

## APPENDIX K2: STORMWATER RFI RESPONSE LETTER

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PROVIDED BY: ADG

**Meander Valley Council**

26 Lyall Street Westbury, TAS 7303

**Attention: Jo Oliver**

23337 / C L004

11 January 2021

ST

Sydney Office

Dear Jo,

**RE: COUNTRY CLUB ESTATE**

**DRAFT AMENDMENT 4/2020 - REQUEST FOR FURTHER INFORMATION**

**CIVIL ENGINEERING ITEMS**

ADG Engineers (Aust.) Pty Ltd act on behalf of Engine Room VM (NSW) Pty Ltd for the abovementioned development and have prepared this response to the Council Draft Amendment 4/2020 Request for Further Information Dated 16<sup>th</sup> December 2020. This response captures the associated Civil Engineering items.

No.	Council Request Item	ADG Civil Engineering Response
2 (e) (i) Part 1	Clarification is sought as to whether the adjoining zoning and subdivision to the east, above Harley Parade (currently under development) has been accounted for in the stormwater modelling, as this area discharges into the same overland flow paths across the golf course into Existing Catchment 8. The subdivision plan is contained In a SAP in the Interim Planning Scheme at F4.	The developer immediately upstream is undertaking works that may alter the existing pervious nature of the upstream development site and in-turn the site runoff will be increased. Accordingly, that person is responsible for the safe mitigation of those increases in flows within their site. Alternatively, the developer could enter into a discussion and negotiation with the Golf Course to use downstream land for detention purposes. The ADG stormwater modelling considers existing catchments in their current state at the time of the assessment.
2 (e) (i) Part 2	Has the climate change scenario been factored into the stormwater modelling?	The stormwater modelling in ADG's stormwater management plan considered the current climate and does not currently consider any predicted changes to the climate over time. Refer below point for further comment.

2 (e) (i) Part 3	If not, this needs to be discussed and justified, or alternatively, the climate scenario is shown and associated mitigation described.	<p>The stormwater model has been re-run with rainfall intensities increased by 39.84% in order to represent predicted climate change impacts as listed in the Climate Futures for Tasmania. The overall site stormwater mitigation philosophy is unchanged, however, if the development is to mitigate the future flow rates to the pre-development case flows at year 2100, some additional detention would be required in the eastern basin due to the greater volume of water. The design of the outlets from the west lake is unchanged from the previous model. It should be noted that the increase in rainfall was found to result in a smaller increase in site discharge than that predicted in the flood model advice provided by Council's Hydrologist (6.6m<sup>3</sup>/s vs 10.4m<sup>3</sup>/s at LPD 7). We have not assessed the capacity of Councils drainage network for predicted increases in flow rates.</p> <p>The below results show the predicted future flows across/under Country Club Avenue (LPD7 in our report) and coincide with a max water level in the east lake of 170.89m AHD, which will require filling around the existing dam outlet (already necessary without rainfall intensity increase) and some additional localised filling to a depth of approx. 300mm over a length of 30-35m centered approximately at: 41°28'56.8"S 147°06'54.9"E. This filling would be required to provide a shallow bund and prevent the existing lake overflowing through this area in the event of very intense rainfall. There is a modelled increase of about 90mm to the water level in east lake between the pre and post development cases.</p>
2 (e) (ii)	<p>Subdivision Design: Post construction sections are required through:</p> <ul style="list-style-type: none"> <li>• Lots 303, 314 and road;</li> <li>• Lots 274, 293 and road;</li> <li>• Lot 116 and road.</li> </ul>	Please refer to the attached ADG Cross Sections.

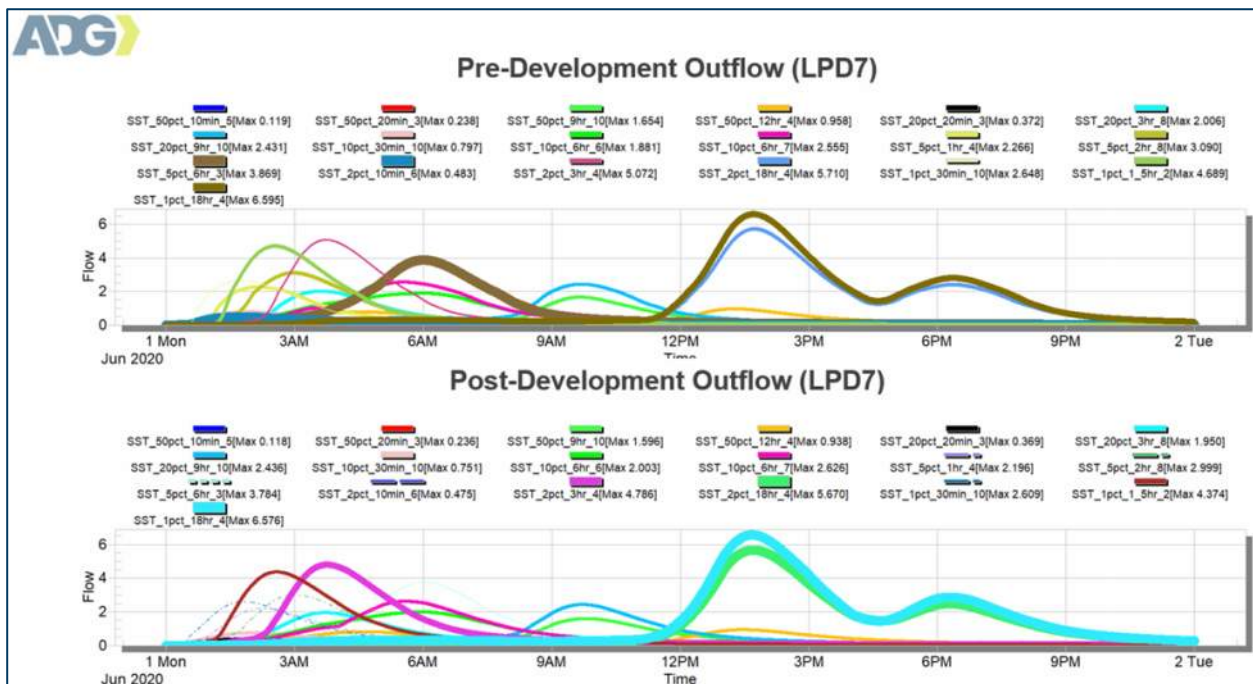


Figure 1 - Predicted Future Flow Rates - LPD 7

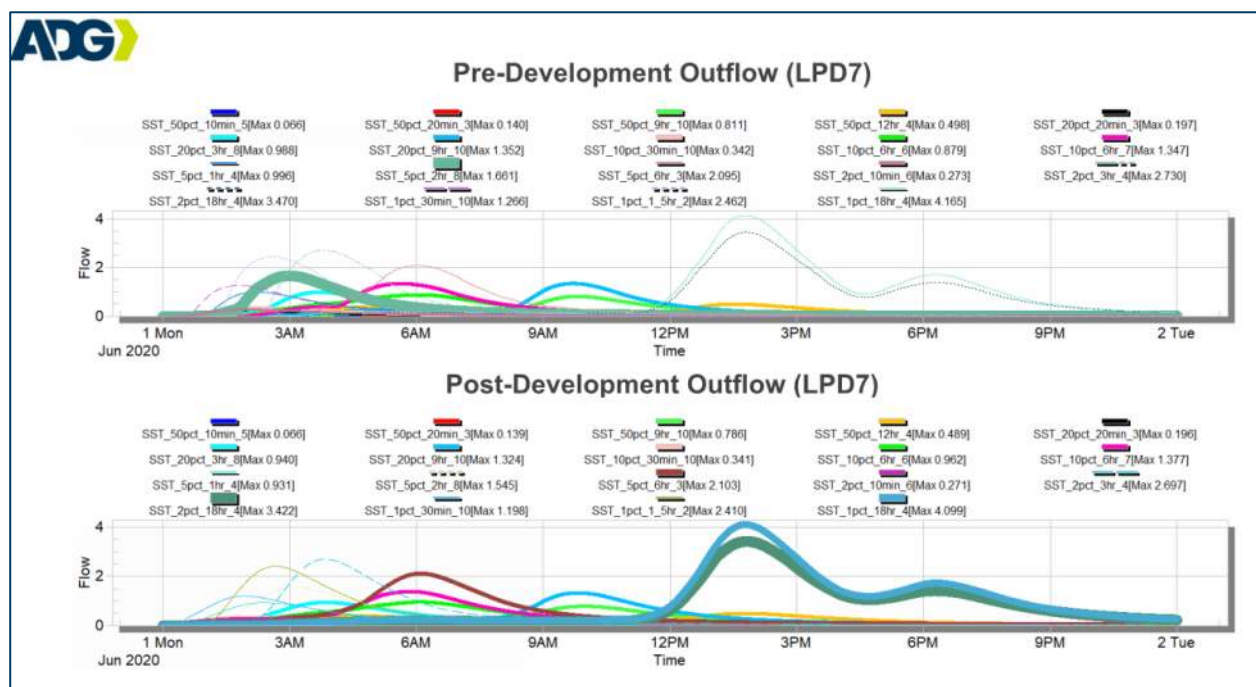


Figure 2 - Current Day Flow Rates - LPD 7

We trust this information is sufficient for your purposes. If you have any questions or require any additional information, please contact the undersigned.

Yours sincerely,

**ADG ENGINEERS (AUST) PTY LTD**

*Stuart Thienpont*

**STUART THIENPONT**

Civil Engineer



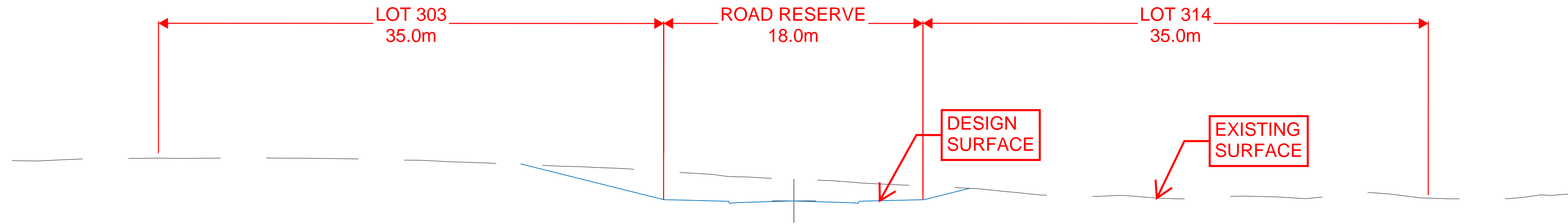


				<b>KINCAPITAL</b>		<b>ADG</b>		Client ENGINE ROOM VM (NSW) PTY LTD		Discipline CIVIL		Status PRELIMINARY		Title PRELIMINARY EARTHWORKS LAYOUT PLAN	
				<b>Federal Group</b>		Sydney Office Suite 1301, Level 13, 20 Berry Street North Sydney, New South Wales 2060, Australia		Project Name 100 COUNTRY CLUB AVE PROSPECT VALE, TASMANIA, 7250 BRYCE GORHAM GOLF CENTRE AND COUNTRY CLUB TASMANIA		Designed By MRB		Checked By ST		Approved By JG	
				<b>ENGINE ROOMVM</b>		T 1300 657 402 F +617 3871 2266 E info@adgce.com W www.adgce.com				Project No. 23337		Drawn By AGC		Scale at A1 1:2000	
						BRISBANE / DARWIN / GOLD COAST / MELBOURNE / PERTH / SUNSHINE COAST / SYDNEY / TOOWOOMBA				The concepts and information contained in this document are the copyright of ADG Engineers (Aust) Pty Ltd. Use or copying of the document in whole or in part without the written permission of ADG Engineers (Aust) Pty Ltd constitutes an infringement of copyright. Do not scale drawings. If in doubt, ask!				Drawing No. DA04	
														Revision 02	

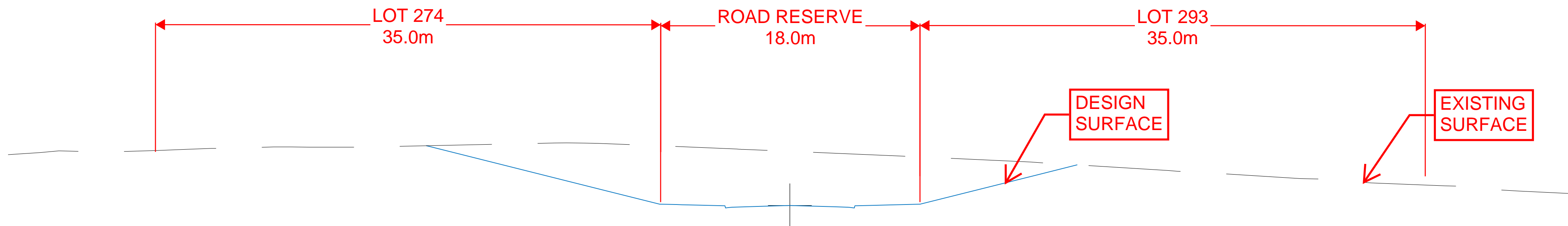
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FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100mm

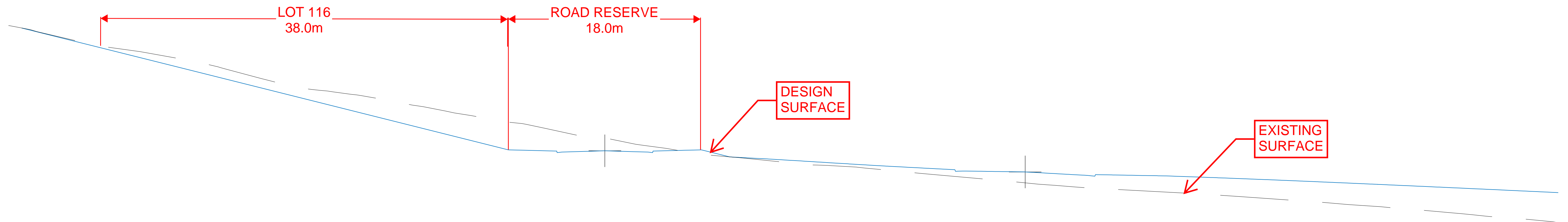




**SECTION C-C**  
1:200



**SECTION B-B**  
1:200



**SECTION A-A**  
1:200



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## APPENDIX L: GEOTECHNICAL INVESTIGATION REPORT

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PROVIDED BY: SCHERZIC GROUND INVESTIGATIONS

# ***SCHERZIC***

***GROUND INVESTIGATIONS***

**KIN CAPITAL**

**Country Club Subdivision, Country Club  
Avenue, Prospect Vale, Tasmania**

**Geotechnical Investigation Report**

**Report No: 7453A(3)**

**December 2020**

***Scherzic Pty Ltd***

**ABN 99 167 712 325**

**PO Box 555, North Hobart, TAS. 7002**

**Email: [info@scherzic.com](mailto:info@scherzic.com)**

**[www.scherzic.com](http://www.scherzic.com)**

## Executive Summary

Scherzic Ground Investigations have undertaken a Geotechnical Investigation for the construction of new residential subdivision to the perimeter of the existing Country Club facility in Prospect Vale, west of Launceston, Tasmania. *This report version has been upgraded to include a revised subdivision layout with a single development zone. The revised layout is provided in Figure 1. This revised report further discusses the implications of the overlay map of landslip produced by the Department of Premier & Cabinet referred to in the Local Provisions Schedule in the forthcoming Tasmanian Planning Scheme which is to be adopted by the Meander Valley Council. (Note the previous revisions of this report cover exactly the same area of Landside Hazard Bands).*

Thirty-Five (35) test pits were excavated at the locations shown on the site plan given in Appendix A using a Kobelco SK55 excavator with a 400mm wide conventional bucket. Disturbed soil samples were taken of pavement materials and natural soils and retained in sealed containers for further testing & analysis in Scherzic's laboratory.

The investigation encountered subsurface profiles consistent with the geology of Jurassic and typically silts overlying clays (including cobbles & boulders) which grade to extremely/highly weathered rock with high strength rock or large boulders causing refusal for the 5.5 tonne excavator in numerous locations (particularly southern areas). There is no landslide risk across the proposed subdivision(s).

A design CBR of 2% is recommended for non-stabilised clays over Areas B and C and shown in Figure 1. A design CBR of 3% is recommended for Area A as shown in figure 1. For competent rock, a design CBR of 20% is recommended.

Control or restriction of nearby vegetation is required to limit future distress due to reactivity of the clay subgrades and buildings founded onto these clays.

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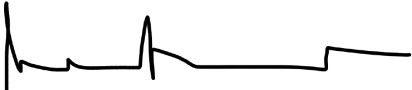
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<b>B</b>	<b>Geology Extract</b>
<b>C</b>	<b>Landslide Inventory</b>
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<b>E</b>	<b>Hill Shade Map</b>
<b>F</b>	<b>Landslide Hazard Bands</b>
<b>G</b>	<b>Engineering Logs</b>
<b>H</b>	<b>Laboratory Test Reports</b>
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## 1 LIMITATIONS

This report has been prepared for ROOM VM on behalf of **Kin Capital** Pty Ltd (Developer) and **Federal Group** (Owner), which is only for use by ROOM VM and KIN CAPITAL/Federal Group for the purpose given below. No responsibility will be taken for use by other parties. Conclusions and recommendations are based on the investigation methods outlined and are considered to be a minimum requirement for the project. Further investigations and testing may be required where differing conditions or information are encountered. The recommendations contained in this report are based on the limited testing described within. The nature of foundation materials can vary over small areas and therefore conditions may exist which were not encountered or foreseen in this assessment. If conditions are found to differ from those descriptions, then Scherzic should be contacted immediately to advise on the consequences. Conditions differing from those described may result in additional costs for footing and foundation works. Unless the site investigation points have been surveyed and clearly marked prior to the investigation, the location of the test sites should only be taken as approximate. This report does not assess contamination of soil or ground water.

  
**Martin Schult**, BEng., MEngSc., DipGeoSc., MIE(Aust)., CPEng., NER

**Geotechnical Engineer**

**Scherzic Pty Ltd**

[www.scherzic.com](http://www.scherzic.com)

Reports Issued			
Report No	Author	Review	Issue Date
7453A Draft	SJ	MBS	22/10/2020
7453A		MBS	4/11/2020
7453A (1)	MK	MBS	12/11/2020
7453A (2)	MK	MBS	13/11/2020
7453A (3)	MK	MBS	29/12/2020

## 2 INTRODUCTION

### 2.1 PROJECT

Scherzic Ground Investigations have undertaken a Geotechnical Investigation for the construction of a new residential subdivision to the perimeter of the existing Country Club facility in Prospect Vale, west of Launceston, Tasmania. This investigation has included all the proposed allotments highlighted as pink given in the figure below. The subdivisions will entail construction of pavements and services for residential construction in the existing vacant land. The layout of the proposed subdivisions is shown in the figure below:



Figure 1 - Subdivision Layout (Revision-3; Taken from Place Design Group)

A site plan is provided in Appendix A.

## 2.2 SCOPE OF INVESTIGATION

ROOM VM, on behalf of KIN CAPITAL Australia Pty Ltd (Federal Group) has engaged Scherzic to undertake a Pavement Investigation for the above development. The scope of the investigation is:

- Undertake excavation of 35 test pits to between 1.5 and 2m or refusal at the locations shown on the site plans (Appendix A).
- Log the soils, rock and ground water encountered in the test pits.
- Undertake in situ testing (PP or DCP) where appropriate
- Undertake laboratory testing on soil samples suite (includes Soaked CBR, Consolidation, Shrink-Swell, Atterberg Limits and Particle Size Distribution).
- Provide a report presenting all information including test pit logs and laboratory test results.
- Provide advice on services and pavement design for the proposed development.

## 3 DESKTOP INVESTIGATION

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The following summarises the information reviewed and presents the results of the desktop study.

### 3.1 GEOLOGY

The 1:25,000 Geological Map Sheet of Northeast Tasmania, produced by Mineral Resources Tasmania (MRT) indicates that the surface geology at the site consists of Jurassic Dolerite with some Quaternary Colluvium nearby. An extract of the geology map is given in Appendix B.

### 3.2 RAINFALL

The Commonwealth Bureau of Meteorology indicates that the average annual rainfall for the project site is approximately 791 mm (Mount Pleasant, Launceston).

### 3.3 ACID SULFATE SOILS

The Department of Primary Industries, Parks, Water and Environment (DPIPWE), The LIST website does not indicate any potential for Acid Sulfate Soil (ASS) occurring at the Site or in the surrounding area.

### 3.4 INUNDATION

The Department of Primary Industries, Parks, Water and Environment (DPIPWE), The LIST website does not indicate any potential inundation of this site.

### 3.5 LANDSLIDE RISK

The LIST website provides a landslide inventory for the area (Appendix C) which shows no historic landslide activity within 2km of the site. An excerpt of the MRT Landslide Susceptibility map of the area indicates there is some risk outside the development to the south west (see Appendix D). The Hill Shade map of the site

(DPIPWE) is also provided in Appendix E which does not indicate any undulations or hummocky land consistent with landslides.

The Department of Premier & Cabinet landslip overlay noted in the Local Provisions Schedule for the proposed Tasmanian Planning Scheme is provided in The LIST website **Landslide Hazard Bands** which are reproduced in Appendix F. These hazard bands show a LOW risk immediately to seven (7) proposed allotments to the south west extent of the proposed development with a Moderate Risk shown further upslope. These risks are discussed below.

### 3.6 PREVIOUS REPORTS

Scherzic are unaware of any previous Pavement Investigation Reports for this site.

## 4 FIELD INVESTIGATIONS

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### 4.1 SITE DESCRIPTION

The site(s) are located within the Country Club estate which has a large tourism facility centrally located within a gently sloping to flat area on the perimeter of the Prospect Vale area of Launceston. The existing facility is located in a gently sloping area and has been benched to the existing hillside exposing the parent dolerite rock. South (upper slope) there is vacant grazing land and some areas of bush with trees. To the north of the existing facility the land is near flat and has extensive grassed areas with some minor trees. At the time of the investigation (26 to 30<sup>th</sup> September 2020), surface water was ponding in low lying and level areas. Existing roadways appear in good condition and the existing buildings over the site show no signs of distress.

The photographs below describe some feature of the site:



Figure 2 - Ponding water near pit 20





*Figure 3 - Gently sloping south west area of the site (Pit 16)*



*Figure 4 - Looking north from Pit 16 showing surface rocks*



*Figure 5 - Access road at south corner (Pit 01)*



*Figure 6 - Looking north from Country Club Avenue (Pit 27)*



*Figure 7 - Looking along Country Club Avenue near Pit 31*



*Figure 8 - Open drain at St Andrew Circuit in North East (Pit 8)*





*Figure 9 - North East at Country Club Avenue (Pit 34)*



*Figure 10 - Flat grassed area to south*

## **4.2 TEST PITS**

Thirty-Five (35) test pits were excavated at the locations shown on the site plan given in Appendix A using a Kobelco SK55 excavator with a 400mm wide conventional bucket. Disturbed soil samples were taken of pavement materials and natural soils and retained in sealed containers for further testing & analysis in Scherzic's laboratory. Pocket Penetrometer tests were undertaken on the natural cohesive soils. All supervision and logging of test pits was undertaken by a qualified Engineer from Scherzic. The engineering logs of the test pits are given in Appendix C.

A summary of subsurface materials encountered in the test pits are given in Table 1 below:

Table 1 - Summary of Subsurface Conditions

7453-01,06,07,23,24 Depth Range (m)	Description
0.00-0.20	SILT, Rootlets, moist
0.20-0.70	CLAY, Some Gravel, moist, stiff, Large BOULDERS
7453-11 Depth Range (m)	Description
0.00-0.20	SILT, Rootlets, moist
0.20-0.90	CLAY, moist, large roots
0.90-2.30	XW DOLERITE, CLAY, Large BOULDERS
7453-04,10,14 Depth Range (m)	Description
0.00-0.20	SILT, Rootlets, moist
0.20-1.10	CLAY, moist, BOULDERS, Weathered DOLERITE
7453-02,08,12,17,26,27,32,33,34 Depth Range (m)	Description
0.00-0.20	SILT, Rootlets, moist
0.20-1.50	Brown CLAY, moist, Seepage 0.65-0.85m in Pit 12 and 26, Trace of Cobbles
7453-03,09,13,18,19,20,21,29,30,31 Depth Range (m)	Description
0.00-0.20	SILT, Rootlets, moist
0.20-1.50	CLAY, moist, XW DOLERITE bottom, Seepage 1.00-1.25m in Pit 13, 18 & 21
7453-05,15,16,22,25,28,35 Depth Range (m)	Description
0.00-0.20	SILT, Rootlets, moist, Seepage 0.15m in Pit 05
0.20-1.20	CLAY, moist, Some Cobbles and Boulders, weathered DOLERITE bottom

### 4.3 GROUND WATER

Free ground water was not encountered deep within the test pits. In pits 7453-05,12,13,18,21,26 moderate seepage (perched above natural clays) was encountered at between 0.60 to 1.00 and at 1.25m depth in the fill soils.

