

Midland Highway – White Lagoon (Tunbridge) to Mona Vale Safety Upgrade


Submission to the Parliamentary Standing
Committee on Public Works

Department of State Growth

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1. Introduction

1.1 Background

As part of Tasmania's National Transport Network, the Midland Highway is the major transport link for the movement of people and freight between the northern and southern regions of Tasmania. The highway is a High Productivity Vehicle (HPV) and Higher Mass Limit (HML) gazetted route, currently supporting B-doubles up to 26m, 67.5t GVM.

The White Lagoon (Tunbridge) to Mona Vale Safety Upgrade is part of the *Midland Highway Action Plan* which will deliver improved safety benefits along the Midland Highway between the northern entrance to Tunbridge and Mona Vale Road, a total length of 10.3km. Between Tunbridge (north) and Mona Vale and past White Lagoon, the existing highway is predominately two lane single carriageway with a posted speed limit of 110 km/h. Approximately 2.5km south of the Mona Vale Road junction there is a section of four-lane undivided highway providing overtaking opportunities in each direction for a distance of 1.45km.

Within the project site, the existing road has deficiencies in stopping sight distance and geometric alignment for a 110 km/h posted speed environment. Land adjacent to the highway is agricultural, with a number of private property accesses within the project site.

Works being undertaken as part of the safety upgrades will provide capacity improvements and improve road user safety to a minimum 3 Star AusRAP rating. This is achieved by eliminating head on crashes and significantly reducing the likelihood and severity of remaining casualty crashes through provision of a central median flexible safety barrier.

1.2 Project Objectives

The main objectives for the upgrade between White Lagoon (Tunbridge) and Mona Vale are:

- Upgrade the road to a minimum 3-Star AusRAP rating
- Eliminate head-on collisions by providing a flexible safety barrier in a central median
- Provide additional safe overtaking opportunities through a "2+1" lane arrangement.
- Maintain a 110 km/h speed environment, consistent with the Tasmania standard for the National Highway
- Upgrades to the Tunbridge Main Road (north) and Mona Vale Road junctions
- Increased traffic flow efficiency due to the provision of two further overtaking opportunities within the project site, as detailed below in Table 1.
- Improvements to two substandard horizontal curves at the northern end of the project, in the vicinity of the Mona Vale Road junction

Table 1: Comparison of Existing and Proposed Overtaking opportunities

Direction	Current Overtaking Opportunities	Proposed Overtaking Opportunities
Northbound	1.45 km	2.45 km – in 2 locations
Southbound	1.45 km	3.30 km – in 2 locations

1.3 Project Location

The project is located approximately 110km north of Hobart on the Midland Highway (A0087), from the Tunbridge Main Road northern junction, to just north of Mona Vale Road junction (Link 55, Chainage 1.04 to Link 57 Chainage 0.85). The project site is designated White Lagoon (Tunbridge) to Mona Vale and is shown in Figure 1.



Figure 1: Project Location Map (source: maps.thelist.tas.gov.au)

1.4 Strategic Context of the Project

1.4.1 Alignment with Approved Strategies

In May 2014, the Australian and Tasmanian Governments committed to the *Midland Highway Action Plan*, which is to provide \$500 million in funding over 10 years to the upgrade of the highway. The upgrade between White Lagoon (Tunbridge) and Mona Vale is a component of this Plan and aims to improve safety to a minimum 3 Star AusRAP rating integrated with additional safe overtaking facilities, and a staged approach to capacity improvements.

1.4.2 Alignment with Planning Policies and Themes

The upgrade between White Lagoon (Tunbridge) and Mona Vale also supports the *Midland Highway Partnership Agreement 2010* that was developed between the Tasmanian Government and the seven Councils abutting the Midland Highway. Upgrading of the section of highway between Mona Vale and White Lagoon, located within the Northern Midlands Council municipality, was identified as a priority in the Agreement.

2. Project Details

2.1 Proposed Works

The White Lagoon (Tunbridge) to Mona Vale Safety Upgrade is located on the Midland Highway from the northern side of Tunbridge Tier Road junction to just north of Mona Vale Road junction. To achieve a minimum 3 Star AusRAP rating, the scope of the Project involves widening the existing Midland Highway to provide alternating lengths of “2+1” lane arrangements separated by a central flexible safety barrier.

The Project will also include improvements to the horizontal alignment of the highway, localised improvements to vertical curves, provision of turn facilities, safer access to adjacent land, and upgrades to the Tunbridge Main Road and Mona Vale Road junctions.

The key outcomes of the Project are:

- Improvements to the overall capacity of the highway to cater for future traffic growth and freight movements
- Additional safe overtaking opportunities through provision of a “2+1” lane arrangement
- Head-on collisions will be eliminated through provision of a flexible safety barrier within a central median
- The section of Midland Highway between White Lagoon (Tunbridge) and Mona Vale will be rated a minimum 3-Star under the AusRAP rating system

The Department of State Growth’s “2+1” lane arrangement includes flexible safety barrier within the central 2.1m median. Flexible safety barriers have also been provided to protect embankment batters with heights of 2.0m or greater where flat, safe batters cannot reasonably be provided.

To provide sufficient turning opportunities for emergency vehicles and general traffic within the project site, breaks in the central median barrier have been provided at intersections, turn facilities and a limited number of accesses. Two formal turn facilities (P-Turns) have been provided at the southern and northern extents of the project site, at Tunbridge Tier Road junction and Mona Vale Road junction, respectively. Two additional turn facilities (P Turns) have been provided for northbound and southbound traffic near White Lagoon at the centre of the project. G-Turns have been incorporated into the design to provide safer access at two significant access locations and based on the Department of State Growth’s strategy for vehicle turns. All turn facilities within the project site have been designed to accommodate 26m B-Doubles.

A number of accesses along the highway will be upgraded as part of the works, with the majority designed as left-in / left-out arrangements accommodating 19m semi-trailer vehicles. Three property accesses will be closed and relocated following consultation with the property owners. As part of a previous landowner agreement established by the Department of State Growth, one existing property access will be closed within the Project site.

As part of the project, a new stock underpass is to be installed for the ‘Lochiel’ property. Based on an analysis of preferred locations and consultations with the property owner, the new stock underpass will be located at Ch. 4280, in proximity to White Lagoon. Stock pens and stock runs have been incorporated into the new underpass design to tie-in with the property’s existing farming operations.

Other features within the project scope include upgrades to roadside drainage, extension of two existing stock underpasses, and reinstatement of adjacent livestock lanes. The scope also includes all pre-construction activities such as clearing and grubbing, relocation of TasNetworks electrical power poles and Telstra communication cables.

The proposed works are shown on the drawings included as Appendix A.

2.2 Design Speed

The current posted speed limit is 110 km/h within the project site. However, there are a number of sections where the existing highway does not meet the design standards for a 110 km/h speed environment, for example, the two substandard horizontal curves near the Mona Vale Road junction which only comply with a 100km/h design speed. There are also several vertical curves which do not comply with minimum stopping sight distances and some accesses where safe intersection site distances are not achieved. This safety upgrade will address these deficiencies.

A minimum design speed of 110km/h has been adopted throughout the project. Where upgrades to the geometry did not involve significant cost, a 120km/h design speed has been accommodated as recommended in the Austroads guidelines. This has been achieved for the majority of the horizontal alignment, with the exception being the curve at the Mona Vale Road intersection which meets the criteria for a 110 km/h design speed. The majority of the highway's vertical alignment has been designed to a 110 km/h design speed since the costs involved with upgrading the geometry to comply with a 120km/h design speed would have made poor use of limited funding, and not maximised the use of the existing pavement, most of which is in good condition.

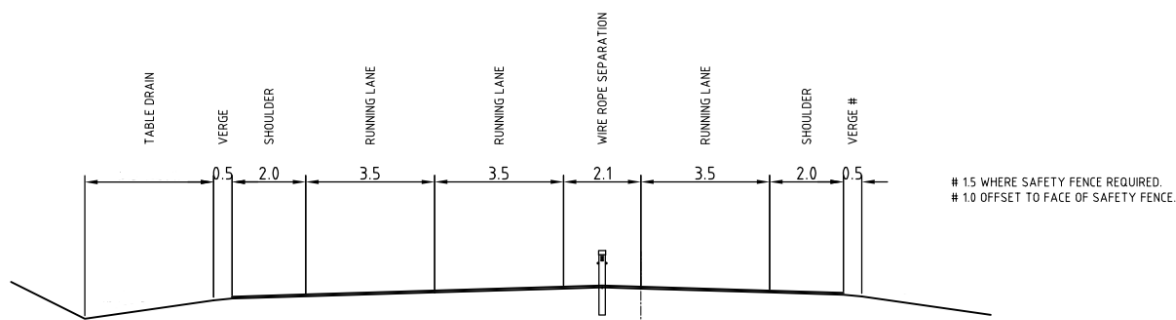
2.3 Road Cross Section

The upgraded highway will generally consist of the following:

- 3.5m traffic lanes with alternating overtaking opportunities
- 2.0m sealed shoulders
- 2.1m central median incorporating tensioned wire rope barrier
- 0.5m unsealed verges

A typical cross-section for the “2+1” lane arrangement is shown in Figure 2 below.

Figure 2: Example “2+1” Lane Arrangement



Treatment of Existing Overtaking Lanes

Through the existing overtaking lanes (Ch. 6200 to Ch. 7900) it is proposed to adopt a shoulder width that is slightly narrower than the width specified by the Department in Figure 2. This has been recommended since the formation width of the existing overtaking lanes is only 600mm less than the Department's typical 2+1 cross section, and the pavement within this section is in good condition. Whilst sufficient shoulder width will still be provided, adopting a slightly narrower formation width in this section also minimises construction costs and traffic disruptions.

Based on consultation with the Department, it is proposed that in several locations where the existing crown falls outside the 2.1m central median, i.e. within the running lane, a nominal overlay shape correction will be applied to move the crown into the median which will contribute to improved ride quality and road user safety.

2.4 Drainage

Open drains have been specified as per the typical cross section for a “2+1” lane arrangement and also where required to account for both existing conditions and changes to roadside environment. There are no known flooding or ponding issues along the section of highway that have been reported by adjacent landowners.

No kerb and channel is proposed to be installed along this project. Adequately sized open table drains will be constructed parallel to the new road pavement to collect existing and additional runoff generated over the widened highway sealed area.

Subsoil drains are anticipated to be required at a number of locations within the project and will generally be required where flow paths are able to travel through the pavement material. This will include areas where cut batters are present on both sides of the road.

It was determined that the existing culverts within the project site have sufficient hydraulic capacity to cope with a 1 in 50 year flood event and will be retained and extended as part of the works. Culvert endwalls that are situated within the proposed clear zone will be extended or upgraded with drivable endwalls if the pipe diameter is less than 450mm. As part of the works, an existing old twin cell cast insitu box culvert near White Lagoon is no longer required and a smaller pipe culvert can be installed due to its proximity to other culverts and small catchment area.

