

# **MIDLAND HIGHWAY ST PETERS PASS TO SOUTH OF TUNBRIDGE**

Submission to the Parliamentary Standing  
Committee on Public Works

Version: 1    Date: 2 June 2017

## Document Development History

### Build Status

| Version | Date       | Author     | Reason           | Sections |
|---------|------------|------------|------------------|----------|
| 1       | 18/05/2017 | Damien Dry | Original version | All      |
|         |            |            |                  |          |
|         |            |            |                  |          |

### Amendments in this Release

| Section Title | Section Number | Amendment Summary |
|---------------|----------------|-------------------|
|               |                |                   |
|               |                |                   |

### Distribution

| Copy No | Version | Issue Date | Issued To |
|---------|---------|------------|-----------|
| 1       | 1       | 18/08/2017 | -         |
|         |         |            |           |
|         |         |            |           |
|         |         |            |           |

## Table of Contents

|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>INTRODUCTION .....</b>   | <b>1</b>  |
| 1.1      | BACKGROUND .....  | 1         |
| 1.2      | PROJECT OBJECTIVES .....  | 1         |
| 1.3      | PROJECT LOCATION .....  | 3         |
| 1.4      | STRATEGIC CONTEXT OF THE PROJECT .....                                | 3         |
| <b>2</b> | <b>PROJECT DETAILS.....</b>   | <b>5</b>  |
| 2.1      | PROPOSED WORKS.....   | 5         |
| 2.2      | DESIGN SPEED .....  | 5         |
| 2.3      | ROAD CROSS SECTION.....   | 5         |
| 2.4      | DRAINAGE .....  | 6         |
| 2.5      | UTILITIES .....   | 6         |
| <b>3</b> | <b>SOCIAL, ENVIRONMENTAL IMPACTS AND STAKEHOLDER ENGAGEMENT .....</b> | <b>8</b>  |
| 3.1      | PROPERTY ACQUISITION .....  | 8         |
| 3.2      | NOISE .....   | 9         |
| 3.3      | FLORA AND FAUNA.....  | 9         |
| 3.4      | ABORIGINAL HERITAGE.....  | 10        |
| 3.5      | HISTORIC HERITAGE.....  | 10        |
| 3.6      | LANDSCAPE AND VISUAL IMPACTS .....                                    | 11        |
| 3.7      | STAKEHOLDER ENGAGEMENT .....  | 12        |
| 3.8      | DEVELOPMENT APPROVALS.....  | 13        |
| <b>4</b> | <b>PROJECT PROGRAM AND COSTS.....</b>                                 | <b>14</b> |
| 4.1      | PROJECT PROGRAM .....   | 14        |
| 4.2      | COSTS.....  | 1         |
| <b>5</b> | <b>CONCLUSION .....</b>   | <b>3</b>  |

## Appendices

APPENDIX A. DRAWINGS

APPENDIX B. P50 / P 90 COST ESTIMATES

## Authorisation

|                | Name | Signature | Date |
|----------------|------|-----------|------|
| Authorised by: |      |           |      |

# 1 Introduction

## 1.1 Background

The Midland Highway St Peters Pass to south of Tunbridge project is a component of the Midland Highway 10 Year Action Plan Program, a 10-year plan with a commitment of \$500 million from the Australian and Tasmanian Governments to make safety improvements along a 157km length of the Midland Highway between Mangalore and Breadalbane.

The crash pattern along the Midland Highway is relatively dispersed, with crashes occurring along its entire length, including locations of multiple crashes. The AusRAP Star Rating Australia's National Network of Highways 2013 report outlined that 86% of the Midland Highway rated at one or two stars, on a five-star scale. By the end of 2016-17, the Midland Highway Upgrade Program will have upgraded approximately 35km of highway and projects will be underway to increase that to approximately 50km.

The Highway's absence of adequate safety features in many areas has resulted in this low rating. A lack of safety features is often a contributing factor in the type and severity of road crashes. For most of the Midland Highway the predominant crash type is loss of control, most of which are single vehicle crashes with some resulting in head-on crashes and fatalities, 60% of the fatalities on the Highway have been due to head-on crashes.

The section of Highway between St Peters Pass and south of Tunbridge has been identified for works as part of the safety package and this Parliamentary Standing Committee on Public Works (PSCPW) Report provides information regarding these works.

## 1.2 Project Objectives

The objectives of the project are to:

- Provide a National Land Transport Network standard 110 km/h speed environment;
- Provide a 3-star AusRAP rating for this section of the Midland Highway;
- Improve freight transport efficiency;
- Improve intersection safety and efficiency.

The key outcomes intended from this project will be to achieve the objectives outlined above, while managing the infrastructure assets to deliver an appropriate level of service and visual amenity, within the agreed budget and program.

To achieve these objectives the Department utilised the Australian Standards, Austroad guidelines and its Design Guidelines for Category One Roads. The Midland Highway upgrade projects also utilise a 'Safe System' approach, which has been adopted by all Australian state and territory road authorities to achieve the minimum 3 star AusRAP rating. The approach recognises that people will make mistakes which result in crashes and road infrastructure needs to be designed to take account of these errors.

Several safety treatments will be applied to achieve the objectives, including:

- Lane separation with flexible safety barriers, which can achieve a 90% reduction in serious road trauma caused by head-on and run-off road crashes
- Audible edge lines (rumble strips) alert drivers when they deviate towards the edge of the road and provide time to recover
- Extended sealed shoulders prevent loss of control when a vehicle crosses the edge line
- Clearing roadside hazards or providing roadside barriers where hazards can't be removed
- Upgrading junctions (including large farm accesses) by providing turning lanes to allow turning vehicles to move out of the traffic flow
- Constructing 2 +1 lane arrangements to improve overtaking opportunities and avoid driver frustration
- Minimising breaks in the flexible safety median barrier
- Provide turning facilities at 3-5km intervals, for residential access, maintenance and emergency services
- Provide alternating overtaking opportunities with a minimum length of 1.2km, to ensure motorists aren't frustrated
- Lane widths of 3.5m
- Shoulder widths of 2.0m, to allow for correction in the event of loss of control

## 1.3 Project Location

Figure 1 - Project location map



## 1.4 Strategic Context of the Project

The AusRAP Survey undertaken by the Australian Automobile Association in 2013 identified up to 86% of the Midland Highway has a safety rating of less than 3 stars. The predominant type of vehicle crash on the Highway is loss of control, most of which are single vehicle crashes with some resulting in head-on collisions. Approximately 60% of fatalities from vehicle crashes are a result of head-on collisions.

The Midland Highway is a gazetted high productivity (HPV) route. The highway between St Peters Pass and south of Tunbridge is generally single lane carriageway with a posted speed limit of 110 km/h. There is one section of dual overtaking lanes just north of St Peters Pass Rest Area which provides north and south bound overtaking opportunities for a distance of 1.6km. The existing road has some deficiencies in Stopping Sight Distance (SSD) and geometric alignment for the 110 km/h speed environment. The current AusRAP rating for the section is predominantly 1-Star and 2-Star.

This Project will help to address current deficiencies in safety along the Midland Highway between St Peters Pass to south of Tunbridge. In particular, the proposed works will help to eliminate head-on collisions and provide additional safe overtaking opportunities in each direction of travel.

#### **1.4.1 Alignment with Approved Strategies**

Upgrading of the Midland Highway is a priority for the Tasmanian Government, and this is being supported by the Australian Government.

The project is a key component of the Midland Highway 10 Year Action Plan and the requirement for safety upgrades along strategic urban freight routes has been identified in the Tasmanian Infrastructure Strategy, the Southern Integrated Transport Plan 2010 and the Midland Highway Partnership Agreement 2009.

The design adheres to the Midland Highway 10 Year Action Plan and specifically the Design Guidelines for Category One roads.

## **2 Project Details**

### **2.1 Proposed Works**

The proposed development consists includes:

- Widening of the existing carriageway for the provision of sections of 2+1 traffic lanes.
- Extended sealed shoulders.
- Lane separation with flexible safety barriers.
- Reduction of roadside hazards.
- Alignment and junction upgrades.
- Provision of a heavy vehicle turning facility at Sorell Springs Road, Antill ponds road and Old Tier Road
- Provision of light vehicle turning facility at Antill ponds road for vehicles coming from the north
- Relocation of Glen Morey Road further north to improve safety.
- Connection into the new highway design to the north.
- Associated earthworks with the proposed widening requiring moderate to significant cutting or embankments in some sections due to the nature of terrain and road gradient

Some acquisition of private property is required to facilitate the proposed construction works.

### **2.2 Design Speed**

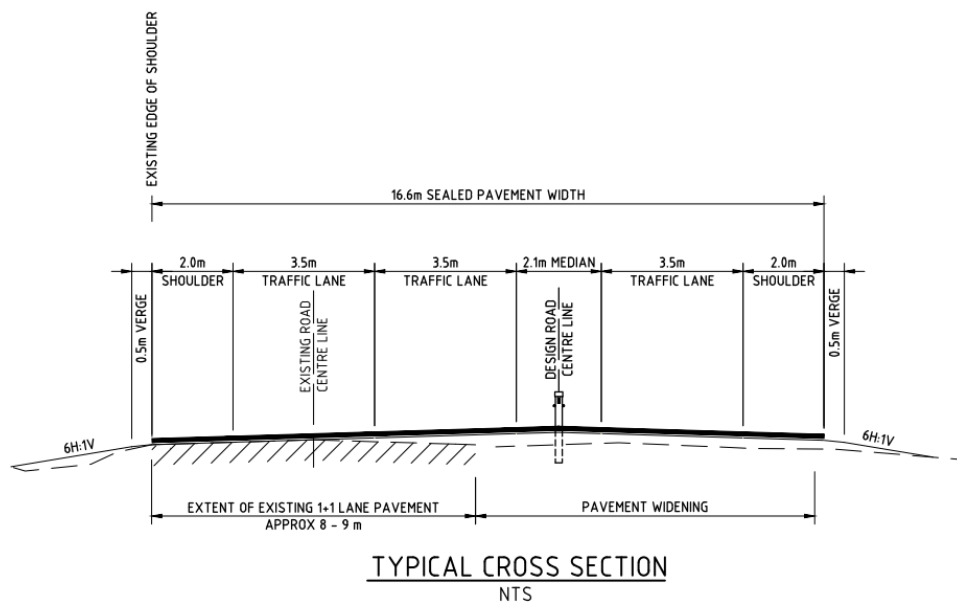
It is planned that the posted speed will be 110 km/h for the entire length of the St Peters Pass to south of Tunbridge upgrade.

### **2.3 Road Cross Section**

The typical cross-section of the “2+1” lane arrangement is shown in Figure 2.



**Figure 2 - Midland Highway 2+1 typical cross-section**



## 2.4 Drainage

Hydrology modelling address surface drainage, sub-surface drainage, investigated culverts and explored impacts on the natural waterways. A number of culverts are being upgraded to allow for sufficient capacity in the event of a 1 in a 100 year rain fall event. The level of drainage of private accesses will either be retained or, in most cases, improved as part of this project.

## 2.5 Utilities

There are TasNetworks, Telstra, TasGas and Tasmanian Irrigation infrastructure present at the project site.

### 2.5.1 TasNetworks

TasNetworks have overhead electrical supply cables that run through the project site. The Overhead power lines are present along the length of the route. They predominantly follow the old highway alignment and are generally clear of any proposed works. The power lines cross over from the western side of the highway just north of the St Peters Pass Rest Area and follow the old formation on the eastern side.

There are 19 power poles that need relocation due to the highway upgrades (17 of these are TasNetworks assets, 2 are private poles owned by Tasmanian Irrigation).

### **2.5.2 Telstra**

Underground Telstra cables are present along the majority of the route, with one optic fibre line crossing under the highway just south of Old Tier Road highway. Telstra road crossings are located at approximately Ch. 11340, Ch. 12970, Ch. 13370, Ch. 14360, Ch. 17150, Ch. 18000 and Ch. 18330. It is likely that all of these crossings will need to be lowered to provide adequate cover under the new highway table drains.

### **2.5.3 TasGas**

The TasGas High-Pressure Pipeline is located west of the road reserve and is not impacted by the proposed works.

### **2.5.4 Tasmanian Irrigation**

A Tasmanian Irrigation pipeline is present within the project site, crossing under the Midland Highway approximately 100m south of Old Tier Road at Woodbury. The pipe crossing is approximately 1.5m deep (minimum). In general, the highway is being raised at that location and therefore the pipeline won't be affected by the proposed works. The highway designs have also ensured that roadside table drains are avoided at the location of the pipeline, as this would have reduced the pipe's cover below the minimum levels defined in design standards.

## 3 Social, Environmental Impacts and Stakeholder Engagement

### 3.1 Property Acquisition

As the project involves widening of the Midland, there is some acquisition from adjoining properties required.

The properties affected by property acquisition have been listed in Table 1, along with the approximate area to be acquired.

**Table 1 Proposed Property Acquisition**

| Property                        | Owner                         | Property Address  | Estimated Area of Acquisition (m <sup>2</sup> ) |
|---------------------------------|-------------------------------|---|---|
| 33523/1                         | Daryl Hazlewood               | The Plains 8299 Midland Hwy, Tunbridge TAS 7120           | 2,510   |
| 136507/5                        | William A & Richard W Webster | "Warringa" 7999 Midland Hwy Woodbury TAS 7120             | 4,252   |
| 113917/3                        | Phillip And Iain Burbury      | Kuranda 388 Glen Morey Rd, Woodbury TAS 7120              | 1,472   |
| 168928/1<br>103934/1<br>47645/1 | Gavin Nicholas                | 109 Sorell Springs Rd Antill Ponds TAS 7120               | 17,690  |
| 168532/1                        | Darryl Hindle                 | "Rockwood Cottage" 7661 Midland Hwy Antill Ponds TAS 7120 | 311   |
| 51052/1<br>51052/2              | Robert D Curtis               | Antill Ponds Rd Antill Ponds TAS 7120                     | 171   |

|   |                                    |  |        |
|---|------------------------------------|--|--------|
| 104898/17<br>104898/16<br>104898/15<br>105392/1<br>135459/1<br>113351/1<br>168611/1<br>168533/1<br>115845/4 | Askin And<br>Catherine<br>Morrison | "St Peters Pass" 6820 Midland<br>Highway Oatlands 7120 | 33,386 |
|---|------------------------------------|--|--------|

## 3.2 Noise

Noise management has been considered in accordance with the Tasmanian State Road Traffic Noise Management Guidelines. Under the Guidelines, this project was assessed as a safety upgrade, and is not an eligible scenario for noise mitigation under the Guidelines.

## 3.3 Flora and Fauna

State Growth commissioned environmental investigations along the Midland Highway between St Peters Pass and Woodbury in 2015 and 2016.

This survey found a number of threatened flora species in the existing roadside environment scattered throughout the Project site are listed on the Tasmanian Threatened Species Protection Act 1995 (TSPA).

- Six state listed (TSPA) flora were recorded in the project site:
- *Austrostipa scabra* (rough speargrass) - rare
- *Scleranthus fasciculatus* (spreading knawel) - vulnerable
- *Vittadinia burbridgeae* (smooth New Holland daisy) - rare
- *Vittadinia cuneata* subsp. *cuneata* (fuzzy New Holland daisy) - rare
- *Vittadinia gracilis* (woolly New Holland daisy) – rare

No flora species currently listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBCA) were found in the project area. Some areas of the lowland *Poa labillardieri* grassland were recorded near the project area. This community is listed as critically endangered under the EPBCA.

A targeted fauna survey for ptunurra brown butterfly (*Oreixenica ptunarra*) was undertaken in early April 2016. This survey recorded one single ptunarra brown butterfly within *Poa* grassland on the top slopes near the Midland Highway at St Peters Pass.

Consistent with the EPBCA assessment guidelines, a significant impact assessment was undertaken for the ptunarra brown butterfly and lowland *Poa labillardieri* grassland. The planned road upgrades was determined to not have a significant impact on either, and thus does not require referral under the EPBCA.

In accordance with Regulation 4 of the Threatened Species Protection Regulations 2006, a permit to take will be sought from DPIPW for the TSPA-listed species prior to construction. The level of impact on this species from the proposed works is relatively minor.

### **3.4 Aboriginal Heritage**

An Aboriginal Heritage Assessment along the Midland Highway between St Peters Pass to south of Tunbridge was undertaken in June 2015, with the survey area extending out 25m from the road centre line. As part of this assessment, a desktop review of the Aboriginal Heritage Register (AHR) was undertaken to determine the extent of sites in proximity to the highway prior to the field assessment.

The search of the Register found 48 registered Aboriginal sites located within a 5km radius of the study area. These sites are largely classified as artefact scatters (23 sites) or individual artefacts (17 sites). The eight remaining sites are classified as stone quarries. The majority of the sites are located outside the study area (42 sites) while the remaining six sites may be located within or in immediate vicinity of the road corridor study area.

A total of nine Aboriginal sites were identified in the field assessment, with four of these sites recorded as artefact scatters. The largest of these scatters (labelled AH13074) was on a discrete rise on the southern banks of the Currajong Rivulet, and located 10 to 20m west of the Midland Highway. This site will be avoided by the works. The other 5 recorded sites are classified as isolated artefacts, with limited potential to contain additional artefact deposits.

Based on the latest design footprint, a number of artefacts are anticipated to be impacted by the works, which are in the following locations:

- Ch. 15860 (west)
- Ch. 15960 (west)
- Ch. 16630 (west)
- Ch. 16830 (west)
- Ch. 18940 (west)

The Department of State Growth have applied for a “permit to interfere” for the artefacts listed above.

### **3.5 Historic Heritage**

A Historic Heritage Assessment incorporating a desktop review and field survey conducted in November 2015 was undertaken to record and assess potential heritage values within the study area and surrounds. The survey extended from St Peters Pass Rest Area along the highway to south of Tunbridge. A number of historical features were observed during the survey including Pioneer Avenue trees, historic plantings and built heritage, as summarised below.

A key aim for the design was to avoid any impact on the Kenmore Arms (listed on the Tasmanian Heritage Register), located on the eastern side of the highway. The Kenmore Arms is very close to the existing highway, and was identified as a major constraint when reviewing options for improved highway alignment. It was determined that works should avoid any impact on the building and the associated sandstone wall along the property frontage.

Due to the significance of the heritage matters on the eastern side (including the Kenmore Arms), all widening to accommodate the additional road width is on the western side of the existing Highway. During construction, the construction contractor will be required to ensure that works do not damage the Kenmore Arms building and other parts of the heritage site.

### **3.6 Landscape and Visual Impacts**

The existing roadside landscape character includes pastoral grazing land, native forest, and exotic tree plantings throughout the site, with views to the hills beyond. The native vegetation consists of scattered trees with native grass and pasture grass understorey. The exotic plantings form part of the historic Pioneer Avenue plantings between Launceston and Hobart and include large trees, hawthorn hedgerows and topiary.

The proposed road widening will impact the existing plantings, particularly along the western side of the highway where the widening will predominantly occur.

During the design process, a key consideration was impact on the hedgerows each side of the highway. The design aimed to avoid impact, where possible, and replaced existing hedges, if necessary. State Growth considered the footprint of both 1+1 and 2+1 alignments on adjacent heritage plantings on the western side of the Highway, and found that the impact on plantings between the two options was very similar. This was due to the close proximity of existing plantings to the highway.

To mitigate the removal of existing plantings, hedgerows on the western side of the highway are to be replaced where they are impacted by the works. State Growth has undertaken a comprehensive landscaping assessment and developed plans to retain the existing landscape character throughout the project area.

The key landscape design principles for the project are:

- Establish selected exotic specimen trees to:
  - provide in-fill planting to complete existing gaps along the highway;
  - highlight the location of the former Midland Highway route where it is visible from the current highway alignment;
  - highlight existing farm tracks where they are visible from the highway;
  - maximise the visual and physical values of the trees close to the highway; and
  - benefit from moisture levels along minor drainage lines.

- Locate selected specimen trees generally along the contour on land adjoining the Midland Highway to highlight the topography and establish trees throughout the broader pastoral landscape in line with the original planting philosophy of using exotic trees to 'beautify the countryside' and using the native background to frame the newer plantings.
- Plant replacement and in-fill Hawthorn hedges where required.
- Removal of Poplar suckers.

To provide effective and accurate presentation of the proposed design, a series of photo-realistic images were created from still photos of the site at critical locations combined with the design road model. These photos were presented at the public information day and have been included in the Development Application report, along with the concept landscaping plan.

### **3.7 Stakeholder Engagement**

State Growth has undertaken significant engagement with all affected stakeholders. State Growth representatives have met with landowners adjacent to this section of the Midland Highway and explained the project objectives and the impacts on their properties. Landowners were provided the opportunity to explain current farm and business operations and communicate definite and potential future operations. Preliminary design drawings were presented to landowners to assist discussions and describe the impacts on roadside vegetation and to existing accesses due to the need to minimise gaps in the central flexible safety barrier in line with the Departments policy for the Midland Highway.

A public display of the design plans was then held on 09 February 2017 at the Oatlands Community Hall in Oatlands. The community was informed through a public notice advertising this display in both the Mercury and Examiner newspapers on Saturday 4 February 2017 and Wednesday 8 February 2017 which included the address for the State Growth road project webpage where the plans can be viewed online. Further to this posters explaining the project and advertising the public display was placed in high profile places in Oatlands. These poster includes the webpage address and the 1800 phone number to allow the public to contact the Department throughout the life of the project.

Directly affected landowners were informed of the project through introductory letters which were then followed up with individual meetings with all adjacent landowners beginning in July 2016 to discuss the project. Design plans were brought to these meetings and Department representatives explained these along with the Midland Highway strategy and associated policies and guidelines to achieve this strategy.

It has been explained to stakeholders that the changes to accesses (and associated restrictions to right turn movements) is in accordance with the Midland Highway Upgrade Strategy and that dedicated facilities will be provided to allow for turn movements at intervals of 3-5km.

Through these initial stakeholder discussions the landowner at Woodbury house expressed concerns regarding the changed access to their property. Addressing these concerns the Department consulted with the landowners on multiple occasions establishing the access use, traffic movements and future planned activities which would change the property.

The Department then undertook a detailed option analysis and investigation to address these concerns. This resulted in providing a turning facilities at a closer spacing to service properties using the affected access.

This amended design accords with the Austroad Guide to Road Design criteria for inclusion of turn treatments and State Growth Design Guidelines for Category 1 Roads. The rationale for not providing a dedicated right turn lane at this location is due to low traffic volumes (even when considering future changes to properties), the provision of public turning facilities in close proximity and the need to retain important overtaking opportunities along with meet safety requirements relating to limiting cross highway movements. The presented design is thus in accordance with the Midland Highway Strategy and the Departments policies and provides the safest outcome for all road users.

### 3.8 Development Approvals

The works will require a permit under the *Land Use Planning and Approvals Act 1993*. This permit must be issued by the relevant planning authority, in this case Southern Midlands Council. As the works are consider discretionary due to not meet the exemption for minor upgrade of road infrastructure due to impacts to threatened vegetation communities by the works they require a permit under the *Southern Midlands Interim Planning Scheme 2015*.

The Department has prepared a development application to demonstrate compliance with the relevant sections of the Southern Midlands Interim Planning Scheme and was submitted to Council in February 2017.

On Friday, 12 May 2017, a special meeting was held by the Southern Midlands Council to consider this Development Application. The application was refused on the following grounds:

1. *Access to Woodbury – lack of break in flexible safety barrier was considered unfair treatment, traffic volumes were discussed as being considered substantial enough to warrant it, lack of consultation, and inconsistency of treatment for other accesses along Highway*
2. *Stormwater – concerns that flooding and drainage issues for Woodbury were not resolved in Hydraulics Assessment.*

The Department is awaiting formal notification of refusal and intends to appeal this decision.



## 4 Project Program and Costs

### 4.1 Project Program

The critical path for the Project is based on the delivery of detailed design and tender documentation in June 2017. Meeting these critical dates will ensure that construction works can begin in the 2016 / 2017 summer construction season. The key dates for the Project are shown in Table 2 below.

Table 2 – Critical Project Tasks and Timing

| Project Task   | Completion Date / Timing | Critical Path? |
|--|--------------------------|----------------|
| Submission of Project Proposal Report Development and Delivery Phase for Federal Government approval | January 2017             | No             |
| Development application submission   | February 2017            | Yes            |
| Parliamentary Standing Committee of Public Works hearing   | 2 June 2017              | No             |
| Planning appeal process  | May-August 2017          | Yes            |
| Tender documents delivered   | May 2017                 | Yes            |
| Advertisement of tender  | September 2017*          | Yes            |
| Award of contract  | October 2017*            | Yes            |
| Commencement of works  | November 2017*           | Yes            |
| Practical completion of works  | August 2019              | Yes            |
| Project close out  | August 2020              | No             |

\*= Above schedule is dependent on the outcome of the planning appeal process.

## 4.2 Costs

A detailed estimate of the expected out-turn costs has been produced for the project, including probabilistic methods using a Monte Carlo analysis of inherent and contingent risk factors that have been identified by the wider project team, as outlined in State Growth's Best Practice Cost Estimation Guidelines.

An extract of this has been included in the Table 2 and additional information is provided in Appendix B.

**Table 2 - Cost Estimate Summary**

| Cost Item   | Estimated Value     |
|---|---------------------|
| Development Phase costs (including design, application fees and project management)   | \$300,830           |
| Property Acquisition <sup>1</sup>   | \$64,280            |
| Delivery Phase costs (including contract management, project management, and insurance costs)   | \$2,743,380         |
| Estimated construction contract costs, including: <ul style="list-style-type: none"> <li>• Earthworks</li> <li>• Drainage</li> <li>• Pavements</li> <li>• Bituminous surfacing</li> <li>• Bridge structures</li> <li>• Traffic facilities</li> <li>• Landscaping</li> </ul> | \$18,922,739        |
| State Growth supplied construction costs, including: <ul style="list-style-type: none"> <li>• Services relocations</li> <li>• Street lighting</li> <li>• Reseal of pavements</li> </ul>   | \$247,000           |
| Expected contingency on base estimate outlined above (P50) plus Escalation  | \$1,665,850         |
| <i>Expected project out-turn cost (P50)</i>   | <i>\$24,840,000</i> |

The above is based on the contingency required to provide a P50<sup>2</sup> level of confidence in the cost estimate. The equivalent project out-turn cost for a P90 level of confidence is \$27,960,000.