## 5 LABORATORY TESTING

Samples retrieved have been tested in Scherzic's laboratory and full test certificates are provided in Appendix D. A summary of the test results is given in the tables below:

Table 2 - Summary of CBR & Swell Laboratory Testing

Sample No.	1749	1750	1755	1748	1759	1736	1756
Sample Location	7345-03	7345-05	7453-08	7345-09	7453-10	7453-13	7453-16
Sample Depth (m)	0.6-0.75	0.5-0.85	0.18-0.30	0.61-0.65	0.44-0.54	0.8-1.15	0.56-0.70
Sample Description	Light Brown/Grey Clay	Brown Clay	Dark Grey Clay	Grey Clay	Brown Clay	Light Brown Clay	Brown/Orange Clay
Soaked CBR % (4 day)	0.5	3	--	4	--	6	--
Swell %	4.8	2.1	--	1.6	--	1.8	--
Shrink – Swell %	--	--	35.5	--	32.6	--	42.6

Sample No.	1737	1757	1751	1752	1758	1738	1753
Sample Location	7453-18	7453-22	7453-23	7453-24	7453-29	7453-28	7453-32
Sample Depth (m)	0.33-0.5	0.40-0.55	0.60-0.70	0.50-0.70	0.52-0.64	0.40-0.44	0.30-0.45
Sample Description	Brown Clay	Brown Clay	Light Brown Clay	Grey Clay	Brown/Grey Clay	Brown Clay	Light Brown Clay
Soaked CBR % (4 day)	2	--	2.5	2	--	3	3.5
Swell %	2.1	--	1.8	2.4	--	2.4	4.6
Shrink – Swell %	--	53.3	--	--	24.7	--	--

Sample No.	1754
Sample Location	7453-34
Sample Depth (m)	0.60-0.70
Sample Description	Light Brown Clay
Soaked CBR % (4 day)	2
Swell %	4.5
Shrink – Swell %	--

Table 3 - Summary of Atterberg Limits

Sample No.	1739	1740	1760	1741	1742	1743
Sample Location	7453-02	7453-04	7453-10	7453-15	7453-19	7453-25
Sample Depth (m)	0.25-0.35	0.45-0.56	0.44-0.54	0.64-0.72	0.65-0.80	0.71-0.84
Sample Description	Brown Clay	Brown Clay	Brown Clay	Brown Clay	Orange/Brown Clay	Brown/Grey Clay
Moisture Content %	32.32	24.8	37.9	29.8	35.8	33.2
Liquid Limit %	46	43	97	73	88	65
Plastic Limit %	24	19	33	26	38	26
Plastic Index %	22	23	65	46	50	39
Shrinkage Limit %	8.8	12	20.1	15.8	16.4	14.8

Table 4 - Atterberg Limits (continued)

Sample No.	1744	1745	1746	1747
Sample Location	7453-27	7453-29	7453-30	7453-31
Sample Depth (m)	0.60-0.65	1.29-1.41	0.70-0.90	0.30-0.50
Sample Description	Brown Sandy Clay	Brown/Grey Clay	Brown/Grey Clay	Grey Clay
Moisture Content %	19.17	38.3	39.9	19.3
Liquid Limit %	22	67	82	45
Plastic Limit %	0	32	32	22
Plastic Index %	22	34	50	23
Shrinkage Limit %	2	12.4	20	12.4

Table 5 - Summary of PH and Electrical Conductivity

Sample No	1749	1750	1752	1738	1754
Test Location	7453-03	7453-05	7453-24	7453-28	7453-34
Depth (m)	0.6-0.75	0.5-0.85	0.5-0.7	0.6-0.64	0.6-0.7
Description	Light Brown Clay	Brown Clay	Brown Clay	Brown Clay	Brown Clay
pH Value	7.2	7.1	6.6	7.2	5.2
Electrical Conductivity $\mu s/cm$	40	53	124	1237	124

## 6 GEOTECHNICAL ASSESSMENT

### 6.1 DISCUSSION

The investigation encountered subsurface profiles consistent with the geology of Jurassic and typically silts overlying clays (including cobbles & boulders) which grade to extremely/highly weathered rock with high strength rock or large boulders causing refusal for the 5.5 tonne excavator in numerous locations (particularly southern areas).

Underground services such as stormwater, water and sewers should be designed to minimise depths of trenches as the dolerite rock (and boulders) is very high strength and most likely will require blasting or large rock breakers.

The surface silts are unsuitable to support pavements and buildings and should be stripped prior to construction. The natural clays and competent rock (dolerite) are suitable to support pavements and buildings across the site(s).

During wetter periods, perched waters should be expected in the surface silts overlying the natural clays. If construction is undertaken during wet periods, the construction sequence should install drainage prior to pavement construction. These perched waters are not expected to contain excessive salts. Electrical Conductivity tests on natural soils give a range within the non-saline definition according to Agriculture Victoria.

The natural clays at this site are highly reactive, shrinking when dried and swelling when wetted. Lime stabilising on the clay subgrade will reduce their reactivity and also increase their strength.

### 6.2 LANDSLIDE RISK

As presented in 3.5, the Landslide Inventory, Susceptibility and Hillshade maps do not indicate any landslide activity over or near to the proposed subdivision.

However, the Landslide Hazard Bands of the LPS, indicates LOW risk to the south west corner (3 allotments) of the proposed subdivision with MEDIUM risk immediately upslope. The nominated Hazard Bands are a desk top assessment of general slope angle only and do not provide any landslide analysis and therefore are a guide only for further assessment. Where a credible risk is identified, an assessment to the Australian Geomechanics Society (AGS) 2007 Guidelines should be adopted. In this instance our field investigations (test pit 7453-11) and site walkover by a Principal Geotechnical Engineer do not indicate any credible landslide risk to the proposed subdivision and the risk to life & property is 0.00.

### 6.3 DWELLING FOOTINGS

All new building at this site should be founded into the highly reactive clay foundations and footing designs should comply to AS2870 for a Class E site where competent rock is greater than 1.4m depth. We recommend adopting a Class H2 where rock is at less than unless footings are founded directly onto rock where footings can be reduced to that required for a Class A site. Footings should adopt the following bearing capacities:

Table 6 - Footing Design Parameters

Foundation Type	Depth into Foundation (mm)	Pad & Slab Beams Allowable Bearing Pressure (kPa)	Pier/Pile Footing Allowable Bearing Pressure (kPa)
Silty Clay	200	100	150
Competent Rock	100	750	1000**



Note for Pier & Beam footings we recommend a minimum 75mm void former be placed to underside of the beams (between piers).

**\*\*Note for deeper bored piles founded at minimum depth of 2m + L/Diameter ratio >4, these can be designed for much higher capacity however specific drilling investigations will be required.**

## 6.4 CUT & FILL BATTERS

Where the site will be cut into the high plasticity clays, we recommend adopting permanent slopes of 1V:2H for heights up to 2.5m. For greater heights we recommend a limit equilibrium analysis.

For fill batters, we recommend the base foundations be benched horizontally and cleaned of all silts and deleterious materials. Embankment heights up to 2m height can adopt a slope of 1V:2H where materials are placed according to AS3798 in no greater than 300mm lifts. The adoption of placement moisture of between -5 and -2% of OMC is recommended. Compaction to between 98 and 100% of the MDD using the STANDARD test is recommended.

Earthworks should be cognisant of the reactivity of the clays and control vegetation as per AS2870 guidelines.

## 6.5 PAVEMENT DESIGN

As discussed above, the clay foundations at this site are highly reactive/expansive and stabilising with Lime will improve pavement performance. It is estimated stabilizing with equivalent 2% Hydrated Lime to a depth of 400mm in clay subgrades will increase the design CBR to greater than 10%, however further analysis should be undertaken to determine the lime percent and CBR improvement.



Figure 11 - Subgrade Design Areas

A design CBR of 2% is recommended for non-stabilised clays over Areas B as shown in Figure 11. A design CBR of 3% is recommended for Area A as shown in Figure 11. For competent rock, a design CBR of 20% is recommended.

Control or restriction of nearby vegetation is required to limit future distress due to reactivity of the clay subgrades and buildings founded onto these clays.

## **6.6 UNDERGROUND SERVICES**

As discussed above, the presence of shallow high strength Dolerite rock will be difficult to excavate. The natural clays & silts will be easily excavated using conventional equipment (ie 5.5 tonne excavator) however during wetter periods the silt soils may not stand in open excavations. The natural clays should stand vertically in 1m deep trenches for short periods.

Designers of thrust blocks founded in the clay soils should be cognisant of the reactive clay foundations which may have little lateral support down to rock during dry periods. An allowable lateral pressure is recommended for the natural clays at below 1m depth. For competent rock we recommend an allowable lateral pressure of 350kPa for competent rock.

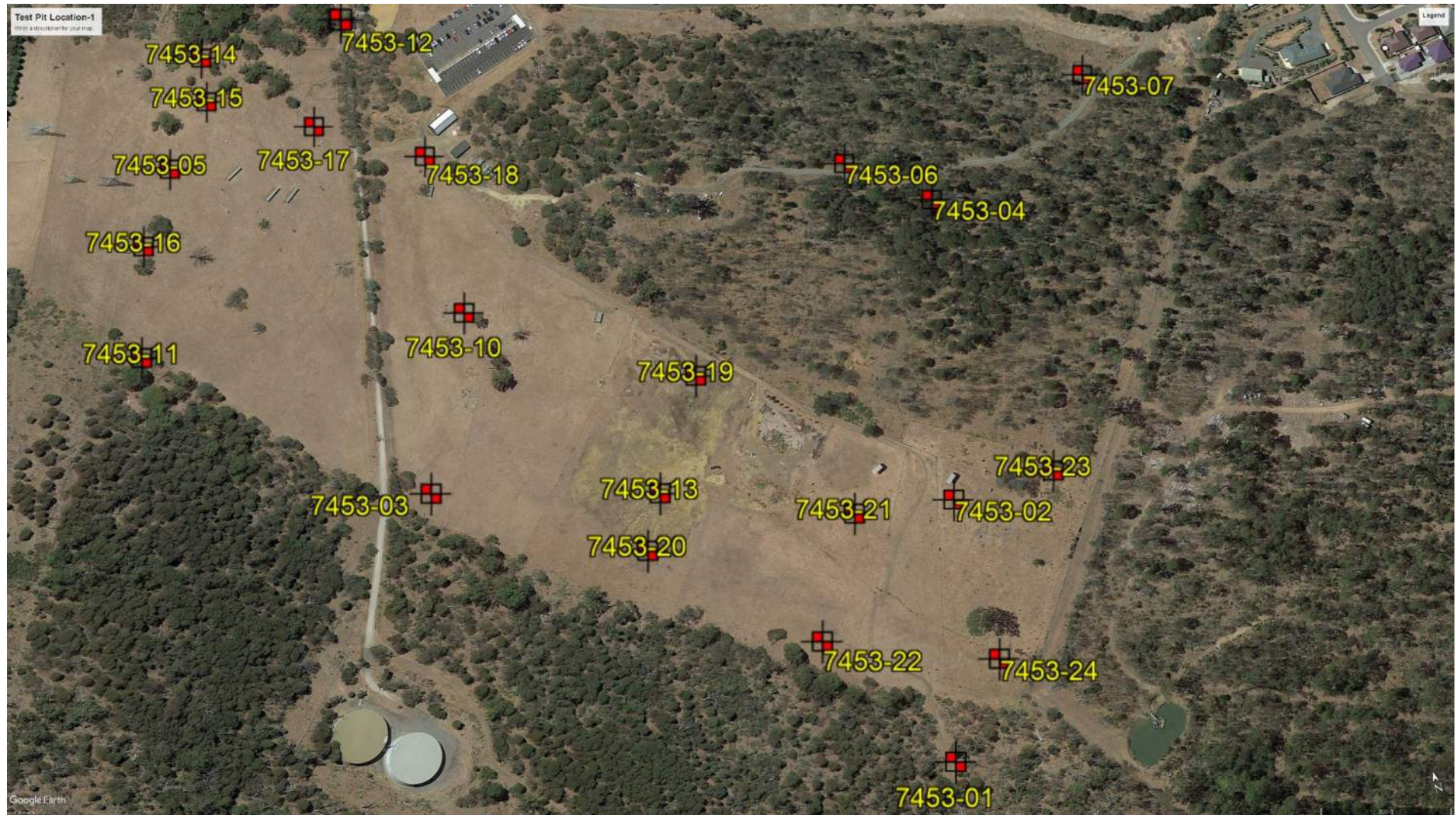
## **6.7 SITE VERIFICATION**

As discussed above, the site contains many areas of filling and existing concrete footings & services which will be removed prior to construction of the new structures and pavements. Foundation approval by Scherzic will be required for subgrades, trench stability and earthworks in accordance with AS3798.



## Appendix A


# Site Plans



Test Pit Locations 





Test Pit Locations 

Appendix B  
Geology Extract



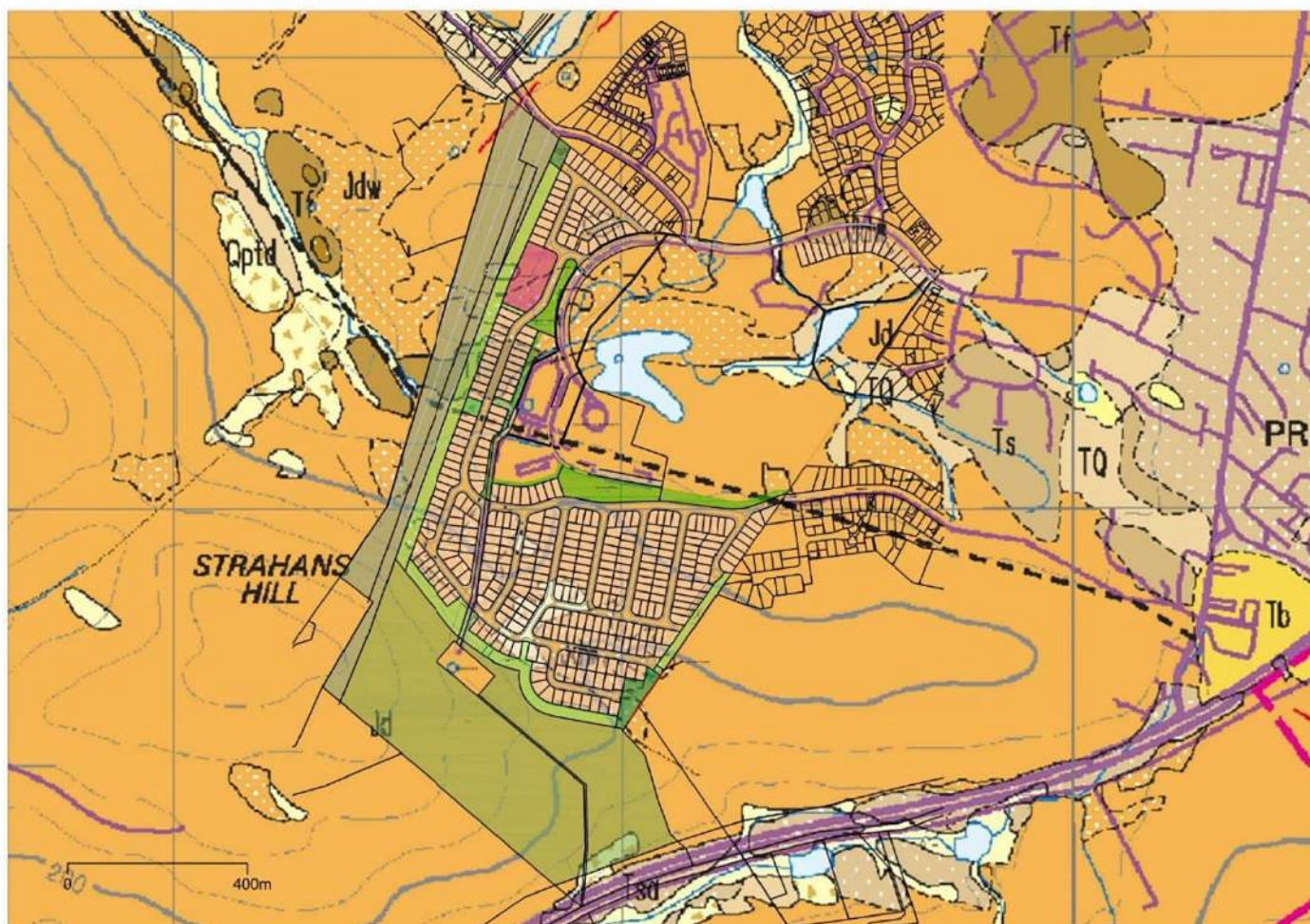


Figure 1 – Geology Map (Taken from Mineral Resources Tasmania scale 1:25000) of Country Club Estate (Revision 3)

Qa	Alluvial gravel, sand and clay (Qa).
Qpt	Talus, including landslide deposits in many areas (Qpt); talus composed predominantly of Tertiary basalt (Qptb); of Jurassic dolerite (Qptd); or ferricrete fragments (Qptx).
TQ	Undifferentiated Cainozoic sediments (TQ).
Tf	Ferricrete, laterite and bauxite with cemented and soft layers. Includes lower remnants of lateritic profile grading down into weathered dolerite in places (Tf).
Tb	Basalt (Tb); basanite (Tbb); quartz tholeiite (Tbq); tholeiitic basalt (Tbs); basanitic dolerite (Tbd).
Ts	Undifferentiated Tertiary sediments: dominantly partly consolidated clay, silt and sand, with minor gravel (conglomerate) and regolith, deposited mainly in lacustrine and fluvial environments (Ts).
Tsg	Partly consolidated clay, silt, and clayey labile sand with rare gravel and lignite; some iron oxide-cemented layers and concretions; some leaf fossils (Tsg).
Jd	Dolerite, intrusive into older sedimentary rocks, of 0.7–6mm grainsize, locally deeply-weathered (Jd); deeply-weathered dolerite (Jdw).

Drawn	SC
Approved	
Date	18/12/2020
Scale	
Original size	A4

**Scherzic**  
Ground Investigations

Client: Kin Capital	
Project: Country Club Estate	
Title: Geology 7453 – 01	
Project number: 7453	Appendix B

## Appendix C

# Landslide Inventory



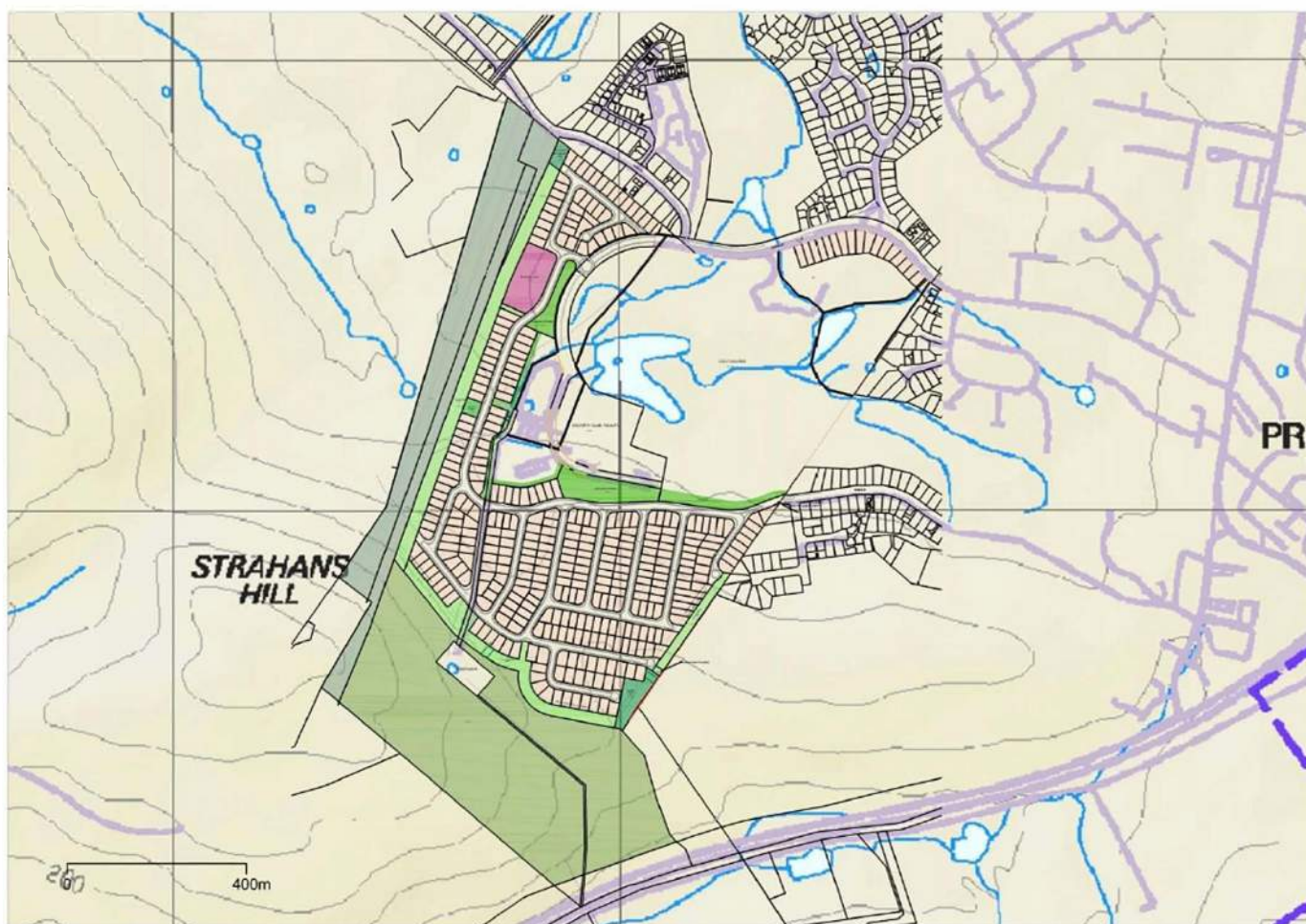
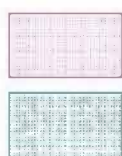


Figure 2 – Landslide Inventory Map (Taken from Mineral Resources Tasmania) of Country Club Estate (Revision 3)

## Landslide Points

- ◆ 1063 Recent or active shallow slide

## Declared Landslip Zones



Landslip A Zone

Landslip B Zone

--- Municipality boundary

Drawn	SC		Client: Kin Capital	
Approved			Project: Country Club Estate	
Date	18/12/2020		Title: Landslide Inventory 7453- 02	
Scale			Project number: 7453	
Original size	A4		Appendix C	



## Appendix D

# Landslide Susceptibility

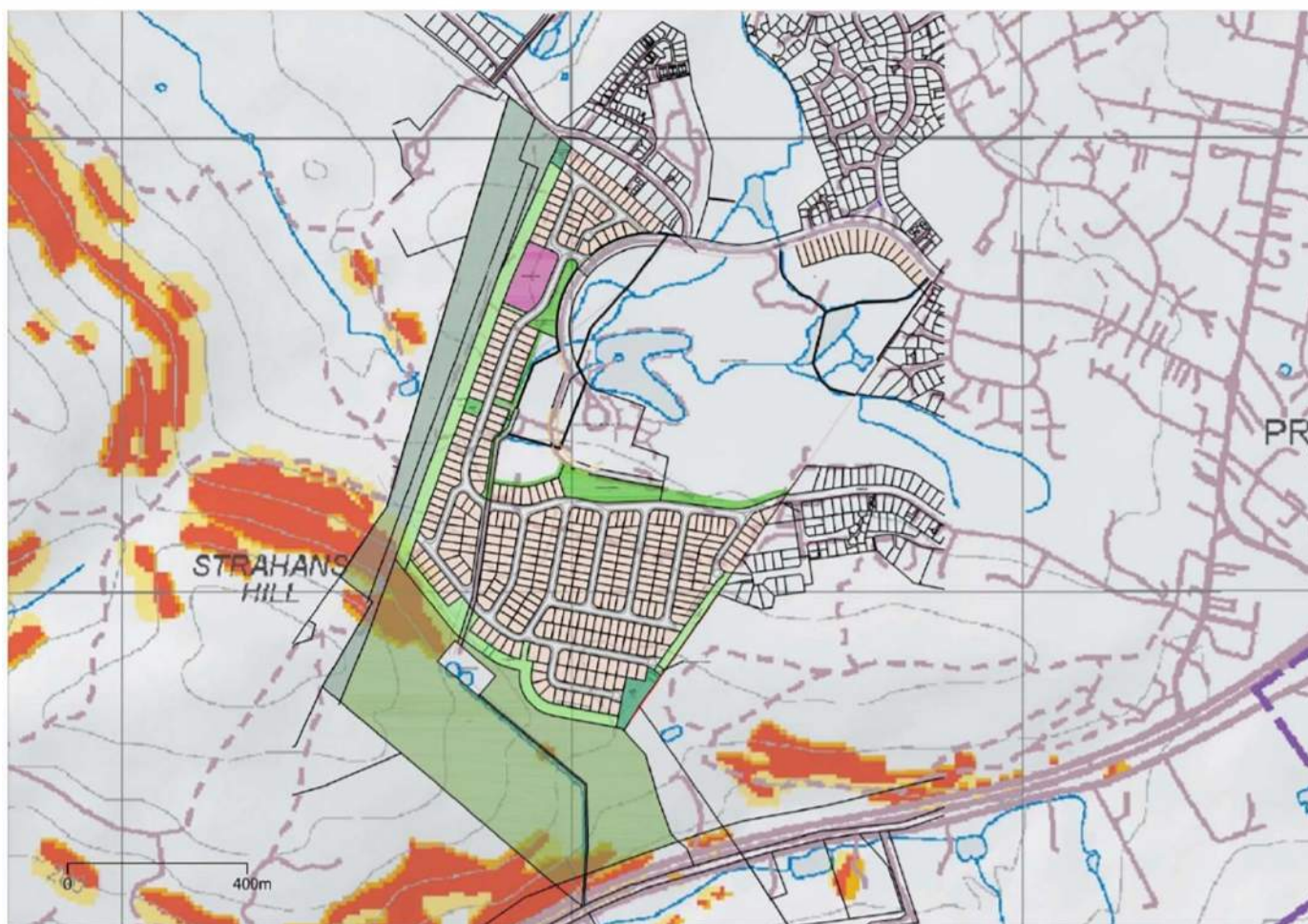


Figure 3 – Shallow Slide and/or Flow Susceptibility Map (Taken from Mineral Resources Tasmania) of Country Club Estate (Revision 3)

### Susceptibility Zones for First Time Failure

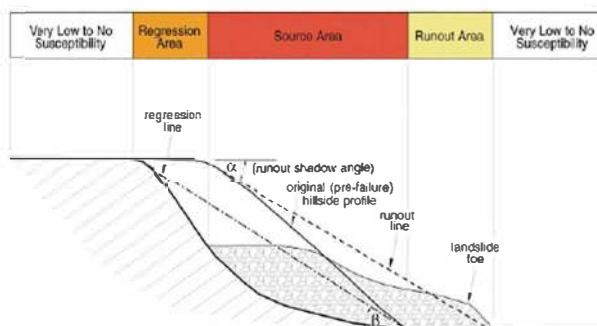


**Regression area:** An area up- slope of a source area that could fail following a landslide movement (a.k.a retrogression or set- back area).