Due to the realignment of the horizontal curve at the northern end of the project (near Ch. 9000), existing culverts in proximity to this location will be abandoned, with three new culverts installed on the new alignment. It is also envisaged that several new drainage channels within existing road formations will need to be incorporated into the final design as part of these new works.

2.5 Utilities

2.5.1 Overhead Power

TasNetworks overhead power lines and poles are located along the length of the project site, almost entirely on the western side of the existing highway. The current design indicates that up to 48 separate power poles will require relocation to accommodate the highway upgrades as they are located within the works footprint or are within the prescribed clear zone. The number of poles requiring relocation will be finalised as part of TasNetwork’s design.

2.5.2 Telecommunications Cables

Telstra underground cables are located on the eastern side of the highway along the majority of the project site, and will require relocation in some areas. Based on Dial Before You Dig plans and initial service locations carried out on site, approximately 200m of communications cable and three Telstra pits were located within the footprint of proposed works and will require relocation prior to construction.

2.5.3 Sewer, and Water and Irrigation

There are no recorded TasWater services within the Project site, however there are a number of private farm irrigation water mains which have been installed through road pipe culverts to allow irrigation of paddocks on each side of the Highway. It is proposed that these water mains are relocated to separate conduits which will be provided within the upgraded highway.

Existing and planned centre pivot irrigators are located on the eastern side of the highway,

approximately between Link 55, Ch. 2750 and Ch. 7000. All of these irrigators are located on the “Lochiel” property. The Design does not have significant impacts on these 5 irrigator sites. There may be a small reduction in irrigation area due to the road widening and fence relocations required as part of the works. The property owner is also aware that the spray of the irrigation gun will need to be turned off near Ch. 3900 due to its proximity to the widened highway.

3. Social, Environmental Impacts and Stakeholder Engagement

3.1 Property Acquisition

Property acquisition will be required since the existing road reserve is inadequate to accommodate the widening works proposed as part of the safety upgrades. Current estimates of the extent of acquisition are provided below and are based on the design of the new highway between White Lagoon (Tunbridge) and Mona Vale.

Table 2: Property Acquisition Estimates

Title Reference	Estimate of Acquisition Required
131849/2	5,072 m ²
131849/3	10,190 m ²
131849/4	664 m ²
45078/1	1,443 m ²
109993/1	18,100 m ²
109993/2	11,700 m ²
110002/6	4,901 m ²
124331/1	929 m ²
141437/1	1,296 m ²
132048/1	1,904 m ²
52616/1	15,370 m ²
52616/2	14,923 m ²
102996/1	32,885 m ²
102996/2	1,810 m ²
105397/1	1,283 m ²

3.2 Noise

The closest dwelling adjacent to the highway is on the Somercotes property at the northern end of the project site (Ch 10,800) on the western side of the road. Because of the rock cutting, heritage listed hedges, and stock underpass immediately south of this property, all widening is proposed to be on the eastern side of the road in this location. Therefore, noise impacts on this property are expected to be minimal since the highway will not be moving closer.

3.3 Flora and Fauna Issues

There are a number of federally listed flora species located within the project corridor. Two *Dianella Amoena* sites located at the northern section of the project were considered to be possible Commonwealth triggers; however advice has since been provided that the removal of these isolated plants is of negligible impact and would not trigger a Commonwealth referral.

In addition to this, there is also a potential Commonwealth listed threatened grassland community located near the Mona Vale junction at the northern end of the project – *Bursaria-Acacia* woodland and scrub (NBA). The proposed design for the highway upgrade significantly impacts this community due to the new horizontal alignment in the northern section of the Project. However, the community is in poor condition and there is significant weed infestation, and therefore it will not qualify for further consideration for protection. It is also a very common community, so removal should not be significant.

There are also two potential Commonwealth listed grassland communities located toward the southern end of the Project – Lowland *Poa labillardierei* grassland (GPL) and Lowland *Themeda triandra* grassland (GTL). These communities are present in the road reserve and are also a potential habitat for state listed threatened fauna species. The grasslands on the western side of the highway are of higher quality and were avoided wherever possible.

The design for the Project includes batter works that encroach slightly on the GPL grassland. Road widening on the eastern side of the existing highway will remove the GTL grassland identified, however this allows for the protection of the grasslands and archaeological sites on the western side of the road which are considered to be of greater significance.

There are a number of state-listed threatened flora plants within the Project site. A 'Permit to Take' has been submitted to the Department of Primary Industries Parks Water and Environment (DPIPWE) after minimising the overall impact of the final road design on flora within the project site. At this stage it is unlikely that the permit will be refused.

3.4 Aboriginal Heritage

A number of Aboriginal heritage sites and artefacts were identified within the project area during the concept design stage. There will be two isolated Aboriginal artefacts impacted by the proposed upgrades. The Department of State Growth has applied for a "permit to interfere" for these artefacts at Ch. 5600 (east) and Ch. 8220 (west). The design has avoided a potential archaeological sensitive site located on the western side of the existing highway at Ch. 4950. Avoiding this area was a key project objective.

3.5 Historic Heritage

Historic heritage sites within the project area include two historic properties, heritage plantings (Pioneer Avenue Trees) and other minor features. The current design for the highway upgrades has avoided a number of Pioneer Avenue Trees that are located adjacent to the existing highway. There are also two historic hedgerow plantings affected by the proposed works, however these are not registered sites and impacts are unavoidable due to the widening works required as part of the upgrades.

Significant historic values within the Somercotes property will not be impacted by the works including the Horton College land at Ch. 10950 and the sandstone entrance to the property off Mona Vale Road. Signage and timber fencing abutting the entrance to the Somercotes homestead at Ch. 10800 will need to be relocated as part of the widening works. Existing hedgerows at this entrance will not be impacted.

3.6 Landscape and Visual Impacts

There are currently five trees which require removal as part of the works since they are within the earthworks footprint or calculated clear zones. One other significant tree within the project site will be retained and protected by providing a safety barrier and localised batter works.

As noted above, there are also two hedgerow plantings affected by the proposed works. The loss of existing trees, hedges or landscaping has been discussed with individual adjacent landowners. Replacement landscaping along the entire Midland Highway will be addressed as a separate project.

3.7 Stakeholder Engagement

A number of public consultation and stakeholder engagement activities have been undertaken during the design phase, including consultations with landowners adjacent to the works, provision of public display plans for general comment, and a brochure drop to around 300 residents in the Ross / Tunbridge region. A sample of this brochure is located in Appendix B. Landowners have previously been sent correspondence regarding geotechnical, surveying, heritage and environmental field investigations being undertaken on their land.

The key stakeholders for the safety upgrades between White Lagoon and Mona Vale are:

- Land owners
- Tasmanian Farmers and Grazers Association (TFGA)
- RACT
- Department of State Growth
- Department of Primary Industry Parks Water and Environment
- Australian Government
- Northern Midlands Council
- Public utilities
 - TasNetworks
 - Telstra
- Heavy vehicle Industry
- Passenger Transport operators
- School buses
 - Redline coaches stop in Ross and Tunbridge

3.7.1 Stakeholder Response

Following the public display period and brochure drop to Ross and Tunbridge residents, there has been no feedback from the community to the Department either by way of letter, phone call or email as a result of the display.

3.8 Development Approvals

The project is located within the Northern Midlands municipality. Development in this area is subject to the provisions in the *Northern Midlands interim Planning Scheme 2013*. The project area is subject to the Utilities Zone (existing road reserve for Midland Highway) and Rural Resource Zone (adjacent agricultural land). A Development Application has been submitted to the Northern Midlands Council as the works will not meet the exemption for a minor upgrade of road infrastructure since there are impacts to threatened vegetation communities within the project site.

The project is a discretionary use/development under the provision of the Planning Scheme. As part of the discretionary planning application all affected landowners have been notified of the development. The project is currently on public display for a period of 14 days and is being advertised by the Northern Midlands Council.

4. Project Program and Costs

4.1 Project Program

The critical path of the Project hinges around the lodgement of the Development Application in September 2015 and the delivery of detailed design and tender documentation in October 2015. Meeting these critical dates will ensure that construction works can begin in the 2015/16 summer construction season. The key dates for the Project are shown below.

Table 3: Key Project Dates

Project Task	Completion Date / Timing
Commencement of Development Phase	March 2015
Development and Delivery Project Proposal Report	May 2015
Development Application Lodgement	September 2015
Delivery of Final Design and Tender Documentation	October 2015
Anticipated Commencement of Works	January 2016
Anticipated Practical Completion Date	May 2017

The key assumptions of the project schedule developed for the White Lagoon (Tunbridge) to Mona Vale safety upgrades include:

- The Development Application is accepted by the Northern Midlands Council without any major representations made
- No onerous environmental or heritage delays impact the Project
- Property acquisition negotiations are resolved during the development phase
- No additional aboriginal artefacts are uncovered during construction

4.2 Costs

Project cost estimates have been prepared based on the designs and also the 'Best Practice Cost Estimation Standard for Publicly Funded Road and Rail Construction.' The total project outturn cost for the proposed upgrades to the Midland Highway between White Lagoon (Tunbridge) and Mona Vale is \$27.96 million for the P50 case and \$30.84 million for the P90 case. The nominal escalation rate applied in the cost estimates was 3.5%, made up of a real escalation of 1%, over and beyond a Consumer Price Index of 2.5% pa. The P50 / P90 cost estimate summaries for the project are shown in Figure 3. Full cost estimates can be found in Appendix C.

The "Escalation Rate" applied to these cost estimates is determined by the cash flow, and the assumed rate of escalation each year from the date of these estimates to one year after practical completion. The predicted project cash flows are shown in Figure 4. Escalation has been applied to costs expended after 2014/2015 in the P90 estimate.

Jacobs has exercised reasonable skill, care and diligence in the preparation of the project cost estimate. Rates have been based on previous tender rates and experience. Quantities have been derived from the designs and are subject to change as the design is refined within the Detailed Design phases. Costs are subject to change as the design is refined within the Detailed Design phases. Costs are subject to revision with further investigation and design review and development.