<sup>1</sup> Estimated value, final value subject to Valuer General's determinations.

<sup>2</sup> P50 refers to the value at which there is a 50% chance of the project coming in above this cost and a 50% chance of it coming in below this cost.

## 5 Conclusion

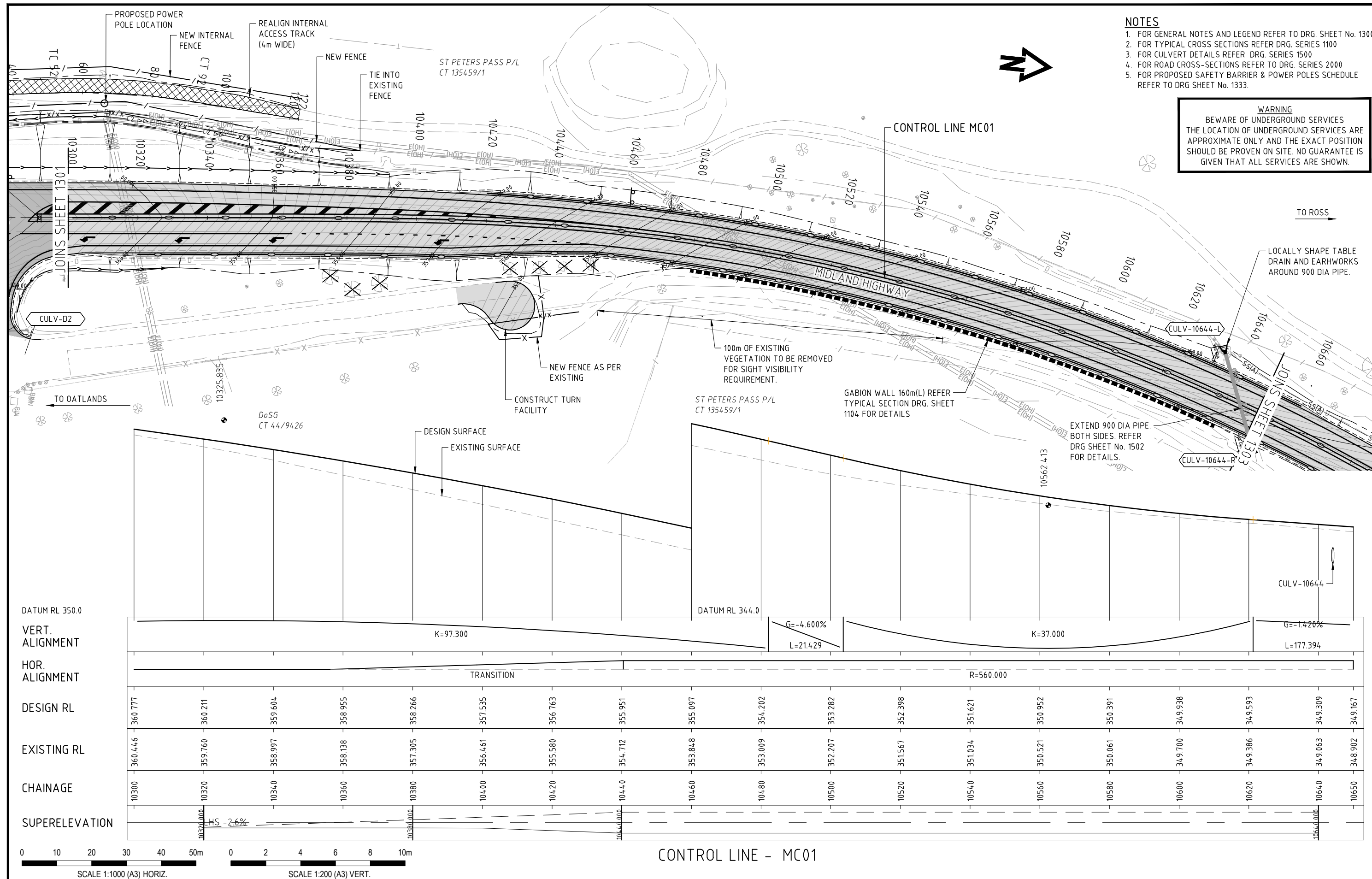
The design for the proposed St Peters Pass to south of Tunbridge upgrade on the Midland Highway has been carried out in accordance with the appropriate design standards and guidelines. The requirements of abutting landowners, Southern Midlands Council and public utility owners have been incorporated.

Once complete, the works will provide improved safety by providing increased sight distance, a central wire rope safety barrier, a wider pavement with sealed shoulders and will provide safer property accesses. The completed works will support transport efficiency objectives on the National Land Transport Network by providing improved overtaking opportunities.

It is recommended that the project be approved.

# Appendix A. Drawings



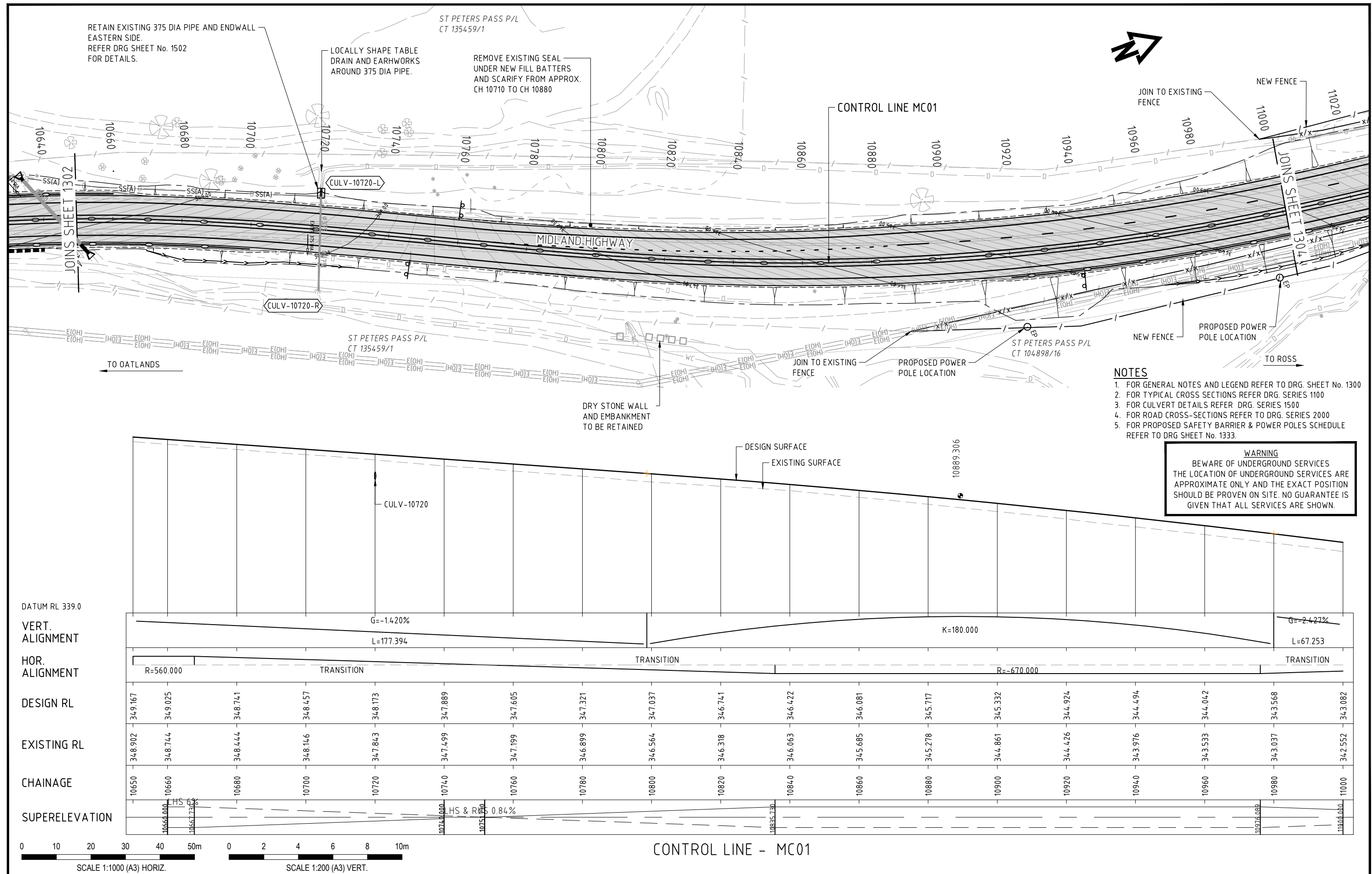




- NOTES
1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
  2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
  3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
  4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
  5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG. SHEET No. 1333.

WARNING  
BEWARE OF UNDERGROUND SERVICES  
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

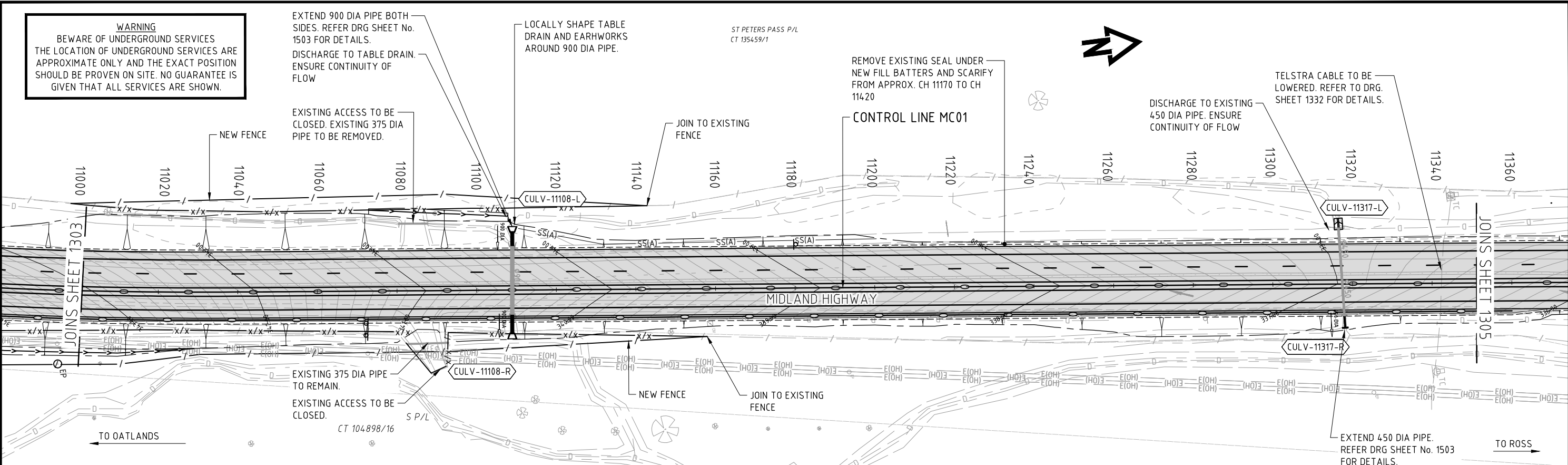
|             |   |          |  |                                |  |   |  |   |  |  |  |                                   |                               |                    |                       |
|-------------|---|----------|--|--------------------------------|--|---|--|---|--|--|--|-----------------------------------|-------------------------------|--------------------|-----------------------|
|             |   |          |  | SCALES<br>AS SHOWN             |  | <div>JACOBS</div> <div>Tasmanian Government</div> |  | Department of State Growth  |  |  |  | CONTRACT No.                      | DRAWING                       | PRINTED DATE       | SHEET No.<br><br>1302 |
|             |   |          |  |                                |  |   |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 24.1 |  |  |  | TBC                               | IS163600-0009-CR-DRG-1301.dwg | 24-Apr-17, 5:31 PM |                       |
|             |   |          |  |                                |  |   |  |   |  |  |  | REGISTRATION NUMBER<br>A0087.000X |                               |                    |                       |
| P1          | ISSUED FOR REVIEW   | RS       |  | 24/04/2017                     |  | DESIGNED B.ANNAKIN / M.YOSHIDA                    |  | REVISION P  |  |  |  |                                   |                               |                    |                       |
| No.         | Amendment Description   | Initials |  | Date                           |  | REVIEWED R. SYKES                                 |  |   |  |  |  |                                   |                               |                    |                       |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |          |  | Co-ordinate System: GDA/MGA 55 |  | Height Datum: AHD 83                              |  |   |  |  |  |                                   |                               |                    |                       |



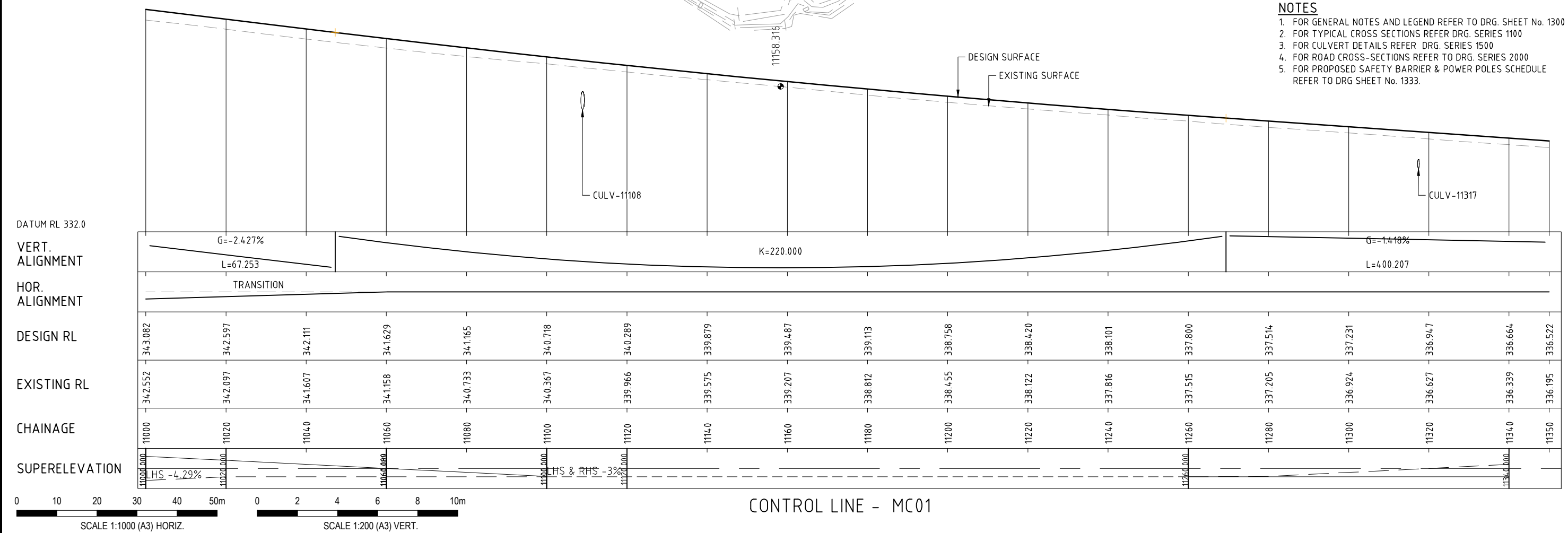


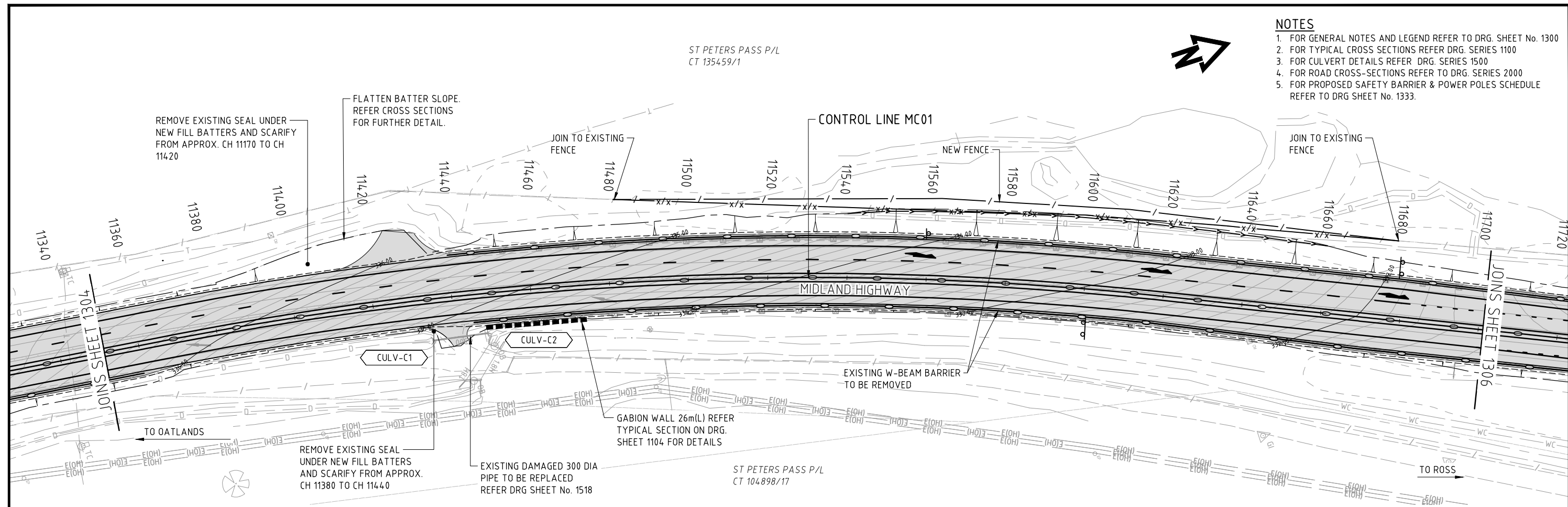
|             |   |    |            |                    |                                |   |                      |   |  |                            |  |                                   |                     |  |                                    |                   |  |
|-------------|---|----|------------|--------------------|--------------------------------|---|----------------------|---|--|----------------------------|--|-----------------------------------|---------------------|--|------------------------------------|-------------------|--|
|             |   |    |            | SCALES<br>AS SHOWN |                                |  |                      |  |  | Department of State Growth |  |                                   | CONTRACT No.<br>TBC | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:31 PM | SHEET No.<br>1303 |  |
|             |   |    |            |                    |                                | DESIGNED : B.ANNAKIN / M.YOSHIDA<br><br>REVIEWED : R. SYKES                           |                      |   | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 3 |                            |  | REGISTRATION NUMBER<br>A0087.000X |                     |  | REVISION P1                        |                   |  |
|             |   |    |            |                    |                                |   |                      |   |  |                            |  |                                   |                     |  |                                    |                   |  |
| P1          | ISSUED FOR REVIEW   | RS | 24/04/2017 |                    |                                |   |                      |   |  |                            |  |                                   |                     |  |                                    |                   |  |
| No.         | Amendment Description   |    | Initials   | Date               |                                |   |                      |   |  |                            |  |                                   |                     |  |                                    |                   |  |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |    |            |                    | Co-ordinate System: GDA/MGA 55 |   | Height Datum: AHD 83 |   |  |                            |  |                                   |                     |  |                                    |                   |  |





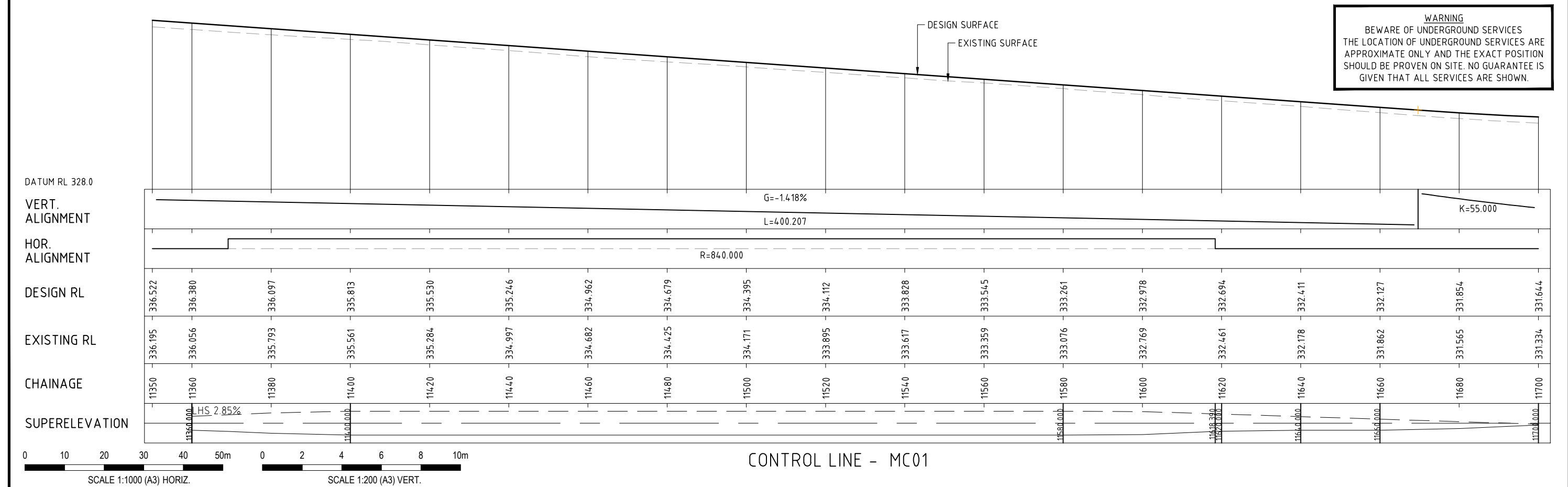
- NOTES**
1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
  2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
  3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
  4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
  5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.



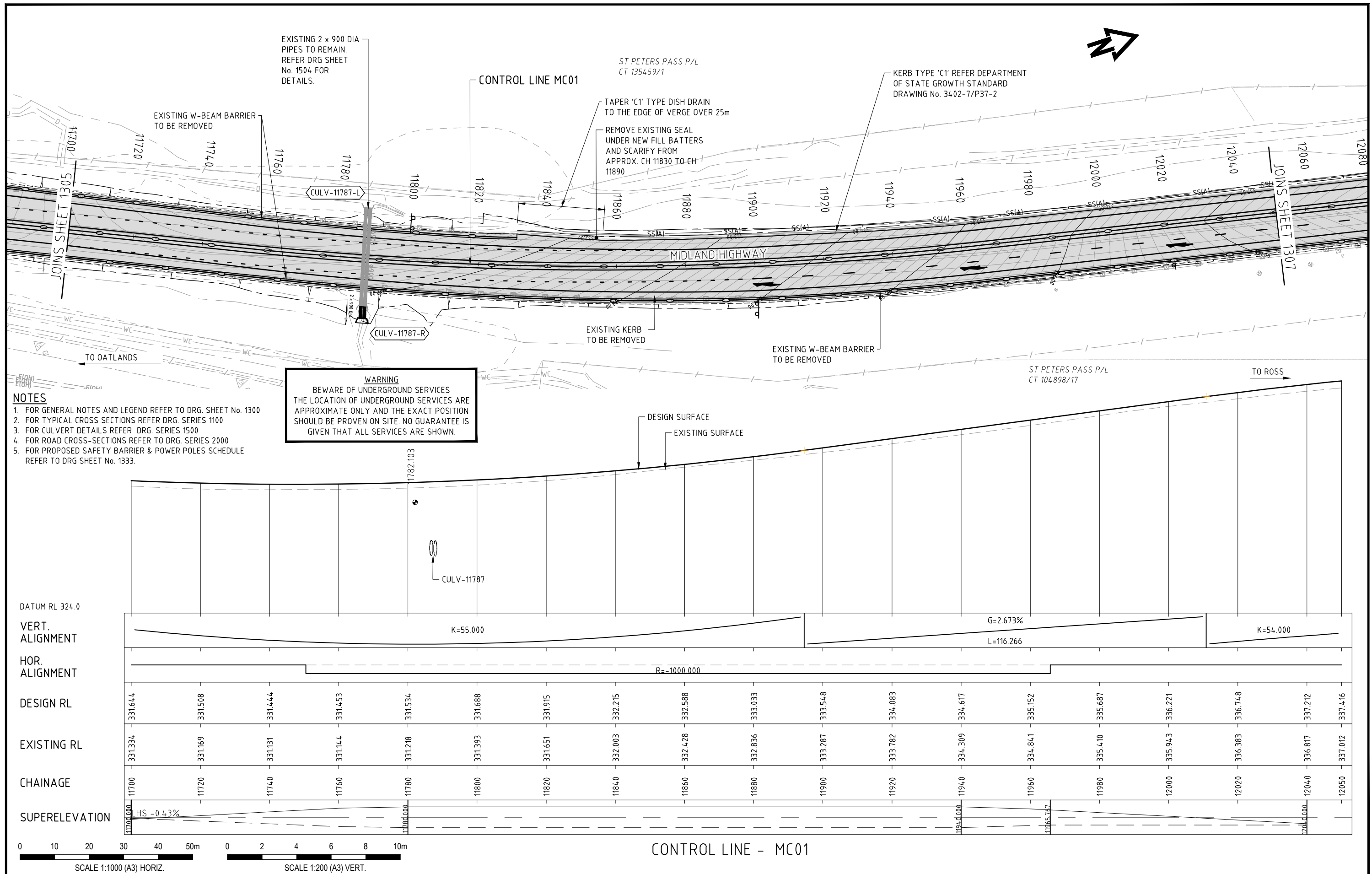



# NOTES

1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

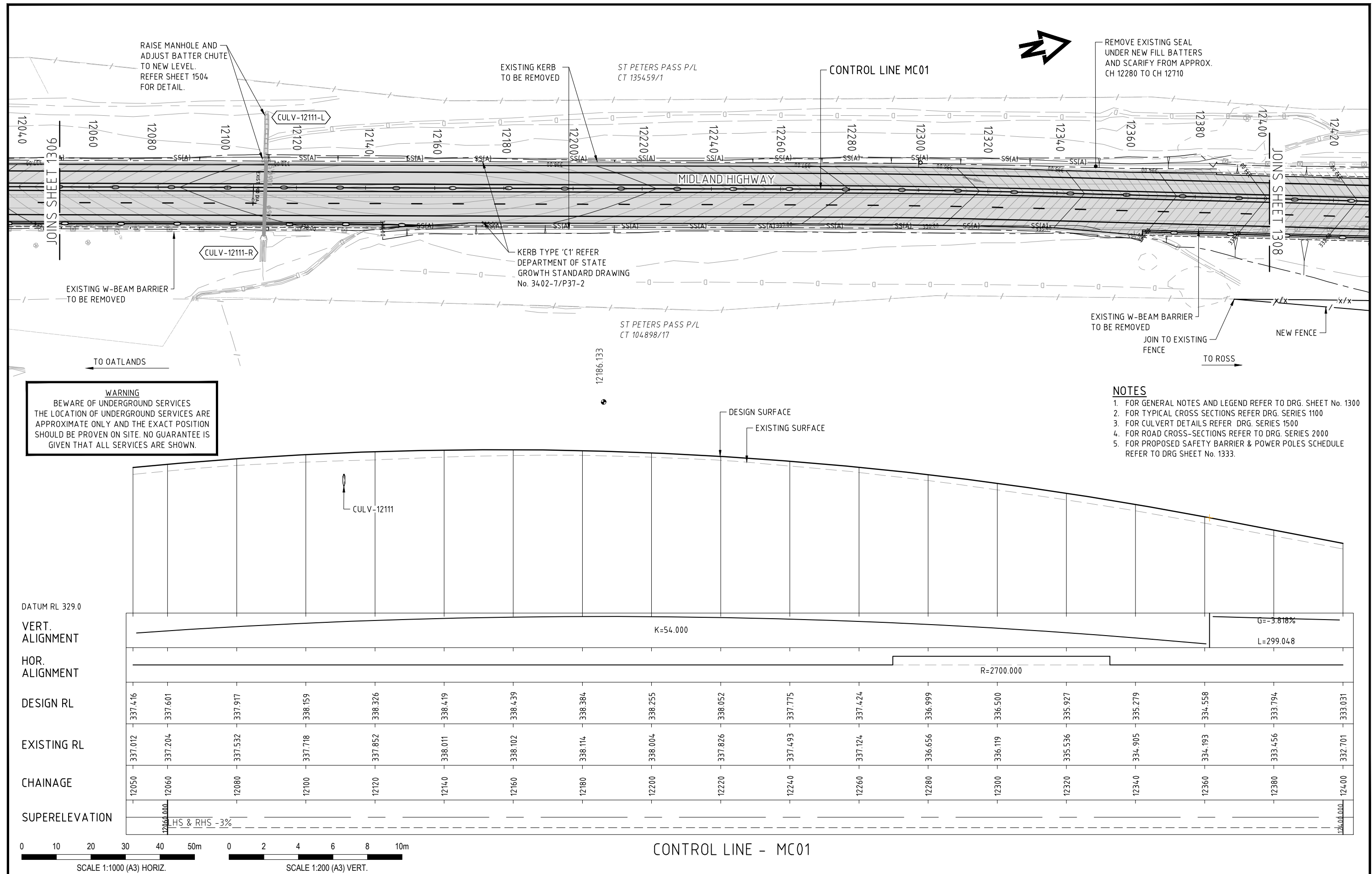




|  |  |  |  |                    |  |  |  |
|--|--|--|--|--------------------|--|--|--|
|  |  |  |  | SCALES<br>AS SHOWN |  | <div>JACOBS</div> <div>1000100</div> |  |
|--|--|--|--|--------------------|--|--|--|

