

## APPENDIX J1: ENGINEERING SERVICES REPORT

---

PROVIDED BY: ADG



# **100 Country Club Avenue, Prospect Vale**

100 Country Club Avenue,  
Prospect Vale

Engineering Services Report

Engine Room VM (NSW) Pty Ltd

13 November 2020

## Document Verification

Job Title 100 Country Club Avenue, Prospect Vale



Job Number 23337

Document Title Engineering Services Report

## Document Control

Date	Document / Description	Revision No.	Author	Reviewer
02.11.20	Engineering Services Report	00	J. Frew / M. Brown	J. Ghobrial S. Thienpont
13.11.20	Engineering Services Report	01	J. Frew / M. Brown	J. Ghobrial S. Thienpont

## Approval for Issue

Name	Signature	Date
Matthew Brown		13 November 2020
Stuart Thienpont		13 November 2020
John Ghobrial		13 November 2020

## © Document copyright of ADG Engineers (Aust) Pty Ltd

This document is and shall remain in the property of ADG. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

To the extent permitted by law, ADG expressly disclaims and excludes liability for any loss, damage, cost or expenses suffered by any third party relating to or resulting from the use of, or reliance on, any information contained in this report. ADG does not admit that any action, liability or claim exist or be available to any third party.

# Contents

<b>1</b>	<b>INTRODUCTION</b>	<b>4</b>
1.1	General	4
1.2	Background Information	4
<b>2</b>	<b>THE SITE</b>	<b>5</b>
2.1	Location	5
2.2	Property Details	5
<b>3</b>	<b>PLAN OF RECONFIGURATION</b>	<b>6</b>
3.1	The Proposal	6
<b>4</b>	<b>CHARACTERISTICS OF THE LAND &amp; SURROUNDING AREA</b>	<b>7</b>
4.1	Dimensions	7
4.2	Topography	7
4.3	Features and Vegetation	7
4.4	Accessibility	8
4.5	Easements	8
4.6	Reservoir Lot Access	8
<b>5</b>	<b>EARTHWORKS</b>	<b>9</b>
5.1	Proposed Earthworks	9
5.2	Slope Stability	9
5.3	Construction Controls	9
5.4	Acid Sulfate Soils	9
5.5	Salinity	9
<b>6</b>	<b>ROADWORKS</b>	<b>10</b>
6.1	Existing Infrastructure	10
6.2	Proposed Infrastructure	10
<b>7</b>	<b>WATER RETICULATION</b>	<b>11</b>
7.1	Existing Infrastructure	11
7.2	Proposed Infrastructure	11
7.3	Proposed Infrastructure Performance Assessment	12
	Proposed Development Demands	12
	Desired Standards of Service	13
	Assumptions and Methodology	13
	Pressure Performance	13
<b>8</b>	<b>SEWERAGE RETICULATION</b>	<b>14</b>
8.1	Existing Infrastructure	14
8.2	Proposed Infrastructure	14
8.3	Proposed Infrastructure Performance Assessment	15
	Proposed Development Demands	15
	Proposed Points of Connection	15



	Proposed Sewer Pump Station	16
	Load Estimation	16
<b>9</b>	<b>STORMWATER DRAINAGE</b>	<b>17</b>
	9.1 Existing Drainage	17
	9.2 Proposed Drainage	17
	9.3 Flooding	17
<b>10</b>	<b>ELECTRICAL SUPPLY</b>	<b>18</b>
<b>11</b>	<b>COMMUNICATIONS</b>	<b>18</b>
<b>12</b>	<b>GAS</b>	<b>18</b>
<b>13</b>	<b>CONCLUSION</b>	<b>19</b>

## Tables

<b>Table 1 – Property Details</b>	<b>5</b>
Table 2 – Site Population Density	12
Table 3 – Water DSS	13
Table 4 – Pressure Performance	13
Table 5 – Site Population Density	15
Table 6 – Expected Sewerage Loading	16
Table E1 – Water Model ET Allocation	5
Table E2 – Boundary Conditions	5

## Figures

Figure 1 – Concept Lot Layout (Place Design Group)	6
--	---

## Appendices

Appendix A Concept Lot Layout Plan
Appendix B Detailed Survey
Appendix C ADG Preliminary Civil Plans
Appendix D Water Network Assessment Demand Allocation
Appendix E DBYD
Appendix F TasWater Correspondence – Sewer
Appendix G TasWater Correspondence - Water

# 1 INTRODUCTION

## 1.1 General

ADG Engineers (Aust.) Pty Ltd have been engaged by Engine Room VM (NSW) to prepare an Engineering Services Report (ESR) suitable for submission to Meander Valley Council (MVC) in support of a Development Application for a residential subdivision located across a portion of 100 Country Club Avenue, Prospect Vale, Tasmania 7250, henceforth referred to as the site.

The proposed development as described in the Place Design Group Pty Ltd (QLD) Concept Plan is to be primarily comprised of detached residential dwellings and retirement living units.

The purpose of this ESR is to provide advice as to the development proposal. The works described herein are subject to future operational works approval and cover works required to service the proposed development with regard to earthworks, roadworks, sewerage, water supply, stormwater drainage, electrical, communications and gas.

The required infrastructure will be subject to the conditions attached to the Development Approval to be provided by MVC and any nominated referral agencies.

## 1.2 Background Information

This report was compiled using information from the following sources:

- ▶ Dial Before you Dig (DBYD) information (**Appendix E**);
- ▶ Tasmanian government mapping (Listdata).
- ▶ Concept Lot Layout plan by Place Design Group (**Appendix A**);
- ▶ Detailed survey plan prepared by Woolcott Surveys (**Appendix B**); and
- ▶ Google Maps Aerial Imagery.

## 2 THE SITE

### 2.1 Location

The site is located at 100 Country Club Avenue, Prospect Vale within the Meander Valley Council (MVC) local government area and thus will be assessed by Meander Valley Council officers.

The subject site is depicted in **Figure 1**. The site is bound by Country Club Avenue and existing “General Residential” allotments to the north and the Prospect Vale Recreational Park and existing “General Residential” allotments to the east. On the western boundary of the site is a Powerline Easement and on the southern boundary are two (2) existing water reservoirs on a dedicated lot surrounded by vacant bushland on the balance of the development lot.

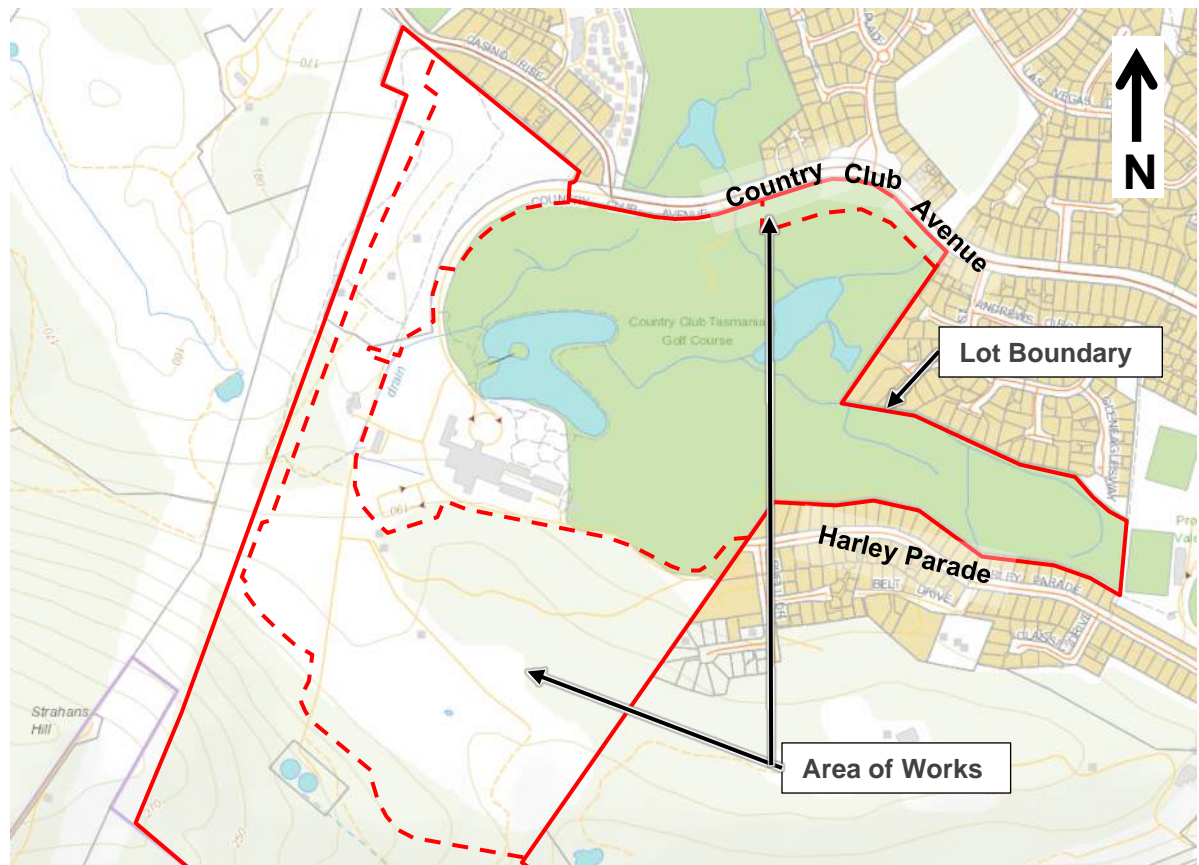


Figure 1 – Locality Map (Accessed on 19.10.2020 from MVC Discover Communities Mapping)

### 2.2 Property Details

The total site area is approximately 115.664ha and the existing land titles are provided in **Table 1**. The proposed development site is currently zoned as ‘Major Tourism’ in MVC’s Discover Communities Map. Refer to the Concept Lot Layout Plan in **Appendix A** for further information.

Table 1 – Property Details

Property	Site Details
Title	P119422
Street Address	100 Country Club Avenue, Prospect Vale
Total Site Area	115.664 ha
Area of works	38.230 ha

## 3 PLAN OF RECONFIGURATION

### 3.1 The Proposal

The proposed development as described in the Place Design Group Preliminary Concept Lot Layout plan is for the reconfiguration of the existing predominantly unutilised land to the south and west of the existing club house to a total of 380 residential dwellings and a retirement living super lot. The proposed lot reconfiguration will include dedicating new roads and park conservation areas to Council whilst also maintaining the existing golf course and Country Club as a private lot. Works to facilitate the development will include earthworks, roadworks, and reticulation of services.

Refer to the Concept Lot Layout plan in **Appendix A** for further information.



Figure 1 – Concept Lot Layout (Place Design Group)



## 4 CHARACTERISTICS OF THE LAND & SURROUNDING AREA

### 4.1 Dimensions

The property has a total area of 115.664 ha. The width (east-west) of the property is 635m on the southern boundary and 890m on the northern boundary, while the length (north-south) is 1,215m along the eastern boundary and 1,000m along the western boundary.

### 4.2 Topography

The proposed area of works generally falls from a high of RL220m AHD in the south to local low points of RL168m AHD in the north-east. The site is subject to a steep grade, which varies from over 20% to 5%.

Refer to Woolcott Surveys detailed survey plans in **Appendix B** of this report for further information on the topography of the site.

### 4.3 Features and Vegetation

Much of the existing site is occupied by the existing Country Club Golf Course, associated clubhouse and car parking. The existing golf course is the confluence point for the surrounding catchment and several existing water bodies are located there. The flows continue north via culverts under Country Club Avenue at two points.

The existing site is largely comprised of grass fields and bushland which have little to no impervious surfaces. Details of these site features can be seen in **Figure 3**.

