McCONNELL DOWELL
CREATIVE CONSTRUCTION

TASMANIAN
PLANNING COMMISSION

Endorsed

Date: 26 September 2022

PROJECT DESIGN PLANS REPORT

NEW BRIDGEWATER BRIDGE

DOC NO: 2024-MCD-0000-REP-PRJ-00006

CLIENT: DEPARTMENT OF STATE GROWTH

PROJECT: NEW BRIDGEWATER BRIDGE PROJECT

LOCATION: BRIDGEWATER, TASMANIA, AUSTRALIA

PROJECT NO: 2024

Revision History

Rev	Date	Details	Author	Reviewer	Approver
A	5 Sep 2022	Issued for Internal Review	G Thomas	L. Foley	P. Fraser
B	5 Sep 2022	Issued for DSG Review	G. Thomas	DSG	
C	16 Sep 2022	Issued for TPC Review	G. Thomas	DSG	

MMS

Contents

1 INTRODUCTION & CONTEXT

1.1 Purpose

The report provides a summary of the key changes to the design since the submission of the Major Project Impact Statement submitted on the 4th January, 2022, and demonstrates compliance with various conditions imposed by the Tasmanian Planning Commission in Permit MPP2201.

The report specifically addresses the following conditions:

Design Plans

Condition 4, 5 & 6.

Transport

Condition 11, 12, 13 & 14

Landslip risk

Condition 21 & 22

Marine Safety and Infrastructure

Condition 27

Noise Walls

Condition 28

Public Open Spaces

Condition 29

1.2 Project Background

Figure 1 - Photograph of Current Vertical Lift Bridge completed in 1946

The Australian and Tasmanian governments have committed $786 million to the new river crossing at Bridgewater, which is the largest ever investment in a single transport infrastructure project in Tasmania's history.

The Bridgewater Bridge is a critical part of the transport and freight link between the state's north and south, and the project will support growth and commercial development in Hobart's outer northern suburbs.

The road and rail bridge carries the Midland Highway and South Railway Line across the Derwent River connecting Granton and Bridgewater. The current steel truss vertical lift was completed in 1946, the bridge accommodates a two-lane highway, a single-track railway, and a grade-separated footpath.

There are a number of network performance and safety issues associated with the existing bridge which impact road and vessel movements. The reliance on lift span operations for marine vessels can cause highway traffic delays, particularly during peak holiday periods, and the existing bridge maintenance costs are significant.

Final design for the new bridge and interchanges includes two lanes in each direction and new interchanges at Bridgewater and Granton.

Other features include:

- a speed limit of at least 80km/h
- a shared path for cyclists and pedestrians
- safety screens and barriers
- a navigation clearance consistent with the Bowen Bridge
- a grade separated interchange will connect the Brooker and Lyell highways
- better connections to local roads in Bridgewater and Granton.

Significant construction work will also include:

- earthworks, including cuttings and embankments and retaining walls to support the new bridge approaches and road upgrades
- temporary and permanent land reclamation
- temporary ancillary facilities during construction including water quality controls, site offices, construction / demolition compounds, pre-cast production and batching plants, stockpile sites
- permanent operational water quality controls and noise mitigation
- utility relocations
- temporary traffic staging
- site rehabilitation and landscaping works.

2 DESCRIPTION OF KEY CHANGES

2.1 Summary

The following are some of the key changes made to the design during design development:

- Noise wall locations have been amended based on compliance with Permit Condition N5. The following changes are required:
    - A 3m high noise wall located adjacent to the Lyell Highway, near George St has been confirmed as required. Refer to Sheet 27012 in Appendix A, which shows the proposed noise wall.
    - The noise walls located adjacent to the South Bound Off-ramp from the Midland Highway has been amended to suit the completed noise modelling. A 3.5m wall is required adjacent to the Midland Highway and a 4.0m wall is required adjacent to the off-ramp to Gunn St. Refer to Sheet 27015 in Appendix A, which shows the proposed noise walls locations.
    - The Noise Wall just south of East Derwent Highway (shown in the MPIS Appendix AA - Sheet 0009 – dated 10-Nov-21) has been determined as not required to achieve compliance with the *Tasmanian Traffic Noise Management Guidelines 2015* or the additional requirements stated in Condition N5, and has thus has been deleted.
- Drainage basins and swales have been added to ensure the overall quality of the stormwater discharged from the impervious areas created by the project to water is treated to a level which complies with treatment criteria specified by the State Stormwater Strategy.
- Bus-stop details are shown on Old Main Road in Bridgewater and adjacent to Granton Reserve. Refer Sheet 27015 and 27017 respectively in Appendix A for details.
- Termination Details shown at the end of Old Main Road (Council Road) which reflects Brighton Council's preference. These details were missing in the Major Project Impact Statement. Refer Sheet 27016 in Appendix A for details.
- The intersection between Black Snake Road and the Lyell Highway Northbound lane has been amended to provide better road safety. Refer Sheet 27012 in Appendix A for details.
- A roundabout has been added at the end of Old Main Road to provide bus turnaround for North Bound buses which exit at Bridgewater to drop-off /pick-up passengers, then need to continue north bound along Midland Highway. The roundabout will also be used by private bus contractors which pick-up and drop-off in Bridgewater. Refer Sheet 27015 in Appendix A for details.

3 COMPLIANCE WITH CONDITIONS

The following sections demonstrates compliance with the nominated specific conditions from the Major Project Permit No.: MPP2201 (see italic text below).

3.1 Design Plans

4. *Prior to the commencement of relevant construction, design plans prepared by a suitably qualified person, must be provided to the satisfaction of the Commission.*

The civil design plans have been prepared by Jacobs Group (Australia) Pty Ltd, under contract to McConnell Dowell Constructors (Aust) Pty Ltd. Jacobs is an international consultancy practice which provides solutions within and between the transport modes of aviation, highways, bridges, ports & maritime and rail & transit. Jacobs is involved in many of Australia's major infrastructure projects and maintains offices in all capital cities, including Hobart.

