. x % Passing 0.425mm	-
Ratio of % Passing (0.075/0.425)	0.69

SIEVE ANALYSIS GRAPH



300mm	150mm	75.00mm	53.00mm	37.50mm	26.50mm	19.00mm	13.2mm	9.50mm	6.70mm	4.75mm	2.36mm	1.18mm	0.600mm	0.425mm	0.300mm	0.150mm	0.075mm
						100	96	91	86	82	71	61	52	49	46	40	34

Soil Classification in accordance with Unified Soil Classification Laboratory Identification Procedure AS1726 Table A1 (1993) - Appendix A, Section A

USC - Grading Specification:

Remarks:

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J Lamont

Form No: CG.329.002

Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

EMERSON CLASS NUMBER

Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **-2**
Report Date: 08/03/17
Request No: -
Test Method: AS 1289.3.8.1
Page: 1 of 2

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701671**	**1701676**	**1701678**	**1701680**	**1701682**
ID No.:	3	8	10	12	14
Lot No.:	-	-	-	-	-
Date Sampled:	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017	10 - 20/01/2017
Time Sampled:	am/pm	am/pm	am/pm	am/pm	am/pm
Date Tested:	22/02/2017	22/02/2017	22/02/2017	22/02/2017	22/02/2017
Material Source:	Insitu	Insitu	Insitu	Insitu	Insitu
Material Description:	sandy CLAY	sandy CLAY	sandy CLAY	sandy CLAY w gravel	sandy CLAY w gravel
To Be Used As	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis
Sample Location :	- BH06 1.5 3.0m -	- BH20 1.5 - 1.95m -	- BH20 4.5 - 4.95m -	- BH20 7.5 - 7.95m -	- BH20 10.5 - 10.95m -
Layer Depth (mm):	-	-	-	-	-
Test Depth (mm):	-	-	-	-	-
Sampling Procedure:	by Client	by Client	by Client	by Client	by Client
Distilled Water:	✓	✓	✓	✓	✓
Reservoir Water:					
Water Temperature:	22 ° C	20 ° C	20 ° C	20 ° C	21 ° C
Air Dried Crumbs:					
Start Time:	2:44pm	8:30am	8:31am	8:30am	8:30am
Time Dispersion Commences:	N/A	N/A	N/A	8:35am	8:35am
Time Dispersion Completed:	N/A	N/A	N/A	11:00am	11:00am
Remoulded Material:					
Start Time:	3:18pm	9:05am	9:00am		
Time Dispersion Commences:	N/A	N/A	N/A		
Time Dispersion Completed:	N/A	N/A	N/A		
Immersion of Air Dried Crumbs:					
Slakes:	✓	✓	✓	✓	✓
Swell:					
Complete Dispersion:					
Partial Dispersion:				✓	✓
Immersion of Remoulded Material:					
Disperses:					
Calcite or Gypsum:					
Present:					
Vigorous Shaking:					
Disperses:		✓	✓		
Flocculates:	✓				
Emerson Class Number:	**6**	**5**	**5**	**2**	**2**

Remarks: **None**

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APPROVED SIGNATORY
J Lamont

Form No.: **CG.313.001**
Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

EMERSON CLASS NUMBER

Customer: Tonkin + Taylor Pty Ltd
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Project: Mt Eliza Village
Location: Mt Eliza
Customer Order No.: 1001289.1

Report Number: **1001967** **-2**
Report Date: 08/03/17
Request No: -
Test Method: AS 1289.3.8.1
Page: 2 of 2

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701684**				
ID No.:	16				
Lot No.:	-				
Date Sampled:	10 - 20/01/2017				
Time Sampled:	am/pm				
Date Tested:	22/02/2017				
Material Source:	Insitu				
Material Description:	sandy CLAY w gravel				
To Be Used As	Material Analysis				
Sample Location :	- BH20 13.5 - 13.95m -				
Layer Depth (mm):	-				
Test Depth (mm):	-				
Sampling Procedure:	by Client				
Distilled Water:	✓				
Reservoir Water:					
Water Temperature:	20 ° C				
Air Dried Crumbs:					
Start Time:	8:31am				
Time Dispersion Commences:	8:36am				
Time Dispersion Completed:	11:00am				
Remoulded Material:					
Start Time:					
Time Dispersion Commences:					
Time Dispersion Completed:					
Immersion of Air Dried Crumbs:					
Slakes:	✓				
Swell:					
Complete Dispersion:					
Partial Dispersion:	✓				
Immersion of Remoulded Material:					
Disperses:					
Calcite or Gypsum:					
Present:					
Vigorous Shaking:					
Disperses:					
Flocculates:					
Emerson Class Number:	**2**				

Remarks: **None**

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J Lamont

Form No.: **CG.313.001**
Issue Date: 19/02/2013

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CHADWICK GEOTECHNICS

CALIFORNIA BEARING RATIO REPORT

Customer: Tonkin + Taylor Pty Ltd
Report Number: **1001967 - 3**
Customer Address: Ground Floor, 95 Coventry Street, Southbank VIC 3205
Report Date: 08/03/17
Project: Mt Eliza Village
CG Request No: -
Location: Mt Eliza
Test Method: AS 1289.6.1.1
Customer Order No.: 1001289.1
Page: 1 of 1

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	**1701671**	**1701675**			
ID No.:	3	7			
Lot No.:	-	-			
Date Sampled:	10 - 20/01/2017	10 - 20/01/2017			
Time Sampled:	am/pm	am/pm			
Date Tested:	6/03/2017	6/03/2017			
Material Source:	Insitu	Insitu			
Material Description:	sandy CLAY	sandy CLAY			
To Be Used As:	Material Analysis	Material Analysis			
Sample Location :	- BH06 1.5 3.0m -	- BH13 2.0 - 3.5m -			
Layer Depth (mm):	-	-			
Sampling Procedure:	by Client	by Client			
MDD (t/m3) AS1289.5.1.1 :	1.84	1.70			
OMC (%) AS1289.5.1.1 :	17.5	22.5			
Compactive Effort :	Standard	Standard			
Nominated % MDD Compaction :	98	98			
Nominated % OMC Compaction :	100	100			
Achieved Density Ratio (%) :	98	98			
Achieved Moisture Ratio (%) :	98	98			
Test Condition (Soaked/Unsoaked) :	Soaked	Soaked			
Test Condition Soaking Period (Days) :	4	4			
Swell (%)	0.0	1.5			
Surcharge (kg) :	4.5	4.5			
Achieved Dry Density before Soak (t/m^3) :	1.81	1.67			
Dry Density after Soak (t/m^3) :	1.80	1.65			
Density Ratio after Soak (%) :	98	97			
Moisture Content AS1289.2.1.1					
Initial Moisture Content (%):	17.8	22.8			
Achieved Moisture Content (%) :	17.2	21.9			
Moisture Content after Soak (%) :	19.2	24.0			
Moisture Content (Top) after Penetration (%) :	18.3	24.5			
% retained on 19mm:	0	0			
CBR Penetration (mm) :	5	2.5			
CBR Value (%) :	**6**	**2.0**			

Remarks: **All oversize was excluded**
If the specimen was soaked, then an additional 1kg surcharge weight was added at the penetration stage as per AS1289.6.1.1 8(a)

ilac-MRA NATA

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J Lamont

Form No.: **CG.304.004**
Issue Date: 19/02/2015

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Attachment 20 – Repeat Appeals Principles

There are a series of well-established principles guiding the hearing of 'repeat appeals' where the Tribunal is required to review an application similar to a proposal previously the subject of a Tribunal decision.

Deputy President Dwyer summarised these principles in *Sprut Pty Ltd v Stonnington CC* in the following terms:

- In the seminal case of *Amoco Australia Limited v City of Berwick*, the Planning Appeals Board (a predecessor of the Tribunal) had stated:

  Although the Board believes that it should deal with this appeal on its merits it also holds that, in determining the appeal, it should pay regard to the previous decision of the Board and give great weight to that decision. Public policy demands that there be some end to litigation. If applicants were to repeatedly come before the Board, perhaps seeking to exhaust the patience of the Board or even in an attempt to pick and choose a suitable division of the Board to hear the appeal, then it would be to the detriment of the appeals system. Moreover repeated appeals would impose unnecessary costs on respondent parties including, in some cases, psychological costs. One can imagine a case where a developer wears down both a Responsible Authority and objectors by repeatedly making fresh applications. This ought to be discouraged.

  and later:

  ... the Board believes that an applicant can make repeated applications for a permit and repeated appeals to this Board. However in determining any subsequent appeal the Board should take the earlier determination into account and give it great weight. Generally speaking the earlier decision should not be reversed unless the applicant can show a change in circumstances which warrant a different view.

- In reaching its view in Amoco, the Board cited with approval the following passage from the decision of *Watkins v MMBW*:

  We should also state that as a matter of principle the Tribunal should act with great caution when considering whether a previous decision should be reversed. A change in circumstances warranting a different view must be positively shown otherwise the reversal of earlier decisions would introduce such a state of inconsistency into the appeals system that chaos could occur with unsuccessful parties applying and appealing time after time.

- The 'usual principles' that have been generally adopted are outlined in decisions such as *Reichert v Banyule City Council* and are sometimes referred to (and were referred to in the hearing before me) as the "*Reichert* principles". Relevant factors to consider when reviewing an application that is similar to a proposal that has been the subject of previous Tribunal findings are:

  - significant changes in the application itself;
  - changes in the circumstances of the land and its surrounds;

- changes in planning policy; and/or
- changes in the interpretation of the facts or law relevant to the Tribunal's consideration.

- Although these principles are often used to dismiss 'classic' repeat appeals where the permit applicant appears to be doing little more than forum shopping or wearing down the opposition with little material change in the development or other circumstances, care must be taken not to apply these principles in an over-zealous manner. There are two main reasons for this.

  First, the 'classic' repeat appeals should be distinguished from what has sometimes been described as 'correcting' repeat appeals - that is, where the Tribunal has refused an earlier application but indicated a modified form of development or changes that might be acceptable, and the repeat appeal comprises a genuine attempt to address those issues. This distinction was noted in Reichert, and is summed up in decisions such as *Benc v City of Doncaster and Templestowe*, where it was stated:

  In the case of a different but similar application which has been prepared in accordance with the advice of the Board, equity or fairness demands that considerable weight be given to the fact that the applicant has endeavoured to accommodate suggestions as to what would be appropriate.

  A similar view has been expressed in decisions such as *Carwoode Pty Ltd v Cardinia SC & Ors (No 3)*, and Pearl Diamond #2. This latter decision is of some interest, as the applicant contends that the proposed four-storey development now permitted on that nearby site is a relevant change that should have great weight placed upon it under the Reichert principles.

  Secondly, irrespective of whether the repeat appeal is in the nature of a 'classic' or 'correcting' repeat appeal, the role of the Tribunal is not to determine whether the proposal before it would have satisfied the earlier (and perhaps differently constituted) Tribunal, nor to summarily determine the matter solely by reference to the Reichert principles. This is a sometimes misunderstood notion. As *Amoco* itself indicated, the role of the Tribunal is to still consider the new application before it on its merits but, in doing so, to give great weight to the Tribunal's decision on the earlier application having regard to the usual principles that have evolved for this purpose.

Attachment 21 – Summary of relevant planning policy

Municipal Planning Strategy

Clause 02.01 Context

This clause relevantly states that the Peninsula is not a designated urban growth area. The green wedge planning provisions implement a 'green break' to protect the Peninsula from inappropriate metropolitan development and protect areas of environmental, landscape and scenic value. These areas include the Peninsula's biodiversity assets, national and state parks, Ramsar wetlands and coastal areas. In this context, the Peninsula has a different but complementary role to other parts of Melbourne in meeting the overall needs of the community.

The Peninsula retains a distinctive settlement pattern consisting of more than 20 separate settlements within a hierarchy ranging from larger centres to smaller towns and coastal villages. Around 70 per cent of the Shire is rural land within the green wedge planning zone and 30 per cent is taken up by towns and villages. Green wedge policy seeks to consolidate any new residential development into these existing settlements. The settlement pattern, rich history of buildings, places and sites of heritage significance, and the relationship between the townships, coast and rural landscape contribute to the Peninsula's distinctive "sense of place".

Clause 02.02 Vision

Council's vision, as underpinned by the Mornington Peninsula Localised Planning Statement, is to:

- Value, protect and improve the Peninsula's unique characteristics and its special role that is distinct from and complementary to metropolitan Melbourne.
- Protect the role of the Peninsula as one of Melbourne's greatest assets, characterised by contained townships, a substantial and diverse local economy, and areas of national and international significance.
- Protect the Peninsula's landscapes, coastlines, seascapes and rural area, including the scenic values of the green wedge.
- Protect and enhance the experience and enjoyment of the natural and cultural values of the Peninsula.
- Retain the Peninsula's agricultural role with a focus on sustainable agriculture.
- Protect the important values and resources of Western Port, having regard to existing settlements and the importance of recreation, nature conservation and tourism.

The strategic objectives related to land use and development, as set out in the Council Plan, are:

- To create thriving, accessible and inclusive places to live, work and visit.
- To protect and enhance the Mornington Peninsula's biodiversity and coastal experience.
- To demonstrate leadership in climate change mitigation and adaptation.

- To facilitate improved mobility and connectivity accessible to all within the Mornington Peninsula.
- To support an integrated transport and connectivity network.
- To facilitate opportunities for job creation and an environment for business to succeed.
- To enhance shoulder season and off-peak visitor experiences that are dispersed throughout the region.
- To help grow key strategic industries, such as the food economy, niche manufacturing and health economy, in the Mornington Peninsula.

Clause 02.03 Strategic Directions

Clause 02.03-1 Settlement

The Peninsula's activity centres hierarchy comprises three Major Activity Centres, i.e. Mornington, Rosebud and Hastings, and the Neighbourhood Activity Centres described in the table below. Anticipated growth is to be accommodated primarily in its three Major Activity Centres while additional limited growth is to be accommodated in its Neighbourhood Activity Centres in accordance with the sub-levels specified in the table. The table identifies the following features for Mount Eliza:

Neighbourhood activity centre sub-level	Service population	Leasable floor area (LFA)	Commercial land uses
Large Township Activity Centre: ▪ Mount Eliza ▪ Bentons Square ▪ Dromana ▪ Rye ▪ Somerville	> 10,000 people (ppl)	10,000 to 25,000 sqm	Typically include: ▪ A major supermarket (LFA > 2,000 sqm) ▪ Office-based services (LFA > 1,000 sqm) ▪ Some restricted retail premises (LFA < 1,500 sqm)

Directing growth to these centres close to services and facilities prevents dispersed population growth throughout the Peninsula's rural area and thereby protects the unique characteristics of small coastal townships and rural villages as well as areas of environmental, landscape, agricultural or recreational significance, including the 'green break' between the Peninsula and metropolitan Melbourne. Directing growth to these centres also supports the need to increase housing diversity.

Council's strategic directions for 'Settlement' include:

- Direct growth primarily to major activity centres, and the remainder to neighbourhood activity centres.
- Strengthen the hierarchy of activity centres while having regard to their individual character and functions, their relationships to each other and to adjacent rural, coastal and port development areas.
- Concentrate commercial and non-commercial services in activity centres to serve the needs of the community, visitors and tourists, commensurate with the role and function of that activity centre in the activity centres hierarchy on the Mornington Peninsula.
- Protect the unique character and functions of the small coastal townships and rural villages, and maintain their compact form and amenity.
- Avoid out-of-centre development and the creation of new activity centres.
- Protect green wedge land, maintain the Urban Growth Boundary and protect the 'green break' between the Peninsula and metropolitan Melbourne.
- Maintain rural areas for their environmental, landscape, recreational and agricultural values, and minimise development that could have an adverse impact on these values on land located in the Green Wedge Zone or Farming Zone.

Clause 02.03-2 Environmental and landscape values

The Mornington Peninsula is an area of great environmental and landscape diversity that owes its special conservation value to a number of features including:

- Natural areas of regional, state, national and international significance located on the Peninsula and adjoining marine areas. These areas combine to form the Peninsula's 'green spine', which includes the parks and coastal reserves on Western Port Bay, Port Phillip Bay, Mornington Peninsula National Park and Arthurs Seat State Park.
- Landscapes that include a combination of natural and cultural elements and support both local native vegetation and introduced species.

Council's strategic directions for 'Environmental and landscape values' are to:

- Maintain the Peninsula's 'green spine', which includes Point Nepean National Park, Mornington Peninsula National Park and Arthurs Seat State Park.
- Maintain the rural character of land adjoining main roads and tourist routes, ensuring the ongoing visual amenity and recreational value of the outlook from these roads.
- Protect coastal and foreshore areas as major tourism and recreational resources from overuse to avoid environmental degradation and loss of natural and cultural values.
- Maintain the integrity of strategic landscapes between and around the Peninsula's townships.

Clause 02.03-4 Natural resource management

Agriculture will continue to play an integral role on the Peninsula, forming part of the economic base, providing for sustainable land management and adding value to recreational experiences. The local agricultural industry relies on maintaining areas with a low population density and providing a separation between incompatible uses, such as townships and port development areas.

Clause 02.03-5 Built environment and heritage

Mornington Peninsula's sense of place is reinforced by the distinctive built-form character of its residential areas. This distinctiveness arises from:

- The relationship between the settlement and its environmental setting.
- The balance between natural features and built form that in many areas has produced a definite local character where the open space, landform and landscape provide a dominant setting for the built form.
- The influence of heritage sites, gardens and precincts such as the Peninsula's rich history of buildings, places and sites of heritage significance contained in many of its townships.
- The cultural significance of heritage places, heritage buildings, structures and gardens such as places, sites and objects of Aboriginal cultural significance.
- Well-established subdivision and development patterns where the ability to retain a bushland, woodland or coastal setting is often dependent on maintaining larger lot sizes with minimal site coverage.

Council's strategic directions for 'Built environment and heritage' are to:

- Ensure the location, design and construction of buildings and works are compatible with the built form and landscape character of the surrounding area.
- Conserve sites and locations of heritage significance, relating to both Aboriginal and European heritage.

Clause 02.03-6 Economic development

Council's strategic directions for 'Economic development' are to:

- Facilitate the expansion of existing industries and support new industries that provide services to the Peninsula community, contribute to the local employment base and are compatible with the Peninsula's character and environment, and the amenity of the local area.
- Maintain the long-term recreational role of the Peninsula, which underpins the tourism sector, to support the local economy.
- Support businesses that improve the ability to experience the Peninsula's natural and cultural recreational values, such as the provision of short-term and home-hosted accommodation, host farms and similar uses.

Clause 02.03-7 Transport

Council's strategic directions for 'Transport' are to:

- Ensure development does not impede the safe and efficient movement of traffic along highways, main roads and tourist routes in the municipality.

Clause 02.03-8 Infrastructure

Council's strategic directions for 'Infrastructure' are to:

- Ensure development does not adversely impact on the regional drainage function of waterways, drains, retarding basins and floodplains.
- Ensure major development in new areas is connected to reticulated sewerage.

- Ensure development does not contribute to the pollution of groundwater or surface waters.
- Ensure development is designed to protect the environment from polluting discharges and activities.

Clause 02.04 Strategic Framework Plan

This clause states that the plan (below) is to be read in conjunction with the strategic directions in Clause 02.03.

Clause 11 Settlement

Planning is to anticipate and respond to the needs of existing and future communities through provision of zoned and serviced land for housing, employment, recreation and open space, commercial and community facilities and infrastructure.

Planning is to prevent environmental, human health and amenity problems created by siting incompatible land uses close together.

Planning is to facilitate sustainable development that takes full advantage of existing settlement patterns and investment in transport, utility, social, community and commercial infrastructure and services.

Clause 11.01-1L Settlement – Mornington Peninsula

This clause aims to promote the sustainable growth and development of Victoria and deliver choice and opportunity for all Victorians through a network of settlements.

Strategies include:

- Create and reinforce settlement boundaries.
- Deliver networks of high-quality integrated settlements that have a strong identity and sense of place, are prosperous and are sustainable by preserving and protecting features of rural land and natural resources and features to enhance their contribution to settlements and landscapes.
- Limit urban sprawl and direct growth into existing settlements.
- Ensure retail, office-based employment, community facilities and services are concentrated in central locations.

Clause 11.01-1R Settlement – Metropolitan Melbourne

This clause aims to maintain a permanent urban growth boundary around Melbourne to create a more consolidated, sustainable city and protect the values of non-urban land.

Clause 11.01-1R Green Wedges – Metropolitan Melbourne

This clause aims to protect the green wedges of Metropolitan Melbourne from inappropriate development. Strategies include:

- Promote and encourage the key features and related values of each green wedge area.
- Support development in the green wedge that provides for environmental, economic and social benefits.
- Consolidate new residential development in existing settlements and in locations where planned services are available and green wedge values are protected.
- Protect important productive agricultural areas such as Werribee South, the Maribyrnong River flats, the Yarra Valley, Westernport and the Mornington Peninsula.
- Support existing and potential agribusiness activities, forestry, food production and tourism.
- Protect areas of environmental, landscape and scenic value such as biodiversity assets, national and state parks, Ramsar wetlands and coastal areas.

Clause 11.01-1L-01 Settlement – Mornington Peninsula

The strategies in this clause are:

- Maintain the existing transition area of lower density residential development to non-urban areas.
- Maintain the existing inter-urban break between settlements and its environmental and landscape values.