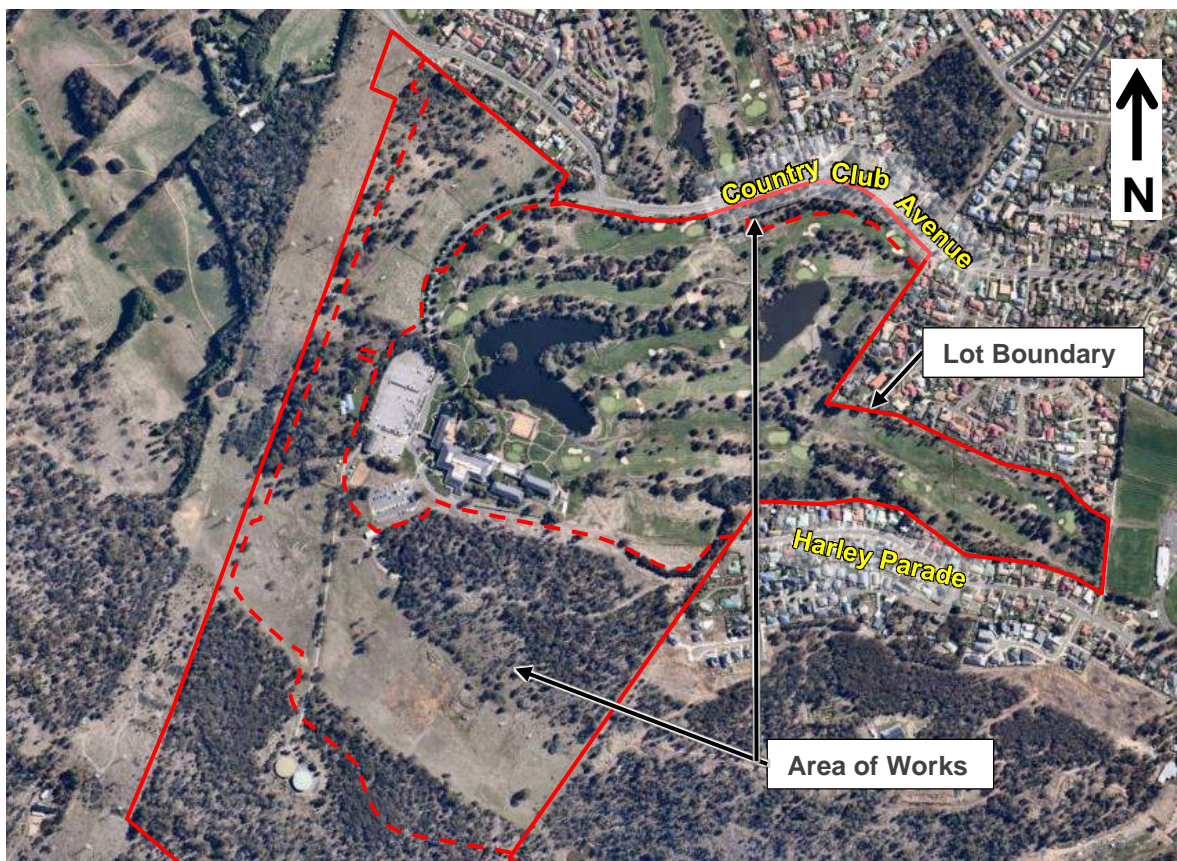


Figure 2 – Site Condition (Source: Nearmap, dated 02.03.2020)

#### 4.4 Accessibility

The subject site has road frontage to Country Club Avenue and Harley Parade. Early discussions with Council have indicated that site entry will be from Country Club Avenue. Proposed development includes a new public road network and connection to existing Country Club Avenue via a new Round-a-bout. An existing section of currently private road will be dedicated to Council to facilitate this connection. The proposed roadway network is demonstrated on the proposed ADG DA plans included in **Appendix C** of this report. Further traffic advice will be provided by Midson Traffic.

#### 4.5 Easements

There are a number of easements that traverse the site as noted on the detailed survey plans prepared by Woolcott Surveys and included in **Appendix B**. These easements include water pipe and access track easements in favour of TasWater, a high-voltage electrical easement along the western boundary and telecommunications easements.

#### 4.6 Reservoir Lot Access

Two (2) TasWater owned water reservoirs are located at the southern extent of the site in a private allotment. The reservoirs are accessed via a track within an existing TasWater easement on the subject site. The proposed development will maintain the existing access track in its current form to the south of the area of works and provide a vehicle crossover to connect into the new road network.

## 5 EARTHWORKS

### 5.1 Proposed Earthworks

To facilitate the proposed development, earthworks is required to be undertaken within the development area. The earthworks design methodology has been guided by various factors including existing shallow rock, retention of existing vegetation, design guidelines and Council requirements. Earthworks are proposed to achieve the development roadway network. The proposed earthworks shall include earthen batters with maximum grades subject to the geotechnical investigation.

### 5.2 Slope Stability

A review of the existing site using Listmap has shown that a landslide hazard and steep slope area may be present in the extreme south-west portion of the area of works. For more information regarding the landslide hazard and steep slopes refer to the geotechnical report 7453A by Sherzic Ground Investigation.

### 5.3 Construction Controls

In all situations where earthworks are proposed, sediment and erosion control measures will be implemented in accordance with the following documents:

- ▶ I.E. Australia "Sediment and Erosion Control Guidelines"; and
- ▶ The Tasmanian Subdivision Guidelines.

A sediment and erosion control plan is to be provided as part of the for construction documentation in accordance with Appendix 7 of the Tasmanian Subdivision Guidelines.

### 5.4 Acid Sulfate Soils

Acid sulfate soils are soils which contain iron sulphides. The Council overlay does not identify the site as being affected by Acid sulfate soils.

### 5.5 Salinity

Council has requested that the salinity in the soil in the vicinity of the area of works be reviewed and assessed for the site. Scherzic Ground Investigations have been engaged for site investigation and will assess the salinity for the site.

## 6 ROADWORKS

### 6.1 Existing Infrastructure

The site currently has access from the north east via Country Club Avenue and from the north west via Casino Rise. Casino Rise consists of a 20m wide road reserve with 10.5m sealed carriageway, kerb and gutter and stormwater infrastructure. The carriageway is two-way with a crested centreline and two-way crossfall.

Country Club Avenue consists of a 30m wide road reserve with an approximate sealed carriageway width of 12m. The carriageway is two-way with a crested centreline and two-way crossfall. There is kerb and gutter and stormwater infrastructure along the road as well as street lighting poles at the back of the southern kerb. A section of Country Club Avenue roadway that is currently privately owned will be dedicated to Council to facilitate the roadway connection for the proposed development.

A bus route also runs along both Casino Rise and Country Club Avenue with associated bus stop infrastructure and line-marked bus bays in various locations along the road.

Internal to the site, Country Club Avenue continues privately for approximately 600m south to the existing club house.

There are several gravel/dirt tracks that traverse the proposed development site including a 500m access track running from the club car park south to two (2) TasWater water reservoirs.

Existing infrastructure impacted by the proposed works will either be retained and protected or relocated in accordance with the relevant local authority requirements.

### 6.2 Proposed Infrastructure

The proposed internal roadworks associated with this development has been designed to comply with:

- ▶ The MVC Planning Scheme; and
- ▶ The MVC Standard Specifications and Drawings;

The proposed development includes a road network that consists of three different roads categorised in accordance with the LGAT / IPWEA standards. These include the following:

1. Collector Through Road – 20m Wide Road Reserve with 11.0m wide Carriageway.
2. Local Through Road – 18m Wide Road Reserve with 8.9m wide Carriageway.
3. Local Cul-de-sac – 15m Wide Road Reserve with 6.9m wide Carriageway.

Connection to the development will be facilitated by a new intersection and round-a-bout constructed along Country Club Avenue.

Access to the existing TasWater reservoirs to the south of the area of works will be maintained via a driveway crossover to the portion of the existing track that remains from the proposed road network.

The proposed roadway network is demonstrated on the Preliminary Concept Lot Layout plan by Place Design Group and is included in **Appendix A**.



## 7 WATER RETICULATION

### 7.1 Existing Infrastructure

The following water infrastructure is located in proximity to the proposed development:

- ▶ Water Supply Reservoirs are on Property ID: 7028567, which is a lot located within the development lot, immediately south of the proposed area of works;
- ▶ DN450 Mild Steel (MS) bulk water transfer main flows from the west across the property boundary and through the area of works to the existing Water Supply Reservoirs;
- ▶ DN375 - DN450 Asbestos Cement (AC) reticulation main flowing north from the Water Supply Reservoirs through the proposed area of works to Country Club Avenue;
- ▶ The existing Country Club is supplied by a DN150 AC reticulation main; and
- ▶ A DN100 PVC water reticulation main that terminates at a capped end at the western end of Harley Parade on the eastern site boundary.

### 7.2 Proposed Infrastructure

The proposed water reticulation within the development has been designed to comply with the following documents:

- ▶ Meander Valley Council Planning Scheme;
- ▶ TasWater Standard Drawings and Specifications; and
- ▶ AS 3500.1 Water Services.

Three (3) points of connection are proposed to link the proposed water network to the existing TasWater network:

- ▶ DN450 main 170m downstream of the existing reservoirs to the south of the site;
- ▶ DN375 main on Country Club Avenue at the main site entrance; and
- ▶ DN100 main at the western end of Harley Parade.

ADG understand from discussions with TasWater officers that this is the preferred water supply solution by TasWater.

Further preliminary details of the proposed water network and the connection points can be found in **Appendix C** on ADG Drawing DA09 (Preliminary Water Reticulation Layout Plan). A primarily DN100 network is proposed to service the development, with three (3) connection points to the existing network as noted above. A section of the network in the south of the site is proposed to be DN150 in order to boost fire flow pressures to an area of the site at high elevation. DN63 PE pipes are to provide a looped end at cul-de-sacs. It should be noted that the network shown on DA09 is not prescriptive of pipe sizes or the network layout and all mains are to be designed in accordance with the requirements of TasWater at the detailed design phase.

Detailed water reticulation drawings will be provided as part of a future plumbing and drainage application once the development application has been approved by Council.

## 7.3 Proposed Infrastructure Performance Assessment

The purpose of this section is to assess the ability of the existing water network to service the proposed development.

The proposed water network has been modelled using InfoWater by Innovyze based on boundary pressures at the proposed connection points as supplied by TasWater. Elevations within the modelled site network are based on the preliminary earthworks design (see ADG's DA Plans in **Appendix C**).

The assessment of the proposed water network was compiled using information from the following sources:

- ▶ Levels across the site are based on the preliminary earthworks plan by ADG Engineers (**Appendix C**);
- ▶ Site layout based on the *Preliminary Concept* plan by Place Design Group (**Appendix A**);
- ▶ Water Pressure boundary conditions, provided by TasWater on 29/10/2020 (**Appendix G**); and
- ▶ Water model constructed to assess the proposed water network layout was based on the *TasWater Supplement to Water Supply Code of Australia WSA 03 – 2011-3.1 MRWA Edition V2.0 (Issue Number PUBLIC 04)*.

### Proposed Development Demands

The proposed development is a subdivision containing 380 residential lots and 100 retirement living units. Refer to **Appendix A** for the site plans. The performance of the proposed water supply network will be assessed against the TasWater Desired Standards of Service (DSS). As shown in **Table 2**, the proposed development represents 440.0 ET of demand on the water network.

**Table 2 – Site Population Density**

Description	Quantity	Criteria*	ET *
Residential Lots	380 lots	1.0 ET per lot	380.0
Retirement Living Units	100 lots	0.6 ET per lot	60.0
<b>Total</b>			<b>440.0</b>

\* As per Table A1 in Appendix A of the TasWater Supplement to Water Supply Code of Australia WSA 03 – 2011-3.1 MRWA Edition V2.0 (Issue Number PUBLIC 04).

## Desired Standards of Service

TasWater Supplement to Water Supply Code of Australia WSA 03 – 2011-3.1 MRWA Edition V2.0 (Issue Number PUBLIC 04) specifies the following Desired Standards of Service (DSS):

Table 3 – Water DSS

Desired Standards of Service	Potable Water Supply
Average Day (AD) Demand	685 L/ET/Day
Mean Day Maximum Month (MDMM)	1.5 x AD
Peak Day (PD) - General	2.25 x AD
Peak Day (PD) - Tourism	2.50 x AD
Peak Hour (PH)	2.0 x PD
Minimum Residual Pressure at lot frontage (Peak Hour Conditions)	220 kPa (lot grade ≤18% up from water main) 250 kPa (lot grade >18% up from water main) 250 kPa (non-residential)
Design Fire Flows (Hydrant) - Residential	10 L/s @ 250 kPa @ 2/3 PH Demand (4 hrs)
Min Pressure during Fire Flows (Network)	100 kPa
Minimum Operating Level in Reservoirs	1/3 Full

## Assumptions and Methodology

This assessment makes assumptions that include the following:

- Hazen-Williams roughness value of 130 has been selected to represent a PVC / PE network.
- Demand was assigned across the proposed water network to service the site based on a “nearest pipe -> nearest junction” philosophy. This distribution of demand is shown in **Table D1** in **Appendix D**, in conjunction with **Figure D1**.

## Pressure Performance

The site demand discussed in **Table 2** was applied across the site as described in **Appendix D** and the model run for a full peak day both with and without fire flows. The minimum pressures observed across the proposed network during peak hour and during fire flow conditions were then observed. Results identified that pressures across the site meet the TasWater DSS as summarised in **Table 3**, with the critical junction in both scenarios being J56. A summary of the results is presented below in **Table 4** and the full results are shown in **Appendix D**.