**Source area:** An area of hillside with the potential to form a slope failure, identified largely on the basis of slope angle and geology.

**Runout area:** An area down- slope of a source area where the moving earth, debris or rock can potentially travel.

### Conceptual Diagram Illustrating Slide- Susceptibility Modelling Techniques



Hillside showing pre- failure and post failure profiles. Runout and regression lines for a hypothetical landslide are defined with their relationship to the modelled susceptibility zones for the pre- failure landscape.

Drawn	SC
Approved	
Date	18/12/2020
Scale	
Original size	A4

**Scherzic**  
Ground Investigations

Client: Kin Capital	
Project: Country Club Estate	
Title: Shallow Slide and/ or Flow Susceptibility 7453– 03	
Project number: 7453	Appendix D

Appendix E  
Hill Shade Map



Figure 4 – Hillshade Map (Taken from Mineral Resources Tasmania) of Country Club Estate (Revision 3)

Drawn	SC		Client: Kin Capital	
Approved			Project: Wellington Park	
Date	18/12/2020		Title: Hillshade Map 7453-04	
Scale			Project number: 7453	
Original size	A4		Appendix E	

## Appendix F

# Landslide Hazard Bands



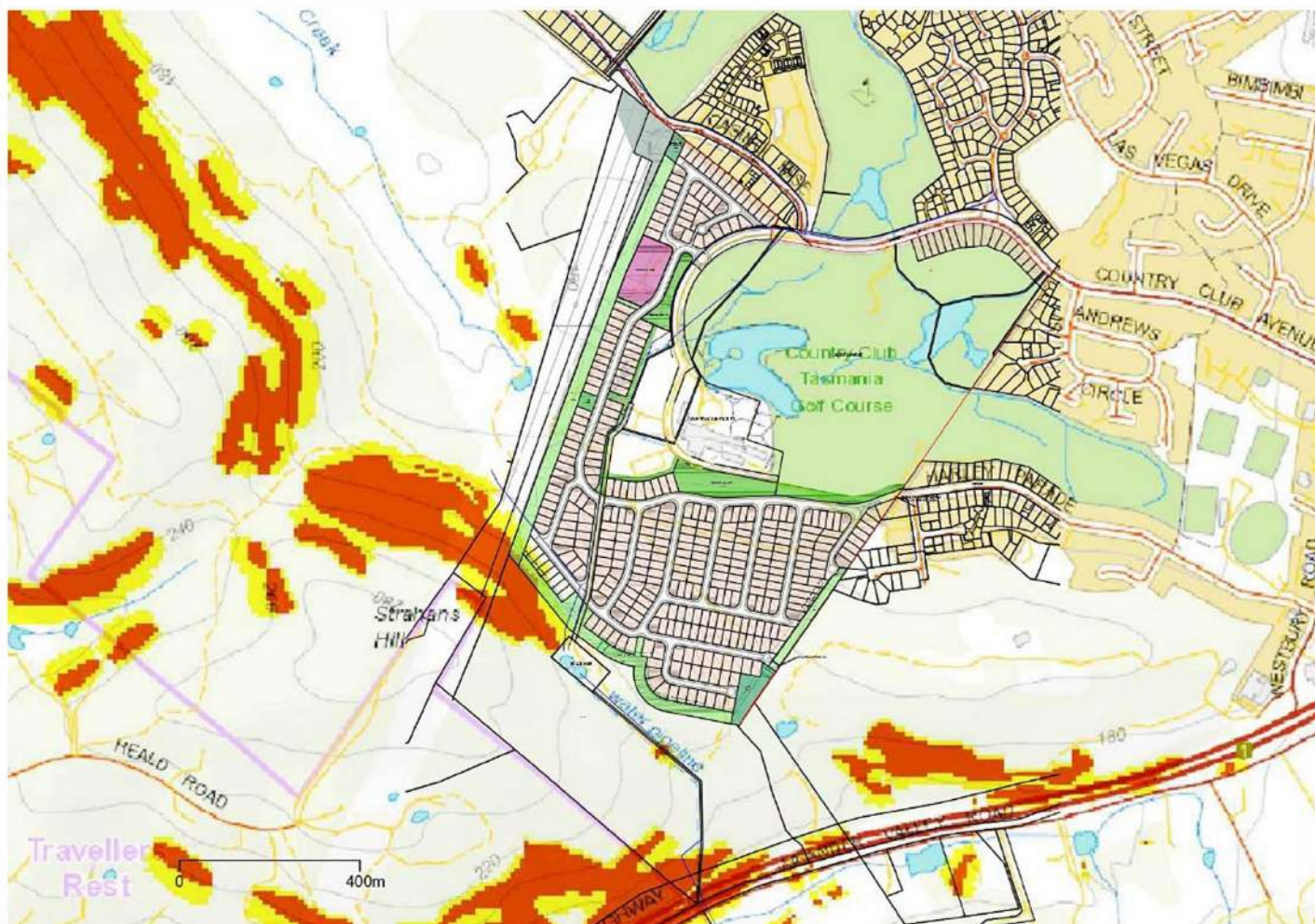


Figure 5 – Landslide Hazard Bands Map (Taken from Mineral Resources Tasmania) of Country Club Estate

- Low
- Medium
- Medium to Active
- High

Drawn	SC		Client: Kin Capital	
Approved			Project: Country Club Estate	
Date	18/12/2020		Title: Landslide Hazard Bands 7453 – 05	
Scale			Project number: 7453	
Original size	A4		Appendix F	

## Appendix G

# Engineering Logs



## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.489561 Latitude 147.109881 Longitude

Commenced: 29/09/2020  
Completed: 29/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information						Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E									ML	GRAVELLY SILT: dark brown; rootlets, organics.	M	F			
									CL	CLAY: grey; trace of gravel, moist.	M	St			
							0.5		CI	CLAY: pale brown, mottled grey; some organics (wood).					
							1.0				M	VSt			
				BS 0.25-0.35 m  0.50-0.70 m 0.70 m PP =240 kPa			1.5			Hole Terminated at 1.50 m Limit of PIT					
							2.0								

Photo



Sketch

### Method

N - Natural Exposure  
X - Existing Excavation  
BH - Backhoe Bucket  
R - Ripper  
E - Excavator

### Penetration

No resistance ranging to refusal

### Water

Level (Date)  
Inflow

### Samples and Tests

U - Undisturbed Sample  
D - Disturbed Sample  
CBR - CBR Mould Sample

### Moisture Condition

D - Dry  
M - Moist  
W - Wet

### Consistency/Relative Density

VS - Very Soft  
S - Soft  
F - Firm  
VSt - Very Stiff  
H - Hard  
Fr - Friable  
VL - Very Loose  
L - Loose  
MD - Medium Dense  
D - Dense  
VD - Very Dense

### Plastic Limit

< PL  
= PL  
< PL

### Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

### Support

T - Timbering



## Engineering Log - Excavation




Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.488889 Latitude 147.105758 Longitude

Commenced: 26/09/2020  
Completed: 26/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	0.18 m PP =130--150 kPa  BS 0.60-0.75 m			0.5		ML	SILT: grey; rootlets, organic.	M	F			
									CH	CLAY: brown; moist.	M	St			
									CH	DOLERITE (XW), WEATHERED TO CLAY: orange.	M	VSt			
							1.5			Hole Terminated at 1.50 m Refusal on Rock					
							2.0								

Photo



Sketch

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal 	Level (Date) Inflow 	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Classification Symbols and Soil Descriptions		Plastic Limit		
T - Timbering	Based on Unified Soil Classification System		< PL = PL < PL		



## Engineering Log - Excavation



Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.488153 Latitude 147.110000 Longitude

Commenced: 26/09/2020  
Completed: 26/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
E				BS 0.45-0.56 m 0.47 m PP =110--120 kPa 0.59-0.60 m 0.60 m PP =150--160 kPa			0.5		ML	SILTY CLAY: dark brown; organic, roots, moist, cobble and boulders; surface rocks sub angular.	M					
						CH	CLAY: pale brown, grey; moist, cobble.	M								
						CH	CLAY: brown, orange.	M	St							
						CH	CLAY: pale brown.									
							1.0									
							1.5			Hole Terminated at 1.14 m Refusal on Rock						
							2.0									



Sketch

SCHERZIC 2.00 I.B.G.L.B. Log 1.7453(1).GPJ <<DrawingFile>> 20/10/2020 11:54 10010011 Dajiel Lab and In Situ Tool - DGD I.B. Scherzic 2.00 2016-03-06 Pj DLSITDGD 3.01 2015-07-20

### Method

N - Natural Exposure  
X - Existing Excavation  
BH - Backhoe Bucket  
R - Ripper  
E - Excavator

### Penetration

No resistance ranging to refusal

### Water

Level (Date)  
Inflow

### Samples and Tests

U - Undisturbed Sample  
D - Disturbed Sample  
CBR - CBR Mould Sample

### Moisture Condition

D - Dry  
M - Moist  
W - Wet

### Consistency/Relative Density

VS - Very Soft  
S - Soft  
F - Firm  
VSt - Very Stiff  
H - Hard  
Fr - Friable  
VL - Very Loose  
L - Loose  
MD - Medium Dense  
D - Dense  
VD - Very Dense

### Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

### Plastic Limit

< PL  
= PL  
< PL

### Support

T - Timbering

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital						Commenced: 26/09/2020																													
Project Name: Country Club Estate						Completed: 26/09/2020																													
Hole Location: Country Club - Launceston						Logged By: SJ/MK																													
Hole Position: -41.486572 Latitude 147.103956 Longitude						Checked By: MBS																													
Equipment Type and Model: KOBELCO SK55						RL Surface:																													
Excavation Dimensions: 400 mm Wide Bucket						Datum: AHD Operator: Blackstone Excavations																													
<b>Drilling Information</b>						<b>Soil Description</b>						<b>Observations</b>																							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations																					
E			26/09/20 see page @ 0.12-0.15m	BS 0.50-0.85 m			0.5		ML	SILT: dark grey-brown; moist, rootlets.	M	F																							
				1.00-1.20 m			1.0		ML	SILT: pale brown; some gravel (fine grained, rounded).	M	F																							
				PP =110--180 kPa					CH	CLAY: pale orange, brown, mottled grey; with boulders, sub angular.	M	St																							
										DOLERITE (HW): orange, yellow; very low Strength.																									
							1.5			Hole Terminated at 1.30 m Refusal on HW Dolerite																									
							2.0																												
Photo						Sketch																													
<b>Method</b> N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator						<b>Penetration</b> No resistance ranging to refusal						<b>Water</b> Level (Date) Inflow						<b>Samples and Tests</b> U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample						<b>Moisture Condition</b> D - Dry M - Moist W - Wet						<b>Consistency/Relative Density</b> VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense					
<b>Support</b> T - Timbering												<b>Classification Symbols and Soil Descriptions</b> Based on Unified Soil Classification System						<b>Plastic Limit</b> < PL = PL < PL																	

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.487194 Latitude 147.109583 Longitude

Commenced: 26/09/2020  
Completed: 26/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations






Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	0.37-0.40 m 0.40 m PP =140--150 kPa			0.5		ML	SILTY CLAY: dark brown; rootlets, large roots, moist, organics, cobbles and boulders; Wood area.	M				
		CH						GRAVELLY CLAY: brown and grey; highly moist.	M	St					
		CH						CLAY: pale brown; moist.	M	St	✖				
		CH						CLAY: brown; Large boulders (Dolerite) (MW).		H					
							1.0			Hole Terminated at 0.97 m Refusal on Rock					
							1.5								
							2.0								

Photo		Sketch
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Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support			Classification Symbols and Soil Descriptions	Plastic Limit	
T - Timbering			Based on Unified Soil Classification System	< PL = PL < PL	

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital	Commenced: 26/09/2020
Project Name: Country Club Estate	Completed: 26/09/2020
Hole Location: Country Club - Launceston	Logged By: SJ/MK
Hole Position: -41.487419 Latitude 147.112622 Longitude	Checked By: MBS
Equipment Type and Model: KOBELCO SK55	RL Surface:
Excavation Dimensions: 400 mm Wide Bucket	Datum: AHD Operator: Blackstone Excavations






Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E									ML	SILT: dark brown; rootlets.	M	F			
									CI	GRAVELLY CLAY: Cobbles.	M - W	F			
			26/09/20, Runoff water	0.39-0.60 m 0.60 m PP =150--190 kPa			0.5		CH	CLAY: pale brown.			St		
									CH	CLAY: pale brown.					
										Hole Terminated at 0.70 m Refusal Dolerite (MW) Boulder					
							1.0								
							1.5								
							2.0								

Photo		Sketch
-------	--	--------

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal 	Level (Date) Inflow 	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support			Classification Symbols and Soil Descriptions	Plastic Limit	
T - Timbering			Based on Unified Soil Classification System	< PL = PL < PL	



## Engineering Log - Excavation








Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.486800 Latitude 147.113497 Longitude

Commenced: 01/10/2020  
Completed: 01/10/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information						Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
E			Not Encountered	BS 0.18-0.30 m					ML	SILT: dark brown; trace of gravel, rootlets.	M					
									CH	CLAY: dark grey; rootlets, moist.	M					
									CH	CLAY: pale brown; trace of rootlets.						
				0.50-0.65 m PP =180--210 kPa		0.5					M	St			✖	
																
				1.30-1.40 m 1.40 m PP =200--220 kPa			1.0		CH	CLAY: pale grey; trace of rootlets.						
											M	VSt		✖		
							1.5			Hole Terminated at 1.50 m Limit of PIT						
							2.0									



Sketch

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support			Classification Symbols and Soil Descriptions	Plastic Limit	
T - Timbering			Based on Unified Soil Classification System	< PL = PL < PL	

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital						Commenced: 30/09/2020																																																																																			
Project Name: Country Club Estate						Completed: 30/09/2020																																																																																			
Hole Location: Country Club - Launceston						Logged By: SJ/MK																																																																																			
Hole Position: -41.482500 Latitude 147.109167 Longitude						Checked By: MBS																																																																																			
Equipment Type and Model: KOBELCO SK55						RL Surface:																																																																																			
Excavation Dimensions: 400 mm Wide Bucket						Datum: AHD Operator: Blackstone Excavations																																																																																			
<b>Drilling Information</b>						<b>Soil Description</b>						<b>Observations</b>																																																																													
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																																																																											
E			Not Encountered	0.30-0.40 m 0.40 m PP =90--110 kPa BS 0.61-0.65 m			0.5		ML CL CH	SILT: dark brown; boulders, dolerite (LW), organic, rootlets, trace of gravel; Slopin toward east surface rock (SW).  GRAVELLY CLAY: grey; moist, presence of boulders and cobbles, dolerite (LW), rootlets. CLAY: brown and grey.	M  M		100 200 300 400 500																																																																												
							1.0		CH	DOLERITE (XW), WEATHERED TO CLAY: brown, grey.	D	VSt																																																																													
							1.5			Hole Terminated at 1.50 m																																																																															
							2.0																																																																																		
Photo								Sketch																																																																																	
<b>Method</b> N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator															<b>Penetration</b>  No resistance ranging to refusal															<b>Water</b> Level (Date) Inflow															<b>Samples and Tests</b> U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample															<b>Moisture Condition</b> D - Dry M - Moist W - Wet															<b>Consistency/Relative Density</b> VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense														
<b>Support</b> T - Timbering																																													<b>Classification Symbols and Soil Descriptions</b> Based on Unified Soil Classification System															<b>Plastic Limit</b> < PL = PL > PL																													

## Engineering Log - Excavation

Project No.: 7453

Client:	Kin Capital	Commenced:	26/09/2020
Project Name:	Country Club Estate	Completed:	26/09/2020
Hole Location:	Country Club - Launceston	Logged By:	SJ/MK
Hole Position:	-41.488731 Latitude 147.105000 Longitude	Checked By:	MBS

Equipment Type and Model:	KOBELCO SK55	RL Surface:	
Excavation Dimensions:	400 mm Wide Bucket	Datum:	AHD
		Operator:	Blackstone Excavations





Drilling Information							Soil Description							Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations
E			Not Encountered	BS 0.34-0.44 m BS 0.35-0.55 m 0.55 m PP =170--180 kPa			0.5		ML	SILT: dark brown; rootlets.	M	F						
		CH						GRAVELLY CLAY: pale grey and brown; some rootlets. CLAY: brown; large boulders (Dolerite) (MW) at 0.5m.	M - W									
		CH							M	St	*							
		CH						CLAY: grey.		St								
							1.0											
							1.5			Hole Terminated at 1.05 m Refusal on Rock								
							2.0											

Photo	Sketch

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal 	Level (Date) Inflow 	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Classification Symbols and Soil Descriptions		Plastic Limit		
T - Timbering	Based on Unified Soil Classification System		< PL = PL < PL		

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.487500 Latitude 147.103333 Longitude

Commenced: 26/09/2020  
Completed: 26/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations







Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	0.35 m PP =40--210 kPa			0.5		ML	SILT: dark brown; rootlets, organics, moist.	M	F			pipeline nearby below 2.5m.
									CI	GRAVELLY CLAY: grey; some cobbles, large roots.					
									CH	CLAY: pale brown; large roots.					
										M	St				
							1.0		CH	DOLERITE (XW): mottled brown, orange; signs of roots.					
							1.5		CH	CLAY: pale brown; some large boulders.					
							2.0				M	St			
										Hole Terminated at 2.30 m Limit of PIT					

Photo	Sketch
	

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support			Classification Symbols and Soil Descriptions	Plastic Limit	
T - Timbering			Based on Unified Soil Classification System	< PL = PL > PL	



## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.486053 Latitude 147.105878 Longitude

Commenced: 26/09/2020  
Completed: 26/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			26/09/20, seepage 0.75-0.85	BS 0.90-1.00 m 1.00 m PP =240 kPa			0.5		GW	FILL, SANDY GRAVEL: fine - medium grained, pale grey; angular.	D	D			
							CI		FILL, CLAY: dark brown; with bricks.	M	St				
							SM		SILTY SAND: fine - medium grained, pale brown; cobbles, boulders (rounded).	M	L				
							CH		CLAY: pale orange-brown, mottled pale grey.	M	VSt				
							1.5			Hole Terminated at 1.50 m Limit of PIT					
							2.0								

Photo



Sketch

### Method

N - Natural Exposure  
X - Existing Excavation  
BH - Backhoe Bucket  
R - Ripper  
E - Excavator

### Penetration

No resistance ranging to refusal

### Water

Level (Date)  
Inflow

### Samples and Tests

U - Undisturbed Sample  
D - Disturbed Sample  
CBR - CBR Mould Sample

### Moisture Condition

D - Dry  
M - Moist  
W - Wet

### Consistency/Relative Density

VS - Very Soft  
S - Soft  
F - Firm  
VSt - Very Stiff  
H - Hard  
Fr - Friable  
VL - Very Loose  
L - Loose  
MD - Medium Dense  
D - Dense  
VD - Very Dense

### Plastic Limit

< PL  
= PL  
< PL

### Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

### Support

T - Timbering

## Engineering Log - Excavation




Project No.: 7453

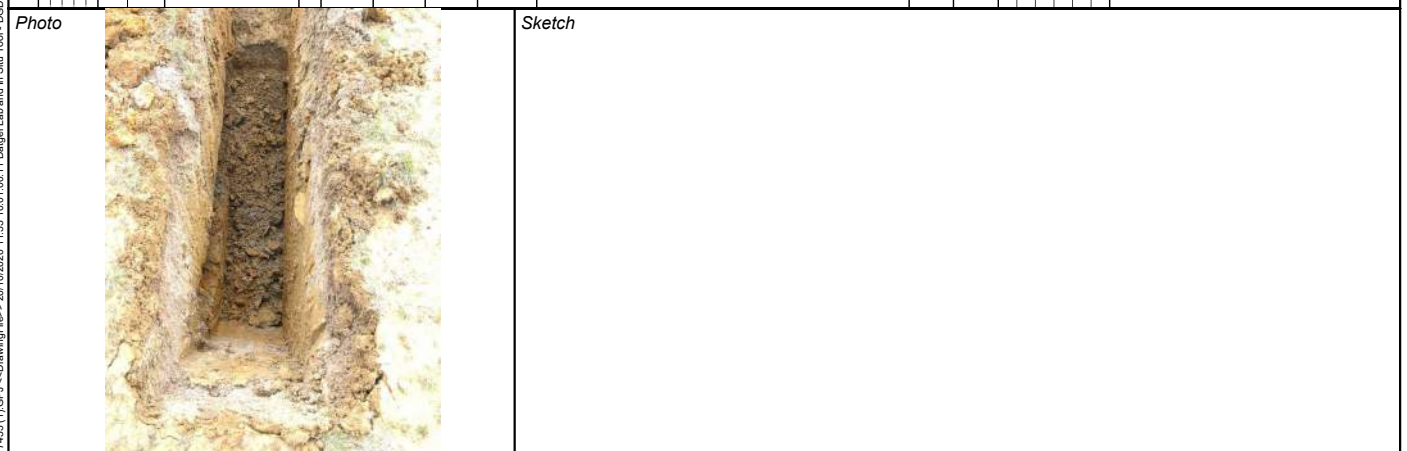
Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.489167 Latitude 147.107222 Longitude

Commenced: 29/09/2020  
Completed: 29/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E									CI	CLAY: brown; Rounded pebbles on surface, high moist.	M			100	
									CL		M			200	
									CH	GRAVELLY SANDY CLAY: grey; Dolerite (HW) mixed with clay.				300	
										CLAY: pale brown and grey.				400	
				0.50-0.70 m 0.70 m PP =160--190 kPa BS 0.80-1.15 m			0.5				M	St		500	
							1.0								
							1.5		CH	DOLERITE (XW), WEATHERED TO CLAY: orange and red.	M	VSt			
				1.80-1.85 m 1.85 m PP =305 kPa											
							2.0			Hole Terminated at 1.90 m Limit of PIT					



Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal 	Level (Date) Inflow 	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Classification Symbols and Soil Descriptions		Plastic Limit		
T - Timbering	Based on Unified Soil Classification System		< PL = PL < PL		

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital			Commenced: 29/09/2020														
Project Name: Country Club Estate			Completed: 29/09/2020														
Hole Location: Country Club - Launceston			Logged By: SJ/MK														
Hole Position: -41.485767 Latitude 147.104656 Longitude			Checked By: MBS														
Equipment Type and Model: KOBELCO SK55			RL Surface:														
Excavation Dimensions: 400 mm Wide Bucket			Datum: AHD Operator: Blackstone Excavations														
Drilling Information			Soil Description			Observations											
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
E			Not Encountered	0.42-0.45 m 0.45 m PP =80--90 kPa			0.5		ML	SILT: dark brown; gravelly, rootlets, organic; surface rocks, sub angular, gentle slope, towards North. Stormwater drain adjacent to test PIT. Drain directed towards road..	M	F					
									CL		M						
									CI	GRAVELLY CLAY: grey; moist. GRAVELLY CLAY: pale brown; moist.	M	F	*				
									CI	GRAVELLY CLAY: pale brown; highly moist.	M						
							1.0			DOLERITE (HW): orange, brown. Hole Terminated at 0.70 m Refusal on Dolerite (MW)							
							1.5										
							2.0										
Photo								Sketch									
Method			Penetration			Water			Samples and Tests			Moisture Condition			Consistency/Relative Density		
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator						 			U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample			D - Dry M - Moist W - Wet			VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense		
Support									Classification Symbols and Soil Descriptions Based on Unified Soil Classification System			Plastic Limit < PL = PL < PL					

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.486375 Latitude 147.104444 Longitude

Commenced: 29/09/2020  
Completed: 29/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55

Excavation Dimensions: 400 mm Wide Bucket

RL Surface:

Datum: AHD

Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	0.52-0.60 m 0.60 m PP =21--25 kPa BS 0.64-0.72 m			0.5		ML	SILTY CLAY: dark brown; trace gravel, organic, rootlets; Presence of surface rocks.	D			100	
									CL	GRAVELLY CLAY: grey; moist, presence of Dolerite cobbles (HW).	M	MD	200		
									SM	DOLERITE (XW): brown; some Boulders, (weathered to sand).	M	MD	300		
										DOLERITE (HW): grey; very low strength.	M		400		
							1.0							500	
							1.5			Hole Terminated at 1.40 m Refusal on Dolerite (HW) Orange					
							2.0								



Sketch

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support			Classification Symbols and Soil Descriptions	Plastic Limit	
T - Timbering			Based on Unified Soil Classification System	< PL = PL < PL	



## Engineering Log - Excavation





Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.486914 Latitude 147.103786 Longitude

Commenced: 29/09/2020  
Completed: 29/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	BS 0.56-0.70 m 0.59 m PP =150--200 kPa					ML	SILT: dark brown; some cobbles, boulders, trace gravel.	D	F			
						CL	GRAVELLY CLAY: brown; rootlets, cobbles, moist.	M							
		0.5				CH	CLAY: orange, pale brown, grey; some cobbles, boulders.	M	St	✖					
		1.0				CH	CLAY: grey, orange; some Dolerite boulders.								
							1.5			Hole Terminated at 1.20 m Refusal on Dolerite (LW)					
							2.0								



Sketch

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal 	Level (Date) Inflow 	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Classification Symbols and Soil Descriptions		Plastic Limit		
T - Timbering	Based on Unified Soil Classification System		< PL = PL < PL		