The architectural plans have been prepared by Conybeare Morrison International Pty Ltd trading as CM+, under contract to McConnell Dowell Constructors (Aust) Pty Ltd. CM+ is an Australia based Architectural practice with specialist expertise in major bridge projects. CM+ approach to infrastructure ensures that a 'whole of place' strategy informs design outcomes and balances impacts with benefits for the public. CM+ works within multi-disciplinary teams to create a legacy of benchmark and award-winning projects.

The design plans attached to this report are submitted to the Commission for review and acceptance.

5. *Design plans must be fully dimensioned, drawn to a scale, and be generally in accordance the following plans:*

   5.1. New Bridgewater Bridge – Master Plan – Sheet No 0002(dated 11-Nov-21);

   Refer to Sheet 0002 in Appendix B for updated details.

   5.2. New Bridgewater Bridge – finishes schedule – Sheet No 0003 (dated 15-Nov-21);

   Refer to Sheet 0003 in Appendix B for updated details.

   5.3. New Bridgewater Bridge – General Arrangement – Sheet 1 to 5 of 5 - Sheet No 0005 to 0008 (dated 11 Nov-21) and Sheet No 0009 (dated 10-Nov-21);

   Refer to Sheets 0005 to 0009 in Appendix B for updated details.

   5.4. New Bridgewater Bridge – Main Bridge details Sheet 06 – Sheet No. 0015 (dated 10-Nov-21);

   Refer to Sheet 0015 in Appendix B for updated details.

   5.5. New Bridgewater Bridge – Black Snake Bridge Sheet 02 – Sheet No. 0020 (dated 10-Nov-21);

   Refer to Sheet 0020 in Appendix B for updated details.

5.6. New Bridgewater Bridge – Perspective Sheet 01 to 03 and 05 – Sheet No. 0030, 0031, 0032, 0034 (dated 10-Nov-21);

Refer to Sheets 0030, 0031, 0032 & 0034 in Appendix B for updated details.

5.7. New Bridgewater Bridge – Typical cross sections Sheet 1 and 5 – Sheet No. 1101 and 1105 (dated 9-Nov-21);

Refer to Sheets 27021 to 27026 in Appendix A for key cross-sections along the main alignment.

Refer to Sheets 27027 and 27027 in Appendix A for key cross-sections along the Lyell Highway.

5.8. New Bridgewater Bridge – Shared use path general arrangements Sheet 1 to 4 – Sheet No. 1401, 1402, 1403, 1404(dated 9-Nov-21);

Refer to Sheets 27012 to 27015 in Appendix A for the Shared use path general arrangements.

5.9. New Bridgewater Bridge – Chosen Design – 3 sheets (undated);

Refer Sheet 27001 and Sheets 27011 to 27017 in Appendix A for updated details

5.10. New Bridgewater bridge project – Potential locations of noise walls (sheets 1 to 3 of 3), (undated); and

Noise walls are required in the following locations:

- Refer to Sheet 27012 in Appendix A, which shows the proposed noise wall adjacent to George St.
- Refer to Sheet 27015 in Appendix A, which shows the proposed noise walls adjacent to the South Bound Off-ramp from the Midland Highway.

Detailed Noise Modelling has demonstrated that the noise wall adjacent to the East Derwent Highway is not required.

5.11. the location and dimensions for reclamation set out in the Existing and Future Public Open Space and Access Paths – Bridgewater and Granton (on or near project land), Burbury Consulting (2 sheets), dated 11/11/2021.

Refer to the reclamation details shown Sheet 27013 and Sheet 27014 in Appendix A. For more comprehensive details refer to the Reclamation Details Report (2024-MCD-0000-REP-PRJ-00005) issued separately.

6. The design plans must be modified from the plans listed in condition 5:

6.1. so that the height of roads on the south side of the River Derwent, at the intersection of Main Road and Black Snake Road, and Main Road passing under the New Bridgewater Bridge, are capable of accommodating a road height higher than a 1% annual exceedance probability from a flood event in 2090;

The height roads on the south side of the River Derwent, at the intersection of Main Road and Black Snake Road, and Main Road passing under the New Bridgewater Bridge, have been set at a level such that they remain safe to use in a 1% annual exceedance flood event in 2090. In addition, the roads can be raised in the future to provide additional flood immunity should climate change result in higher than forecasted levels. The Lyell Highway can be raised a further 700mm to address climate change while still providing standard vertical bridge clearances (i.e. >6.2m). Refer Sheet 27013 in Appendix A.

6.2. to respond to issues identified in previous road safety audit reports;

See Initial Road Safety Audit prepared on the 28th July 2021, as attached in Appendix C. On pages 23 to 25, our Civil Designer, Jacobs (Australia) Pty Ltd, has provided responses to each of the items raised in the audit report.

Where items are noted as “Reject”, the proposed response has been addressed with the Department of State Growth and the Independent Verifier to ensure that the response is acceptable.

6.3. to include plans of access provisions for land impacted by the new works;

The design plans show all access provisions to land impacted by the works. For instance, refer Sheet 27015 in Appendix A, which shows access provision to all properties along Gunn St and Old Main Road.

6.4. to provide reasonable provision for U-turns to accommodate local traffic requirements on roads with turning limitations to or from intersecting roads or properties;

U-turn provision are provided in the following locations:

- P-turn provided on Lyell Highway, for north bound vehicles, which need to u-turn. Refer Sheet 27017 in Appendix A.
- Roundabout provided on Gunn St / Old Main Road, to allow north bound buses to turn-around in Bridgewater. Refer Sheet 27015 in Appendix A.
- Termination provided at northern end of Old Main Road, to allow vehicles to u-turn at end of no-through road. Refer Sheet 27016 in Appendix A.

6.5. to provide Disability Discrimination Act 1992 (Cth) compliant paths;

All paths are compliant with the Disability Discrimination Act 1992 (Cth).

6.6. to provide bus stops in consultation with public transport providers;

Bus stops have been provided in the following locations. These bus-stops have been located in consultation with public transport providers:

- Bridgewater Bus Stops located on Old Main Road, just south of Boyer Road. Refer Sheet 27015 in Appendix A.
- Granton Reserve Bus Stops located on Lyell Highway. Refer Sheet 27017 in Appendix A.