<u>Clause 11.03 Planning for Places</u>

Clause 11.03-03S Peri-urban areas

The objective of this clause is to manage growth in peri-urban areas to protect and enhance their identified valued attributes. Strategies include:

- Identify and protect areas that are strategically important for the environment, biodiversity, landscape, open space, water, agriculture, energy, recreation, tourism, environment, cultural heritage, infrastructure, extractive and other natural resources.

- Provide for development in established settlements that have capacity for growth having regard to complex ecosystems, landscapes, agricultural and recreational activities.
- Establish growth boundaries for peri-urban towns to avoid urban sprawl and protect agricultural land and environmental assets.
- Enhance the character, identity, attractiveness and amenity of peri-urban towns.
- Prevent dispersed settlement and provide for non-urban breaks between urban areas.
- Improve connections to regional and metropolitan transport services.

Clause 11.03-4S Coastal settlement

Strategies to plan for sustainable coastal development include:

- Identify a clear settlement boundary around coastal settlements to ensure that growth in coastal areas is planned and coastal values are protected. Where no settlement boundary is identified, the extent of a settlement is defined by the extent of existing urban zoned land and any land identified on a plan in the planning scheme for future urban settlement.
- Minimise linear urban sprawl along the coastal edge and ribbon development in rural landscapes.
- Protect areas between settlements for non-urban use.
- Limit development in identified coastal hazard areas, on ridgelines, primary coastal dune systems, shorelines of estuaries, wetlands and low-lying coastal areas, or where coastal processes may be detrimentally impacted.
- Ensure a sustainable water supply, stormwater management and sewerage treatment for all development.
- Minimise the quantity and enhance the quality of stormwater discharge from new development into the ocean, bays and estuaries.

Clause 11.03-5S Distinctive areas and landscapes

This clause refers to the Mornington Peninsula Localised Planning Statement (Victorian Government, 2014).

Strategies to recognise the importance of distinctive areas and landscapes and protect the values attributes of identified distinctive areas and landscapes include:

- Recognise the unique features and special characteristics of these areas and landscapes.
- Implement the strategic directions of approved Localised Planning Statements and Statements of Planning Policy.
- Recognise the important role these areas play in the state as tourist destinations.
- Protect the identified key values and activities of these areas.
- Enhance conservation of the environment, including the unique habitats, ecosystems and biodiversity of these areas.
- Support use and development where it enhances the valued characteristics of these areas.
- Avoid use and development that could undermine the long-term natural or non-urban use of land in these areas.
- Protect areas that are important for food production.

Clause 12 – Environmental and Landscape Values

Clause 12.02 Marine and Coastal Environment, Clause 12.03 Water Bodies and Wetlands

These clauses recognise the need for the protection and, where appropriate, conservation of ecological systems and the biodiversity they support. This includes the protection of coastal areas, emphasising the need to ensure development responds to the character of coastal settlement and improving the health of Port Phillip Bay by way of, amongst other things, focusing development in areas already developed or that can tolerate more intensive use and improve the quality of stormwater entering waterways.

Clause 12.05 Significant Environments and Landscapes

Clause 12.05-2S Landscapes

This clause aims to protect and enhance significant landscapes and open spaces that contribute to character, identity and sustainable environments. Strategies include:

- Ensure significant landscape areas such as forests, the bays and coastlines are protected.
- Ensure development does not detract from the natural qualities of significant landscape areas.
- Improve the landscape qualities, open space linkages and environmental performance in significant landscapes and open spaces, including green wedges, conservation areas and non-urban areas.
- Recognise the natural landscape for its aesthetic value and as a fully functioning system.
- Ensure important natural features are protected and enhanced.

Clause 13 – Environmental Risks and Amenity

This clause seeks to identify and manage risks in planning decisions and strategies based on environmental changes to avoid or minimise the potential for environmental degradation/hazard, including climate change, and amenity conflicts. Relevant risks applicable include coastal inundation and erosion, landslip, adverse noise, land use compatibility and bushfire mitigation. How a proposal responds to these immediate risks is critical in demonstrating its suitability especially within in this application due to the sensitive land uses present and the diversity of valued landscapes present.

Clause 13.02-1S Bushfire Planning

This policy must be applied to all planning and decision making under the *Planning and Environment Act 1987* relating to land that is:

- Within a designated bushfire prone area; or
- Proposed to be used or developed in a way that may create a bushfire hazard.

In a bushfire prone area designated in accordance with regulations made under the Building Act 1993, bushfire risk should be considered when assessing planning applications for Accommodation.

Strategies give priority to the protection of human life by:

- Prioritising the protection of human life over all other policy considerations.
- Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.
- Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process.

Other specific directions under this clause relating to settlement planning are:

- Directing population growth and development to low risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metre under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).
- Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.
- Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reducing bushfire risk overall.
- Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behaviour it will produce at a landscape, settlement, local, neighbourhood and site scale, including the potential for neighbourhood-scale destruction.
- Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.

Clause 13.03-1S Floodplain Management

This clause aims to assist the protection of life, property and community infrastructure from floor hazard and floodplain areas of environmental significance. Strategies seek to avoid intensifying the impact of flooding through inappropriately located use and development.

Clause 13.05-1S Noise Abatement

This clause aims to assist the control of noise effects on sensitive land uses and requires consideration of the noise requirements in accordance with the Environment Protection Regulations under the *Environment Protection Act* 2017.

Clause 13.07-1S Land use compatibility

This clause aims to protect community amenity, human health and safety while facilitating appropriate commercial, industrial, infrastructure or other uses with potential adverse off-site impacts.

Strategies include:

- Ensure that use or development of land is compatible with adjoining and nearby land uses.
- Avoid locating incompatible uses in areas that may be impacted by adverse off-site impacts from commercial, industrial and other uses.
- Avoid or otherwise minimise adverse off-site impacts from commercial, industrial and other uses through land use separation, siting, building design and operational measures.
- Protect existing commercial, industrial and other uses from encroachment by use or development that would compromise the ability of those uses to function safely and effectively.

Clause 15 – Built Environment

This clause aims to achieve high quality urban design outcomes responsive to context by way of location, character, cultural identity, natural features, surrounding landscape and climate. It emphasises that development should contribute positively to is surroundings and that a key consideration of this, amongst others, is that any detrimental impacts incurred by neighbouring properties, the public realm and natural environment as a consequence of development should be minimised. Notably the retention of existing vegetation is also encouraged, alongside the provision of site responsive landscaping. A strategy sis to ensure development is designed to protect and enhance valued landmarks, views and vistas.

Furthermore, safe access and egress for pedestrians, cyclists and vehicles is pertinent with regards to this application given the multiple points of access to the subject site and the extensive internal road network proposed.

Clause 15.01-6S aims to ensure development respects valued areas of rural character through the following strategies:

- Ensure that the siting, scale and appearance of development protects and enhances rural character.
- Protect the visual amenity of valued rural landscapes and character areas along township approaches and sensitive tourist routes by ensuring new development is sympathetically located.
- Site and design development to minimise visual impacts on surrounding natural scenery and landscape features including ridgelines, hill tops, waterways, lakes and wetlands.

Clause 15.03-1S and Clause 15.03-1L-01 relate to heritage. Importantly, not only is the conservation of heritage places recognised but so too their enhancement. Any such new development to occur within these heritage places must respect the established form of their significance. Similarly, Aboriginal cultural heritage is also acknowledged specific to the protection and conservation of places of such significance.

Clause 16 – Housing

This clause seeks to provide for diverse housing options that suit the wide scope of varying needs required by the community. Housing for older people is specifically contemplated, including aged care facilities. Such facilities are recognised to be appropriate within residential areas and significantly, are expected to have a different built form outcome to that of a dwelling. However, whilst it isn't expected that aged care facilities duplicate the

scale and form of more common residential development it must still have some regard to the subject site and its context.

The integration of housing with services and infrastructure is also highlighted in order to suitably cater for the needs to residents in new housing developments. The co-location of such uses enables an improved level of access to transport, employment and retail opportunities.

Clause 17 – Economic Development

This clause looks to enable each region in building on its economic potential by providing land, facilitating decision and resolving land use conflicts. Such decisions include those that have implications on a variety of employment sectors, such as health related services and more specifically aged care and retirement living.

Clause 18 – Transport

This clause encourages planning decisions that integrate into or provide for a transport network enabling access to a variety of social and economic opportunities. This includes the provision of sustainable personal transport such as safe walking and cycling connections. Amongst other things, Clause 18 also recognises the need to expand and upgrade road networks to provide for ongoing development in outer suburbs and that such developments supply adequate car parking supply. The provision of sufficient car parking is further emphasised by way of minimising residential amenity impacts which would be undermined as a consequence of excessive on-street car parking.

Clause 19 – Infrastructure

This clause aims to ensure that communities are provided with suitable social and physical infrastructure to meet its individual needs. Such infrastructure should be facilitated on the basis of demographic trends, the existing and future demand requirements and the integration of services into communities with specific regard to health-related services, of which aged care is recognised.

This policy also emphasises the need to adequately cater for staff and visitors when it comes to car parking.

VICTORIAN CIVIL AND ADMINISTRATIVE TRIBUNAL

PLANNING AND ENVIRONMENT LIST

VCAT REFERENCE NO. P1362/2020
PERMIT APPLICATION NO. P19/2453

CATCHWORDS

Special Use Zone – Land outside Urban Growth Boundary – Proposed aged care and retirement facility – "In association with" Place of worship – Heritage mansion and grounds – Built form – Impacts on local and broader traffic network – Interface with Kunyung Primary School – Ecological and landscape values

APPLICANT	Ryman Healthcare (Australia) Pty Ltd
RESPONSIBLE AUTHORITY	Mornington Peninsula Shire Council
REFERRAL AUTHORITIES	Department of Environment, Land, Water and Planning
RESPONDENTS	National Trust of Australia (Victoria), David Anthony Quinn, Genevieve Adams, Elizabeth Sheffield & Others, Ian David Morrison & Others, Leanne Ennis, Frank Mangan, Klaus C Albert, Save Sir Reg's Wedge Inc, Daan Spijer, Sally Trewenack, Leigh Eustace, David Morris MP, South Eastern Centre for Sustainability Inc, Rosemary West OAM, Green Wedges Guardians Alliance Inc (Green Wedges Coalition)
SUBJECT LAND	60-70 Kunyung Road MOUNT ELIZA VIC 3930
HEARING TYPE	Hearing
DATES OF HEARING	15, 16, 17, 18, 19, 30 and 31 March, 1, 6-9 April and 3, 4 and 6 May 2021
DATE OF ORDER	1 July 2021
CITATION	Ryman Healthcare (Australia) Pty Ltd v Mornington Peninsula SC [2021] VCAT 711

ORDER

Substitution of amended plans

1 Pursuant to clause 64 of Schedule 1 of the *Victorian Civil & Administrative Tribunal Act 1998*, the permit application is amended by substituting for the permit application plans, the following plans filed with the Tribunal:

Drawing numbers (incl. revisions and dates):	• DA00-DA70, VCAT Issue, (Rev. A) January 2021

Determination of proceeding

2 In Application P1362/2020 the decision of the responsible authority is affirmed.

3 In permit application No. P19/2453 no permit is granted.

Dalia Cook
Presiding Member

Rebecca Cameron
Member

APPEARANCES

For applicant	Mr Christopher Townshend QC with Ms Jane Sharp of Counsel instructed by Minter Ellison Solicitors. They called expert evidence from:

- Ms Amanda Ring, Town Planner, SJB Planning
- Mr Chris White, Engineer, Adams Consulting
- Ms Catherine Wells, Retirement and Aged Care Consultant, O'Hara Wells Pty Ltd
- Mr Jim Gard'nr, Architect and Heritage Consultant, gjm heritage
- Mr Bernard McNamara, Town Planner, bmda Development Advisory
- Mr Aaron Organ, Ecologist, Ecology and Heritage Partners
- Mr Simon Howe, Arborist and Landscape Heritage Consultant, Tree Department Pty Ltd
- Mr Darren Atkinson, Landscape Architect, Urbis
- Mr Stephen Hunt, Traffic Engineer, Ratio Consultants
- Mr Daniel Flood, Photomontage Developer, Flood Slicer
- Mr Mark Sheppard, Urban Designer, Kinetica

For responsible authority	Mr Barnaby Chessell of Counsel instructed by Marcus Lane Group. He called expert evidence from: • Mr Robert McGauran, Architect and Urban Designer, MGS • Ms Natica Schmeder, Architectural Historian and Buildings Conservator, Landmark Heritage Pty Ltd • Dr Christina Dyson, Landscape Heritage Specialist, Context • Mr John-Paul Maina, Traffic Engineer, Impact
For Department of Environment, Land, Water and Planning	No appearance
For respondents	Mr Daniel Epstein of Counsel with Mr Daan Spijer, Solicitor for Save Sir Reg's Wedge Inc. They called Dr Jeff Yugovic, Ecologist, Jeff Yugovic Consulting, to give expert evidence. Mr David Quinn, Ms Genevieve Adams, Ms Pamela King, Ms Elizabeth Sheffield, Mr John Karakitsos, Mr Greg Hooper, Ms Leanne Ennis, Mr Frank Mangan, Mr Klaus Albert, Mr Leigh Eustace, Ms Judy Walsh, Mr David Morris MP and Ms Rosemary West made submissions to the Tribunal while numerous other objectors observed the hearing.

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INFORMATION

Description of proposal	Residential aged care facility and retirement village in association with a place of worship The application proposes to restore core parts of the Moondah Mansion and to extend it for adaptive reuse. A total of seven buildings are proposed, including 82 residential aged care rooms, 48 assisted living suites and 181 independent living units. A stand alone single storey place of worship would be developed in a central location. Communal facilities would include a bowling green, swimming pool, activities area, beauty salon, café and lounge. A total of 357 car parking spaces would be distributed across the land in a combination of basement and at grade bays.
Nature of proceeding	Application under section 77 of the *Planning and Environment Act 1987* – to review the refusal to grant a permit.
Planning scheme	Mornington Peninsula Planning Scheme
Zone and overlays	Special Use Zone (Schedule 2) Heritage Overlay (Schedule 110 and Schedule 111 over part)

Permit requirements	Use of the land for a Residential Aged Care Facility and Retirement Village - Clause 37.01-1 Construction of a building or construction or carrying out works – Clause 37.01-4 Demolition and alteration of heritage buildings, construction of buildings and works, display of signage and tree removal - Clause 43.01-1 Reduction in car parking spaces (for Place of Worship) – Clause 52.06-3 Removal, destruction or lopping native vegetation – Clause 52.17-1 Construction and display of signage - Clause 52.05-13.
Key scheme policies and provisions	Clauses 11, 12, 13, 15, 16, 17, 18, 19, 21 (Municipal Strategic Statement), 22.04 (Heritage Places and Abutting Land), 22.05 (Aboriginal Cultural Heritage), 22.10 (Advertising Signs), 22.11 (Mornington Peninsula Fire Protection) and Clause 65.
Land description	The land is the site of a former grand bayside mansion estate of approximately 8.9 hectares. The Moondah mansion and some of its outbuildings have local heritage value, with the state significant Moondah gatehouse at the entry to the property. The land contains a large number of established trees and other vegetation, including open lawns. It also hosts significant native vegetation in the mostly undeveloped portion of the site which slopes steeply towards Moondah beach. Title to the land extends to part of the foreshore, with stormwater draining from the property to a concrete outlet on the beach.

Tribunal inspection	The Tribunal conducted an accompanied inspection of the subject land and an unaccompanied inspection of external areas of Kunyung Primary School on the second day of the hearing. In addition, it conducted an unaccompanied inspection of the subject land and its broader setting, including residential properties and vantage points nominated by parties as well as the local road network between the latter parts of the hearing.

REASONS[1]

INTRODUCTION:

1 Moondah Estate is a large and gracious seaside mansion property overlooking Moondah Beach. It was developed as a holiday home and later used for a residential hotel, then adapted and extended for the Mount Eliza Business School. It is currently vacant.

2 More recently, the land was purchased by Ryman Healthcare (Australia) Pty Ltd (Ryman), an experienced aged care provider with New Zealand origins. Ryman proposes to redevelop the land including restoration of part of the Moondah mansion for use as a residential aged care facility and retirement village in association with a place of worship.

3 Important aspects of the land's context is its location immediately outside the Urban Growth Boundary (UGB) with Green Wedge land to one side, as well as its adjacency to the Kunyung Primary School within a broader bayside residential setting.

4 These unique characteristics contributed to strong opposition by a number of local residents to the character, scale and intensity of the proposal.

5 Mornington Peninsula Shire Council (Council) determined to refuse to grant a permit for reasons including, in summary:

- lack of compliance with planning policy since the proposed design, scale and vegetation loss is inconsistent with the context of the site, its interfaces and surrounding character;
- the proposal would detrimentally affect coastal character and the visual and scenic qualities of the coastline;
- there would be an unacceptable loss of habitat;
- the proposal would adversely affect the significance of the heritage place;
- the proposed pedestrian network is inadequate and on site car parking has not been suitably addressed. The proposed uses also may also necessitate mitigating works to the surrounding road network; and
- the proposal would result in significant social effects[2].

6 Ryman sought review of this decision. It emphasised the Special Use zoning of the land, the lack of overlay controls (other than heritage) and the site specific exemption from the core Green Wedge planning provisions of the Mornington Peninsula Planning Scheme (planning scheme).

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[1] The submissions and evidence of the parties, any supporting exhibits given at the hearing, and the statements of grounds filed have all been considered in the determination of the proceeding. In accordance with the practice of the Tribunal, not all of this material will be cited or referred to in these reasons.

[2] By reference to section 60(f) of the *Planning and Environment Act 1987*.

7 Ryman sought to demonstrate the amended proposal represented a suitable response to planning policy and the land's context since it would respect landscape and coastal character, would not create unreasonable visual impacts (from public vantage points in particular) and would significantly enhance the heritage values of the Moondah mansion as part of its adaptive reuse.

Key considerations

8 It is clear that this land provides a spectacular setting for a future use, particularly for aged care. The suite of uses proposed have the capacity to generate significant community benefit from this strategic site.

9 The restoration and adaptive reuse of the Moondah mansion is highly desirable as part of any future redevelopment.

10 However, the suitability of the development also needs to be carefully considered in light of the notable open and vegetated qualities of this land, particularly in light of its strategic designation in the planning scheme. This raises complex considerations for our determination, reflected in divergent expert evidence and submissions.

11 Central issues include:

- Can planning permission be granted for the proposed uses?
- Is the proposed use and development consistent with key policy directions?
- Does the proposal respond appropriately to the heritage values of the site?
- Has built form been appropriately configured and designed to respond to site features including its interfaces?
- Does the proposal respect the landscape and ecological values of the site?
- Could infrastructure including parking and traffic impacts be managed suitably?
- How should net community benefit be evaluated in this case?

12 Ultimately, we are called upon to balance competing policy objectives in the planning scheme to achieve net community benefit and sustainable development.[3]

Summary of conclusions

13 We conclude that the proposed uses are lawful. On the basis of the application material and evidence, we find that the use of the land for both the residential aged care facility and retirement village would be in

[3] Clause 71.02-3.

association with the proposed place of worship, meeting the requirements of Schedule 2 to the Special Use Zone (SUZ2).

14 Likewise, notwithstanding the location of the land outside the UGB, we conclude there is scope for the specific non-urban uses proposed for this land by virtue of the Special Use Zone controls and corresponding exemption from the core Green Wedge planning provisions. The land also has an important history of institutional use which is supported by the current planning controls.

15 The proposal would positively facilitate the reuse of a heritage property, with consequential improvements to the condition of key heritage fabric. On balance, we consider the applicant has provided suitable justification for the demolition of some primary and contributory heritage fabric. We would also support a number of new additions as suitably respectful of the key heritage values of the site, including the addition of new wings to the mansion building.

16 However, we consider that the siting and scale of two proposed buildings would unreasonably detract from heritage values of the site and from the open landscape setting that reinforces the mansion as a key local landmark.

17 Although the uses would have the potential to result in community benefit, we consider that priority needs to be given to these site specific policy directions over more general policy directions such as those favouring increased provision of housing and health facilities including aged care services. This is especially the case where the land is not in a preferred location for such services.

18 There are opportunities for this site to be developed for the proposed uses in a more intensive format than existing. However, we are not persuaded that the configuration and consistent 3-4 storey scale of buildings proposed is suitably site responsive, especially on parts of the land with a currently open character.

19 We also consider Ryman has downplayed the impacts of the effects on this bayside estate in its entirety by seeking to place much higher emphasis on parts of the development visible from the public realm.

20 Overall, we find that the application has given disproportionate reliance to the zone controls without sufficient recognition and respect for the location of the land outside the UGB and outside a designated township. Although the exemption from the core Green Wedge provisions facilitates a broader range of institutional uses on this site, there is a need for sensitive site layout and building design to achieve other key policies for this land.

21 We find that the particular configuration and siting of the proposed campus of buildings across the site would not suitably achieve central policy directions for the land, which include the protection of the inter-urban break between Mount Eliza and Mornington and sensitive interface conditions to the Green Wedge Zone.

22 An integrated approach to redesign would need to be taken to site configuration together with building scale or design in light of policy objectives to achieve an acceptable outcome for this land.

LAWFULNESS OF THE PROPOSED USE[4]

Is the proposed use of the land permissible under the zone controls?

23 Phrasing the question of law positively, the question is whether the uses of land proposed in the amended application namely, a residential aged care facility and retirement village, are permissible under applicable planning controls.[5]

24 The answer depends on whether the conditions in the relevant table of uses in the zone controls would be met. It also involves a question of mixed fact as to whether the proposal, properly characterised, includes a place of worship.