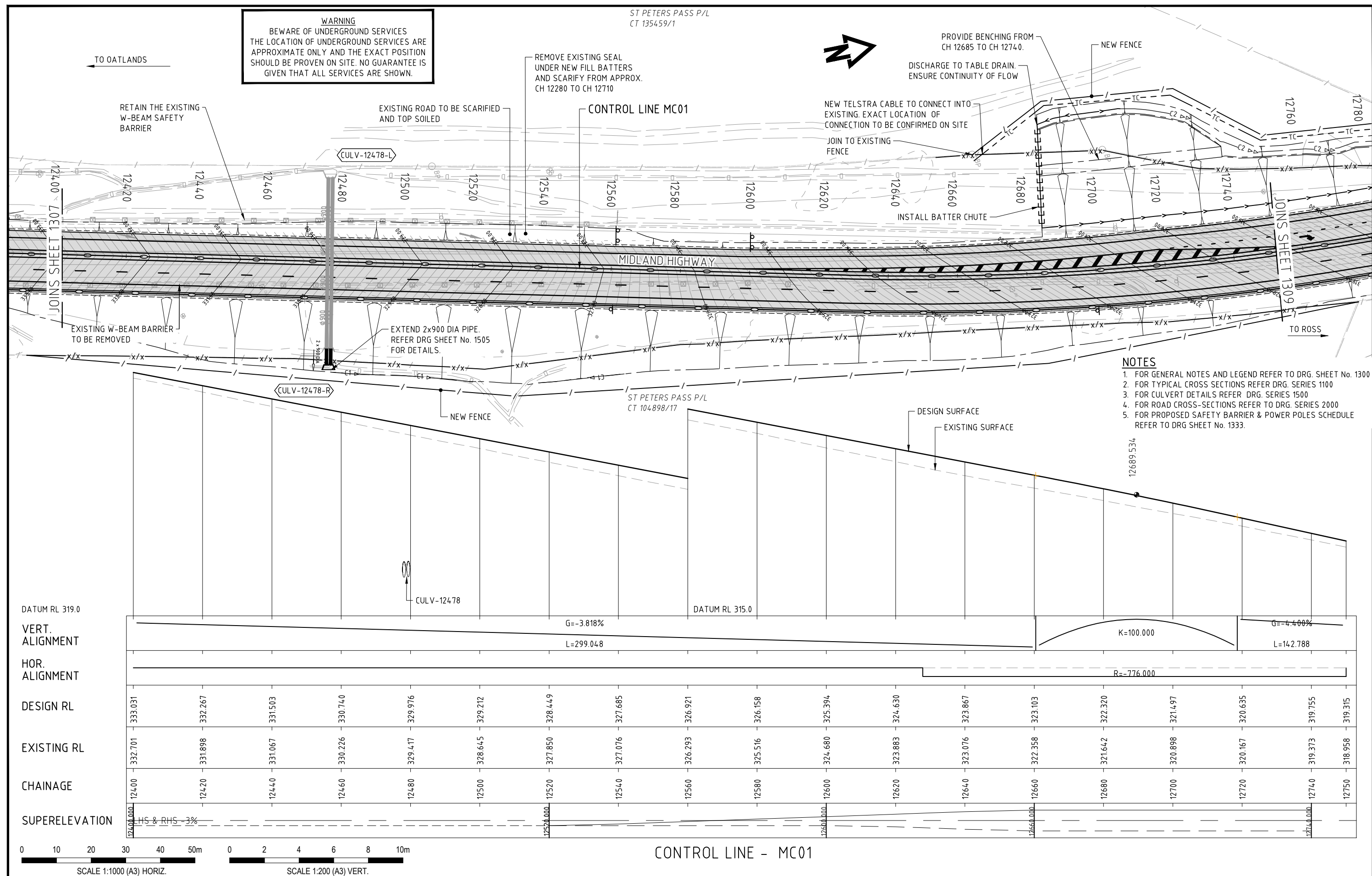


|  |  |  |  |                    |  |  |
|--|--|--|--|--------------------|--|--|
|  |  |  |  | SCALES<br>AS SHOWN |  | <br><small>JACOBS<br/>1000100</small> |
|--|--|--|--|--------------------|--|--|





|                      |  |   |  |            |  |                                |  |   |  |  |  |                            |  |  |  |                     |  |  |  |                                    |  |                       |  |
|----------------------|--|---|--|------------|--|--------------------------------|--|---|--|--|--|----------------------------|--|--|--|---------------------|--|--|--|------------------------------------|--|-----------------------|--|
|                      |  |   |  |            |  | SCALES<br>AS SHOWN             |  |  |  |   |  | Department of State Growth |  |  |  | CONTRACT No.<br>TBC |  | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg |  | PRINTED DATE<br>24-Apr-17, 5:31 PM |  | SHEET No.<br><br>1307 |  |
|                      |  |   |  |            |  |                                |  | DESIGNED : B.ANNAKIN / M.YOSHIDA<br><br>REVIEWED : R. SYKES                           |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 7 |  |                            |  | REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                     |  |  |  | REVISION P1                        |  |                       |  |
|                      |  |   |  |            |  |                                |  |   |  |  |  |                            |  |  |  |                     |  |  |  |                                    |  |                       |  |
| P1 ISSUED FOR REVIEW |  | RS  |  | 24/04/2017 |  |                                |  |   |  |  |  |                            |  |  |  |                     |  |  |  |                                    |  |                       |  |
| No.                  |  | Amendment Description   |  | Initials   |  | Date                           |  |   |  |  |  |                            |  |  |  |                     |  |  |  |                                    |  |                       |  |
| A3 original          |  | This sheet may be prepared using colour and may be incomplete if copied |  |            |  | Co-ordinate System: GDA/MGA 55 |  | Height Datum: AHD 83  |  |  |  |                            |  |  |  |                     |  |  |  |                                    |  |                       |  |




#### NOTES

1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

|             |   |          |            |
|-------------|---|----------|------------|
|             |   |          |            |
|             |   |          |            |
|             |   |          |            |
| P1          | ISSUED FOR REVIEW   | RS       | 24/04/2017 |
| No.         | Amendment Description   | Initials | Date       |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |          |            |

|                     |            |
|---------------------|------------|
| SCALES<br>AS SHOWN  |            |
| Co-ordinate System: | GDA/MGA 55 |
| Height Datum:       | AHD 83     |

|               |   |
|---------------|---|
| <b>JACOBS</b> |  |
| DESIGNED      | B. ANNAKIN / M. YOSHIDA   |
| REVIEWED      | R. SYKES  |

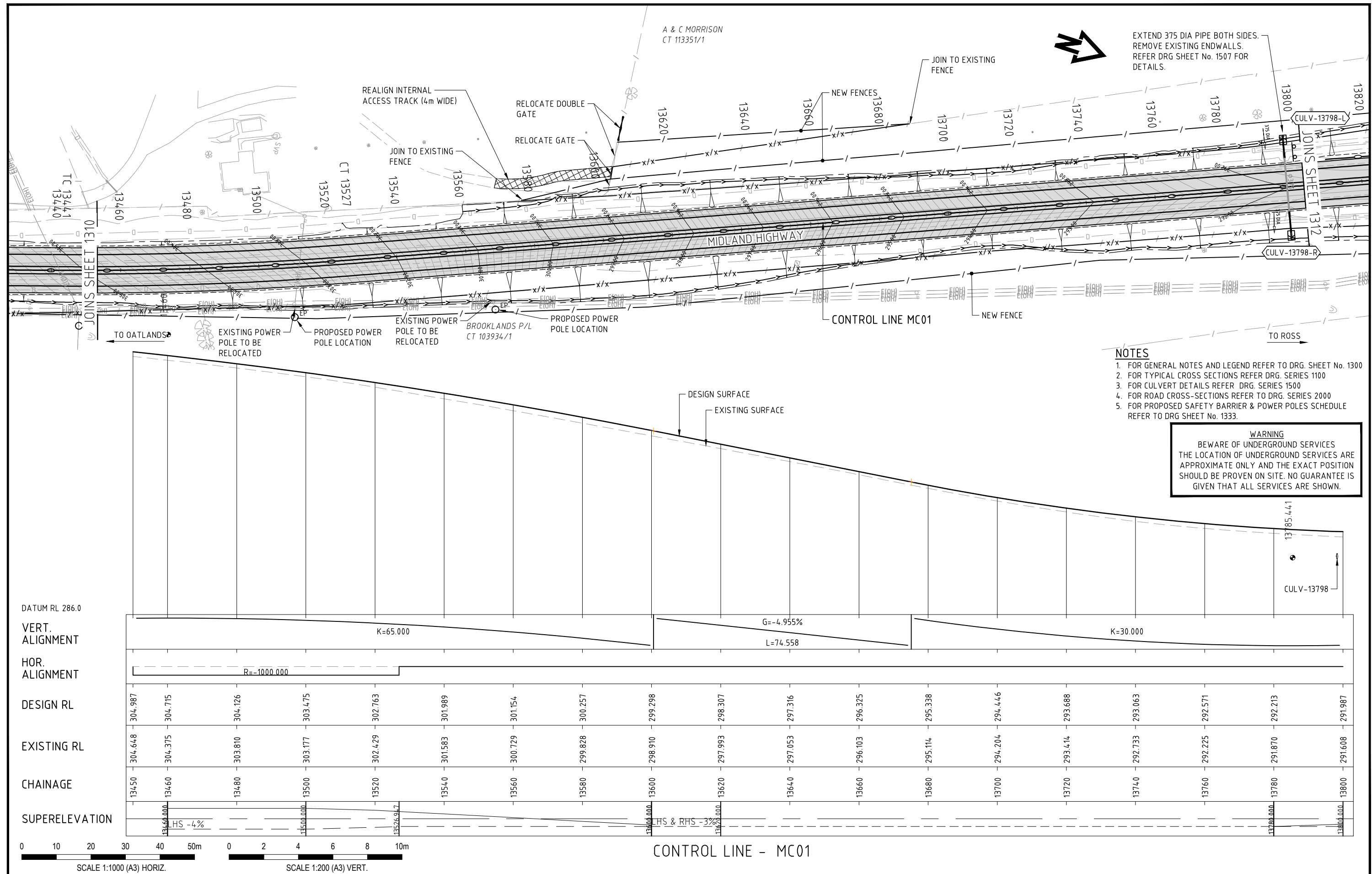
|                                      |
|--------------------------------------|
| Department of State Growth           |
| MIDLAND HIGHWAY (A0087)              |
| ST PETERS PASS TO SOUTH OF TUNBRIDGE |
| ROADWORKS - GENERAL ARRANGEMENT      |
| PLAN AND LONGITUDINAL SECTION        |
| SHEET 8                              |



|  |  |                                    |                          |
|--|--|------------------------------------|--------------------------|
| CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:31 PM | SHEET No.<br><b>1308</b> |
| REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                                    | REVISION P1              |



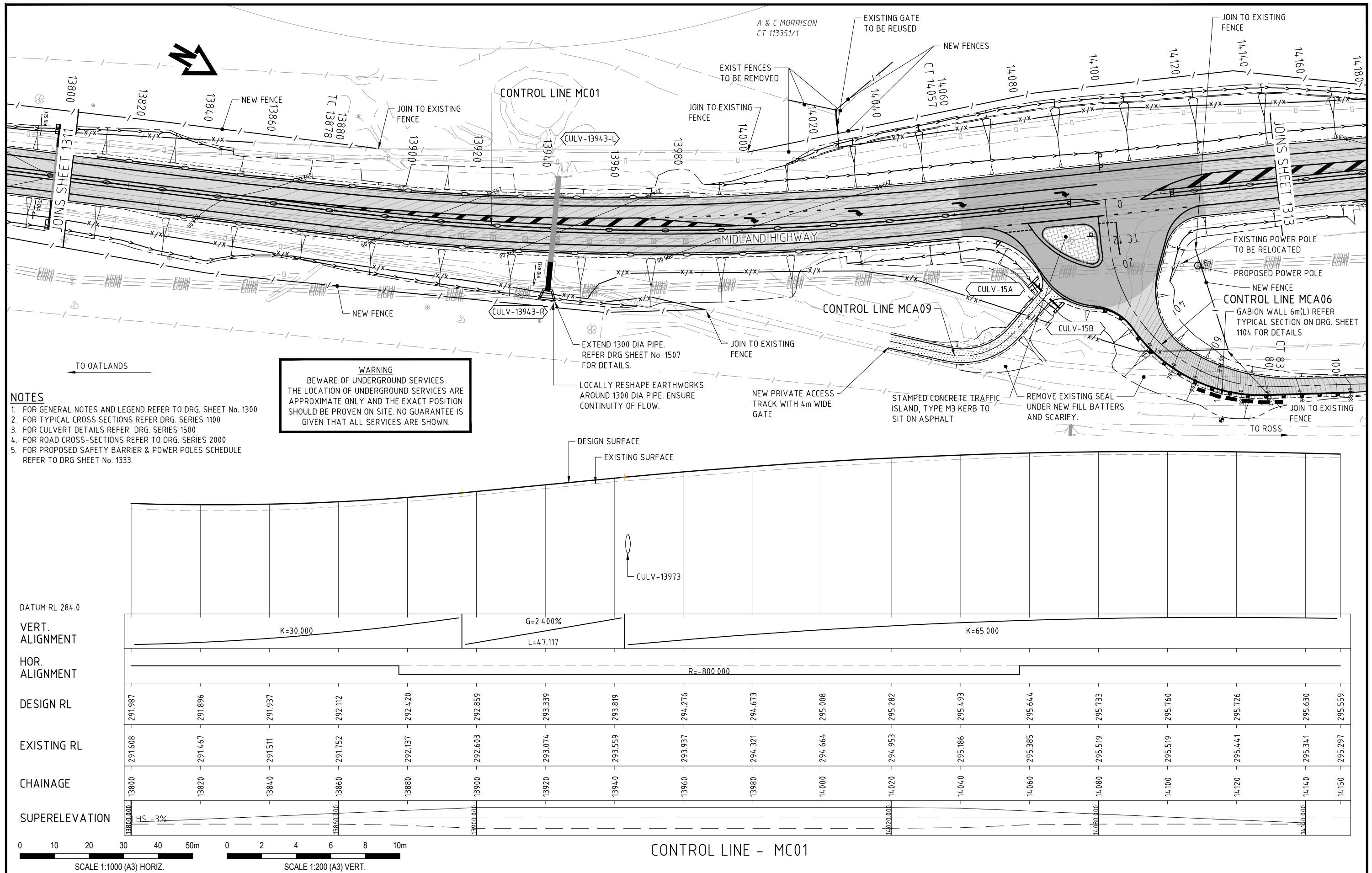






|             |   |  |                                |  |                      |                    |                                |  |   |                            |             |  |  |              |                               |                    |           |
|-------------|---|--|--------------------------------|--|----------------------|--------------------|--------------------------------|--|---|----------------------------|-------------|--|--|--------------|-------------------------------|--------------------|-----------|
|             |   |  |                                |  |                      | SCALES<br>AS SHOWN |                                | <div><div><p>JACOBS<br/>Engineering<br/>Architecture<br/>Interiors<br/>Sustainability</p><p>100 South Hobart Road<br/>Hobart TAS 7000<br/>Tel: +61 8 6500 0000<br/>Fax: +61 8 6500 0001<br/>www.jacobs.com.au</p></div><div><div><p>Tasmanian<br/>Government</p></div></div></div> |   | Department of State Growth |             |  |  | CONTRACT No. | DRAWING                       | PRINTED DATE       | SHEET No. |
|             |   |  |                                |  |                      |                    |                                |  |   |                            |             |  |  | TBC          | IS163600-0009-CR-DRG-1301.dwg | 24-Apr-17, 5:32 PM | 1311      |
| P1          | ISSUED FOR REVIEW   |  | RS                             |  | 24/04/2017           |                    |                                |  |   | REGISTRATION NUMBER        |             |  |  | 1311         |                               |                    |           |
| No.         | Amendment Description   |  | Initials                       |  | Date                 |                    | A0087.000X                     |  |   |                            | REVISION P1 |  |  |              |                               |                    |           |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |  | Co-ordinate System: GDA/MGA 55 |  | Height Datum: AHD 83 |                    | DESIGNED B.ANNAKIN / M.YOSHIDA |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 11 |                            |             |  |  |              |                               |                    |           |
|             |   |  |                                |  |                      | REVIEWED R. SYKES  |                                |  |   |                            |             |  |  |              |                               |                    |           |





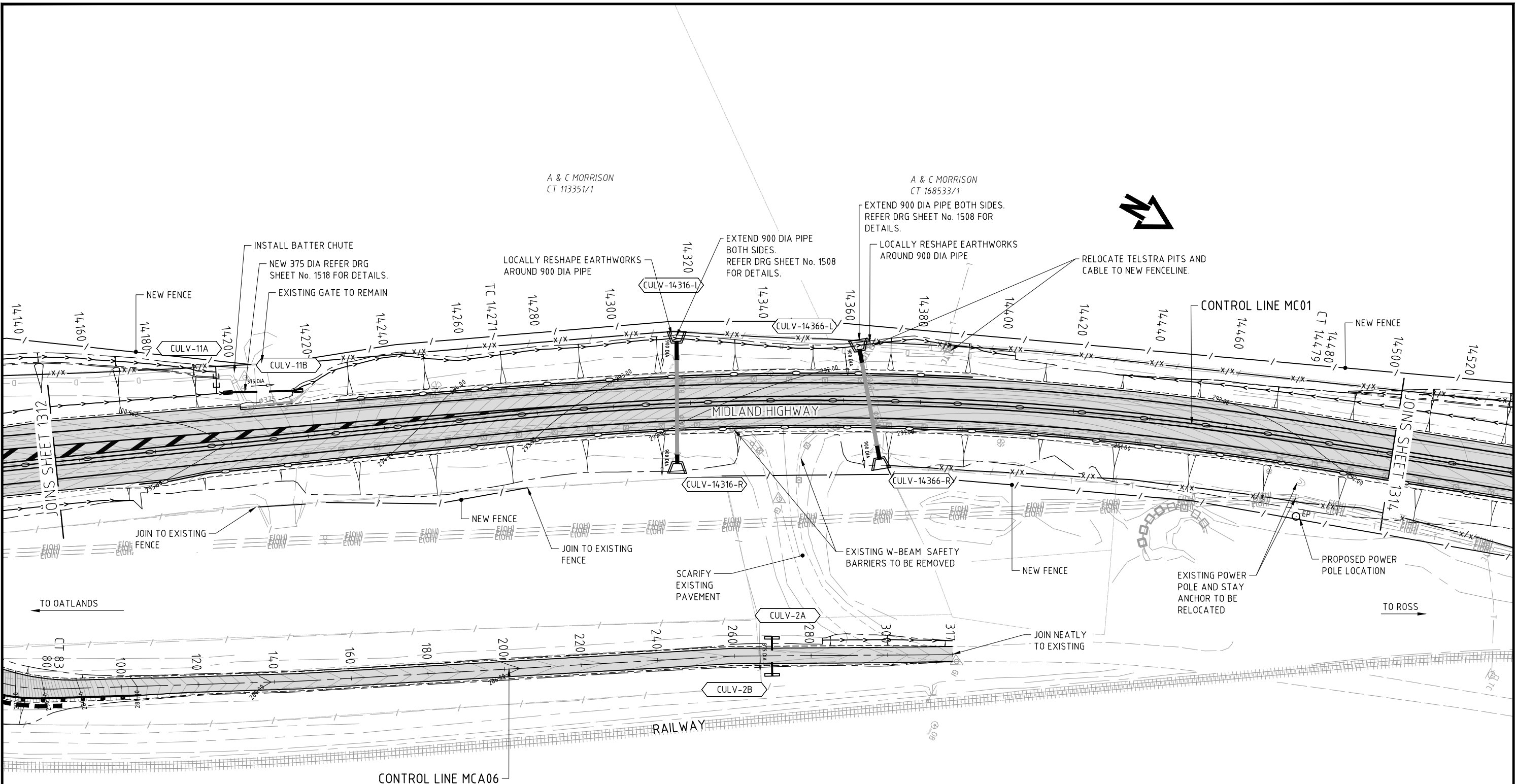


- NOTES**
1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
  2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
  3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
  4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
  5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

|   |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| DATUM RL 284.0  |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| VERT. ALIGNMENT                                       | <div><div>K=30.000</div><div>G=2.400%<br/>L=47.117</div><div>K=65.000</div></div> |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| HOR. ALIGNMENT  | <div><div></div><div>R=-800.000</div><div></div></div>                            |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| DESIGN RL   | 291.987   | 291.896 | 291.937 | 292.112 | 292.420 | 292.859 | 293.339 | 293.819 | 294.276 | 294.673 | 295.008 | 295.282 | 295.493 | 295.644 | 295.733 |
| EXISTING RL   | 291.608   | 291.467 | 291.511 | 291.752 | 292.137 | 292.603 | 293.074 | 293.559 | 293.937 | 294.321 | 294.664 | 294.953 | 295.186 | 295.385 | 295.519 |
| CHAINAGE  | 13800   | 13820   | 13840   | 13860   | 13880   | 13900   | 13920   | 13940   | 13960   | 13980   | 14000   | 14020   | 14040   | 14060   | 14080   |
| SUPERELEVATION  | HS -3%  |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| <div><div>01020304050m</div><div>0246810m</div></div> |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| SCALE 1:1000 (A3) HORIZ.                              |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| SCALE 1:200 (A3) VERT.                                |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| CONTROL LINE - MC01                                   |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |

|   |  |  |  |                                |  |   |  |   |  |  |  |                                    |                          |
|---|--|--|--|--------------------------------|--|---|--|---|--|--|--|------------------------------------|--------------------------|
|   |  |  |  | SCALES AS SHOWN                |  |   |  | Department of State Growth  |  | CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:32 PM | SHEET No.<br><b>1312</b> |
|   |  |  |  |                                |  |   |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 12 |  | REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                                    | REVISION P1              |
| P1 ISSUED FOR REVIEW  |  |  |  | RS 24/04/2017                  |  | DESIGNED B.ANNAKIN / M.YOSHIDA  |  |   |  |  |  |                                    |                          |
| No. Amendment Description   |  |  |  | Initials Date                  |  | REVIEWED R. SYKES   |  |   |  |  |  |                                    |                          |
| A3 original This sheet may be prepared using colour and may be incomplete if copied |  |  |  | Co-ordinate System: GDA/MGA 55 |  | Height Datum: AHD 83  |  |   |  |  |  |                                    |                          |



0 10 20 30 40 50m  
SCALE 1:1000 (A3)

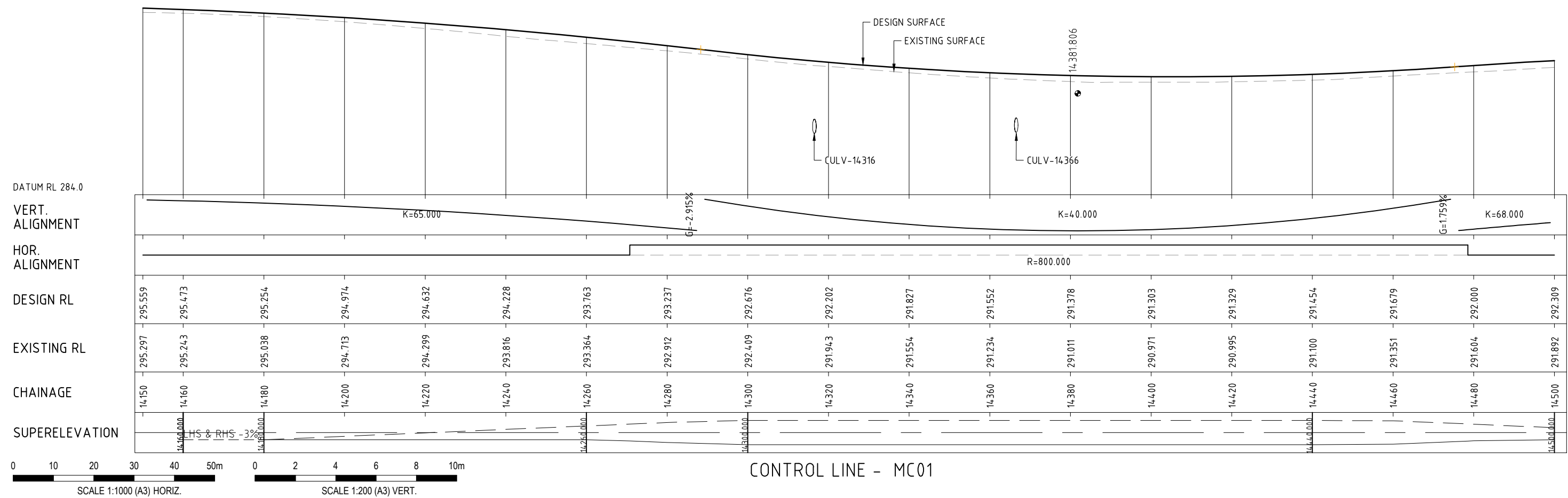
BROOKLANDS P/L  
CT 232311/1

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
THE LOCATION OF UNDERGROUND SERVICES ARE  
APPROXIMATE ONLY AND THE EXACT POSITION  
SHOULD BE PROVEN ON SITE. NO GUARANTEE IS  
GIVEN THAT ALL SERVICES ARE SHOWN.