6.7. to provide safe pedestrian and cyclist crossing points where paths meet roadways and other paths, and to provide access to bus stops;

Refer to Sheets 27012, 27013, 27014, 27015 and 27017 in Appendix A which shows the safe pedestrian and cyclists crossing points where paths meet roadways and other paths. Access to bus-stops are also shown.

6.8. to provide for the creation of a foreshore trail beneath the new bridge at Bridgewater, connecting the path from folios of the Register 176642/4 and 176642/5 to Gunn Street;

Refer to Sheet 27015 in Appendix A, which shows the future foreshore trail. The trail will be built by others as part of the foreshore development.

6.9. to include footpaths on both sides of Gunn Street;

Refer to Sheet 27015 in Appendix A, which shows footpaths on both sides of Gunn Street.

6.10. with a materials and finishes schedule that has:

6.10.1. a colour palette of natural and muted hues; and

6.10.2. low reflectivity to avoid glint and glare;

Refer Sheet 0003 in Appendix B, which shows the updated materials and finishes. A colour palette of natural and muted hues has been adopted. The materials and finishes have low reflectivity to avoid glint and glare.

6.11. to include the final location and general arrangements of all structures;

Refer to the Sheets in Appendix A and Appendix B which shows the location and general arrangement of all structures.

6.12. to include the works or structures associated with any operating stage noise mitigation measures required by this permit;

A detailed noise modelling report has been prepared and will be submitted to show compliance with Permit Condition N5. The noise modelling report has determined noise walls are required in the following locations:

- Refer to Sheet 27012 in Appendix A, which shows the proposed noise wall adjacent to George St.
- Refer to Sheet 27015 in Appendix A, which shows the proposed noise walls adjacent to the South Bound Off-ramp from the Midland Highway.

The noise modelling report identifies the individual properties that are eligible for noise mitigation properties.

6.13. to identify the areas of land to be reclaimed from the River Derwent above the high water mark, that does not exceed:

6.13.1. 5500m² at the southern site; and

6.13.2. 2500m² at the northern site;

The Southern Reclaimed Area is shown on Sheet 27013 in Appendix A.

The Northern Reclaimed Area is shown on Sheet 27014 in Appendix A.

For more comprehensive details refer to the Reclamation Details Report (2024-MCD-0000-REP-PRJ-00005) issued separately.

6.14. to show the existing rail corridor, including showing a useable clearance available under and beside the bridge;

The existing rail corridor is shown on Sheets 27012 to 27017 in Appendix A.

The useable clearance available under and beside the bridge is calculated as 7.8m vertical clearance. The abutment and pier structures are more than 10m from the rail corridor. Refer Sheet 27013 in Appendix A for details.

6.15. to include a vehicle crossing for access to the Watch House property; and

A vehicle crossing is provided to the Watch House property. Refer Sheet 27017 in Appendix A.

6.16. to be consistent with the requirements of any other permit condition.

The plans have been amended to be consistent with the requirements of any other permit conditions.

3.2 Transport

11. *New or modified local roads, parking, pedestrian and cycle infrastructure must be designed to meet relevant design, engineering and safety guidelines including Austroads Guide to Traffic Management, with new roads joining existing roads in a smooth and continuous fashion, in accordance with advice from the road authority.*

All local roads, parking, pedestrian and cycle infrastructure has been designed to meet relevant design, engineering and safety guidelines including Austroads Guide to Traffic Management, with new roads joining existing roads in a smooth and continuous fashion, in accordance with advise from the road authority.

All designs prepared by McConnell Dowell are submitted for review and acceptance by the Department of State Growth and the nominated Independent Verifier for the project.

12. *Independent Road Safety Audits, must be undertaken in accordance with advice from the road authority and the Austroads Guide to Road Safety, Part 6, 2019, for all stages of the Project development, including pre-opening.*

Independent Road Safety Audits will be undertaken in accordance with advice from the road authority and the Austroads Guide to Road Safety, Part 6, 2019, for all stages of the Project development, including pre-opening.

13. *Safe pedestrian and cyclist access must be maintained at all times. Where pre-existing engineered pedestrian and/or bicyclist pathways, including all surface types (asphalt, concrete or gravel) are impacted, alternative routes are to be provided using temporary pathways. All temporary pathways must be of a standard not less than that of pre-existing pathways, including the standard of lighting. All temporary pathways and crossings must be clearly delineated, signed and fenced to prevent easy access to the remainder of the Construction Site.*

Safe pedestrian and cyclist access will be maintained at all times. Where pre-existing engineered pedestrian and/or bicyclist pathways, including all surface types (asphalt, concrete or gravel) are impacted, alternative routes are to be provided using temporary pathways. All temporary pathways will be of a standard not less than that of pre-existing pathways, including the standard of lighting. All temporary pathways and crossings will be clearly delineated, signed and fenced to prevent easy access to the remainder of the Construction Site.

14. *Changes to bus stops and routes must be determined in consultation with relevant public transport operators.*

Changes to bus stops and routes have been determined in consultation with relevant public transport operators, including Metro Tasmania, Redline Coaches and O’Driscoll Coaches.

3.3 Land Slip Risk

21. *For all cuttings identified on New Bridgewater Bridge – General Arrangement - Sheet 4 and 5 of 5 – Sheet No 0008 (dated 11 Nov-21) and Sheet No 0009 (dated 10-Nov-21):*

    21.1. construct catch drains above new cuttings and install drape netting; or

    21.2. apply alternative strategies as determined by a suitably qualified person to mitigate rock fall.

Refer to Sheet 27015 and Sheet 27016 in Appendix A, which shows cuttings identified above. The following is noted:

- Due to geography, the existing ground levels at the top of all cut batters falls away from the batter and thus catch drains are not provided. Refer to 27026 in Appendix A as an example.
- All new cut batters are at 1V:2H, or nominally 30 degrees, which will ensure rock fall does not occur. The potential for rock fall has been determined by a suitably qualified geotechnical engineer.
- The road geometry has been amended to eliminate the requirement to re-cut the large existing cutting on the east side of the Midland Highway. The cutting will remain as is.