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.486389 Latitude 147.105278 Longitude

Commenced: 29/09/2020  
Completed: 29/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations



Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
E									ML	SILT: dark brown; trace of gravel, rootlets, slightly moist.	M					
									CL		M					
									CH	SILTY CLAY: grey; trace of gravel, medium moist.	D					
										GRAVELLY CLAY: grey and brown; medium moist.						
							0.5		CH	CLAY: pale brown; some boulders.						
											M	St				
					0.51-0.65 m 0.65 m PP =200 kPa											
							1.0		CH	CLAY: grey and brown.						
											M	St				
							1.5			Hole Terminated at 1.50 m Refusal on Dolerite (LW) Rock surface Large and Flat						
							2.0									

Photo		Sketch
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Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support			Classification Symbols and Soil Descriptions	Plastic Limit	
T - Timbering			Based on Unified Soil Classification System	< PL = PL > PL	



## Engineering Log - Excavation

Project No.: 7453

Client:		Kin Capital		Commenced:		29/09/2020									
Project Name:		Country Club Estate		Completed:		29/09/2020									
Hole Location:		Country Club - Launceston		Logged By:		SJ/MK									
Hole Position:		-41.486667 Latitude 147.106111 Longitude		Checked By:		MBS									
Equipment Type and Model: KOBELCO SK55				RL Surface:											
Excavation Dimensions: 400 mm Wide Bucket				Datum:		AHD Operator: Blackstone Excavations									
Drilling Information				Soil Description				Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
E				BS 0.33-0.50 m BS 0.42-0.62 m 0.62 m PP =190--210 kPa			0.5		ML	SILT: dark brown; traces of gravel, organic, rootlets.	D				
									CL	SILTY CLAY: grey; traces of gravel, rootlets, slightly moist.	M				
									CI	CLAY: brown and orange; some boulders and cobbles (Dolerite).		St			
									CH	DOLERITE (XW), WEATHERED TO CLAY: orange, grey.	M	VSt			
			29/09/20, seepage @ 1.25m				1.5			Hole Terminated at 1.50 m Refusal on Boulder					
							2.0								
Photo															
Sketch															
Method		Penetration		Water		Samples and Tests				Moisture Condition		Consistency/Relative Density			
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator				 		U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample				D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense			
Support						Classification Symbols and Soil Descriptions Based on Unified Soil Classification System				Plastic Limit					
T - Timbering										< PL = PL < PL					

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital						Commenced: 29/09/2020																													
Project Name: Country Club Estate						Completed: 29/09/2020																													
Hole Location: Country Club - Launceston						Logged By: SJ/MK																													
Hole Position: -41.488828 Latitude 147.107806 Longitude						Checked By: MBS																													
Equipment Type and Model: KOBELCO SK55						RL Surface:																													
Excavation Dimensions: 400 mm Wide Bucket						Datum: AHD Operator: Blackstone Excavations																													
<b>Drilling Information</b>						<b>Soil Description</b>						<b>Observations</b>																							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations																					
E			Not Encountered	0.30-0.50 m PP =110--180 kPa  0.65-0.80 m BS BS 0.65-0.85 m 0.85 m PP =410--600 kPa					ML CH  CH	GRAVELLY SILT: grey; Gravel (Dolerite/mudstone), sub angular, rootlets. CLAY: brown, pale brown.	M  M		xx	surface water nearby.																					
							0.5			DOLERITE (XW)-WEATHERED TO CLAY: orange, pale brown; trace grey.		H	x x																						
							1.0																												
							1.5			DOLERITE (XW), WEATHERED TO CLAY: grey. Hole Terminated at 1.50 m Limit of PIT																									
							2.0																												
Photo						Sketch																													
																																			
<b>Method</b> N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator						<b>Penetration</b> No resistance ranging to refusal						<b>Water</b> Level (Date) Inflow						<b>Samples and Tests</b> U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample						<b>Moisture Condition</b> D - Dry M - Moist W - Wet						<b>Consistency/Relative Density</b> VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense					
<b>Support</b> T - Timbering																		<b>Classification Symbols and Soil Descriptions</b> Based on Unified Soil Classification System						<b>Plastic Limit</b> < PL = PL < PL											



## Engineering Log - Excavation

Project No.: 7453

Client:		Kin Capital		Commenced:		29/09/2020								
Project Name:		Country Club Estate		Completed:		29/09/2020								
Hole Location:		Country Club - Launceston		Logged By:		SJ/MK								
Hole Position:		-41.489628 Latitude 147.107153 Longitude		Checked By:		MBS								
Equipment Type and Model: KOBELCO SK55				RL Surface:										
Excavation Dimensions: 400 mm Wide Bucket				Datum:		AHD Operator: Blackstone Excavations								
Drilling Information				Soil Description				Observations						
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			29/09/20, seepage @ 0.15m-0.36m	0.50-0.65 m 0.65 m PP =140--180 kPa			0.5		ML	GRAVELLY SILT: dark brown; rootlets, organics; surface water in rear.	M	F		
									ML	GRAVELLY SILT: grey.	M	F		
									CH	CLAY: pale brown, grey; trace cobbles Dolerite (MW).	M	St		
									CH	DOLERITE (HW): grey; very low strength.				
				1.30-1.35 m 1.35 m PP =240--250 kPa			1.5		Hole Terminated at 1.50 m Limit of PIT					
							2.0							
Photo						Sketch								
Method		Penetration		Water		Samples and Tests				Moisture Condition		Consistency/Relative Density		
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator						U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample				D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense		
Support						Classification Symbols and Soil Descriptions Based on Unified Soil Classification System				Plastic Limit				
T - Timbering										< PL = PL < PL				

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.489992 Latitude 147.108533 Longitude

Commenced: 29/09/2020  
Completed: 29/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations









Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E				0.60-0.80 m 0.80 m PP =250--300 kPa			0.5		ML	SILT: dark brown; rootlets, moist, some gravel; grass land.	M				
									CH	GRAVELLY CLAY: grey.	M - W				
									CH	DOLERITE (XW), WEATHERED TO CLAY: orange, pale brown.	M	St	xx		
									CH	AS ABOVE, DOLERITE (XW), WEATHERED TO CLAY: orange, pale brown.					
							1.0				M	St			
							1.5								
							2.0			Hole Terminated at 1.55 m Limit of PIT					

Photo	Sketch
	

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support			Classification Symbols and Soil Descriptions	Plastic Limit	
T - Timbering			Based on Unified Soil Classification System	< PL = PL > PL	

## Engineering Log - Excavation

Project No.: 7453

Client:		Kin Capital		Commenced:		29/09/2020									
Project Name:		Country Club Estate		Completed:		29/09/2020									
Hole Location:		Country Club - Launceston		Logged By:		SJ/MK									
Hole Position:		-41.490333 Latitude 147.108228 Longitude		Checked By:		MBS									
Equipment Type and Model: KOBELCO SK55				RL Surface:											
Excavation Dimensions: 400 mm Wide Bucket				Datum:		AHD Operator: Blackstone Excavations									
Drilling Information				Soil Description				Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
E			Not Encountered	0.40-0.60 m BS 0.40-0.55 m 0.60 m PP =80--120 kPa			0.5 1.0		ML	SILTY CLAY: dark brown; rootlets, organic; Slight angle ground.	M				
									ML	GRAVELLY SILT: grey; rootlets, highly moist.	M	F			
									CI	CLAY: brown; with Dolerite, cobbles and boulders (rounded) (MW).	M	D	xx		
									(XW) DOLERITE LAYER.						
							1.5 2.0			Hole Terminated at 1.30 m PIT Refusal at 1.3m on Rock					
Photo									Sketch						
Method		Penetration		Water		Samples and Tests				Moisture Condition		Consistency/Relative Density			
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator						U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample				D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense			
Support						Classification Symbols and Soil Descriptions Based on Unified Soil Classification System				Plastic Limit					
T - Timbering										< PL = PL < PL					

## Engineering Log - Excavation




Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.489872 Latitude 147.110478 Longitude

Commenced: 29/09/2020  
Completed: 29/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	BS 0.60-0.70 m 0.70 m PP =110--180 kPa			0.5		ML	SILT: dark brown; moist organics and rootlets, surface rocks Dolerite (SW); surface rocks, slopping southeast (gentle slope). GRAVELLY CLAY: grey; moist, Dolerite cobbles.	M				
									CH		M				
									CI						
										M	St	xx			
							1.0			Hole Terminated at 0.85 m Refusal on Rock					
							1.5								
							2.0								



Sketch

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal 	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Classification Symbols and Soil Descriptions		Plastic Limit		
T - Timbering	Based on Unified Soil Classification System		< PL = PL < PL		



## Engineering Log - Excavation

Project No.: 7453

Client:		Kin Capital		Commenced:		29/09/2020									
Project Name:		Country Club Estate		Completed:		29/09/2020									
Hole Location:		Country Club - Launceston		Logged By:		SJ/MK									
Hole Position:		-41.490897 Latitude 147.109472 Longitude		Checked By:		MBS									
Equipment Type and Model: KOBELCO SK55				RL Surface:											
Excavation Dimensions: 400 mm Wide Bucket				Datum:		AHD Operator: Blackstone Excavations									
Drilling Information				Soil Description				Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	BS 0.50-0.70 m BS 0.55-0.70 m 0.70 m PP =120--130 kPa			0.5		ML	SILT: dark brown; organics, rootlets, some boulders.	M - W				
									CI	GRAVELLY CLAY: grey; Dolerite boulders and cobbles.	M				
									CI	CLAY: grey and pale brown; some boulders (Dolerite).	M	St			
							1.0								
							1.5			Hole Terminated at 1.20 m Refusal on Rock					
							2.0								
Photo						Sketch									
Method		Penetration		Water		Samples and Tests				Moisture Condition		Consistency/Relative Density			
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator		 No resistance ranging to refusal		 Level (Date)  Inflow		U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample				D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense			
Support						Classification Symbols and Soil Descriptions				Plastic Limit					
T - Timbering						Based on Unified Soil Classification System				< PL = PL < PL					

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital		Commenced: 30/09/2020													
Project Name: Country Club Estate		Completed: 30/09/2020													
Hole Location: Country Club - Launceston		Logged By: SJ/MK													
Hole Position: -41.481294 Latitude 147.109781 Longitude		Checked By: MBS													
Equipment Type and Model: KOBELCO SK55		RL Surface:													
Excavation Dimensions: 400 mm Wide Bucket		Datum: AHD Operator: Blackstone Excavations													
Drilling Information		Soil Description				Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	0.55-0.57 m 0.57 m PP =150--200 kPa BS 0.71-0.84 m			0.5		ML	SILT: dark brown; rootlets, organic, boulders angular, trace of gravel; slopping towards East.	D	F			
									CH	CLAY: grey; gravelly.	M	F			
									CH	CLAY: grey, brown; ash, gravel, cobble Dolerite (MW).	M	St			
									CH	CLAY: brown and grey; some cobbles (Dolerite).	M	St			
							1.0			DOLERITE (HW): brown and grey; very low strength.					
							1.5			Hole Terminated at 1.32 m Refusal on Rock					
							2.0								
Photo						Sketch									
Method		Penetration		Water		Samples and Tests				Moisture Condition		Consistency/Relative Density			
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator						U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample				D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense			
Support						Classification Symbols and Soil Descriptions				Plastic Limit					
T - Timbering						Based on Unified Soil Classification System				< PL = PL < PL					

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.481558 Latitude 147.111389 Longitude

Commenced: 30/09/2020  
Completed: 30/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations






Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E									ML	SILT: dark brown; rootlets.	M	F			
							0.5		CH	GRAVELLY CLAY: grey; traces of brown, rootlets, Boulders Dolerite (LW), highly moist.	M	St			
							1.0		CH	CLAY: brown.	M	St			
							1.5		CH	CLAY: brown.	M	St			
			30/09/20, seepage @ 0.68-0.71m	1.25-1.30 m 1.30 m PP =180--190 kPa			1.5			Hole Terminated at 1.50 m					
							2.0								

Photo		Sketch
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Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support			Classification Symbols and Soil Descriptions	Plastic Limit	
T - Timbering			Based on Unified Soil Classification System	< PL = PL > PL	

## Engineering Log - Excavation










Project No.: 7453

Client:		Kin Capital		Commenced:		30/09/2020									
Project Name:		Country Club Estate		Completed:		30/09/2020									
Hole Location:		Country Club - Launceston		Logged By:		SJ/MK									
Hole Position:		-41.481456 Latitude 147.112194 Longitude		Checked By:		MBS									
Equipment Type and Model: KOBELCO SK55				RL Surface:											
Excavation Dimensions: 400 mm Wide Bucket				Datum:		AHD Operator: Blackstone Excavations									
Drilling Information				Soil Description				Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	0.51-0.56 m 0.56 m PP =210--250 kPa BS 0.60-0.65 m			0.5		ML	SILT: dark brown; organic, roots, traces of gravel.	M	F			
									CI	SILTY CLAY: dark brown; rootlets, cobbles.	M	St			
									CH	CLAY: brown and grey; some sand.	M	St			
									CI	GRAVELLY CLAY: pale brown and grey.	M	St			
									CH	CLAY: brown, grey; trace of rootlets.	M	H			
				1.30-1.33 m 1.33 m PP =200 kPa			1.5			Hole Terminated at 1.55 m					
							2.0								
Photo						Sketch									
Method		Penetration		Water		Samples and Tests				Moisture Condition		Consistency/Relative Density			
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator		 No resistance ranging to refusal		 Level (Date) Inflow		U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample				D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense			
Support						Classification Symbols and Soil Descriptions Based on Unified Soil Classification System				Plastic Limit					
T - Timbering										< PL = PL < PL					



## Engineering Log - Excavation

Project No.: 7453

Client:		Kin Capital		Commenced:		30/09/2020								
Project Name:		Country Club Estate		Completed:		30/09/2020								
Hole Location:		Country Club - Launceston		Logged By:		SJ/MK								
Hole Position:		-41.481092 Latitude 147.111461 Longitude		Checked By:		MBS								
Equipment Type and Model: KOBELCO SK55				RL Surface:										
Excavation Dimensions: 400 mm Wide Bucket				Datum:		AHD Operator: Blackstone Excavations								
Drilling Information				Soil Description				Observations						
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E				BS 0.40-0.44 m  0.69-0.76 m 0.76 m PP =200--250 kPa			0.5		ML	SILT: dark brown; rootlets, organic, large roots, medium moist; Close to stormwater drain, large trees surrounding.	M	F		
									CH	CLAY: grey; trace of gravel, cobbles.	M	St		
									CH	CLAY: brown; trace of rootlets, cobbles, boulders.	M	St		
									CH	CLAY: grey and brown; trace of gravel, roots, cobbles (sub angular, Dolerite).	M	St		
										DOLERITE (HW): brown; very low strength.				
							1.5			Hole Terminated at 1.32 m Refusal on Rock				
							2.0							
Photo								Sketch						
Method		Penetration		Water		Samples and Tests		Moisture Condition		Consistency/Relative Density				
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator		 No resistance ranging to refusal		 Level (Date)  Inflow		U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample		D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense				
Support						Classification Symbols and Soil Descriptions		Plastic Limit						
T - Timbering						Based on Unified Soil Classification System		< PL = PL < PL						

## Engineering Log - Excavation





Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.481186 Latitude 147.112189 Longitude

Commenced: 30/09/2020  
Completed: 30/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E									ML	SILT: dark brown; organic, roots, traces of gravel, highly moist; Close to Stormwater Drain. GRAVELLY CLAY: dark grey; rootlets. GRAVELLY CLAY: grey. CLAY: brown and grey.	M	F			
								CL	M		St				
								CL							
								CH	M		St				
				0.47-0.50 m 0.50 m PP =150 kPa BS 0.52-0.64 m			0.5								
				0.83-0.85 m 0.85 m PP =140--170 kPa			1.0								
				BS 1.29-1.41 m			1.5		CH	DOLERITE (XW)-WEATHERED TO CLAY: grey, brown; some boulders.	M	H			
							1.51			Hole Terminated at 1.51 m					
							2.0								

Photo



Sketch

### Method

N - Natural Exposure  
X - Existing Excavation  
BH - Backhoe Bucket  
R - Ripper  
E - Excavator

### Penetration

No resistance ranging to refusal

### Water

Level (Date)  
Inflow

### Samples and Tests

U - Undisturbed Sample  
D - Disturbed Sample  
CBR - CBR Mould Sample

### Moisture Condition

D - Dry  
M - Moist  
W - Wet

### Consistency/Relative Density

VS - Very Soft  
S - Soft  
F - Firm  
VSt - Very Stiff  
H - Hard  
Fr - Friable  
VL - Very Loose  
L - Loose  
MD - Medium Dense  
D - Dense  
VD - Very Dense

### Plastic Limit

< PL  
= PL  
< PL

### Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

### Support

T - Timbering

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.481856 Latitude 147.113714 Longitude

Commenced: 01/10/2020  
Completed: 01/10/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations



Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	BS 0.70-0.90 m PP =140--170 kPa			0.5		ML	SILT: dark brown; traces of gravel, organics, rootlets.	M	F			
									CH	CLAY: grey; with rootlets.	M	St			
									CH	CLAY: grey and brown.	M	St			
									CH	DOLERITE (XW)-WEATHERED TO CLAY: brown; some boulders.	M	VSt			
							1.5			Hole Terminated at 1.50 m					
							2.0								

Photo		Sketch
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Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support			Classification Symbols and Soil Descriptions	Plastic Limit	
T - Timbering			Based on Unified Soil Classification System	< PL = PL > PL	

## Engineering Log - Excavation

Project No.: 7453

Client:	Kin Capital	Commenced:	01/10/2020
Project Name:	Country Club Estate	Completed:	01/10/2020
Hole Location:	Country Club - Launceston	Logged By:	SJ/MK
Hole Position:	-41.481931 Latitude 147.114436 Longitude	Checked By:	MBS

Equipment Type and Model: KOBELCO SK55	RL Surface:
Excavation Dimensions: 400 mm Wide Bucket	Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E				BS 0.30-0.50 m			0.30		ML	SILT: dark brown; large roots, organics, rootlets.	D				
				BS 0.50-0.65 m			0.40		ML	GRAVELLY SILT: pale brown; large roots.	D				
			Not Encountered	PP >600 kPa			0.50		CH	CLAY: grey; some cobbles.		D	H		*
				1.15-1.25 m			1.00		CH	DOLERITE (XW), WEATHERED TO CLAY: grey.					
				1.25 m			1.25				D	H		*	
				PP =240--250 kPa			1.50			Hole Terminated at 1.50 m					
							2.00								




Sketch

**Method**  
N - Natural Exposure  
X - Existing Excavation  
BH - Backhoe Bucket  
R - Ripper  
E - Excavator


**Support**  
T - Timbering


**Penetration**

No resistance  
ranging to  
refusal



**Water**

 Level (Date)

 Inflow

**Samples and Tests**  
 U - Undisturbed Sample  
 D - Disturbed Sample  
 CBR- CBR Mould Sample

**Classification Symbols  
and Soil Descriptions**  
Based on Unified Soil  
Classification System

**Moisture Condition**  
D - Dry  
M - Moist  
W - Wet

### Plastic Limit

< PL  
= PL  
< PL

**Consistency/Relative Density**

- VS - Very Soft
- S - Soft
- F - Firm
- VSt - Very Stiff
- H - Hard
- Fr - Friable
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense



## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital						Commenced: 01/10/2020																																																																																			
Project Name: Country Club Estate						Completed: 01/10/2020																																																																																			
Hole Location: Country Club - Launceston						Logged By: SJ/MK																																																																																			
Hole Position: -41.481492 Latitude 147.115381 Longitude						Checked By: MBS																																																																																			
Equipment Type and Model: KOBELCO SK55						RL Surface:																																																																																			
Excavation Dimensions: 400 mm Wide Bucket						Datum: AHD				Operator: Blackstone Excavations																																																																															
<b>Drilling Information</b>						<b>Soil Description</b>										<b>Observations</b>																																																																									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations																																																																											
E			Not Encountered	BS 0.30-0.45 m  0.45-0.55 m PP =360--450 kPa			0.5		ML	SILT: dark brown; organics, large roots trace neraby trees, rootlets; large trees surrounding area.	M																																																																														
									CH	CLAY: pale brown.	D - M	H		x x																																																																											
							1.0		CH	CLAY: pale grey.	M - D	H		x x																																																																											
				1.25-1.35 m 1.35 m PP =280--340 kPa			1.5			Hole Terminated at 1.50 m Limit of PIT same as above																																																																															
							2.0																																																																																		
<b>Photo</b> 															<b>Sketch</b>																																																																										
<b>Method</b> N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator															<b>Penetration</b> No resistance ranging to refusal															<b>Water</b> Level (Date) Inflow															<b>Samples and Tests</b> U - Undisturbed Sample D - Disturbed Sample CBR- CBR Mould Sample															<b>Moisture Condition</b> D - Dry M - Moist W - Wet															<b>Consistency/Relative Density</b> VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense														
<b>Support</b> T - Timbering																																													<b>Classification Symbols and Soil Descriptions</b> Based on Unified Soil Classification System															<b>Plastic Limit</b> < PL = PL < PL																													

## Engineering Log - Excavation


Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.481797 Latitude 147.116658 Longitude

Commenced: 01/10/2020  
Completed: 01/10/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
E			Not Encountered	0.70-0.90 m 0.90 m PP =200--240 kPa			0.5		ML	SILT: dark brown; rootlets, moist.	M	F			
									CH	CLAY: grey; rootlets.	M	St			
									CH	CLAY: pale brown and grey; rootlets.					
											M	VSt			
				1.30-1.45 m 1.45 m PP =210--260 kPa			1.0	CH	CLAY: grey; rootlets.	M	VSt				
							1.5			Hole Terminated at 1.50 m Limit of PIT same as above					
							2.0								



Sketch

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Classification Symbols and Soil Descriptions	Plastic Limit			
T - Timbering	Based on Unified Soil Classification System	< PL = PL > PL			

## Engineering Log - Excavation

Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.482403 Latitude 147.117111 Longitude

Commenced: 01/10/2020  
Completed: 01/10/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
E			Not Encountered	0.50-0.70 m 0.70 m PP =290--370 kPa BS 0.60-0.70 m			0.5		ML	SILT: dark brown; rootlets, highly moist; last night rain (9mm), next to a rain water drench (3m).	M	F					
									CH		M	St					
									CH	CLAY: grey; rootlets, trace of gravel.							
							1.0			M	VSt - H						
							1.5										
							2.0			Hole Terminated at 1.60 m Limit of PIT							

Photo	Sketch

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal 	Level (Date) Inflow 	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Classification Symbols and Soil Descriptions		Plastic Limit		
T - Timbering	Based on Unified Soil Classification System		< PL = PL < PL		

## Engineering Log - Excavation





Project No.: 7453

Client: Kin Capital  
Project Name: Country Club Estate  
Hole Location: Country Club - Launceston  
Hole Position: -41.479444 Latitude 147.107222 Longitude

Commenced: 30/09/2020  
Completed: 30/09/2020  
Logged By: SJ/MK  
Checked By: MBS

Equipment Type and Model: KOBELCO SK55  
Excavation Dimensions: 400 mm Wide Bucket

RL Surface:  
Datum: AHD Operator: Blackstone Excavations

Drilling Information							Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
E				0.19-0.33 m 0.33 m PP =160 kPa					ML	SILT: dark brown; cobbles and boulders, organic, rootlets, trace of gravel. CLAY: brown.	M	St					
						CH											
					0.85-0.87 m 0.87 m PP =150 kPa					CH	CLAY: brown, grey; rootlets.	St					
							CH	DOLERITE (XW), WEATHERED TO CLAY: yellow-brown.									
				1.15 m						Hole Terminated at 1.20 m Refusal on Rock							
							1.5										
							2.0										

Photo



Sketch

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
N - Natural Exposure X - Existing Excavation BH - Backhoe Bucket R - Ripper E - Excavator	No resistance ranging to refusal	Level (Date) Inflow	U - Undisturbed Sample D - Disturbed Sample CBR - CBR Mould Sample	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Classification Symbols and Soil Descriptions	Plastic Limit			
T - Timbering	Based on Unified Soil Classification System	< PL = PL > PL			



## Appendix H

# Laboratory Test Reports

Australian Standard AS1289.2.1.1, 3.1.1, 3.2.1, 3.3.1, 3.4.1 Atterberg Limits Casagrande one point

Client:	Kin Capital	Sampled by:	SJ/Mk
Report No:	L7453-01	Tested by:	SJ
Project Number:	7453	Test Date:	07/10/20
Project Location:	Country Club - Launceston	Checked by:	mbs

Sample No.	1746	1760	1747	1740
Sample Location	7453-30	7453-10	7453-31	7453-04
Sample Depth (m)	0.70 - 0.90m	0.44 - 0.54m	0.30 - 0.50m	0.45 - 0.56m
Sample Description	Brown & Grey Clay	Brown Clay	Grey Clay	Brown Clay
Moisture Content %	39.93%	37.95%	19.34%	24.82%
Liquid Limit (W <sub>L</sub> )	82	97	45	43
Plastic Limit (W <sub>P</sub> )	32	33	22	19
Plastic Index (I <sub>P</sub> )	50	65	23	23
Linear Shrinkage %	20.00%	20.80%	12.40%	12.00%

**Comment :**

Sample No.	1745	1743	1741	
Sample Location	7453-29	7453-25	7453-15	
Sample Depth (m)	1.29 - 1.41m	0.71 - 0.84m	0.64 - 0.72m	
Sample Description	Brown & Grey Clay	Brown and Grey Clay	Brown Clay	
Moisture Content %	38.34%	33.19%	29.78%	
Liquid Limit %	67	65	73	
Plastic Limit %	32	26	26	
Plastic Index %	34	39	46	
Linear Shrinkage %	12.40%	14.80%	15.80%	