Figure 3: P50 / P90 Cost Estimate Summary

Base Estimate (Owners Cost + Construction Cost)	\$ 24,474,507.00	
	P50	P90
Inherent risk allowance	\$ 1,804,321	\$ 3,893,981
Contingent risk allowance	\$ 236,237	\$ 869,172
Base Estimate + Contingency (Inherent + Contingent)	\$ 26,515,065	\$ 29,237,660
Total contingency % above base estimate + Escalation	108%	119%
Escalation (Nominal - applied to base case + contingency)	\$ 1,448,248	\$ 1,602,714
Total Out turn	\$ 27,960,000	\$ 30,840,000

Total Out turn Cost	P50	P90
	\$ 27,960,000	\$ 30,840,000

Figure 4: P50 / P90 Cash Flow Summary

P50 Cash Flow	Financial Year			
	2014 / 2015	2015 / 2016	2016 / 2017	2017 / 2018
Project Identification and Scoping	\$ 165,000	\$ -	\$ -	\$ -
Project Development	\$ 550,000	\$ 714,000	\$ -	\$ -
Project Delivery (incl. CA)	\$ -	\$ 9,218,203	\$ 13,827,304	\$ -
Inherent Risk	\$ -	\$ 721,728	\$ 1,082,592	\$ -
Contingent Risk	\$ -	\$ 94,495	\$ 141,742	\$ -
Escalation costs (nominal)	\$ -	\$ 376,195	\$ 1,072,053	\$ -
Sub-Total (annual)	\$ 715,000	\$ 11,124,621	\$ 16,123,692	\$ -
Accumulative Total	\$ 715,000	\$ 11,839,621	\$ 27,963,313	\$ 27,963,313

P90 Cash Flow	Financial Year			
	2014 / 2015	2015 / 2016	2016 / 2017	2017 / 2018
Project Identification and Scoping	\$ 165,000.00	\$ -	\$ -	\$ -
Project Development	\$ 550,000.00	\$ 714,000.00	\$ -	\$ -
Project Delivery (incl. CA)	\$ -	\$ 9,218,202.80	\$ 13,827,304.20	\$ -
Inherent Risk	\$ -	\$ 1,557,592.48	\$ 2,336,388.72	\$ -
Contingent Risk	\$ -	\$ 347,668.66	\$ 521,502.99	\$ -
Escalation costs (nominal)	\$ -	\$ 414,311.24	\$ 1,188,403.08	\$ -
Sub-Total (annual)	\$ 715,000	\$ 12,251,775	\$ 17,873,599	\$ -
Accumulative Total	\$ 715,000	\$ 12,966,775	\$ 30,840,374	\$ 30,840,374

4.3 Risk Assessment

The Department of State Growth has established a Risk Assessment process which has been set up to support delivery of this project. The risk assessment includes impact, risk rating, mitigation strategies and revised risk rating, throughout the Planning, Scoping and Delivery Phases of the project. The rating system for the risk assessment is defined in Table 4. The risk assessment has been continually updated throughout the project lifecycle as appropriate.

Table 4: Risk Ratings

Risk Rating	Risk Action Levels
VH - Very High	<ul style="list-style-type: none"> Minister/Secretary decision/direction may be required Provide memorandum to Manager Project Services Include in Project Monthly Report
H – High	<ul style="list-style-type: none"> Take immediate action to further control the risk Include in Project Monthly Report Consider providing supplementary advice to Manager Project Services
M – Medium	<ul style="list-style-type: none"> Proactively manage risks Report to Project Steering Committee through risk register Review for improvement opportunities
L – Low	<ul style="list-style-type: none"> Monitor risk, reduce if practicable

The risk assessment considered the key areas such as scope, communication, design, approvals, construction and implementation. Mitigations strategies have been developed for all of the risk items identified within these general areas. At this stage the residual risk ratings for all the items are either Medium or Low. A consolidated list of the identified risk events for the project has been incorporated into the P50 / P90 cost estimates attached in Appendix C. Currently the major risks identified include:

- Tight project timeframes – tendering of the project is proposed to commence early in November 2015 so construction works can commence in the 2015 / 2016 construction season.
- Approval delays – delays in development application approval, Federal Government Project Proposal Report approval, delays due to the flora 'Permit to Take' process / referral to the Commonwealth, Aboriginal Heritage 'Permits to Interfere' are not approved in a timely manner.
- Stakeholder opposition – there may be an appeal against the Council's decision to issue a Planning Permit.
- Planning Permit conditions – the planning permit may have an unexpected number of conditions which could require design and specification changes, further negotiations with landowners, or other project delays.
- Protracted landowner negotiations – delays may be caused during final negotiations with landowners (e.g. acquisition, fencing and access agreements).
- Geotechnical risks and latent conditions – unforeseen ground conditions, delays due to poor weather, rock at the northern end of the project near the Mona Vale Road junction may require more blasting than the amount predicted from geotechnical investigations. Discovery of an unlisted site or artefact with heritage values may also cause delays and cost overruns.
- Delays caused by protracted service relocations – this includes discovery of additional services (such as private landowner infrastructure) not included in tender documentation. This may contribute to increased cost in service relocations. Delays may occur prior to early construction works if service authorities do not deliver works on time.
- Differences in the estimate rates as compared to the tendered rates
- Quality of tender documentation

5. Conclusion

The White Lagoon (Tunbridge) to Mona Vale Safety Upgrade Project will improve the current deficiencies in safety along the Midland Highway and in particular will help to eliminate head-on collisions and reduce the severity of other casualty crashes due to the installation of a central flexible safety barrier. The Project will also provide a staged approach to capacity improvements and additional safe overtaking opportunities in each direction of travel.

An analysis of the proposed design using the AusRAP star rating assessment confirmed that this upgraded section of the Midland Highway will achieve an average overall 3 star AusRAP rating which was one of the key project objectives.

The safety upgrade forms part of the *Midland Highway Action Plan*, a 10-year, \$500 million commitment made by the Australian and Tasmanian Governments in May 2014. The upgrade between White Lagoon and Mona Vale will support the following key objectives for the *Midland Highway Action Plan*:

- Increased safety along the Midland Highway
- Provision of additional safe overtaking opportunities
- Maintain a 110 km/h speed environment along the Midland Highway

The Project also supports the *Midland Highway Partnership Agreement* which was developed between the Tasmanian Government and the seven Councils abutting the Midland Highway. Upgrading of the Highway between Mona Vale (Tunbridge) and White Lagoon was identified as a priority in the Agreement.

It is recommended the project be approved.

Appendix A: Drawings




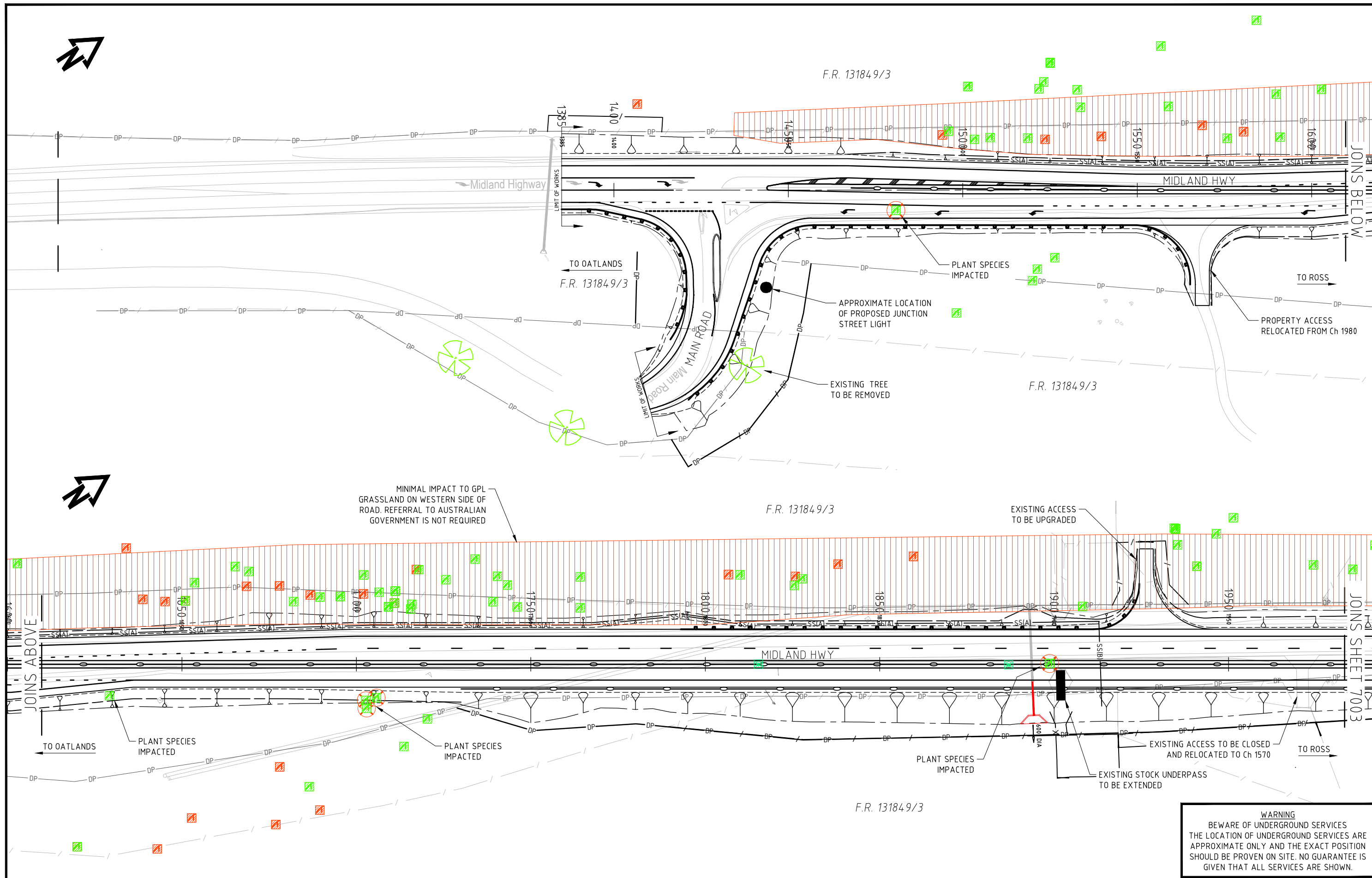
WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

LEGEND:

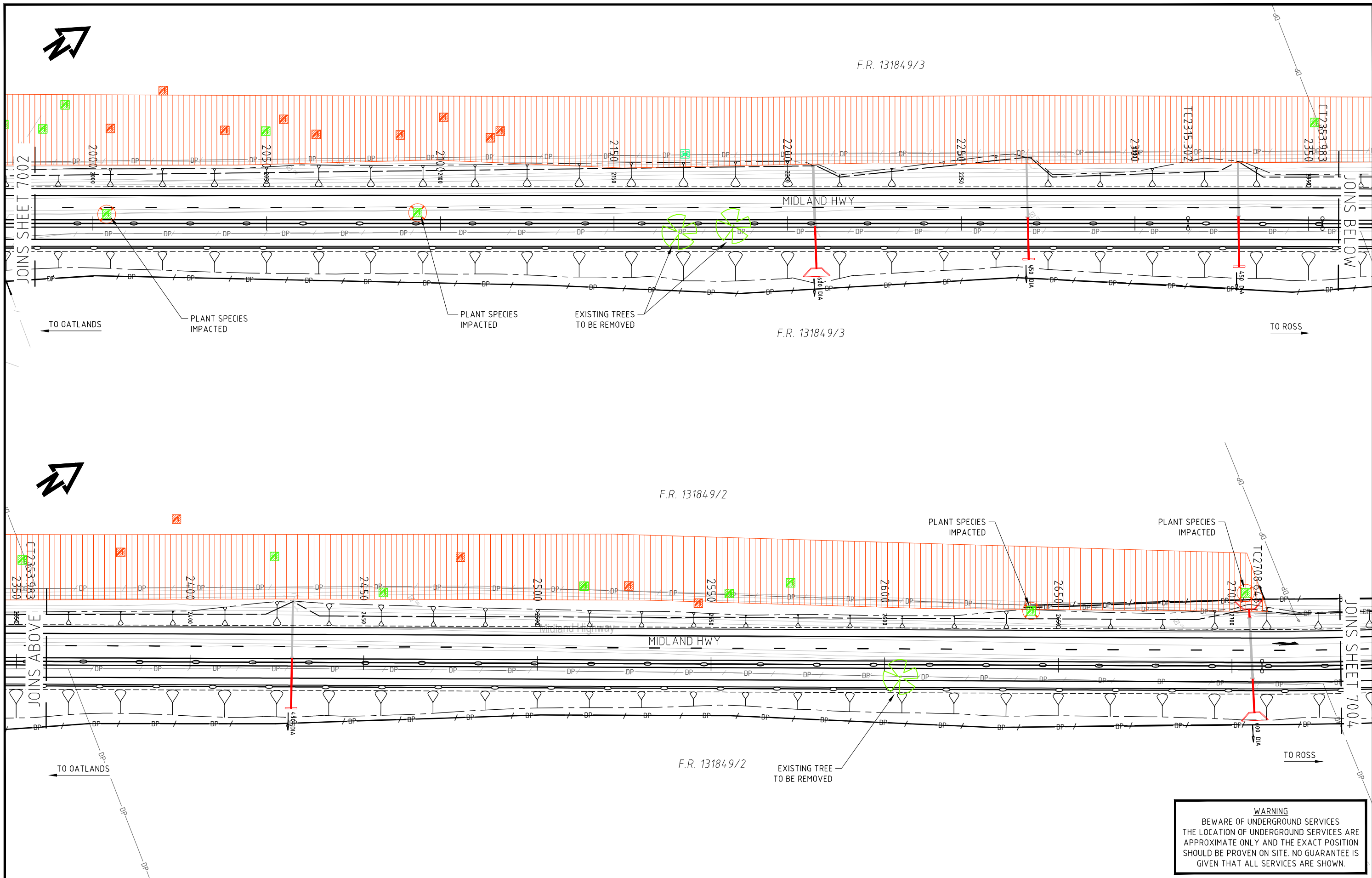
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- VEGETATION AREA - MILKY BEAUTYHEADS. TSPA LISTED
- VEGETATION AREA - NBA - BURSARIA - ACACIA WOODLAND AND SCRUB - NON THREATENED
- VEGETATION AREA - GTL - LOWLAND THEMEDA TRIANDRA GRASSLAND
- THREATENED PLANT SPECIES - EPBCA LISTED
- THREATENED PLANT SPECIES - TSPA LISTED
- PIONEER AVENUE TREES
- TREES - OTHER
- THREATENED PLANT SPECIES - TSPA LISTED - POLYGON
- HEDGEROW
- QUARRY
- MILE POST
- ROADSIDE MEMORIAL




PROPOSED W-BEAM SAFETY BARRIERPROPOSED WIRE ROPE SAFETY BARRIERPROPOSED EDGE OF VERGEPROPOSED EARTHWORKS - BATTERPROPOSED BATTEREXISTING ROAD FORMATIONEXISTING EDGE OF VERGEPIPE - STORMWATER (NEW EXTENDED)PIPE - STORMWATER (EXISTING)PROPOSED FENCEEXISTING FENCEPROPOSED STOCK RUNPROPOSED TITLE BOUNDARY (NOMINAL 2.0m OFFSET FROM EARTHWORKS)EXISTING TITLE BOUNDARYHERITAGE - HORTON COLLEGEPOWER POLE - EXISTINGPROPOSED PERMIT TO TAKE PLANT SPECIES IMPACTED