22. *For all new cuttings identified on the eastern side of the New Bridgewater Bridge – Master Plan - Sheet No 0002 (dated 11-Nov-21):*

    22.1. construct catch drains above each cutting;

    22.2. install drape netting; or

    22.3. apply alternative strategies to mitigate rock fall.

Refer to Sheets 27011 to 27017 in Appendix A, which shows the location of all cuttings. The following is noted:

- Catch drains are provided above each cutting where necessary to redirect any overland flow to the stormwater network.
- Where cut batters are steeper than 1V:2H, drape netting will be applied. Refer to Appendix D for a typical product
- For steep batters where less competent rock is encountered a shotcrete surfacing will be adopted to mitigate rock fall.

3.4 Marine Safety and infrastructure

27. *Prior to the completion of the development, install permanent navigation aids and markings for the ongoing safe navigation of vessels, in accordance with advice from MAST.*

Navigation Aids and markings as per Sheet 60985 in Appendix E, will be installed on the River Derwent Bridge, prior to completion of the project.

The navigation aids and markings have been prepared in consultation and accepted by MAST.

3.5 Noise walls

28. *Noise walls must not reduce sunlight to the private open space of a dwelling to less than 3 hours between the hours of 9:00am and 3:00pm on 21 June.*

The noise modelling report has determined noise walls are required in the following locations:

- Refer to Sheet 27012 in Appendix A, which shows the proposed noise wall adjacent to George St.
- Refer to Sheet 27015 in Appendix A, which shows the proposed noise walls adjacent to the South Bound Off-ramp from the Midland Highway.

Noise walls have been located such that they will not reduce sunlight to the private open space of a dwelling to less than 3 hours between the hours of 9:00am and 3:00pm on 21 June.

3.6 Public Open Space

29. *An open space network must be provided substantially in accordance with the future public open space, shown in:*

    29.1. Existing and Future Public Open Space and Access Paths – Bridgewater (on or near project land), dated 1/11/2021; and

    29.2. Existing and Future Public Open Space and Access Paths – Granton (on or near project land), dated 1/11/2021.

The design as set-out in Sheets 27011 to 27017 in Appendix A, in general retains the open space set-out in the above two sketches. Some space is used for drainage basins and swales necessary to treat stormwater collected on the project.

The project will work with the Department of State Growth to maximise available open space and ensure that the connections are maintained.