Table 4 – Pressure Performance

Model ID	Description	Peak Hour Pressure (m)	Fire Flow Pressure (m)
J56	Critical Junction	22.95	20.51

## 8 SEWERAGE RETICULATION

### 8.1 Existing Infrastructure

The following sewage infrastructure is located in proximity to the proposed development:

- ▶ A DN150 PVC-U sewer gravity reticulation main that flows north-west along Pitcher Parade from a maintenance hole opposite 3 Pitcher Parade;
- ▶ A DN150 PVC-U sewer gravity reticulation main that originates within the proposed area of works on the north-western corner of the Casino Rise – Country Club Avenue intersection and flows east under Casino Rise;
- ▶ A DN150 PVC-U sewer gravity reticulation main that terminates at a capped end at the western end of Harley Parade on the eastern site boundary;
- ▶ A DN150 PVC-U sewer gravity reticulation main that terminates at a capped end in the rear of the lots to the north of Harley Parade on the eastern site boundary;
- ▶ A DN150 PVC-U sewer gravity reticulation main that passes under the eastern portion of the existing golf course, linking the sewer gravity main that services the lots on Harley Parade and the sewer servicing the lots on Oakmont Way. This sewer continues north through existing lots before re-emerging back into the golf course in the vicinity of Pinehurst Road; and
- ▶ A DN225 PVC-U sewer gravity reticulation main that passes under the north-eastern portion of the existing golf course, flowing from the sewer gravity mains that services the lots on Pinehurst Court to the northern side of Country Club Avenue.

### 8.2 Proposed Infrastructure

The proposed development is characterised by multiple catchments that fall to the south, east and north. As such, it is proposed that the development will discharge to the existing sewerage network at multiple locations.

TasWater has been contacted to confirm the capacity downstream of each of the existing sewerage mains around the area of works but have yet to respond at the time of writing. Once provided, this information will facilitate optimisation of sewage catchments across the site.

TasWater advised ADG that the existing sewer mains to the east of the site (Harley Parade and downstream) are presently at capacity, meaning upgrade works would be required to the downstream sewers. ADG propose a solution to divert the maximum number of lots to the sewer mains to the north of the site as possible to minimise the additional load placed on the at-capacity mains.

The sewerage works proposed within the development has been designed to comply with the following documents:

- ▶ Meander Valley Council Planning Scheme;
- ▶ TasWater Standard Drawings and Specifications; and
- ▶ AS 3500.2 Sanitary plumbing and drainage.

The preliminary alignment of the sewer that will service the proposed development can be found on the attached ADG drawing DA10 (Preliminary Proposed Sewerage Catchment Layout Plan).

Detailed sewer reticulation drawings will be provided as part of a future plumbing and drainage application once the development application has been approved by Council.

## 8.3 Proposed Infrastructure Performance Assessment

The purpose of this section is to assess the ability of the existing sewage network to service the proposed development. This assessment was compiled using information from the following sources:

- Advice provided by TasWater regarding the capacity of the downstream sewer network at each proposed connection point has yet to be provided (**Appendix F**);
- Site layout based on the *Preliminary Concept* plan by Place Design Group (**Appendix A**);
- ET rates sourced from *TasWater Supplement to Water Supply Code of Australia WSA 03 – 2011-3.1 MRWA Edition V2.0 (Issue Number PUBLIC 04)*.

### Proposed Development Demands

The proposed development is a subdivision containing 380 residential lots and 100 retirement living units. Refer to **Appendix A** for the site plans. As shown in **Table 5**, the proposed development represents 455.0 ET of load on the sewer network.

**Table 5 – Site Population Density**

Description	Quantity	Criteria*	ET *
Residential Lots	380 lots	1.0 ET per lot	380.0
Retirement Living Units	100 lots	0.75 ET per lot	75.0
<b>Total</b>			<b>455.0</b>

\* As per Table A1 in Appendix A of the TasWater Supplement to Water Supply Code of Australia WSA 03 – 2011-3.1 MRWA Edition V2.0 (Issue Number PUBLIC 04).

### Proposed Points of Connection

Multiple points of connection are available for the proposed sewage network:

- The DN150 gravity sewer on Harley Parade to the east of the area of works;
- The DN225 gravity sewer passing under Country Club Avenue from south to north along the eastern boundary of the existing golf course;
- The DN150 gravity sewer on Country Club Avenue which projects into the north of the area of works;
- The DN150 gravity sewer on Casino Rise near the intersection with Country Club Avenue; and
- The DN150 gravity sewer on Pitcher Parade to the north-west of the area of works.

Refer to **DA10** in **Appendix C** for the location of these connection points.

## Proposed Sewer Pump Station

A Sewer Pump Station (SPS) will be required to service the southern portion of the proposed development. This is due to the fall of the land in this area and the lack of existing downstream infrastructure in close proximity to the proposed development. All information regarding the proposed development SPS is subject to confirmation at the detailed design phase. A 30m buffer zone will be provided from the SPS to the nearest building envelope in accordance with Table H5 of the TasWater Supplement to WSA 04-2005 2.1 (Version 3.0).

## Load Estimation

The spare capacity available in the network downstream of each proposed connection point has been requested from and provided by TasWater. The expected development loading for each connection point is presented in **Table 6**.

**Table 6 – Expected Sewerage Loading**

Connection Point	ET	TasWater estimated spare downstream Capacity (ET)
DN150 gravity main on Harley Parade	78	Limited
DN150 gravity main on Country Club Avenue	255	Adequate
	84 (Pumped)	Adequate
DN150 gravity main on Pitcher Parade	20	Adequate
DN225 gravity main passing under Country Club Avenue	18	Limited

## 9 STORMWATER DRAINAGE

### 9.1 Existing Drainage

Meander Valley Council infrastructure mapping in addition to the attached detailed site survey has identified the following stormwater infrastructure within the vicinity of the site:

- ▶ Overland flow paths are the primary means of flow conveyance through the site. Culverts convey flows from the southern side of Country Club Avenue to the northern side at two points as described below.
- ▶ A DN800 Stormwater culvert conveys flows from south to north under Country Club Avenue approximately 60m east from the centre of the Country Club Avenue – Casino Rise intersection.
- ▶ 2x DN1125 Stormwater culverts conveys flows from south to north under Country Club Avenue approximately 210m east from the centre of the Country Club Avenue – Casino Rise intersection.
- ▶ The west end of Country Club Avenue is serviced by an open-channel swale in the eastern verge. Pits and pipes convey flows from the western kerb and channel to the swale at intervals along the road.

### 9.2 Proposed Drainage

A pit and pipe stormwater network will be constructed throughout the proposed development in order to collect runoff and direct flows away from proposed lots and to the relevant downstream Lawful Point of Discharge (LPD). The stormwater pit and pipe networks will be sized with the following rational:

- ▶ Minimum 20% AEP captured in the stormwater pits and pipes.
- ▶ All other larger flows via overland flow.

The stormwater drainage proposed within the development will comply with the following documents:

- ▶ Meander Valley Council Planning Scheme;
- ▶ Meander Valley Council Standard Drawings and Specifications; and
- ▶ AS 3500.3 Plumbing and Drainage – Stormwater Drainage.

A separate stormwater management plan has been prepared by ADG to provide advice on the stormwater management requirements for the project. Please refer to ADG report (23337 C R002) for further details.

Further design details of the proposed developments stormwater drainage will be provided at the Detailed Design Stage.

### 9.3 Flooding

The Meander Valley Council mapping does not identify any portion of the site as flood prone to regional flooding. There is existing localised inundation of parts of the site and downstream waterways that has been identified in a Council flood model for the area. From the information provided of the residential subdivision, there does not appear to be flood affected lots.

## 10 ELECTRICAL SUPPLY

The Aurora Energy and TasNetwork maps provided by DBYD and aerial imagery search identifies that there are currently overhead and underground electrical cables which run in close proximity to the subject site which include:

- Underground high voltage cables entering the site at the northern corner of the development lot;
- Underground high voltage cables located parallel to Country Club Avenue and continuing onto Casino Rise;
- Overhead electrical infrastructure located parallel along Harley Parade to the east of the site;
- Underground 22kV line connecting the existing club house to the HV line towards the west of the site;
- Substation located within the existing club house; and
- Overhead high voltage cables within a 10m electrical easement located along the western boundary.

The Electrical Consultant will determine the extent of the upgrading and connection works that will be required to facilitate the required electrical reticulation for the proposed development at detailed design stage.

Refer to the DYBD Information in **Appendix E** for further details on the existing electrical reticulation.

## 11 COMMUNICATIONS

According to DBYD information there are communication services in close vicinity to and entering the site. This information can be found **Appendix E**.

- One (1) DN100 PVC duct with NBN fibre optic cable entering the development site along Country Club Avenue and servicing the existing club house; and
- Two (2) DN100 PVC ducts located along the eastern boundary.

It is proposed that the telecommunications consultant will negotiate with the relevant carriers regarding the requirements of the proposed development telecommunications connection and the extent of any upgrading and possible relocation works to the system if necessary.

## 12 GAS

A review of the Tas Gas maps provided by DBYD identifies that the subject site has gas services located in close vicinity to the site. This information can be found in **Appendix E**.

- A 63mm 500kPa PE gas main located parallel to Harley Parade and terminating at the site boundary; and
- A 90mm 500kPa PE gas main located parallel to Country Club Avenue and continuing onto Casino Rise.

The gas consultant will assess the extent of any gas servicing upgrades and possible relocation works if the development proposes that gas reticulation be required.



## 13 CONCLUSION

The site appears to be adequately serviced by water, sewer, electricity, telecommunications and gas.

Stormwater management measures are also demonstrated in the Conceptual Stormwater Management Plan (23337 C R002) prepared by ADG. Detailed stormwater drainage drawings will be provided at the detailed design stage for the proposed development.

Further detailed engineering drawings will be prepared on approval of the development prior to construction.

## Appendix A Concept Lot Layout Plan



© Place Design Group Pty Ltd A.C.N. 082 370 063

All information displayed, transmitted or carried within this drawing is protected by Copyright and Intellectual Property laws.

The information contained in this document is confidential.

Recipients of this document are prohibited from disclosing the information herein to any person outside the written consent of Place Design Group.

Annotation dimensions take precedence over any measures of scale.

Verify all dimensions on site prior to construction.

This drawing may display with permission a combination of specialist and other consultant(s) input and inwork.

Nominated specialist and consultant information contained within this document is referenced from their supplied documentation and is contained in this document as indicative only and not for construction or certification purposes.


## PROJECT

## PROSPECT VALE

[illegible]

### PLAN

INDICATIVE CONCEPT  
MASTER PLAN

DESIGN :	CK	
DOCUMENT :	JB	
PROJECT :	1019084	
DATE :	12/11/20	

DRAWING NUMBER	REVISION
1019084_116	B

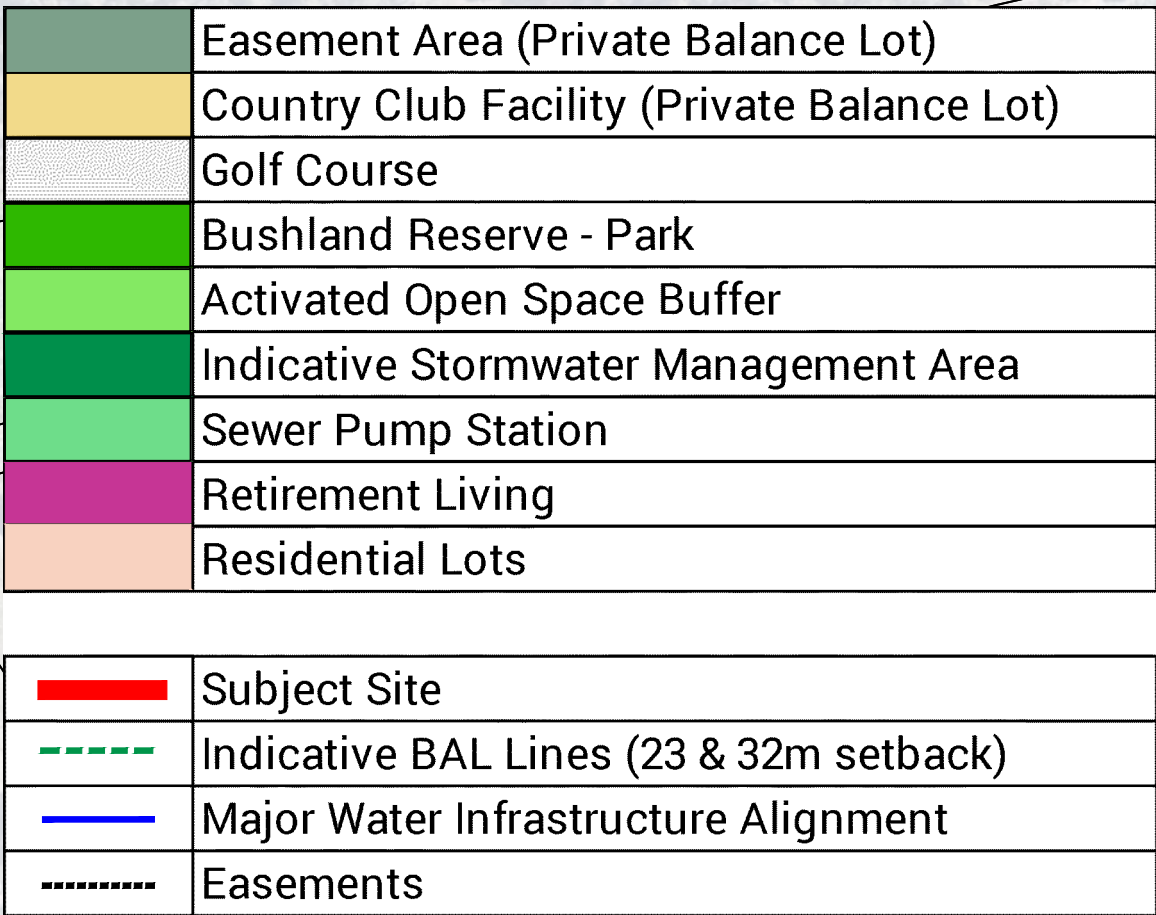
SCALE : 1:2500 @ A1  
1:5000 @ A3

The contents of this plan are preliminary and for discussion purposes only. The development extent, layout and yield outcome are based on preliminary technical studies. Further technical input may vary these preliminary assumptions.