**NOTES**  
1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300  
2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100  
3. FOR CULVERT DETAILS REFER DRG. SERIES 1500  
4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000  
5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE  
REFER TO DRG SHEET No. 1333.

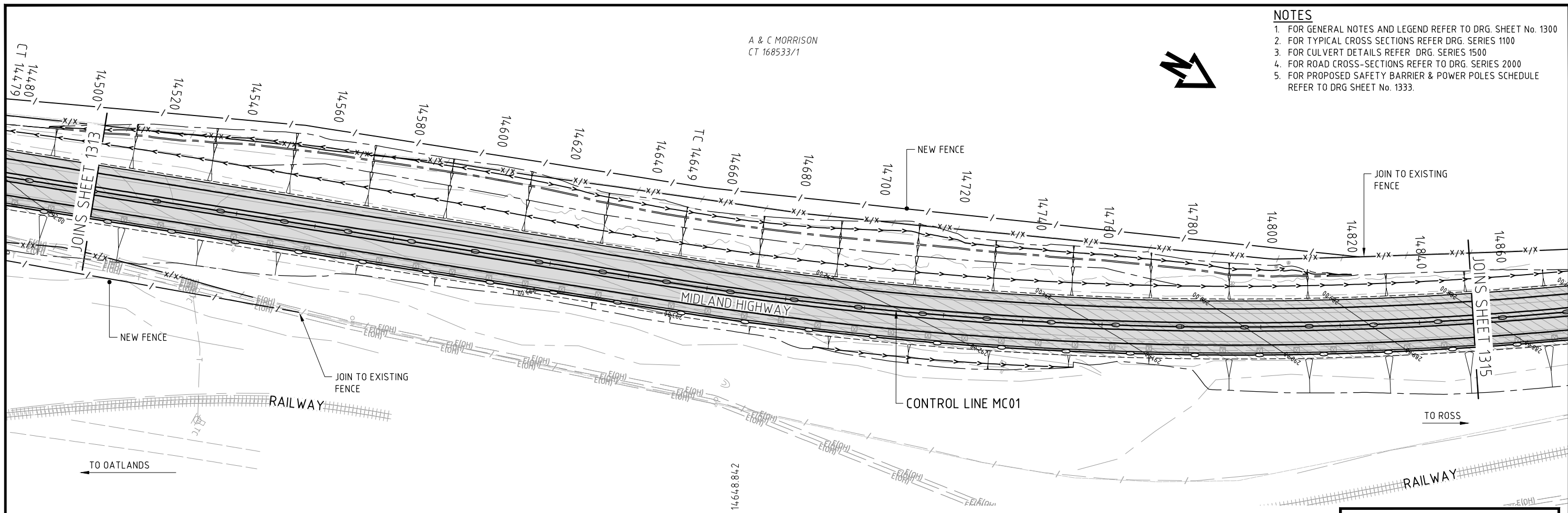
|   |  |  |  |                                  |  |                      |  |   |  |                                   |  |                                    |                   |
|---|--|--|--|----------------------------------|--|----------------------|--|---|--|-----------------------------------|--|------------------------------------|-------------------|
| SCALES<br>AS SHOWN  |  |  |  | JACOBS                           |  | Tasmanian Government |  | Department of State Growth  |  | CONTRACT No.<br>TBC               | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:32 PM | SHEET No.<br>1313 |
| P1 ISSUED FOR REVIEW  |  |  |  | DESIGNED B. ANNAKIN / M. YOSHIDA |  | REVIEWED R. SYKES    |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 13 |  | REGISTRATION NUMBER<br>A0087.000X |  | REVISION P1                        |                   |
| No. Amendment Description   |  |  |  | Co-ordinate System: GDA/MGA 55   |  | Height Datum: AHD 83 |  |   |  |                                   |  |                                    |                   |
| A3 original This sheet may be prepared using colour and may be incomplete if copied |  |  |  |                                  |  |                      |  |   |  |                                   |  |                                    |                   |
| P1 ISSUED FOR REVIEW  |  |  |  | RS                               |  | 24/04/2017           |  |   |  |                                   |  |                                    |                   |
| No. Amendment Description   |  |  |  | Initials                         |  | Date                 |  |   |  |                                   |  |                                    |                   |

- NOTES
1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
  2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
  3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
  4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
  5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

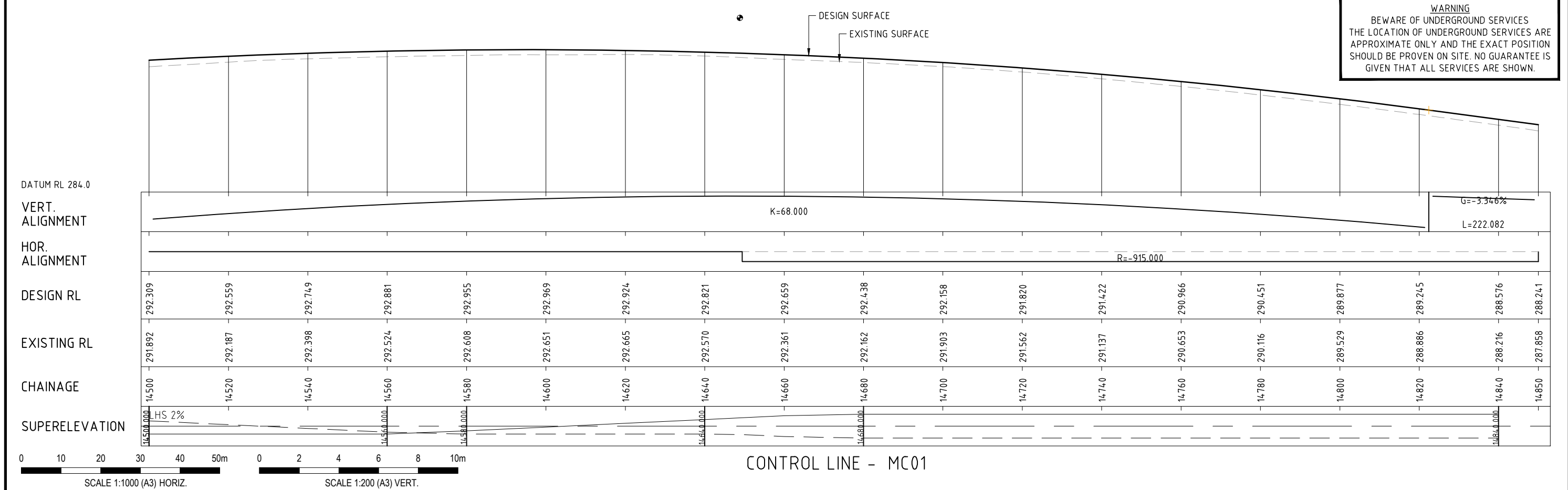


|                      |   |                         |            |                    |  |  |   |  |  |  |                                    |                              |                                |                      |
|----------------------|---|-------------------------|------------|--------------------|--|--|---|--|--|--|------------------------------------|------------------------------|--------------------------------|----------------------|
|                      |   |                         |            | SCALES<br>AS SHOWN | <br><small>JACOBS<br/>Engineering &amp; Construction<br/>100 South Street<br/>Suite 100<br/>Melbourne, VIC 3000<br/>Tel: +61 3 9592 9000<br/>Fax: +61 3 9592 9001<br/>www.jacobs.com.au</small> | <br><small>Tasmanian<br/>Government</small> | Department of State Growth  |  | CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:32 PM | SHEET No.<br><br><b>1314</b> |                                |                      |
| P1 ISSUED FOR REVIEW |   | RS                      | 24/04/2017 |                    |  |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 14 |  | REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                                    | REVISION P1                  |                                |                      |
| No.                  | Amendment Description   |                         | Initials   |                    |  |  |   |  |  |  |                                    |                              | Date                           |                      |
| A3 original          | This sheet may be prepared using colour and may be incomplete if copied |                         |            |                    |  |  |   |  |  |  |                                    |                              | Co-ordinate System: GDA/MGA 55 | Height Datum: AHD 83 |
| DESIGNED             |   | B. ANNAKIN / M. YOSHIDA |            |                    |  |  |   |  |  |  |                                    |                              | REVIEWED                       |                      |





- NOTES**
1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
  2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
  3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
  4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
  5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

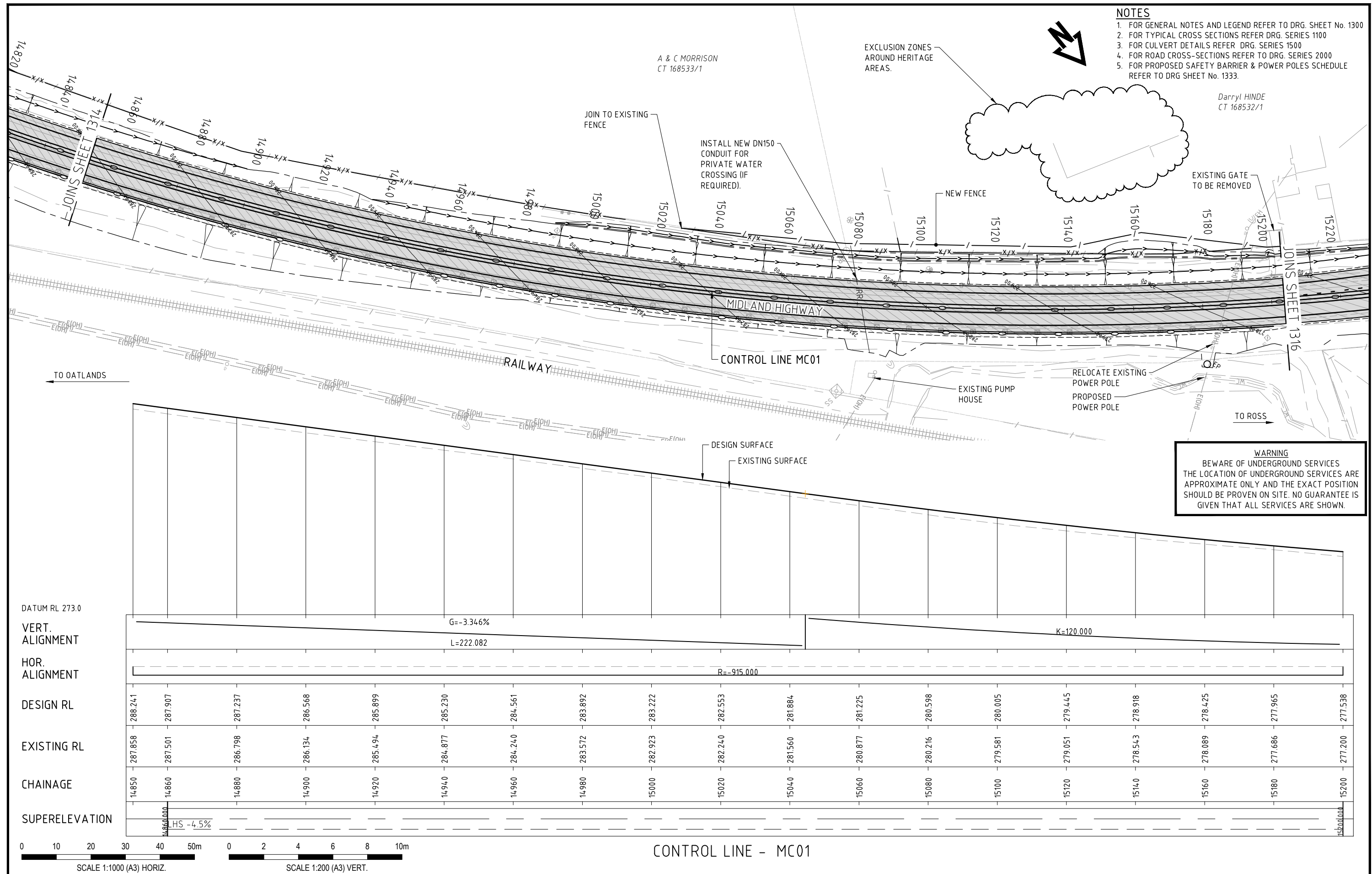




**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

|  |  |  |  |                   |  |  |  |  |  |                                    |                          |
|--|--|--|--|-------------------|--|--|--|--|--|------------------------------------|--------------------------|
| <b>SCALES AS SHOWN</b><br>SCALE 1:1000 (A3) HORIZ.<br>SCALE 1:200 (A3) VERT. |  |  |  | <b>JACOBS</b><br> |  | <b>Department of State Growth</b><br>MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 15 |  | CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:32 PM | SHEET No.<br><b>1315</b> |
| DESIGNED B. ANNAKIN / M. YOSHIDA<br>REVIEWED R. SYKES                        |  |  |  |                   |  |  |  | REGISTRATION NUMBER<br><b>A0087.000X</b> |  | REVISION P1                        |                          |

P1 ISSUED FOR REVIEW  
 No. Amendment Description  
 A3 original This sheet may be prepared using colour and may be incomplete if copied

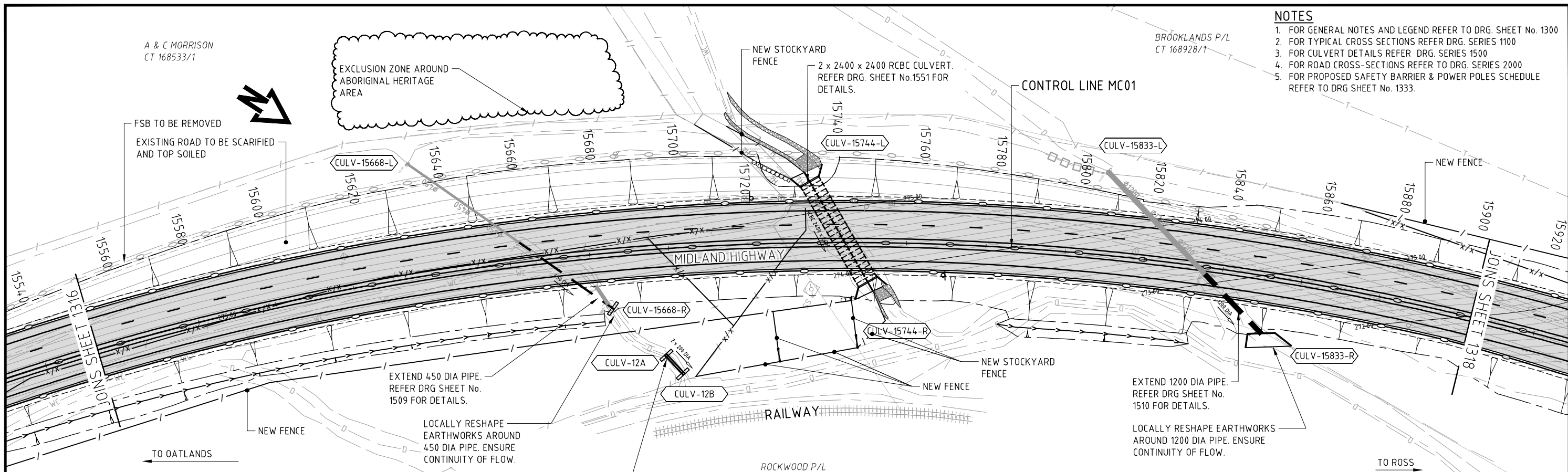
RS 24/04/2017  
 Initials Date  
 Co-ordinate System: GDA/MGA 55  
 Height Datum: AHD 83



|             |   |  |          |                    |                                |   |                      |   |  |                            |  |  |  |                     |  |                                    |                              |
|-------------|---|--|----------|--------------------|--------------------------------|---|----------------------|---|--|----------------------------|--|--|--|---------------------|--|------------------------------------|------------------------------|
|             |   |  |          | SCALES<br>AS SHOWN |                                | <br><small>JACOBS<br/>Engineering &amp; Construction<br/>100 South Street<br/>Melbourne VIC 3000<br/>Tel: +61 3 9592 9000<br/>Fax: +61 3 9592 9001<br/>www.jacobs.com.au</small> |                      | <br><small>Tasmanian<br/>Government</small>                |  | Department of State Growth |  |  |  | CONTRACT No.<br>TBC | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:32 PM | SHEET No.<br><br><b>1316</b> |
|             |   |  |          |                    |                                | DESIGNED : B.ANNAKIN / M.YOSHIDA<br><br>REVIEWED : R. SYKES   |                      | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 16 |  |                            |  | REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                     |  |                                    |                              |
|             |   |  |          |                    |                                |   |                      |   |  |                            |  |  |  |                     |  |                                    |                              |
| P1          | ISSUED FOR REVIEW   |  | RS       | 24/04/2017         |                                |   |                      |   |  |                            |  |  |  |                     |  |                                    |                              |
| No.         | Amendment Description   |  | Initials | Date               |                                |   |                      |   |  |                            |  |  |  |                     |  |                                    |                              |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |  |          |                    | Co-ordinate System: GDA/MGA 55 |   | Height Datum: AHD 83 |   |  |                            |  |  |  |                     |  | REVISION P1                        |                              |

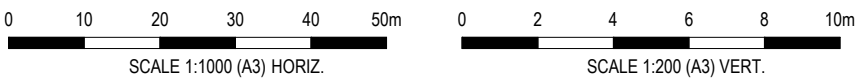
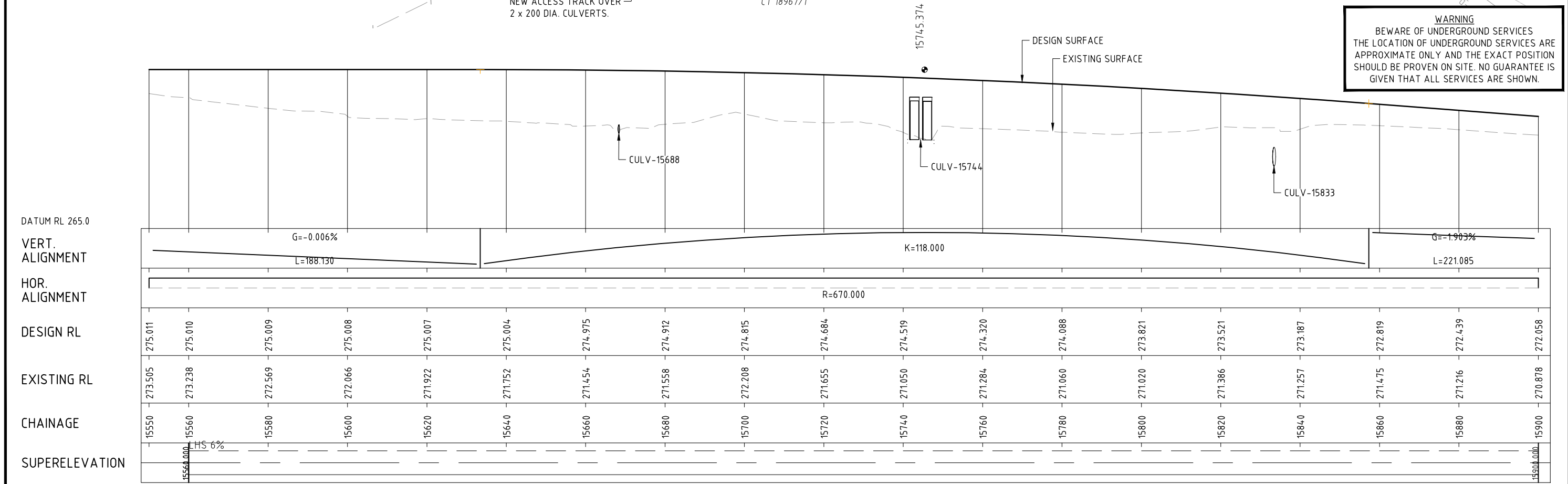






- NOTES**
- 1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
  - 2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
  - 3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
  - 4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
  - 5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

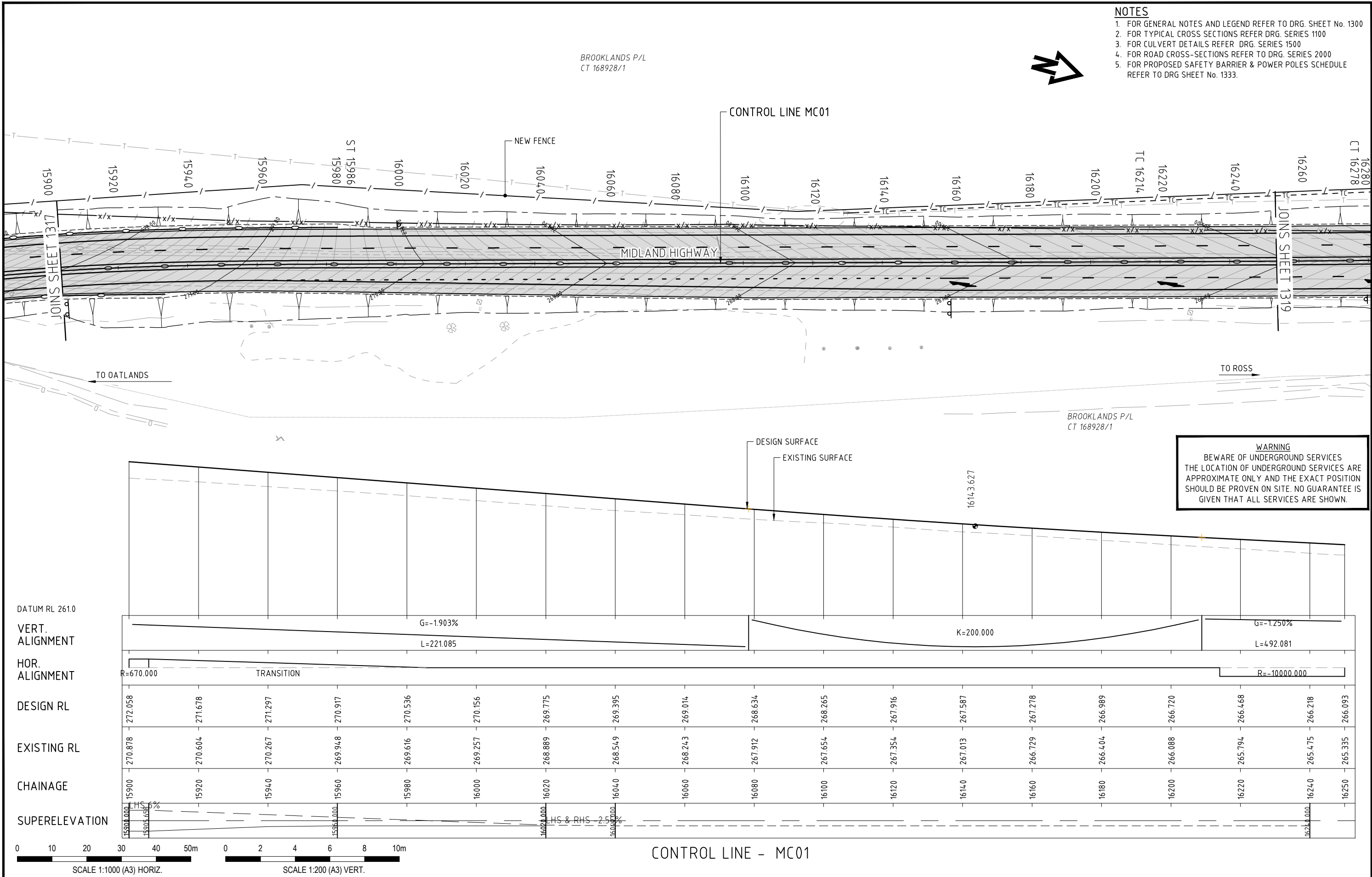
**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.