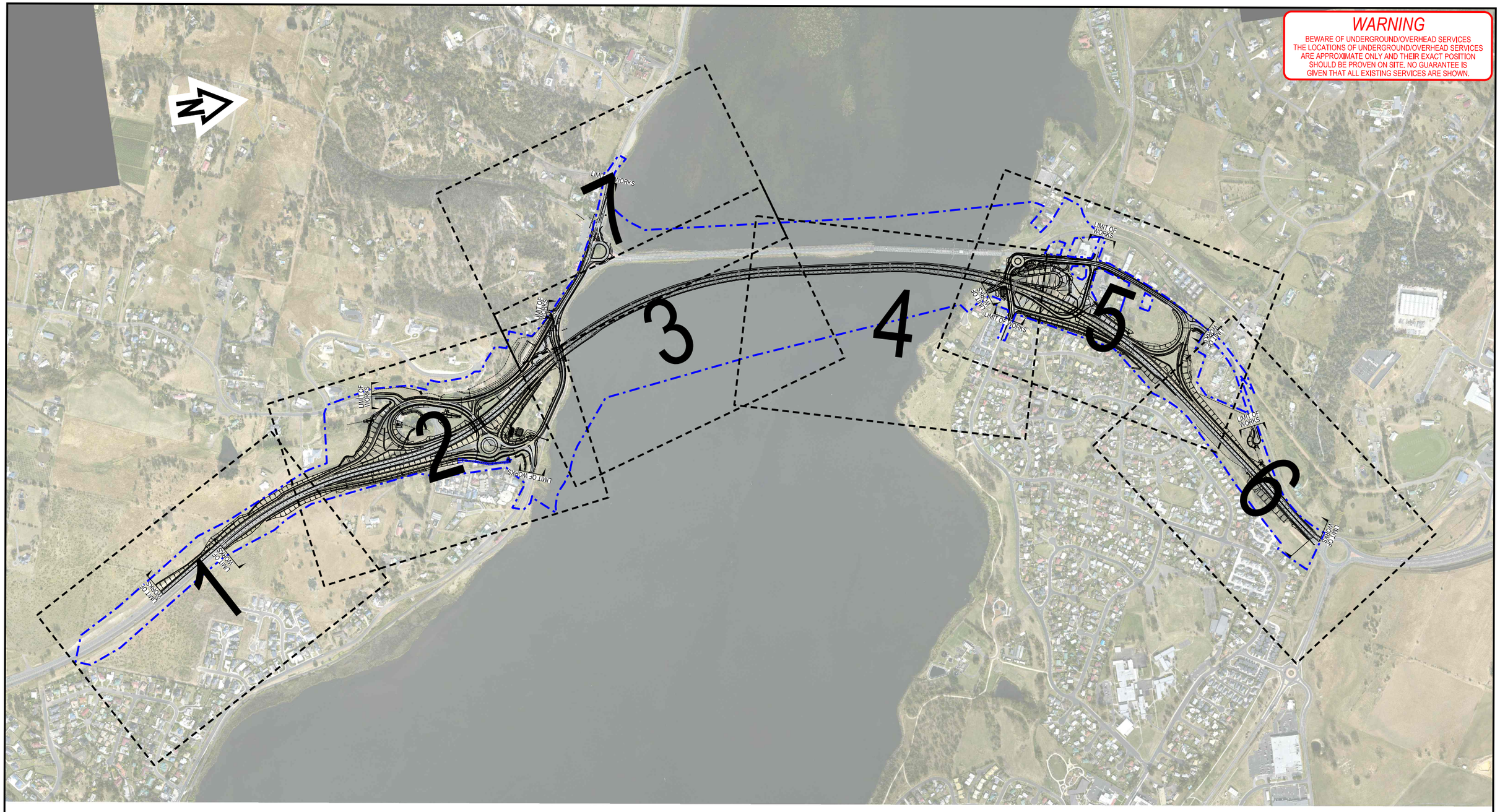
APPENDIX A – DESIGN PLANS

General Arrangement Plans

- 2024-JAC-1000-DRG-CIV-27001_D - General Arrangement Plans – Key Plan
- 2024-JAC-1000-DRG-CIV-27011_D - General Arrangement Plans – Sheet 1
- 2024-JAC-1000-DRG-CIV-27012_D - General Arrangement Plans – Sheet 2
- 2024-JAC-1000-DRG-CIV-27013_D - General Arrangement Plans – Sheet 3
- 2024-JAC-1000-DRG-CIV-27014_D - General Arrangement Plans – Sheet 4
- 2024-JAC-1000-DRG-CIV-27015_D - General Arrangement Plans – Sheet 5
- 2024-JAC-1000-DRG-CIV-27016_D - General Arrangement Plans – Sheet 6
- 2024-JAC-1000-DRG-CIV-27017_D - General Arrangement Plans – Sheet 7

Road Typical Sections

- 2024-JAC-1000-DRG-CIV-27021_D – Road Typical Sections – Sheet 1
- 2024-JAC-1000-DRG-CIV-27022_D – Road Typical Sections – Sheet 2
- 2024-JAC-1000-DRG-CIV-27023_D – Road Typical Sections – Sheet 3
- 2024-JAC-1000-DRG-CIV-27024_D – Road Typical Sections – Sheet 4
- 2024-JAC-1000-DRG-CIV-27025_D – Road Typical Sections – Sheet 5
- 2024-JAC-1000-DRG-CIV-27026_D – Road Typical Sections – Sheet 6
- 2024-JAC-1000-DRG-CIV-27027_D – Road Typical Sections – Sheet 7
- 2024-JAC-1000-DRG-CIV-27028_D – Road Typical Sections – Sheet 8



WARNING

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THE LOCATIONS OF UNDERGROUND/OVERHEAD SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

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FOR INFORMATION

No.	Amendment Description	Initials	Date
D	ISSUED FOR INFORMATION		19/09/22
C	ISSUED FOR INFORMATION		22/08/22
B	ISSUED FOR INFORMATION		12/08/22
A	ISSUED FOR INFORMATION		03/08/22

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DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 MGA55 | Height Datum: AHD83

Jacobs
PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION

Department of State Growth

MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
GENERAL ARRANGEMENT PLANS
KEY PLAN

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27001	16\09\2022	27001

REGISTRATION NUMBER
A0087.062

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LIMIT OF WORKS

BROOKER HIGHWAY

LIMIT OF WORKS

FOR CONTINUATION REFER TO SHEET 2

LEGEND - PLAN

- PROJECT LAND BOUNDARY
- NAVIGATION CHANNEL AFTER EXISTING BRIDGE HAS BEEN REMOVED
- NAVIGATION CHANNEL
- NOISE WALL
- DRAINAGE FEATURES
- EXCLUSION ZONE
- SUP (3.0m NOM.)
- FOOT PATH (1.8m NOM.)

NOTE: ALL PATHS ARE DDA COMPLIANT

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Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

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PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Department of State Growth

MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
GENERAL ARRANGEMENT PLAN
SHEET 1

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27011	16\09\2022	27011

REGISTRATION NUMBER
A0087.062

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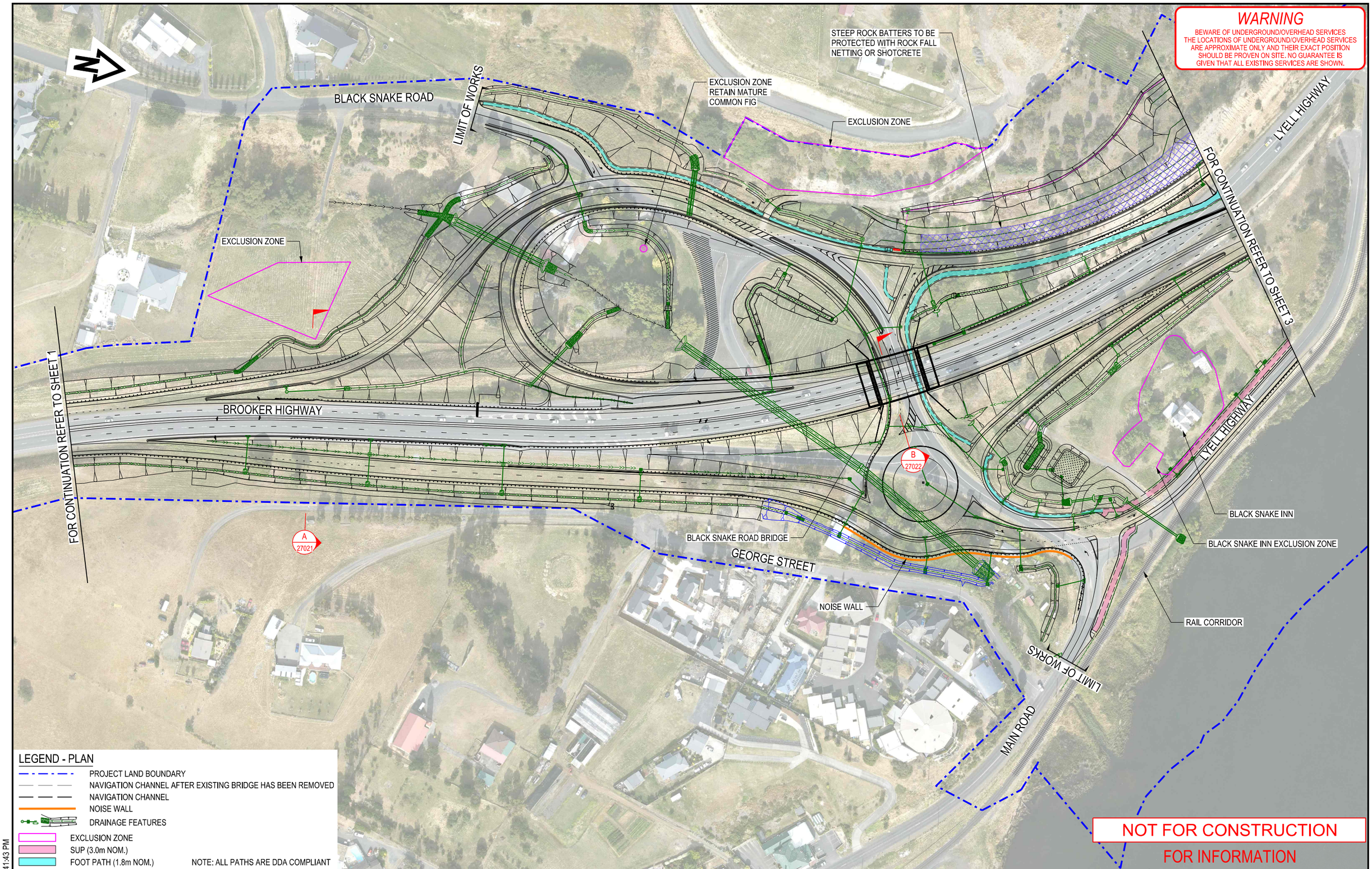