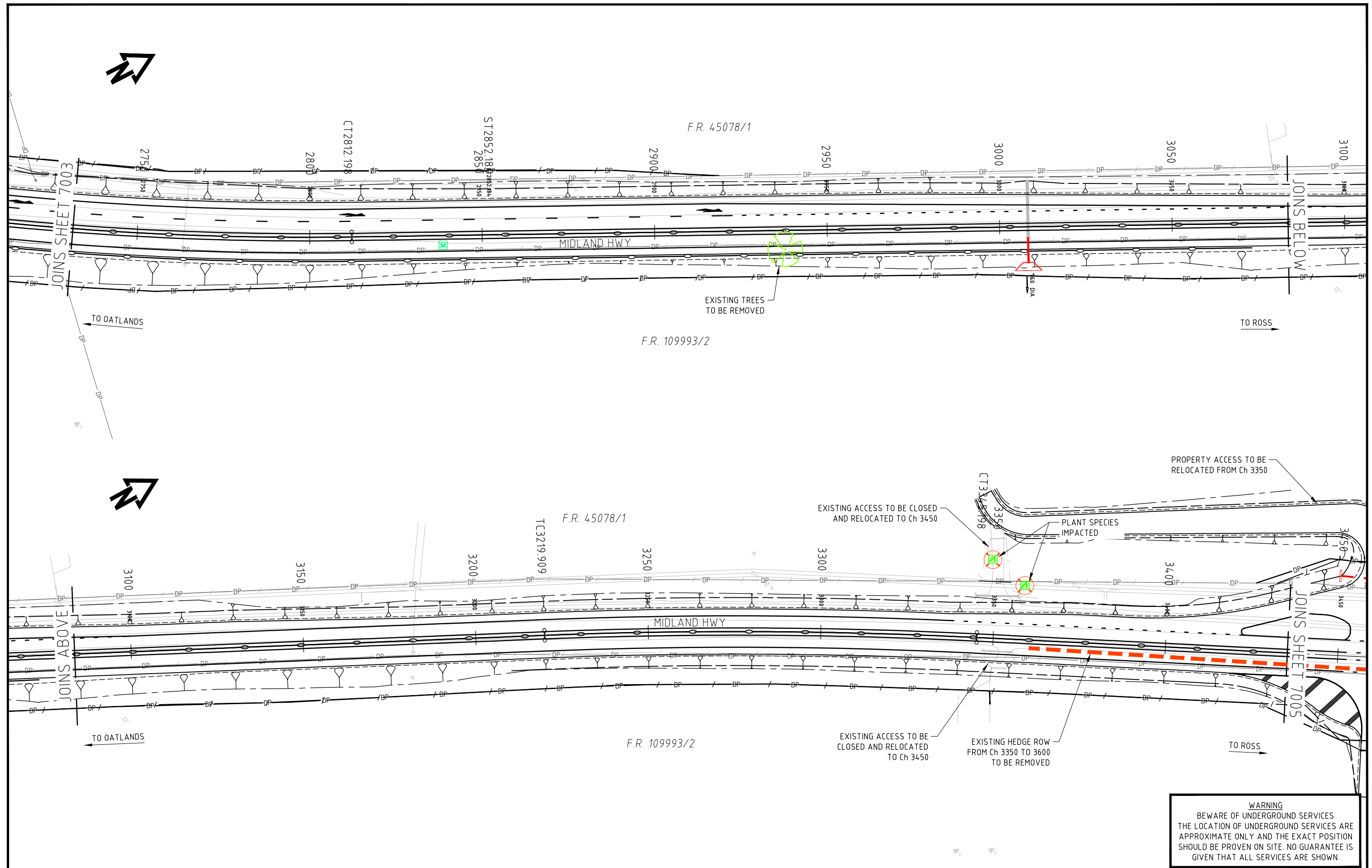
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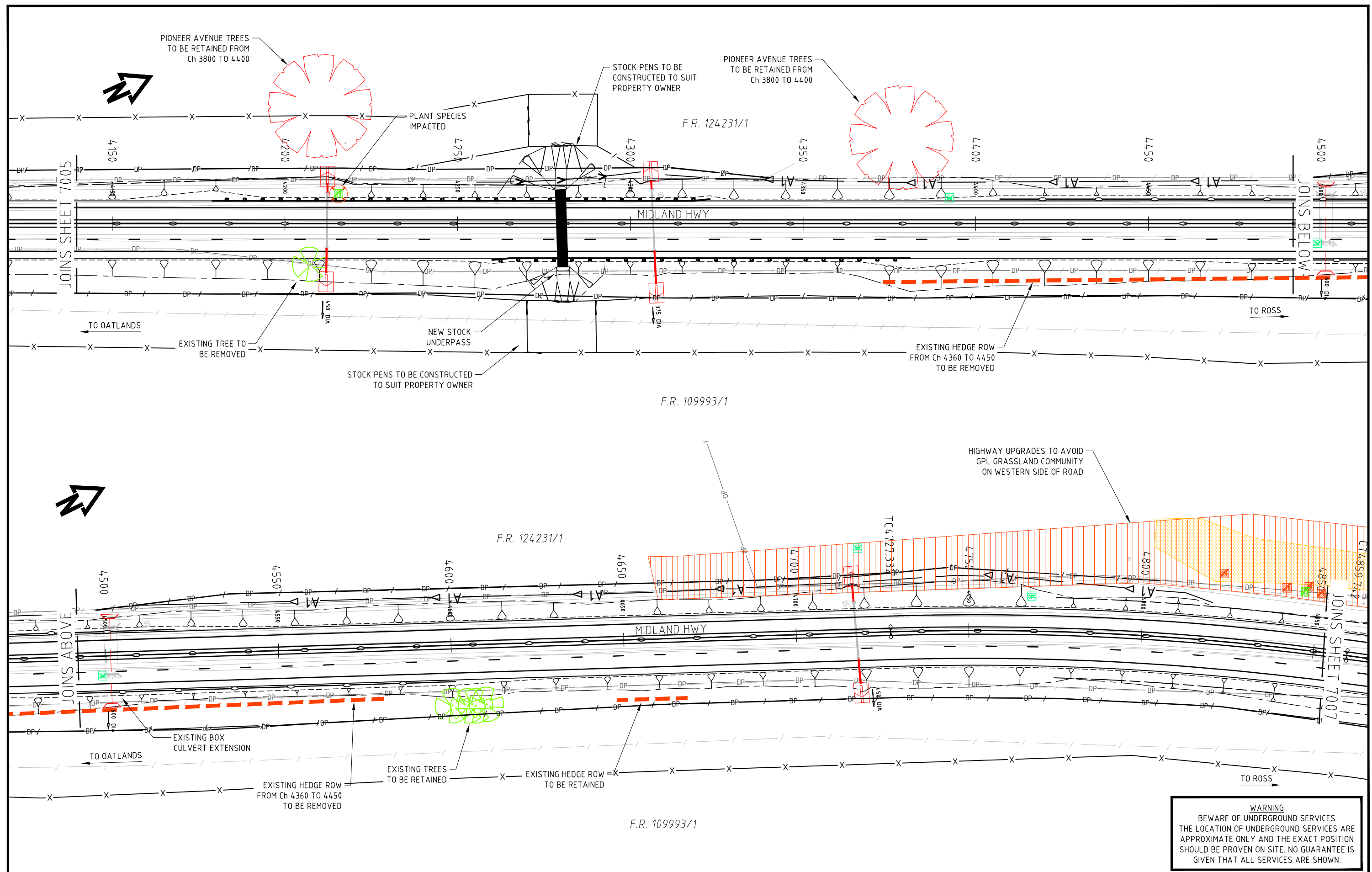
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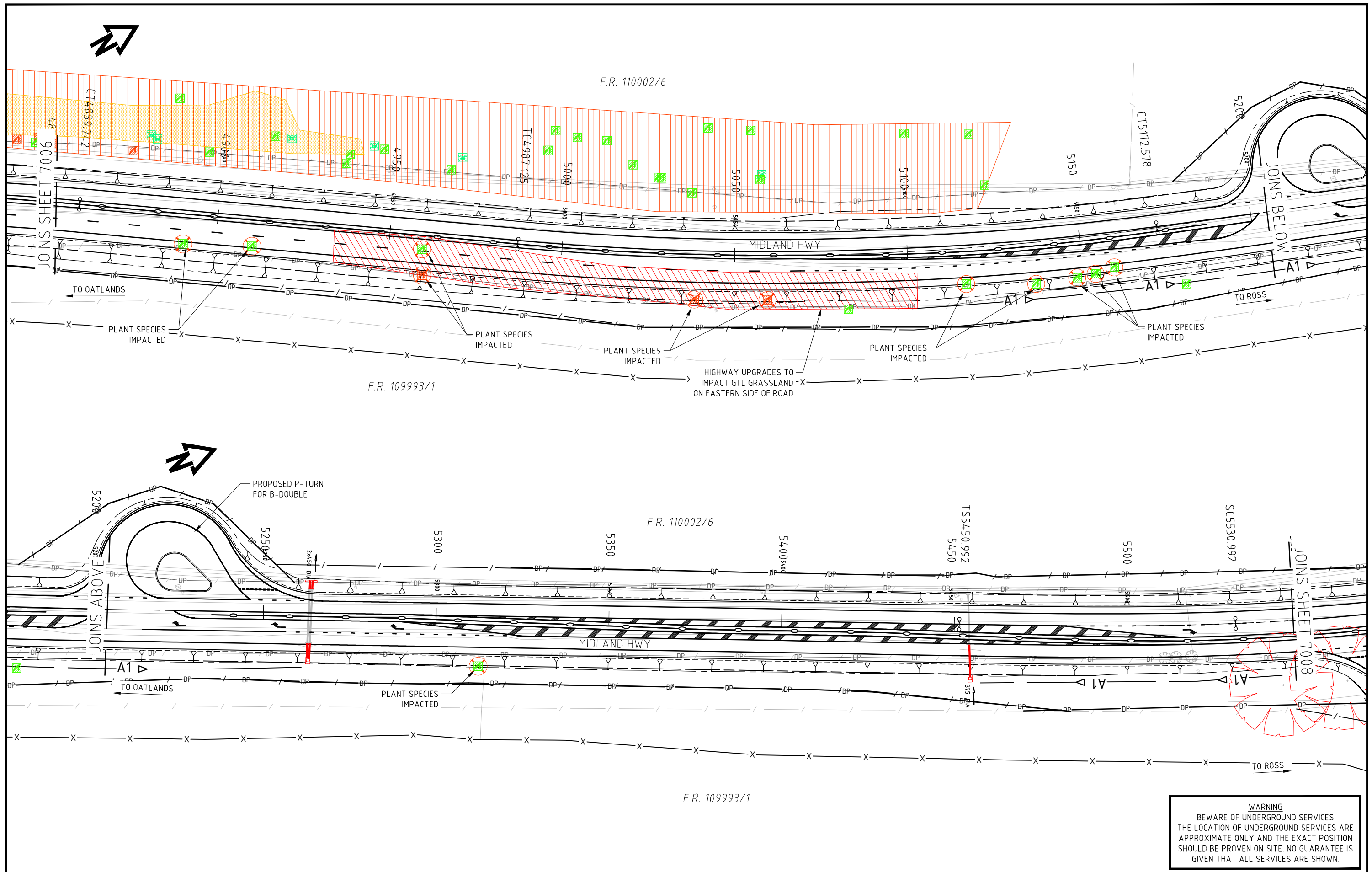
			SCALES		 <small>JACOBS 10000 Hill Street, Suite 1000, Dallas, Texas 75230 Phone: 972.362.0000 Fax: 972.362.0001 www.jacobs.com</small>	 <small>Tasmanian Government</small>	Department of State Growth		CONTRACT No.	DRAWING	PRINTED DATE	SHEET No. 7003 REVISION 0
							MIDLAND HIGHWAY (A0087) WHITE LAGOON (TUNBRIDGE) TO MONA VALE SAFETY UPGRADE PSCPW PLANS		TBA	S096300-0000-CR-DG-0012.dwg	23-Sep-15, 3:41 PM	
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No.	Amendment Description		Initials	Date								
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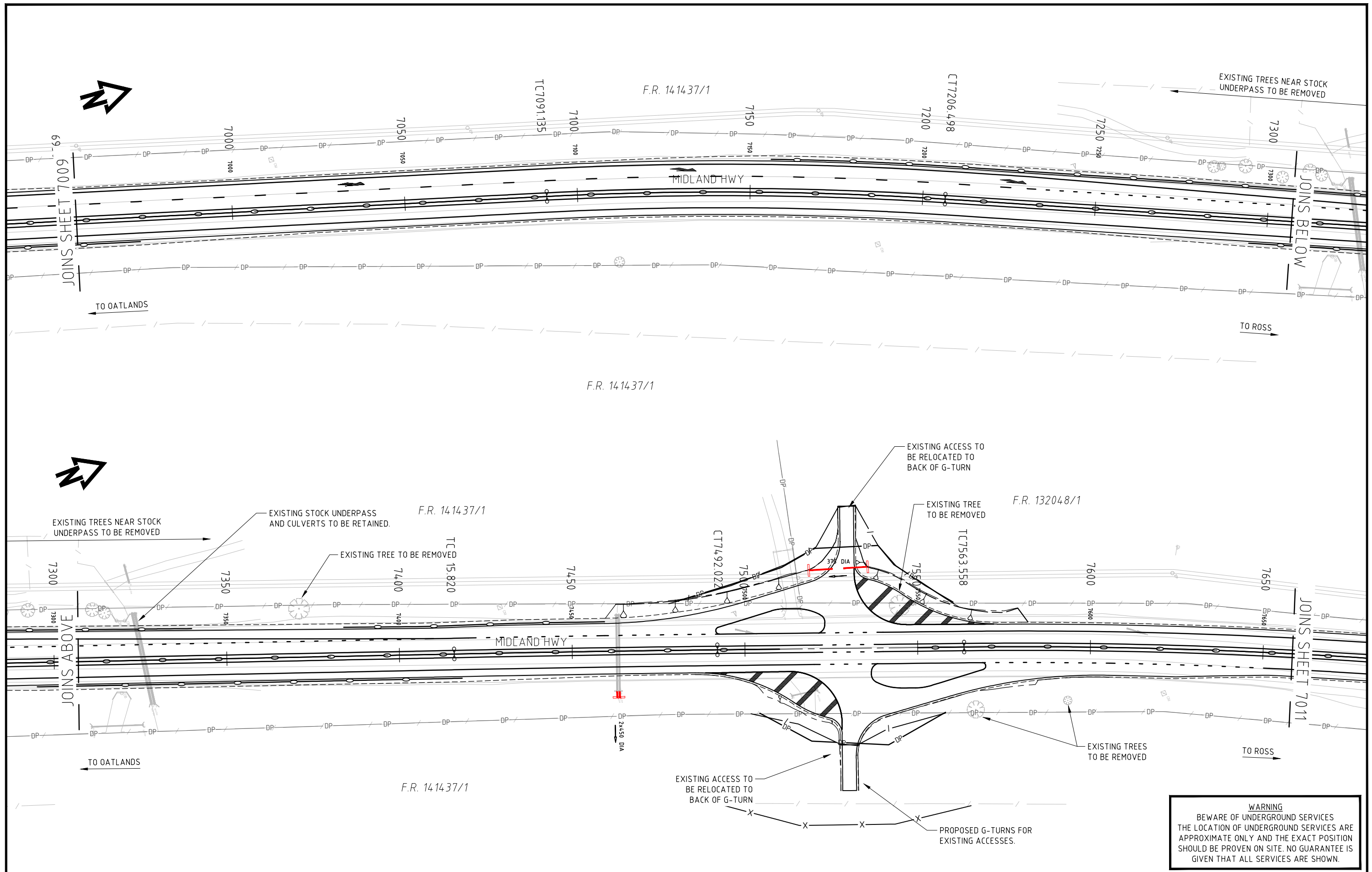