25 The subject land is included in the SUZ2 which is expressed to apply to Private Sportsgrounds, Religious, Health and Educational Establishments.[6] The purpose of the schedule is to "recognise strategic sites that contain recreational, religious, health or educational facilities that performs (sic) a significant community function".

26 Much was said by parties about the history of this zoning, but we do not find any aspect determinative since we are obliged to apply the planning scheme provisions as we find them at the date of our decision. Put simply, it appears that at least one of these facilities existed on each SUZ2 parcel of land at the time the new format planning scheme was introduced, and it was considered no other zone would provide a suitable fit. The subject land hosted an educational facility at that point in time.

27 Residential aged care is defined in Clause 74 of the planning scheme as:

> Land used to provide accommodation and personal or nursing care for the aged. It may include recreational, health or laundry facilities and services for residents of the facility.

It is clear to us that the aged care facility proposed in this application would meet this definition, noting also that it proposes a wide range of recreational and health services for residents.

28 Retirement village is defined as:

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4 The parties identified a question of law in the lead up to the hearing. The Tribunal made directions at the conclusion of a compulsory conference for written submissions to be circulated on this question. Leave was granted by the Tribunal for confined additional submissions and evidence to be led on this issue at the hearing.

5 Member Cook has determined this question of law as a legal practitioner.

6 This zoning was applied in 1999.

> Land used to provide permanent accommodation for retired people or the aged and may include communal recreational or medical facilities for residents of the village.

Given the integrated nature of the uses and facilities proposed, substantial communal recreational and medical (health) facilities would be provided for residents with a broad range of levels of care.

29 The table of uses at Clause 1.0 provides that the following are section 2 (permit required) uses:

Residential aged care facility	Must be used in association with an Education centre, Minor sports and recreation facility or Place of worship.
Residential building	Must be used in association with an Education centre, Minor sports and recreation facility or Place of worship.
Retirement village	Must be used in association with a Place of worship.

30 Therefore, a permit may be granted for a residential aged care facility provided that the condition is met; requiring it to be "used in association with an Education centre, Minor sports and recreation facility or Place of worship". A more confined condition applies to the use of land for a retirement village, which must be used "in association with a Place of worship".[7]

31 The term "in association with" is not defined in the planning scheme. This permit application relies on demonstrating an association with the use of land for a proposed place of worship, which is intended to operate from a dedicated new building.

Party positions

32 The applicant submitted that the requirements within the table of uses would be met and could further be secured through a condition of a permit, if granted.

33 Mr Townshend QC and Ms Sharp submitted for Ryman that "the term *in association with* does not require one or other use to be a dominant or ancillary use; rather, an association is required between the two". They further submitted that even if one use is dominant, this does not disqualify a relationship of association between the two uses.

34 Applying the ordinary meaning of the term "in association with", they considered that the residential aged care facility and retirement village must be "joined, combined or connected with the Place of worship".

[7] This wording is the outcome of Amendment C254 approved in October 2019 which reinstated the use of Residential aged care facility as a section 2, permit required use (noting that such use had inadvertently become prohibited after earlier changes to the 'nesting' provisions of the VPPs).

35 Ryman suggested this connection would arise on account of these uses being part of the same permit application for a singular site by the same applicant and manager. It also emphasised their functional and practical connection since the place of worship would serve the community of the residential aged care facility and retirement village (in addition to being open to the general public by invitation).

36 Ryman's experts also confirmed that the place of worship had been shifted to a central location in the amended plans and would now be physically well integrated with key parts of the facility, including the reception and communal facilities.

37 Council generally accepted that the amended proposal would meet the requirement for both uses to be "in association with a Place of worship". Notwithstanding, it suggested that the primacy of the aged care/retirement uses on the land should inform an assessment of appropriate scale and intensity of redevelopment in the exercise of the Tribunal's discretion to grant a permit.

38 Since the place of worship was designed principally to service residents of the proposed uses (as opposed to members of the general public) and to provide pastoral care, Council suggested it should be characterised as ancillary to those two uses. It considered that the nature and extent of the association would depend on its operation in practice, and suggested Ryman should demonstrate the place of worship was "more than a device to legitimise what would otherwise be a prohibited planning proposal".

39 Ryman distinguished cases referenced by Council[8] on the basis that they concerned the term "in conjunction with", being a defined provision with different terminology. I accept this analysis.

40 By contrast, a number of objectors submitted that the uses of the land proposed would not meet the mandatory condition in the zone controls and would be prohibited as a result. They expressed concern that the proposal was using a "loophole" to establish an aged care facility as the primary use of the land. Mr Spijer and Mr Mangan outlined objectors' key points on the question of law that:

- the primary use of the land must be as a place of worship to meet the implied requirement of the condition – i.e. the use of the land for a residential aged care facility and retirement village must be in association with the place of worship, rather than the other way around;
- the proposed use of the land as a place of worship would be minor and insufficient;

[8] Such as *Jinalec v Mornington Peninsula Shire Council* [2007] VCAT 1238.

- alternatively, if the place of worship would be an ancillary use to the proposed uses, it must already exist on the land (for reasons including the wording of the purpose to the zone schedule);
- the proposed use of the building identified cannot properly be characterised as a place of worship as this term is defined in the planning scheme; and
- the proposed use would not be consistent with the purpose of the schedule to the zone since the use of the land for a place of worship would not "perform a significant community function" i.e. to the wider community.

41 We distinguish the decisions referred to by Mr Spijer in submissions for a number of reasons. For the most part, in these examples, this term was imposed in permit conditions by the responsible authority or the Tribunal rather than stemming from a planning scheme requirement as it does in this case. We are also not persuaded that it was integral to the Tribunal's reasoning in those cases that for a use to be "in association with" another use, it necessarily had to be ancillary.

42 Ryman disputed the objectors' interpretation of the requirement. It also submitted that the proposed use of the land for a place of worship, residential aged care facility and retirement village would "sit comfortably" within the purpose of the schedule to the zone.

Tribunal findings

43 It is critical that the term "in association with" is not defined in the planning scheme. Therefore, it must be given its ordinary meaning in line with accepted principles of statutory interpretation.[9]

44 This must be distinguished from the term "in conjunction with" – a term used in the Green Wedge Zone for example and which is the subject of a specific provision (below) requiring a sufficiency of connection, being the subject of extensive case law.

> **64.02** **LAND USED IN CONJUNCTION WITH ANOTHER USE**
> 28/03/2018 VC145
> If a provision of this scheme provides that a use of land must be used 'in conjunction with' another use of the land:
> - there must be an essential association between the two uses; and
> - the use must have a genuine, close and continuing functional relationship in its operation with the other use.

45 The Macquarie Dictionary online provides a relevant meaning for the term "association" as "connection or combination". The Oxford dictionary online includes a relevant meaning as "the action of conjoining or uniting one person or thing with another".

[9] For example, *Australian Education Union v Dept of Education and Children's Services* [2012] HCA 3:(2012) 285 ALR 27; SGRC *Pty Ltd v Melbourne CC & Ors* [2014] VSC238; *Hartel & Ors v Macedon Ranges SC & Ors* [2014] VSC 215.

46 It is also highly relevant that an integrated facility is proposed encompassing all uses. Considering the application material as a whole, I find there would be multiple types of association between the use of the land for a place of worship and the proposed uses of residential aged care and retirement village. Key associations would include:

- the principal function of the place of worship would be to serve the religious needs of residents of the facility and their guests;
- operational relationships would be created between the place of worship and the aged care uses, including pastoral and spiritual care; and
- there would be a clear physical integration between the uses, with the place of worship uniquely designed and centrally located on the site proximate to key communal facilities.

47 As a matter of timing, the staging plan demonstrates that the place of worship would be constructed early in the development of the facility as a whole.

48 Although some objectors doubted the genuineness of the proposal or whether a place of worship would have been provided in the redevelopment scheme absent a planning scheme requirement, I note that it is not uncommon for this particular operator to facilitate such use as part of its aged care facilities in both Australia and New Zealand.

49 The planning scheme as drafted requires the uses of land to be "in association with" a place of worship. It would not be appropriate for the Tribunal to read in a requirement for minimum sufficiency of this association, especially where it is not a defined term. One exception may be if the association is illusory (and therefore not validly established), which I do not find is the case here.

50 I would not put it so high as to suggest the place of worship will be the primary use of the land, but I find this is not required to meet the condition for permitted uses. I contrast this with conditions in other zone controls that require one use to be ancillary to the other or in conjunction with another.

51 In practise, given the scale and nature of modern aged care and retirement facilities, it would be unusual to contemplate a situation where a place of worship could readily be characterised as the dominant use of land, especially where a private operator is involved (as distinct from a religious or governmental organisation which may have a different imprimatur). This is consistent with the provisions of planning schemes focusing on the conduct of uses irrespective of the nature of the operator and the reference in this zone schedule to "private" establishments.

52 It is also relevant to consider the purpose of the schedule in evaluating whether there will be an association between the proposed uses. I am satisfied there is a clear capacity for religious, recreational and health

facilities to be established on this strategic site through the combination of uses proposed (including the place of worship) that would provide a significant community function.

53 There was debate at the hearing as to whether the facilities performing a significant community function needed to already exist on the land (as submitted by the objectors) or whether new facilities could be contemplated.

54 I am unable to accept the objectors' submission that a place of worship must already exist on the land for the other uses to be permissible, or that this is a necessary implication from the drafting of the purpose to the zone schedule.

55 While I accept that the purpose of the SUZ2 was principally crafted to reflect existing uses on these sites, it is inherent in the operation of the controls in the schedule that new facilities *can* be contemplated for approval on this land. This proposal falls into such a category – while originally recognised for the former educational facility on the land, its future use for a significant community function cannot realistically be frozen in time to only that category of use. This is borne out by the objectives of planning in Victoria to provide for the fair, orderly, economic and sustainable use and development of land, to secure a pleasant, efficient and safe living and recreational environment as well as to balance the present and future interests of all Victorians.[10]

56 For completeness, I note submissions by some objectors that they were informed there was a restrictive covenant applying to the land that would constrain its use to education, religion, religious-based aged care or primary production. However, parties were unable to provide evidence of such a restrictive covenant either historically or currently attaching to the title. On this basis, I am unable to place any weight on expectations that may have arisen upon the sale of this land to its current owner.

Does the application include a place of worship?

57 Place of worship is defined in Clause 74 of the planning scheme as:

> Land used for religious activities, such as a church, chapel, mosque, synagogue, and temple.

This land use is included in the land use category Place of assembly.

58 Objectors submitted that the proposed use of the building identified as the place of worship would not meet this planning scheme definition. At best, they suggested it would meet the definition of a place of assembly (providing cultural activities, entertainment and meetings) but would fall short of having a real and substantial purpose as a place of worship.

[10] Per section 4 of the *Planning and Environment Act 1987*.

59 For example, Mr Mangan referred to the terminology used in the application material and submitted that "the proposed facility does not, in my submission, present as a church building, is not operated by a church organisation, is unlikely to have regular services comparable with those mentioned above and is not accessible to the public". In his view:

> The applicant cannot give any reasonable assurance that the building will be primarily used for religious activities. In fact, no assurance can be given for such activity at all. Once the development is built it will be the residents of the village who will vote with their feet and determine together with management the actual use of the building…
>
> It is in fact not a church but a facility that is ancillary to the retirement village, where the retirement village community can undertake communal activities that may well, and rightly so include religious activities, but are also likely to include social meetings, celebrations, cultural and recreational activities and the like... The facility is in this respect no different from the bowling green provided for the village residents.

60 The amended application proposes a contemporary building with a flexible layout to be used as a place of worship for multi-faith use. The draft Place of Worship Operational Management Plan provides that it would have a maximum capacity of 120 people, be open each day between 9am and 5pm for residents and visitors. Access to the general public would be at management's discretion.[11] It has been designed in a way that could facilitate its use for conventional services, religious study or related activities as well as use for special events such as weddings, funerals, baptisms and the like.

61 The draft Operational Management Plan includes the following description of the proposed use (noting that the use of the land for a place of worship is as-of-right in the SUZ2):

> The Village includes a formal building which is flexible enough to meet multi faith needs but also adaptable where possible to meet the needs for specific religious services. Incoming residents will be consulted as to their needs and the Village will work to achieve outcomes that suit residents on an occasional or more regular basis depending on demand and availability of religious leaders. Consultation will also occur directly with religious organisations to provide services within the Village including virtual attendances where appropriate...
>
> Weekly services will be conducted by various religious organisations and will be organised for residents by village staff. Capacity, room configuration and service type will be coordinated based on worship and resident requirements. A minimum of two (2) services including a Sunday service and a mid-week service, and one(1) study group will be conducted each week. Additional services will be organised based

[11] Included in Appendix B to the updated expert traffic report.

on demand. Village residents may also organise services and study groups with their select denomination as well as individual blessings. Residents may also use the PoW for individual or group prayers sessions. All denominations will be welcomed within the PoW for all services and, over time it is anticipated that the PoW will accommodate a range of religious denominations accordingly to community demand.

62 Ryman submitted that the real and substantial purpose of the building would be for use for religious activities and would therefore meet the characterisation of a place of worship as evidenced by:

- Its siting, design and layout;
- Its dedicated purpose to be used for religious activities for members of varying faiths;
- The design, externally and internally, for community and congregational gatherings;
- The architectural plans show that it will be identifiable, externally and internally, as a place of worship;
- The management proposal and pertinent operational conditions;
- The separate cost dedicated to the place of worship building is substantial (at an estimated cost of $2,500,000);
- Whether or not the place of worship is confined to residents of the residential aged care facility and the retirement village or the broader community does not change its proper categorisation; and
- The categorisation of the use focuses on the use, and the activities constituting the use, and not on the occupiers or licencees (sic) and therefore the identity of the users or the religion they practice does not define whether the land is, in fact, a place of worship.

63 On the whole, I find this element of the application demonstrates a sufficient intention for the real and substantial use of the proposed building to operate as a proposed place of worship, centering around religious activities.

64 It is premature to expect all operational details for this place of worship to be pre-determined. Some flexibility is appropriate to cater for the ongoing religious needs and preferences of the residential community to be established on the land.

65 Likewise, there is no requirement that the place of worship be open to all members of the general public under the provisions of the planning scheme. The fact it is principally intended to serve the extensive community that would reside within the facility and their guests is sufficient.

66 The parameters for the use of this building could be secured through a permit condition for an Operational Management Plan as an ongoing requirement, even potentially to require a record of usage to be kept to confirm its primary use for religious purposes. Notwithstanding the fact the place of worship is itself an as-of-right (no permit required) use, I consider there may a sufficient nexus in this application to justify such a condition being applied.

67 Similarly, the applicant proposes a condition requiring the use of the land to be in association with the place of worship. This is essentially confirmation of the schedule requirement in the permit itself.

68 Some objectors considered that the use of the building for a place of worship would preclude its use for activities such as choir practice or Probus, Rotary and Lions Club meetings or similar (as suggested by Ryman).

69 I appreciate objectors' concerns there is potential for the building to be used for other purposes, not just religious purposes. In reality, it is not uncommon for places of worship to be used for functions and activities for the community they serve, such as a bridge club, performances or talks. So long as their real and substantial purpose remains the use of the land for religious activities, other ancillary uses will be permissible.

70 For the reasons above, I find that the grant of a permit for both the use of the land for residential aged care and a retirement village would be lawful in association with the proposed place of worship.

RESPONSE TO PLANNING POLICY AND CONTROLS

What are key policy aspirations of relevance?

71 We turn now to policies relevant to the exercise of the Tribunal's discretion as to whether the proposal is acceptable and warrants a planning permit in the context of its physical setting.

72 The parties took very different approaches to answering this question. Both Council and the applicant submitted that the other had misconstrued the provisions of the planning scheme in its application to this land. The objectors' position was substantially aligned with Council.

Policies outlined in the State Planning Policy Framework (SPPF) and Local Planning Policy Framework (LPPF)

73 Council and many objectors emphasised the significance of the land being outside the UGB and the Mt Eliza township. They pointed out that irrespective of its Special Use zoning, the land has the status of 'green wedge land' for the purpose of Part 3AA of the *Planning and Environment Act 1987* and its designation outside the UGB could only be varied by Parliament.

74 In our view, settlement policies in Clause 11 of the planning scheme are particularly pertinent to this land. A key strategy in Clause 11.01-1S is "to maintain a permanent urban growth boundary around Melbourne to create a more consolidated, sustainable city and protect the values of non-urban land". Clause 11.01-1R seeks to "protect green wedge land from inappropriate development".

75 Other key policy themes relating to this application as summarised in submissions and evidence for the parties relate to:

- a desire to protect and enhance environmental values including coastal landscapes (including in Clause 21.08). One strategy to protect and enhance natural ecosystems and landscapes is to contain development in coastal locations to existing settlements, specifically avoiding further linear development along the coast;
- a strong emphasis on preserving neighbourhood character, noting that the municipality forms part of a distinctive area of state significance as recognised in Clause 11.05-2;
- the need to protect, maintain and reasonably adapt heritage assets;
- providing housing and specialised facilities for a growing and ageing population; and
- addressing infrastructure demands of new development in a sustainable way.

76 The Municipal Strategic Statement addresses settlement planning at a more fine grain level. From our perspective, a central policy issue is the critical role to be played by inter-urban breaks between townships.

77 A central consideration in our decision making is the observation in Clause 21.02 that "[the] settlement pattern and the relationship between the townships, the coast and the rural landscape contribute to the Peninsula's distinctive "sense of place". We consider this statement also summarises what is most distinctive and valued about this particular estate in its physical context.

78 Clause 21.04 provides a Strategic Framework Plan for the municipality and identifies major strategic directions which include reinforcing the hierarchy of towns and villages and defining township growth boundaries as a means of focusing future development in the major towns. It also seeks to recognise and protect strategic landscape areas between and around townships, due to their strong influence on the Peninsula's sense of place.

79 Clause 21.06 seeks to carefully manage demand for housing, to be integrated with the achievement of other major planning objectives including conservation and recreation. It identifies that:

> It is necessary to distribute future population growth in support of major township development, rather than allowing ad hoc expansion or dispersed population growth throughout the Peninsula's rural area.

This requires clear definition of growth areas and township boundaries, including the "green break" between the Peninsula and metropolitan Melbourne.

80 A relevant objective is to establish an integrated land use pattern recognising the regional role and character of the Peninsula and to ensure urban development does not prejudice environmental, recreational or agricultural values. Pertinent strategies in Clause 21.06 include:

- Define clear and stable township boundaries which:
  - Maintain a clear separation or "green break" between metropolitan Melbourne and the Peninsula.
  - Reinforce the clear separation between Mt Eliza and Mornington.
  - Recognise the character and 'sense of place' of individual towns, including the relationship between towns, coastal areas and the rural hinterland.
  - Avoid the extension of urban development into areas of high agricultural and landscape value.
  - Protect areas of conservation, environmental and recreational value.
  - Recognise the constraints on development in areas that…may be subject to environmental threats (such as flooding or bush fire risk). [Tribunal emphasis].
- Maintain the existing transition area of lower density residential development in Mt Eliza and the inter-urban break with Mornington, having regard to its particular environmental, landscape, township character and heritage values.

Other key policies

81 Policy 2.1.1, Outcome 4 and Direction 4.5 of Plan Melbourne 2017-2050 emphasise the need to strengthen protection and management of green wedge land as well as protecting valued attributes of distinctive areas and landscapes.

82 In addition, the *Marine and Coastal Policy, March 2020*[12] relevantly seeks to:

- manage coastal cultural heritage sites and encourage their adaptive reuse in a way that "maintains their values and character and enhances their contribution to community activities, coastal tourism and sense of place";
- maintain non-urban breaks between coastal settlements to preserve the character of the coastline and coastal settlements. A key policy seeks

[12] A policy pursuant to the *Marine and Coastal Act 2018* and identified for consideration under various state planning policies in the planning scheme.

to "avoid linear urban sprawl along the coast and within rural landscapes"; and

- encourage excellence in the siting and design of buildings in the coastal environment that is "sympathetic to the landscape context and minimises impacts on the environment".

83 More detailed design guidelines are provided in the *Siting and design guidelines for structures on the Victorian Coast, May 2020*. One element calls for consideration of the distinctive environmental, social and cultural features that contribute to the sense of place.

84 Council referenced the *Mornington Peninsula Localised Planning Statement*, *Victorian Government, 2014*.[13] This is one of the most detailed policy documents for the achievement of state and local policies relating to strategic planning, especially for land outside the UGB. Relevant strategies include:

> Protecting coastal areas for their special recreational, community and conservation values.
>
> The Mornington Peninsula will not accommodate major population growth and the existing Urban Growth Boundary and Green Wedge rural area will be maintained.
>
> Urban development, including residential and low density residential development in whatever form, will be limited to areas within the Urban Growth Boundary…
>
> The character and functions of the towns and villages will be protected and there will be no linear development between towns along the coast or expansion into the areas between townships.
>
> Development within each settlement will only be of a scale and character appropriate to the role, function and location of that settlement…
>
> Use and development, which by its intensity or form would result in defacto urbanisation of the rural or coastal landscape, including large scale caravan park or mobile home based developments, will not be permitted

85 This is supplemented by the *Mornington Peninsula Green Wedge Management Plan, April 2019*[14], whose vision includes:

> A place that retains a rural character, defined by agriculture and natural systems land uses, heritage places, attractive vistas, unobtrusive buildings and a low population settled in relatively few buildings that is:
>
> - At its strongest in key locations including: significant landscapes, land with coastal frontage, land adjoining urban growth boundaries and separations between closely located townships…

[13] Listed as a policy guideline in Clause 11.05-2.
[14] An adopted document which applies to all land outside the UGB.