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DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

Jacobs
PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Department of State Growth
MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
GENERAL ARRANGEMENT PLAN
SHEET 2

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27012	16\09\2022	27012

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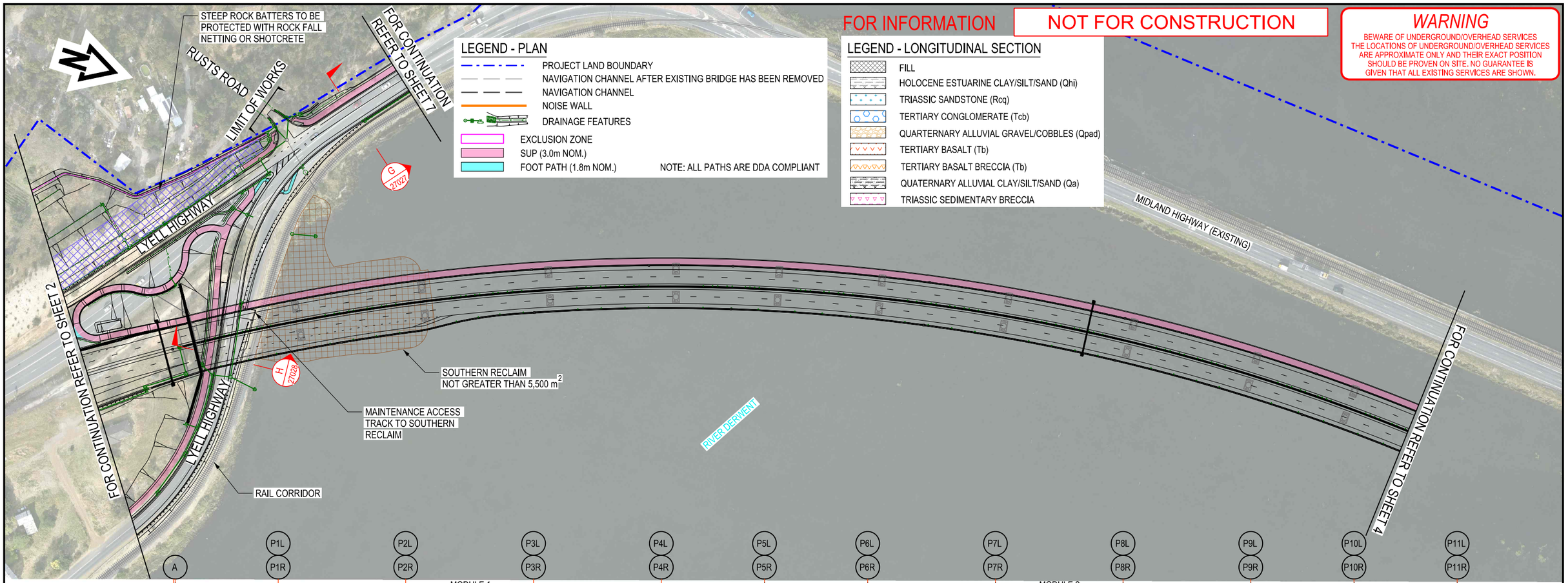

	A	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
EXISTING SURFACE LEVEL ON CONTROL LINE	+8.775	-1.022	-1.183	-1.167	-1.183	-1.145	-1.207	-1.125	-1.104	-1.061	-1.104	-1.002
PROPOSED SURFACE LEVEL ON CONTROL LINE MC01	13.8169	14.3346	14.9754	15.6163	16.2572	16.7749	17.2925	17.9334	18.5743	19.2151	19.7328	20.2505
CHAINAGE OF LEFT BOX ON CONTROL LINE MC01	1278.2915	1330.0628	1394.1502	1458.2384	1522.3263	1574.0972	1625.8686	1689.9567	1754.0447	1818.1322	1869.9040	1921.6749
CHAINAGE OF RIGHT BOX ON CONTROL LINE MC01	1278.2915	1330.0628	1394.1502	1458.2384	1522.3263	1574.0972	1625.8686	1689.9567	1754.0447	1818.1322	1869.9040	1921.6749

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B	ISSUED FOR INFORMATION		12/08/22
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SCALES
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1 : 2000 FULL SIZE A3

DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

Jacobs
PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Department of State Growth

MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
GENERAL ARRANGEMENT PLAN
SHEET 3