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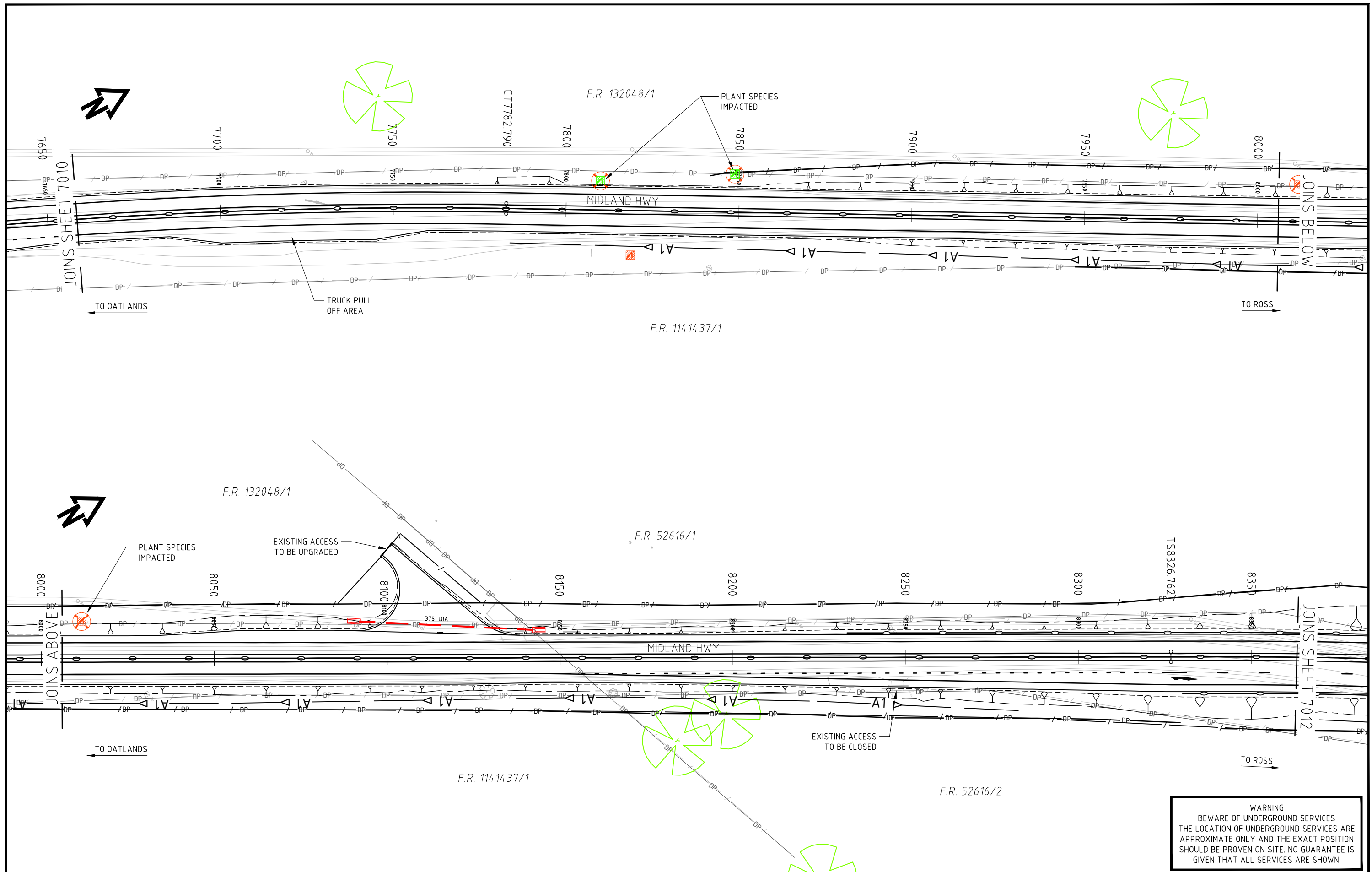


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							MIDLAND HIGHWAY (A0087) WHITE LAGOON (TUNBRIDGE) TO MONA VALE SAFETY UPGRADE PSCPW PLANS		TBA	S096300-0000-CR-DG-0012.dwg	23-Sep-15, 3:42 PM	7007
0	ISSUED FOR PSCPW	B.S.	23/09/2015	SCALE 1:1000 (A3)	DESIGNED A.SHAW		SHEET 7 OF 16		REGISTRATION NUMBER A130031.002			REVISION 0
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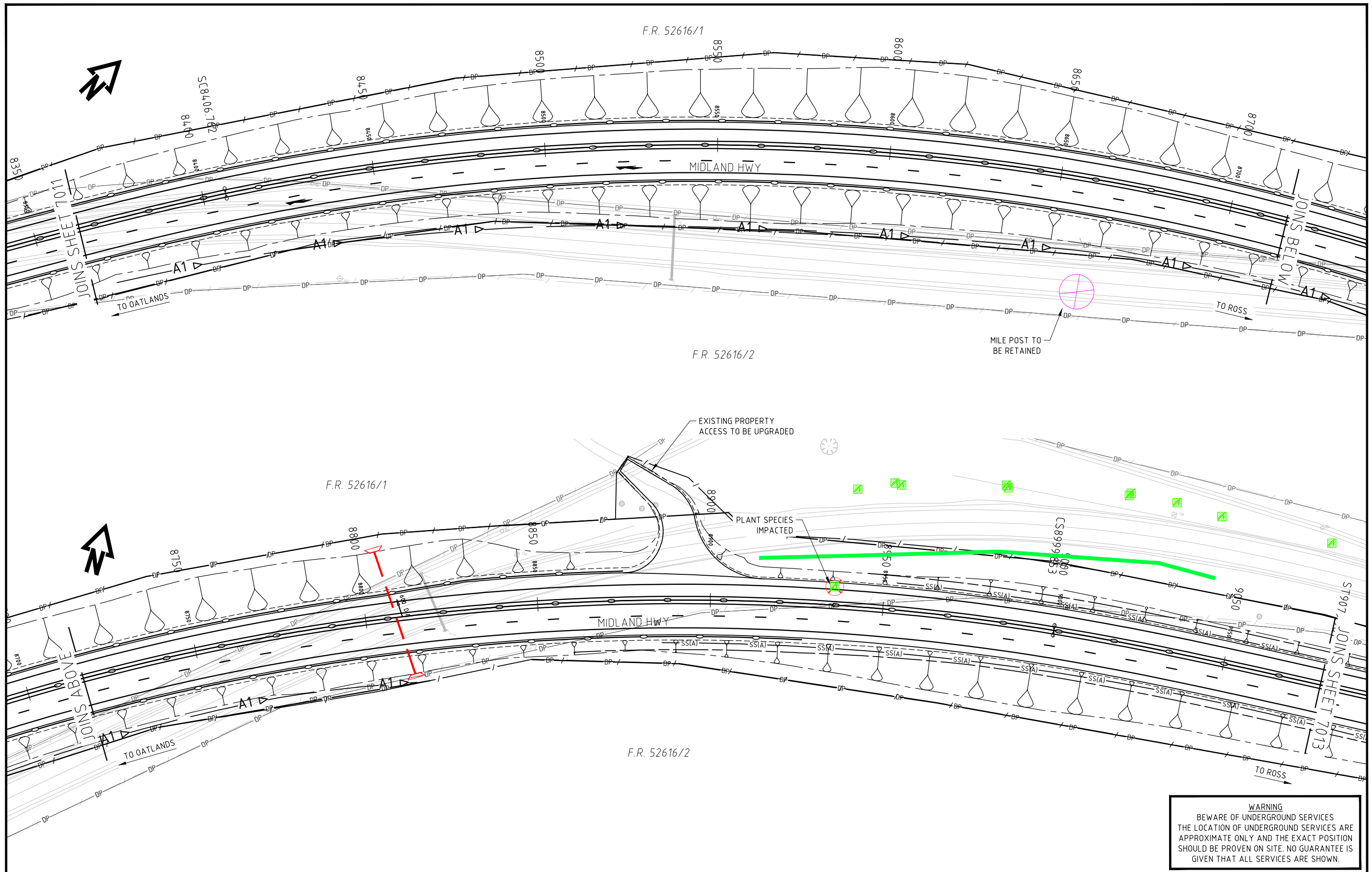


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No.	Amendment Description	Initials	Date			REVIEWED		A130031.002					
A3 original	This sheet may be prepared using colour and may be incomplete if copied		Co-ordinate System:		Height Datum:		SHEET 10 OF 16						