86 Mr Chessell submitted on behalf of Council that the proposal was an overdevelopment of the land since:

> The proposal would do nothing to "reinforce" this character [sought for land outside the UGB]. Instead, given its scale and intensity, it would substantially erode the contribution that the site makes to the inter-urban break between the townships, and runs directly counter to the land's designation as forming part of the break and part of the green wedge. In particular, the Council notes that the proposal is of an inherently urban (and residential) character, and that it will introduce buildings of a massive scale onto the site, including onto those parts of the site that are presently vacant and open.

87 Some objectors regarded the proposal as tantamount to a multi unit residential development. Ms Walsh submitted that the SUZ2 was never intended and should not be used to override the fundamental principle that residential and other urban development should not be permitted in green wedges.

88 Ms West referenced Professor Michael Buxton's views on two fundamental criteria used to access the success of protective 'green belts' – the extent to which they retain the primacy of non-urban uses and their ability to maintain a strict demarcation from metropolitan or township areas.[15] The Green Wedges Coalition was concerned that the proposal would breach these two "fundamental principles" and would thereby compromise the integrity of the planning scheme and this green wedge.

89 Mr Morris MP similarly expressed the view that "it cannot be credibly argued that this is not a significant expansion of the urban area of Mount Eliza, outside the UGB, and contrary to state and local policy".

90 By contrast, Ryman sought to give primacy to the provisions of the Special Use Zone in connection with the exemption from Clause 51.02 – Metropolitan Green Wedge: Core Planning Provisions.[16] In essence, those provisions establish purposes for land outside the UGB in nominated zones and provide a bespoke (restricted) table of uses as well as limitations on subdivision.

91 Ryman therefore focused on the proposal's response to policies seeking to:

- protect heritage assets (including encouraging adaptive reuse of heritage places);
- preserve landscape and scenic character;
- maintain coastal values and ecological processes; and
- provide a respectful presentation to the streetscape and limit unreasonable impacts on adjacent land.

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15 She quoted his expert evidence to Planning Panels Victoria in Amendment C273 to the Casey Planning Scheme.

16 The exemption arises from inclusion of the land in the schedule to Clause 51.01.

92 Mr McNamara in giving evidence for Ryman considered that the site's location outside the UGB should not be regarded as significant for a number of reasons. These include the fact the land benefits from provisions of the SUZ2, other applicable planning controls already call for a sensitive built form outcome and the uses will still need to ensure rural activities are not compromised. He also pointed out that the land benefits from single ownership and management and has a longstanding history of urban use as part of the suburb of Mt Eliza and is part of an existing settlement area. In his view, it was relevant that the proposal is "not seeking to use rural land for an urban purpose".

93 In summary, Mr McNamara identified the following factors leading to his support for the proposal in policy terms – the site's specific character, its history of commercial and institutional use, benefits from the restoration of heritage buildings, proposed redevelopment layout and scale including degree of separation from interfaces, extent of landscaping and presentation to the streetscape and the provision of more diverse housing options and services to the community.

94 Ms Ring considered similar factors and also emphasised that there would be no unreasonable impacts on amenity, that vegetation removal was suitably confined and that coastal and landscape character would be preserved.

Amendment C270

95 We are conscious that Council has applied for Ministerial authorisation for Amendment C270 which seeks to rezone a number of parcels outside the UGB, including the subject land to Green Wedge Zone (Schedule 3). Concurrently, it seeks to remove the current exemption from the core Green Wedge provisions in Clause 51.02.

96 We were advised that the Minister for Planning has deferred consideration of the request for authorisation of that Amendment until after our determination of this proceeding.

97 We are obliged to evaluate this planning proposal under existing planning scheme provisions. We also refrain from making comment about the veracity of the proposed Amendment, noting it is not yet 'seriously entertained' as this term is understood under relevant legislation.[17]

What weight should be given to the zone provisions and the exemption from the Core Green Wedge provisions?

98 The zone controls applying to the land in its broader setting are indicated in the map below. It can be seen that the land is within a limited number of Special Use Zones and that it is to the south and east of an established General Residential area. Adjacent land to its south is included in the Green Wedge Zone which is also subject to the Environmental Significance Overlay (Schedule 1). There are also instances of Low Density Residential

[17] As this term is understood in the *Planning and Environment Act 1987*.

Zoning further south subject to the Design and Development Overlay (Schedule 6).

Land use provisions

99 In our opinion, the central significance of the zone provisions and the exemption from Clause 51.02 is that the use of land for residential aged care and retirement village is permissible (subject to conditions). This can be contrasted directly with land use constraints on other land outside the UGB including the Green Wedge Zone, where such land uses would be prohibited (within the land use category Accommodation).

100 We accept that the site enjoys a full exemption from Clause 51.02. It is clear that the approach taken by the schedule in Clause 51.01 is to refer to the land, rather than current or former land use. In our view, the land is readily identified in this schedule.

101 When considered closely, we find that these core provisions and their associated purposes substantially address land use and subdivision. In this way, the land use provisions are effectively replaced for this land by the SUZ2 provisions.[18]

102 A notable aspect of the provisions of the Special Use Zone, as pointed out by Mr Townshend on behalf of Ryman, is that the schedule purpose as reflected in the table of uses would prevent the use of the land reverting to a single dwelling. Instead, it contemplates mainly institutional land uses including education, recreation and health facilities, with a focus on those

[18] There is no proposal before us for subdivision.

performing a community function. This is consistent with the identification of the land as a strategic site in the purpose to the schedule.

103 As mentioned, some objectors took an 'absolute' position and considered that the land should be regarded as Green Wedge land and it would therefore be inappropriate to approve any form of use other than a rural one.

104 With respect, we regard this approach as too simplistic and not supported by the applicable planning controls for this land which are bespoke.

105 Instead, we support the use of the land for residential aged care and a retirement village as consistent with both the schedule to the zone and having regard to the long term historic use of the land for both residential and institutional use.

106 To the extent that some objectors regarded this proposal as a form of multi unit housing, we see clear distinctions between this proposal and more conventional accommodation. First, by law, there will be a minimum age for residents, with the entire facility catering for those in their advanced years. Second, given the integrated nature of the facility there will a significant focus on the provision of health, nursing and personal services to all residents, not only those in the aged care facility or high care rooms. Third, the facility will offer opportunities to age in place with well-developed communal and recreational facilities to encourage wellbeing, an active lifestyle and social connections. Fourth, the facility will provide a place of worship. Fifth, it will be run by consolidated management.

107 To the extent we support institutional use of the land in the form of an integrated aged care facility, we also accept the evidence of Ms Ring about its potential intensity, that:

> Having regard to the possibility that they can be established at the site, neither of the uses requiring a permit can reasonably be expected to be boutique propositions as they rely on larger (rather than smaller) populations to sustain the diversity of accommodation and lifestyle offered, which includes a range of community facilities and health and other services.

108 This is especially the case where the purpose of the schedule is for the land to perform a "significant community function". We consider the proposal has the potential to deliver this outcome.

Directions for built form

109 In order to achieve other equally important policy objectives, we consider that the buildings that house these uses must also be appropriately sited and scaled to maintain the natural, open and scenic qualities of this land which are integral to its strategic role.

110 We note that Clause 53.17 relating to residential aged care facilities does not apply to proposed buildings and works in the Special Use Zone but it

nonetheless makes a relevant observation that such facilities may involve a different scale and built form to the surrounding neighbourhood.

111 However, we are unable to find any direction in the zone controls as to what scale or configuration of institutional building forms would be acceptable for this site. In fact, the zone is silent in respect of buildings and works controls and there is no applicable Environmental Significance Overlay or Design and Development Overlay providing guidance (as it does for other land within this inter-urban break).

112 While the absence of these overlays is broadly relevant, in our view it does not create a vacuum for this land given specific policy directions.

113 Professor McGauran explained in evidence for Council:

> It does not follow in my view from the site's SUZ designation that this should make the site a candidate for scale of building footprints and heights that are incongruous inside the urban growth boundary let alone in a location specifically outside the UGB…

114 On this point, Council submitted that:

> It is also clear, in the Council's submission, that the purposes of the zone do not promote intensive urban development outcomes on this site (or on any site that is subject to the SUZ2). Indeed, in land use terms, it is apparent that none of the categories of facilities specified in the purposes would constitute intensive urban development outcomes comprising accommodation.[19]

115 The core planning provisions are also silent as to preferred or acceptable built form. Therefore, it is not a sufficient answer in all respects to say that the core Green Wedge provisions are 'switched off' for this land and therefore the status of the land being outside the UGB is of no real consequence to this proposal, as suggested by Ryman in response to questions by the Tribunal.

116 Although the zone contemplates institutional uses, these can take varying forms, scales and levels of intensity. We find that relevant policy provisions and the site context are key to evaluating the acceptability of the resultant development. Fundamentally, we accept that the location of this land outside the UGB informs an acceptable scale and intensity of urban design and built form.

117 Another important consideration informing the appropriateness of site layout and building form is the existing open landscaped character of the estate, hosting the mansion building as a coastal landmark.

118 Therefore, while the site has a strategic role to achieve the purpose of the SUZ2, we consider this must be delivered in a way that also satisfies its higher level strategic role of being outside the UGB. We find this is where the proposal overextends itself.

[19] Council's closing submissions para 27.

How should tensions between competing planning policies be resolved when assessing this proposal?

119 The starting point is Clause 71.02-3 of the planning scheme which provides that planning policies should be applied in an integrated way and competing objectives should be balanced in favour of net community benefit and sustainable development.

120 We consider that planning policy at state and local level provides very clear guidance in respect of settlement planning, with an emphasis on the need to maintain defined township boundaries and to maintain the character of green wedge land outside these boundaries. In particular, we note the guidance in Clause 21.04 that "achieving balance does not mean trying to accommodate all land uses in all locations; it means making the most of each area's particular strengths and respecting limits.

121 Some expert witnesses regarded the land as part of the township of Mt Eliza (or were equivocal about its status in this regard). For example, Mr McNamara regarded the site as part of the "settled urban area" since he considered the site had for many years in physical and land use terms formed part of the Mt Eliza "suburban area". He considered the proposal would not endanger the 'green break' between the metropolitan area and the Peninsula.

122 Likewise, in closing submissions, Mr Townshend referred to the SUZ2 as contemplating small 'u' urban outcomes; being an "undeniably urban zone" since it did not prefer agricultural land use or similar. He submitted the UGB was of no significance to this proposal because the land was "exempted from the statutory implications of being outside the UGB". Therefore, he urged the Tribunal to focus on whether the proposal was appropriate at the 'edge' of the UGB.

123 We regard this suite of submissions and evidence as misguided. On our interpretation of the relevant planning policies and provisions including the Strategic Framework Plan at Clause 21.04, the land is outside the urban area and defined township area as depicted in the map below.[20]

[20] From page 2 of the Mornington Peninsula Localised Planning Statement.

124 The location of the land outside the defined township boundary is also highly consistent with its location outside the UGB. These factors are critical to the acceptability of the built form response, including site planning and the overall scale of development.

125 To this extent, we consider Ryman and its experts have posed the wrong question - "with the site being outside of the UGB, the policy issue for integrated planning asks whether the re-use of the site would enhance the character and role of the settlement area" (Tribunal emphasis).[21]

126 Given the site's values and location outside an existing settlement and in the UGB, we consider that too much emphasis was given by Ryman and its experts to policies encouraging the efficient use of urban land or encouraging consolidation of existing settlements on the Mornington Peninsula.

127 Instead, we accept submissions from Council and objectors that the land presently serves an important role in establishing the commencement of both the inter-urban break between Mt Eliza and Mornington, and in marking the commencement of the UGB. The two are aligned.

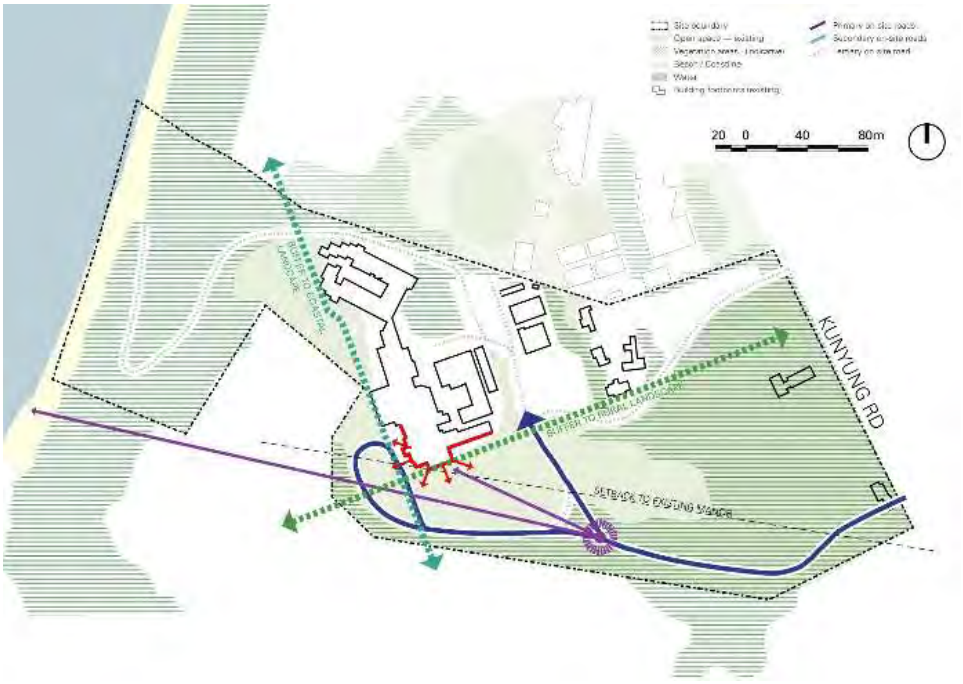
128 Key elements of the existing site layout and development are directly aligned with policy. There are numerous characteristics of the site that present as part of the inter-urban break, even though its current

[21] From Mr McNamara's expert report, page 26.

development has some peri urban characteristics. These are explored further below but include generally low scale development with limited visibility from public vantage points. The heritage mansion is the paramount building on the site.

129 One important element of the current site presentation as identified by Professor McGauran in expert evidence for Council is the concentration of outbuildings associated with the mansion adjacent to the UGB boundary, at the point of transition, with a notable absence of buildings on the eastern and southern parts of the land.

130 In our view, this reinforces the open and landscaped character of the south western part of the land, consistent with notions of the inter-urban break. This was helpfully illustrated by the figure below[22]:



131 We have already identified there is scope for a change of use and more intensive built form on this land to achieve policy objectives relating to health and housing, even though this is not a preferred location for such uses.

132 However, in its proposed form, we find that the development would be inconsistent with other more site specific policy directions since it would introduce substantial built form into the inter-urban break in a form contributing to linear development between townships, which is expressly discouraged. It would also detract from the scenic values of the green

[22] From Professor McGauran's Powerpoint presentation at the hearing, Document J2.

wedge to the extent it would add a series of new, sizeable buildings in parts of the site that retain a strong landscape and scenic character.

133 This is evidenced by the proposed building and site layout compared with the existing site layout[23]:

134 To the extent that competing policy objectives seek to retain and enhance heritage and landscape values, we find that the development needs to be tempered further to achieve an acceptable outcome. In essence, this will require a revised approach to the siting and design of buildings, most likely with a diminished site capacity. In other instances, the question of building scale may need to be revisited to achieve acceptable outcomes.

HERITAGE CONSIDERATIONS

Background

135 The subject land comprising the Moondah mansion, its outbuildings and grounds is included in Schedule 110 to the Heritage Overlay. The historic gatehouse to Kunyung Road is separately recognised on the Victorian Heritage Register for its architectural and historic significance[24] and is included in Schedule 111 of the Heritage Overlay.

136 Moondah was constructed in 1889-90 and is an Italianate Renaissance Revival mansion. The Gatehouse is of Gothic Revival style, constructed in 1902.

[23] As above
[24] VHR H1894. Works to this place would be subject to a separate statutory approval.

137 The starting point for our assessment of the acceptability of the proposal in terms of its heritage response are the objectives and decision guidelines within the Heritage Overlay, together with policies in the planning scheme. Other important documents informing our assessment include the statements of significance for the heritage place and documents prepared by experts on behalf of the applicant, including a Conservation Management Plan and Heritage Impact Statement.[25]

138 The current heritage citation for the Moondah estate derives from the Shire of Mornington Heritage Study by Graeme Butler & Associates in 1994. It provides:

> Moondah gatehouse and mansion ... are two buildings important in the townscape and history of the area, are representative of the large seaside mansion estates built in this area and are significant architecturally. The gatehouse is a rare and late example of the Picturesque Gothic Revival style and particularly of a picturesque folly. The location of the gate in the building is most uncommon. The typical boom style mansion is important for its porte-cochere and angled façade.

139 A revised Statement of Significance for the property was prepared as part of the more comprehensive heritage investigation undertaken on behalf of the applicant. All parties agreed that while this does has not have statutory weight, it is detailed and highly relevant, following best practice heritage principles.[26] It provides:

> What is significant?
>
> James Grice bought 251 acres of land adjacent to his father's estate Manyung in Mount Eliza in 1887. The Grices were a wealthy and prominent business family, due to the success of the firm Grice, Sumner & Co. The Mornington Peninsula was a popular destination for wealthy Victorians to construct residences as a retreat from the city, and James' father Richard had built the Picturesque Gothic and Tudor Revival mansion at Manyung (now Norman Lodge) nearby in the early 1860s. The mansion Moondah was constructed in 1889-90, and the family increasingly made the property their full-time residence.
>
> The mansion, Moondah was designed by notable architect William Salway. It is a rendered two-storey mansion in the Italianate style with a porte cochere and key elevations expressed as arcades. It is of note for its immense scale and role as a landmark on Port Phillip Bay. A gatehouse in a picturesque medieval style was constructed at the entrance to the Moondah Estate in 1902. An original coach house survives on site but has been altered to the extent that its original role

[25] Moondah Estate Conservation Management Plan, Lovell Chen, March 2020 and Heritage Impact Statement, Lovell Chen, November 2019.

[26] This was contrasted with other draft statements of significance for other potential heritage properties which had not been progressed through planning scheme amendments or the like, such as for bayside mansions in the Mornington Peninsula.

> is no longer legible. The form of the original driveway from the gatehouse to the mansion survives although an associated avenue of trees was replaced in the mid-twentieth century.
>
> The Grices vacated the site in 1947 when it was purchased and altered internally and externally for use as a hotel. It operated as the Hotel Manyung until 1957 when the Australian Administrative Staff College (later Mount Eliza Business School) purchased the site making further alterations and extensive additions. A sprawling educational complex known as the Jubilee Wing was constructed to the north of the mansion in 1983. The original coach house was adapted as the Association Wing in 1984.
>
> How is it significant?
>
> The Moondah Estate is of historic and aesthetic (architectural) significance at a local level.
>
> Why is it significant?
>
> The Moondah Estate is of historical significance for its association with James Grice and the notable Grice family… Collectively, these residences and others in the locale form an important architectural ensemble which is of historical significance for its capacity to demonstrate the taste for grand residences on large estates among the wealthy in the second half if the nineteenth century. While the coach house has been altered to the extent that its original form, use and appearance are no longer legible, it is the last surviving outbuilding from the Grice family's occupancy and retains some modest historical significance.
>
> The Moondah Estate is historically significant for its association with upper class life on the peninsula…The mansion, Moondah is of some aesthetic (architectural) significance for its immense scale and role as a landmark on Port Phillip Bay. While not a key element in Salway's oeuvre it is of some significance for its association with Salway and its role within his catalogue.

140 The updated statement of significance identifies historical (A), representative (D), aesthetic (E) and associative heritage significance (H), referable to established criterion used in *Planning Practice Note 1: Applying the Heritage Overlay*.

Outline of party positions

141 Although Council and its expert witnesses generally supported the adaptive reuse of the mansion and associated restoration works, it considered the redevelopment would have a major negative impact on the heritage significance of the Moondah estate overall. Council was concerned with both the extent of proposed demolition of original fabric and considered that "dominant, unsympathetic' forms would be introduced in close juxtaposition to key heritage fabric.

142 Ms Walsh on behalf of the National Trust expressed similar concerns. She emphasised by reference to the Burra Charter that the cultural heritage significance of the place was not limited to its buildings, but included its relationship with the landscape setting and the community. The National Trust considered the redevelopment would negatively impact these features.

143 Ryman submitted the suite of works proposed would lead to an improved or at least, acceptable, heritage outcome overall. More specifically, it considered that any loss of heritage fabric would be offset by enhancements that would create a 'net positive'; being a valid response to policy.

144 Submissions and evidence for Ryman emphasised that elements proposed for demolition would not unacceptably diminish the heritage values of the property. They considered that new additions had been suitably designed and sited to be recessive or sympathetic to the heritage significance of the place as a landmark bayside mansion estate.

Adaptive reuse and restoration

145 The Moondah estate is a significant landholding comprised of the main mansion building with extension wings, various outbuildings and grounds. It has been vacant since the conclusion of operations of the Mount Eliza Business School and its buildings (including the mansion) are need of considerable repair, restoration and maintenance.

146 A key purpose of the Heritage Overlay is to conserve and enhance places of cultural significance. Policy at Clause 22.04-3 includes to:

- Support the conservation of heritage places…
- Encourage the removal of non-significant alterations or additions, particularly where this would assist in revealing the significance of the place.
- Support the restoration or reconstruction of fabric of heritage significance where opportunities arise.