Approval: M B Schult., CPEng., NER

Approved Signatory: 

Australian Standard AS1289.2.1.1, 3.1.1, 3.2.1, 3.3.1, 3.4.1 Atterberg Limits Casagrande one point

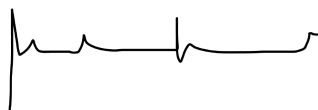
Client:	Kin Capital	Sampled by:	SJ/Mk
Report No:	L7453-02	Tested by:	SJ
Project Number:	7453	Test Date:	20/10/20
Project Location:	Country Club - Launceston	Checked by:	mbs

Sample No.	1739	1742	1744
Sample Location	7453-02	7453-19	7453-27
Sample Depth (m)	0.25 - 0.35m	0.65-0.80m	0.6-0.65m
Sample Description	Brown Clay	Orange Clay	Sandy Clay
Moisture Content %	32.32%	35.82%	19.17%
Liquid Limit (W <sub>L</sub> )	46	88	22
Plastic Limit (W <sub>P</sub> )	24	38	0
Plastic Index (I <sub>P</sub> )	22	50	22
Linear Shrinkage %	8.80%	16.40%	2.00%

**Comment :**

Approval: M B Schult., CPEng., NER

Approved Signatory:



# SOAKED C.B.R. REPORT

<b>Report No:</b>	L7453-3	<b>Pit No:</b>	7453-13
<b>JOB NUMBER:</b>	7453	<b>Depth:</b>	0.8-1.15m
<b>CLIENT:</b>	Kin Capital	<b>Balance:</b>	3
<b>PROJECT:</b>	Country Club Launceston	<b>OVEN:</b>	1
<b>DATE:</b>	09/10/20	<b>TECHNICIAN:</b>	SJ
<b>AUSTRALIAN STANDARD:</b>	AS1289.6.1.1		

<b>Sample No</b>	1736	
<b>Sample Identification</b>	7453-13	
<b>Field Moisture Content</b>	37.00%	
<b>Moisture Content</b>		
<b>Compaction Details 1</b>		
<b>AS 1289.5.1.1 Standard Compaction</b>		
<b>Maximum Dry Density</b>	1.388	
<b>Optimum Moisture Content %</b>	34.50	
<b>Material retained on 19.0mm sieve and discarded</b>	0	
<b>Compaction Details 1</b>		
<b>Target laboratory density ratio%</b>	98	
<b>Target laboratory moisture ratio%</b>	98	
<b>No of layers</b>	55	
<b>Specimen details before soaking</b>		
<b>Dry density</b>	1.366	
<b>Moisture content%</b>	34.57%	
<b>Laboratory moisture ratio%</b>	1.00%	
<b>Laboratory density ratio%</b>	98.41%	
<b>Period of soaking</b>	4 days	
<b>Specimen details after soaking</b>		
<b>Dry density</b>	1.365	
<b>Moisture content%</b>	37.90	
<b>Laboratory moisture ratio%</b>	109.84%	
<b>Laboratory density ratio%</b>	98.33%	
<b>Moisture content top 30mm%</b>	39.76%	
<b>Surcharge mass</b>	4.5kg	
<b>Swell%</b>	1.77%	
<b>C.B.R. VALUE</b>	6	
<b>Penetration</b>	2.5	
<b>Sample Description</b>	LIGHT BROWN CLAY	

Approved:

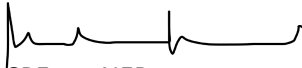
M B Schult., CPEng., NER



# SOAKED C.B.R. REPORT

Report No:	L7453-4	Pit No:	7453-18
JOB NUMBER:	7453	Depth:	0.33-0.5m
CLIENT:	Kin Capital	Balance:	3
PROJECT:	Country Club Launceston	OVEN:	1
DATE:	09/10/20	TECHNICIAN:	SJ
AUSTRALIAN STANDARD:	AS1289.6.1.1		

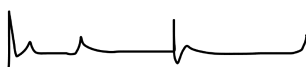
Sample No	1737	
Sample Identification	7453-18	
Field Moisture Content	37.10%	
Moisture Content		
<b>Compaction Details 1</b>		
AS 1289.5.1.1 Standard Compaction		
Maximum Dry Density	1.399	
Optimum Moisture Content %	34.50	
Material retained on 19.0mm sieve and discarded	0	
<b>Compaction Details 1</b>		
Target laboratory density ratio%	98	
Target laboratory moisture ratio%	98	
No of layers	55	
<b>Specimen details before soaking</b>		
Dry density	1.428	
Moisture content%	33.56%	
Laboratory moisture ratio%	97.28%	
Laboratory density ratio%	102.07%	
Period of soaking	4 days	
<b>Specimen details after soaking</b>		
Dry density	1.381	
Moisture content%	36.31	
Laboratory moisture ratio%	105.25%	
Laboratory density ratio%	98.69%	
Moisture content top 30mm%	42.87%	
Surcharge mass	4.5kg	
Swell%	2.13%	
<b>C.B.R. VALUE</b>	2	
Penetration	2.5	
Sample Description	Brown Clay	

Approved:   
M B Schult., CPEng., NER

# SOAKED C.B.R. REPORT

Report No:	L7453-05	Pit No:	7453-23
JOB NUMBER:	7453	Depth:	0.6 - 0.7m
CLIENT:	Kin Capital	Balance:	3
PROJECT:	Country Club Launceston	OVEN:	1
DATE:	16/10/20	TECHNICIAN:	SJ
AUSTRALIAN STANDARD:	AS1289.6.1.1		

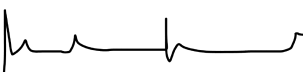
Sample No	1751	
Sample Identification	7453-23	
Field Moisture Content	27.80%	
Moisture Content		
<b>Compaction Details 1</b>		
AS 1289.5.1.1 Standard Compaction		
Maximum Dry Density	1.621	
Optimum Moisture Content %	25.50	
Material retained on 19.0mm sieve and discarded	0	
<b>Compaction Details 1</b>		
Target laboratory density ratio%	95	
Target laboratory moisture ratio%	95	
No of layers	55	
<b>Specimen details before soaking</b>		
Dry density	1.583	
Moisture content%	25.60%	
Laboratory moisture ratio%	1.00%	
Laboratory density ratio%	97.66%	
Period of soaking	4 days	
<b>Specimen details after soaking</b>		
Dry density	1.574	
Moisture content%	27.83	
Laboratory moisture ratio%	109.15%	
Laboratory density ratio%	97.12%	
Moisture content top 30mm%	34.30%	
Surcharge mass	4.5kg	
Swell%	1.82%	
<b>C.B.R. VALUE</b>	2.5	
Penetration	2.5	
Sample Description	BROWN CLAY SOME GRAVEL	

Approved:   
M B Schult., CPEng., NER

# SOAKED C.B.R. REPORT

Report No:	L7453-06	Pit No:	7453-24
JOB NUMBER:	7453	Depth:	0.5-0.7M
CLIENT:	Kin Capital	Balance:	3
PROJECT:	Country Club Launceston	OVEN:	1
DATE:	12/10/20	TECHNICIAN:	SJ
AUSTRALIAN STANDARD:	AS1289.6.1.1		

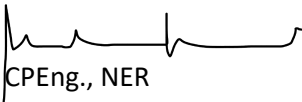
Sample No	1752	
Sample Identification	7453-24	
Field Moisture Content	34.80%	
Moisture Content		
<b>Compaction Details 1</b>		
AS 1289.5.1.1 Standard Compaction		
Maximum Dry Density	1.439	
Optimum Moisture Content %	30.50	
Material retained on 19.0mm sieve and discarded	0	
<b>Compaction Details 1</b>		
Target laboratory density ratio%	98	
Target laboratory moisture ratio%	98	
No of layers	55	
<b>Specimen details before soaking</b>		
Dry density	1.44	
Moisture content%	30.44%	
Laboratory moisture ratio%	1.00%	
Laboratory density ratio%	100.07%	
Period of soaking	4 days	
<b>Specimen details after soaking</b>		
Dry density	1.440	
Moisture content%	33.33	
Laboratory moisture ratio%	109.26%	
Laboratory density ratio%	100.09%	
Moisture content top 30mm%	37.08%	
Surcharge mass	4.5kg	
Swell%	2.37%	
<b>C.B.R. VALUE</b>	2	
Penetration	2.5	
Sample Description	Brown Clay	

Approved:   
M B Schult. CPEng., NER

# SOAKED C.B.R. REPORT

<b>Report No:</b>	L7453-7	<b>Pit No:</b>	7453-28
<b>JOB NUMBER:</b>	7453	<b>Depth:</b>	0.4-0.44m
<b>CLIENT:</b>	Kin Capital	<b>Balance:</b>	3
<b>PROJECT:</b>	Country Club Launceston	<b>OVEN:</b>	1
<b>DATE:</b>	09/10/20	<b>TECHNICIAN:</b>	SJ
<b>AUSTRALIAN STANDARD:</b>	AS1289.6.1.1		

<b>Sample No</b>	1738	
<b>Sample Identification</b>	7453-28	
<b>Field Moisture Content</b>	31.90%	
<b>Moisture Content</b>		
<b>Compaction Details 1</b>		
<b>AS 1289.5.1.1 Standard Compaction</b>		
<b>Maximum Dry Density</b>	1.503	
<b>Optimum Moisture Content %</b>	26.00	
<b>Material retained on 19.0mm sieve and discarded</b>	0	
<b>Compaction Details 1</b>		
<b>Target laboratory density ratio%</b>	96	
<b>Target laboratory moisture ratio%</b>	98	
<b>No of layers</b>	55	
<b>Specimen details before soaking</b>		
<b>Dry density</b>	1.456	
<b>Moisture content%</b>	25.98%	
<b>Laboratory moisture ratio%</b>	99.92%	
<b>Laboratory density ratio%</b>	96.87%	
<b>Period of soaking</b>	4 days	
<b>Specimen details after soaking</b>		
<b>Dry density</b>	1.456	
<b>Moisture content%</b>	29.49	
<b>Laboratory moisture ratio%</b>	113.42%	
<b>Laboratory density ratio%</b>	96.86%	
<b>Moisture content top 30mm%</b>	37.63%	
<b>Surcharge mass</b>	4.5kg	
<b>Swell%</b>	2.43%	
<b>C.B.R. VALUE</b>	3	
<b>Penetration</b>	2.5	
<b>Sample Description</b>	Brown Clay	

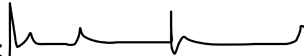
Approved:   
M B Schult., CPEng., NER



# SOAKED C.B.R. REPORT

<b>Report No:</b>	L7453-08	<b>Pit No:</b>	7453-34
<b>JOB NUMBER:</b>	7453	<b>Depth:</b>	0.6 - 0.7m
<b>CLIENT:</b>	Kin Capital	<b>Balance:</b>	3
<b>PROJECT:</b>	Country Club Launceston	<b>OVEN:</b>	1
<b>DATE:</b>	16/10/20	<b>TECHNICIAN:</b>	SJ
<b>AUSTRALIAN STANDARD:</b>	AS1289.6.1.1		

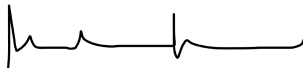
<b>Sample No</b>	1754	
<b>Sample Identification</b>	7453-34	
<b>Field Moisture Content</b>	29.60%	
<b>Moisture Content</b>		
<b>Compaction Details 1</b>		
<b>AS 1289.5.1.1 Standard Compaction</b>		
<b>Maximum Dry Density</b>	1.595	
<b>Optimum Moisture Content %</b>	22.50	
<b>Material retained on 19.0mm sieve and discarded</b>	0	
<b>Compaction Details 1</b>		
<b>Target laboratory density ratio%</b>	98	
<b>Target laboratory moisture ratio%</b>	98	
<b>No of layers</b>	55	
<b>Specimen details before soaking</b>		
<b>Dry density</b>	1.639	
<b>Moisture content%</b>	22.28%	
<b>Laboratory moisture ratio%</b>	0.99%	
<b>Laboratory density ratio%</b>	102.76%	
<b>Period of soaking</b>	4 days	
<b>Specimen details after soaking</b>		
<b>Dry density</b>	1.641	
<b>Moisture content%</b>	28.10	
<b>Laboratory moisture ratio%</b>	124.89%	
<b>Laboratory density ratio%</b>	102.88%	
<b>Moisture content top 30mm%</b>	35.20%	
<b>Surcharge mass</b>	4.5kg	
<b>Swell%</b>	4.51%	
<b>C.B.R. VALUE</b>	2	
<b>Penetration</b>	2.5	
<b>Sample Description</b>	GREY CLAY	

Approved:   
M B Schult, CPEng., NER

# SOAKED C.B.R. REPORT

Report No:	L7453-09	Pit No:	7453-09
JOB NUMBER:	7453	Depth:	0.6-0.65m
CLIENT:	Kin Capital	Balance:	3
PROJECT:	Country Club Launceston	OVEN:	1
DATE:	19/10/20	TECHNICIAN:	SJ
AUSTRALIAN STANDARD:	AS1289.6.1.1		

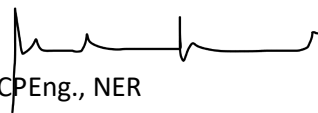
Sample No	1748	
Sample Identification	7453-09	
Field Moisture Content	34.30%	
Moisture Content		
<b>Compaction Details 1</b>		
AS 1289.5.1.1 Standard Compaction		
Maximum Dry Density	1.448	
Optimum Moisture Content %	29.00	
Material retained on 19.0mm sieve and discarded	0	
<b>Compaction Details 1</b>		
Target laboratory density ratio%	98	
Target laboratory moisture ratio%	98	
No of layers	55	
<b>Specimen details before soaking</b>		
Dry density	1.482	
Moisture content%	29.46%	
Laboratory moisture ratio%	1.02%	
Laboratory density ratio%	102.35%	
Period of soaking	4 days	
<b>Specimen details after soaking</b>		
Dry density	1.481	
Moisture content%	31.29	
Laboratory moisture ratio%	107.90%	
Laboratory density ratio%	102.30%	
Moisture content top 30mm%	41.93%	
Surcharge mass	4.5kg	
Swell%	1.62%	
<b>C.B.R. VALUE</b>	4	
Penetration	2.5	
Sample Description	LIGHT BROWN CLAY	

Approved:   
M B Schult., CPEng., NER

# SOAKED C.B.R. REPORT

Report No:	L7453-10	Pit No:	7453-32
JOB NUMBER:	7453	Depth:	0.3-0.45m
CLIENT:	Kin Capital	Balance:	3
PROJECT:	Country Club Launceston	OVEN:	1
DATE:	19/10/20	TECHNICIAN:	SJ
AUSTRALIAN STANDARD:	AS1289.6.1.1		

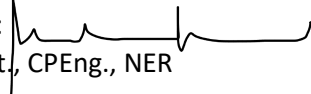
Sample No	1753	
Sample Identification	7453-32	
Field Moisture Content	34.90%	
Moisture Content		
<b>Compaction Details 1</b>		
AS 1289.5.1.1 Standard Compaction		
Maximum Dry Density	1.362	
Optimum Moisture Content %	32.50	
Material retained on 19.0mm sieve and discarded	0	
<b>Compaction Details 1</b>		
Target laboratory density ratio%	98	
Target laboratory moisture ratio%	98	
No of layers	55	
<b>Specimen details before soaking</b>		
Dry density	1.357	
Moisture content%	32.67%	
Laboratory moisture ratio%	1.01%	
Laboratory density ratio%	99.63%	
Period of soaking	4 days	
<b>Specimen details after soaking</b>		
Dry density	1.355	
Moisture content%	38.07	
Laboratory moisture ratio%	117.15%	
Laboratory density ratio%	99.45%	
Moisture content top 30mm%	44.39%	
Surcharge mass	4.5kg	
Swell%	4.58%	
<b>C.B.R. VALUE</b>	3.5	
Penetration	2.5	
Sample Description	Light Brown Clay some Gravel	

Approved:   
M B Schult., CPEng., NER

# SOAKED C.B.R. REPORT

Report No:	L7453-11	Pit No:	7453-05
JOB NUMBER:	7453	Depth:	0.5-0.85m
CLIENT:	Kin Capital	Balance:	3
PROJECT:	Country Club Launceston	OVEN:	1
DATE:	18/10/20	TECHNICIAN:	SJ
AUSTRALIAN STANDARD:	AS1289.6.1.1		

Sample No	1750	
Sample Identification	7453-05	
Field Moisture Content	36.90%	
Moisture Content		
<b>Compaction Details 1</b>		
AS 1289.5.1.1 Standard Compaction		
Maximum Dry Density	1.421	
Optimum Moisture Content %	32.50	
Material retained on 19.0mm sieve and discarded	0	
<b>Compaction Details 1</b>		
Target laboratory density ratio%	98	
Target laboratory moisture ratio%	98	
No of layers	55	
<b>Specimen details before soaking</b>		
Dry density	1.4	
Moisture content%	32.09%	
Laboratory moisture ratio%	0.99%	
Laboratory density ratio%	98.52%	
Period of soaking	4 days	
<b>Specimen details after soaking</b>		
Dry density	1.404	
Moisture content%	34.52	
Laboratory moisture ratio%	106.20%	
Laboratory density ratio%	98.79%	
Moisture content top 30mm%	37.57%	
Surcharge mass	4.5kg	
Swell%	2.14%	
<b>C.B.R. VALUE</b>	3.5	
Penetration	2.5	
Sample Description	Brown Clay with Gravel	

Approved:   
M B Schult, CPEng., NER



# SOAKED C.B.R. REPORT

Report No:	L7453- 12	Pit No:	7453-03
JOB NUMBER:	7453	Depth:	0.6-0.75m
CLIENT:	Kin Capital	Balance:	3
PROJECT:	Country Club Launceston	OVEN:	1
DATE:	18/10/20	TECHNICIAN:	SJ
AUSTRALIAN STANDARD:	AS1289.6.1.1		

Sample No	1749	
Sample Identification	7453-03	
Field Moisture Content	36.20%	
Moisture Content		
<b>Compaction Details 1</b>		
AS 1289.5.1.1 Standard Compaction		
Maximum Dry Density	1.413	
Optimum Moisture Content %	29.00	
Material retained on 19.0mm sieve and discarded	0	
<b>Compaction Details 1</b>		
Target laboratory density ratio%	98	
Target laboratory moisture ratio%	98	
No of layers	55	
<b>Specimen details before soaking</b>		
Dry density	1.373	
Moisture content%	28.93%	
Laboratory moisture ratio%	1.00%	
Laboratory density ratio%	97.17%	
Period of soaking	4 days	
<b>Specimen details after soaking</b>		
Dry density	1.373	
Moisture content%	36.42	
Laboratory moisture ratio%	125.58%	
Laboratory density ratio%	97.20%	
Moisture content top 30mm%	47.42%	
Surcharge mass	4.5kg	
Swell%	4.82%	
<b>C.B.R. VALUE</b>	0.5	
Penetration	2.5	
Sample Description	LIGHT BROWN CLAY	

Approved:

M B Schult., CPEng., NER

Australian Standard AS1289.7.1.1-2003 Method 7.1.1: Soil reactivity tests-Determination of the shrinkage index of a soil - Shrink-swell index

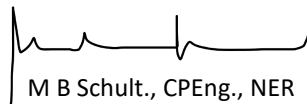
Client:	Kin Capital	Sampled by	SJ/MK
Report No:	L7453-13	Date sampled	01/10/20
Project Number:	7453	Tested by	SJ
Project Location:	Country Club - Launceston	Date tested	11/10/20
		Checked by	mbs

Sample information			
Sample location	7453 - 08	Sample depth	0.18-0.3m
Sample description			
Light Brown Clay			

Shrink-Swell test Result	
Shrink-Swell Index	35.5
Moisture content for shrink specimen	40.9%
Moisture content for swell specimen	44.7%
Estimated percentage of inert inclusion	NIL
Extent of soil crumbling during shrinkage	NIL
Extent of crack of shrinkage specimen	MULTIPLE CRACKS BUT INTACT

Signed:

Approved Signatory:

  
M B Schult., CPEng., NER

Australian Standard AS1289.7.1.1-2003 Method 7.1.1: Soil reactivity tests-Determination of the shrinkage index of a soil - Shrink-swell index

Client:

Report No:

Project Number:

Project Location:

Kin Capital

L7453-14

7453

Country Club - Launceston

Sampled by

Date sampled

Tested by

Date tested

Checked by

SJ/MK

29/09/20

SJ

08/10/20

mbs

## Sample information

Sample location	7453 - 16	Sample depth	0.56-0.7m
Sample description			
Brown Clay			

## Shrink-Swell test Result

Shrink-Swell Index	42.6
Moisture content for shrink specimen	40.4%
Moisture content for swell specimen	41.6%
Estimated percentage of inert inclusion	NIL
Extent of soil crumbling during shrinkage	NIL
Extent of crack of shrinkage specimen	MULTIPLE CRACKS BUT INTACT

Signed:

Approved Signatory:

M B Schult., CPEng., NER

Australian Standard AS1289.7.1.1-2003 Method 7.1.1: Soil reactivity tests-Determination of the shrinkage index of a soil - Shrink-swell index

Client:	Kin Capital	Sampled by	SJ/MK
Report No:	L7453-15	Date sampled	30/09/20
Project Number:	7453	Tested by	SJ
Project Location:	Country Club - Launceston	Date tested	13/10/20
		Checked by	mbs

Sample information			
Sample location	7453 - 29	Sample depth	0.52-0.64m
Sample description			
Light Brown Clay			

Shrink-Swell test Result	
Shrink-Swell Index	24.7
Moisture content for shrink specimen	22.7%
Moisture content for swell specimen	25.2%
Estimated percentage of inert inclusion	NIL
Extent of soil crumbling during shrinkage	NIL
Extent of crack of shrinkage specimen	MULTIPLE CRACKS BUT INTACT

Signed:

Approved Signatory: M B Schult., CPEng., NER

Australian Standard AS1289.7.1.1-2003 Method 7.1.1: Soil reactivity tests-Determination of the shrinkage index of a soil - Shrink-swell index

Client:	Kin Capital	Sampled by	SJ/MK
Report No:	L7453-15	Date sampled	30/09/20
Project Number:	7453	Tested by	SJ
Project Location:	Country Club - Launceston	Date tested	13/10/20
		Checked by	mbs

Sample information			
Sample location	7453 - 29	Sample depth	0.52-0.64m
Sample description			
Light Brown Clay			

Shrink-Swell test Result	
Shrink-Swell Index	24.7
Moisture content for shrink specimen	22.7%
Moisture content for swell specimen	25.2%
Estimated percentage of inert inclusion	NIL
Extent of soil crumbling during shrinkage	NIL
Extent of crack of shrinkage specimen	MULTIPLE CRACKS BUT INTACT

Signed:

Approved Signatory: M B Schult., CPEng., NER



Australian Standard AS1289.7.1.1-2003 Method 7.1.1: Soil reactivity tests-Determination of the shrinkage index of a soil - Shrink-swell index

Client:	Kin Capital	Sampled by	SJ/MK
Report No:	L7453-17	Date sampled	01/10/20
Project Number:	7453	Tested by	SJ
Project Location:	Country Club - Launceston	Date tested	14/10/20
		Checked by	mbs

Sample information			
Sample location	7453-22	Sample depth	0.40 - 0.55m
Sample description			
Brown Clay			

Shrink-Swell test Result	
Shrink-Swell Index	53.3
Moisture content for shrink specimen	39.6%
Moisture content for swell specimen	41.0%
Estimated percentage of inert inclusion	NIL
Extent of soil crumbling during shrinkage	NIL
Extent of crack of shrinkage specimen	NO VISIBLE CRACKS

Signed:   
Approved Signatory: M B Schult., CPEng., NER

## pH and Electrical Conductivity Report

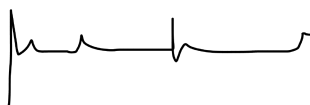
<b>Client:</b>	Kin Capital	<b>Equipment No:</b>	92
<b>Report No:</b>	L7453-18	<b>Sample No:</b>	
<b>Project Number:</b>	7453	<b>Test Date:</b>	11/11/2020
<b>Project Location:</b>	Devonport East Port	<b>Sampled By:</b>	MK/SJ
<b>Tested by</b>	SJ	<b>Checked By:</b>	MBS

Calibrated Before Testing                      Yes / No

<b>Sample No</b>	1752	1754	1749
<b>Test Location</b>	7453-24	7453-34	7453-03
<b>Depth (m)</b>	0.5-0.7	0.6-0.7	0.6-0.75
<b>Description</b>	Brown Clay	Brown Clay	Light Brown Clay
<b>pH Value</b>	6.6	5.2	7.2
<b>Electrical Conductivity</b> $\mu S/cm$	124	124	40
<b>Sample Temperature</b> $^{\circ}C$	26.6	26.7	26.9

<b>Sample No</b>	1750	1738	
<b>Test Location</b>	7453-05	7453-28	
<b>Depth (m)</b>	0.5-0.85	0.6-0.64	
<b>Description</b>	Brown Clay	Brown Clay	
<b>pH Value</b>	7.1	7.2	
<b>Electrical Conductivity</b> $\mu S/cm$	53	1237	
<b>Sample Temperature</b> $^{\circ}C$	24.3	24.2	

Approved By:



M B Schult, CPEng., NER

## Appendix I

## Notes

## UNIFIED SOIL CLASSIFICATION

COARSE GRAIN SOILS	GRAVELS	GW	Well graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		GM	Silty gravels, poorly graded gravel-sand-clay mixtures
		GC	Clayey gravels, poorly graded gravel-sand-silt mixtures
	SANDS	SW	Well graded sands, gravelly sand little or no fines
		SP	Poorly graded sands, gravelly sand little or no fines
		SM	Silty sands, poorly graded sand- silt mixtures
		SC	Clayey sands, poorly graded sand- clay mixtures
FINE GRAIN SOILS	SILTS & CLAYS LL<50	ML	Inorganic silts with low LL. Very fine plastic silty-clayey-sands
		CL	Inorganic sandy-silty-gravelly clays of low to medium plasticity
		OL	Organic silts and silt-clays of low plasticity
	SILTS & CLAYS LL>50	MH	Inorganic silts with high LL. Diatomaceous/micaeous sands-silts
		CH	Inorganic clays of high plasticity
		OH	Organic clays of medium to high plasticity
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

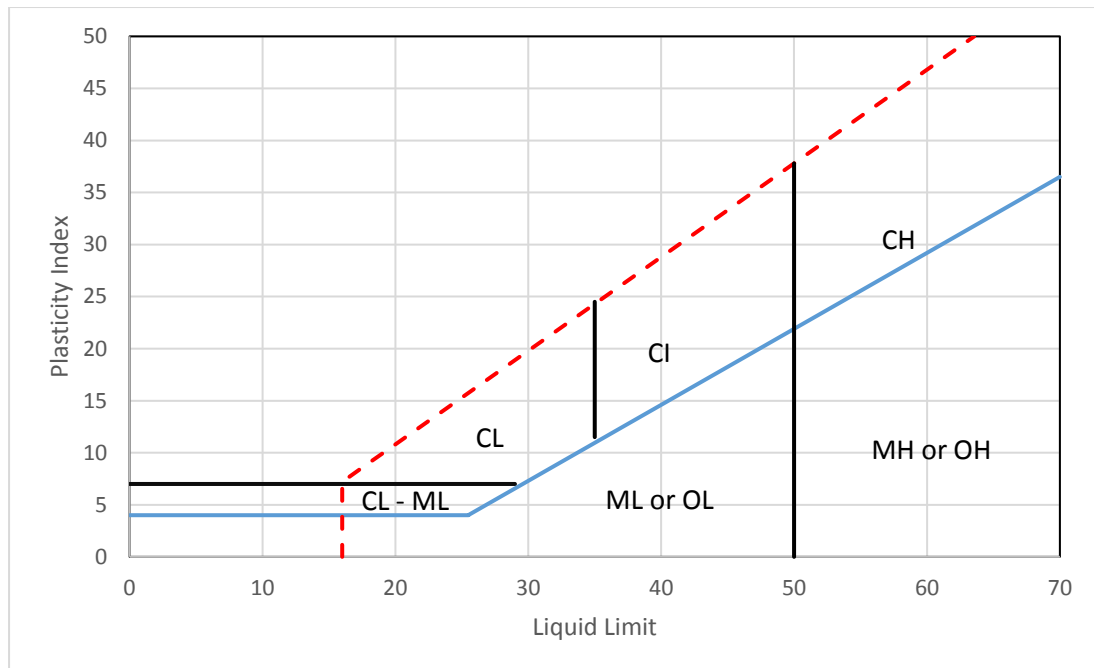
## PROPORTION DEFINITIONS

Coarse Grained Soils		Fine Grained Soils	
% Fines	Modifier	% Coarse	Modifier
<5	omit, or use "trace"	<15	omit, or use "trace"
5-12	describe as "with clay/silt" as applicable	15-30	described as "with sand/gravel" as applicable
>12	prefix soil as "silty/clayey" as applicable	>30	prefix soil as "sandy/gravelly" as applicable

Particle Size Chart		
Classification	Particle Size (mm)	Sieve Size (mm) AS
Boulder	> 200	
Cobble	60 - 200	63 - 200
Gravel <i>Coarse</i> <i>Medium</i> <i>Fine</i>	60 - 200	19 - 63
	6 - 20	6.7 - 19
	2 - 6	2.36 - 6.7
Sand <i>Coarse</i> <i>Medium</i> <i>Fine</i>	0.6 - 2	0.6 - 2.36
	0.2 - 0.6	150 - 600um
	0.06 - 0.2	75 - 150um
Silt & Clay	0.06	<75um

+

### PLASTICITY CHART



### SOIL STRENGTH CHART

#### Cohesionless Soils

Relative Density	N' Value
Very Loose	0 to 4
Loose	4 to 10
Moderately Dense	10 to 30
Dense	30 to 50
Very Dense	> 50

#### Cohesive Soils

Consistency	Undrained Shear Strength (kPa)
Very Soft	0 to 12.5
Soft	12.5 to 25
Firm	25 to 50
Stiff	50 to 100
Very Stiff	100 to 200
Hard	> 200



## ROCK

### ROCK SUBSTANCE WEATHERING CLASSIFICATION

SYMBOL	TERM	DIAGNOSTIC FEATURES
RS	<b>Residual Soils</b>	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is large change in volume but the soil has not been significantly transported
XW	<b>Extremely Weathered</b>	Rock is weathered to such an extent that it has soil properties but still retains the original structure (either disintegrates in water or Rock can be remoulded)
HW	<b>Highly Weathered</b>	Rock strength reduced significantly by weathering. The rock is discoloured, usually by limonite and rock fabric near discontinuities is altered; alteration continues deeply but corestones may be present.
MW	<b>Moderately Weathered</b>	Rock strength reduced moderately by weathering. The rock may be discoloured, usually by limonite and discontinuities may have alteration and may be open.
SW	<b>Slightly Weathered</b>	Rock is slightly discoloured but shows little or no change of strength from fresh rock
F	<b>Fresh</b>	Rock shows no sign of decomposition or staining

### ROCK LOGGING CODE

#### Fracture Type

JT	Joint
BP	Bedding Plane
Cb	Cross Bed
SS	Sheared Surface
SM	Seam
CS	Crushed Seam
FZ	Fragmented Zone
SZ	Shear Zone
VN	Vein

#### Orientation

For vertical non-oriented core "Dip" angle measured relative to horizontal	
For inclined non-oriented core "Angle" measured relative to core axis.	
For inclined oriented core "Dip" angle and "Dip Direction" angle (eg. 66°/275° mag.)	
VT	Vertical
HZ or 0°	Horizontal
d	degrees

#### Infilling/Coating

CN	Clean
X	Carbonaceous
CLAY	Clay
KT	Chlorite
CA	Calcite
FE	Iron Oxide
MI	Micaceous
Mn	Manganese
Py	Pyrite
QZ	Quartz

#### Shape

PLN	Planar
CU	Curved
UN	Undulating
ST	Stepped
IR	Irregular

#### Roughness

POL	Polished
SLK	Slickensided
SO	Smooth
RF	Rough
VR	Very Rough

#### Other

DIS	Discontinuous
OP	Open
CI	Closed
TI	Tight
VE	Veneer

## APPENDIX M1: CONCEPT LANDSCAPE DESIGN

---

PROVIDED BY: PLACE DESIGN GROUP

place  
design  
group.

# Country Club Estate, Prospect Vale Landscape Concept

Prepared for Kin Capital

12<sup>th</sup> November 2020

Revision 05



Australia  
China  
South East Asia

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Report title	Country Club Estate, Prospect Vale, Landscape Concept
Project number	1019084
Prepared for	Engine Room Venture Management
Authors	Alvin Kirby, Miranda Williams, Alexandra Jackson
Revision number	05
Revision issue date	12/11/2020
Approved	Alvin Kirby
Reason for revision	Review

Disclaimer: This report has been prepared in accordance with the scope of services described in the contract or agreement between Place Design Group Pty Ltd ACN 082 370063 and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and Place Design Group accepts no responsibility for its use by other parties.

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EXECUTIVE SUMMARY

The developer is proposing a Scheme Amendment, Specific Area Plan (SAP) and future residential subdivision application for the Country Club Estate, Prospect Vale. The following report outlines the landscape concept for proposed streets, park and open space which are intended to form part of the Scheme Amendment, SAP and future residential subdivision application.

The intent of the landscape concept is to:

- Provide a number of park, open space and outdoor recreational opportunities for future residents and the broader community
- Create attractive streets and public open space which reflect the landscape character of the Country Club Estate and surrounding areas
- Design high quality public open space which is safe and engaging for users and can feasibly be maintained in the short, medium and long term

The landscape design work included in this report is at a concept design level only and will be subject to detailed design and a detailed tree survey.

Planning Authority Requirements

The landscape concept addresses Meander Valley Council's requirement that 5% of the developed land area is provided as open space, as outlined in Meander Valley Council Local Policy Manual, March 2020. Policy no. 11 Public Open Space Contributions.

The landscape concept provides up to 6.4 hectares of land for public open space, which equates to around 14% of the 45 hectares of developable land.

The landscape concept addresses Council's requirements for the provision of open space areas as outlined in (Meander Valley Council's 2013 Planning Scheme, section E10 Recreation and Open Space Code).

Specific outcomes in response to this code's performance criteria are outlined below.

PERFORMANCE CRITERIA	RESPONSE	COMPLIANCE
P1 Provision of public open space, unless in accordance with Table E10.1, must:		✓
a) not pose a risk to health due to contamination; and	Refer to Niche Planning Studio's report.	✓
B) not unreasonably restrict public use of the land as a result of:	Public use of identified public open space is not restricted by any of these uses.	
i) services, easements or utilities; and ii) stormwater detention basins; and iii) drainage or wetland areas; and iv) vehicular access; and		✓
c) be designed to:	The proposed public open space provides a range of recreational settings including: - A bushland reserve	
i) provide a range of recreational settings and accommodate adequate facilities to meet the needs of the community, including car parking; and	- Areas of open space, activated landscape and bushfire buffer, featuring a recreational trail connection - Parallel car parking in the road reserve.	✓
ii) reasonably contribute to the pedestrian connectivity of the broader area; and	The proposal includes pedestrian connections to: - The proposed internal subdivision road network - Existing roads external to the Country Club Estate (such as Country Club Avenue and Harley Parade) which enable connectivity to the broader Prospect Vale area.	✓
iii) be cost effective to maintain; and	In developing the landscape concept for public open space, we have included tried and tested landscape finishes and materials and that have been successfully used in local open space in northern Tasmania, and that are cost-effective to maintain.	✓
iv) respond to the opportunities and constraints presented by the physical characteristics of the land to provide practically useable open space; and	Design responses to the physical characteristics of the land include: - Incorporation of stone / rock boulder retaining walls, where required, to form flatter useable spaces in the naturally steep terrain - Various seating opportunities placed to optimise views from elevated positions - Recreational trails proposed that follow the natural profile of the land	✓
v) provide for public safety through Crime Prevention Through Environmental Design (CPTED) principles; and	The landscape concept for the public open space has considered CPTED principles. Specific outcomes include: - Bushland reserve positioned where it is overlooked by residential lots - Variety of recreational uses proposed to attract various user types - Good visibility into spaces through the use of low shrubs and groundcovers at park entries/ thresholds.	✓
vi) provide for the reasonable amenity of adjoining land users in the design of facilities and associated works; and	The amenity of adjoining land users has been addressed through: - Incorporation of landscape buffer planting in the bushland reserve between the Country Club accommodation buildings and the residential subdivision.	✓
vii) have a clear relationship with adjoining land uses through treatment such as alignment, fencing and landscaping; and	A variety of treatments are proposed to delineate public open space from adjoining land, such as: - Residential lot fencing - Planted park / nature strip threshold - Paddock fencing	✓
viii) create attractive environments and focal points that contribute to the existing or desired future character statements, if any.	The proposed public open space provides a distinct, attractive environment which reflects the rural estate character of the region, incorporating locally sourced materials and a mix of native and European planting types. The proposed local park provides the key open space focal point for the project.	✓



# BACKGROUND

This landscape concept package has been prepared by Place Design Group to accompany a submission to Meander Valley Council for a Scheme Amendment, Specific Area Plan (SAP) and future residential subdivision application for the Country Club Estate, Prospect Vale by KIN Capital, Federal Group and Engine Room Venture Management.

The proposed development site is adjacent to Federal Group’s existing property, The Country Club Estate, Prospect Vale, Launceston.

This application should be read concurrently with the urban design concept package also prepared by Place Design Group for the same project.

## SITE DESCRIPTION

### Site Address

100 Country Club Avenue, Prospect Vale, Launceston  
TASMANIA 7250

### Property ID and Title Reference

2852135 – 119422/1, 33678/1

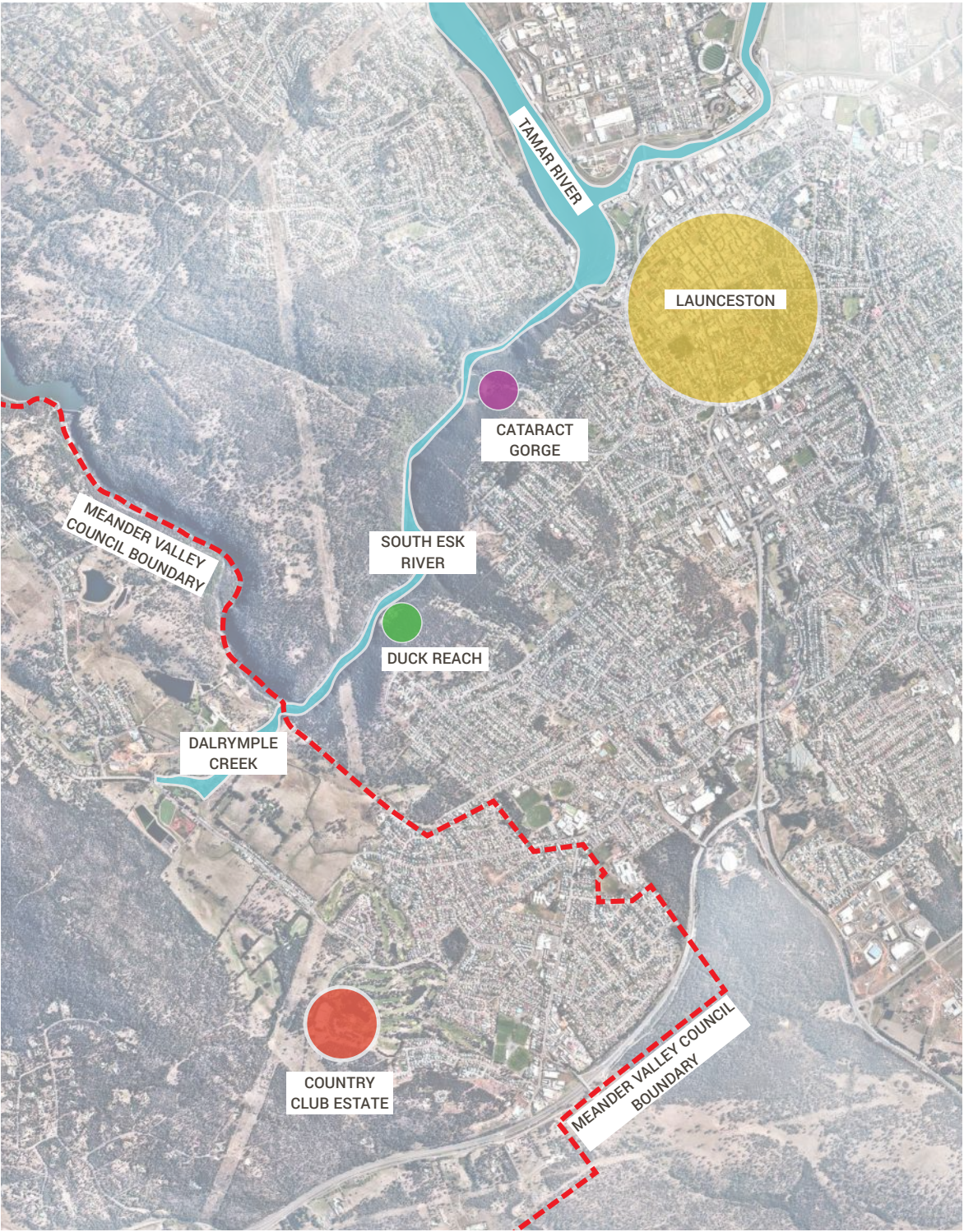
The site comprises two titles within which are located an easement (CID 652067) and reservoir (TasWater).  
[Brief description of physical site features; Refer also Site Context]

## PLANNING

The landscape concept has been developed in accordance with Tasmanian Planning Scheme’s State Planning Provisions and the Meander Valley Interim Planning Scheme 2013.

The design scope includes:

- Streetscape
- Open Space
- Landscape to Stormwater Management Devices

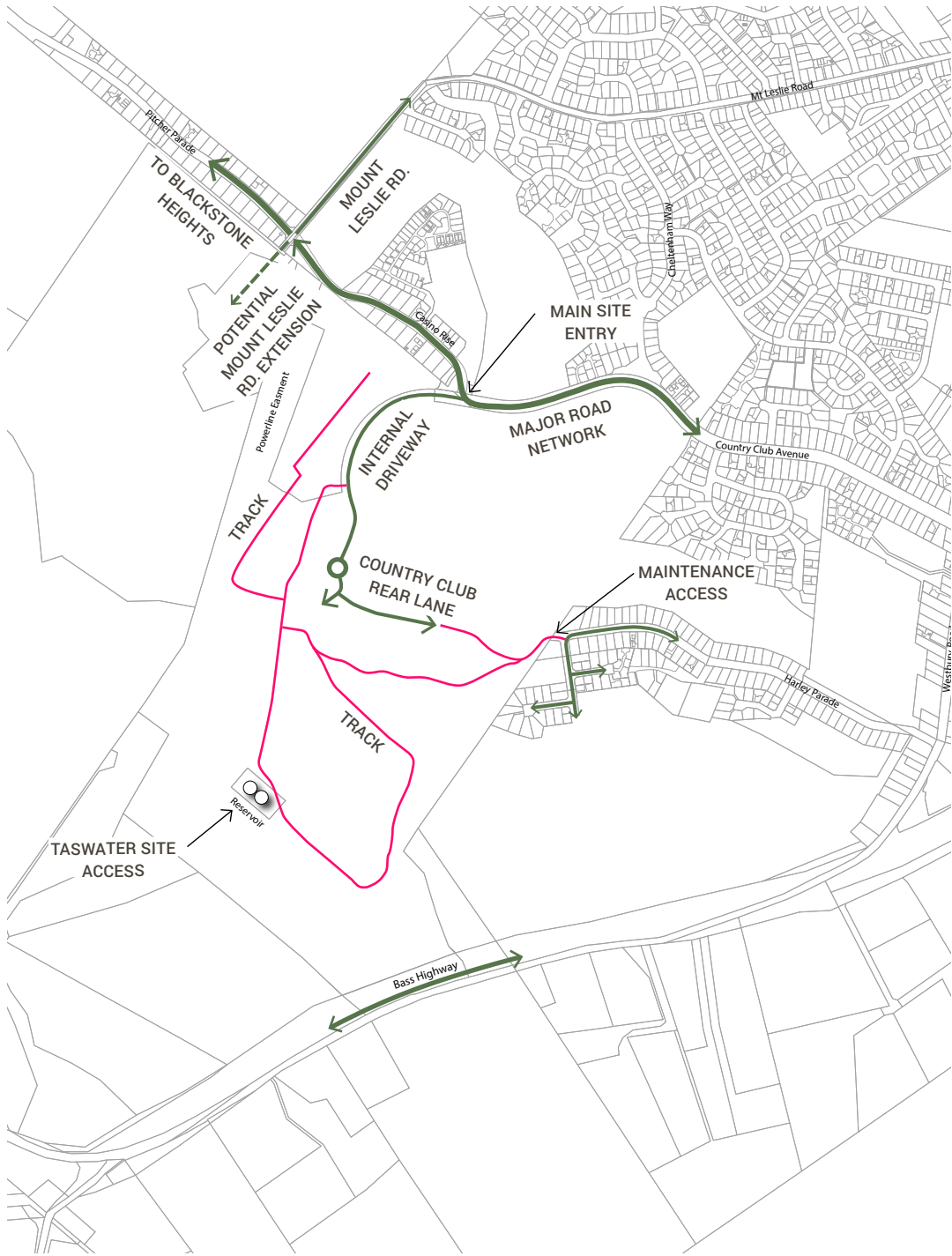


LOCALITY MAP

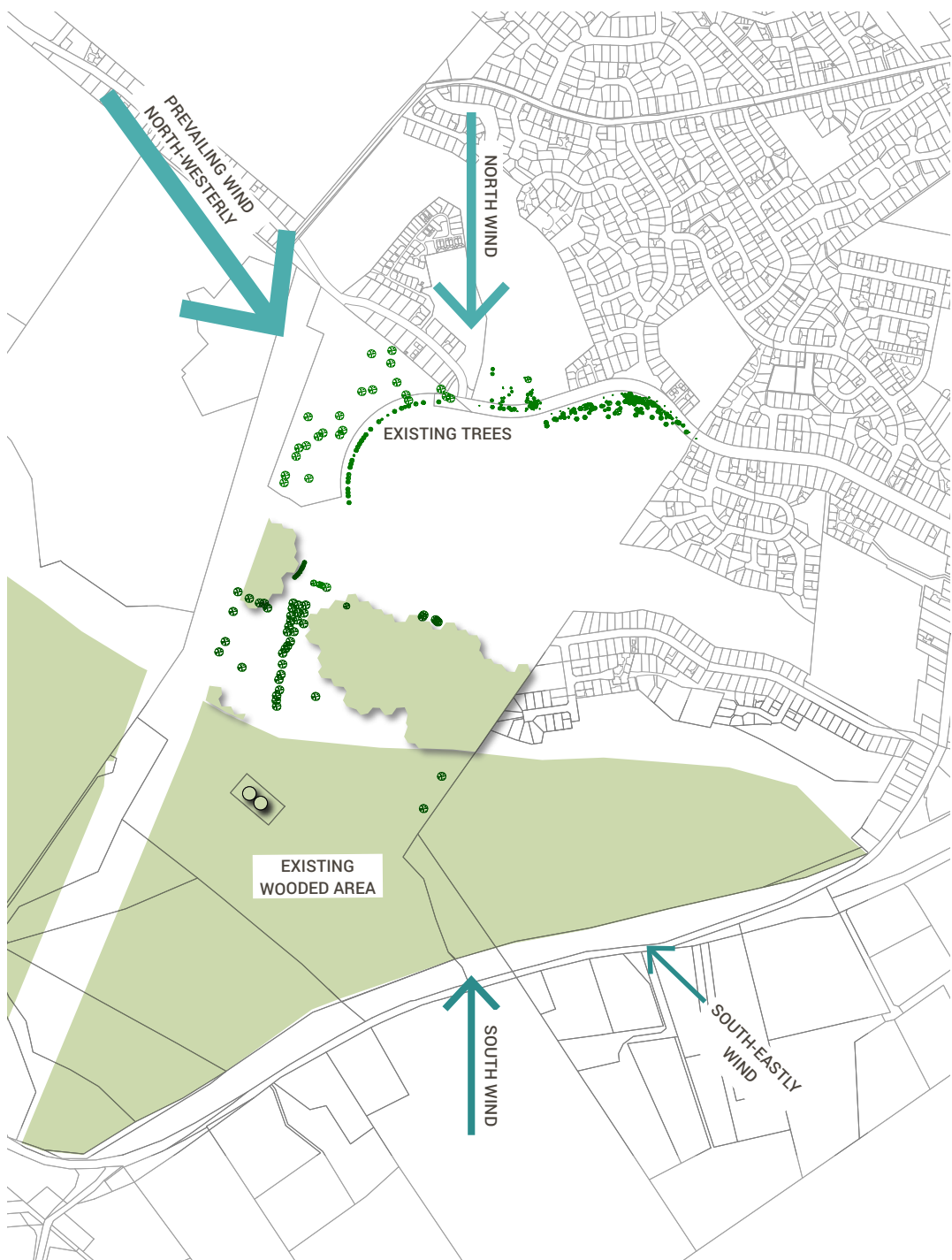


SITE ANALYSIS

EXISTING CIRCULATION & ACCESS



EXISTING VEGETATION







01



02



03





04



05



06



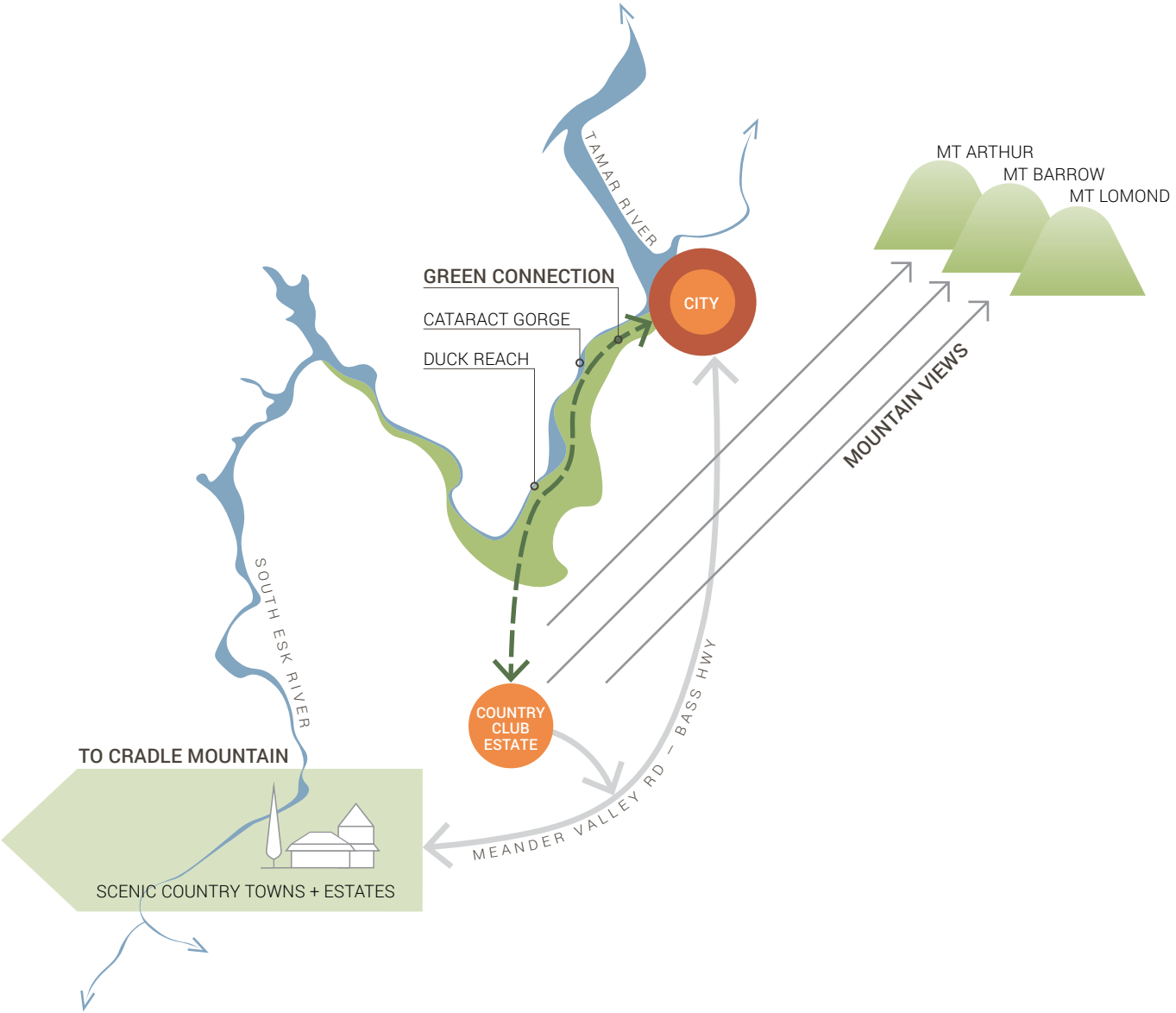
07



LANDSCAPE VISION



The Country Club Estate is located at the threshold of Launceston and Meander Valley Council. A short walk or cycle to the north and you'll find yourself on the Duck Reach Trail beside the picturesque South Esk Gorge. A short drive to the south-west and you'll be passing beautiful rural landscapes and settlements on route to Cradle Mountain. Our vision is to create a place a enticing residential development which embraces the rural landscape character of the region, incorporating design elements that draw from country estates, farms, horse paddocks as well as local remnant vegetation.