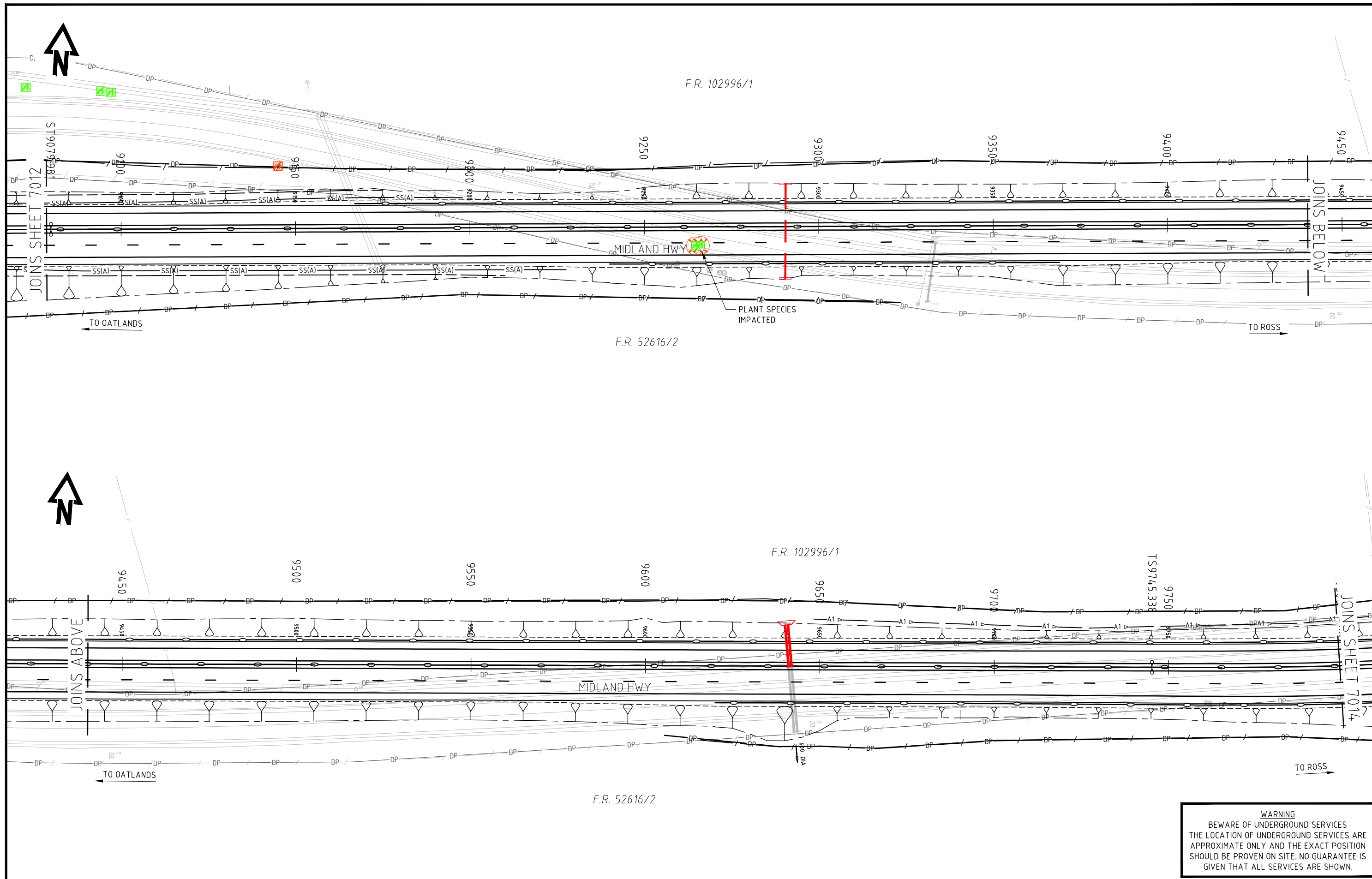
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No.	Amendment Description			Initials	Date			REVIEWED		A130031.002				
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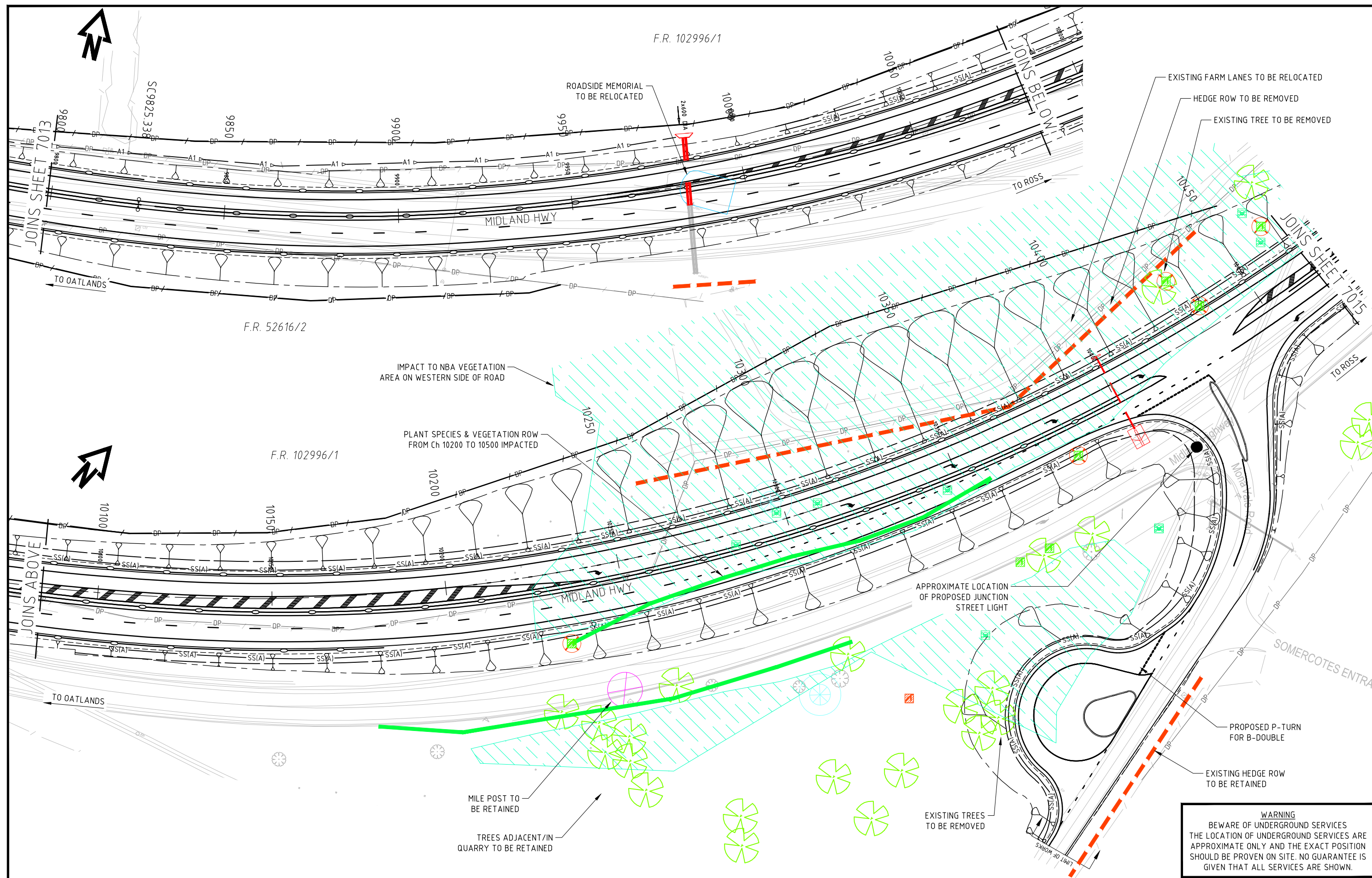


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No.	Amendment Description	Initials	Date		REVIEWED		A130031.002					
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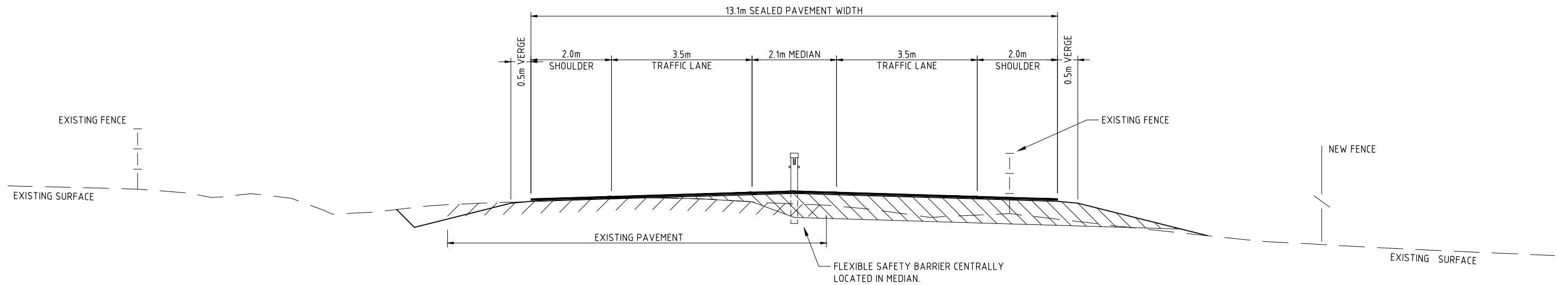


				<div>SCALES</div> <div><div>01020304050m</div><div>SCALE 1:1000 (A3)</div></div>		<div><div><div>JACOBS</div><div>100 Waterloo Road Melbourne VIC 3007 Australia Tel: +61 (0)3 9592 9000 Fax: +61 (0)3 9592 9001 www.jacobs.com.au</div></div><div><div><div>Tasmanian Government</div></div><div><div>DESIGNEDA.SHAW</div><div>REVIEWED</div></div></div></div>	Department of State Growth		CONTRACT No. TBA	DRAWING S096300-0000-CR-DG-0012.dwg	PRINTED DATE 23-Sep-15, 3:43 PM	SHEET No. <div>7013</div> <div>REVISION 0</div>
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No.	Amendment Description		Initials	Date			SHEET 13 OF 16					
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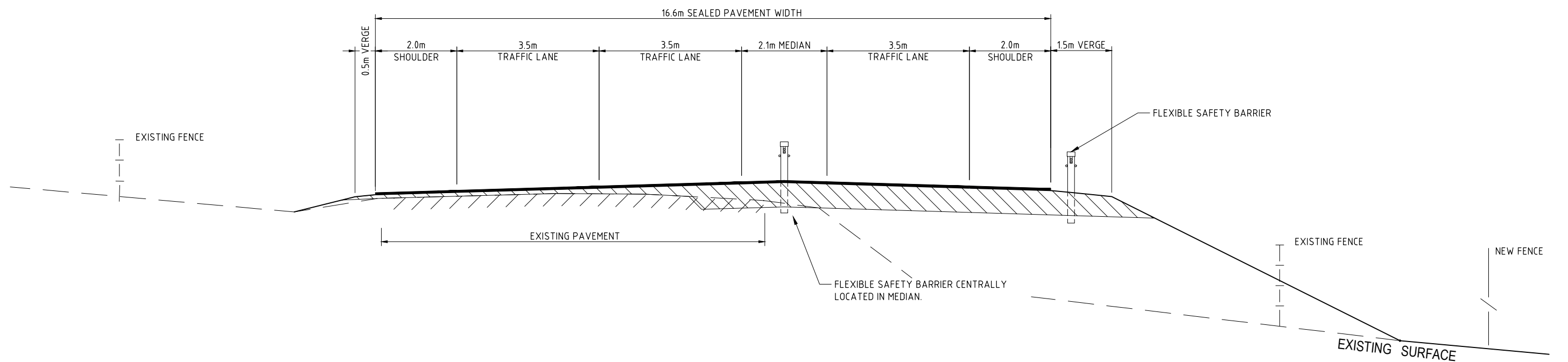


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0	ISSUED FOR PSCPW	B.S.	23/09/2015										
No.	Amendment Description	Initials	Date							DESIGNED	A.SHAU	REVIEWED	
A3 original	This sheet may be prepared using colour and may be incomplete if copied			Co-ordinate System:		Height Datum:							



TYPICAL CROSS SECTION 1+1 (1 LANE IN EACH DIRECTION)



TYPICAL CROSS SECTION 2+1 (2 LANES IN ONE DIRECTION, 1 IN OPPOSITE DIRECTION)

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0		ISSUED FOR PSCPW		B.S.		23/09/2015		<div>DESIGNED</div> <div>A. SHAW</div>				<div>REGISTRATION NUMBER</div> <div>A130031.002</div>									
No.		Amendment Description		Initials		Date		<div>REVIEWED</div> <div></div>													
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Appendix B: Public Display Plan Flyer

Public display

Design plans for the safety works to the Midland Highway White Lagoon (Tunbridge) to Mona Vale will be available for viewing.

Thursday, 3 Sept – Tuesday 15 Sept 2015

The Wool Centre

48 Church Street

Ross

Monday – Friday 9:30 am – 4:30 pm

Saturday, Sunday 10:00 am – 4:00 pm

Further Information

You can also use the contact details below to find out more about the project:

Phone: 1800 753 878

Email: info@stategrowth.tas.gov.au

Web: www.midlandhighway.tas.gov.au/projects



Department of State Growth
State Roads
Stakeholder Engagement Unit

4th Floor, 10 Murray Street
Hobart TAS 7001 Australia

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Midland Highway
Safety upgrades
White Lagoon
(Tunbridge) to
Mona Vale



Australian Government

BUILDING OUR FUTURE



Tasmanian
Government

What's happening?

The Australian and Tasmanian Governments have committed to invest \$500 million to improve safety on the Midland Highway over the next 10 years.

The objective of this investment is to lift the safety standard of this strategic highway to a minimum three star AusRAP* safety rating over its entire length.