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27013	16\09\2022	27013

REGISTRATION NUMBER
A0087.062

REVISION D

16\09\2022 4:42:06 PM

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WARNING
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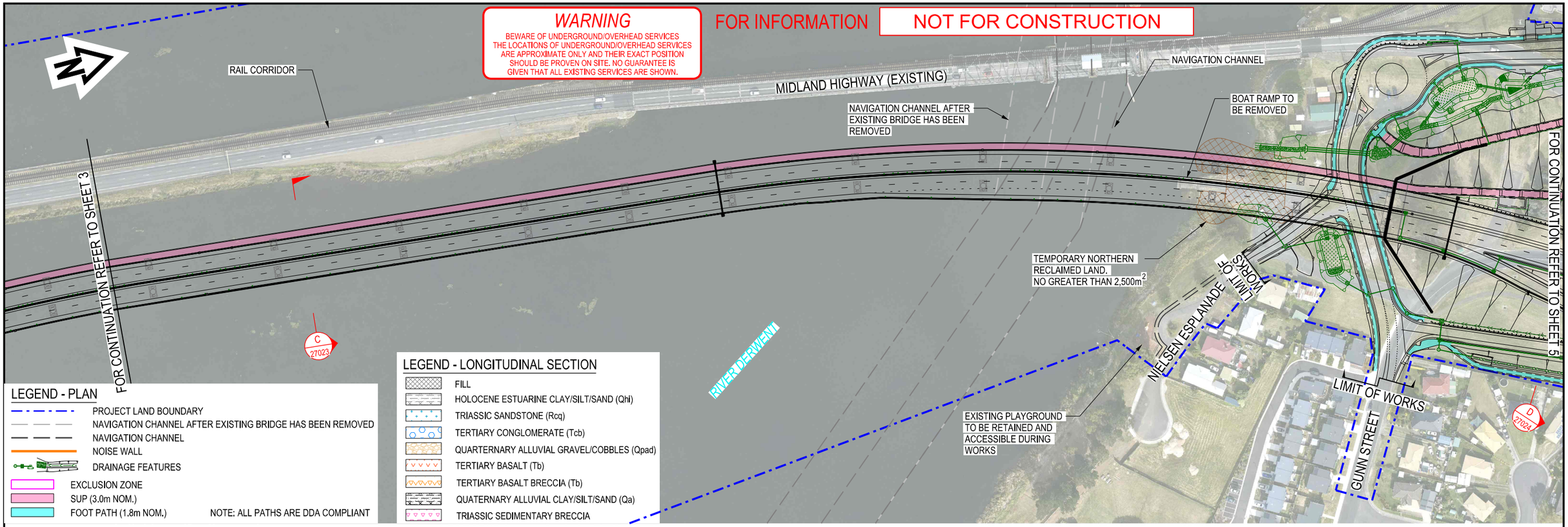
THE LOCATIONS OF UNDERGROUND/OVERHEAD SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

FOR INFORMATION

NOT FOR CONSTRUCTION



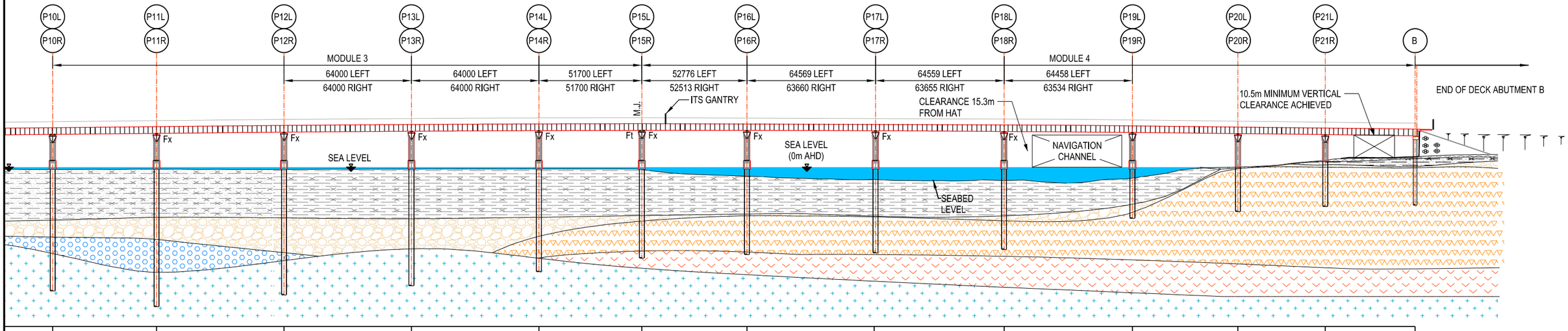
LEGEND - PLAN

- PROJECT LAND BOUNDARY
- NAVIGATION CHANNEL AFTER EXISTING BRIDGE HAS BEEN REMOVED
- NAVIGATION CHANNEL
- NOISE WALL
- DRAINAGE FEATURES
- EXCLUSION ZONE
- SUP (3.0m NOM.)
- FOOT PATH (1.8m NOM.)

NOTE: ALL PATHS ARE DDA COMPLIANT

LEGEND - LONGITUDINAL SECTION

- FILL
- HOLOCENE ESTUARINE CLAY/SILT/SAND (Qhi)
- TRIASSIC SANDSTONE (Rcq)
- TERTIARY CONGLOMERATE (Tcb)
- QUARTERNARY ALLUVIAL GRAVEL/COBBLES (Qpad)
- TERTIARY BASALT (Tb)
- TERTIARY BASALT BRECCIA (Tb)
- QUATERNARY ALLUVIAL CLAY/SILT/SAND (Qa)
- TRIASSIC SEDIMENTARY BRECCIA



-1.104	-1.002	-1.116	-0.948	-0.815	-1.260	-4.504	-6.212	-6.662	-5.479	-0.798	+3.468	+5.345
19.7328	20.2505	20.8659	21.3290	21.6214	21.7330	21.7322	21.5754	21.2475	20.7484	20.2101	19.6769	19.0458
1869.9040	1921.6749	1985.6781	2049.6783	2113.6785	2165.3784	2218.0152	2282.1027	2346.1912	2410.2790	2462.9513	2506.5609	2551.4227
1869.9040	1921.6749	1985.6781	2049.6783	2113.6785	2165.3784	2218.0152	2282.1027	2346.1912	2410.2790	2462.9513	2506.5609	2551.4227