147 In our opinion, a key way to achieve this on the subject land is to provide for the adaptive reuse of primary heritage buildings and to facilitate new built form that is suitably respectful of the heritage values of the site. These are important components of policy in Clause 15.03-1S and the decision guidelines at Clause 22.04-4 relating to whether the proposed buildings and works would assist in the conservation of a heritage place by:

- Supporting the continued original use of a building by enabling it to be upgraded to meet present day requirements and standards; or,
- Allowing an alternative use when the original use is no longer viable....

148 We accept the evidence and submissions for Ryman that the reuse of this property for a proposed aged care facility and retirement village is a significant positive element of the proposal. More specifically, it would

reinvigorate the Moondah mansion as the hub of the new facility in a way that would meet contemporary needs for accommodation, care and recreation.

149 The current condition of mansion viewed from the south west is shown in the figure below.[27]

150 A further key positive aspect of the proposal is the extensive works proposed to restore and repair key heritage fabric. For example, the more recent structure enclosing the southern verandah of the Moondah Mansion (Copland room) would be removed to reveal the original arcaded façade.

151 The detailing above the mansion parapet and comparable external finishes would also be reinstated. The photomontages reveal this would reinvigorate its currently tired external presentation, although we do not assume that the exterior will be bright white as depicted in the application plans given the need to respect historic finishes.[28]

152 In combination, these works would substantially restore the built form presentation of the mansion from the south west.

153 Another notable element of the works would include the removal of the unsympathetically sited and designed Jubilee Wing from the north west corner of the mansion adjacent to the Bachelors Wing.

154 From experience, we accept that these restoration works are of a scale and associated cost that are unlikely to be undertaken without a commensurately comprehensive proposal for the reuse of the land as a whole.

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27 Sourced from Figure 29, Conservation Management Plan.

28 This would need to be determined through a heritage paint analysis in situ under supervision of a heritage conservation professional.

155 We also consider that some flexibility should be afforded in the redevelopment proposal to ensure buildings are fit for purpose to facilitate the alternative use of the land. For example, the grand driveway entrance to the mansion and porte cochere will be restored, but in a functional and more contemporary layout and design than the historic driveway entrance. We regard this as entirely acceptable.

156 For this reason, we also support the proposal to create an additional main driveway entrance to a new covered entry on the southern side of the mansion generally in the location of the historic Residential Wing, notwithstanding the site cut that would be required.

157 Likewise, in our opinion, there is scope for suitably designed new openings or altered fenestration to the historic fabric of the mansion without generating unreasonable impacts on key elements of architectural or historic significance. For this reason, we do not share Ms Schmeder's in principle concerns in evidence for Council about the proposed alterations to the southern side of the mansion.

158 However, we acknowledge these and other modernisation works would need to be managed carefully so as not to negatively impact the presentation or function of the heritage place.

159 In this regard, we consider that the Conservation Management Plan prepared for the applicant is a rigorous starting point. It identifies sound principles for the management and enhancement of this heritage estate. It also provides clear guidance for works to restore and modify these heritage assets. It is therefore capable of guiding suitable outcomes through conditions of a planning permit requiring its implementation.

Acceptability of demolition works

160 A number of structures and other outbuildings are proposed to be demolished to facilitate the redevelopment and proposed new use of the subject land. Council and some objectors opposed the demolition of structures considered more central to the values of the heritage place, but not others which were heavily modified or less integral to its heritage significance.[29]

161 A relevant purpose of the Heritage Overlay is to ensure development does not adversely affect the significance of heritage places. Corresponding decision guidelines include whether demolition, removal, external alteration or proposed works will adversely affect such significance.

162 Partial demolition is addressed in policy in Clause 22.04-3 which seeks to:

- Discourage partial demolition of a heritage place unless it can be demonstrated that one of the following apply:
  - It will not adversely affect the significance of the place.

[29] Including the bluestone Principal's residence towards the property frontage.

- It will assist in the long-term conservation of the place.
- It will support the viability of the existing use or will facilitate a new use that is compatible with the ongoing conservation of the place.
- It will remove non-contributory elements such as alterations or additions.

163 This policy is important to inform the exercise of discretion for buildings and works under the Heritage Overlay but cannot be elevated to a mandatory requirement, having regard to the role of policies (as opposed to controls) in the planning scheme.

164 We turn to key aspects of demolition in dispute in this proceeding.

Residential Wing

165 The application proposes the demolition of the original (eastern) Residential Wing to the Moondah mansion and its replacement with a new building wing in a similar location. Existing conditions are shown in the figure below.[30]

166 Mr Gard'nr confirmed that the Residential Wing (minus a small extension at its easternmost end) was constructed at the same time as the mansion and designed by the same architect. This was affirmed in the Conservation Management Plan. Mr Chessell and Ms Schemeder pointed out that the majority of the external fabric of the Residential Wing was identified of primary heritage significance in that document.[31]

167 On this basis, Council strongly opposed demolition of this part of the building, being largely original heritage fabric which Ms Schmeder regarded as significant. She considered the demolition of this wing would decrease one's understanding of the original form and function of the

[30] Figure 30, Conservation Management Plan.
[31] Excluding the extension in approximately 2000.

mansion. Similarly, Dr Dyson gave evidence that the Residential Wing (which was occupied by staff or servants) is important to the understanding of how the historic mansion functioned as a wealthy holiday estate.

168 Council further submitted that the replacement building was of a siting, scale and design that would overwhelm the heritage mansion. Ms Schmeder explained that the demolition would result in a 'visually truncated' south elevation and would facilitate the juxtaposition of an unsympathetic addition (the glazed 'link' structure) against the core of the mansion.

169 We accept that, as a starting point, heritage policy does not support the demolition of original heritage fabric, especially where it contributes to the significance of the place. However, there are a number of reasons why we consider the demolition of the Residential Wing could be regarded as acceptable in the context of a proposal that provides for adaptive reuse on the proviso that new buildings are suitably respectful of heritage values.

170 The statements of significance for this heritage place confirm its historical and architectural significance, as well as representativeness and associative significance in more recent assessment.

171 From an architectural perspective, it is clear that the design language and detailing of the Residential Wing are deliberately far more modest and restrained than the highly detailed, ornate main mansion building.

172 From a historic perspective, we accept that the Residential Wing housed service accommodation for the estate. However, we regard this function as clearly secondary to the primary heritage significance of the place as a seaside holiday estate for the wealthy. While it may assist in telling a more complete story, we are of the view that its primary historic significance could still readily be understood in the absence of this supporting structure.

173 We are also not persuaded that the representativeness of the property or its association with the Grice family and the architect, Salway, would be diminished by the demolition of this part of the mansion building.

174 Further, in a practical sense, we accept that there is a need to permit demolition and new built form to the extent necessary to facilitate the adaptive reuse of the mansion building overall. The Residential Wing is in a critical part of the site to provide all-mobility access for an aged care and retirement facility. This is necessary to enable the regular use of the mansion building as a hub for key activities as proposed.

175 In our opinion, is not realistic to expect that facilities required for the central management of a contemporary aged care facility could be provided in this location if the Residential Wing was retained. In our opinion, the difference in floor levels (compared with the remainder of the mansion) and the narrow, regular openings in this building would likely preclude a realistic opportunity for adaptive reuse for this purpose.

176 On balance, we agree that the proposed demolition of this structure can be justified and prefer the evidence of Mr Gard'nr on behalf of Ryman that:

- The Residential Wing demonstrates few of the architectural features or elements that characterise the primary form of the Renaissance Revival mansion;
- to this extent, the Residential Wing is more of a secondary element, such that its demolition would have only a "modest detrimental impact" on the overall heritage significance of the place relative to the statements of significance which emphasise a large seaside mansion estate;
- its removal would facilitate the ongoing use and conservation of the place by allowing its redevelopment for a residential aged care facility and retirement village; and
- the suite of works proposed would result in a substantial overall improvement to the presentation of the principal façade of the mansion which is of prime significance.

177 We further agree there would be merit in a permit condition requiring the heritage values of this part of the building to be recorded (photographically) prior to demolition to help mitigate the loss of this nineteenth-century fabric in part.

Coach House

178 The Coach House is one of few remaining buildings dating from the original or early occupation of the site by the Grice family. Council submitted that the demolition of this structure would be inconsistent with policy and would detract from the heritage values of the site.

179 However, its expert Ms Schmeder considered that the demolition of the Coach House could be justified on the basis of its extensive alterations. Mr Gard'nr arrived at a comparable assessment, advising that it had lost most of its legibility as an original coach house, such that its demolition would have a negligible impact on identified heritage values of the estate.

180 Given its former function, we accept that this is one of a number of buildings that contribute to the understanding of the historical significance of the place.

181 Its adaptive reuse might be possible in an altered redevelopment scheme given its siting and flexible internal configuration. Retention would be preferable from our perspective but we are obliged to consider whether the suite of proposed works would result in an acceptable outcome.

182 We find that demolition of the Coach House could be justified based the extent of its alteration and consequent reduced legibility of original form, use and appearance as outlined in expert evidence.

183 Notably, given the Coach House is a contributory - not primary - element of significance, we also consider that the historic values of the land as a whole would not be unreasonably diminished if this structure was demolished.

Heritage landscape features

184 Dr Dyson gave expert evidence on behalf of Council about the key landscape features of the property she considered of heritage significance including:

- the generous landscape setting to the mansion;
- the landscape character of the grounds; and
- the prominence of the mansion in the landscape with aesthetic significance as a "bayside landmark".

185 The schedule to the Heritage Overlay also includes tree controls for this land.

186 A positive element of the landscape response is the retention of the row of heritage cypress trees along the entrance drive (even though they are senescing). However, other plantings are more recent and we do not consider there is sufficient evidence justifying their retention on heritage grounds. We address their worthiness of retention when considering landscape and ecological values of the site.

187 We agree that an important part of the heritage significance of the place is the open landscaped coastal setting. This is reflected in the statements of significance recognising the land as a 'country park' style seaside estate for the wealthy in the 1880's Boom period.

188 We have had regard to this characteristic when evaluating the appropriateness of new built form below.

189 Dr Dyson also emphasised the importance of early landscape features for the evidence they provide of its history and function as a large peninsula estate for the wealthy. These features include the carriageway alignment, landscape terrace or forecourt in front of the mansion, the southern lawn, subsidiary (northern) entrance drive, brick spoon drainage channel and identified trees.

190 Aside from the need to maintain the general alignment of the entry drive from the gatehouse to the porte cochere (referenced specifically in the statement of significance), we prefer submissions and evidence for Ryman on this issue.

191 We would not go so far as to prioritise any particular layout or features of the current landscape as notable or primary elements contributing to the heritage significance of the place having regard to each criterion for significance. We find that these features are not integral to the future presentation or operation of this land when redeveloped.

192 In addition, we are not persuaded by Professor McGauran's evidence that continuing the driveway past the mansion to create a loop road is "major design flaw" that would diminish the relationship between the coast and the mansion.

193 We consider there is ample scope to reconfigure the layout of the northern driveway and to provide a continuing loop road past the mansion on the basis that it would be well separated and at grade such that it would not detract from the primacy of this structure as a landmark. If anything, it would have the potential to make the mansion building more readily visible in the round.

194 However, we make comment below that it is desirable to maintain the open presentation of the southern lawn in any redevelopment, with a need for sensitive design of any recreational structures.

Important vantage points and acceptability of new additions

195 Parties diverged in submissions about the acceptability of the proposed new buildings and works having regard to heritage values of the estate.

196 A core purpose of the Heritage Overlay and policy seeks to ensure that development does not adversely affect the significance, character or appearance of the heritage place. A key question relates to the implementation of the decision guideline in the overlay "whether the location, bulk, form or appearance of the proposed building will adversely affect the significance of the heritage place".

197 Policy in Clause 22.04 provides that the significance of heritage places should be retained such as through:

- Creatively interpreting and respecting identified heritage values…
- Being visually recessive and compatible in terms of scale, siting, design, form and materials with the historic character and significance of the heritage place, and
- Responding positively to special features such as views, vistas, mature vegetation and landmarks.

198 When making this evaluation, it is important to bear in mind that the 'heritage place' is the entirety of the site – that is, the mansion, its outbuildings, grounds and associated works.

199 We support the recommendations of the Conservation Management Plan in identifying opportunities or parameters for new built form while respecting the significance of the heritage place, including[32]:

> New built form should be designed and sited to minimise impacts on the key approaches to Mansion along Essington-Lewis Drive. New built form should not compete in terms of scale or character with the

[32] At page 145.

> design of Moondah and should be situated to avoid impacts on its key southern and western elevations.
>
> Where new buildings are required, these are most appropriately situated in the north-eastern sections of the site…Buildings in this area could be accessed by way of an alternative point of entry to the north of the existing gatehouse.
>
> Some limited opportunities exist for new development in the vicinity of the existing tennis courts and vineyard although greater sensitivities exist in this section of the site than in areas to their north. New development in this area should be of a modest height and footprint adopting pavilion forms in a landscaped setting. New buildings in this area should not obscure or dominate Moondah.

200 Council in particular was critical that the redevelopment did not pay due deference to these directions.

Viewlines to the mansion

201 We find that the combination of siting and topography grounds the mansion in its setting and reinforces its primacy as a local landmark. Another important element is the choreographed entry sequence which includes openness of the grounds on the immediate approach.

202 We agree with Dr Dyson and Professor McGauaran that the curved entrance drive and 'reveal' of the mansion on the western approach towards the coast is a key element of the way the heritage buildings are configured and interact with site topography.

203 Council submitted that Building 03 was overscaled and inappropriately sited, with the consequence that it would directly and unreasonably impede important viewlines to the mansion on the approach from the state heritage listed gatehouse. We agree.

204 We consider that sympathetic redevelopment of this site requires the retention of open viewlines to the mansion, unobstructed by new built form on the immediate approach. We are concerned about the design and siting of Building 03 on this basis.

205 Had this been the only issue, there may have been potential to chamfer the building at its south western corner, for example, to facilitate the reveal of the corner of the mansion where the viewline opens out. At minimum, we would have wanted to facilitate the full reveal of the southern façade of the mansion building (excluding the Residential Wing) from the location generally depicted as the entrance to proposed Building 03.

206 However, a related concern is the effect of the viewing the mansion building in the backdrop of substantial new built form in the foreground (Building 03) in a part of the site with a deliberately open character. This is acknowledged in the Conservation Management Plan when it recommends that new buildings in this area should not obscure or dominate Moondah.

207 This is exacerbated by the 4 storey arrangement of this building in the location with the highest sensitivity. It is also reinforced by the 56 metre singular length of the building and its east-west orientation.

208 In theory, there may be potential for an alternative building in the general location of the proposed three storey element of Building 3 as a suitable heritage response. This would need to carefully adhere to the valid reference in the Conservation Management Plan to a building of modest height and footprint, adopting a pavilion form in a landscaped setting.

209 Beyond heritage considerations, there is also a need for caution if new built form was to be introduced in this location. The open garden aspect of this part of the property is a feature that we consider delivers on policies reinforcing this inter-urban break.

210 It also appears that a building in this location (especially a sizeable one) would complete the effect of a 'campus of buildings' across the site as a whole, which would represent a meaningful change to the open garden character achieved by current building siting.

New additions to and around the mansion

211 The southern elevation of the mansion is depicted in the application plan below[33]:

This depicts one wing of Building 04 as proposed.

212 Ms Schmeder's evidence was that the mansion would no longer appear as the dominant element of the site given the cumulative effect of the demolition and construction works. Rather, it would be "perceived as the small centre point of the very large B04 building complex" and "this impact would be magnified by the construction of six more residential buildings around it of a similar height to and similar or longer length than the remnant mansion".

213 By contrast, Mr Gard'nr considered the siting, form, scale and materiality of the proposed additions would provide a refined and recessive contemporary design that would maintain key heritage values of the place. In particular, he regarded the new addition to the north and east as suitably sited to ensure the mansion's primary west and south elevations would retain their visual prominence and scale. In his opinion, taller built form would be suitably sited away from the mansion.

[33] Plan No. DA35.

214 The starting point for our consideration are the statements of significance having regard to the character and siting of existing heritage buildings. In our opinion, the Conservation Management Plan fairly acknowledges that there is scope for new buildings in the north-eastern sections of the site while maintaining heritage values.

215 This is consistent with the layout of the current estate and the form of the mansion with its various wings. It is also facilitated by the sloping topography from north to south.

216 We agree that the north east sections of the site provide the greatest opportunity for new built form without detracting from key heritage values since:

- the 'country park' estate characteristics of a building set into an open garden are far less evident in that part of the site which already hosts a number of outbuildings and extensions in close proximity to the common boundary;
- new built form would be embedded into the centre of the site, well away from public views, such as along Kunyung Road;
- it would not impact materially on key viewlines or the primacy western façade of the mansion since it would not sit forward of the existing mansion building; and
- the northern extension has been designed to sit below the decorative parapet of the mansion. Although it would partially obscure views of the mansion when viewed from the north, we do not regard this as a principal viewline of significance.

217 For reasons discussed below, providing additional built form towards the northern part of the site would also be consistent with the interface with the adjacent institutional school buildings within the UGB.

218 We therefore support the layout and siting of Building 04 even though it would result in a substantial extension to the mansion to the north and east. For the most part, we consider that it also has been sympathetically designed with a recessive presentation and materials palette and adopts building heights that would not visually overwhelm the historic mansion as the centrepiece. Its northern extension (Assisted Living Units) is also far more set back and confined in footprint compared with the existing Jubilee Wing which sits forward of the mansion currently.

219 While a substantial new structure is proposed in place of the Residential Wing, we consider that suitable design techniques have been employed to maintain the primacy of the heritage mansion. These include the simple glazed link between old and new fabric, the use of setbacks from the mansion's arcaded façade and the stepping of height as one moves away from the core of the mansion. The two eras of construction will be readily

identifiable, with the ornate, projecting mansion sitting forward against the all-important coastal backdrop.

Jubilee Wing – demolition and replacement infill

220 The Jubilee Wing is a more recent, highly unsympathetic extension to the Mansion building that sits in front of the Bachelors Wing. It is proposed to be removed as part of the suite of works, with associated restoration to the northern façade of the Mansion and the western façade of the Bachelors Wing in particular.

221 This aspect of the demolition works was non-controversial and generally supported by the parties as a positive aspect of the proposal consistent with heritage policy.

222 However, the application proposes a new lounge structure infilling the ground level corner of the Mansion and Bachelors Wing. Mr Townshend emphasised that this facility would be 'the heartbeat' of the proposed facility, with close connections to the main administration within the mansion and a prized outlook to the coast.

223 Council submitted these works would obscure primary heritage fabric and would significantly reduce the benefits of demolishing the Jubilee Wing. Ms Schmeder was concerned that the Bachelors Wing would be largely obscured from views within the site. She considered the arcaded verandahs of both the mansion and Bachelors Wing should be unimpeded by new built form.

224 The applicant responded that the new structure would be a relatively lightweight design, with purpose-designed glazed roof elements around its perimeter to enable the arcaded facades to be appreciated within the new lounge space.

225 Mr Gardn'r fairly acknowledged in cross examination that avoiding a new structure in this location would be an improved heritage outcome but that it would remain acceptable. In particular, he accepted that some viewlines of the mansion would be interrupted but the works would be visually recessive. He further considered the presentation of the restored mansion would be enhanced by the demolition works when viewed from the north west, west and south west, maintaining the mansion's role as a local landmark.

226 If ideal heritage outcomes were sought, we agree that it would be a lesser outcome to permit any new built form in the junction between these two important parts of the building. However, there are competing policies within the planning scheme, including within heritage policy itself, that seek to encourage suitable adaptive reuse. The question is whether the replacement works are acceptable in heritage terms.

227 There is scope for new built form adjacent to heritage fabric provided the location, bulk, form and appearance of the proposed building is in keeping

with the character and appearance of adjacent buildings and the heritage place overall (referencing the decision guidelines of the Heritage Overlay in Clause 43.01-8 and policy).

228 On balance, we consider there is justification in this instance for the new structure as proposed for reasons including:

- its design as a lightweight structure - being far more confined in height, footprint and of a vastly more recessive design than the structure it would replace;
- the key opportunities it would provide for users to interact with and view these adjacent heritage facades on a day to day basis;
- it is in a location that logically provides an opportunity to expand communal facilities that are central to the property's repurposing for an aged care and retirement facility;
- there are still tangible heritage benefits in demolishing the Jubilee Wing. The photomontages prepared by the applicant confirm that from a number of vantage points on site and from the coast, there will be a greater reveal of the original fabric of both the mansion and the Bachelors Wing (especially the upper level) and the mansion will remain as a landmark building; and
- in heritage and engineering terms, the structure could be designed as a 'reversible' addition which would not detrimentally affect extant heritage fabric. It would theoretically be capable of being removed in future if the use of the land were to change.

The Bowling green

229 The application proposes a communal bowling green in front of the mansion building with covered seating areas and balustrading or hedging. Council emphasised that given its levels and design, it would unacceptably obscure at least part of the lower level of the mansion when viewed from the south east.

230 The parties and witnesses addressed the design and impact of the bowling green on potential viewlines in detail at the hearing. This included relevant photomontages confirmed to be technically accurate by Mr Flood.

231 Towards the end of the hearing, Ryman offered an alternative concept design for the bowling green that would increase the cut downslope to reduce the extent of visual incursion on the mansion facade.

232 In heritage terms, we find strong parallels between the historic recreational use and presentation of the open lawns in front of the mansion its adaptive reuse as a bowling green.