CONTROL LINE - MC01

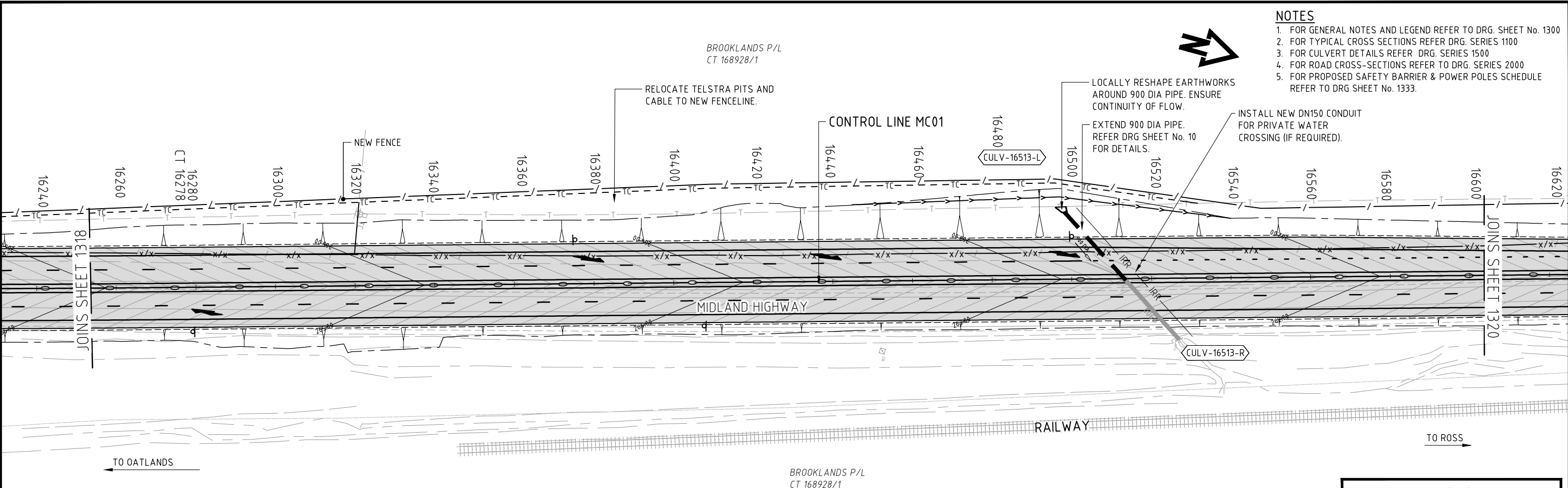
|   |  |  |  |                                  |  |                             |  |   |  |  |  |                                    |                          |
|---|--|--|--|----------------------------------|--|-----------------------------|--|---|--|--|--|------------------------------------|--------------------------|
| <b>SCALES AS SHOWN</b>  |  |  |  | <b>JACOBS</b>                    |  | <b>Tasmanian Government</b> |  | <b>Department of State Growth</b>   |  | CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:32 PM | SHEET No.<br><b>1318</b> |
|   |  |  |  | DESIGNED B. ANNAKIN / M. YOSHIDA |  |                             |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 18 |  | REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                                    | REVISION P1              |
|   |  |  |  | REVIEWED R. SYKES                |  |                             |  |   |  |  |  |                                    |                          |
| P1 ISSUED FOR REVIEW RS 24/04/2017  |  |  |  | Co-ordinate System: GDA/MGA 55   |  | Height Datum: AHD 83        |  |   |  |  |  |                                    |                          |
| No. Amendment Description Initials Date   |  |  |  |                                  |  |                             |  |   |  |  |  |                                    |                          |
| A3 original This sheet may be prepared using colour and may be incomplete if copied |  |  |  |                                  |  |                             |  |   |  |  |  |                                    |                          |

- NOTES
1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
  2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
  3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
  4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
  5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

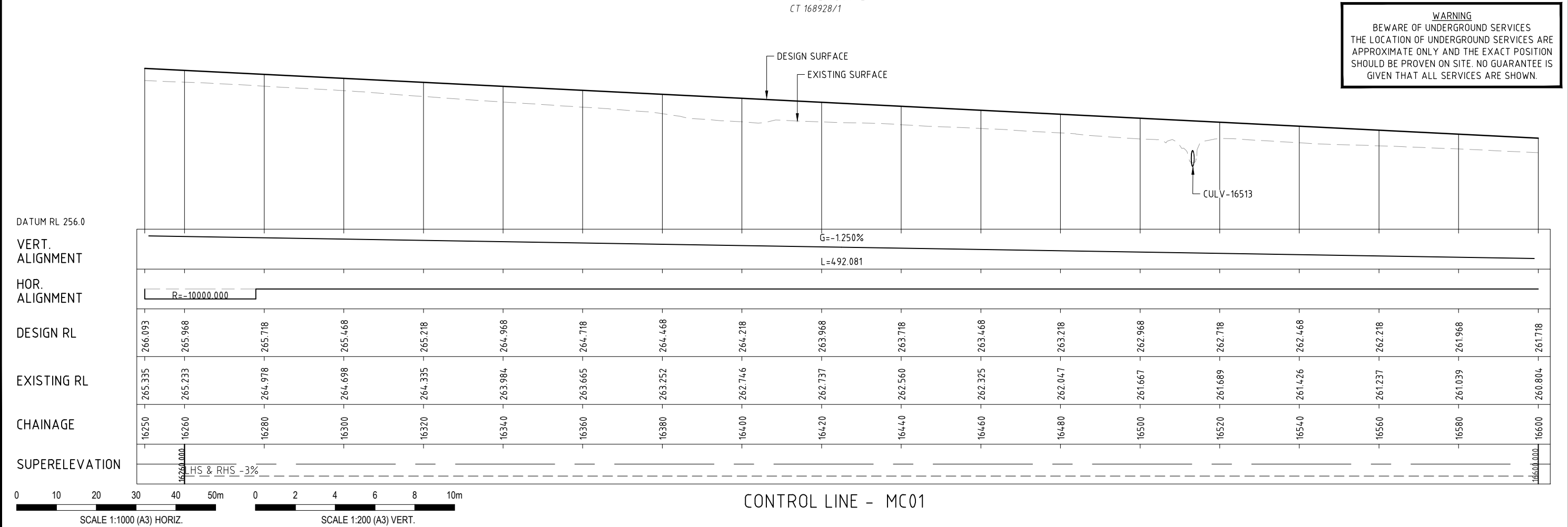


|   |   |  |                    |      |  |            |                            |            |          |                                   |                               |                    |  |
|---|---|--|--------------------|------|--|------------|----------------------------|------------|----------|-----------------------------------|-------------------------------|--------------------|--|
|   |   |  | SCALES<br>AS SHOWN |      | <div><div><small>JACOBS<br/>Engineering &amp; Construction<br/>100 South Street<br/>Suite 100<br/>Melbourne, VIC 3000<br/>Australia<br/>Tel: +61 3 9592 9000<br/>Fax: +61 3 9592 9001<br/>www.jacobs.com.au</small></div><div><div><small>Tasmanian<br/>Government</small></div></div></div> |            | Department of State Growth |            |          | CONTRACT No.                      | DRAWING                       | PRINTED DATE       | SHEET No.<br><br>1319<br><br>REVISION P1 |
| MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 19 |   |  |                    |      |  |            |                            |            |          | TBC                               | IS163600-0009-CR-DRG-1301.dwg | 24-Apr-17, 5:33 PM |  |
|   |   |  |                    |      |  |            |                            |            |          | REGISTRATION NUMBER<br>A0087.000X |                               |                    |  |
| P1  | ISSUED FOR REVIEW   |  |                    |      |  |            | RS                         | 24/04/2017 | DESIGNED | B.ANNAKIN / M.YOSHIDA             |                               |                    |  |
| No.   | Amendment Description   |  | Initials           | Date | REVIEWED   | R. SYKES   |                            |            |          |                                   |                               |                    |  |
| A3 original   | This sheet may be prepared using colour and may be incomplete if copied |  |                    |      | Co-ordinate System:  | GDA/MGA 55 | Height Datum:              | AHD 83     |          |                                   |                               |                    |  |



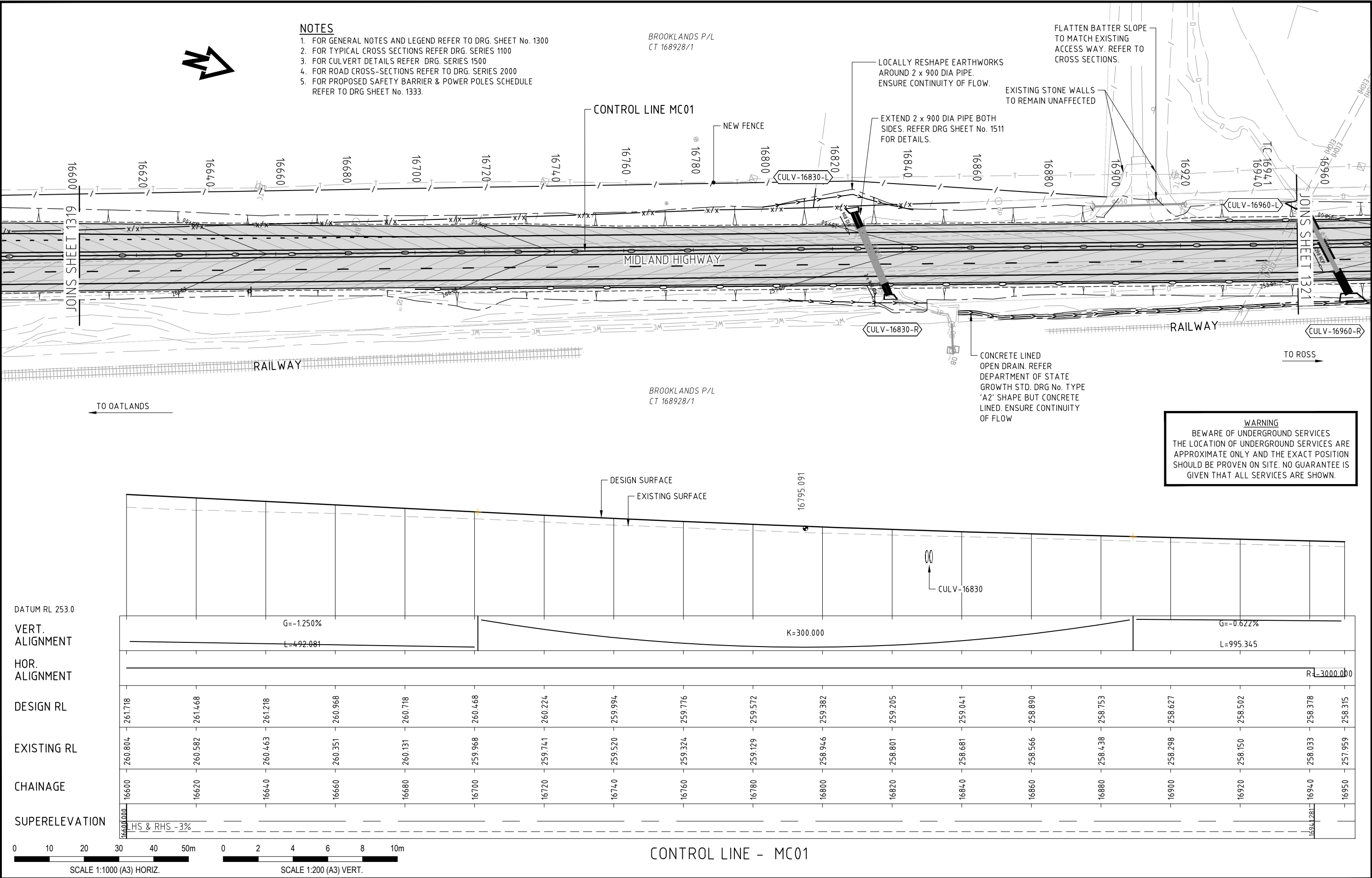



- NOTES**
1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
  2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
  3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
  4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
  5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

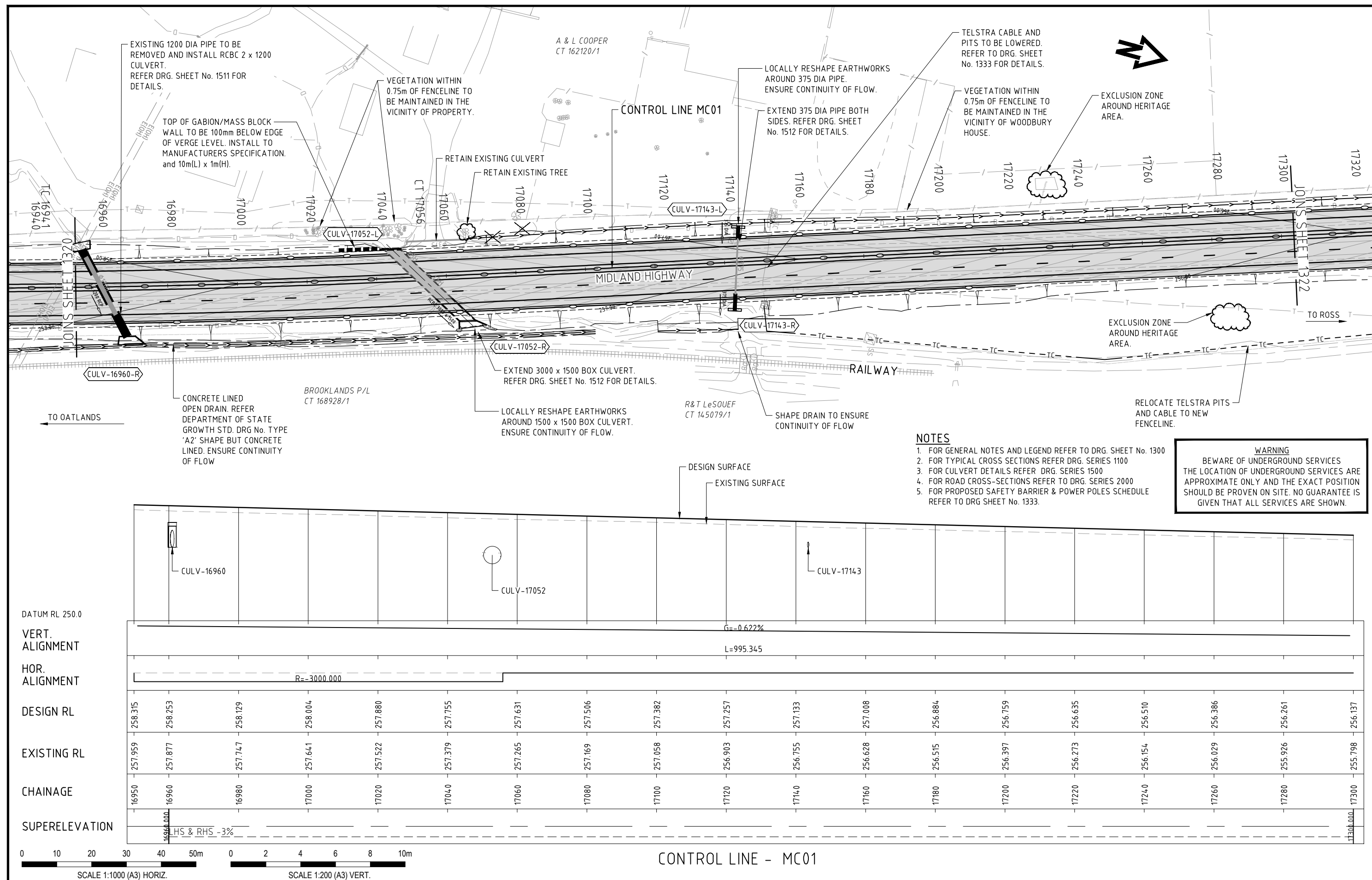




**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

|                    |   |          |            |   |                      |  |  |                                    |                          |
|--------------------|---|----------|------------|---|----------------------|--|--|------------------------------------|--------------------------|
| SCALES<br>AS SHOWN |   |          |            | Department of State Growth<br>MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 20 |                      | CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:33 PM | SHEET No.<br><b>1320</b> |
| P1                 | ISSUED FOR REVIEW   | RS       | 24/04/2017 |   |                      | REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                                    | REVISION P1              |
| No.                | Amendment Description   | Initials | Date       | DESIGNED<br>B. ANNAKIN / M. YOSHIDA   | REVIEWED<br>R. SYKES |  |  |                                    |                          |
| A3 original        | This sheet may be prepared using colour and may be incomplete if copied |          |            | Co-ordinate System: GDA/MGA 55  |                      | Height Datum: AHD 83                     |  |                                    |                          |

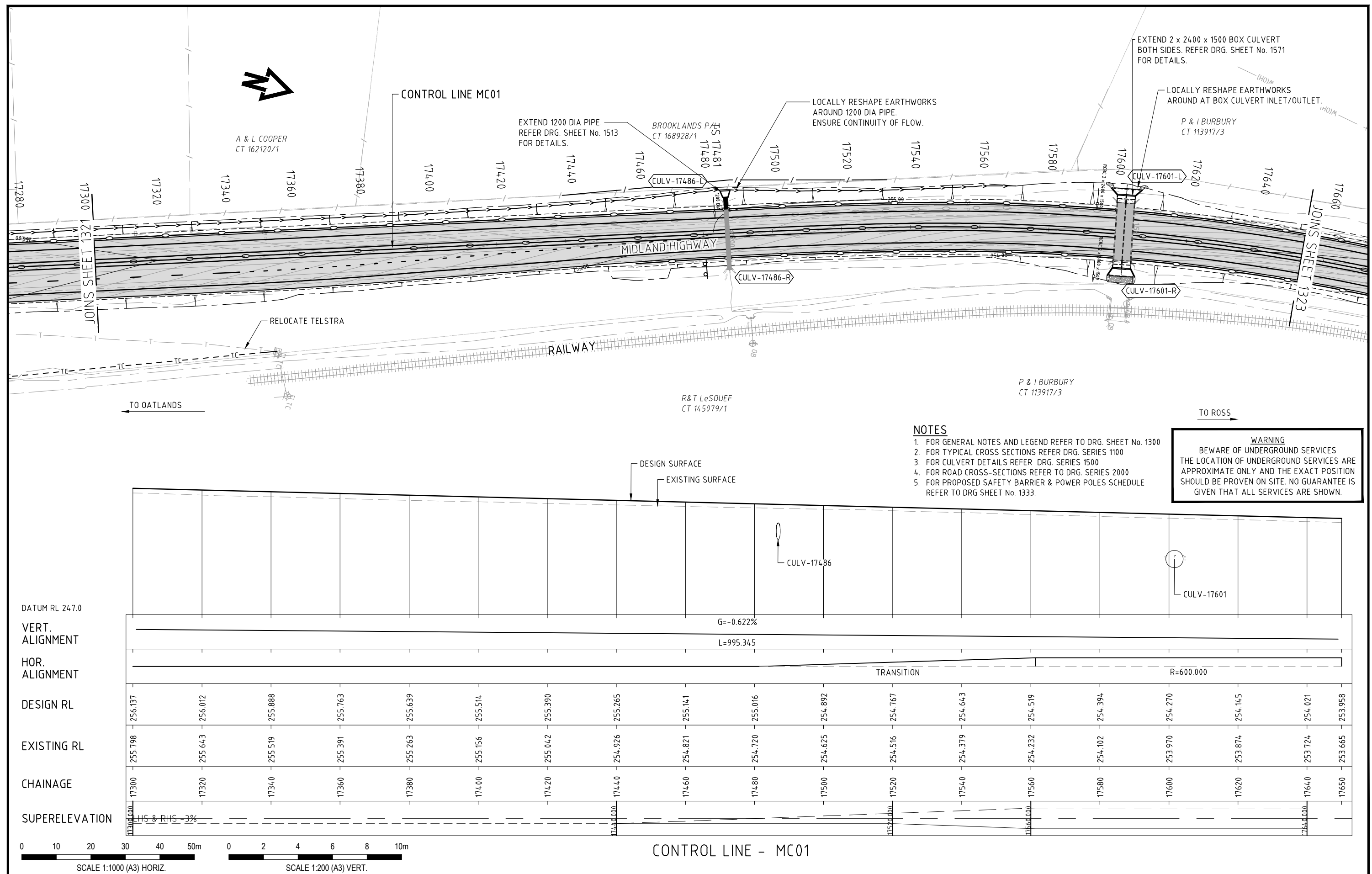


|             |   |  |          |                                |  |   |   |   |  |  |  |                                    |                              |
|-------------|---|--|----------|--------------------------------|--|---|---|---|--|--|--|------------------------------------|------------------------------|
|             |   |  |          | SCALES<br>AS SHOWN             |  |   |   | Department of State Growth  |  | CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:33 PM | SHEET No.<br><br><b>1321</b> |
|             |   |  |          |                                |  |   |   | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 21 |  | REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                                    | REVISION P1                  |
| P1          | ISSUED FOR REVIEW   |  | RS       |                                |  | 24/04/2017  | DESIGNED B. ANNAKIN / M. YOSHIDA<br><br>REVIEWED R. SYKES |   |  |  |  |                                    |                              |
| No.         | Amendment Description   |  | Initials |                                |  | Date  |   |   |  |  |  |                                    |                              |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |  |          | Co-ordinate System: GDA/MGA 55 |  | Height Datum: AHD 83  |   |   |  |  |  |                                    |                              |

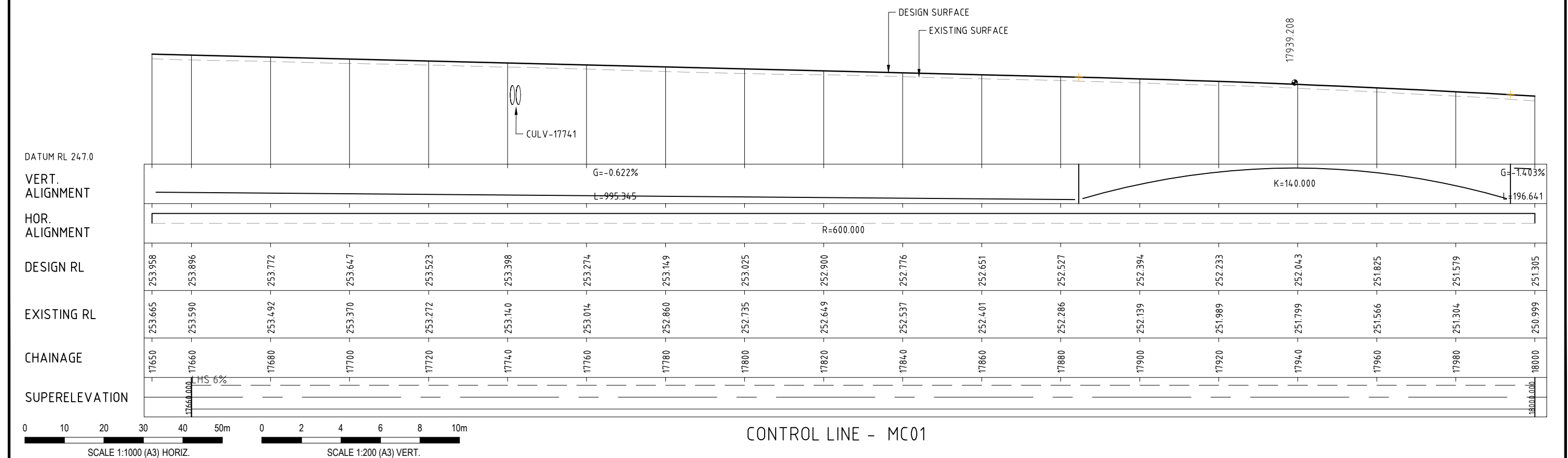
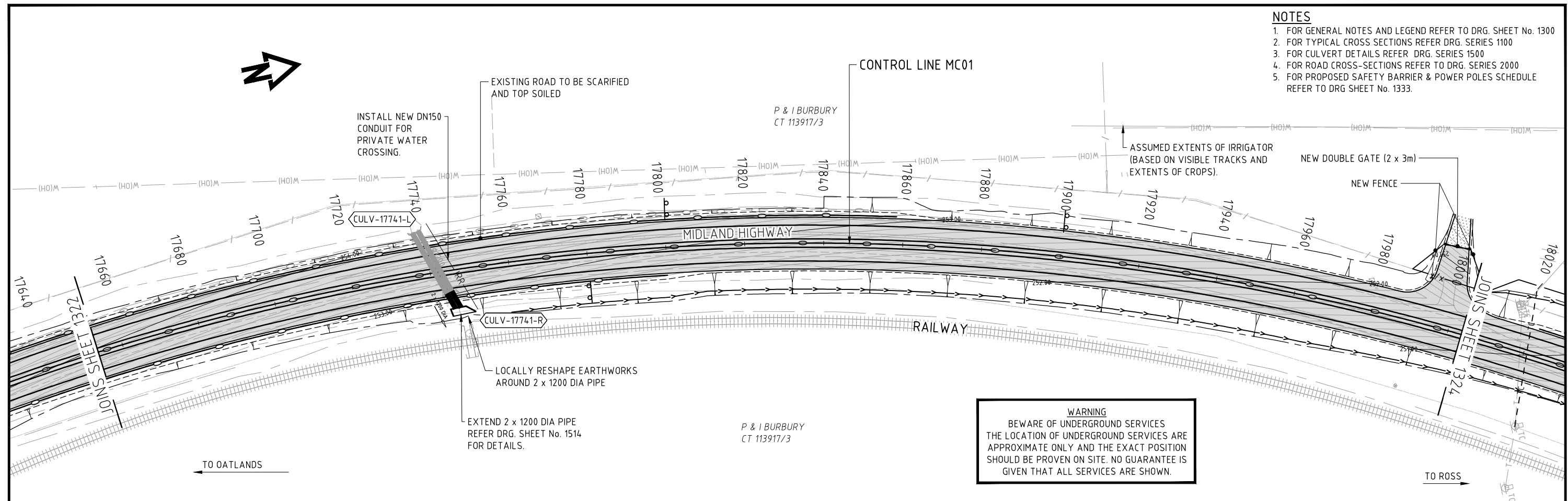




|             |   |  |          |                                |  |  |  |   |  |  |  |                                   |  |                                    |                       |
|-------------|---|--|----------|--------------------------------|--|--|--|---|--|--|--|-----------------------------------|--|------------------------------------|-----------------------|
|             |   |  |          | SCALES<br>AS SHOWN             |  | <div><div><div></div><div><div>DESIGNED</div><div>B. ANNAKIN / M. YOSHIDA</div></div><div><div>REVIEWED</div><div>R. SYKES</div></div></div></div> |  | Department of State Growth  |  |  |  | CONTRACT No.<br>TBC               | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:33 PM | SHEET No.<br><br>1322 |
|             |   |  |          |                                |  |  |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 22 |  |  |  | REGISTRATION NUMBER<br>A0087.000X |  |                                    |                       |
|             |   |  |          |                                |  |  |  |   |  |  |  |                                   |  |                                    |                       |
| P1          | ISSUED FOR REVIEW   |  | RS       | 24/04/2017                     |  |  |  |   |  |  |  |                                   |  |                                    |                       |
| No.         | Amendment Description   |  | Initials | Date                           |  |  |  |   |  |  |  |                                   |  |                                    |                       |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |  |          | Co-ordinate System: GDA/MGA 55 |  | Height Datum: AHD 83   |  |   |  |  |  | REVISION P                        |  |                                    |                       |