The crash pattern along the Midland Highway is relatively dispersed, with crashes occurring along its entire length, including locations of multiple crashes. When assessed using the AusRAP safety rating methodology, 86% of the Midland Highway rates at one or two stars, on a five star scale.

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 along the highway.

Historically head-on collisions have accounted for approximately 14% of casualty crashes, which account for 60% of fatalities on the highway. Head-on collisions are the type of crash most likely to result in serious injury or death.

*AusRAP – the national road safety audit approach initiated by the combined national motoring associations, including the RACT.

The section of highway between White Lagoon (Tunbridge) and Mona Vale has been identified for works as part of the safety package.

Features and safety benefits White Lagoon to Mona Vale

These works will improve safety by reducing head-on crashes and the severity of crashes by providing:

- a wider highway with sealed shoulders
- a two metre median with flexible safety barrier
- four evenly spaced overtaking opportunities to replace the existing two
- curve improvement at Mona Vale
- better visibility at Mona Vale junction
- safe turning facilities

Flexible Safety Barriers

- Flexible safety barriers help absorb the impact energy, reducing the risk of serious injury and damage.
- Studies overseas have found an 85 per cent to 90 per cent reduction in serious casualties where flexible safety barriers have been installed.
- Flexible safety barriers in the median:
 - stop out-of-control vehicles from crossing into the path of on-coming traffic, preventing head-on crashes; and
 - reduce the severity of single vehicle crashes, where the vehicle veers to the right.

www.transport.tas.gov.au/roadsafety/roads/flexible_safety_barriers

Timing

Design complete	Sept 2015
Tender advertised	Oct 2015
Start of works	end 2015
Completion of works	mid 2017

Appendix C: P50 / P90 Cost Estimates

Midland Highway Safety Upgrade - White Lagoon (Tunbridge) to Mona Vale

Project Name:

Midland Highway Safety Upgrade - White Lagoon
(Tunbridge) to Mona Vale

Project Phase:

PSCPW

Brief reference number

2220-1-5

Project completion:

State Growth Project Number

A130031.002

Mar-17

Consultant Project number

IS096300

Date

23/09/2015

Preferred Option

Base Estimate (Owners Cost + Construction Cost)
Inherent risk allowance
Contingent risk allowance
Base Estimate + Contingency (Inherent + Contingent)
Total contingency % above base estimate + Escalation
Escalation (Nominal - applied to base case + contingency)
Total Out turn

Total Out turn Cost

\$	24,474,507.00
P50	P90
\$ 1,804,321	\$ 3,893,981
\$ 236,237	\$ 869,172
\$ 26,515,065	\$ 29,237,660
108%	119%
\$ 1,448,248	\$ 1,602,714
\$ 27,960,000	\$ 30,840,000

P50	P90
\$ 27,960,000	\$ 30,840,000

Midland Highway Safety Upgrade - White Lagoon (Tunbridge) to Mona Vale

Project Name: Midland Highway Safety Upgrade - White Lagoon (Tunbridge) to Mona Vale

Project Phase: PSCPW

Brief reference number 2220-1-5 Project completion: Mar-17
 State Growth Project Number A130031.002
 Consultant Project number IS096300
 Date 23/09/2015

Description of Scope

The scope of the Project is to widen the existing Midland Highway to provide alternating lengths of "2+1" lane arrangements between the northern entrance to Tunbridge and Mona Vale Road. The Project will also improve the horizontal and vertical alignment of the highway and includes an upgrade of the Mona Vale junction located at the northern end of the Project.

Other features within this Project's scope include the provision of U-Turn facilities and safer property accesses, upgrades to roadside drainage, provision/extension of stock underpasses, and reinstatement of adjacent livestock lanes. 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 previous cost estimates and past experience. The rates are subject to change depending on market conditions.

Quantities:

Quantities have been taken from the design model.

Escalation:

A 3.5% escalation rate has been applied to activities outside of the 2015/2016 construction season.

Summary of results:

Base Estimate (Owners Cost + Construction Cost)
Inherent risk allowance
Contingent risk allowance
Base Estimate + Contingency (Inherent + Contingent)
Total contingency % above base estimate + Escalation
Escalation (Nominal - applied to base case + contingency)
Total Out turn

\$	24,474,507.00
P50	P90
\$ 1,804,321	\$ 3,893,981
\$ 236,237	\$ 869,172
\$ 26,515,065	\$ 29,237,660
108%	119%
\$ 1,448,248	\$ 1,602,714
\$ 27,960,000	\$ 30,840,000

Total Out turn Cost

P50	P90
\$ 27,960,000	\$ 30,840,000

Overall Cash Flow

	Financial Year			
P50 Cash Flow	2014 / 2015	2015 / 2016	2016 / 2017	2017 / 2018
Project Identification and Scoping	\$ 165,000	\$ -	\$ -	\$ -
Project Development	\$ 550,000	\$ 714,000	\$ -	\$ -
Project Delivery (incl. CA)	\$ -	\$ 9,218,203	\$ 13,827,304	\$ -
Inherent Risk	\$ -	\$ 721,728	\$ 1,082,592	\$ -
Contingent Risk	\$ -	\$ 94,495	\$ 141,742	\$ -
Escalation costs (nominal)	\$ -	\$ 376,195	\$ 1,072,053	\$ -
Sub-Total (annual)	\$ 715,000	\$ 11,124,621	\$ 16,123,692	\$ -
Accumulative Total	\$ 715,000	\$ 11,839,621	\$ 27,963,313	\$ 27,963,313

	Financial Year			
P90 Cash Flow	2014 / 2015	2015 / 2016	2016 / 2017	2017 / 2018
Project Identification and Scoping	\$ 165,000.00	\$ -	\$ -	\$ -
Project Development	\$ 550,000.00	\$ 714,000.00	\$ -	\$ -
Project Delivery (incl. CA)	\$ -	\$ 9,218,202.80	\$ 13,827,304.20	\$ -
Inherent Risk	\$ -	\$ 1,557,592.48	\$ 2,336,388.72	\$ -
Contingent Risk	\$ -	\$ 347,668.66	\$ 521,502.99	\$ -
Escalation costs (nominal)	\$ -	\$ 414,311.24	\$ 1,188,403.08	\$ -
Sub-Total (annual)	\$ 715,000	\$ 12,251,775	\$ 17,873,599	\$ -
Accumulative Total	\$ 715,000	\$ 12,966,775	\$ 30,840,374	\$ 30,840,374

P90 AND P50 COST ESTIMATION FOR:

Project Name

Brief reference number

State Growth Project Number

Consultant Project number

Date

Midland Highway Safety Upgrade -
White Lagoon (Tunbridge) to Mona
2220-1-5
A130031.002
IS096300
23/09/15

ID	Description	Estimate	
		Unit	Net amount
1.0	Project Identification Services		
1.1	Project identification consultancy	item	\$ 65,000.00
1.2	State Growth Management (Incl. elsewhere)	item	\$ -
	<i>Subtotal Identification</i>		\$ 65,000.00
2.0	Project Site Investigations		
2.1	Consultant project scoping phase activities (engineering survey, environmental and heritage investigations)	item	\$ 100,000.00
2.2	State Growth Project Management Scoping phase (Incl. elsewhere)	item	\$ -
	<i>Subtotal Scoping</i>		\$ 100,000.00
3.0	Project Development Including Preconstruction Activities		
3.1	Project development phase activities (preliminary design, detailed design, Tender documentation)	item	\$ 550,000.00
3.2	State Growth Project Management Scoping to Development	item	\$ -
3.3	Acquisition and Utilities relocation costs	item	\$ 714,000.00
	<i>Subtotal Development</i>		\$ 1,264,000.00
4.0	Contract Administration and Owners Costs		
4.1	State Growth Project Management Delivery Phase cost per annum	item	\$ 1,554,163.37
4.2	Contract Admin costs	item	\$ 650,000.00
4.3	Insurances	%	\$ 80,977.53
4.4	Final Seal (not required) and Line marking	item	\$ 50,000.00
	<i>Subtotal Contract Administration</i>		\$ 2,335,140.90
	<i>Total Owners Costs</i>		\$ 3,764,140.90
5.0	Construction		
5.1	PROJECT SPECIFIC ITEMS	item	\$ 897,500.00
5.2	EARTHWORKS	Item	\$ 5,785,920.00
5.3	DRAINAGE	Item	\$ 668,784.00
5.4	PAVEMENT	Item	\$ 7,109,474.00
5.5	BITUMINOUS SURFACING	Item	\$ 2,598,130.00
5.6	TRAFFIC FACILITIES	Item	\$ 2,020,703.10
5.7	LANDSCAPING	Item	\$ 368,280.00
5.8	MISCELLANEOUS	Item	\$ 1,095,900.00
5.9	PRECAST UNITS	Item	\$ 165,675.00
	<i>Total Construction Costs (TCC)</i>		\$ 20,710,366.10
	Base Estimate (Owners Cost + Construction Cost)		\$ 24,474,507.00
	Inherent risk allowance		\$ 1,804,321 P50 \$ 3,893,981 P90
	Contingent risk allowance		\$ 236,237 \$ 869,172
	Base Estimate + Contingency (Inherent + Contingent)		\$ 26,515,065 \$ 29,237,660
	Escalation (Nominal - applied to base case + contingency)		\$ 1,448,248 \$ 1,602,714
	Total contingency % above base estimate + Escalation		108% 119%
	Total Out turn		\$ 27,960,000 \$ 30,840,000

Contract Value Estimations for:

Project Name

Brief reference number

State Growth Project Number

Consultant Project number

Date

Midland Highway Safety Upgrade -
White Lagoon (Tunbridge) to Mona
2220-1-5
A130031.002
IS096300
23/09/15

Assumptions

CPI

2.5%

Real escalation

1.0%

Nominal escalation

3.5%

Midland Highway Safety Upgrade - White Lagoon (Tunbrid Project Cash Flow

Totals

P50 Cash Flow	Financial Year		
	2014 / 2015	2017 / 2018	2018 / 2019
Project Identification and Scoping	\$ 165,000		
Project Development	\$ 550,000		
Project Delivery (incl. CA)			
Inherent Risk			
Contingent Risk			
Escalation costs (nominal)			
Sub-Total (annual)	\$ 715,000	\$ -	\$ -
Accumulative Total	\$ 715,000	\$ 27,964,000	\$ 27,964,000

P90 Cash Flow	Financial Year		
	2014 / 2015	2017 / 2018	2018 / 2019
Project Identification and Scoping	\$ 165,000		
Project Development	\$ 550,000		
Project Delivery (incl. CA)			
Inherent Risk			
Contingent Risk			
Escalation costs (nominal)			
Sub-Total (annual)	\$ 715,000	\$ -	\$ -
Accumulative Total	\$ 715,000.00	\$ 30,841,000.00	\$ 30,841,000.00