233 However, we accept Council's concerns that the design as shown in the amended plans would detract from the setting of the mansion. We consider this could have been resolved through more careful attention to design

detail including levels and edge detailing. The objective would be to maintain generally unobscured views across the green to the lower level of the mansion building (excluding the Residential Wing).[34] The plans circulated by the applicant in closing submissions appear to be a step in the right direction.

Built form to Port Phillip Bay

234 Parties generally agreed that the new buildings would not be visible from Moondah Beach given the topography and extent of separation.

235 However, Council was concerned about Building 05, being a sizeable building that would sit forward of the mansion and would have the potential to diminish the landmark quality of the mansion when viewed from the water.

236 Ryman submitted that although Building 05 was sited forward of the mansion it would not be appreciated as being directly in front of it; such that the mansion would remain visually prominent.

237 We share Council's concerns from a heritage and policy perspective, particularly given the scale and height of the new building at 4 storeys with a width of some 45.6 metres parallel to the coast. We consider that an important aspect of the landmark quality of the mansion stems from it being the pre-eminent building viewed from the coast, reinforced by the openness of its landscape setting on either side.

238 Building 05 would clearly diminish this even though it would sit at a lower elevation given the slope of the land. Although there is sizeable spacing between the mansion building and Building 05, in oblique views from the bay to the north west, the perception of this spacing would be vastly reduced.[35]

239 Beyond heritage considerations, the planning scheme acknowledges the sensitivity of these views. For example, a strategy in Clause 21.08 seeks to "ensure that new construction and development on the coast is designed on the basis of a site and landscape analysis, which takes account of the scenic and visual qualities of the foreshore and coastal areas".

240 A further objective seeks to achieve coordinated development, with a related strategy to:

> Limit the number of structures within foreshore areas to that necessary to meet demonstrated community needs. The preferred option is to investigate the re-use of existing buildings and the multi-use of buildings and structures and the upgrading of existing facilities in preference to a proliferation of separate buildings and structures.

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[34] It appears that it would still be possible to provide access for people of limited mobility given the changes in grade between the proposed new driveway entry (beside the porte cochere) and the southern side of the bowling green.

[35] For example, as depicted in CE12 and CE13 of Mr Flood's evidence.

241 While Building 05 would have the capacity to provide future residents with spectacular views of the bay, we are concerned about the presentation of this building in terms of its effect on coastal values including the commencement of the inter-urban break in this location. Some experts for Ryman pointed to the fact that it would simply infill a part of the site between the northern boundary and existing built form (the mansion). However, we regard the current openness of this part of the site in its interface with the coast as a key characteristic of the inter-urban break, being an important feature that distinguishes this site from the more closely settled built form of the land further to the north, within the UGB.

242 We recognise that parts of the Jubilee Wing are currently visible in this general location from some coastal vantage points. However, only its top architectural features are clearly visible beyond surrounding vegetation. It is notable that this existing structure is far lower and more substantially set back from the coastal bluff than the new building.

243 By comparison, the new building would be far more substantial in scale, sitting forward on the site and parts of the upper levels would be likely to project above the prevailing tree line when seen in distant views.[36]

Aboriginal cultural heritage

244 The subject land is designated of cultural heritage sensitivity under the *Aboriginal Heritage Act 2006 and Aboriginal Heritage Regulations 2018*. High impact activities such as those proposed by the permit application[37] cannot be approved by planning permit unless there is an approved Cultural Heritage Management Plan (CHMP) for the relevant activity area.

245 This plan involves historic investigation (involving a desktop, standard and complex assessment) and site testing as well as recommendations for management of the site and any potential cultural heritage material. It did not find any evidence of Aboriginal cultural heritage in the activity area.

246 The National Trust of Australia (Vic.) was concerned that the CHMP may not cover all areas of the land in which works may be required, such as the native vegetation areas and access track adjacent to the coast.

247 We were provided with a copy of the approved CHMP for the subject land and were advised it would encompass all proposed activities constituting the permit application.[38] All works would need to be undertaken in line with applicable legislation and the comprehensive guidelines in the approved plan.

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36 This is borne out by the photomontages and to some extent from our inspection of the broader outlook from Mornington Pier, for example.

37 Notably, works resulting in significant ground disturbance for the purpose of a retirement village.

38 Plan No. 16147 prepared by Alpha Archaeology Pty Ltd dated 18 November 2019 and approved on

248 We confirm that the activity area in the CHMP is identified as the entire site (approximately 8.9 hectares) including the foreshore.[39] However, if the applicant proposes to extend the activity area or to alter the works comprising the approved activities, this would likely require a further approval process under the *Aboriginal Heritage Act 2006* as a precondition to such works being undertaken. This is a matter governed by separate legislation that is not under review in this proceeding.

APPROPRIATENESS OF NEW BUILT FORM

249 Council submitted that the scale, siting and design of new structures would fundamentally transform this seaside mansion estate into a more urbanised "campus of buildings".

250 It submitted the proposal represented an overdevelopment of the site, notwithstanding its site coverage of approximately 21%. Its view was principally informed by:

- the location of the land outside the UGB and defined township boundaries;
- the nature of the coastal environs, including landscape and environmental qualities;
- the extent of incongruity with prevailing neighbourhood character; and
- the poor interaction with adjacent interfaces.

251 Mr Mangan explained that:

> From an objector's perspective…the highly visible and recognisable edge of the urban area in this location is, together with its landscape values and all-important view-lines to the bay, important for the character and sense of place of the residential neighbourhood adjoining the site to the north. The density and scale of the proposal would significantly detract from that.

We heard numerous submissions from other objectors on similar grounds.

252 Ms West of the Green Wedges Coalition submitted that it has been rare for residential development to be approved in green wedges throughout Victoria and that, in her experience, no proposal of comparable bulk, scale and height has been approved since relevant green wedge provisions were finalised as part of the Melbourne 2030.

253 Ryman further submitted that positive aspects of the development included substantial setbacks, use of topography to shield public views of buildings,

[39] This has been referred to as Lot 1 on TP813402. However, discussion at the hearing indicated that a second lot is proposed for development and is claimed to be within Ryman's ownership. This issue would need to be resolved before any works could commence. The mapping in the CHMP indicates that almost all the activity area will be impacted except the far western section as described in Map 6.

relatively low scale buildings, extensive tree retention and replanting, maintaining landscape values and provision of a functional site layout.

254 Ms Ring gave evidence for Ryman that this was not a development proposal that would threaten or compromise policies protecting non-urban landscapes between Mount Eliza and Mornington. A prime reason was because of the site's longstanding history of institutional use and development and the fact it is not in the Green Wedge Zone per se. Ms Ring considered the land would continue to fulfil its function of an open setting with a view to the mansion after redevelopment.

What is the relevance of visibility from the public versus private realm?

255 Mr Townshend submitted for Ryman that it would be reasonable for the Tribunal to attribute greater weight to buildings and structures that would be visible from the public realm, with comparatively lesser weight to those that could only be viewed on the site itself.

256 This was aligned with a corresponding submission that neighbourhood character is principally understood in one's experience from the public realm, whereas impacts on the private realm are more suitably assessed as amenity impacts.

257 Ryman and its expert witnesses emphasised that the proposal would result in a limited perception of urban development from the public realm given the site's sloping topography and generous landscaped setbacks to most interfaces.

258 In fact, Mr Sheppard's evidence focused almost exclusively on the treatment of interfaces and the impact of the redevelopment on the public realm. In response to cross examination by parties and questions from the Tribunal, it became clear that he considered that one's experience of internal spaces to be created did not warrant significant scrutiny because they were regarded as 'private'.

259 Mr Chessell challenged this approach on behalf of Council, submitting that the planning scheme at Clause 15.01-1S for example does not distinguish between public and private views when requiring development to "respond to its context in terms of character, cultural identity, natural features and surrounding landscape". We agree. He asked rhetorically whether the impacts on a heritage property would be evaluated differently if that property was surrounded by high fencing and entirely obscured from public view.

260 We find it is reasonable in this case to provide higher levels of scrutiny of the appropriateness of development visible from the public realm because of the sensitivities of this site.

261 In our view, the fact that many (centralised) parts of the site are not readily visible from public vantage points provides an opportunity for buildings of

increased scale in these locations, provided that heritage and landscape values are respected.

262 Beyond this, we find the applicant's approach too superficial for this landholding. We reject the notion that the relevance of the internal site configuration and presentation of buildings is principally in terms of amenity for future residents. This site is not an isolated parcel of land and has a strategic role to play that calls for appropriate development of the site in its entirety.[40]

263 In our opinion, the configuration of buildings and works and their effect on the layout and presentation of the entire site (whether directly visible by the public or not) is still a highly relevant consideration in this policy context which emphasises the concept of an inter-urban break.

Kunyung Road streetscape presentation

264 Mr Sheppard accepted that the view of the site from Kunyung Road is important in terms of neighbourhood character and also in contributing to the characteristics of the inter-urban break.

265 Notwithstanding, he considered Building 01 would present acceptably to the public realm in Kunyung Road for a number of reasons. These included its angled setback of between 40.4 metres from the site frontage and 63.3 metres to the southern property boundary, the building design including increased height where site levels fall away and the natural treed front setback that would be maintained and enhanced.

266 Mr Sheppard also considered that the planning scheme and the former use and development of the land contributed to expectations of different built form on this site compared with other land outside the UGB, where buildings could be prominent but not dominant from the public realm. He regarded the ESO as the policy that sought to most clearly implement the concept of an inter-urban break and confirmed that this did not apply to the subject land.

267 We recognise that the amended plans provide a more tempered built form to Kunyung Road, compared with the original application plans which provided more extensive built form closer to the site frontage. We also accept that sound planning principles do not generally require buildings to be invisible from public vantage points.

268 While the existing bluestone Principal's residence is already a feature of the current streetscape, we distinguish the proposed design response which would provide a far more substantial face to the street at a far taller height and larger scale, including an approximate length of 67 metres. This is

[40] The analysis undertaken by the applicant also neglects the opportunities for public and private views down the two wide accessways and from land opposite on Kunyung Road which would enable a more fulsome appreciation of the building layout. There are also qualities of the proposed occupation of this site that mean that it will be frequented by a large number of non-residents.

notwithstanding the fact this building will present as a 2-3 storey building given the difference in levels compared with the footpath[41] and the fact individual units have been designed with articulated facades at all levels.

269 We support concerns expressed by Council that the scale of Building 01 in this streetscape would notably exceed buildings within the township and in the adjacent residential area. This is a concern for land outside the UGB in principle. Another equally relevant factor is policy which seeks to maintain the inter-urban break and the landscape presentation of the site.

270 We consider that a respectful response to this policy would preclude a sizeable building in this location running parallel to Kunyung Road. While there may be scope for a far more confined, low slung pavilion building form in this general location, we are unable to support Building 01 as designed.

271 For the record, we do not consider that the curtailment of bay views from this part of Kunyung Road, the adjacent side street (Kanya Road) or from private land opposite would justify the removal or redesign of this building. While these views may be valued by local residents, they are limited and somewhat fortuitous. In our opinion, they are not an integral part of the character of this site when viewed from public land, and should be distinguished from the far more significant, sweeping public views of the bay that can be obtained further north along Kunyung Road.

272 We take a different view of Building 02. While it is also proposed at 3-4 storeys, it is located far deeper into the site and consequently far more removed from public view. It also takes advantage of site topography as the land slopes towards the coast.

Interface considerations

Kunyung Primary School

273 Many local residents who are parents at the school made detailed submissions about the undesired effects of the proposed use and built form on the operation of the primary school. They submitted that particular sensitivities arose because of the use of adjacent classrooms, playgrounds and toilet blocks by younger students in particular. They were concerned about the capacity for aged care residents and visitors to observe these activities.

274 While we accept that these concerns are genuinely held and reasonably widespread among the objectors, we regard them as overstated given the nature of the two uses.

275 We are not persuaded that an aged care facility and primary school are in any way incompatible simply because both are regarded as sensitive land uses. The modern concept of seeking to facilitate ageing in place

[41] Illustrated by sections on DA11.

acknowledges that aged care and retirement facilities are themselves community facilities. It is not uncommon to find them suitably co-located with institutional facilities (including educational facilities) or residential neighbourhoods for mutual benefit.

276 Likewise, we do not consider that the aged care facility needs to be designed to prevent all views to the school. A favourable consideration for this proposal is the siting and outlook of school buildings and key facilities such as the oval, which are principally internal to the school itself and to the coast, with the exception of one music/performance room towards the front of the site.

277 The school is on public land[42] and is currently fenced with wire fencing that is visually permeable to the subject land. This appears to be a longstanding existing condition from when the site was operating as a business school.

278 The application proposes solid fencing along this boundary which would provide greater shielding of school activities from views along the northern driveway and pedestrian path and at ground level.

279 At ground level, Buildings 04, 05 and 07 would be set back from the common boundary in the order of 16.9 to 25.8 metres, with increased setbacks to some upper levels. Excluding Building 06 at a reduced setback (discussed later), these setbacks would provide a reasonably substantial separation that would be supplemented by layered tree planting that would be expected to filter views further.

280 This is a measure that would appropriately exceed the separation that would be expected between buildings in different ownership within the township boundary, for example. Subject to the appropriate configuration of buildings, we consider these setbacks and interface treatment would assist in creating a meaningful transition into the UGB for this land, recognising it has already been developed for intensive institutional land use.

281 There are also additional opportunities for the school to plant screening vegetation, especially in areas adjacent to the existing oval.

282 While balconies for the retirement village would not be screened, we consider there are benefits to both the residents of the new facility in terms of maintaining amenity and a broad outlook, as well as providing further passive surveillance of the school.

283 In terms of built form, we accept that the proposal would involve the replacement of scattered outbuildings with more intensive new development towards the common boundary.

284 In so far the Jubilee Wing is concerned, this already presents a bold and tall built form orientated toward the school. We consider this provides scope for replacement built form in this general location provided that appropriate setbacks and modulation are provided.

[42] Within the Public Use Zone.

285 However, we accept submissions from Council, evidence from Professor McGauran and some objectors that Building 06 in particular has not been sensitively designed to meet site constraints and this strategic context. It provides a long (albeit partly cranked) façade parallel to the school at a height of 2-3 storeys. To this extent, it adopts a longitudinal orientation that does not follow site contours in the way that other buildings do, such as the northern element of Building 04.

286 Another significant consideration justifying a reduced footprint for Building 06 is that there is a need for careful building siting and design overall along this interface, recognising that it delineates the UGB. In our opinion, this would result in a more intensively developed interface than would reasonably be expected from land outside the UGB.

287 In these circumstances, we consider that generous spacing between buildings to allow views through and wide, landscaped circulation areas are crucial to an acceptable presentation of this land for urban development outside the UGB.

288 We consider that a building with a narrower face to the school, orientated more north-south could be supported in this location, generally adopting the location and scale of the 4 storey component of Building 06 to the south east. If this was undertaken, the proposed building including Building 07 and Building 02 would adopt a similar north-south orientation to school buildings, responding more suitably to site topography.

289 By contrast, we do not share concerns of objectors that Building 07 is problematic because of its scale or proximity to the school. It is well set into the site and responds to its slope and is in an area already occupied by a cluster of existing buildings. It would also adopt an angled setback with a minimum 16.9 metre setback from the common boundary and could be buffered by new landscaping. Notably, it would also present with a narrow building face to the school.

Green Wedge land

290 Council submitted that the southern return of Building 05 was an inadequate response to the values of adjacent farmland to the south, recognising that both properties are outside the UGB. In addition, it emphasised the natural landscape values of the adjacent site which are reinforced by its limited capacity for redevelopment given its location in the Green Wedge Zone.

291 Council was concerned that a building of 3-4 storeys constructed within 10 metres of the common boundary would not be consistent with expectations for this interface. We agree.

292 Much of the site is buffered from land to the south from established vegetation on the subject land. However, we consider that the direct relationship between this land and the open rural landscape to the south has not been sensitively responded to in the vicinity of Building 05.

293 We regard the scale and siting of the southern element of this building as particularly problematic since it would provide an abrupt and unsympathetic interface to land within the Green Wedge that is protected for its scenic values.

294 Also, a substantial building in this location would detract from the values of the inter-urban break when viewed from the coast. Expert witnesses such as Ms Ring and Mr Sheppard considered this was a reasonable location for a new building since it would constitute infill between the northern boundary and the existing mansion.

295 It was suggested by Ryman and its experts that a building in this location would simply extend the line of development along the coast which is already evident to the north. While this may be true, this other land is inside the UGB and potentially also within the defined Mount Eliza township boundary.

296 We are particularly cautious about such justification in circumstances where policy seeks to reinforce the qualities of the inter-urban break for this land, albeit recognising the existing landmark that is the Moondah mansion.

Osprey Ave

297 There are two freestanding dwellings adjacent to the subject land which we observed on our site inspections.

298 We accept the evidence of Mr Sheppard for Ryman that this interface has been appropriately managed by building setbacks, design and intervening vegetation. In addition, we consider that the primary outlook from these residential properties is to the coast, rather than towards the subject land.

299 We note that these properties would likely benefit from a more open outlook across the landscaped areas of the subject land if Building 05 was removed in line with our findings.

Residential properties opposite

300 We heard submissions from a number of residents who live on the opposite side of Kunyung road who objected to the proposal. They were concerned about the visual impact of the new buildings and the potential to generate increased noise, headlights and the like. We also inspected a number of these properties from inside.

301 These dwellings are substantially separated from proposed buildings on the subject land and are also notably more elevated given the increasing topography. They are also filtered by generous front gardens and landscaping on the subject land that will be retained and enhanced.

302 Their residential outlook to the west is expected to be well above the rooftops of the new buildings and, although some existing (generally confined) water views may be diminished, we find that there is no

reasonable expectation that these views of the bay will be maintained across all parts the site, being land in private ownership.[43]

303 These are significant factors which lead to our conclusion that the proposed development (and more so if Building 01 was not approved) would not unreasonably affect the amenity of these properties.

Tribunal response to potential built form changes offered by Ryman during the hearing

304 In closing submissions Ryman offered a number of changes to proposed buildings and structures by way of permit condition as a response to party submissions, evidence and questions from the Tribunal.[44] These changes included:

- an increased setback of Building 05 to the boundary of the Green Wedge zoned land to a minimum of 16.8 metres (compared with a 10 metre minimum setback on the amended application plans)
- potentially removing half a floorplate from Building 05 to lower its profile;
- removing most of the east-west portion of Building 06 (extending somewhat into the three storey element of that building as shown in the amended plans); and
- lowering part of the bowling green by 1.4 metres with associated reconfiguration works.

305 We would generally support the changes proposed to Building 06 in line with our findings above, subject to confirming design and levels. We consider this would have the potential to result in an acceptable design response and presentation to the interface with the primary school.

306 Likewise, we consider the changes proposed to the bowling green would have the potential for acceptable outcomes subject to detailed design. The key objective would be to avoid intrusions into full height viewlines of the arcaded façade of the mansion from the entry drive.

307 However, given heritage, interface and UGB concerns, we remain unable to support:

- a substantial building in the location of Building 05 even if the setback to the Green Wedge zoned land was increased to a minimum 16.8 metres;
- Building 01 having regard to its siting and scale; and
- Building 03 as sited and designed, given its impacts on viewlines to Moondah mansion and its effect on the open landscape values of the site.

[43] No party identified any view sharing policies or provisions that would apply to these interfaces.
[44] Supplemented by concept plans at J57-J61 of the Tribunal Book.

308 We are conscious of Mr Townshend's observation that, in some ways, this proposal is in the nature of a master plan for the site. It follows that there may be some flexibility in the siting and design of certain buildings to achieve an acceptable outcome for the land as a whole.

309 In these circumstances and given the extensive public participation and hearing process to date, we considered whether it may be appropriate to issue an interim determination allowing for the circulation of amended plans to address our concerns.

310 However, we consider that the scope of these changes go well beyond what can reasonably be accomplished within the current permit application. Numerous buildings would need to be removed or redesigned and overall site planning and circulation would need to be reconsidered.

311 Also, while our reasoning has principally addressed individual buildings, when read cumulatively, we consider that this proposal for numerous sizeable new buildings across this site is too ambitious having regard to the policy and physical context.

312 This is particularly the case where most buildings adopt a similar typology, scale and design, creating an impression of a campus of like buildings. Its effect is also magnified when buildings are proposed in parts of the site with a currently open landscape character.

313 While we have identified scope for new buildings, especially with increased scale on central and northern portions of the site, greater restraint is required to preserve values of parts of the site that are currently free from buildings. A fresh permit application would need to consider and act on these more limited parameters to achieve sensitive redevelopment.

LANDSCAPE AND ECOLOGICAL IMPACTS

314 The land has impressive proportions with formal gardens including a wide variety of established trees and other vegetation. It also contains significant areas of native vegetation, particularly on the escarpment leading to the foreshore.

315 Numerous objectors were concerned about the impacts of the proposal on the environmental values of the site, especially the effect of tree removal and additional built form on wildlife and ecology.

Proposed tree removal

316 The applicant commissioned a number of arboricultural reports in support of the permit application and relied on the evidence of Mr Howe, an experienced arborist, horticulturist and landscape heritage consultant at the hearing.

317 If a permit was granted, Council had a preference for additional eucalyptus trees to be retained within the property frontage.[45] Mr Atkinson who had

[45] Tree Nos. 387, 393 and 394.

prepared a landscape concept plan confirmed this could be achieved with adjustments to the proposed path layout. Likewise. he explained how a a group of native trees along the property frontage (Council land) could be protected if required by relocating a proposed entrance and path.[46]

318 Some objectors opposed the extent of tree removal to facilitate the proposal, especially established native trees, which they considered would lead to a measurable loss in biodiversity and a diminution of landscape character.