LANDSCAPE STRUCTURE PLANS

CONNECTED OPEN SPACE



The project incorporates an array of connected open space including a Bushland Reserve adjacent to the Country Club Estate complex, which provides the key community focal point, together with an Open Space Node to the south to the site and areas of Open Space, Activated Landscape and Bushfire Buffer connected by a Recreation Trail.



DATE	PROJECT NO.	REVISION	DWG NO.
12/11/2020	1019084	05	09

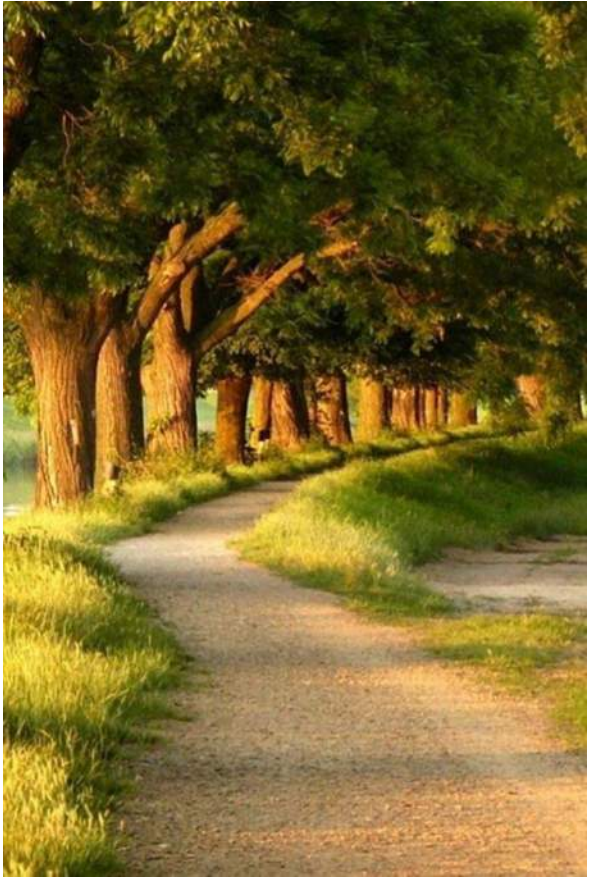


LANDSCAPE STRUCTURE PLANS

LANDSCAPE CHARACTER



The landscape concept is intended to reflect the characteristics of the Country Club and local rural estates within the Meander Valley Council area. The plan and images below convey how landscape theming will be applied to different areas of the site.





LANDSCAPE STRUCTURE PLANS

WATER SUSTAINABILITY



The project proposes a sustainable approach to water usage by using the topography to direct surface water runoff to street trees, nature strips and the Bushland Reserve.





LANDSCAPE MASTERPLAN



DETAIL PLAN  
REFER DWG 14

DETAIL PLAN  
REFER DWG 15

The Landscape Masterplan intends to sensitively integrate the proposed residential subdivision into the existing environment, to minimise the visual impact of adjoining land users, such as the existing Country Club complex and golf course.

The tree lined Country Club Avenue sets up a scenic drive and arrival experience at the approach to the site, retaining the mature street trees. Landscape works to the nature strip adjacent to the proposed retirement village and roundabout provide a further opportunity to reinforce the sense of arrival and incorporate wayfinding to direct users to the residential subdivision.

The proposed street hierarchy reflects the various functions and design of each street typology. The tree lined streets are intended to provide attractive streets cutting across the terrain to break up the appearance of the residential subdivision. The Country Lane provides the main form of circulation and access to the residential subdivision and will be lined with large street trees. The Park Connector features medium sized street trees and links the Hillside Park adjacent to the Country Club complex with the linear open space to the south of the site. The standard residential streets feature smaller street trees.

The Landscape Masterplan provides a series of public open spaces to provide residents and the general public with a variety of recreational opportunities across the site. The Bushland Reserve to the south of the Country Club Complex provides an attractive engaging place for users to relax and participate in various recreational activities. An open space node provides a secondary focal point to the south of the site and is connected to other linear open space, activated landscape and bushfire buffer areas via a proposed recreational trail. Further detail on the various public open space opportunities is provided later in this report.

The Country Club Estate includes remnant vegetation in areas of proposed park and open space, as well as a large wooded area in the south of the site. The project is subject to a bushfire setback from existing vegetation in the south and south east of the site, which may have an impact on remnant vegetation (subject to the environmental consultant's advice).

LEGEND

	SITE BOUNDARY		PARK CONNECTOR ROAD
	EXISTING GOLF COURSE		STANDARD RESIDENTIAL STREET
	EXISTING COUNTRY CLUB COMPLEX		RETIREMENT VILLAGE
	EXISTING ROAD		REMNANT VEGETATION
	ARRIVAL EXPERIENCE		DETENTION BASIN
	BUSHLAND RESERVE		TASWATER SITE
	OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER		LANDSCAPE BUFFER
	COUNTRY LANE CHARACTER ROAD		



LANDSCAPE DETAIL PLAN



LEGEND

	SITE BOUNDARY
01	EXISTING GOLF COURSE
02	EXISTING COUNTRY CLUB
03	EXISTING ROAD
04	RETIREMENT VILLAGE
05	OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER
06	COUNTRY LANE CHARACTER ROAD
07	STANDARD RESIDENTIAL STREET
08	ARRIVAL EXPERIENCE
09	LANDSCAPE BUFFER



LANDSCAPE DETAIL PLAN



LEGEND

	SITE BOUNDARY
	EXISTING GOLF COURSE
	EXISTING COUNTRY CLUB
	BUSHLAND RESERVE
	OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER
	OPEN SPACE NODE
	COUNTRY LANE CHARACTER ROAD
	PARK CONNECTOR ROAD
	STANDARD RESIDENTIAL STREET
	REMNANT VEGETATION
	DETENTION BASIN
	TAS WATER



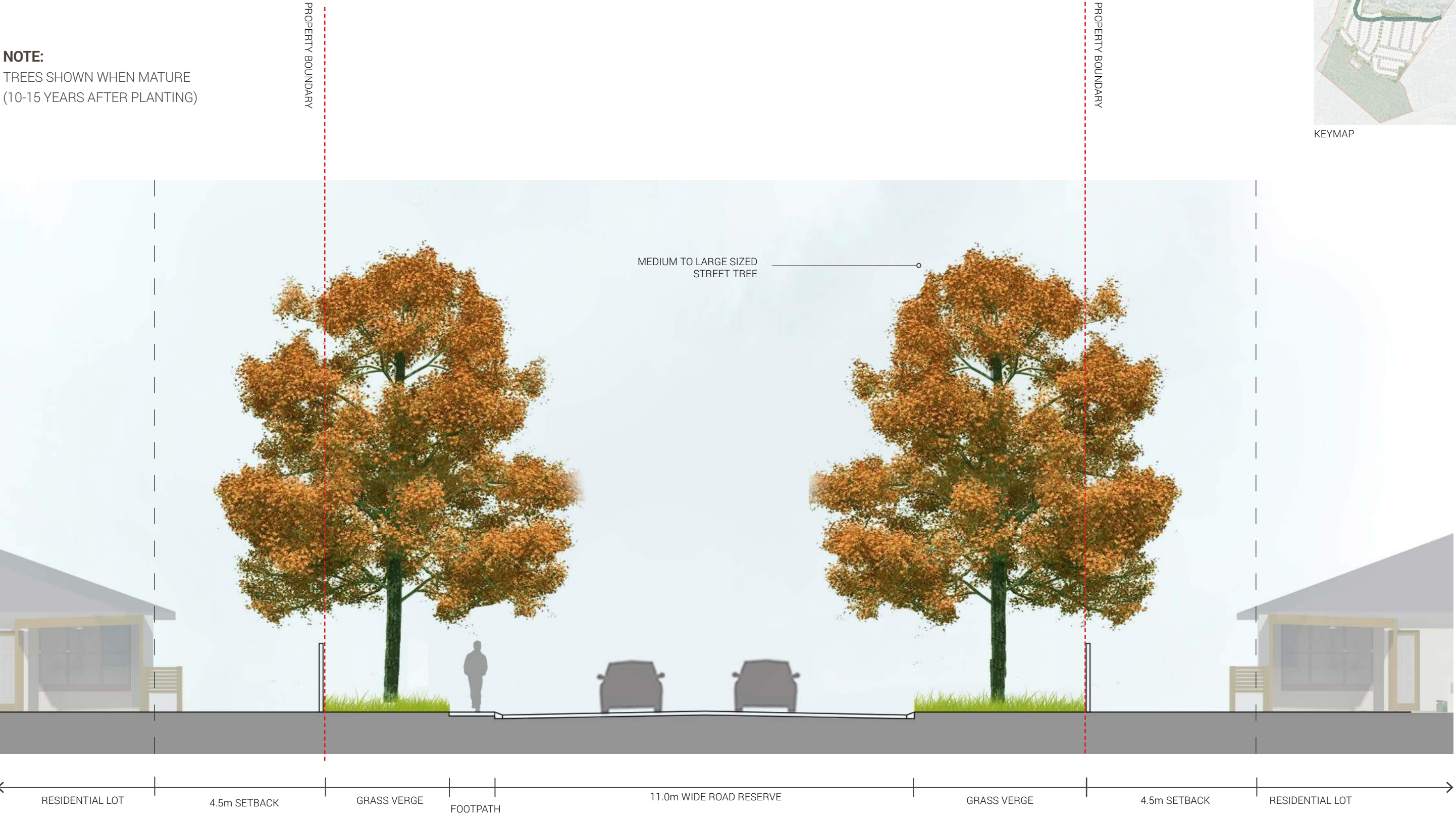
TYPICAL STREETSCAPE SECTIONS

20m WIDE COUNTRY LANE

**NOTE:**  
TREES SHOWN WHEN MATURE  
(10-15 YEARS AFTER PLANTING)



KEYMAP





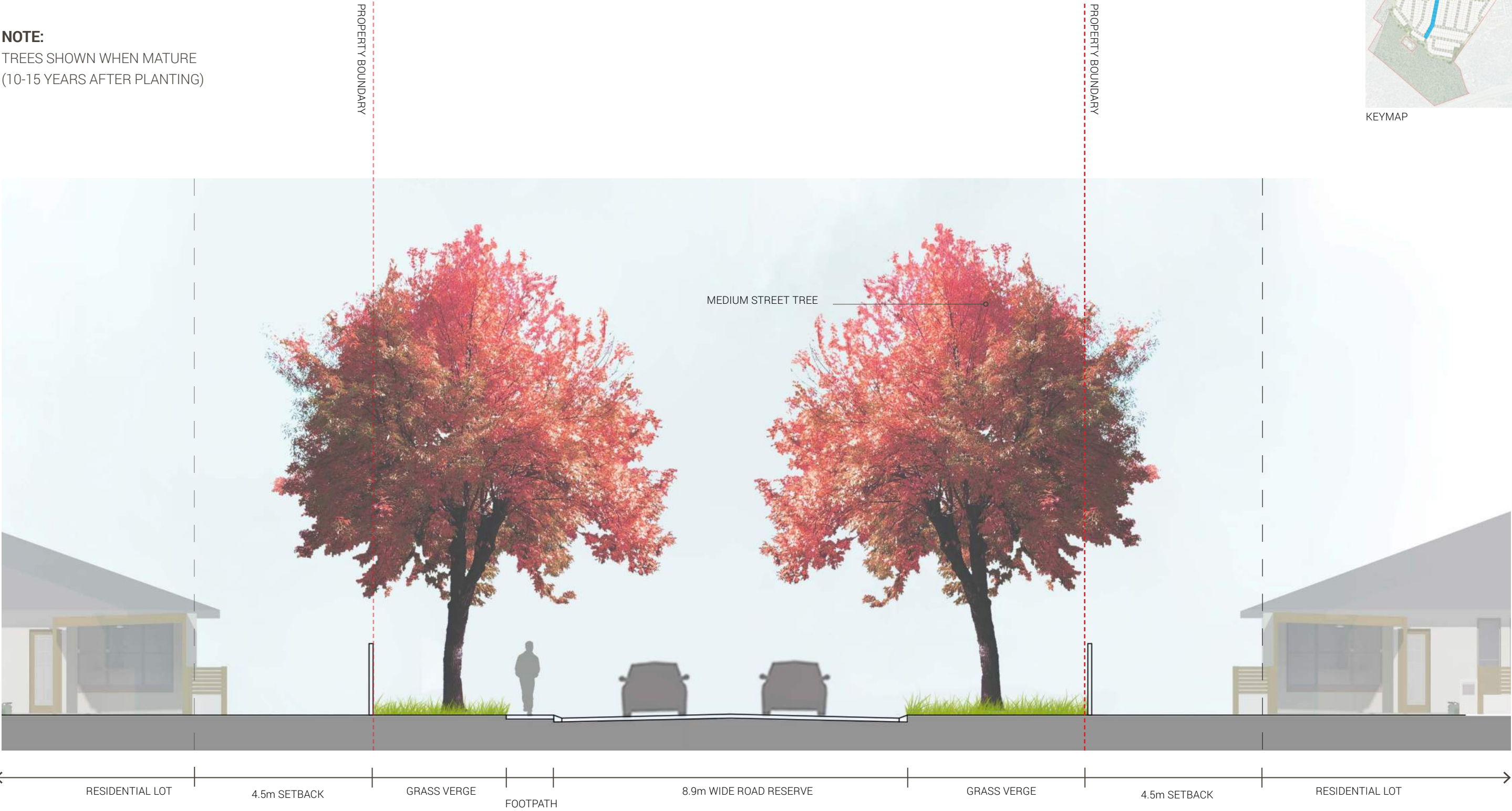
TYPICAL STREETSCAPE SECTIONS

18m WIDE PARK CONNECTOR ROAD

**NOTE:**  
TREES SHOWN WHEN MATURE  
(10-15 YEARS AFTER PLANTING)



KEYMAP





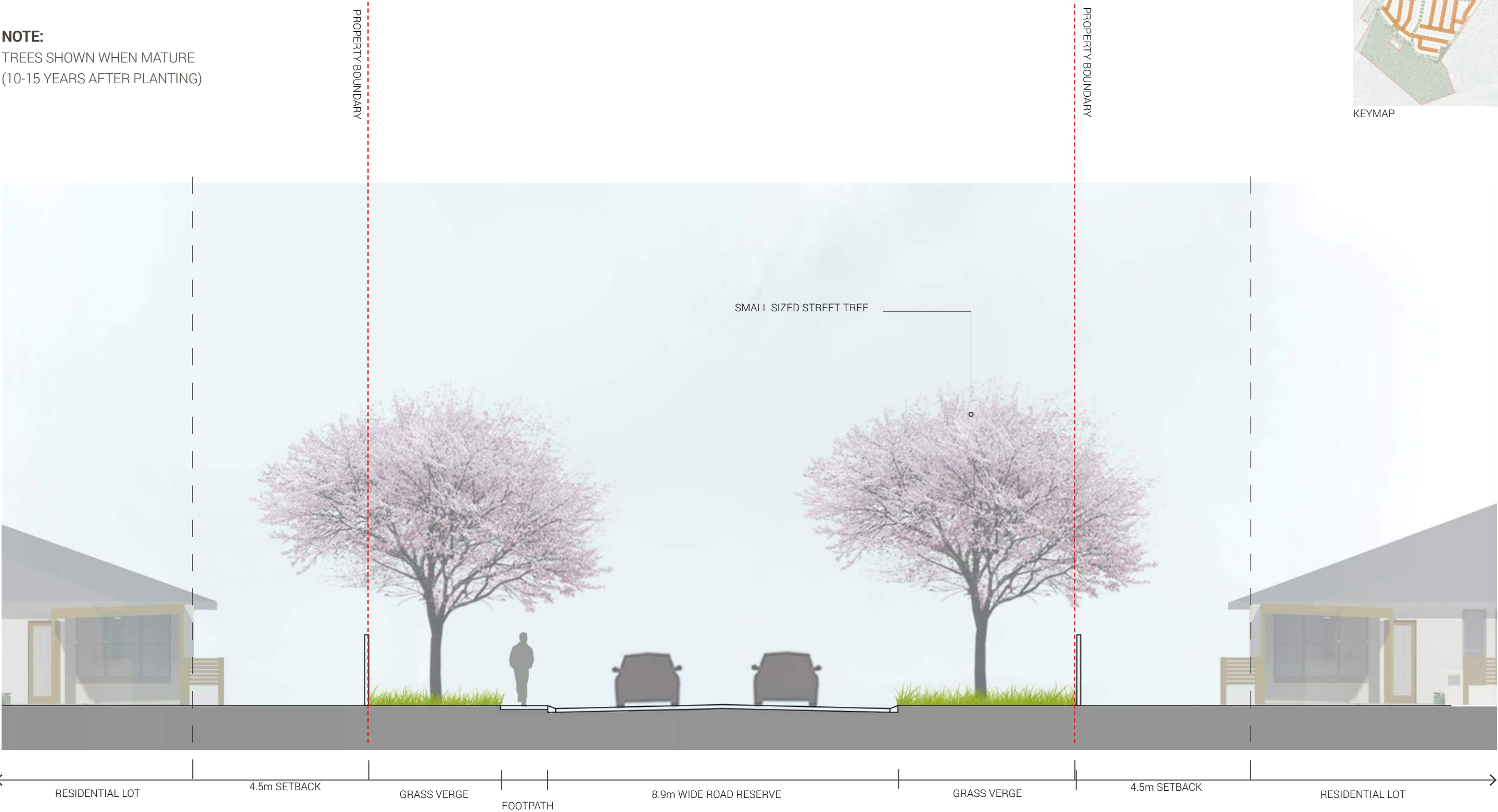
TYPICAL STREETSCAPE SECTIONS

STANDARD RESIDENTIAL STREET

**NOTE:**  
TREES SHOWN WHEN MATURE  
(10-15 YEARS AFTER PLANTING)



KEYMAP

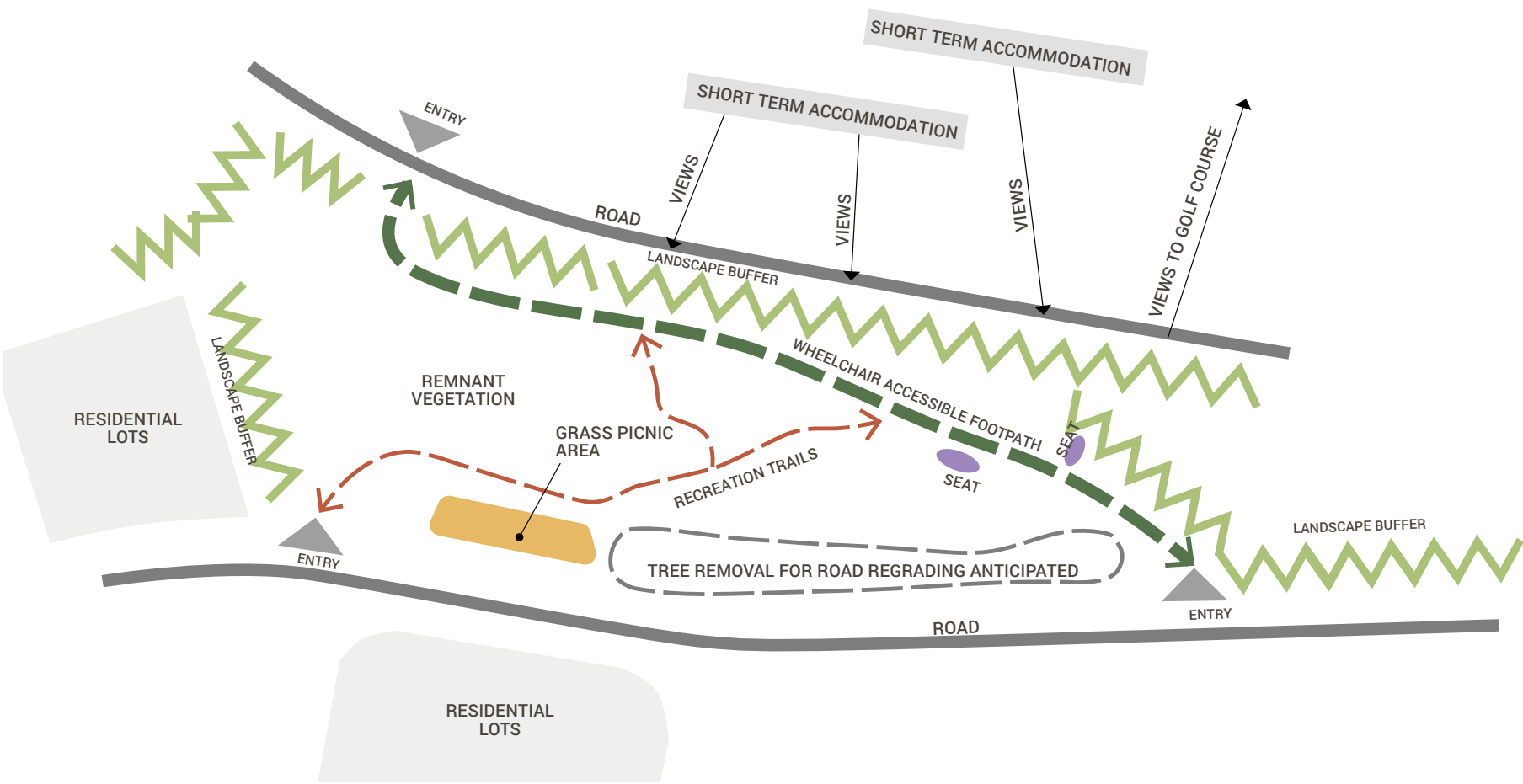




LANDSCAPE DESIGN DRIVERS

BUSHLAND RESERVE

Bushland Reserve is situated on a north-facing steep sided area of land covered with dense remnant vegetation. The landscape concept seeks to create a woodland setting amongst the remnant vegetation, whilst creating a useable grass terrace where the topography is flatter in the south-west corner of the space. Additional native planting will be used to infill gaps in the remnant vegetation and provide a landscape buffer to the northern edge of the space, screening sightlines from the Country Club accommodation buildings. The grass terrace provides an informal area for kids to run around and users to sit, rest and or have a picnic. Proposed road engineering is likely to impact the topography and vegetation to much of the space's southern edge, so it is anticipated this area will require regrading and revegetation.