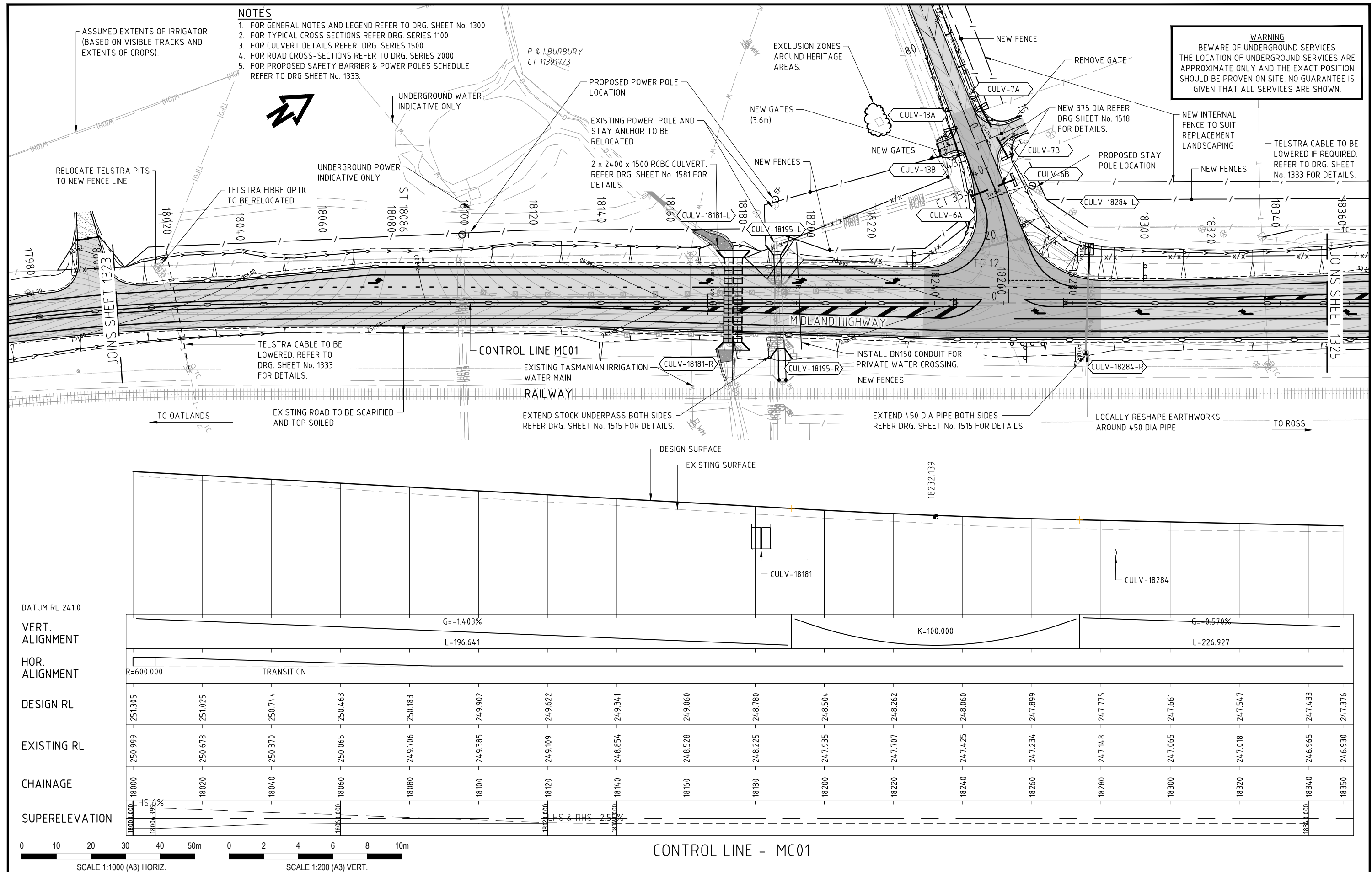




|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|



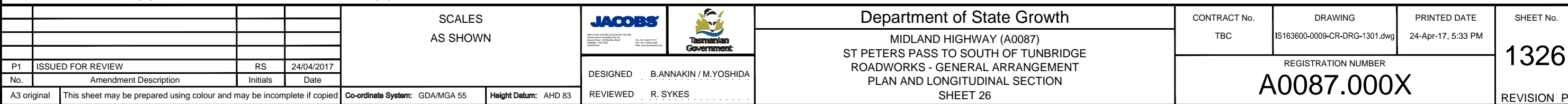
|             |   |  |                     |                    |            |   |               |   |                       |                            |                                       |  |                     |  |                                    |                       |
|-------------|---|--|---------------------|--------------------|------------|---|---------------|---|-----------------------|----------------------------|---------------------------------------|--|---------------------|--|------------------------------------|-----------------------|
|             |   |  |                     | SCALES<br>AS SHOWN |            |  |               |    |                       | Department of State Growth |                                       |  | CONTRACT No.<br>TBC | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:33 PM | SHEET No.<br><br>1324 |
|             |   |  |                     |                    |            |   |               | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 24 |                       |                            | REGISTRATION NUMBER<br><br>A0087.000X |  |                     |  |                                    |                       |
|             |   |  |                     |                    |            |   |               |   |                       |                            |                                       |  |                     |  |                                    |                       |
|             |   |  |                     |                    |            |   |               |   |                       |                            |                                       |  |                     |  |                                    |                       |
| P1          | ISSUED FOR REVIEW   |  | RS                  |                    | 24/04/2017 |   | DESIGNED      |   | B.ANNAKIN / M.YOSHIDA |                            | REVISION P1                           |  |                     |  |                                    |                       |
| No.         | Amendment Description   |  | Initials            |                    | Date       |   | REVIEWED      |   | R. SYKES              |                            |                                       |  |                     |  |                                    |                       |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |  | Co-ordinate System: |                    | GDA/MGA 55 |   | Height Datum: |   | AHD 83                |                            |                                       |  |                     |  |                                    |                       |



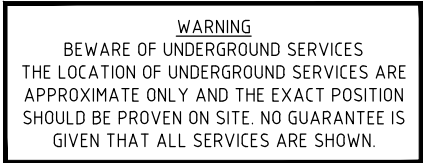
|                                  |  |  |  |   |  |  |  |                                    |                          |
|----------------------------------|--|--|--|---|--|--|--|------------------------------------|--------------------------|
| SCALES AS SHOWN                  |  |  |  | Department of State Growth  |  | CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:33 PM | SHEET No.<br><b>1325</b> |
| DESIGNED B. ANNAKIN / M. YOSHIDA |  |  |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 25 |  | REGISTRATION NUMBER<br><b>A0087.000X</b> |  | REVISION P1                        |                          |
| REVIEWED R. SYKES                |  |  |  |   |  |  |  |                                    |                          |
| Co-ordinate System: GDA/MGA 55   |  |  |  | Height Datum: AHD 83  |  |  |  |                                    |                          |
| P1 ISSUED FOR REVIEW             |  |  |  |   |  |  |  |                                    |                          |
| No. Amendment Description        |  |  |  |   |  |  |  |                                    |                          |
| Initials Date                    |  |  |  |   |  |  |  |                                    |                          |
| 24/04/2017                       |  |  |  |   |  |  |  |                                    |                          |
| A3 original                      |  |  |  | This sheet may be prepared using colour and may be incomplete if copied   |  |  |  |                                    |                          |





1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

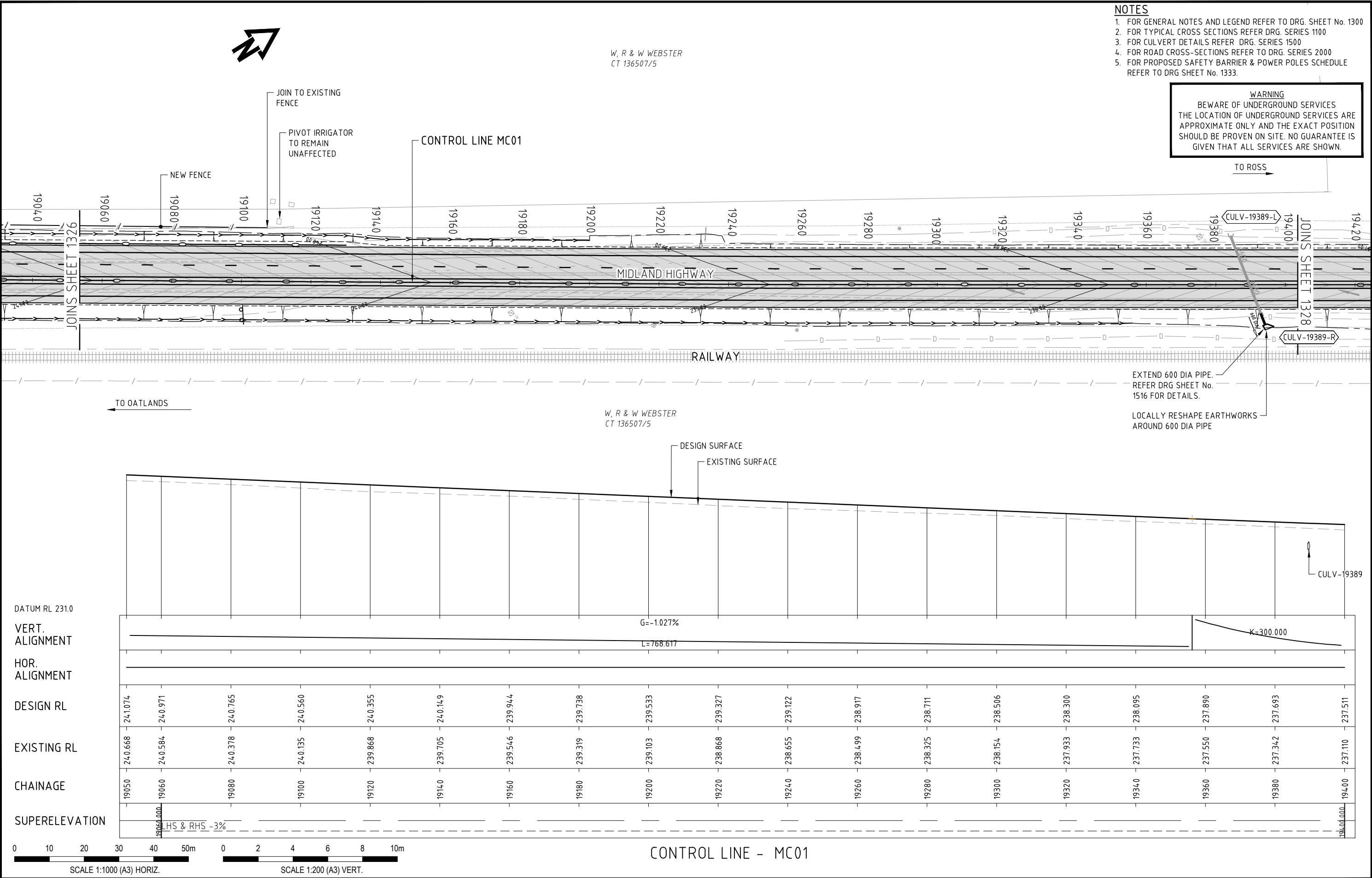


1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE  
REFER TO DRG SHEET No. 1333.



|             |                       |   |                            |            |   |  |  |  |                       |  |   |   |                              |
|-------------|-----------------------|---|----------------------------|------------|---|--|--|--|-----------------------|--|---|---|------------------------------|
|             |                       |   | <p>SCALES<br/>AS SHOWN</p> |            |   |  | <p>Department of State Growth</p>  |  |                       | <p>CONTRACT No.</p> <p>TBC</p>               | <p>DRAWING</p> <p>IS163600-0009-CR-DRG-1301.dwg</p> | <p>PRINTED DATE</p> <p>24-Apr-17, 5:34 PM</p> | <p>SHEET No.</p> <p>1327</p> |
|             |                       |   |                            |            |   |  | <p>MIDLAND HIGHWAY (A0087)<br/>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br/>ROADWORKS - GENERAL ARRANGEMENT<br/>PLAN AND LONGITUDINAL SECTION<br/>SHEET 27</p> |  |                       | <p>REGISTRATION NUMBER</p> <p>A0087.000X</p> |   |   |                              |
|             |                       |   |                            |            |   |  |  |  |                       |  |   |   |                              |
| P1          | ISSUED FOR REVIEW     |   | RS                         | 24/04/2017 |   |  | DESIGNED   |  | B.ANNAKIN / M.YOSHIDA |  |   |   |                              |
| No.         | Amendment Description |   | Initials                   | Date       |   |  | REVIEWED   |  | R. SYKES              |  |   |   |                              |
| A3 original |                       | This sheet may be prepared using colour and may be incomplete if copied |                            |            | Co-ordinate System: GDA/MGA 55  |  | Height Datum: AHD 83   |  |                       |  |   |   |                              |





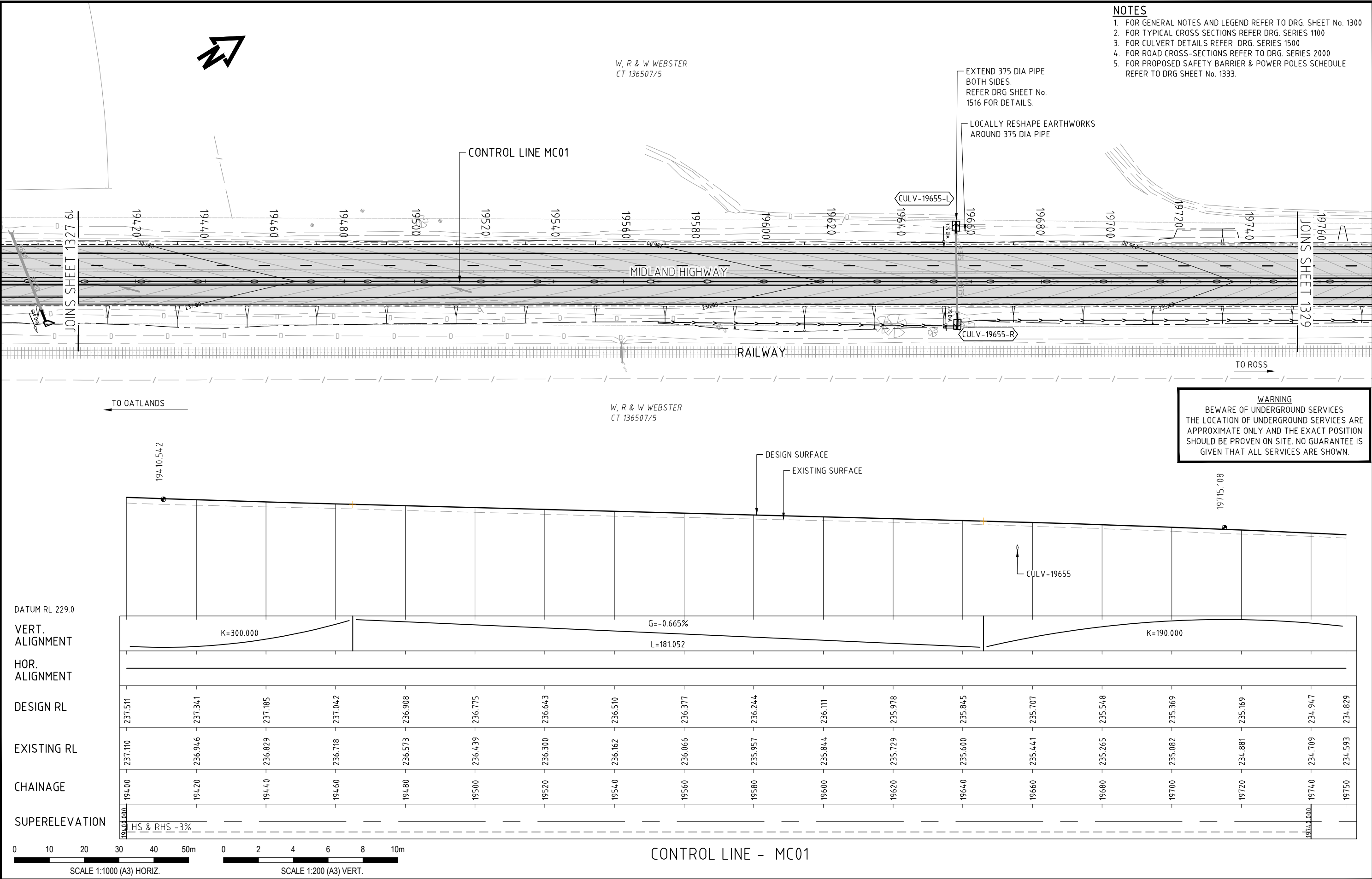


- NOTES**
1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
  2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
  3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
  4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
  5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

**WARNING**

BEWARE OF UNDERGROUND SERVICES  
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

|             |   |          |            |                    |   |   |                         |  |  |                                    |                       |             |  |
|-------------|---|----------|------------|--------------------|---|---|-------------------------|--|--|------------------------------------|-----------------------|-------------|--|
|             |   |          |            | SCALES<br>AS SHOWN |   | Department of State Growth  |                         | CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:34 PM | SHEET No.<br><br>1328 |             |  |
|             |   |          |            |                    |   | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 28 |                         | REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                                    |                       | REVISION P1 |  |
| P1          | ISSUED FOR REVIEW   | RS       | 24/04/2017 |                    |   | DESIGNED  | B. ANNAKIN / M. YOSHIDA |  |  |                                    |                       |             |  |
| No.         | Amendment Description   | Initials | Date       |                    |   | REVIEWED  | R. SYKES                |  |  |                                    |                       |             |  |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |          |            |                    |   | Co-ordinate System:   | GDA/MGA 55              | Height Datum:                            | AHD 83                                   |                                    |                       |             |  |



- NOTES
1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
  2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
  3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
  4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
  5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.

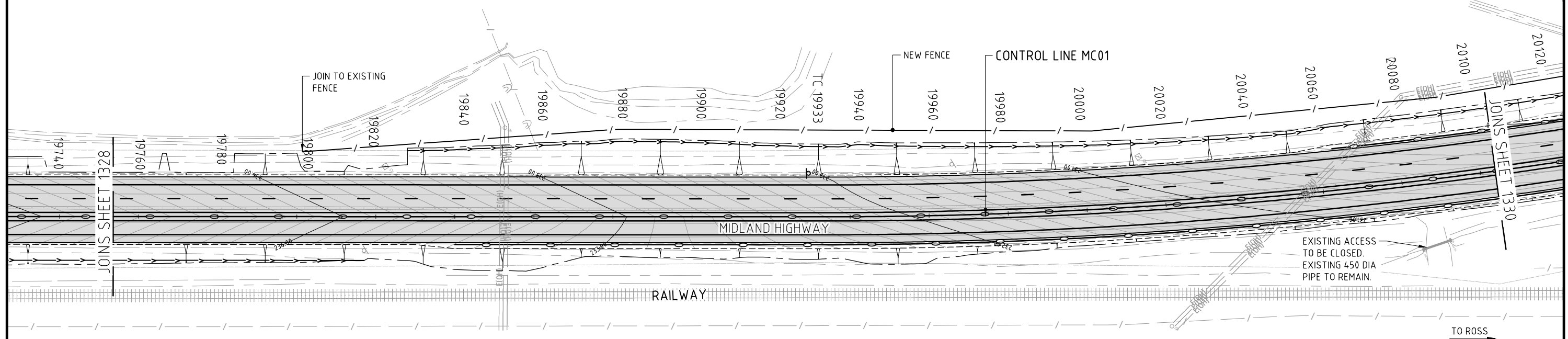
|             |   |  |          |                    |   |  |   |                                  |  |  |                                    |                       |  |
|-------------|---|--|----------|--------------------|---|--|---|----------------------------------|--|--|------------------------------------|-----------------------|--|
|             |   |  |          | SCALES<br>AS SHOWN | <br><small>JACOBS<br/>Engineering<br/>Architecture<br/>Interiors<br/>Infrastructure<br/>Marine<br/>Process<br/>Transport<br/>Urban &amp; Environmental<br/>Water</small> | <br><small>Tasmanian<br/>Government</small> | Department of State Growth  |                                  | CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:34 PM | SHEET No.<br><br>1329 |  |
|             |   |  |          |                    |   |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 29 |                                  | REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                                    | REVISION P1           |  |
| P1          | ISSUED FOR REVIEW   |  | RS       |                    |   |  | 24/04/2017  | DESIGNED B. ANNAKIN / M. YOSHIDA |  |  |                                    |                       |  |
| No.         | Amendment Description   |  | Initials |                    |   |  | Date  | REVIEWED R. SYKES                |  |  |                                    |                       |  |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |  |          |                    |   |  | Co-ordinate System: GDA/MGA 55  |                                  | Height Datum: AHD 83                     |  |                                    |                       |  |

W, R & W WEBSTER  
CT 136507/5

THE PLAINS CO. PTY. LTD CT  
113917/3

#### NOTES

1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.



TO OATLANDS

W, R & W WEBSTER  
CT 136507/5

D POWELL  
CT 113363/1

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
THE LOCATION OF UNDERGROUND SERVICES ARE  
APPROXIMATE ONLY AND THE EXACT POSITION  
SHOULD BE PROVEN ON SITE. NO GUARANTEE IS  
GIVEN THAT ALL SERVICES ARE SHOWN.

DATUM RL 226.0

VERT.  
ALIGNMENT

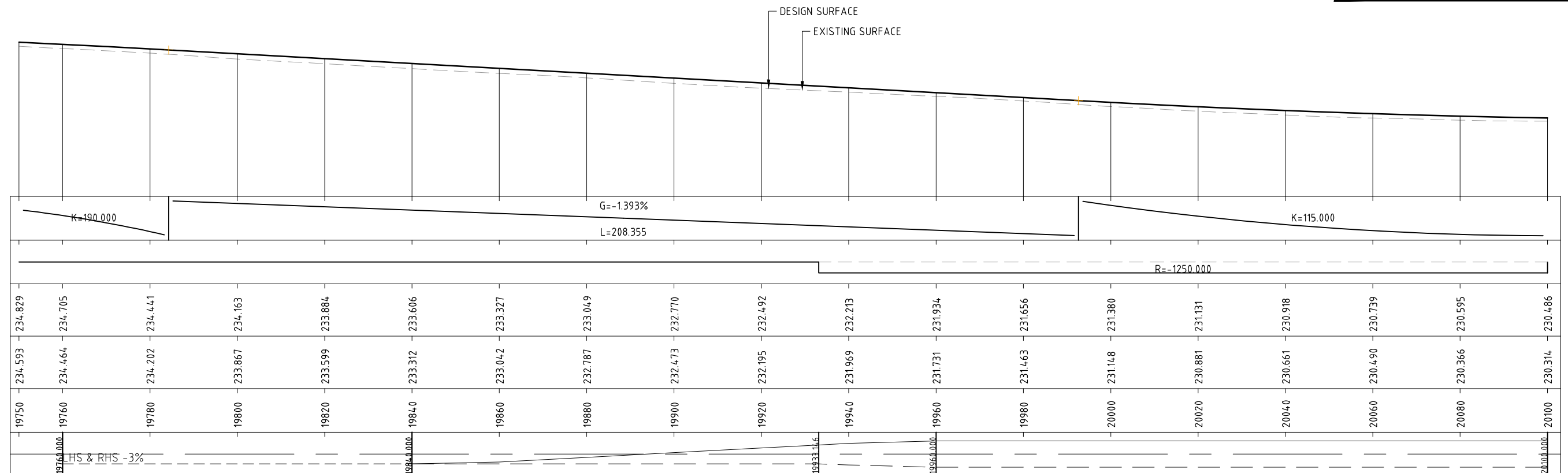
HOR.  
ALIGNMENT

DESIGN RL

EXISTING RL

CHAINAGE

SUPERELEVATION



0 10 20 30 40 50m  
SCALE 1:1000 (A3) HORIZ.