319 Other objectors were particularly concerned about the removal of trees near the common boundary with the primary school, especially in light of what they regarded as a relatively narrow planting area proposed adjacent to this interface.

320 We accept that a sizeable number of trees are proposed for removal to facilitate the redevelopment.[47] Notwithstanding, had we supported the redevelopment scheme, we would have considered the applicant's approach to managing vegetation on site to be acceptable for reasons including:

- The two key areas of vegetation requiring protection for streetscape and environmental purposes are the treed area across the site frontage and the vegetated escarpment. The vegetated escarpment would not be negatively impacted and there is an opportunity for net gain through future management. For the most part, established trees (especially native trees) within the property frontage will be protected during the redevelopment. This would be supplemented by the addition of mid and understorey plantings (to be documented on a detailed landscape plan for Council approval).
- While a number of established trees are proposed for removal, including trees of moderate retention value, they are for the most part decorative or commemorative trees planted in connection with the use of the land as a business school and are not generally visible external to the site. They are not native trees protected by Clause 52.17 of the planning scheme. Likewise, the land is not affected by a Vegetation Protection Overlay or Significant Landscape Overlay. No permission is required under relevant legislation such as the *Flora and Fauna Guarantee Act 1998*.
- There is substantial scope for planting semi mature trees throughout the site as a whole, even once redeveloped. This was illustrated through a landscape concept plan but could be further enhanced.
- While there would be some opportunities for planting additional trees along the common boundary with the school, we would have been in favour of increasing this planting area by potentially redesigning the pedestrian path or roadway to provide a wider area. Particular

[46] Tree Nos. 337 and 338
[47] Comprising a total of 2 high trees assessed of high worthiness to be removed, 43 of assessed of medium worthiness and 142 others.

attention would need to be given to this aspect of the landscape plan to provide an appropriate visual buffer to a new complex of buildings.

- In our opinion, had the siting of buildings was found to be acceptable, we would have generally supported the approach taken by the applicant's team in terms of giving priority to retaining specific trees while removing others. For example, we would have accepted the priority given to retaining the intact historic mature cypress hedge over Tree No. 127 (Lemon scented gum) if basement access was required for Building 01.
- Before plans were endorsed, there would be a further opportunity to minimise removal of established trees and maximise replacement planting as confirmed in evidence.

Potential impacts on native vegetation and fauna

321 The application was accompanied by assessments from ecologists on behalf of Ryman including Ecology and Heritage Partners which recorded 27 indigenous plant species.[48] It did not provide a list of fauna seen or recorded on the site but noted records of 15 nationally significant, 18 state significant and 12 regionally significant fauna species previously recorded within 10 kilometres of the study area.[49]

322 Mr Organ expressed the view that:

> Based on the modified nature of the majority of the study area (the extensive lawns and ornamental planted gardens), other significant species are unlikely to occur, particularly in the parts of the study area lacking native vegetation. In particular, many of the significant species recorded within 10 kilometres of the study area are marine or freshwater species. Some birds may fly over the study area when moving between other areas of habitat but are unlikely to reside within the study area itself or rely on the study area as important breeding or foraging habitat.

323 In respect of the presence of koala, Mr Organ considered that this species may occasionally use the site and surrounds to move between more abundant food sources, there are only two trees on the land which are preferred by koala and insufficient to support a population of the species within the site. He considered that because most trees would be retained on the land, especially adjacent to Kunyung Road, "the ability of koala to occasionally utilise the site to traverse between higher habitats within the broader area will not be impacted by the proposal".

324 The application does not propose any works within the area of native vegetation on the escarpment. On this basis, Ryman's expert reports do not address potential impacts on this area.

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[48] The relevant EVCs do not meet established criteria for national or state significant communities.
[49] Based on the Victorian Biodiversity Atlas (DELWP 2020), in addition to 28 nationally significant and two state significant species not previously recorded by with potential to occur in the locality

325 However, during the hearing, it became apparent that there were ready opportunities that should be taken to improve the quality of this vegetation, especially through weed reduction and management required by permit condition. This would also directly facilitate improved erosion control.

326 We note the evidence of Mr Howe that there are a number of self-seeded trees within the predominantly native escarpment vegetation and that it may be desirable for these to be removed. This could be one potential component of such a plan if ecological values are to be prioritised. If the concern is to control their spread through self sowing, the proposed use would result in more active management of the overall landscape that could contain these effects.

327 Mr Organ gave evidence about the potential impacts of the proposal on what he identified as two remaining patches of native vegetation within the part of the site affected by the proposed development.[50] These patches are somewhat degraded but contain native grasses which have traditionally been mown and form part of the Grassy Woodland Ecological Vegetation Class (EVC 175).

328 The objector group Save Sir Reg's Wedge Inc called Dr Jeff Yugovic to give expert evidence about potential impacts on ecology. In summary, he considered:

- the areas of remnant native vegetation are more extensive than mapped by Mr Organ – the two areas identified should be larger and two additional areas should be identified,[51]
- the site contains vegetation from a total of five EVCs (compared with three identified by Ecology and Heritage Partners) including Coastal Dune Scrub ad Berm Grassy Shrubland;
- the impacts of the proposal on fauna are likely to have been understated; and
- Moondah Beach is an important natural and recreational asset which supports significant native vegetation and includes sites of geological and geomorphological significance. The ecological values of the foreshore should be enhanced, particularly through the removal of imported material on Moondah Beach.

329 Dr Yugovic and some objectors requested Ryman transfer its portion of the foreshore into public ownership (to vest in Council) to help compensate for biodiversity loss and to provide appropriate management. In our opinion, this request goes well beyond the scope of the current permit application or any reasonable expectations arising from zoning or land management practises.

[50] Estimated at 0.014 ha.
[51] Per Figure 1 of Dr Yugovic's expert report.

330 In terms of remnant vegetation, the applicant provided a copy of a further Native Vegetation Removal Assessment from the Department of Environment, Land, Water and Planning (DELWP) for the larger area identified by Dr Yugovic.[52] This remained within the intermediate assessment pathway under the *Guidelines for the removal, destruction or lopping of native vegetation*, *DELWP 2017* (Guidelines).

331 We have considered realistic opportunities to avoid or minimise impacts on this vegetation. We accept the evidence of Mr Organ that, in the current design, engineering requirements to create a realigned internal access road and footpath along the northern boundary would impact the northern patch. That size is small and of relatively low quality. Impacts on the southern patch have been minimised by the siting of buildings and configuration of the internal movement network.

332 Significantly, the application would avoid all impact on the high quality patches of native vegetation on the escarpment leading to the foreshore.

333 In its initial referral response (for the more confined area), DELWP advised that suitable offsets could be provided.

334 We accept that offset credits could be reasonably sourced for this vegetation in line with the Guidelines. In reality, we expect that while complete loss has been assumed, there is also potential for a proportion of this remnant vegetation to be retained and maintained on site within a managed landscape setting. This is made possible by avoiding building footprints within these patches.

335 Mr Karakitsos and the South Eastern Centre for Sustainability Inc considered the proposal would significantly reduce habitat and wildlife corridors for fauna. They were also critical of a lack of species identification on the site by way of survey, compared with more extensive investigation on the water reservoir property on the other side of Kunyung Road.[53]

336 It is clear that local residents highly value the opportunity to live amongst wildlife in this part of Mount Eliza. We appreciate it is important to preserve opportunities for a range of local fauna when considering the redevelopment of land.

337 At the same time, we consider these opportunities should generally be proportionate to the values and setting of the land. This land comprises a modified site, with existing institutional habitation and landscaped gardens. It is not specifically protected through an Environmental Significance Overlay, for example.

338 We accept the evidence of Mr Organ that it is unlikely that significant flora species occur on the part of the land identified for development given its modified nature. Mr Organ was also of the view that the native vegetation

[52] Included in J41 of the Tribunal Book, identifying 0.242 ha for removal.
[53] Included in the Public Use Zone.

proximate to the foreshore (mainly Coastal Headland Scrub) was unlikely to provide habitat for significant fauna species given high levels of weed infestation, erosion and general disturbance.

339 While some fauna species occupy the land from time to time or traverse through it, we are not persuaded that the site forms part of key habitat for any of these species or operates as part of a more established wildlife corridor. We are unable to accept evidence that the development of this site would further threaten species diversity or any species in particular in this region.

340 While the proposed development would significantly intensify the development and use of the land, there would still be some opportunities for fauna to occupy or inhabit the land, including by foraging, nesting or passing through. These opportunities have the potential to be enhanced or improved if a less intensive development outcome is sought in future, especially if widespread mid to understorey vegetation is established.

Bushfire management

341 The land is wholly within a Bushfire Prone Area but is not covered by a Bushfire Management Overlay. There are strong planning policies at state and local level including Clause 13.02 and 22.11 requiring the safe design and management of land having regard to bushfire risk, with the prioritisation of protecting human life.

342 The permit application was accompanied by a bushfire development report prepared by Terramatrix which explained:[54]

- the site is adjacent to an established suburban area and is close to areas that would be rated Bushfire Attack Level (BAL) BAL-Low. This represents a relatively low bushfire risk landscape;
- the majority of the land is managed as a low threat cultivated garden and parkland;
- nevertheless, foreshore vegetation on the land and adjacent pasture constitute a bushfire hazard that need to be factored into the use and development; and
- the use of the land for aged people should be taken into account given their potentially reduced ability to respond to bushfire threat.

343 The report recommended that all new buildings be constructed to BAL-12.5 standard and setback the minimum distance required from classified vegetation beyond the site boundary. In addition, Building 05 should be constructed to BAL-29 for most components (given the exposure to coastal scrub vegetation). During the hearing, Ryman's consultant re-confirmed

[54] Dated January 2021.

requirements for fencing between proposed Building 05 and the Green Wedge Zone land.[55]

344 Terramatrix considered that a Bushfire Emergency Management Plan could be prepared if required by the Country Fire Authority (CFA).

345 The application was referred to the CFA. It did not object to the grant of a permit, subject to specific conditions such as restricting planting in certain areas, providing a vehicle turnaround area and restricting fire truck access to the northern entry.

346 We accept that with careful siting, building design and management, this site could suitably mitigate bushfire risk to an acceptable level. However, had we been inclined to approve the current proposal, we would have strongly supported the development of a Bushfire Emergency Management Plan. Such a plan has the potential to be effective for land with confined site and landscape bushfire risk and where there is a centrally coordinated facility including permanent staff. This would need to include specific measures to account for the vulnerabilities of future aged residents if evacuation was required.

Proposed landscaping

347 In light of our principal finding we do not make any conclusive comments about the adequacy of the proposed landscape concept. However, we make a number of observations for completeness.

348 A relevant heritage policy in Clause 22.04-3 seeks to "support landscaping that will enhance the historic cultural landscape character of a heritage place". We recognise that the property hosts a mix of native and exotic trees and consider there is scope for this to continue in some form in deference to the values of the historic garden.

349 As mentioned, we consider that there is also scope for a well-designed bowling green in the vicinity of the Mansion, reminiscent of the historic recreational use of the Mansion open lawns.

350 Beyond this, we would have supported objectors' preferences for a native (primarily indigenous) planting scheme where possible and respectful of the heritage setting, such as by replacing the proposed feature palms outside the Moondah mansion, the rows of capital pears along the northern accessway and the proposed exotic planting in the vicinity of the gatehouse entry.

351 This would provide a greater opportunity to enhance the ecological, coastal and landscape values of the site consistent with broader planning policies for the inter-urban break.

TRAFFIC AND PARKING

352 Many objectors were concerned about the impacts of the proposal on the local and broader traffic network, particularly:

[55] At J45 of the Tribunal Book.

- capacity for safe ingress and egress, especially given the likely older demographic of site residents and the land's adjacency to the Kunyung Primary School;
- impacts of additional traffic on Kunyung Road and other local roads;
- additional pressure on the intersection of Kunyung Road and Nepean Highway (considered to be already above capacity at times), especially in the absence of a commitment to specific mitigating measures as part of the proposal; and
- the allocation of resident and visitor parking, including claimed inadequate on site parking for all uses when operating at peak visitation (such as when events would be held at the place of worship).

353 Council and a number of other objectors also raised concerns about the layout, design and management of the proposed internal road and pathway network. A related issue was the proposed staging of development to provide ongoing access for people of limited mobility.

How should site access be managed?

354 Historically, the site used two access points - the southern access through the state heritage listed gatehouse, and a secondary northern access. Ryman proposes to reconstruct an extended version of the northern accessway to create a loop road with offshoots to various buildings.

355 The gatehouse has fixed dimensions which both limit its use by oversized vehicles and constrain its capacity for two way vehicle movements depending on projected usage rates. We accept the evidence of Mr Maina who gave evidence for Council that this single width access point requires intervention to enable safe operation to service projected peak hour vehicle use.[56]

356 Mr Hunt, Ryman's expert traffic witness, considered that access and egress through the gatehouse would be managed appropriately by a 'stop-go' light system combined with signage to give priority to incoming vehicles and pedestrians.

357 After further consideration, Mr Maina considered that a 'stop-go' light system in this particular setting would be potentially problematic, since it may create conflict by suggesting that incoming vehicles do not need to give way to pedestrians (particularly when faced with a green light).[57] Council therefore expressed a preference for the gatehouse to operate as a one-way only ingress point.

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[56] Mr Maina's revised evidence was that the gate house access would attract 39 vehicle movements during peak hours, compared with the Australian Standard limit on 30 vehicles per peak hour for the use of a single width access accommodating two-way traffic.

[57] In a supplementary report tendered at the hearing after his oral evidence. Depending on the nature and location of signage and traffic controls, additional permissions may be needed under road management legislation and/or heritage controls.

358 While we do not need to decide on a preferred management approach given our principal findings, we make a number of observations. We are not persuaded that a 'stop-go' light system would be suitably safe to regulate incoming traffic, especially in this context where there are consistently large numbers of pedestrians traversing the driveway at school pick up and drop off periods (summarised below).

359 In these circumstances, we would have preferred to confine the use of the southern gateway to one way (incoming) vehicles. This direction would also have the advantage of maintaining the historic approach to the mansion which we have found is key to the site's presentation.

360 We would have also been satisfied based on the further analysis undertaken by Mr Hunt that the northern access would have sufficient and safe capacity for all exiting vehicle movements, subject to appropriate design and management.

361 However, if a fresh permit application was made in line with our suggested approach to site planning, we anticipate it is likely to result in a reduction of units (with coincidental reduced vehicle movements) to the point that the southern accessway could be used for two way traffic in line with recommended standards without any specific interventions.

Could the interface with the school be managed acceptably?

362 This was a central concern for a large number of objectors who considered that it was fundamentally challenging, if not inappropriate, for an aged care facility traffic to directly interact with pedestrian and other movements associated with the adjacent primary school. Objectors sought to emphasise the incompatibility between potentially poor response times for elderly drivers and a lack of road safety awareness in younger pedestrians.

363 Local residents tendered a count of foot traffic during various school pick up and drop off periods undertaken by Ms Ennis. These counts indicated that there were just over 1,000 pedestrians traversing the site each day during both peak periods. This was consistent with our observations on our inspections.

364 Notwithstanding, we would have found that the interface with the school could have been managed acceptably in traffic and safety terms since, in summary:

- we accept the evidence of Mr Hunt that it is appropriate to assume that people associated with the facility who are driving are licensed and capable of driving in accordance with road rules;
- road rules provide that pedestrians have priority over exiting vehicles when travelling along a pedestrian pathway;
- while we consider that great care needs to be taken when driving in an environment where an aged care facility adjoins a busy primary

school, the two uses are not fundamentally incompatible in traffic terms;

- acceptable sight lines could be provided for both accessways in line with Australian standards to provide clear visibility of passers-by. As indicated at the hearing, we would have given more careful consideration to reconfiguring or relocating services close to the property frontage to extend the length of direct sightlines towards the school;
- we accept evidence from Mr Hunt that peak vehicle movements associated with the aged care facility are unlikely to coincide with peak school times, with the former projected to occur in the late morning/midday period;
- with the exception of school pick up and drop off times - which are highly confined in duration and are predictable in timing (noting vastly higher pedestrian counts in the concentrated periods between 8.20am-9.00am and 3.15pm-3.40pm) - vehicle and pedestrian traffic in Kunyung Road would be consistent with its collector road layout and designation;
- to its credit, the school already actively manages student pick up and drop off periods through the use of staff, parents and crossing supervisors in an effective way to ensure the safe movement of children along and across Kunyung Road, as well as the passage of vehicles in the vicinity of the school premises (including 'kiss and go' bays); and
- there are further opportunities for physical and management measures by the site operator to improve the safe operation of the access points, including signage reinforcing the need to give way to pedestrians as well as the offer by the applicant to provide traffic supervisors to guide traffic during school pick up and drop off periods. While we accept submissions that these measures would not be equivalent to statutory measures, we consider they would have been suitable as supplementary measures to provide a level of additional oversight.

Would proposed parking arrangements be suitable?

365 A total of 347 car parking spaces are proposed on site for residents, staff and visitors. The majority of these are located in various basements under corresponding buildings. There are also 10 service and emergency vehicle spaces.

Resident parking demand

366 The application assumes comparable parking demand for the assisted living units and the residential aged care facility. Council considered that a higher proportion of parking spaces should be allocated to the assisted living units since they were not considered to form part of the residential aged care use.

of the land. It advocated for one car space per unit, rather than the 0.3 spaces per unit currently proposed.

367 Significantly though, Mr Maina considered the overall number of parking spaces to be provided on site would be adequate based on a car parking demand assessment. However, he recommended these spaces depicted in the application plans be reallocated to provide greater number of visitor parking spaces. Alternatively, he recommended the place of worship should be prevented from holding special events during weekdays.

368 We are not required to resolve this issue conclusively since the adequacy of parking would need to be revisited in any fresh proposal in any event. However, we are not necessarily persuaded by Council that the overall number of parking spaces offered to residents by category of occupancy is deficient in the current proposal.

369 In reality, there is a ready opportunity for parking spaces to be reallocated between various locations to cater for actual demand at any given time so long as the property is operated under consolidated management as proposed.

Visitor parking

370 Another issue was whether sufficient on site parking spaces would be provided to cater for parking associated with the place of worship when frequented for special events.[58] Residents were concerned about take up of on street parking spaces on Kunyung Road if this parking demand was not managed appropriately.

371 The application seeks a reduction of parking of 20 spaces for the use of the place of worship, compared with the rate in Clause 52.06 of the planning scheme.[59]

372 Ryman proposes a Special Event Management Plan to cater for such times. A draft was included in Mr Hunt's evidence. Essentially, it proposes a system of parking marshals to direct traffic on days when special events are held at the place of worship, with capacity for parking along one side of the internal driveway.

373 We consider these issues could have been managed through suitable permit conditions generally as proposed by the permit applicant. In principle, we would support the reduction of parking proposed for the place of worship given its close integration with the facility and expected day to day use by residents and their visitors.

374 There is also capacity through active parking management as well as physical capacity for overflow short term parking on the internal road network within the site (as depicted in plan form) to provide suitable arrangements for special events. These arrangements could operate in

[58] Noting also that permission is sought for buildings and works for the Place of Worship.
[59] We note that this is the only shortfall compared with the planning scheme requirement.

conjunction with a management plan for the place of worship limiting overall patron numbers to 120 at any one time.

375 Although we consider it unlikely visitors would choose to park on Kunyung Road given the travel distance and topography, we accept it may be desirable to prevent special events being held in the place of worship during peak school times to avoid any potential overflow impacts on Kunyung Road.

Impacts on the local road network

376 Mr Hunt estimated that the development would generate two way volumes of 935 vehicles per day, with up to 146 vehicles per hour expected during the site peak (late morning/midday). Mr Maina derived generally similar upper end estimates for vehicles per day but up to 71 trips at commuter peak hours.

377 Approximately 88 and 64 vehicles per hour are estimated for AM and PM network peaks respectively. In broad terms, we accept Mr Hunt's use of pre-COVID survey data as a more indicative baseline to predict maximum traffic volumes in this road network compared with more recent data.

378 Kunyung Road is extremely busy at weekday school pick up and drop off times. This was clear from submissions, evidence and as confirmed by our inspection, with vehicles banked up a significant distance from the site with generally slow moving traffic (generally in the western carriageway on the side of the land).

379 At other times, however, we accept that Kunyung Road operates satisfactorily as a collector road (Level 2) - consistent with its network designation.[60]

380 Mr Hunt prepared turning movement diagrams and estimates of vehicle movements at peak hour in each direction. We accept that the vast majority of traffic from the site will seek to travel in a southerly direction, towards Nepean Highway, Acheron Avenue (towards Mt Eliza) and Volitans Ave (comprising exit trips to Mornington).

381 Only a relatively small percentage (in the order of 10%) are expected to travel to local neighbourhoods to the north. We also do not consider there will be an unreasonable impact on the local road network from vehicles travelling to Mount Eliza Village given the numerous routes available.

382 Therefore, a far lower proportion of the overall site traffic will be expected to pass by the school directly, with a far higher percentage expected to travel in the opposite direction as the prevailing path of travel.

383 We are not persuaded by submissions by residents that Kunyung Road is either of a character or capacity that would fundamentally be compromised

[60] Noting this aligns with a target of 3,000-7,000 vehicles per day. Measured volumes were in the order of 3,350-4,200 vehicles per day, with the development expected to increase southbound traffic movements by approximately 850 vehicles per day.

by the additional vehicle movements likely to be generated by the proposed uses.