Subject to detail design, engineering design, consultant inputs and all relevant planning and government approvals.

#### SOURCE BASE INFORMATION

- THE BOUNDARY AND CONTOUR INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED FOR THE PURPOSES OF SHOWING THE PHYSICAL FEATURES OF THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
- TYPE BOUNDARIES SHOWN WERE EITHER SURVEYED OR MARKED AT THE TIME OF THIS SURVEY.
- SERVICES SHOWN ON THIS PLAN WERE LOCATED BY POSSIBLE FIELD SURVEY. THE LOCATIONS OF SERVICES WERE NOT VERIFIED OR MARKED AT THE TIME OF THIS SURVEY. LOCATIONS ARE NOT VERIFIED BEFORE COMMENCEMENT OF ANY WORK ON SITE. IN PARTICULAR, THESE SERVICES ARE NOT VERIFIED FOR THE PRESENCE OF ANY HAZARDOUS MATERIALS.
- UNDERGROUND SERVICES WERE NOT LOCATED AT THE TIME OF THE SURVEY. ALL SERVICES WERE LOCATED AT GROUND LEVEL WHERE VISIBLE.
- WOODLOT SURVEYS CAN NOT ACCEPT LIABILITY WHATSOEVER FOR LOSS OR DAMAGE TO WOODLOT SURVEYS OR SERVICES WHENEVER THIS SURVEY OR REPORT IS USED.
- THIS NOTE IS AN INTEGRAL PART OF THIS PLAN/REPORT. REPRODUCTION OF THIS PLAN OR REPORT IN WHOLE OR IN PART WITHOUT THIS NOTE BEING INCLUDED IN FULL WILL RENDER THE INFORMATION SHOWN ON SUCH A REPRODUCTION INVALID AND NOT SUITABLE FOR USE WITHOUT PRIOR AUTHORITY OF THE WOODLOT SURVEY SERVICE.
- VERTICAL DATUM: MEAN SEA LEVEL (MSL) PER AUSTRIAN DATUM.
- CONTOUR INTERVAL: 1.5 METRES, EXCEPT 0.5 METRES.
- CONTOURS WERE DERIVED FROM A MIXTURE OF LEASER AND GPS, LEASER ACCURATE TO  $\pm 10$  MM, GPS ACCURATE TO  $\pm 20$  MM.
- THE BOUNDARIES AND EASEMENTS ARE COMPILED FROM SP0214, SP 15386, SP 17465, SP 19784, SP 19785, SP 19786, SP 19787, SP 19788, SP 19789, SP 19790, SP 19791, SP 19792, SP 19793, SP 19794, SP 19795, SP 19796, SP 19797, SP 19798, SP 19799, SP 19800, SP 19801, SP 19802, SP 19803, SP 19804, SP 19805, SP 19806, SP 19807, SP 19808, SP 19809, SP 19810, SP 19811, SP 19812, SP 19813, SP 19814, SP 19815, SP 19816, SP 19817, SP 19818, SP 19819, SP 19820, SP 19821, SP 19822, SP 19823, SP 19824, SP 19825, SP 19826, SP 19827, SP 19828, SP 19829, SP 19830, SP 19831, SP 19832, SP 19833, SP 19834, SP 19835, SP 19836, SP 19837, SP 19838, SP 19839, SP 19840, SP 19841, SP 19842, SP 19843, SP 19844, SP 19845, SP 19846, SP 19847, SP 19848, SP 19849, SP 19850, SP 19851, SP 19852, SP 19853, SP 19854, SP 19855, SP 19856, SP 19857, SP 19858, SP 19859, SP 19860, SP 19861, SP 19862, SP 19863, SP 19864, SP 19865, SP 19866, SP 19867, SP 19868, SP 19869, SP 19870, SP 19871, SP 19872, SP 19873, SP 19874, SP 19875, SP 19876, SP 19877, SP 19878, SP 19879, SP 19880, SP 19881, SP 19882, SP 19883, SP 19884, SP 19885, SP 19886, SP 19887, SP 19888, SP 19889, SP 19890, SP 19891, SP 19892, SP 19893, SP 19894, SP 19895, SP 19896, SP 19897, SP 19898, SP 19899, SP 19900, SP 19901, SP 19902, SP 19903, SP 19904, SP 19905, SP 19906, SP 19907, SP 19908, SP 19909, SP 19910, SP 19911, SP 19912, SP 19913, SP 19914, SP 19915, SP 19916, SP 19917, SP 19918, SP 19919, SP 19920, SP 19921, SP 19922, SP 19923, SP 19924, SP 19925, SP 19926, SP 19927, SP 19928, SP 19929, SP 19930, SP 19931, SP 19932, SP 19933, SP 19934, SP 19935, SP 19936, SP 19937, SP 19938, SP 19939, SP 19940, SP 19941, SP 19942, SP 19943, SP 19944, SP 19945, SP 19946, SP 19947, SP 19948, SP 19949, SP 19950, SP 19951, SP 19952, SP 19953, SP 19954, SP 19955, SP 19956, SP 19957, SP 19958, SP 19959, SP 19960, SP 19961, SP 19962, SP 19963, SP 19964, SP 19965, SP 19966, SP 19967, SP 19968, SP 19969, SP 19970, SP 19971, SP 19972, SP 19973, SP 19974, SP 19975, SP 19976, SP 19977, SP 19978, SP 19979, SP 19980, SP 19981, SP 19982, SP 19983, SP 19984, SP 19985, SP 19986, SP 19987, SP 19988, SP 19989, SP 19990, SP 19991, SP 19992, SP 19993, SP 19994, SP 19995, SP 19996, SP 19997, SP 19998, SP 19999, SP 20000, SP 20001, SP 20002, SP 20003, SP 20004, SP 20005, SP 20006, SP 20007, SP 20008, SP 20009, SP 20010, SP 20011, SP 20012, SP 20013, SP 20014, SP 20015, SP 20016, SP 20017, SP 20018, SP 20019, SP 20020, SP 20021, SP 20022, SP 20023, SP 20024, SP 20025, SP 20026, SP 20027, SP 20028, SP 20029, SP 20030, SP 20031, SP 20032, SP 20033, SP 20034, SP 20035, SP 20036, SP 20037, SP 20038, SP 20039, SP 20040, SP 20041, SP 20042, SP 20043, SP 20044, SP 20045, SP 20046, SP 20047, SP 20048, SP 20049, SP 20050, SP 20051, SP 20052, SP 20053, SP 20054, SP 20055, SP 20056, SP 20057, SP 20058, SP 20059, SP 20060, SP 20061, SP 20062, SP 20063, SP 20064, SP 20065, SP 20066, SP 20067, SP 20068, SP 20069, SP 20070, SP 20071, SP 20072, SP 20073, SP 20074, SP 20075, SP 20076, SP 20077, SP 20078, SP 20079, SP 20080, SP 20081, SP 20082, SP 20083, SP 20084, SP 20085, SP 20086, SP 20087, SP 20088, SP 20089, SP 20090, SP 20091, SP 20092, SP 20093, SP 20094, SP 20095, SP 20096, SP 20097, SP 20098, SP 20099, SP 20100, SP 20101, SP 20102, SP 20103, SP 20104, SP 20105, SP 20106, SP 20107, SP 20108, SP 20109, SP 20110, SP 20111, SP 20112, SP 20113, SP 20114, SP 20115, SP 20116, SP 20117, SP 20118, SP 20119, SP 20120, SP 20121, SP 20122, SP 20123, SP 20124, SP 20125, SP 20126, SP 20127, SP 20128, SP 20129, SP 20130, SP 20131, SP 20132, SP 20133, SP 20134, SP 20135, SP 20136, SP 20137, SP 20138, SP 20139, SP 20140, SP 20141, SP 20142, SP 20143, SP 20144, SP 20145, SP 20146, SP 20147, SP 20148, SP 20149, SP 20150, SP 20151, SP 20152, SP 20153, SP 20154, SP 20155, SP 20156, SP 20157, SP 20158, SP 20159, SP 20160, SP 20161, SP 20162, SP 20163, SP 20164, SP 20165, SP 20166, SP 20167, SP 20168, SP 20169, SP 20170, SP 20171, SP 20172, SP 20173, SP 20174, SP 20175, SP 20176, SP 20177, SP 20178, SP 20179, SP 20180, SP 20181, SP 20182, SP 20183, SP 20184, SP 20185, SP 20186, SP 20187, SP 20188, SP 20189, SP 20190, SP 20191, SP 20192, SP 20193, SP 20194, SP 20195, SP 20196, SP 20197, SP 20198, SP 20199, SP 20200, SP 20201, SP 20202, SP 20203, SP 20204, SP 20205, SP 20206, SP 20207, SP 20208, SP 20209, SP 20210, SP 20211, SP 20212, SP 20213, SP 20214, SP 20215, SP 20216, SP 20217, SP 20218, SP 20219, SP 20220, SP 20221, SP 20222, SP 20223, SP 20224, SP 20225, SP 20226, SP 20227, SP 20228, SP 20229, SP 20230, SP 20231, SP 20232, SP 20233, SP 20234, SP 20235, SP 20236, SP 20237, SP 20238, SP 20

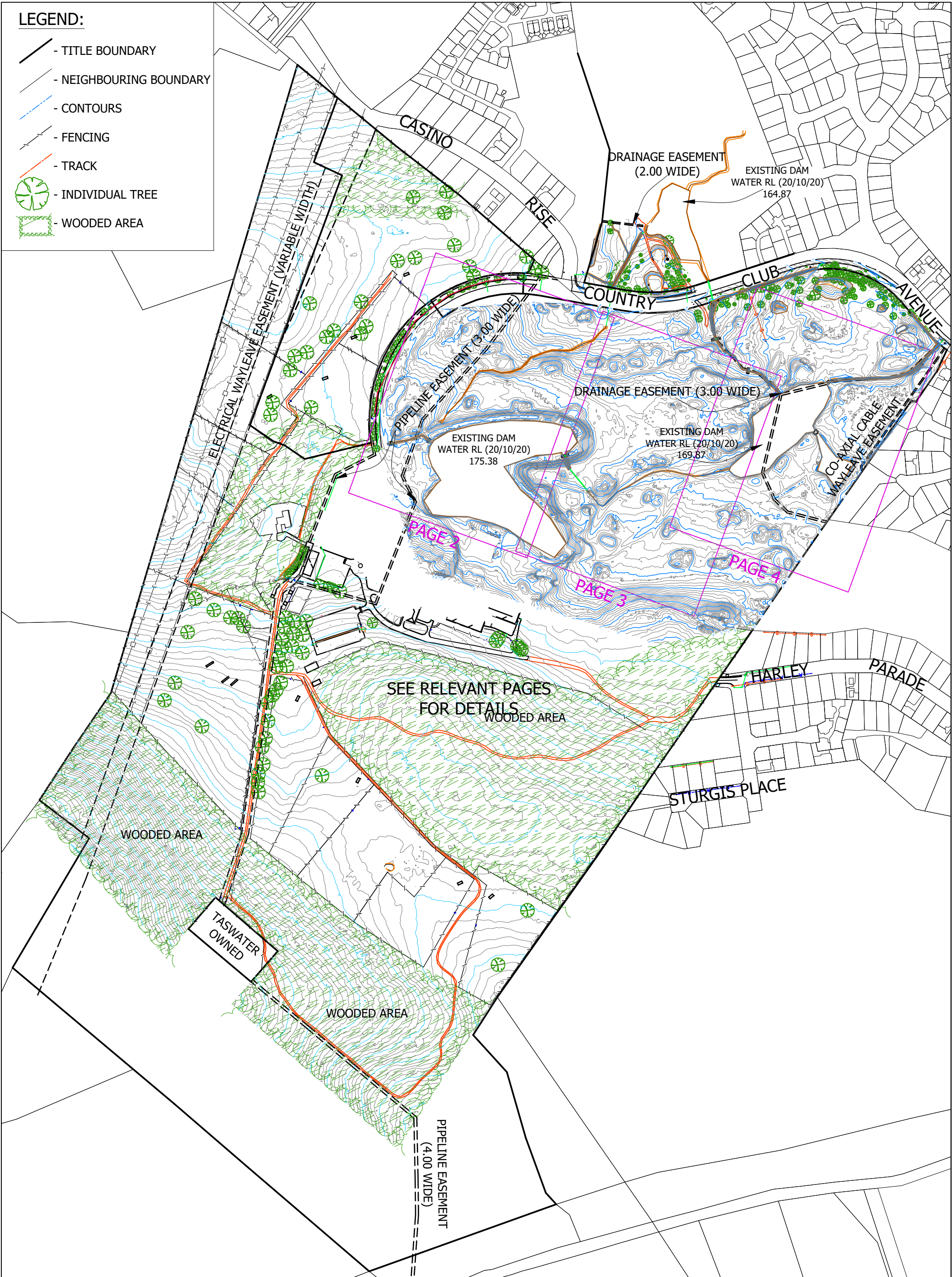




## Appendix B Detailed Survey

LEGEND:

- TITLE BOUNDARY
- NEIGHBOURING BOUNDARY
- CONTOURS
- FENCING
- TRACK
- INDIVIDUAL TREE
- WOODED AREA



Notes:

- HORIZONTAL BEARING DATUM IS PLANE MGA BASED ON RTK GPS.
- VERTICAL DATUM IS AHD PER SPM9987.
- CONTOUR INTERVAL STATED IN RELEVANT AREA PAGES.