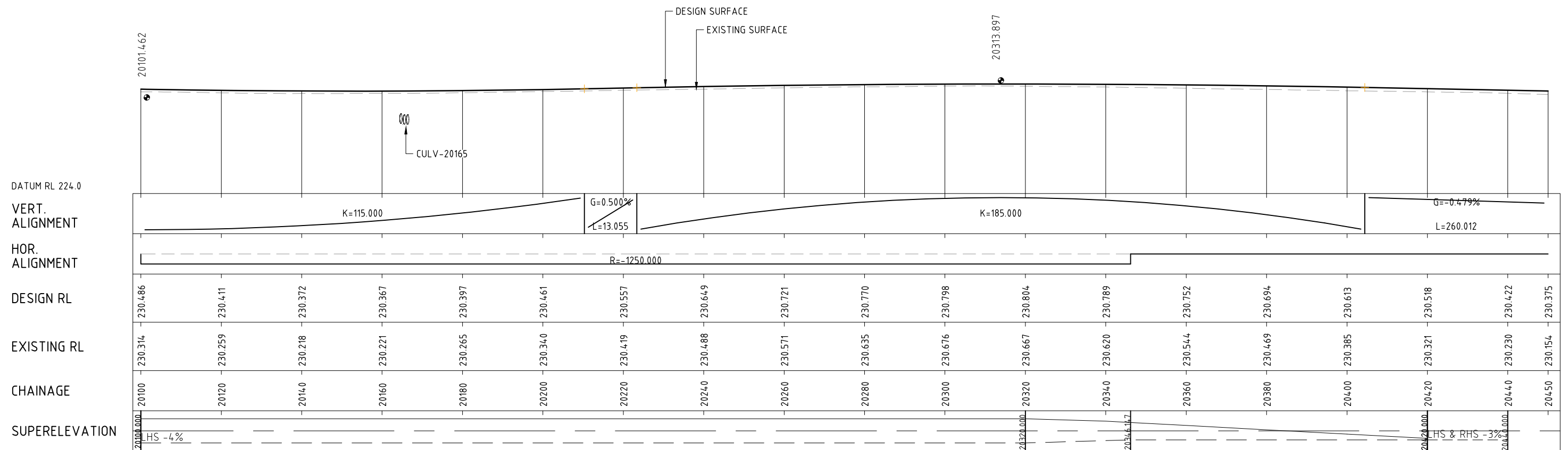
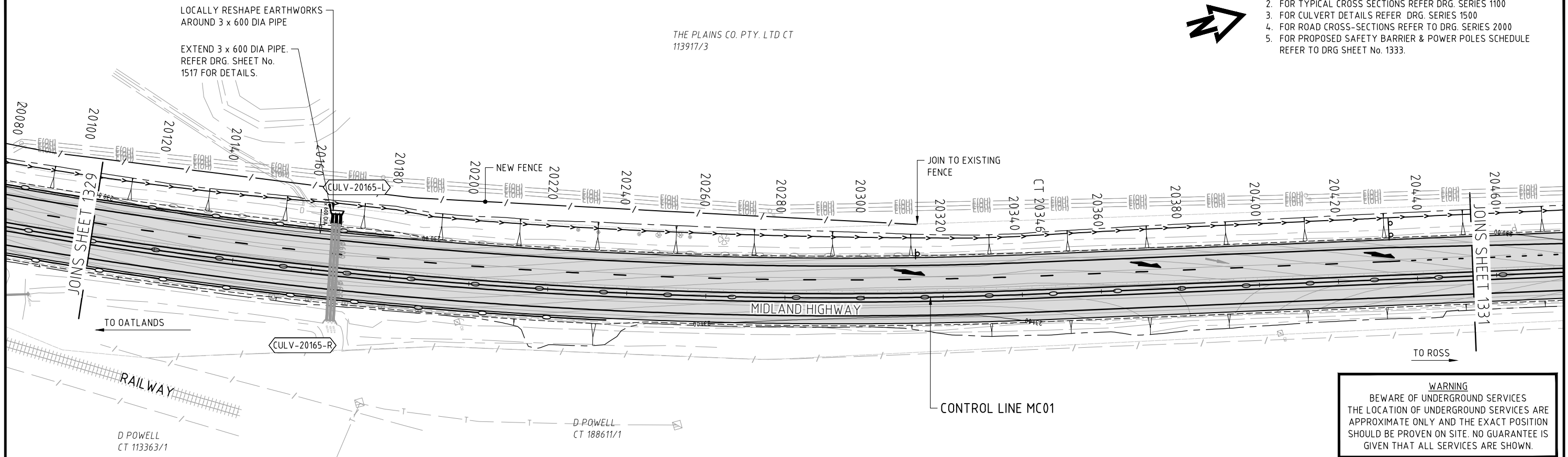
0 2 4 6 8 10m  
SCALE 1:200 (A3) VERT.

CONTROL LINE - MC01

|                           |  |  |  |   |  |                                |  |   |  |                                   |  |                                    |                   |
|---------------------------|--|--|--|---|--|--------------------------------|--|---|--|-----------------------------------|--|------------------------------------|-------------------|
| SCALES<br>AS SHOWN        |  |  |  | JACOBS  |  | Tasmanian Government           |  | Department of State Growth  |  | CONTRACT No.<br>TBC               | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:34 PM | SHEET No.<br>1330 |
| P1 ISSUED FOR REVIEW      |  |  |  | RS  |  | 24/04/2017                     |  | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION |  | REGISTRATION NUMBER<br>A0087.000X |  | REVISION P1                        |                   |
| No. Amendment Description |  |  |  | Initials  |  | Date                           |  | DESIGNED B. ANNAKIN / M. YOSHIDA  |  |                                   |  |                                    |                   |
| A3 original               |  |  |  | This sheet may be prepared using colour and may be incomplete if copied |  | Co-ordinate System: GDA/MGA 55 |  | Height Datum: AHD 83  |  | REVIEWED R. SYKES                 |  |                                    |                   |

## NOTES

1. FOR GENERAL NOTES AND LEGEND REFER TO DRG. SHEET No. 1300
2. FOR TYPICAL CROSS SECTIONS REFER DRG. SERIES 1100
3. FOR CULVERT DETAILS REFER DRG. SERIES 1500
4. FOR ROAD CROSS-SECTIONS REFER TO DRG. SERIES 2000
5. FOR PROPOSED SAFETY BARRIER & POWER POLES SCHEDULE REFER TO DRG SHEET No. 1333.





CONTROL LINE - MC01

0 10 20 30 40 50m

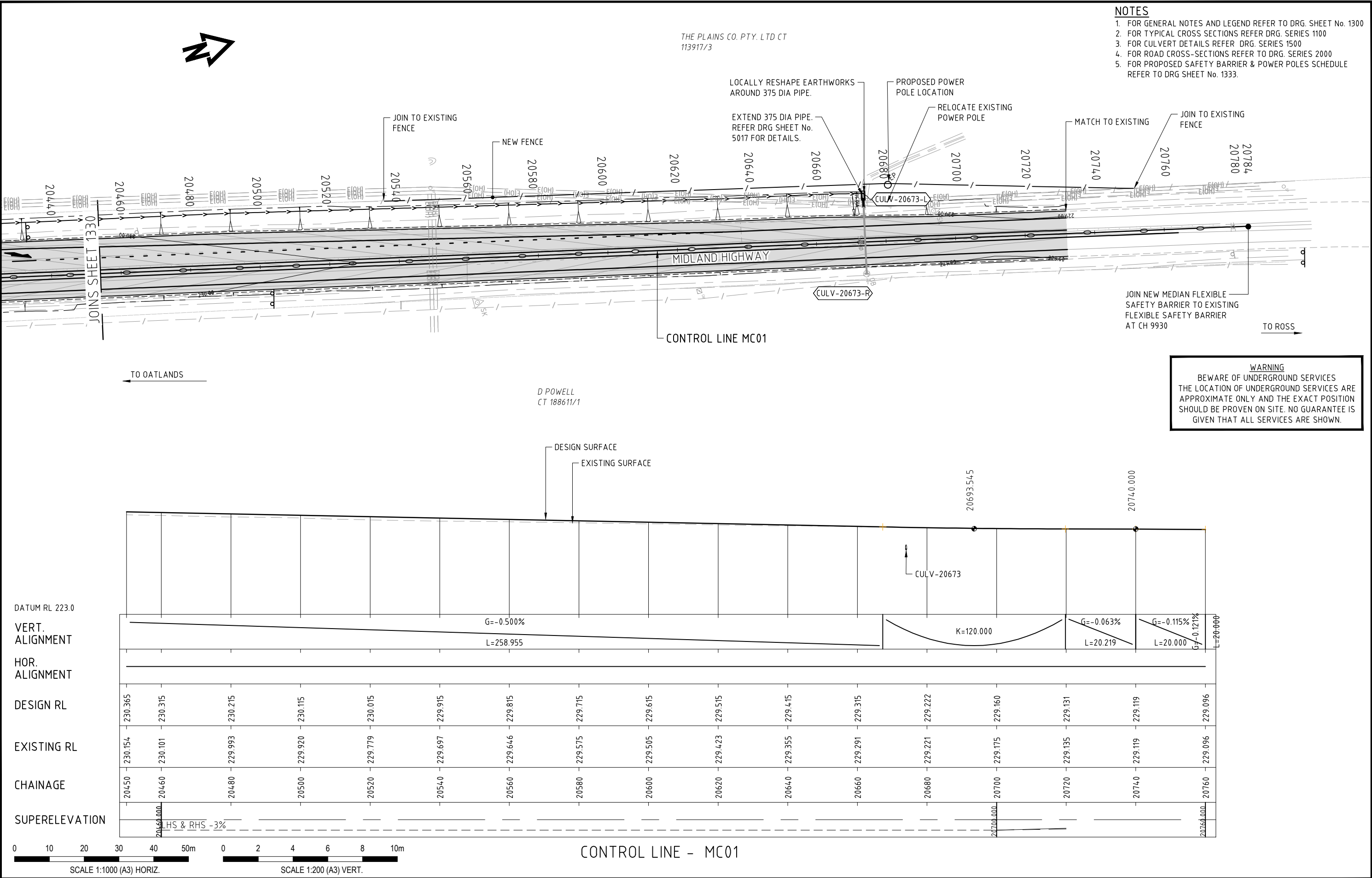
SCALE 1:1000 (A3) HORIZ.



0 2 4 6 8 10m

SCALE 1:200 (A3) VERT.

|             |   |  |          |                                |  |   |  |                            |   |  |                     |  |                                    |                       |             |
|-------------|---|--|----------|--------------------------------|--|---|--|----------------------------|---|--|---------------------|--|------------------------------------|-----------------------|-------------|
|             |   |  |          | SCALES<br>AS SHOWN             |  |   |  | Department of State Growth |   |  | CONTRACT No.<br>TBC | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:34 PM | SHEET No.<br><br>1331 |             |
|             |   |  |          |                                |  | DESIGNED B.ANNAKIN / M.YOSHIDA<br>REVIEWED R. SYKES   |  |                            | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 31 |  |                     | REGISTRATION NUMBER<br>A0087.000X        |                                    |                       | REVISION P1 |
|             |   |  |          |                                |  |   |  |                            |   |  |                     |  |                                    |                       |             |
| P1          | ISSUED FOR REVIEW   |  | RS       |                                |  | 24/04/2017  |  |                            |   |  |                     |  |                                    |                       |             |
| No.         | Amendment Description   |  | Initials | Date                           |  |   |  |                            |   |  |                     |  |                                    |                       |             |
| A3 original | This sheet may be prepared using colour and may be incomplete if copied |  |          | Co-ordinate System: GDA/MGA 55 |  | Height Datum: AHD 83  |  |                            |   |  |                     |  |                                    |                       |             |





|             |                       |   |  |                    |   |   |            |  |  |                                    |                       |             |
|-------------|-----------------------|---|--|--------------------|---|---|------------|--|--|------------------------------------|-----------------------|-------------|
|             |                       |   |  | SCALES<br>AS SHOWN |   | Department of State Growth  |            | CONTRACT No.<br>TBC                      | DRAWING<br>IS163600-0009-CR-DRG-1301.dwg | PRINTED DATE<br>24-Apr-17, 5:34 PM | SHEET No.<br><br>1332 |             |
|             |                       |   |  |                    |   | MIDLAND HIGHWAY (A0087)<br>ST PETERS PASS TO SOUTH OF TUNBRIDGE<br>ROADWORKS - GENERAL ARRANGEMENT<br>PLAN AND LONGITUDINAL SECTION<br>SHEET 32 |            | REGISTRATION NUMBER<br><b>A0087.000X</b> |  |                                    |                       |             |
| P1          |                       | ISSUED FOR REVIEW   |  |                    |   | RS  | 24/04/2017 |  |  |                                    |                       |             |
| No.         | Amendment Description |   |  |                    |   | Initials  | Date       |  |  |                                    |                       |             |
| A3 original |                       | This sheet may be prepared using colour and may be incomplete if copied |  |                    |   | Co-ordinate System: GDA/MGA 55  |            | Height Datum: AHD 83                     |  |                                    |                       | REVISION P1 |

## **Appendix B. P50 / P 90 Cost Estimates**

# Midland Highway - St Peters Pass Rest Area to south of Tunbridge

Project Name: Midland Highway - St Peters Pass Rest Area to south of Tunbridge

Project Phase: Preliminary Design

Brief reference number 2220-1-34 Project completion: May-19  
 State Growth Project Number A130022.000  
 Consultant Project number IS163600  
 Date 16/01/2017

## Description of Scope

The St Peters Pass to South of Tunbridge upgrade project is part of the Greater Midland Highway Upgrades Program. The program has the objective of making safety improvements to the Midland Highway in order to achieve a minimum 3-star AusRAP rating along the entire length of the highway. This will be achieved through the provision of alternating lengths of "2+1" lane arrangements, as well as targeted vertical and horizontal alignment improvements and junction upgrades.

The project is located on the Midland Highway (A0087) approximately 95km north of Hobart. The project extends from 3.6km south of the Sorell Springs Road junction (Link 43/10.00) to south of Tunbridge (Link 49/7.77), with a total length of approximately 10.7km.

Other features within this Project's scope include the provision of U-Turn facilities and safer property accesses, upgrades to roadside drainage and extension of stock underpasses. The scope also includes all pre-construction activities such as the relocation of TasNetworks electrical power poles and Telstra communication cables.

## Rates:

Rates are based on historic experience (prices from recent projects including Perth to Breadalbane, Ferry Main Road Glendevie and Tunbridge to Mona Vale upgrades), and are subject to change depending on market conditions.

## Quantities:

Quantities have been taken from the preliminary design model

## Escalation:

Escalation rates have been based on the Road Construction Outturn Cost Index (RCOCI) series and annual escalation rates calculations provided with the Template for Road Project Cost Reporting spreadsheet.

## Summary of results:

|   |               |               |
|---|---------------|---------------|
| Base Estimate (Owners Cost + Construction Cost)                       | \$ 22,284,235 |               |
| Inherent risk allowance   | P50           | P90           |
| Contingent risk allowance   | \$ 919,921    | \$ 2,566,194  |
| Base Estimate + Contingency (Inherent + Contingent)                   | \$ 745,926    | \$ 2,101,375  |
| Total contingency % above base estimate                               | \$ 23,950,082 | \$ 26,951,804 |
| Escalation (applied to base case + contingency, incorporating uplift) | 107%          | 121%          |
| Total Out turn  | \$ 886,918    | \$ 1,012,196  |
|   | \$ 24,840,000 | \$ 27,960,000 |
| Total Out turn Cost   | P50           | P90           |
|   | \$ 24,840,000 | \$ 27,960,000 |

## Overall Cash Flow

| P50 Cash Flow                                    | Financial Year |             |              |               |               |
|--|----------------|-------------|--------------|---------------|---------------|
|  | 2014 / 2015    | 2015 / 2016 | 2016 / 2017  | 2017 / 2018   | 2018 / 2019   |
| Project Identification and Scoping               | \$ -           | \$ 300,831  | \$ -         | \$ -          | \$ -          |
| Project Development                              | \$ -           | \$ -        | \$ 1,999,234 | \$ -          | \$ -          |
| Project Delivery (incl. CA)                      | \$ -           | \$ -        | \$ -         | \$ 9,717,292  | \$ 9,717,292  |
| Inherent Risk                                    | \$ -           | \$ -        | \$ -         | \$ 448,462    | \$ 448,462    |
| Contingent Risk                                  | \$ -           | \$ -        | \$ -         | \$ 363,639    | \$ 363,639    |
| Escalation costs                                 | \$ -           | \$ -        | \$ 35,986    | \$ 610,705    | \$ 831,822    |
| Sub-Total (annual, incorporating uplift factor)  | \$ -           | \$ 301,000  | \$ 2,035,000 | \$ 11,140,000 | \$ 11,361,000 |
| Accumulative Total (incorporating uplift factor) | \$ -           | \$ 301,000  | \$ 2,336,000 | \$ 13,476,000 | \$ 24,837,000 |

| P90 Cash Flow                                    | Financial Year |             |              |               |               |
|--|----------------|-------------|--------------|---------------|---------------|
|  | 2014 / 2015    | 2015 / 2016 | 2016 / 2017  | 2017 / 2018   | 2018 / 2019   |
| Project Identification and Scoping               | \$ -           | \$ 300,831  | \$ -         | \$ -          | \$ -          |
| Project Development                              | \$ -           | \$ -        | \$ 1,999,234 | \$ -          | \$ -          |
| Project Delivery (incl. CA)                      | \$ -           | \$ -        | \$ -         | \$ 9,717,292  | \$ 9,717,292  |
| Inherent Risk                                    | \$ -           | \$ -        | \$ -         | \$ 1,251,020  | \$ 1,251,020  |
| Contingent Risk                                  | \$ -           | \$ -        | \$ -         | \$ 1,024,420  | \$ 1,024,420  |
| Escalation costs                                 | \$ -           | \$ -        | \$ 35,986    | \$ 695,578    | \$ 947,426    |
| Sub-Total (annual, incorporating uplift factor)  | \$ -           | \$ 301,000  | \$ 2,035,000 | \$ 12,688,000 | \$ 12,940,000 |
| Accumulative Total (incorporating uplift factor) | \$ -           | \$ 301,000  | \$ 2,336,000 | \$ 15,024,000 | \$ 27,964,000 |

P90 AND P50 COST ESTIMATION FOR:

Project Name

Brief reference number

State Growth Project Number

Consultant Project number

Date

Midland Highway - St Peters Pass Rest Area to south of Tunbridge

2220-1-34

A130022.000

IS163600

16/01/17

Project completion:

May-19

| ID  | Description   | Estimate |                  |                 |                 |
|-----|---|----------|------------------|-----------------|-----------------|
|     |   | Unit     | Billed Qty       | Net Rate        | Net amount      |
| 1.0 | Project Identification Services   |          |                  |                 |                 |
| 1.1 | Project identification consultancy  | item     | 1.00             | \$ 119,498.00   | \$ 119,498.00   |
| 1.2 | State Growth Management   | item     | 1.00             | \$ 181,333.33   | \$ 181,333.33   |
|     | <i>Subtotal Identification</i>  |          |                  |                 | \$ 300,831.33   |
| 2.0 | Project Site Investigations   |          |                  |                 |                 |
| 2.1 | Consultant project scoping phase activities (engineering survey, environmental and heritage investigations) | item     | 1.00             | \$ 249,633.00   | \$ 249,633.00   |
| 2.2 | State Growth Project Management Scoping phase   | item     | 1.00             | \$ 362,666.67   | \$ 362,666.67   |
|     | <i>Subtotal Scoping</i>   |          |                  |                 | \$ 612,299.67   |
| 3.0 | Project Development Including Preconstruction Activities  |          |                  |                 |                 |
| 3.1 | Project development phase activities (preliminary design, detailed design, Tender documentation)            | item     | 1.00             | \$ 894,197.00   | \$ 894,197.00   |
| 3.2 | State Growth Project Management Scoping to Development  | item     | 1.00             | \$ 544,000.00   | \$ 544,000.00   |
| 3.3 | Acquisition and Utilities relocation costs  | item     | 1.00             | \$ 311,288.00   | \$ 311,288.00   |
|     | <i>Subtotal Development</i>   |          |                  |                 | \$ 1,749,485.00 |
| 4.0 | Contract Administration and Owners Costs  |          |                  |                 |                 |
| 4.1 | State Growth Project Management Delivery Phase cost per annum   | item     | 1.00             | \$ 75,000.00    | \$ 75,000.00    |
| 4.2 | Contract Admin costs  | item     | 1.00             | \$ 550,000.00   | \$ 550,000.00   |
| 4.3 | Insurances  | %        | \$ 18,895,000.00 | 0.39%           | \$ 73,879.45    |
|     | <i>Subtotal Contract Administration</i>   |          |                  |                 | \$ 698,879.45   |
|     | <i>Total Owners Costs</i>   |          |                  |                 | \$ 3,361,495.45 |
| 5.0 | Construction  |          |                  |                 |                 |
| 5.1 | PROJECT SPECIFIC ITEMS  | item     | 1.00             | \$ 598,000.00   | \$ 598,000.00   |
| 5.2 | EARTHWORKS  | Item     | 1.00             | \$ 3,220,319.00 | \$ 3,220,319.00 |
| 5.3 | DRAINAGE  | Item     | 1.00             | \$ 623,076.00   | \$ 623,076.00   |
| 5.4 | PAVEMENT  | Item     | 1.00             | \$ 7,785,640.00 | \$ 7,785,640.00 |
| 5.5 | BITUMINOUS SURFACING  | Item     | 1.00             | \$ 2,076,270.00 | \$ 2,076,270.00 |
| 5.6 | TRAFFIC FACILITIES  | Item     | 1.00             | \$ 2,250,416.22 | \$ 2,250,416.22 |
| 5.7 | LANDSCAPING   | Item     | 1.00             | \$ 366,250.00   | \$ 366,250.00   |
| 5.8 | MISCELLANEOUS   | Item     | 1.00             | \$ 916,500.00   | \$ 916,500.00   |
| 5.9 | PRECAST UNITS   | Item     | 1.00             | \$ 1,086,268.00 | \$ 1,086,268.00 |
|     | <i>Total Construction Costs (TCC)</i>   |          |                  |                 | \$ 18,922,739   |
|     | Base Estimate (Owners Cost + Construction Cost)   |          |                  |                 | \$ 22,284,235   |
|     |   |          |                  |                 |                 |
|     | Inherent risk allowance   |          |                  |                 | \$ 919,921      |
|     | Contingent risk allowance   |          |                  |                 | \$ 745,926      |
|     | Base Estimate + Contingency (Inherent + Contingent)   |          |                  |                 | \$ 23,950,082   |
|     |   |          |                  |                 |                 |
|     | Escalation (applied to base case + contingency, incorporating uplift)                                       |          |                  |                 | \$ 886,918      |
|     | Total contingency % above base estimate   |          |                  |                 | 107%            |
|     | <b>Total Out turn</b>   |          |                  |                 | \$ 24,840,000   |

|   | P50           | P90           |
|---|---------------|---------------|
| Inherent risk allowance   | \$ 919,921    | \$ 2,566,194  |
| Contingent risk allowance   | \$ 745,926    | \$ 2,101,375  |
| Base Estimate + Contingency (Inherent + Contingent)                   | \$ 23,950,082 | \$ 26,951,804 |
| Escalation (applied to base case + contingency, incorporating uplift) | \$ 886,918    | \$ 1,012,196  |
| Total contingency % above base estimate                               | 107%          | 121%          |



Contract Value Estimations for:

Project Name

Midland Highway - St Peters Pass Rest Area to south of Tunbridge

Brief reference number

2220-1-34

Project completion:

State Growth Project Number

A130022.000

May-19

Consultant Project number

IS163600

Date

16/01/17

Assumptions

Year

2016/2017

2017/2018

2018/2019

2019/2020

Annual Escalation Rate

1.79%

3.93%

3.50%

3.50%

Cumulative Escalation Factor

1.018

1.058

1.079

1.111

Uplift Factor

0.975

0.975

0.975

0.975

Midland Highway - St Peters Pass Rest Area to south of Tunbridge

Project Cash Flow

Totals

| P50 Cash Flow                                    | Financial Year |             |              |               |               |
|--|----------------|-------------|--------------|---------------|---------------|
|  | 2014 / 2015    | 2015 / 2016 | 2016 / 2017  | 2017 / 2018   | 2018 / 2019   |
| Project Identification and Scoping               |                | \$ 300,831  |              |               |               |
| Project Development                              |                |             | \$ 1,999,234 |               |               |
| Project Delivery (incl. CA)                      |                |             |              | \$ 9,717,292  | \$ 9,717,292  |
| Inherent Risk                                    |                |             |              | \$ 448,462    | \$ 448,462    |
| Contingent Risk                                  |                |             |              | \$ 363,639    | \$ 363,639    |
| Escalation costs                                 |                | \$ -        | \$ 35,986    | \$ 610,705    | \$ 831,822    |
| Sub-Total (annual, incorporating uplift factor)  | \$ -           | \$ 301,000  | \$ 2,035,000 | \$ 11,140,000 | \$ 11,361,000 |
| Accumulative Total (incorporating uplift factor) | \$ -           | \$ 301,000  | \$ 2,336,000 | \$ 13,476,000 | \$ 24,837,000 |

| P90 Cash Flow                                    | Financial Year |             |              |               |               |
|--|----------------|-------------|--------------|---------------|---------------|
|  | 2014 / 2015    | 2015 / 2016 | 2016 / 2017  | 2017 / 2018   | 2018 / 2019   |
| Project Identification and Scoping               |                | \$ 300,831  |              |               |               |
| Project Development                              |                |             | \$ 1,999,234 |               |               |
| Project Delivery (incl. CA)                      |                |             |              | \$ 9,717,292  | \$ 9,717,292  |
| Inherent Risk                                    |                |             |              | \$ 1,251,020  | \$ 1,251,020  |
| Contingent Risk                                  |                |             |              | \$ 1,024,420  | \$ 1,024,420  |
| Escalation costs                                 |                | \$ -        | \$ 35,986    | \$ 695,578    | \$ 947,426    |
| Sub-Total (annual, incorporating uplift factor)  | \$ -           | \$ 301,000  | \$ 2,035,000 | \$ 12,688,000 | \$ 12,940,000 |
| Accumulative Total (incorporating uplift factor) | \$ -           | \$ 301,000  | \$ 2,336,000 | \$ 15,024,000 | \$ 27,964,000 |

| SPEC<br>REF                            | ITEM<br>NO.   | DESCRIPTION   | QUANTITY | UNIT | RATE<br>\$ | AMOUNT<br>\$   |
|--|---------------|---|----------|------|------------|----------------|
| <u>PART 1 - PROJECT SPECIFIC ITEMS</u> |               |   |          |      |            |                |
| 160                                    | 1.01          | Contract Establishment and Mobilisation including fully operational site office and amenities. (Max 2% of Tender Sum) | 1        | Item | 50,000     | 50,000         |
| 304                                    | 1.02<br>1.02a | Construction - Incorporation of Existing Seal<br>Reclaim Existing Pavement - all activities                           | 165000   | m²   | 2          | 330,000        |
| 702                                    | 1.03          | Conduits for water pipes (irrigation for landowners)  | 140      | m    | 250        | 35,000         |
| 304                                    | 1.04          | Internal Laneways / Construct 3.0m wide unsealed farm access track  | 800      | m    | 60         | 48,000         |
| 731                                    | 1.05          | Street Lighting   | 3        | No.  | 10,000     | 30,000         |
|  | 1.06          | Relocate Pivot Irrigation Infrastructure  | 0        | Item | 25,000     | 0              |
|  | 1.07          | Removal of heritage/pioneer trees   | 11       | No.  | 5,000      | 55,000         |
|  | 1.08          | Extend Circular Stock Underpass   | 1        | Item | 50,000     | 50,000         |
|  |               | PART 1 - PROJECT SPECIFIC ITEMS<br>CARRIED TO SUMMARY   |          |      | TOTAL \$   | <u>598,000</u> |
| <u>PART 2 - EARTHWORKS</u>             |               |   |          |      |            |                |

| SPEC<br>REF   | ITEM<br>NO. | DESCRIPTION                                      | QUANTITY | UNIT | RATE<br>\$ | AMOUNT<br>\$     |
|---------------|-------------|--|----------|------|------------|------------------|
| 204.00        | 2.01        | Excavation & Embankment<br>Clearing and grubbing | 1        | Item | 150,000    | 150,000          |
| 204.00        | 2.02        | Excavation in all materials                      | 88,773   | m³   | 10         | 887,730          |
| 204.00        | 2.03        | Extra Over Item 2.02 for rock                    | 17,755   | m³   | 40         | 710,184          |
| 204.00        | 2.06        | Embankment construction                          | 82,830   | m³   | 15         | 1,242,450        |
|               |             | Drainage Layers                                  |          |      |            |                  |
| R22           | 2.08        | Rock drainage blanket                            | 250      | m²   | 50         | 12,500           |
| 204.00        | 2.12        | Treatment of redundant road                      | 10,497   | m²   | 15         | 157,455          |
|               |             | Batter Treatment                                 |          |      |            |                  |
| <u>204.00</u> | <u>2.13</u> | <u>Supply and placing of topsoil</u>             |          |      |            |                  |
| 204.00        | 2.13a       | 50mm deep  | 1        | Item | 60,000     | 60,000           |
|               |             | PART 2 - EARTHWORKS<br>CARRIED TO SUMMARY        |          |      | TOTAL \$   | <u>3,220,319</u> |
|               |             | <u>PART 3 - DRAINAGE</u>                         |          |      |            |                  |

| SPEC<br>REF | ITEM<br>NO. | DESCRIPTION   | QUANTITY | UNIT           | RATE<br>\$ | AMOUNT<br>\$ |
|-------------|-------------|---|----------|----------------|------------|--------------|
|             |             | Surface Drainage                                    |          |                |            |              |
| 701.00      | 3.01        | Excavation of surface drains                        | 9,930    | m              | 13         | 129,090      |
|             | <u>3.03</u> | <u>Lining of open drains</u>                        |          |                |            |              |
| R31         | 3.03a       | Rock lining of open drains                          | 200      | m <sup>2</sup> | 40         | 8,000        |
|             |             | Culverts & Endwalls                                 |          |                |            |              |
| <u>701</u>  | <u>3.09</u> | <u>Steel Reinforced Concrete pipes in new works</u> |          |                |            |              |
| 701         | 3.09b       | 375mm dia pipe                                      | 227.10   | m              | 450        | 102,195      |
| 701         | 3.09c       | 450mm dia pipe                                      | 59.30    | m              | 450        | 26,685       |
| 701         | 3.09e       | 600mm dia pipe                                      | 21.96    | m              | 700        | 15,372       |
|             |             | 900mm dia pipe                                      | 63.44    | m              | 850        | 53,924       |
| R32         | 3.09i       | 1200mm dia pipe                                     | 45.14    | m              | 1,000      | 45,140       |
| <u>R32</u>  | <u>3.12</u> | <u>Removal of pipes ≤ 600mm dia</u>                 |          |                |            |              |
| 701.00      | 3.12c       | Under existing pavement                             | 160.60   | m              | 50         | 8,030        |
| <u>R32</u>  | <u>3.13</u> | <u>Removal of pipes &gt; 600mm dia</u>              |          |                |            |              |
| R32         | 3.13c       | Under existing pavement                             | 11.90    | m              | 100        | 1,190        |
| 701.00      | 3.14        | Remove endwalls ≤ 600mm dia                         | 23       | No.            | 100        | 2,300        |
| R32         | 3.15        | Remove endwalls > 600mm dia                         | 17       | No.            | 150        | 2,550        |
| <u>R32</u>  | <u>3.16</u> | <u>Construction of endwalls</u>                     |          |                |            |              |
| R32         | 3.16b       | 375mm dia pipe                                      | 22       | No.            | 550        | 12,100       |
| R32         | 3.16c       | 450mm dia pipe                                      | 5        | No.            | 700        | 3,500        |
| R32         | 3.16e       | 600mm dia pipe                                      | 2        | No.            | 1,100      | 2,200        |
|             |             | 600mm dia pipe - 3 barrel                           | 1        | No.            | 3,000      | 3,000        |
| R32         | 3.16g       | 900mm dia pipe                                      | 8        | No.            | 1,800      | 14,400       |
|             |             | 900mm dia pipe - 2 barrel                           | 2        | No.            | 3,000      | 6,000        |
| R32         | 3.16i       | 1200mm dia pipe                                     | 3        | No.            | 2,000      | 6,000        |
|             |             | 1200mm dia pipe - 2 barrel                          | 2        | No.            | 3,000      | 6,000        |
|             |             | 1350mm dia pipe                                     | 1        | No.            | 2,400      | 2,400        |
|             |             | Pits  |          |                |            |              |
| R32         | 3.18        | Construction of catch pits                          | 2        | No.            | 2,000      | 4,000        |
| <u>R32</u>  | <u>3.23</u> | <u>Construction of outlet protection works</u>      |          |                |            |              |
| R32         | 3.23b       | Rock dispersing apron                               | 12       | No.            | 750        | 9,000        |
|             |             | Subsoil Drains                                      |          |                |            |              |
| R33         | 3.34a       | Class 400 sub-soil drain <750 mm deep               | 2,000    | m              | 45         | 90,000       |
| R33         | 3.34b       | Class 1000 sub-soil drain <750mm deep               | 100      | m              | 60         | 6,000        |
|             |             | Kerbing   |          |                |            |              |
| R36         | 3.46        | B1, barrier kerb/gutter                             | 800      | m              | 80         | 64,000       |

| SPEC<br>REF | ITEM<br>NO. | DESCRIPTION   | QUANTITY | UNIT | RATE<br>\$ | AMOUNT<br>\$   |
|-------------|-------------|---|----------|------|------------|----------------|
|             |             | PART 3 - DRAINAGE<br>CARRIED TO SUMMARY             |          |      | TOTAL \$   | <u>623,076</u> |
|             |             | <u>PART 4 - PAVEMENT</u>                            |          |      |            |                |
|             |             | Construction  |          |      |            |                |
| R40         | 4.01        | <u>Supply, spread and compact sub-base material</u> | 42,483   | m³   | 80         | 3,398,640      |
| R40         | 4.03        | <u>Supply, spread and compact base material</u>     | 43,860   | m³   | 100        | 4,386,000      |
| P.S         | 4.12        | Saw Cutting of existing surface/pavement            | 40       | m    | 25         | 1,000          |



| SPEC<br>REF | ITEM<br>NO. | DESCRIPTION   | QUANTITY | UNIT | RATE<br>\$ | AMOUNT<br>\$     |
|-------------|-------------|---|----------|------|------------|------------------|
|             |             | PART 4 - PAVEMENT<br>CARRIED TO SUMMARY                         |          |      | TOTAL \$   | <u>7,785,640</u> |
|             |             | <u>PART 5 - BITUMINOUS SURFACING</u>                            |          |      |            |                  |
|             |             | New pavements   |          |      |            |                  |
| <u>R51</u>  | <u>5.01</u> | <u>Sprayed Seal</u>   |          |      |            |                  |
| R51         | 5.01b       | Nominally 14mmm size  | 176,785  | m²   | 10         | 1,767,850        |
|             |             | Asphalt   |          |      |            |                  |
| <u>R55</u>  | <u>5.05</u> | <u>Supply, deliver, place and compact including sweeping of</u> |          |      |            |                  |
|             |             | Dense Graded Asphalt  |          |      |            |                  |
| R55         | 5.05c       | Nominally 14 mm size  | 11,015   | m²   | 25         | 275,375          |
| R55         | 5.05f       | Tack Coat   | 11,015   | m²   | 3          | 33,045           |

| SPEC<br>REF | ITEM<br>NO. | DESCRIPTION   | QUANTITY | UNIT | RATE<br>\$ | AMOUNT<br>\$     |
|-------------|-------------|---|----------|------|------------|------------------|
|             |             | PART 5 - BITUMINOUS SURFACING<br>CARRIED TO SUMMARY                   |          |      | TOTAL \$   | <u>2,076,270</u> |
|             |             | <u>PART 6 - TRAFFIC FACILITIES</u>                                    |          |      |            |                  |
|             |             | Road Safety Barrier Systems   |          |      |            |                  |
| R61         | 6.01a       | Supply and installation of W-Beam Safety Barrier                      | 480      | m    | 145        | 69,600           |
| R61         | 6.02        | Supply and installation of Thrie Beam Safety Barrier                  | 105      | m    | 400        | 42,000           |
| R61         | 6.04        | Supply and Installation of Tensioned Wire Rope Safety Barrier (TWRSB) | 18,350   | m    | 90         | 1,651,500        |
| <u>R61</u>  | <u>6.05</u> | <u>Supply and installation of W-Beam Safety Barrier</u>               |          |      |            |                  |
| R61         | 6.05b       | Trailing Terminal   | 2        | No.  | 2,000      | 4,000            |
| R61         | 6.05c       | Terminal Assemblies End impact  | 4        | No.  | 4,000      | 16,000           |
| R61         | 6.05d       | Barrier to Thrie Beam transition pieces                               | 2        | No.  | 2,000      | 4,000            |
| <u>R61</u>  | <u>6.09</u> | <u>Remove existing barrier</u>  |          |      |            |                  |
| R61         | 6.09a       | W-Beam Safety Barrier   | 3,560    | m    | 25         | 89,000           |
| R61         | 6.09e       | Tensioned Wire Rope Safety Barrier                                    | 1,005    | m    | 25         | 25,125           |
|             |             | Guide Posts   |          |      |            |                  |
| <u>R62</u>  | <u>6.14</u> | <u>Supply and installation of guide post</u>                          |          |      |            |                  |
| R62         | 6.14a       | Guide posts   | 200      | No.  | 42         | 8,400            |
| R62         | 6.15        | Removal and disposal of existing guide posts                          | 200      | No.  | 11         | 2,160            |
|             |             | Delineators   |          |      |            |                  |
| <u>R61</u>  | <u>6.17</u> | <u>Supply and installation of delineator holders and delineators</u>  | 2,367    | No.  | 14         | 32,781           |
|             |             | Signs   |          |      |            |                  |
| <u>R63</u>  | <u>6.18</u> | <u>Fabrication and installation of signs</u>                          | 56       | No.  | 450        | 25,200           |
| <u>R63</u>  | <u>6.19</u> | <u>Relocation of existing signs</u>                                   | 39       | No.  | 250        | 9,750            |
| R63         | 6.20        | Removal of existing signs   | 7        | No.  | 200        | 1,400            |

| SPEC<br>REF | ITEM<br>NO. | DESCRIPTION  | QUANTITY | UNIT | RATE<br>\$ | AMOUNT<br>\$ |
|-------------|-------------|--|----------|------|------------|--------------|
| <u>R64</u>  | <u>6.27</u> | Extruded Thermoplastic<br><u>Supply and application of EXTRUDED THERMOPLASTIC</u><br><u>pavement marking including glass beads and angular</u><br><u>aggregate as required</u> | 1        | Item | 40,000     | 40,000       |
| <u>R64</u>  | <u>6.30</u> | Audio Tactile Type A<br><u>Supply and install AUDIO Tactile Type A pavement marking</u><br><u>including glass beads and angular aggregate as required</u>                      | 1        | Item | 180,000    | 180,000      |
| <u>R64</u>  | <u>6.32</u> | Chevrons<br><u>Supply and application of chevrons with:</u>  |          |      |            |              |
| R64         | 6.32b       | Standard Waterborne Paint  | 1        | Item | 10,000     | 10,000       |
| <u>R64</u>  | <u>6.34</u> | Pavement Arrows<br><u>Supply and install pavement arrows including glass beads and</u><br><u>angular quartz in Extruded Thermoplastic</u>                                      |          |      |            |              |
| R64         | 6.34a       | Left or right only   | 30       | No.  | 350        | 10,500       |
| R64         | 6.34e       | Rural merge  | 20       | No.  | 350        | 7,000        |
| <u>R64</u>  | <u>6.45</u> | RRPM's<br><u>Supply and application of raised pavement markers</u>   | 1        | Item | 22,000     | 22,000       |

| SPEC<br>REF  | ITEM<br>NO. | DESCRIPTION  | QUANTITY | UNIT | RATE<br>\$ | AMOUNT<br>\$     |
|--------------|-------------|--|----------|------|------------|------------------|
|              |             | PART 6 - TRAFFIC FACILITIES<br>CARRIED TO SUMMARY  |          |      | TOTAL \$   | <u>2,250,416</u> |
|              |             | <u>PART 7 - LANDSCAPING</u>  |          |      |            |                  |
|              |             | General  |          |      |            |                  |
| R70          | 7.04        | Hydroseeding   | 1        | item | 15,000     | 15,000           |
|              |             | Plantings  |          |      |            |                  |
| <u>R70</u>   | <u>7.06</u> | <u>Supply, transportation and storage of plants, planting and<br/>maintenance up to Practical Completion</u> | 1        | Item | 10,000     | 10,000           |
|              |             | Fences and Gates   |          |      |            |                  |
| R72          | 7.10        | Supply and erect fences & gates  | 1        | Item | 200,000    | 200,000          |
| R72          | 7.13        | Remove existing fence  | 1        | Item | 30,000     | 30,000           |
|              |             | Footpaths and Islands  |          |      |            |                  |
| R36 /<br>R80 | 7.15        | Construction of paved traffic islands including kerbing and all<br>infill materials                          | 445      | m²   | 250        | 111,250          |
|              |             | PART 7 - LANDSCAPING<br>CARRIED TO SUMMARY   |          |      | TOTAL \$   | <u>366,250</u>   |
|              |             | <u>PART 8 - MISCELLANEOUS</u>  |          |      |            |                  |
| R91          | 8.01c       | Close access   | 5        | No.  | 2,500      | 12,500           |
| G1           | 8.02        | Inspection of buildings  | 10       | No.  | 900        | 9,000            |
| <u>R92</u>   | <u>8.05</u> | <u>Service Relocation - Excavation and Backfill of trenches for:</u>   |          |      |            |                  |
| R92          | 8.05d       | Telecommunications   | 1500     | m    | 30         | 45,000           |
| G2           | 8.06b       | Provision of Environmental Completion Audit  | 1        | Item | 10,000     | 10,000           |
| G2           | 8.08        | Environmental Management   | 1        | Item | 40,000     | 40,000           |
| G3           | 8.10        | Traffic Management   | 1        | Item | 800,000    | 800,000          |

| SPEC<br>REF | ITEM<br>NO. | DESCRIPTION   | QUANTITY | UNIT           | RATE<br>\$ | AMOUNT<br>\$ |
|-------------|-------------|---|----------|----------------|------------|--------------|
|             |             | PART 8 - MISCELLANEOUS<br>CARRIED TO SUMMARY                                    |          |                | TOTAL \$   | 916,500      |
|             |             | <u>PART 9 - PRECAST UNITS</u>   |          |                |            |              |
|             |             | <u>EXCAVATION</u>   |          |                |            |              |
| B1          | 9.01        | Excavation  | 439      | m <sup>3</sup> | 20         | 8,780        |
| B1          | 9.02        | Extra over Items 9.01 for excavation in rock                                    | 44       | m <sup>3</sup> | 60         | 2,634        |
| B1          | 9.03        | Supply, place and compact special fill  | 665      | m <sup>3</sup> | 120        | 79,800       |
| B1          | 9.08        | Supply and place rock armour (around wingwalls)                                 | 137      | m <sup>2</sup> | 180        | 24,588       |
| B1          | 9.09        | Excavation of inlet, outlet and stream diversion channels                       | 30       | m              | 200        | 6,000        |
| B1          | 9.10        | Supply and place rock protection to inlet, outlet and stream diversion channels | 265      | m <sup>2</sup> | 200        | 53,000       |
|             |             | <u>MANUFACTURE AND SUPPLY</u>   |          |                |            |              |
| <u>B24</u>  | <u>9.11</u> | <u>Construction of for precast units</u>  |          |                |            |              |
| B24         | 9.11a       | Construction of concrete base slabs   | 137      | m <sup>3</sup> | 1,350      | 184,410      |
| B24         | 9.11b       | Construction of crushed rock foundation   | 546      | m <sup>2</sup> | 40         | 21,856       |
| B24         | 9.12        | Manufacture precast culvert crown units and deliver to storage area             | 118      | No.            | 3,500      | 413,000      |
| B24         | 9.14        | Manufacture precast wingwall units and deliver to storage area                  | 26       | No.            | 4,000      | 104,000      |
| B24         | 9.15        | Manufacture precast kerb units and deliver to storage area                      | 19       | No.            | 1,600      | 30,400       |
|             |             | <u>HANDLE AND PLACE</u>   |          |                |            |              |
| <u>B14</u>  | <u>9.17</u> | <u>Handle and place precast culvert crown units on prepared foundation</u>      |          |                |            |              |
| B14         | 9.17b       | Units 2 to 3 m wide   | 104      | No.            | 900        | 93,600       |
| B14         | 9.17c       | Units greater than 3 m wide   | 14       | No.            | 1,200      | 16,800       |
| <u>B14</u>  | <u>9.19</u> | <u>Handle and place precast wingwall units</u>                                  |          |                |            |              |
| B14         | 9.19b       | Units 1.5 to 2.4 m high   | 22       | No.            | 900        | 19,800       |
| B14         | 9.19c       | Units greater than 2.4 m high   | 4        | No.            | 1,200      | 4,800        |
| B14         | 9.20        | Handle and place precast kerb units   | 19       | No.            | 1,200      | 22,800       |



| SPEC<br>REF | ITEM<br>NO. | DESCRIPTION                                  | QUANTITY | UNIT | RATE     | AMOUNT           |
|-------------|-------------|--|----------|------|----------|------------------|
|             |             |  |          |      | \$       | \$               |
|             |             | PART 9 - PRECAST UNITS<br>CARRIED TO SUMMARY |          |      | TOTAL \$ | <u>1,086,268</u> |

SCHEDULE OF RATES  
SUMMARY

| PART<br>NO. | ITEM                 | OPTION 1<br>AMOUNT<br>\$ |
|-------------|----------------------|--------------------------|
| 1           | PROJECT SPECIFIC     | 598,000                  |
| 2           | EARTHWORKS           | 3,220,319                |
| 3           | DRAINAGE             | 623,076                  |
| 4           | PAVEMENT             | 7,785,640                |
| 5           | BITUMINOUS SURFACING | 2,076,270                |
| 6           | TRAFFIC FACILITIES   | 2,250,416                |
| 7           | LANDSCAPING          | 366,250                  |
| 8           | MISCELLANEOUS        | 916,500                  |
| 9           | PRECAST UNITS        | 1,086,268                |

TOTAL \$ 18,922,739

## Utilities Relocation Costs

Based on Preliminary Design Layout

Service Relocation - Excavation and Backfill of trenches for:

| DESCRIPTION              | QUANTITY | UNIT | RATE | AMOUNT    |
|--------------------------|----------|------|------|-----------|
| Electricity poles        | 19 No.   |      | 8000 | 152,000.0 |
| Telecommunications cable | 1500 m   |      | 50   | 75,000.0  |
| Telecommunications pits  | 10 No.   |      | 2000 | 20,000.0  |
| Service Relocation       |          |      |      | 247,000.0 |

|             |    |        |      |           |
|-------------|----|--------|------|-----------|
|             |    | Qty    | Rate | Amount    |
| Acquisition | m2 | 45,920 | 1.4  | 64,288.00 |

|       |  |  |    |            |
|-------|--|--|----|------------|
| TOTAL |  |  | \$ | 311,288.00 |
|-------|--|--|----|------------|

CONTINGENT RISKS FOR:

Project Name  
Brief reference number  
State Growth Project Number  
Consultant Project number  
Date

Midland Highway - St Peters Pass Rest Area to south of Tunbridge  
2220-1-34  
A130022.000  
IS163600  
16/01/2017

Project completion:  
May-19

| Summary Description  | Likelihood of occurring | Likelihood of not occurring | Consequence of occurring  |              |  |               |   |                 |
|--|-------------------------|-----------------------------|---|--------------|--|---------------|---|-----------------|
|  |                         |                             | Description Min   | Min Value    | Description Most Likely  | ML Value      | Description Max   | Max Value       |
|  |                         |                             |   | 10.00        |  | 50.00         |   | 90.00           |
| <b>CONTINGENT RISKS - PRIOR DEVELOPMENT APPLICATION</b>  |                         |                             |   |              |  |               |   |                 |
| Delay in commencement of design and impact on cost caused by a lack of geotechnical information                              | 30%                     | 70%                         | Additional desktop analysis required to determine batter designs etc.                     | \$ 20,000.00 | Supplementary field investigations required  | \$ 100,000.00 | Additional field investigations and lab testing. Design modifications for geotechnical issues (slope stability) create increased project costs. | \$ 1,000,000.00 |
| Design standards are unable to be met at a number of locations along the project site and require redesign and/or mitigation | 20%                     | 80%                         | Minimal design changes required - risk accepted.  | \$ 15,000.00 | Minor mitigation measures required to address SSD or similar issues.   | \$ 50,000.00  | Re-design required to address all deficient areas.  | \$ 500,000.00   |
| Error or omission in design identified during project delivery and requires additional / changed work                        | 20%                     | 80%                         | Minimal design changes required.  | \$ 15,000.00 | Minor issues during delivery that can be addressed in consultation with Contractor.  | \$ 50,000.00  | Major re-design required during delivery.   | \$ 250,000.00   |
| Impact on Services (TasIrrigation, Telstra, TasNetworks), and TasRail causing delays   | 20%                     | 80%                         | Minimal design changes required.  | \$ 15,000.00 | Minor design changes undertaken  | \$ 50,000.00  | Re-design to avoid items and additional relocation costs.   | \$ 200,000.00   |
| <b>CONTINGENT RISKS - PRIOR RFT</b>  |                         |                             |   |              |  |               |   |                 |
| Stakeholder dissatisfaction with design / Planning permit is challenged and requires design changes                          | 70%                     | 30%                         | No design changes required - concerns addressed through liaison with council.             | \$ 10,000.00 | Additional consultation with Council and landowners as well as investigation of potential changes.   | \$ 50,000.00  | Re-design resulting in additional concessions for landowners (eg. G-turns, underpasses etc) creating time delay and additional project costs.   | \$ 500,000.00   |
| Impact on environmental and heritage items causes delays or redesign   | 20%                     | 80%                         | No design changes required, slight time delay to confirm insignificant impact.            | \$ 10,000.00 | Additional approval requirements required (eg. Changes to landscaping plans) creating time delays and some additional documentation costs. | \$ 40,000.00  | Re-design required to avoid items creating time delays and additional project costs.  | \$ 500,000.00   |
| Significant re-design required due to landslide hazards within the project site  | 10%                     | 90%                         | Minimal design changes required.  | \$ 15,000.00 | Moderate additional design required to develop risk mitigations (e.g. engineered retaining wall).  | \$ 30,000.00  | Major re-design required during delivery.   | \$ 100,000.00   |
| Service Authorities do not deliver works on time   | 20%                     | 80%                         | Contractor will be able to work around the delay with minimal impact.                     | \$ 25,000.00 | Minor delays to Contractor's program creating additional project costs.  | \$ 50,000.00  | Major delays to Contractors program creating additional project costs.  | \$ 250,000.00   |
| <b>CONTINGENT RISKS - DURING CONSTRUCTION</b>  |                         |                             |   |              |  |               |   |                 |
| Discovery of unlisted site/object with heritage values   | 10%                     | 90%                         | Unanticipated Discovery Plan process is undertaken.                                       | \$ 25,000.00 | Authorities required to attend site and to assess object - time delays to construction.  | \$ 100,000.00 | Significant delays or re-design during delivery that create additional time and construction costs.   | \$ 500,000.00   |
| Discovery of additional services not shown on Tender drawings  | 10%                     | 90%                         | No relocations required, very small time delay.   | \$ 10,000.00 | Minor relocation or protection required during site works.   | \$ 50,000.00  | Major relocation of undiscovered services.  | \$ 150,000.00   |
| Unforeseen ground condition or latent condition  | 40%                     | 60%                         | Minor additional work dealt with on site.   | \$ 50,000.00 | Advice required from designer - additional works required on site and construction delayed.  | \$ 150,000.00 | Major additional works and design effort creating additional time and costs.  | \$ 2,000,000.00 |
| Construction works cause landslip to occur   | 5%                      | 95%                         | Minor batter failure / rockfall which is corrected on site with minimal specialist input. | \$ 50,000.00 | Advice required from designer - additional works required on site and construction delayed.  | \$ 100,000.00 | Major construction delays and additional design is required to rectify.   | \$ 1,000,000.00 |
| Constructability issues - Project unable to be constructed as per design   | 20%                     | 80%                         | Minimal design changes required.  | \$ 25,000.00 | Minor issues during delivery that can be addressed in consultation with Contractor.  | \$ 50,000.00  | Major re-design required during construction works.   | \$ 500,000.00   |
| <b>CONTINGENT RISKS - AFTER CONSTRUCTION</b>   |                         |                             |   |              |  |               |   |                 |
| Existing flooding issues reported by the landowners could be exacerbated by the highway upgrades                             | 20%                     | 80%                         | Flooding issues easily remediated.  | \$ 10,000.00 | Adjustments required to watercourses.  | \$ 30,000.00  | Major adjustments required to watercourses.   | \$ 200,000.00   |

@risk output

|                       |     |    |           |
|-----------------------|-----|----|-----------|
| Contingency allowance | P50 | \$ | 745,926   |
| Contingency allowance | P90 | \$ | 2,101,375 |