384 Some residents such as Mr Karakitsos and Ms Sheffield were concerned about the increased noise associated with additional vehicle movements.

385 While the proposal would result in notable traffic increases along Kunyung Road, we do not consider that additional passing traffic would equate to the type of noise disturbance that would unreasonably affect any residence, professional, service or other businesses operating from home in this immediate area. In any event, Kunyung Road is an identified collector road and the additional traffic that could be expected is within the engineering and environmental capacity of this roadway.

386 We are also conscious that some residents operate businesses from home. The principal activities of the proposed aged care and retirement facility are expected to be generally centralised on this site, such that they would not cause detriment to the amenity of the neighbourhood.

Impacts on the intersection with Nepean Highway

387 Kunyung Road is a road under Council's control and management, while Nepean Highway is a road under the control and management of the Department of Transport. Right turns are facilitated into Kunyung Road via a dedicated turn lane and only left turns out into Nepean Highway are permitted.

388 The application was referred to the Department of Transport which did not object to the grant of a permit.

389 One ground of Council's refusal related to the absence of mitigating works that may be required at this intersection. It initially suggested additional traffic lights may need to be installed. At the conclusion of the hearing, it proposed permit conditions on a without-prejudice basis requiring a Traffic Impact Assessment (TIA). These measures were sought before the commencement of the approved uses and would focus on:

- the performance and operation of the site access and egress points on Kunyung Road compared to baseline conditions;
- the performance of the intersection of Kunyung Road and Nepean Highway, including at peak times as compared to baseline conditions; and
- any recommendations for mitigation treatments or operational changes to the intersection of Kunyung Road and Nepean Highway that may reasonably arise as a consequence of the development.

390 The permit applicant did not investigate potential traffic impacts on the intersection between Kunyung Road and Nepean Highway as part of the permit application or in evidence to the Tribunal.

391 Mr Maina for Council analysed data on the existing operation of this intersection and found it was above acceptable operating conditions at certain times.[61] He therefore recommended that the additional impact of vehicle movements associated with the facility should be investigated with recommendations for mitigating measures if required.

392 Mr Hunt agreed that this level of detailed investigation would be appropriate, although he was of the opinion that this should be undertaken after stage 3 of the development, to provide data pertaining to actual traffic from the facility using the road network.[62] He also considered that mitigating measures were likely to be more operational rather than in the nature of improved or new road infrastructure, such as recalibrating the timing for traffic lights in the opposite direction to provide additional breaks for vehicles turning right.

393 We accept Council's position that it would be incumbent on the applicant to take responsibility to investigate and address the effects of vehicle movements from the proposed facility on this intersection. If the facility was to alter the status quo, it should take responsibility for proportional mitigating measures.

394 Had we approved the application, we would have supported the permit applicant's version of the condition including the timing of the investigation i.e. after part of the use was operational. The planning permit would continue to control the ongoing use of the land and the works would be proportionate to its impact, such that a condition of this nature would be enforceable.

395 Consistent with Mr Hunt's evidence, the traffic associated with the earlier stages would not of itself be expected to warrant additional mitigating works, but would provide useful data about practical operating conditions as an input to the TIA.

396 In addition, we accept the evidence of Mr Hunt and Mr Maina that there would be a range of potential mitigating measures available to restore this intersection to pre-development operating conditions if required. This would need to be explored with input from the Department of Transport.

Construction management

397 Objectors reiterated concerns throughout the hearing about the potentially long and disruptive effects of construction of the facility (if approved), particularly on school operations and residential amenity.

398 We recognise that development of this scale would be lengthy and would have the potential to be disruptive to local residents and the primary school. This is not a reason to refuse redevelopment if appropriate. Rather, it is a

[61] Based on pre-COVID results in 2018.
[62] This would result in occupation of 87 independent living units in buildings 2, 3 and 5 and would generate up to 300 vehicle movements per day, with up to 40 vehicle movements estimated at site peak.

matter that would require careful management to reduce construction impacts on the local community.

399 Ryman was prepared to accept a detailed condition of approval requiring a Construction Management Plan to be approved and implemented to Council's satisfaction. This could include management of suitable times for certain activities including access or egress to large construction vehicles, measures to manage emissions including noise, as well as a liaison officer for contact by residents and Council. This would be accompanied by a Construction Traffic Management Plan as proposed by Council.

FORESHORE ISSUES

Is the stormwater concept plan reasonable in principle?

400 A relevant strategy in Clause 21.08 seeks to "minimise the need for drainage outfalls to the coast and ensuring that the location and design of all structures minimises the impact on both physical and ecological processes and coastal amenity". It also seeks to ensure that preference is given to the re-use of existing structures "where feasible".

401 Some residents were very concerned that the proposal would increase stormwater discharge to Moondah Beach given the ongoing reliance on the existing outlet pipe and drainage system.

402 For example, Mr Eustace and Mr Albert identified that some existing drainage infrastructure assets (pits) were in disrepair and there were signs of coastal erosion within the area of native vegetation (observed on our accompanied inspection). Residents were concerned that additional runoff would cause scouring to Moondah Beach and would have the potential to reduce water quality if not managed scrupulously.

403 DELWP as the land manager of adjacent unreserved crown land did not object to the proposed use and development subject to conditions. These would include the containment of drainage runoff from the site onto coastal land to be controlled to pre-development levels to its satisfaction. It also required the drainage design to account for increased rainfall due to climate change.

404 In reality, the existing site (albeit with far lesser residential intensity than proposed) has historically discharged uncontrolled and untreated stormwater onto the foreshore and into the bay.

405 By comparison, the stormwater concept plan for the proposal would involve significant detention tanks including filtration and tertiary treatment systems, with careful attention to water flows across the site. This system would regulate water flows to ensure they did not exceed pre-development conditions and would need to comply with current regulations and best practice.

406 Having heard from Mr Chris White, Engineer, Adams Consulting, we are satisfied that the stormwater concept plan for this proposal would be

adequate to service the proposed use without unreasonable effects on the environment. This would of course be fully engineered as part of the future design work prior to construction to demonstrate its efficacy.

407 A further benefit expected from capturing stormwater 'upstream' is that it would reduce the risk of uncontrolled water flows and consequential erosion to the cliff face.

408 We would also have considered repairs to the existing infrastructure were warranted, especially damaged pit entrances, but otherwise accept the assessment by the applicant's engineers that this infrastructure has been investigated and found to be of suitable capacity and fit for purpose.

Foreshore access and works

409 For the record, we note that earlier proposals for lighting along this track were withdrawn by Ryman in an attempt to minimise the effects of illumination on fauna, the beach and the night sky.

410 The application does not propose any works to upgrade access to Moondah Beach and we observed that the existing surfaced roadway from the top of the escarpment to the beach is in poor condition. Similarly, access from the 'landing' at the end of this roadway to the sand is variable to challenging at present, even for able-bodied people, given the condition of an unsecured sand deposit without any defined transition points.[63]

411 While we accept separate permissions are likely to be required for this work given zoning and land management arrangements, we consider it was deficient for this application not to have addressed these issues at least in principle.

412 In our opinion, direct foreshore access is a key site feature and is an important benefit to future users. If the land is to be used and developed with an aged care and retirement facility, it would be remiss not to ensure there is convenient and safe foreshore access for at least a proportion of future residents.

413 In this regard, any future application should consider integrated permissions for such works.

414 We agree with Save Sir Wedge's Reg and the evidence of Dr Yugovic that it is highly desirable that these works have regard to principles of ecologically sustainable development. In particular, they should involve ecological restoration to the foreshore - especially within the title boundary, since existing conditions are unsecured and sub-standard. Dr Yugovic fairly suggested these works should involve short term stabilisation and long term fulsome removal as part of a broader strategy of managed coastal retreat with sea level rise.

415 However, we do not accept proposed conditions sought by objectors (as their default position) that public access should be provided through the site

[63] The landing generally comprises artificial fill lined by imported boulders.

to the foreshore. While there may have been opportunities in the past from time to time, these were fortuitous.

416 It is not reasonable to require this operator to provide safe passage through the site to the foreshore for members of the public when considering its obligations as both an aged care provider and private land owner. This is especially the case when other suitable public access points for local residents and visitors to access Moondah Beach are provided locally.

EVALUATING NET COMMUNITY BENEFIT

Significant social effects

417 Another ground of Council's refusal was that the proposal would result in significant social effects pursuant to section 60(f) of the *Planning and Environment Act 1987.* It suggested that the number of objections (1068 with 33 letters of support) should be taken into account by the Tribunal on review.[64]

418 Mr Chessell urged the Tribunal to consider the capacity for the proposal to generate adverse social effects as a consequence of "the impact of the project on the character and composition of the township of Mt Eliza, as well as on the recognised heritage values of the Moondah Estate".

419 Ryman submitted that the number of objections in this application was not enough to demonstrate a significant social effect and that both positive and adverse effects of the proposal must be considered.

420 All parties relied on the reasoning in *Rutherford & Ors v Hume CC*[65] and other seminal cases[66] where the Tribunal considered that such effects should be objectively ascertained; must be sufficiently probable to be significant; should have a causal connection to the proposed use or development; would generally involve effects on the community at large or an identifiable section of the community (rather than a small group of individuals); and should be based on a proper evidentiary basis or empirical analysis (such as a formal social impact or socio-economic assessment).

421 While a significant number of objections were submitted, we do not find that these necessarily equate with a significant social effect of the proposal. We accept that there is substantial local opposition to the aged care facility but consider that the principal adverse effects of the proposal would principally be experienced in built form and strategic planning terms, rather than as social effects per se. No objective evidence was presented by objectors to sustain this allegation beyond a general assumption.

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64 Pursuant to section 84(2)(jb) of that Act.
65 (Red Dot) [2014] VCAT 786.
66 Including references in the submissions for Save Sir Reg's Wedge at pages 40-42.

422 Even if a significant social effect is demonstrated, case law confirms it should still be balanced alongside all other relevant planning considerations.

423 The nature of this proposal is such that it stands to offer significant social benefits through the provision of integrated, modern aged care within this part of the Mornington Peninsula. This is a positive factor of the proposal being likely to deliver community benefit.

Evidence of need

424 Council explained that under planning scheme definitions, the independent living units forming part of the retirement village are to be regarded as a form of accommodation, rather than a health care (aged care facility).

425 Ryman strongly advocated for the fact that the facility as a whole should be regarded as a health facility and that it would deliver a substantial community benefit.

426 Parties did not dispute that Victoria is predicted to experience an increase in an ageing population and that there will be an increased need for services to all age cohorts.

427 Ryman relied on the evidence of Ms Wells, a retirement and aged care industry consultant. She identified that:

- *In the immediate Mount Eliza SA2, the benchmarks*[67] *indicate a current undersupply of 46 residential aged care places, and without further supply, this is projected to increase to an undersupply of 85 places by 2032. . .This would indicate the need to develop and open an average of 140 new places each year between 2021 and 2031 – that is the equivalent of opening 1.5 new sites each year*;
- *There are 7 proposed new sites and 1 existing site holding 609 allocations* [for residential aged care]. *If all were developmed [sic] by 2026, this would indicate the current undersupply of 195 places as at 2021 may change to an undersupply of 178 places within 5 years to 2026 or 903 places within 11 years to 2032*;
- To maintain the current 6.3% capacity for the 65 plus population to access retirement dwellings would require development of around 486 new retirement dwellings in the 5 years to 2026 or 896 new dwellings in the 10 years to 2031. While 516 new dwellings are proposed across 6 retirement villages (including the subject land), this would fall short of current capacity. At this point in time only 168 dwellings are known to be proceeding.[68]

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67 Referred to as Department of Health planning ratios of 125 aged care places per 1,000 people aged 70 and above, including targets of 80 residential care places and 45 home care packages.

68 Noting that a 72 dwelling proposed retirement facility by Ryman at Mount Martha was recently refused by the Tribunal in *Ryman Healthcare (Australia) Pty Ltd v Mornington Peninsula SC* [2020] VCAT 1394.

- Average entry age to retirement facilities is 74-75 years of age with an average resident age of 81 years. Community, government and resident expectations have shifted to a modern, integrated retirement village. There are currently no villages in the Mornington Peninsula offering independent living, assisted living and residential aged care "on the one site as a fully integrated care continuum".
- Provision of aged care services through the Ryman model would provide for significant savings to all levels of government compared with other models of care.

428 In cross examination of Ms Wells, Council sought to emphasise that the potential shortfalls in the provision of aged care were principally in parts of the municipality more remote from Mt Eliza.

429 Residents also expressed the view that there was no certainty that local residents of Mt Eliza or the relevant catchment would be able to reside in either aspect of the facility, with access depending on pricing.

430 While there will be an increasing need for aged care facilities throughout the Mornington Peninsula, we are not persuaded that there is evidence of clear localised need that could not otherwise be fulfilled. We are also not satisfied through evidence in this proceeding of a minimum yield that would be required to make this facility viable.

431 It is therefore entirely conceivable that a viable facility could be provided within a more confined development footprint that would constitute sympathetic redevelopment of this distinctive site.

432 Ms Wells also outlined features of Ryman's proposed operations that would provide a high standard of care to residents, referred to as "the Ryman Difference". These include a guarantee given to future residents that they would have a seamless transition through the facility within their lifetime to cater for all levels of care, as well as a low capped deferred management fee and fixed weekly fee for life.

433 Mr Townshend submitted that Ryman's model of care is highly consistent with the recommendations of the Royal Commission into Aged Care Quality and Safety, generally seeking to provide improved quality of life and connection for older people, offer more choice as to how and when care and support is accessed and to deliver residential aged care in less institutional and more flexible environments.[69]

434 While we accept that Ryman offers a high quality service to the aged, we refrain from placing too much weight on alleged benefits that may flow from the particular operations proposed, since the planning permit is proposed to run with the land rather than to attach to any particular operator.

[69] The Final Report Volume 1 was referred to in part during the hearing.

435 In *Steller Lifestyle Pty Ltd v Mornington Peninsula SC*[70] SM Bennett outlined planning issues relating to the provision of aged care in the Mornington Peninsula, with a particular focus on Westernport. He held that need was a relevant consideration in circumstances where the use of land for a retirement village required planning permission under the zone controls. However, the Tribunal regarded that application as:

> *...properly characterised as falling within the 'middle ground' of cases identified by the Tribunal in Tulcany Pty Ltd v Knox CC [2003] VCAT 1627 wherein 'need may not be a decisive factor in the case of an individual development application, but will be a factor which influences the balances to be struck between competing planning policy consideration' (sic).*

436 SM Bennett therefore regarded an assessment of need as one matter to be balanced when evaluating matters under Clause 65 of the planning scheme. Ultimately, in *Steller Lifestyle* he gave greater weight to zone and policy expectations which did not support the proposed density of development on that land, notwithstanding evidence of need for more retirement village units.

437 We approach the issue of need in this case through a similar lens.

Balancing need with other policy considerations

438 Residents and Council did not take issue with the provision of aged care per se. Rather, they considered that any claimed need for such a facility of this intensity on the subject land would not outweigh other relevant considerations such as strategic policy considerations and the need to achieve appropriate built form outcomes. Mr Chessell submitted:

> The Council, in making its decision in respect of the application, was cognisant of these clauses and that the provision of aged care facilities and retirement villages is important in servicing the needs of the community. That said, considerations of need in this case, do not outweigh the clear deficiencies of this proposal in heritage, strategic, or urban design terms.
>
> It is important to stress, also, that nothing about the nature of the proposed use of the site justifies:
>
> a) a facility of the size or intensity proposed;
> b) the provision of a campus of buildings of 3-4 storeys in scale;
> c) the provision of buildings of up to 70 metres in length; or
> d) the degree of urban intensification and character change proposed.[71]

[70] [2018] VCAT 55.
[71] Paras 48 and 49 of Council's closing submissions.

439 Some objectors emphasised that the strategic policy framework identifies Mt Eliza as a 'service town', which is to be contained within its established boundaries and is not identified as a key focus for future population growth.

440 Other objectors considered that need should not override the impacts on vegetation, heritage, character and protection of the values of the green wedge.

441 We accept that the need for both aged care facilities and retirement villages will increase over time as the population ages, but consider the evidence falls short of demonstrating either a strong need or one which is particular to this locality.

442 Another important consideration is a spatial one. Mr Mangan submitted that even if there is a need for more accommodation for ageing people, it is to be satisfied on urban land, and not on this site outside the UGB.

443 The submission made by Mr Morris MP resonates with us, that:

> Many of the claimed benefits of this development, and the claimed consistency with the State Planning Policy Framework, relate to urban metropolitan Melbourne, and do not reflect the role of the Peninsula, as endorsed by the State government, as an area of special character and clearly distinct from, and complimentary to, metropolitan Melbourne.

444 We agree this is not a preferred location for aged care or a retirement village under policy although it may be an acceptable use of this land. To the extent that planning policy supports 'ageing in place', Clause 16.01-5S seeks to ensure residential aged care facilities are located in residential areas, activity centres and urban renewal precincts, close to services and public transport. While this site may be a suitable candidate from a 'first principles' assessment, it remains relatively remote from other local services and facilities and does not meet these criteria.

445 We conclude that the need for aged care in the relevant statistical area appears to be low to moderate and it has not been demonstrated these needs (or a continuum of care on an individual site) would not otherwise been met if this application was refused in its current form.

446 Also, the site is not a preferred location for such land use and any claimed need does not outweigh the deficiencies in responding to policies for land outside the UGB and the inter-urban break between Mt Eliza and Mornington.

CONCLUSION

447 We find that planning permission can be granted for the proposed uses. The application demonstrates that the proposed residential aged care facility and retirement village would operate "in association with" the proposed place of worship in a physical, functional and spiritual sense. The zone controls do not expressly or impliedly require the place of worship to be the

primary use of this land. In addition, there is scope for ancillary use of the place of worship building, so long as its real and substantial purpose remains for religious activities.

448 We reject submissions that the location of this land outside the UGB precludes any form of urban use, since the Special Use zoning of the land specifically provides opportunities for nominated institutional uses. This is confirmed by the site's full exemption from the core Green Wedge planning controls. Likewise, we are unable to accept submissions from some objectors that approving any form of residential aged care or retirement village on this land would be tantamount to rezoning. It is well within the scope of a valid planning permit application.

449 A key benefit of the proposal would be the adaptive reuse and restoration of the Moondah mansion. For the most part, we support the approach taken to maintaining and enhancing the historic values of the place, but retain concerns about the design and siting of Building 03 on the approach to the mansion and the resolution of design for the proposed bowling green and Building 05 forward of the mansion in bay views. Had these been the only outstanding issues, they could potentially have been addressed through redesign.

450 However, the more significant issue is whether the proposed layout and built form is acceptable in this relatively unique policy and physical context. This is where we find the application overextends itself.

451 The location of the land outside the UGB and outside the Mt Eliza township are highly relevant considerations for the use and development of this land. Key policies applying to this land focus on maintaining the inter-urban break between Mt Eliza and Mornington as well as the landscape, scenic and coastal features of the setting.

452 In our opinion, the existing site configuration and buildings respond well to these policies. There is scope for greater built form around the location of existing buildings and with the benefit of topographical screening in a way that would be consistent with these policies.

453 However, we are concerned about the proposal's introduction of extensive new built form at the Kunyung Road frontage (Building 01), notwithstanding its setback and intervening vegetation. This would represent an unwarranted intrusion into the inter-urban break that is also inconsistent with the character of this particular streetscape.

454 To a lesser extent, we make the same observations about the location and scale of Building 03 (regarding the inter-urban break), even though it would have reduced visibility from public vantage points due to siting and topography.

455 As mentioned, we are also concerned about introducing a substantial built form (Building 05) between the UGB and the Moondah mansion when

viewed from the coast. This building is also a poor response to the direct interface with Green Wedge land to its south.

456 The east-west form element of Building 04 would also present with excessive scale at the UGB adjacent to Kunyung Primary School that is not site responsive to existing contours. It would also limit spacing between buildings when viewed across the site from the north west to the south east, which is a definitive feature that aligns with landscape and scenic policy aspirations.

457 While Kunyung Primary School is an important existing land use with a strong community focus, we do not accept submissions that the proposed facility would be incompatible as a direct neighbour.

458 Kunyung Primary School generates high pedestrian traffic past the site. This requires particular care when making provision for access and egress for vehicles for the proposed aged care facility. However, we consider the school peaks occur at very confined and predictable times and access to and egress from the facility would be capable of safe management.

459 Overall, we find that increased projected traffic could be reasonably absorbed by the local and broader road network, subject to further investigation of whether mitigating measures would be required at the Nepean Highway intersection.

460 Much of the land is landscaped and highly modified and it has a history of institutional use. We are not persuaded that the proposal would result in unreasonable ecological impacts. While a substantial number of trees would be removed to facilitate the redevelopment, we consider this would also be acceptable subject to an appropriate landscape plan that would enhance existing values.

461 Another positive aspect of the proposal would be its integrated stormwater management system and enhancement of the vegetation on the coastal bluff down to the foreshore by way of permit conditions.

462 Beyond this, we strongly recommend that any future permit application consider ecologically sustainable works to facilitate safe foreshore access for future residents.

463 We accept that the proposal for a modern, integrated aged care and retirement facility would have the capacity to meet the future needs and expectations of an ageing population. That said, this is not a preferred location for aged care, neither is there strong evidence of unmet localised demand.

464 In these circumstances, when evaluating the proposal in light of net community benefit and sustainable development, we consider priority needs to be given to preserving what is unique about this site. This would require a more consolidated and considered building layout or scale to achieve important policies for land outside the UGB.

Dalia Cook
Presiding Member

Rebecca Cameron
Member