OVERALL SITE PLAN  
OWNER: TASMANIAN COUNTRY CLUB  
100 COUNTRY CLUB AVENUE, PROSPECT 7250  
C.T. 119422/1



**WOOLCOTT SURVEYS**

Drawn NJK  
File name L200315SitePlans\_281020.dwg

10 Goodman Court Invermay TAS 7248  
PO Box 593 Mowbray Heights TAS 7248  
Phone (03) 6332 3760  
Fax (03) 6332 3764  
Email: office@woolcottsurveys.com.au

Date 28/10/20  
Scale 1:5000@A3

Job Number  
L200315

Edition V1  
Sheet 1/4

## Appendix C

### ADG Preliminary Civil Plans



# PROPOSED DEVELOPMENT

## 100 COUNTRY CLUB AVE, PROSPECT VALE, TASMANIA, 7250

### CIVIL WORKS

#### NOTE:

- THE FOLLOWING INSPECTIONS MUST BE COMPLETED BY ADG ENGINEERS BEFORE ENGINEERING CERTIFICATION WILL BE ISSUED. THE CONTRACTOR IS TO PROVIDE A MINIMUM OF 72 HOURS NOTICE TO ADG FOR REQUIRED INSPECTIONS. SHOULD THE CONTRACTOR FAIL TO REQUEST AN INSPECTION, THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS TO ALLOW FOR THE WORKS TO BE INSPECTED TO THE SATISFACTION OF ADG. ANY INSPECTIONS THAT FAIL ARE TO BE RE-INSPECTED WITH ALL REINSPECTION COSTS TO BE PAID BY THE CONTRACTOR.
- a) PRESTART
  - b) EARTHWORKS - FINAL STRIPPING OF TOPSOIL, INSTALLATION OF SEDIMENT AND EROSION CONTROL MEASURES
  - c) UNSUITABLE GROUND
  - d) SIDE AND CUT OFF DRAINS
  - e) STORMWATER PIPE LAID ON BEDDING PRIOR TO BACKFILL
  - f) STORMWATER TRENCH BACKFILLED PRIOR TO PAVEMENT PLACEMENT
  - g) STORMWATER STRUCTURE BASE SLABS
  - h) STORMWATER DETENTION TANKS

#### GENERAL NOTES:

- G1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE SHOWN.
- G2. ALL SETOUT ON SITE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR TO ALLOW FOR ALL MEANS NECESSARY TO ACCURATELY SETOUT THE WORKS.
- G3. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND WHERE FURTHER DETAILS ARE REQUIRED THE CONTRACTOR SHALL REFER TO MEANDER VALLEY COUNCIL (MVC) DEVELOPMENT GUIDELINES, LOCAL WATER AUTHORITY GUIDELINES, ASSOCIATED STANDARD DRAWINGS AND SPECIFICATIONS U.N.O.
- G4. SHOULD ANY OF THE CONSTRUCTED WORKS BE CONSTRUCTED OUTSIDE OF THE TOLERANCES SPECIFIED WITHIN THE PROJECT SPECIFICATION AND LOCAL AUTHORITY REQUIREMENTS, THE CONTRACTOR WILL RECTIFY AT THEIR COST INCLUSIVE OF ANY ADDITIONAL COSTS INCURRED BY ADG.
- G5. EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. NO RESPONSIBILITY IS TAKEN BY ADG OR THE PRINCIPAL FOR THE ACCURACY AND COMPLETENESS OF THIS INFORMATION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ACCURATELY ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CONTRACTOR TO LOCATE AND PROTECT SERVICES AS REQUIRED DURING PROPOSED WORKS.
- G6. THE CONTRACTOR IS TO CHECK THROUGH LOCATING, POTHOLING AND SURVEY ALL CRITICAL CONNECTION POINTS FOR ALL CIVIL WORKS SHOWN ON THE DRAWINGS INCLUDING ANY POTENTIAL EXISTING SERVICES CLASHES PRIOR TO COMMENCEMENT OF CIVIL WORKS. CONTRACTOR TO IMMEDIATELY REPORT ANY DISCREPANCIES TO ADG AND AWAIT FORMAL DIRECTION PRIOR TO COMMENCING CIVIL WORKS.
- G7. ON COMPLETION OF SERVICES INSTALLATION, ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL LEVEL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.
- G8. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ANY DAMAGE TO AUTHORITY/COUNCIL'S INFRASTRUCTURE. SUCH REPAIR OR REINSTATEMENT TO BE CARRIED OUT IMMEDIATELY TO THE SATISFACTION OF INFRASTRUCTURE OWNER/MANAGER / AUTHORITY/COUNCIL.
- G9. CONTRACTOR TO UNDERTAKE ALL WORKS IN ACCORDANCE WITH ALL WORKPLACE HEALTH AND SAFETY REQUIREMENTS.
- G10. WHERE ANY EXCAVATION OR CONSTRUCTION WORKS ARE TO BE IN CLOSE PROXIMITY TO NEIGHBOURING LOT BOUNDARIES OR INFRASTRUCTURE, CONTRACTOR TO ALLOW IN SCOPE OF WORKS TO PROVIDE ALL MEASURES NECESSARY TO ENSURE THE INTEGRITY OF EXISTING BOUNDARIES AND INFRASTRUCTURE. THIS MAY INCLUDE THE USE OF LOW VIBRATION EQUIPMENT, TRENCH SHORING ETC AS REQUIRED.
- G11. PRIOR TO THE CONTRACTOR COMMENCING ANY WORKS DETAILED ON THESE DRAWINGS, THE CONTRACTOR IS TO NOTIFY ADG ENGINEERS (AUST.) Pty. Ltd. AND RECEIVE WRITTEN CONFIRMATION THAT WORKS CAN COMMENCE
- G12. CONTRACTOR TO PROVIDE AS CONSTRUCTED DRAWINGS FOR ALL CONSTRUCTED WORKS IN ACCORDANCE WITH LOCAL GOVERNMENT REQUIREMENTS. UNLESS OTHERWISE ADVISED BY ADG ENGINEERS (AUST.) Pty. Ltd. CONTRACTOR TO NOTE COUNCILS ADAC REQUIREMENTS.
- G13. CONTRACTOR TO UNDERTAKE ALL WORKS IN ACCORDANCE WITH RELEVANT APPROVALS.
- G14. CONTRACTOR TO ALLOW TO LIAISE/CO-ORDINATE WITH ELECTRICAL, LANDSCAPE AND OTHER SERVICE CONTRACTORS THROUGHOUT CIVIL CONSTRUCTION.

## ADG CIVIL SERVICES

- i) BIO-RETENTION PRIOR TO INSTALLATION OF EACH LAYER
- j) SEWER RETICULATION
- k) WATER RETICULATION
- l) PAVEMENT SUBGRADE
- m) PAVEMENT REINFORCING
- n) PAVEMENT PRIOR TO SEALING (PRESEAL)
- o) RETAINING WALL FOOTING REINFORCING
- p) RETAINING WALL BLOCKWORK PRIOR TO CORE FILL
- q) STEEL REINFORCEMENT OF CONCRETE STRUCTURES
- r) PRACTICAL COMPLETION
- s) ON MAINTENANCE
- t) OFF MAINTENANCE
- u) ANY OTHER INSPECTION AS SPECIFIED BY LOCAL COUNCIL (REFER DEVELOPMENT APPROVAL)
- v) ANY OTHER INSPECTION AS REQUIRED BY THE WATER AUTHORITY AND WHERE RELEVANT TO THEIR CERTIFICATION SCHEME

#### LOCALITY PLAN

NOT TO SCALE



PROPERTY DESCRIPTION  
LOT: C.T. 119422/1

#### DRAWING SCHEDULE

DRAWING No.	DRAWING TITLE
DA01	DRAWING SCHEDULE NOTES AND LOCALITY PLAN
DA02	PRELIMINARY FEATURES LAYOUT PLAN
DA03	PRELIMINARY OVERALL LAYOUT AND ROAD GRADING
DA04	PRELIMINARY EARTHWORKS LAYOUT PLAN
DA05	PRELIMINARY TYPICAL ROAD CROSS SECTIONS
DA06	PRELIMINARY PRE DEVELOPMENT CATCHMENT PLAN
DA07	PRELIMINARY POST DEVELOPMENT CATCHMENT PLAN
DA09	PRELIMINARY SEWER NETWORK LAYOUT
DA10	PRELIMINARY WATER RETICULATION PLAN

## PRELIMINARY

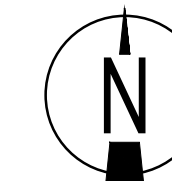
NOT FOR CONSTRUCTION

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

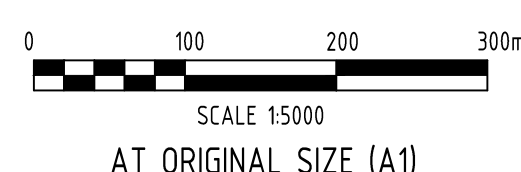


## LEGEND

- 
- SITE BOUNDARY  
 ——— -12.0 ——— EXISTING SURFACE CONTOURS  
 ——— LIMIT OF WORKS  
 — S ——— EXISTING SEWER  
 — W ——— EXISTING WATER  
 — T ——— EXISTING TELECOMMUNICATIONS  
 ——— -dE ——— EXISTING ELECTRICITY (RECORDS)



**PRELIMINARY**  
NOT FOR CONSTRUCTION

[illegible]

**Sydney Office**  
Suite 1301, Level 13, 20 Berry Street  
North Sydney, New South Wales 2060, Australia

T 1300 657 402 F +617 3871 2266  
E [info@adgce.com](mailto:info@adgce.com) W [www.adgce.com](http://www.adgce.com)

BRISBANE | DARWIN | GOLD COAST | MELBOURNE  
SUNSHINE COAST | SYDNEY | TOOWOOMBA

Client	ENGINE ROOM VM (NSW) PTY LTD
Project Name	100 COUNTRY CLUB AVE PROSPECT VALE, TASMANIA, 7250 BRYCE GORHAM GOLF CENTRE AND COUNTRY CLUB TASMANIA

Discipline <b>CIVIL</b>		Status <b>PRELIMINARY</b>
Designed By <b>MRB</b>	Checked By <b>ST</b>	Approved By <b>JG</b>
Project No. <b>23337</b>	Drawn By <b>AGC</b>	Scale at A1 <b>1:5000</b>
<p>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.</p> <p>Drawn: <i>agc</i> Date: <i>11/11/2016</i> Scale: <i>1:5000</i></p>		

Title  
PRELIMINARY EXISTING FEATURES  
LAYOUT PLAN

Drawing No.	Rev.
DA02	

PLOT DATE: 11/13/2020 10:36 AM FILENAME: J:\23000\23337\DWG\04\23337\_0402 PRELIMINARY EXISTING FEATURES LAYOUT PLAN.DWG

0 10 20 30 40 50 60 70 80 90 100mm



LEGEND

- LIMIT OF WORKS
- SITE BOUNDARY
- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- SWD