Landscape buffer to park boundaries



Picnic area in bushland setting



Opportunity for recreation trails through existing vegetation



LANDSCAPE CONCEPT PLAN

BUSHLAND RESERVE

DETAIL PLAN  
REFER DWG 21

DETAIL PLAN  
REFER DWG 22



LEGEND

01	PEDESTRIAN ENTRY	09	REMNANT VEGETATION
02	GRAVEL TRAIL	10	NATIVE HEDGEROW BUFFER PLANTING
03	PICNIC SETTING	11	STREET TREES
04	SMALL SEATING AREAS	12	SEATING AREA OFF PRIMARY FOOTPATH
05	SHRUB AND GROUNDCOVER PLANTING	13	PEDESTRIAN FOOTPATH CONNECTION TO COUNTRY CLUB
06	GRASS VERGE		
07	STREET FOOTPATH		
08	OPEN TURF RECREATION AREA		





LANDSCAPE DETAIL PLAN

BUSHLAND RESERVE



04 05



02

LEGEND

01	PEDESTRIAN ENTRY	08	GRASS VERGE
02	RECREATION TRAIL THROUGH EXISTING VEGETATION - GRAVEL TRAIL	09	STREET FOOTPATH
03	REMNANT VEGETATION	10	PEDESTRIAN FOOTPATH CONNECTION TO COUNTRY CLUB
04	OPEN TURF AREA	11	CONCRETE SURFACE
05	PICNIC SETTINGS	12	NATIVE HEDGEROW BUFFER PLANTING
06	SHRUB AND GROUNDCOVER PLANTING	13	STREET TREES
07	SEATING AREAS	14	ACCESS TO EXISTING COUNTRY CLUB



LANDSCAPE DETAIL PLAN

BUSHLAND RESERVE



KEYMAP



LEGEND

01	PEDESTRIAN ENTRY	07	REMNANT VEGETATION
02	GRAVEL TRAIL	08	NATIVE LANDSCAPE BUFFER PLANTING
03	SHRUB AND GROUNDCOVER PLANTING	09	STREET TREES
04	GRASS VERGE	10	SEATING NOOK
05	STREET FOOTPATH	11	ENTRY ARBOUR
06	PEDESTRIAN FOOTPATH CONNECTION TO COUNTRY CLUB		



07



11



LANDSCAPE SECTIONS

BUSHLAND RESERVE



KEYMAP



SECTION A



LANDSCAPE SECTIONS

BUSHLAND RESERVE



SECTION B

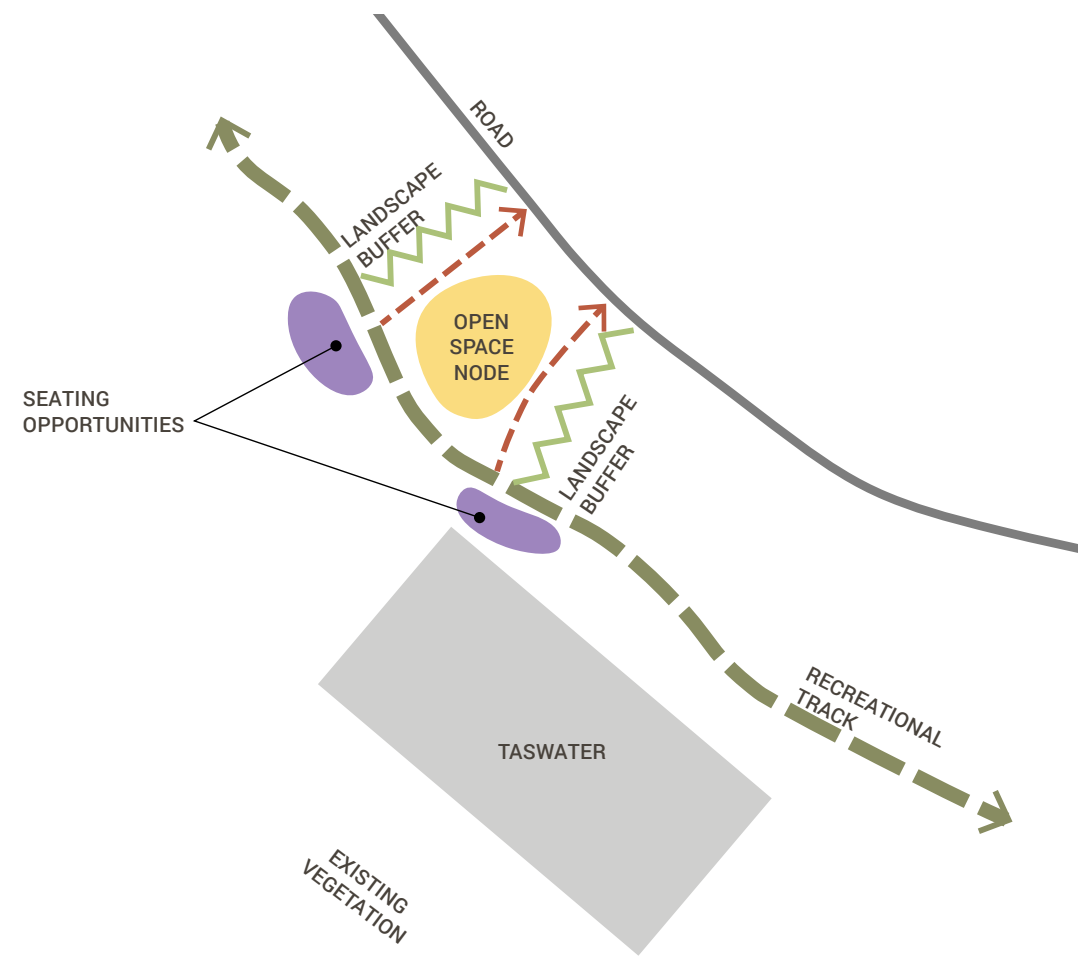


LANDSCAPE DESIGN DRIVERS

OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER

The site includes areas of open space, activated landscape and bushfire buffer running along the western, south-eastern and southern extents of the residential subdivision. These areas provide a continuous recreational trail which broadly follows the existing terrain of the landscape. This gravel track will move through existing vegetation and allow users to experience various landscape types, from wooded areas in the south to the more open paddocks on the west of the site.

An Open Space Node is proposed to the south of the project area near to the existing Taswater owned site (refer below). This space is located in one of the more elevated parts of the residential subdivision and provides a secondary focal point with mountain views, seating and an open grass area for picnics and other recreational uses.





LANDSCAPE CONCEPT PLAN

OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER



LEGEND

	SITE BOUNDARY
	OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER
	OPEN SPACE NODE
	EXISTING VEGETATION
	DETENTION BASIN





LANDSCAPE DETAIL PLAN

OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER



LEGEND

	SITE BOUNDARY
01	GRAVEL TRACK
02	DETENTION BASIN
03	PARK BENCH ON CONCRETE SLAB
04	EXISTING VEGETATION



KEYMAP





LANDSCAPE DETAIL PLAN

OPEN SPACE NODE



KEYMAP



LEGEND

	SITE BOUNDARY
01	GRAVEL TRACK
02	OPEN SPACE NODE
03	SEATING WALLS
04	TURF
05	EXISTING VEGETATION
06	SHRUB AND GROUNDCOVER PLANTING
07	PARK BENCH ON CONCRETE SLAB
08	TASWATER SITE



LANDSCAPE DETAIL PLAN

OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER



KEYMAP

LEGEND

	SITE BOUNDARY
	GRAVEL TRACK
	DETENTION BASIN
	EXISTING VEGETATION



TYPICAL LANDSCAPE SECTIONS

OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER



SECTION C

DATE	PROJECT NO.	REVISION	DWG NO.
12/11/2020	1019084	05	29
0	1	2	3
4	5M/ 1:100@A3		

TYPICAL LANDSCAPE SECTIONS

OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER



SECTION D

DATE	PROJECT NO.	REVISION	DWG NO.
12/11/2020	1019084	05	30



TYPICAL LANDSCAPE SECTIONS

OPEN SPACE, ACTIVATED LANDSCAPE & BUSHFIRE BUFFER



SECTION E

DATE	PROJECT NO.			REVISION	DWG NO.
12/11/2020	1019084			05	31
	0	1	2	3	4
	5M/ 1:100@A3				



MATERIALS PALETTE

WALLS



FENCING



SEATING



GABION WALLS



FOOTPATHS





PLANTING STRATEGY



The proposed planting strategy is critical to maintaining the character of the County Club Estate and mitigating the visual impact of the proposed residential sub division adjacent to the golf club and other surrounding uses.

A hierarchy of tree lined streets with different size trees has been defined to provide an attractive setting for residential lots and improve the legibility for users. This includes the use of taller trees along the Country Lane, the primary access road to the subdivision, the use of medium size trees along the Green Connector to emphasise the link to the Bushland Reserve and the Open Space Node to the south and the use of small flowering trees are proposed on the Orchard Streets.

The mix of ornamental street trees reflects the site's rural estate character and provides spring blossom, summer shading and autumnal colour. The use of deciduous streets trees (especially on east-west streets) allows winter light and passive solar gain to buildings. The boulevard of mature street trees is proposed to be retained along Country Club Avenue, providing a strong arrival experience on the approach to the Country Club and the residential subdivision.

Proposed infill and landscape buffer planting to the Bushland Reserve is intended to supplement the existing native woodland character of the remnant planting and comprises a range of trees, shrubs and groundcovers endemic to the area.

A bushfire setback line runs along the southern and south-eastern edges of the proposed residential lots, requiring vegetation to be managed to minimise the bushfire threat.

Planting Palettes on subsequent pages outline indicative plant species proposed for the site. Species selections have been informed by research into plants that have been successfully grown on the Country Club Estate site and within the Prospect Vale locality on low nutrient soils over dolerite, with relatively low annual rainfall and periodic dry periods.



PLANTING PALETTE – STREETS

TREES

BOTANICAL NAME	COMMON NAME
ACACIA <i>melanoxylon</i>	Australian Blackwood
FRAXINUS <i>excelsior</i> 'Aurea'	Golden Ash
FRANXINUS 'Raywoodii'	Claret Ash
LIQUIDAMBAR <i>styraciflua</i>	Sweet Gum
MELALEUCA <i>linarifolia</i>	Flax Leaved Paperbark
MALUS <i>floribunda</i>	Japanese Crabapple
OLEA <i>europaea</i>	European Olive
PRUNUS <i>cerasifera</i>	Cherry Plum
PYRUS <i>calleryana</i>	Callery Pear
SCHINUS <i>molle</i>	Amerian Pepper



FRAXINUS *excelsior* 'Aurea'



LIQUIDAMBAR *styraciflua*



MALUS *floribunda*



OLEA *europaea*



PRUNUS *cerasifera*



PYRUS *calleryana*



PLANTING PALETTE – LANDSCAPE BUFFER

SHRUBS

BOTANICAL NAME	COMMON NAME
ACACIA <i>melanoxylon</i>	Australian Blackwood
CALLITRIS <i>oblonga</i>	Pygmy Cypress Pine
MELALEUCA <i>pallidus</i> 'Silver Cloud'	Lemon Bottlebrush
MELALEUCA <i>ericifolia</i>	Swamp Paperbark
WESTRINGIA <i>fruticosa</i> 'Wynyabbie Gem'	Coastal Rosemary



ACACIA *melanoxylon*



CALLITRIS *oblonga*



MELALEUCA *pallidus* 'Silver Cloud'



MELALEUCA *ericifolia*



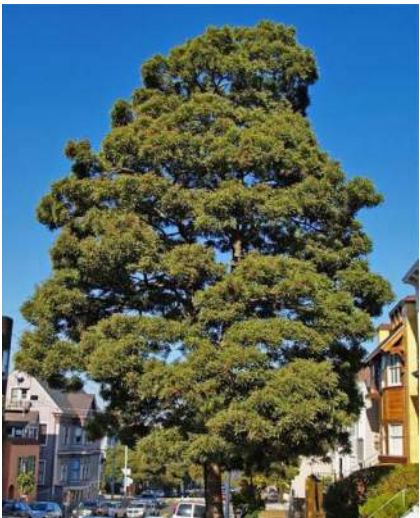
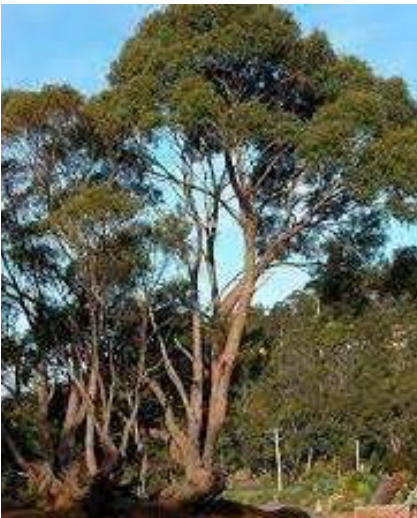
WESTRINGIA *fruticosa* 'Wynyabbie Gem'



PLANTING PALETTE – OPEN SPACE

TREES

BOTANICAL NAME	COMMON NAME
ACACIA <i>dealbata</i>	Silver Wattle
ACACIA <i>melanoxylon</i>	Blackwood
ALLOCASUARINA <i>litorallis</i>	Black sheoak
ALLOCASUARINA <i>verticillata</i>	Drooping sheoak
BANKSIA <i>marginata</i>	Silver banksia
EUCALYPTUS <i>pauciflora</i>	Snow Gum
EUCALYPTUS <i>amygdalina</i>	Black Peppermint



EUCALYPTUS *amygdalina*

ACACIA *dealbata*

ALLOCASUARINA *litorallis*

BANKSIA *marginata*

ALLOCASUARINA *verticillata*

ACACIA *melanoxylon*



PLANTING PALETTE – OPEN SPACE



DODONAEA viscosa



CALYTRIX tetragona



MELALEUCA pallidus



BURSARIA spinosa



DIANELLA revoluta



ACANTHUS mollis



WESTRINGIA fruticosa 'jervis gem'



DIPLARRENA moraea



LIRIOPE 'Evergreen Giant'



CLEMATIS aristata



HUMULUS lupulus



WISTERIA sinensis

SHRUBS

BOTANICAL NAME	COMMON NAME
BURSARIA spinosa	Native Blackthorn
BANKSIA marginata	Silver Banksia
CALYTRIX tetragona	Common Fringe Myrtle
CAMELLIA sasanqua	Sasanqua Camelia
CHAEMOMELES japonica	Maule's quince
DODONAEA viscosa	Green Hop-Seed Bush
GREVILLEA australis	Spider flower
HEBE speciosa	Showy Hebe Veronica
MELALEUCA ericifolia	Swamp Paperbark
MELALEUCA pallidus	Lemon Bottlebrush
PELARGONIUM peltatum	Ivy Geranium
WESTRINGIA fruticosa	Coastal Rosemary
WESTRINGIA fruticosa 'jervis gem'	Coastal Rosemary

GROUNDCOVERS

BOTANICAL NAME	COMMON NAME
ACANTHUS mollis	Bear's breeches
DIETES grandiflora	Wild Iris
DIPLARRENA moraea	White Iris
DIANELLA revoluta	Blue Flax Lilly
FICINIA nodosa	Knobby Club Rus
LIRIOPE 'evergreen giant'	Giant Liriope
IRIS spp.	Irises
VIOLA hederacea	Native Violet

CLIMBERS

BOTANICAL NAME	COMMON NAME
CLEMATIS aristata	Australian Clematis
HUMULUS lupulus	Common Hops
PARTHENOCISUS quinquefolia	Virigina Creeper
VITIS vinifera	Common Grape Vine
WISTERIA sinensis	Chinese Wisteria



## APPENDIX M2: CONCEPT LANDSCAPE PLAN

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PROVIDED BY: PLACE DESIGN GROUP







# APPENDIX N1: SPECIFIC AREA PLAN COUNTRY CLUB SAP F6

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PROVIDED BY: NICHE PLANNING STUDIO



## **CCE-SF6.0 Country Club Estate Specific Area Plan**

### **CCE-SF6.1 Plan Purpose**

The purpose of the Country Club Estate Specific Area Plan is:

CCE-SF6.1.1 To provide for diverse housing outcomes that promote Liveable Housing.

CCE-SF6.1.2 To provide for the development of the area consistent with the local area objectives and desired future character statements

CCE-SF6.1.3 To provide for retirement uses and development that is compatible with higher density residential development.

CCE-SF6.1.4 To provide for a revitalised tourism precinct in accordance with the layout shown in Figure CCE-SF6.1.

CCE-SF6.1.5 To provide for open space and recreation opportunities for residents within the estate and visitors.

### **CCE-SF6.2 Application of this Plan**

CCE-SF6.2.1 The specific area plan applies to the area of land designated as CCE-SF6.0 Country Club Estate Specific Area Plan on the overlay maps and in Figure SF6.1.





## CCE-SF6.3 Local Area Objectives

### General Residential Zone

- a) To provide for the standard range of uses in the zone.

### Connectivity

- (a) Development is to provide for a co-ordinated network of roads, pedestrian and bicycle paths that connect the activity centre, mixed use and residential areas and public open space.

## CCE-SF6.4 Definition of Terms

This sub-clause is not used in this specific area plan.

## CCE-SF6.5 Use Table

This sub-clause is not used in this specific area plan.

## CCE-SF6.6 Use Standards

This sub-clause is not used in this specific area plan.

## CCE-SF6.7 Development Standards for Buildings and Works

### CCE-SF6.7.1 Building Design and Siting

This clause is in addition to General Residential Zone – clause 8.4 Development Standards for Dwellings.

<b>Objective</b>	<ul style="list-style-type: none"> <li>a) To ensure that the siting and design of development is consistent with the local area objectives and desired future character for land within the Specific Area Plan.</li> <li>b) To protect the residential amenity of lots by ensuring that the height, setbacks, siting, and design of buildings provides adequate privacy, separation, open space and sunlight for residents.</li> <li>c) To provide for private open space that is appropriate to a higher density residential environment.</li> </ul>
<b>Acceptable Solutions</b>	<b>Performance Criteria</b>
<b>A1</b> Within the retirement living lot, building height must not exceed 14.5 metres.	<b>P1</b> The design and siting of buildings must: <ul style="list-style-type: none"> <li>a) not cause unreasonable loss of amenity by:               <ul style="list-style-type: none"> <li>(i) reduction in sunlight to a habitable room (other than a bedroom) of a dwelling on an adjoining lot;</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>(ii) overshadowing the private open space of a dwelling on an adjoining lot;</li> <li>(iii) overshadowing of an adjoining vacant lot;</li> <li>(iv) visual impacts caused by the apparent scale, bulk or proportions of the dwelling when viewed from an adjoining lot; or</li> <li>(v) overlooking of habitable room windows or private open space of an adjoining dwelling; and</li> </ul> <p>b) have regard to the intended or prevailing character of the surrounding area.</p>
--	--

#### CCE-SF6.72 Site Coverage

This clause is in substitution of General Residential Zone - clause 8.4.3 Site Coverage and Private Open Space for all dwellings.

<b>Objective</b>	<p>That site coverage protects residential amenity through appropriate siting and design of development to provide adequate:</p> <ul style="list-style-type: none"> <li>(a) privacy and separation between dwellings;</li> <li>(b) separation of dwellings from vehicular traffic and common open space; and</li> <li>(c) sunlight to habitable rooms.</li> </ul>
<b>Acceptable Solutions</b>	<b>Performance Criteria</b>
<p><b>A1</b></p> <p>Dwellings must have a site coverage of:</p> <ul style="list-style-type: none"> <li>(a) not more than 65% if the development includes 50% or greater portion of livable housing; or</li> <li>(b) not more than 50%.</li> </ul>	<p><b>P1</b></p> <p>Dwellings must have a site coverage that protects residential amenity, having regard to:</p> <ul style="list-style-type: none"> <li>(a) topographical constraints;</li> <li>(b) infrastructure and servicing;</li> <li>(c) vehicular access through the site;</li> <li>(d) vehicle parking for residents and visiting services;</li> <li>(e) siting and scale of buildings;</li> <li>(f) any particular needs of residents;</li> <li>(g) the provision of private open space or common open space;</li> <li>(h) access to sunlight for habitable rooms.</li> </ul>



## CCE-SF6.8 Development Standards for Subdivision

### CCE-SF6.8.1 Lot Design

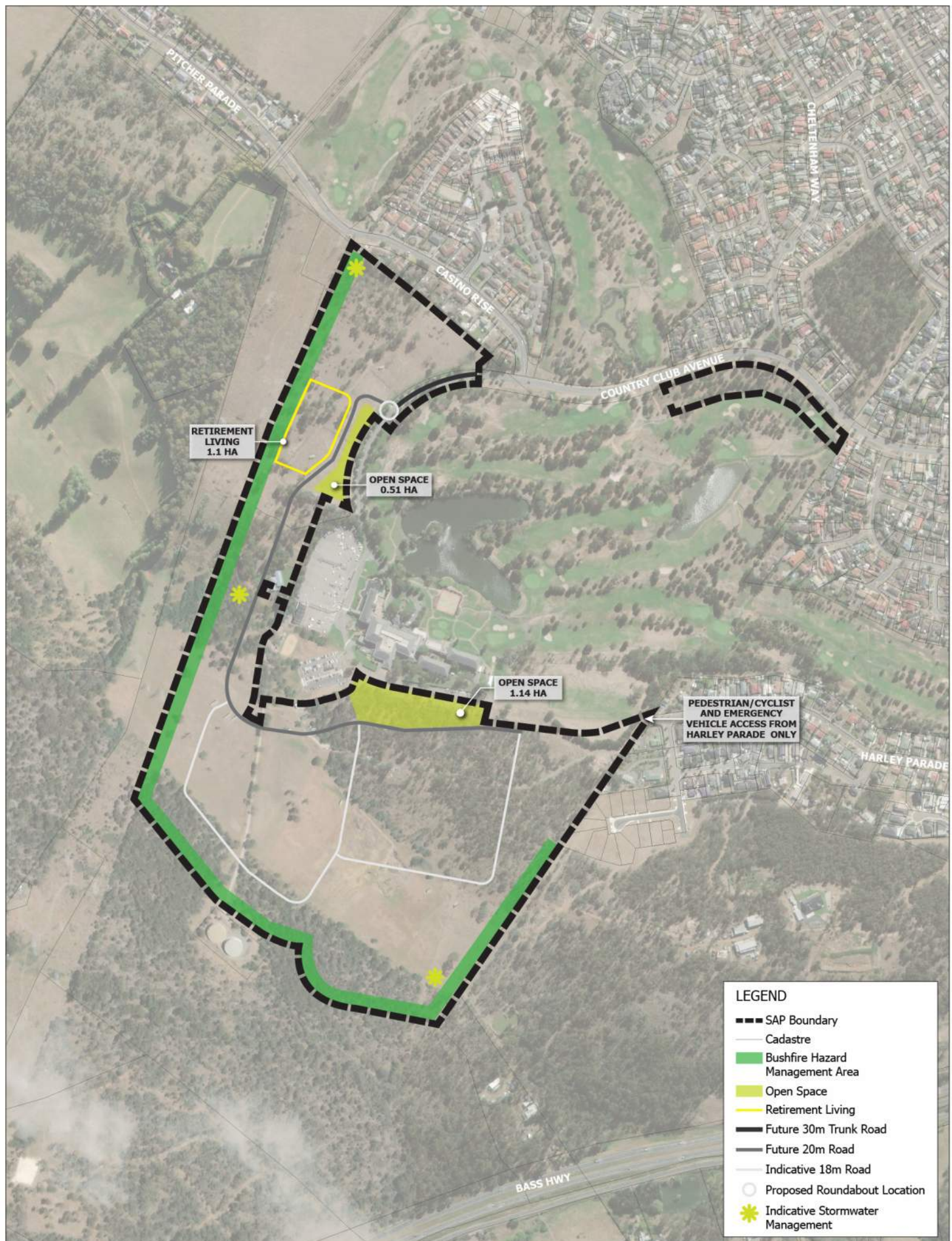
<b>Objective</b>	<p>That each lot:</p> <ul style="list-style-type: none"> <li>(a) has an area and dimensions appropriate for use and development in the zone;</li> <li>(b) is provided with appropriate access to a road;</li> <li>(c) contains areas which are suitable for development appropriate to the zone purpose, located to avoid natural hazards; and</li> <li>(d) is orientated to provide solar access for future dwellings.</li> </ul>
<b>Acceptable Solutions</b>	<b>Performance Criteria</b>
<p><b>A1</b></p> <p>Each lot, or a lot proposed in a plan of subdivision, must:</p> <ul style="list-style-type: none"> <li>(a) have an area of not less than 450m<sup>2</sup> and: <ul style="list-style-type: none"> <li>i) be able to contain a minimum area of 10m x 15m with a gradient not steeper than 1 in 5, clear of: <ul style="list-style-type: none"> <li>a. all setbacks required by clause 8.4.2 A1, A2 and A3, and 8.5.1 A1 and A2; and</li> <li>b. easements or other title restrictions that limit or restrict development; and</li> </ul> </li> <li>ii) existing buildings are consistent with the setback required by clause 8.4.2 A1, A2 and A3, and 8.5.1 A1 and A2;</li> </ul> </li> <li>(b) be required for public use by the Crown, a council or a State authority;</li> <li>(c) be required for the provision of Utilities; or</li> <li>(d) be for the consolidation of a lot with another lot provided each lot is within the same zone</li> </ul>	<p><b>P1</b></p> <p>Each lot, or a lot proposed in a plan of subdivision, must have sufficient useable area and dimensions suitable for its intended use, having regard to:</p> <ul style="list-style-type: none"> <li>(a) the relevant requirements for development of buildings on the lots;</li> <li>(b) the intended location of buildings on the lots;</li> <li>(c) the topography of the site;</li> <li>(d) the presence of any natural hazards;</li> <li>(e) adequate provision of private open space; and</li> <li>(f) the pattern of development existing on established properties in the area</li> </ul>

## APPENDIX N2: SAP PLAN

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PROVIDED BY: NICHE PLANNING STUDIO



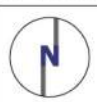


**LEGEND**

- SAP Boundary
- Cadastre
- Bushfire Hazard Management Area
- Open Space
- Retirement Living
- Future 30m Trunk Road
- Future 20m Road
- Indicative 18m Road
- Proposed Roundabout Location
- ★ Indicative Stormwater Management

**SPECIFIC AREA PLAN**  
100 COUNTRY CLUB AVE, PROSPECT VALE TAS

Aerial supplied by: N/A  
Aerial Date Stamp: N/A  
Survey supplied by: The List  
Plan Number: 195736-016  
Revision Number: C  
Drawn By: Nivedita Ravindran  
Client: Country Club



0 80 160 240 320 400 480m  
Scale: 1:8,000 @A3 Date Issued: 22.12.2020 @Niche Planning Studio  
DISCLAIMER:  
All Dimensions, Areas and Calculations are subject to Detailed Survey and Design before Town Planning Permit application.  
This Plan is illustrative only and subject to Architectural Design and approval from an RMA qualified architect. This plan has been prepared for illustrative purposes only and should not be used as a means to judge any properties value or yield potential.