EXISTING STORMWATER DRAINAGE
- S

EXISTING SEWER
- W

EXISTING WATER
- T

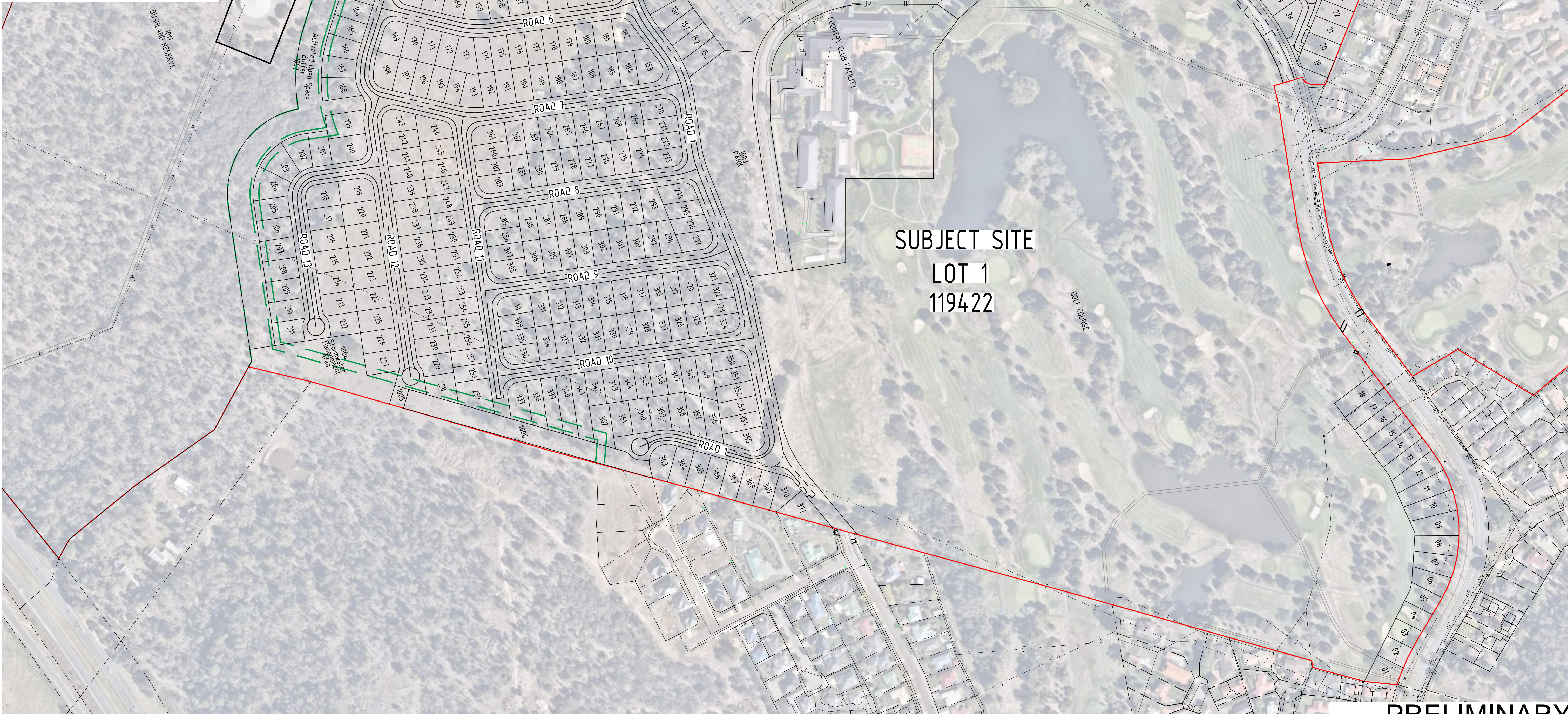
EXISTING TELECOMMUNICATION
- dE

EXISTING ELECTRICITY (RECORDS)
- SWD

PROPOSED STORMWATER DRAINAGE
- S

PROPOSED SEWER
- W

PROPOSED WATER MAIN
- PROPOSED EASEMENTS
- INDICATIVE BUSH FIRE SET BACK



PRELIMINARY  
NOT FOR CONSTRUCTION

Rev	Date	Description	By	Chk
02	13.11.20	PRELIMINARY - ISSUED FOR INFORMATION	DE	ST
01	02.11.20	PRELIMINARY - ISSUED FOR INFORMATION	AGC	ST

KINCAPITAL

Federal Group

ENGINE ROOMVM

0 50 100 150 200m  
SCALE 1:4000  
AT ORIGINAL SIZE (A1)

ADG  
Sydney Office  
Suite 1301, Level 13, 20 Berry Street  
North Sydney, New South Wales 2060, Australia

T 1300 657 402 F +617 3871 2266  
E info@adgco.com W www.adgco.com  
BRISBANE / DARWIN / GOLD COAST / MELBOURNE / PERTH /  
SUNSHINE COAST / SYDNEY / TOOWOOMBA

Client:  
ENGINE ROOM VM (NSW) PTY LTD  
Project Name:  
100 COUNTRY CLUB AVE  
PROSPECT VALE, TASMANIA, 7250  
BRYCE GORHAM GOLF CENTRE  
AND COUNTRY CLUB TASMANIA

Discipline CIVIL	Status PRELIMINARY
Designed By MRB	Checked By ST
Project No. 23337	Drawn By AGC
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!	

Title  
PRELIMINARY OVERALL LAYOUT  
AND ROAD GRADING

Drawing No.  
DA03

Revision  
02





**PRELIMINARY**  
NOT FOR CONSTRUCTION

02	13.11.20	PRELIMINARY - ISSUED FOR INFORMATION	DE	ST
01	02.11.20	PRELIMINARY - ISSUED FOR INFORMATION	AGC	ST
Rev	Date	Description	By	Chk



0 20 40 60 80 100m  
SCALE 1:2000  
AT ORIGINAL SIZE (A1)

**ADG**  
Sydney Office  
Suite 1301, Level 13, 20 Berry Street  
North Sydney, New South Wales 2060, Australia  
T 1300 657 402 F +617 3871 2266  
E info@adgce.com W www.adgce.com  
BRISBANE / DARWIN / GOLD COAST / MELBOURNE / PERTH /  
SUNSHINE COAST / SYDNEY / TOOWOOMBA

Client  
ENGINE ROOM VM (NSW) PTY LTD  
Project Name  
100 COUNTRY CLUB AVE  
PROSPECT VALE, TASMANIA, 7250  
BRYCE GORHAM GOLF CENTRE  
AND COUNTRY CLUB TASMANIA

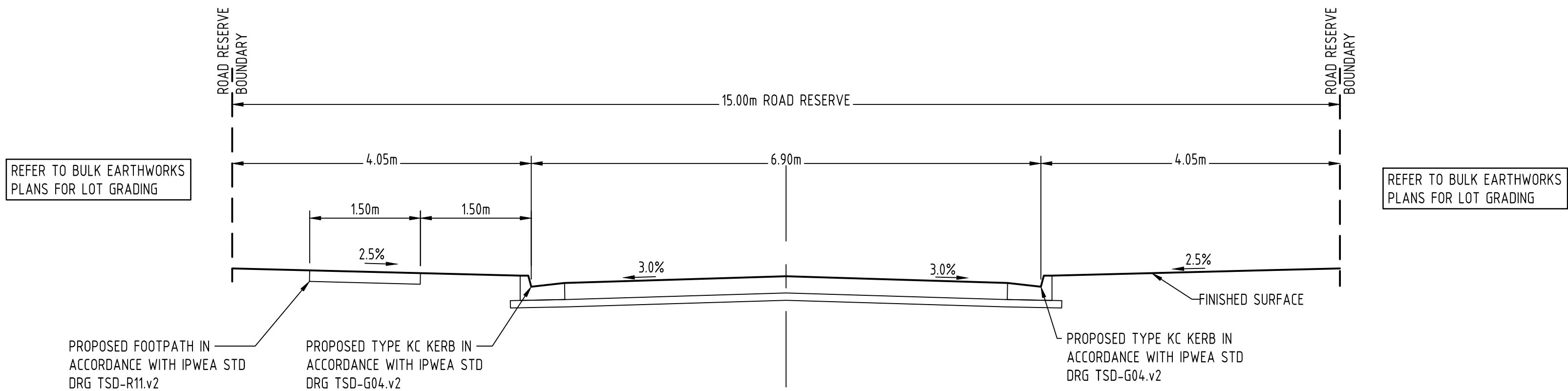
Discipline CIVIL	Status PRELIMINARY
Designed By MRB	Checked By ST
Project No. 23337	Drawn By AGC
Approved By JG	
Scale at A1 1:2000	

Title  
PRELIMINARY EARTHWORKS  
LAYOUT PLAN

Drawing No.  
DA04

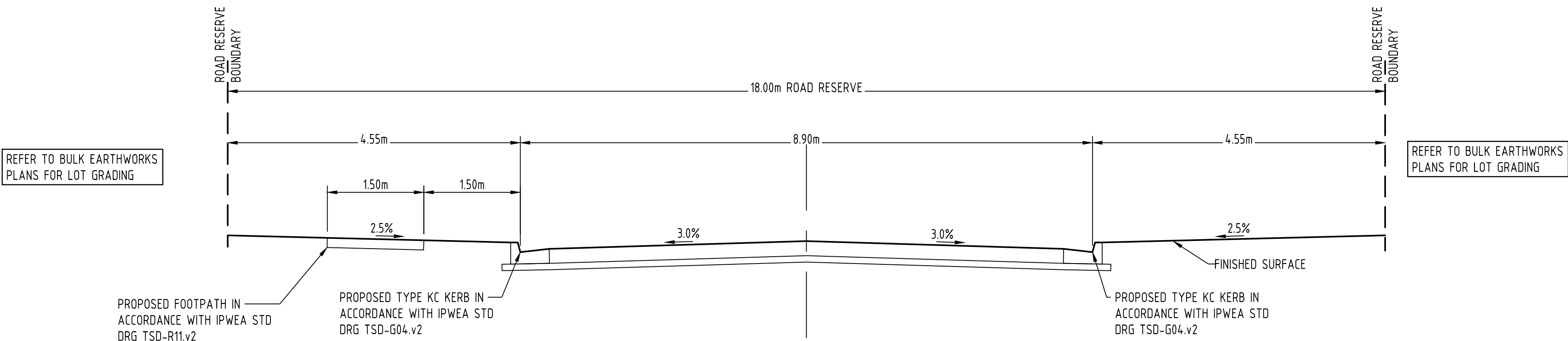
Revision  
02





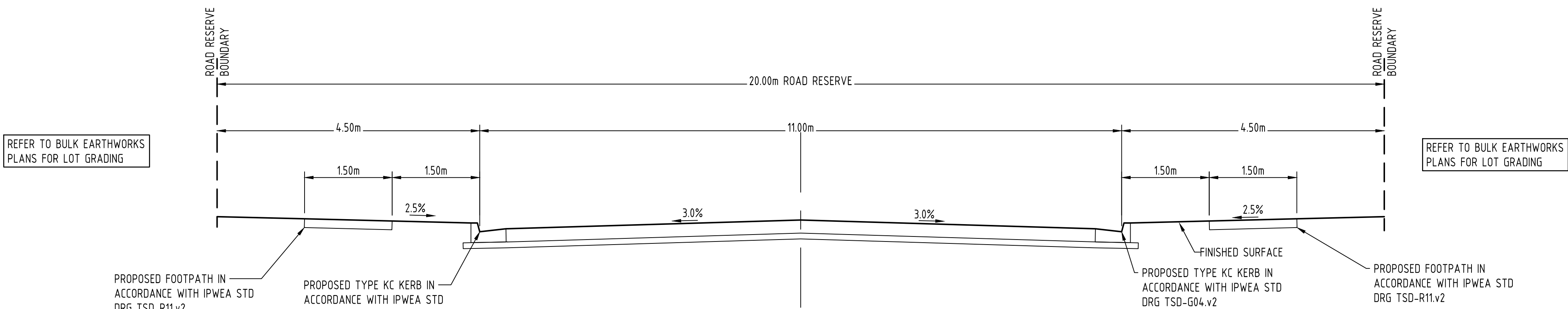
15.00m ROAD RESERVE TYPICAL SECTION - ROADS 1 & 3

6.9m PAVEMENT (15m ROAD RESERVE)  
SCALE 1:50



18.00m ROAD RESERVE TYPICAL SECTION - ROADS 2-13

8.9m PAVEMENT (18m ROAD RESERVE)  
SCALE 1:50

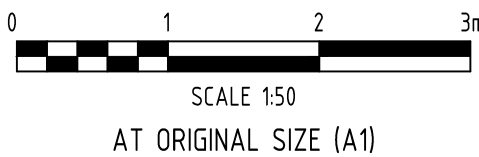


20.00m ROAD RESERVE TYPICAL SECTION - ROAD 1

11.0m PAVEMENT (20m ROAD RESERVE)  
SCALE 1:50

PRELIMINARY  
NOT FOR CONSTRUCTION

01	02.11.20	PRELIMINARY - ISSUED FOR INFORMATION			AGC ST
Rev	Date	Description			By Chk



**Sydney Office**  
Suite 1301, Level 13, 20 Berry Street  
North Sydney, New South Wales 2060, Australia  
T 1300 657 402 F +617 3871 2266  
E info@adgce.com W www.adgce.com  
BRISBANE / DARWIN / GOLD COAST / MELBOURNE / PERTH /  
SUNSHINE COAST / SYDNEY / TOOWOOMBA

Client ENGINE ROOM VM (NSW) PTY LTD		Discipline CIVIL		Status PRELIMINARY	
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	Title PRELIMINARY TYPICAL ROAD CROSS SECTIONS
		Project No. 23337	Drawn By AGC	Scale at A1 1:50	
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. DA05
					Revision 01



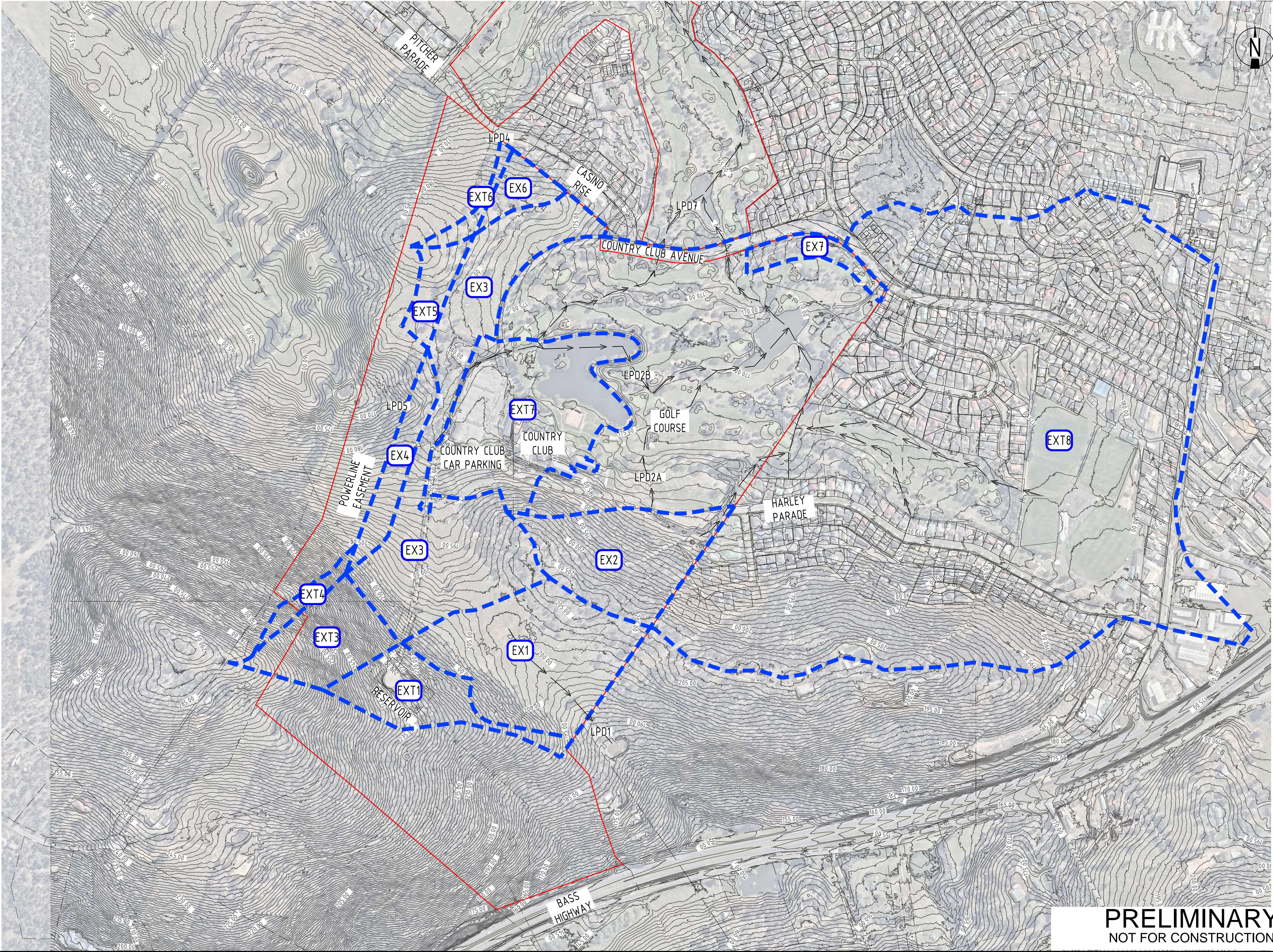
LEGEND

- PREDEVELOPMENT CATCHMENT BOUNDARY
- WATER COURSE
- C1

CATCHMENT LABEL
- FLOW DIRECTION

CATCHMENT TABLE (POST DEVELOPMENT)

CATCHMENT	AREA (ha)	FRACTION IMPERVIOUS
EX1	10.27	0.00
EX2	7.22	0.00
EX3	15.23	0.00
EX4	2.30	0.00
EX6	1.38	0.00
EX7	1.42	0.00
EXT1	4.22	0.09
EXT3	4.38	0.00
EXT4	0.79	0.00
EXT5	1.26	0.00
EXT6	1.06	0.00
EXT7	11.36	0.30



PRELIMINARY  
NOT FOR CONSTRUCTION

02	13.11.20	PRELIMINARY - ISSUED FOR INFORMATION		DE	ST
01	02.11.20	PRELIMINARY - ISSUED FOR INFORMATION		AGC	ST
Rev	Date	Description		By	Chk

KINCAPITAL

Federal Group

ENGINE ROOMVM

0 50 100 150 200m  
SCALE 1:4000  
AT ORIGINAL SIZE (A1)

ADG  
Sydney Office  
Suite 1301, Level 13, 20 Berry Street  
North Sydney, New South Wales 2060, Australia

T 1300 657 402 F +617 3871 2266  
E info@adgc.com W www.adgc.com  
BRISBANE / DARWIN / GOLD COAST / MELBOURNE / PERTH /  
SUNSHINE COAST / SYDNEY / TOOWOOMBA

Client:  
ENGINE ROOM VM (NSW) PTY LTD

Project Name  
100 COUNTRY CLUB AVE  
PROSPECT VALE, TASMANIA, 7250  
BRYCE GORHAM GOLF CENTRE  
AND COUNTRY CLUB TASMANIA

Discipline  
CIVIL

Designed By  
MRB

Checked By  
ST

Project No.  
23337

Drawn By  
AGC

Status  
PRELIMINARY

Approved By  
JG

Scale at A1  
1:4000

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!

Title  
PRELIMINARY PRE DEVELOPMENT  
CATCHMENT PLAN

Drawing No.  
DA06

Revision  
02

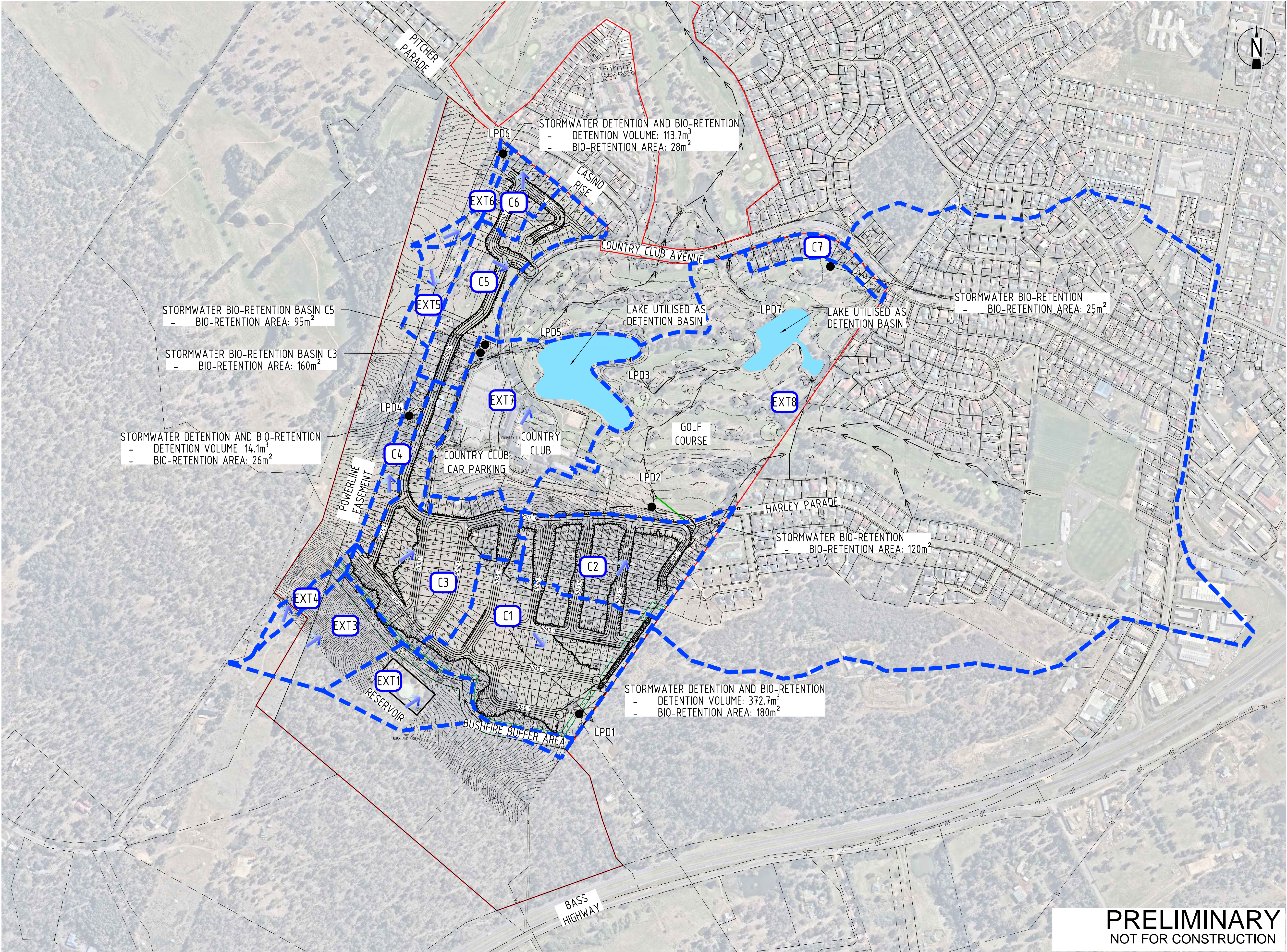


LEGEND

- PREDEVELOPMENT CATCHMENT BOUNDARY
- WATER COURSE
- C1

CATCHMENT LABEL
- FLOW DIRECTION
- SITE BOUNDARY

CATCHMENT TABLE (POST DEVELOPMENT)		
CATCHMENT	AREA (ha)	FRACTION IMPERVIOUS
C1	10.96	0.50
C2	6.92	0.50
C3	9.37	0.50
C4	1.46	0.50
C5	5.43	0.50
C6	1.67	0.50
C7	1.45	0.50
EXT1	4.22	0.09
EXT3	4.38	0.00
EXT4	0.79	0.00
EXT5	1.26	0.00
EXT6	1.06	0.00
EXT7	11.36	0.30
EXT8	110.21	0.27



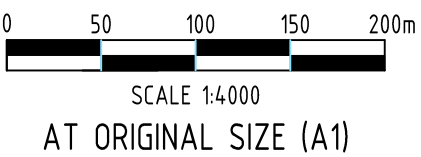
PRELIMINARY  
NOT FOR CONSTRUCTION

02	13.11.20	PRELIMINARY - ISSUED FOR INFORMATION		DE	ST
01	02.11.20	PRELIMINARY - ISSUED FOR INFORMATION		AGC	ST
Rev	Date	Description		By	Chk

KINCAPITAL

Federal Group

ENGINE ROOM VM



ADG

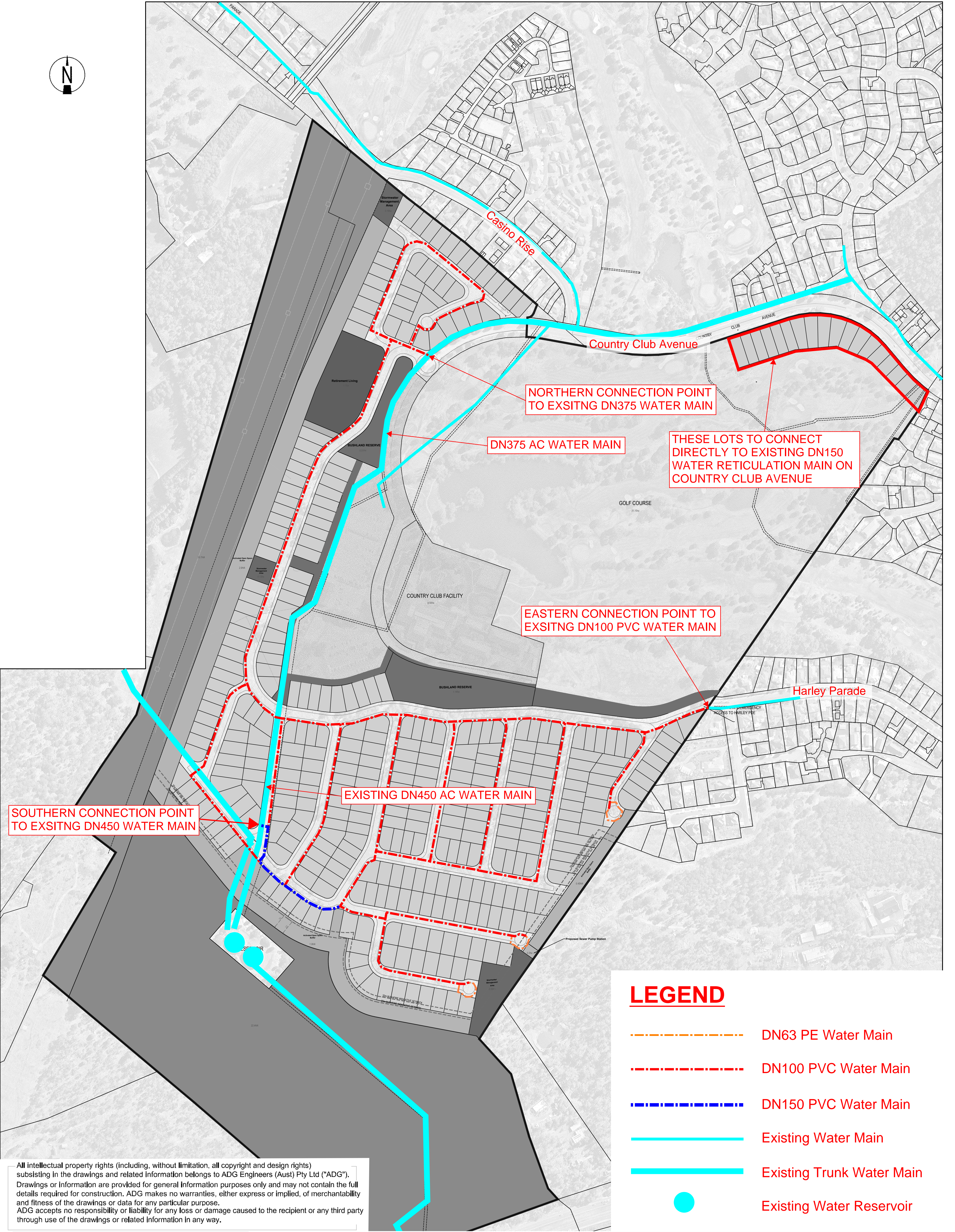
Sydney Office  
Suite 1301, Level 13, 20 Berry Street  
North Sydney, New South Wales 2060, Australia  
T 1300 657 402 F +617 3871 2266  
E info@adgce.com W www.adgce.com  
BRISBANE / DARWIN / GOLD COAST / MELBOURNE / PERTH /  
SUNSHINE COAST / SYDNEY / TOOWOOMBA

Client	ENGINE ROOM VM (NSW) PTY LTD
Project Name	100 COUNTRY CLUB AVE PROSPECT VALE, TASMANIA, 7250 BRYCE GORHAM GOLF CENTRE AND COUNTRY CLUB TASMANIA

Discipline		Status
CIVIL		PRELIMINARY
Designed By	Checked By	Approved By
MRB	ST	JG
Project No.	Drawn By	Scale at A1
23337	AGC	1:4000
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!		

Title		PRELIMINARY POST DEVELOPMENT CATCHMENT PLAN	
Drawing No.	DA07	Revision	02





SOUTHERN CONNECTION POINT TO EXSITNG DN450 WATER MAIN

NORTHERN CONNECTION POINT TO EXSITNG DN375 WATER MAIN

DN375 AC WATER MAIN

THESE LOTS TO CONNECT DIRECTLY TO EXISTING DN150 WATER RETICULATION MAIN ON COUNTRY CLUB AVENUE


EASTERN CONNECTION POINT TO EXSITNG DN100 PVC WATER MAIN

EXISTING DN450 AC WATER MAIN

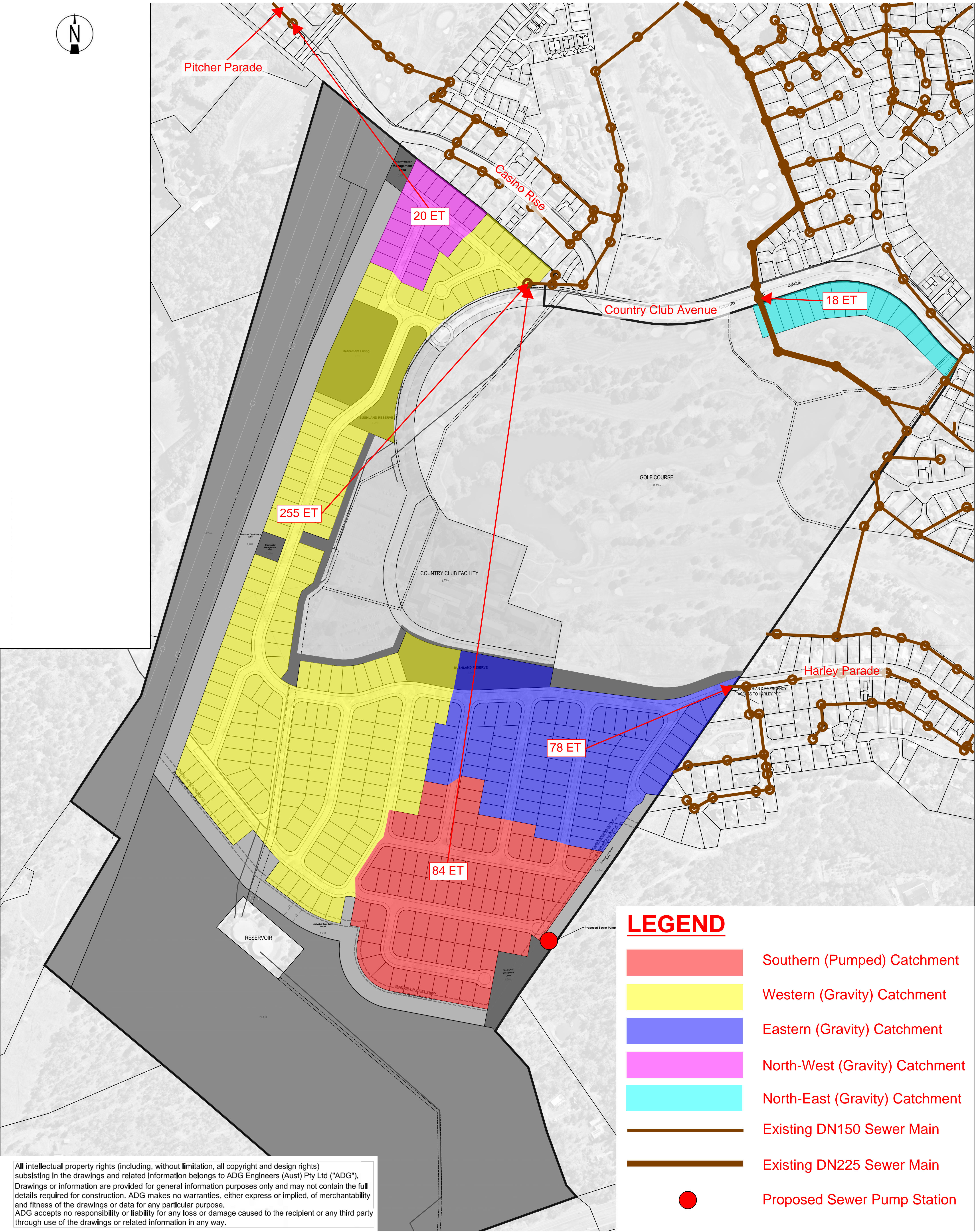
## LEGEND

- DN63 PE Water Main
- DN100 PVC Water Main
- DN150 PVC Water Main
- Existing Water Main
- Existing Trunk Water Main
- Existing Water Reservoir

All intellectual property rights (including, without limitation, all copyright and design rights) subsisting in the drawings and related information belongs to ADG Engineers (Aust) Pty Ltd ("ADG"). Drawings or information are provided for general information purposes only and may not contain the full details required for construction. ADG makes no warranties, either express or implied, of merchantability and fitness of the drawings or data for any particular purpose. ADG accepts no responsibility or liability for any loss or damage caused to the recipient or any third party through use of the drawings or related information in any way.

				ENGINE ROOM VM (NSW) Pty Ltd  Project Name: 100 COUNTRY CLUB AVE PROSPECT VALE TASMANIA 7250 BRYCE GORHAM GOLF CENTRE AND COUNTRY CLUB TASMANIA	Discipline CIVIL		Status INFORMATION	No. PRELIMINARY PROPOSED WATER NETWORK LAYOUT PLAN	
					Designed By MRB	Checked By ST	Approved By JG		
					Project No. 23337	Drawn By MRB	Scale NTS <small>(at A3)</small>		
					The concepts and information contained in this document are the copyright of ADG Engineers (Aust) Pty Ltd, use or copying of this 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.				
02	13.11.20	ISSUED FOR INFORMATION						Drawing No. DA09	Revised 02
01	02.11.20	ISSUED FOR INFORMATION							
Rev	Date	Description							





All intellectual property rights (including, without limitation, all copyright and design rights) subsisting in the drawings and related information belongs to ADG Engineers (Aust) Pty Ltd ("ADG"). Drawings or information are provided for general information purposes only and may not contain the full details required for construction. ADG makes no warranties, either express or implied, of merchantability and fitness of the drawings or data for any particular purpose. ADG accepts no responsibility or liability for any loss or damage caused to the recipient or any third party through use of the drawings or related information in any way.

Rev	Date	Description
02	13.11.20	ISSUED FOR INFORMATION
01	02.11.20	ISSUED FOR INFORMATION



Client  
ENGINE ROOM VM (NSW) Pty Ltd  
Project Name  
100 COUNTRY CLUB AVE  
PROSPECT VALE TASMANIA 7250  
BRYCE GORHAM GOLF CENTRE  
AND COUNTRY CLUB TASMANIA

Discipline CIVIL		Status INFORMATION
Designed By MRB	Checked By ST	Approved By JG
Project No. 23337	Drawn By MRB	Scale NTS (at A3)
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.		

Title PRELIMINARY PROPOSED SEWAGE CATCHMENT PLAN	
Drawing No. DA10	Revision 02



# Appendix D

## Water Network Assessment Demand Allocation



Table E1 – Water Model ET Allocation

Junction	Load (ET)	Elevation (m AHD)	Post-Development PH Pressure (m)	Post-Development FF Pressure (m)
J12	10.00	183.00	47.56	47.30
J14	9.00	197.50	33.09	30.02
J18	9.00	186.00	45.26	44.49
J20	12.00	199.00	32.36	30.87
J24	7.00	193.00	38.59	37.58
J26	14.00	203.00	28.61	27.01
J30	11.00	203.00	28.63	27.52
J32	13.00	203.00	28.5	26.97
J34	6.00	200.00	31.89	30.90
J36	12.00	205.50	26.40	24.95
J38	10.00	202.00	29.90	28.92
J40	8.00	201.50	30.74	30.02
J42	12.00	203.00	29.25	28.17
J44	11.00	202.50	29.78	29.11
J46	8.00	206.50	26.45	26.48
J48	8.00	203.00	29.94	29.75
J50	9.00	199.00	33.92	31.41
J54	8.00	198.00	34.92	30.44
J56	10.00	210.00	22.95	21.26
J60	8.00	195.50	37.41	32.70
J62	10.00	195.50	37.06	36.78
J64	13.00	200.00	32.76	32.25
J68	9.00	210.00	23.10	23.43
J70	6.00	193.50	39.11	39.16
J72	7.00	199.00	34.01	33.88
J74	9.00	209.00	24.26	24.80
J76	10.00	191.50	41.02	40.96
J78	7.00	195.00	37.62	37.31
J80	12.00	207.00	25.88	25.41
J82	10.00	182.50	49.45	48.87
J84	12.00	181.00	50.46	49.81
J86	10.00	181.00	50.12	49.65
J88	66.00	179.50	51.29	51.27
J90	12.00	179.50	51.25	52.14
J92	14.00	177.00	53.73	53.77
J94	13.00	177.00	53.73	53.86
J96	5.00	176.00	54.73	55.51
J108		198.00	34.92	30.74
J110	2.00	176.00	54.74	56.05
J112		206.00	27.42	28.10
J118		195.00	35.58	32.88
J120		197.00	35.92	31.63
J122		206.50	25.13	23.61
J124		179.00	51.73	51.76

Table E2 – Boundary Conditions

Connection Main	Post-Development PH Pressure (m)	Post-Development FF Pressure (m)
DN100	230.18	232.59
DN375	230.85	232.86
DN450	233.53	234.26