No.	Amendment Description	Initials	Date
D	ISSUED FOR INFORMATION		19/09/22
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SCALES
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DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 MGA55 | Height Datum: AHD83

Jacobs
PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Department of State Growth
MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
GENERAL ARRANGEMENT PLAN
SHEET 4

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27014	16\09\2022	27014

REGISTRATION NUMBER
A0087.062

REVISION D

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WARNING

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THE LOCATIONS OF UNDERGROUND/OVERHEAD SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

SORELL STREET
LIMIT OF WORKS
BOYER ROAD
RETAIN EXISTING KERB LINE UNLESS OTHERWISE AGREED WITH BRIGHTON COUNCIL AND ADJACENT LANDOWNER.
PROPOSED BUS STOP
OLD MAIN ROAD
RAIL CORRIDOR
PROPOSED BUS STOP
BOYER ROAD
LIMIT OF WORKS
OLD MAIN ROAD
RECLAIMED LAND
BOYER ROAD BRIDGE
FOR CONTINUATION REFER TO SHEET 4
FUTURE FORESHORE TRAIL
LIMIT OF WORKS
NELSEN ESPLANADE
GUNN STREET
NOISE WALL
D 27024
E 27025
F 27026
LIMIT OF WORKS
GUNN STREET
HAYTON PLACE
MIDLAND HIGHWAY
BRAYDON COURT
FINLAY STREET
FOR CONTINUATION REFER TO SHEET 6

LEGEND - PLAN

- PROJECT LAND BOUNDARY
- NAVIGATION CHANNEL AFTER EXISTING BRIDGE HAS BEEN REMOVED
- NAVIGATION CHANNEL
- NOISE WALL
- DRAINAGE FEATURES
- EXCLUSION ZONE
- SUP (3.0m NOM.)
- FOOT PATH (1.8m NOM.)

NOTE: ALL PATHS ARE DDA COMPLIANT

NOT FOR CONSTRUCTION
FOR INFORMATION

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Jacobs
PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Department of State Growth
MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
GENERAL ARRANGEMENT PLAN
SHEET 5

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27015	16\09\2022	27015

REGISTRATION NUMBER
A0087.062

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RAIL CORRIDOR

OLD MAIN ROAD

LIMIT OF WORKS

LIMIT OF WORKS

LIMIT OF WORKS

MIDLAND HIGHWAY

E DERWENT HIGHWAY

FOR CONTINUATION REFER TO SHEET 5

FINLAY STREET

SWAN STREET

LEGEND - PLAN

- PROJECT LAND BOUNDARY
- NAVIGATION CHANNEL AFTER EXISTING BRIDGE HAS BEEN REMOVED
- NAVIGATION CHANNEL
- NOISE WALL
- DRAINAGE FEATURES
- EXCLUSION ZONE
- SUP (3.0m NOM.)
- FOOT PATH (1.8m NOM.) NOTE: ALL PATHS ARE DDA COMPLIANT

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FOR INFORMATION

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SCALES

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1 : 2000 FULL SIZE A3

DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

Jacobs

PROJECT No. IA256601

Tasmanian Government

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Department of State Growth

MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
GENERAL ARRANGEMENT PLAN
SHEET 6

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27016	16\09\2022	27016

REGISTRATION NUMBER
A0087.062

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LEGEND - PLAN

- PROJECT LAND BOUNDARY
- NAVIGATION CHANNEL AFTER EXISTING BRIDGE HAS BEEN REMOVED
- NAVIGATION CHANNEL
- NOISE WALL
- DRAINAGE FEATURES
- EXCLUSION ZONE
- SUP (3.0m NOM.)
- FOOT PATH (1.8m NOM.)

NOTE: ALL PATHS ARE DDA COMPLIANT

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PROJECT No. IA256601

Tasmanian Government

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MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
GENERAL ARRANGEMENT PLAN
SHEET 7

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27017	16\09\2022	27017

REGISTRATION NUMBER
A0087.062

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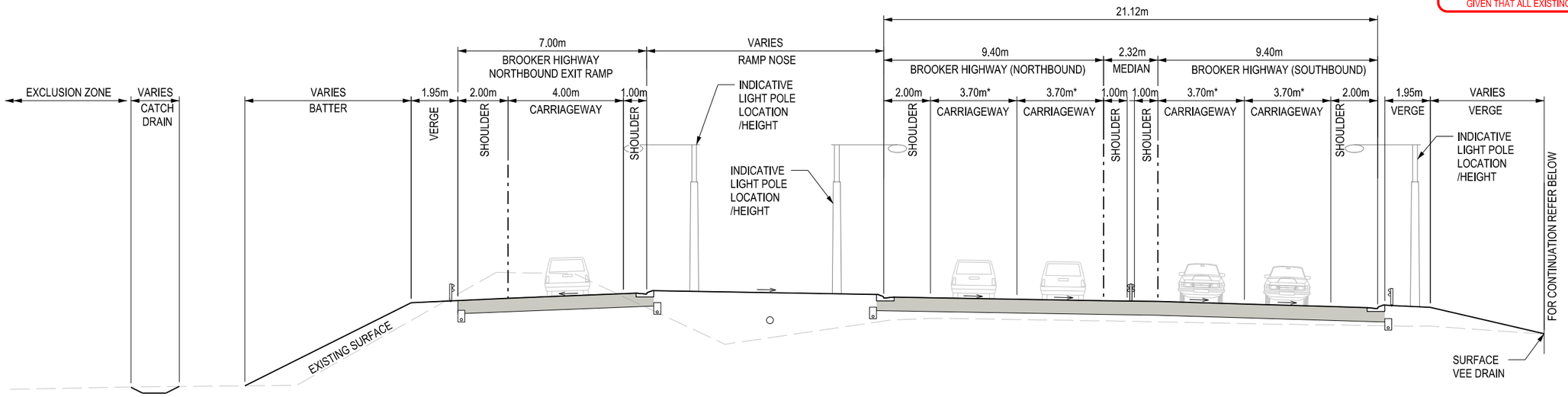

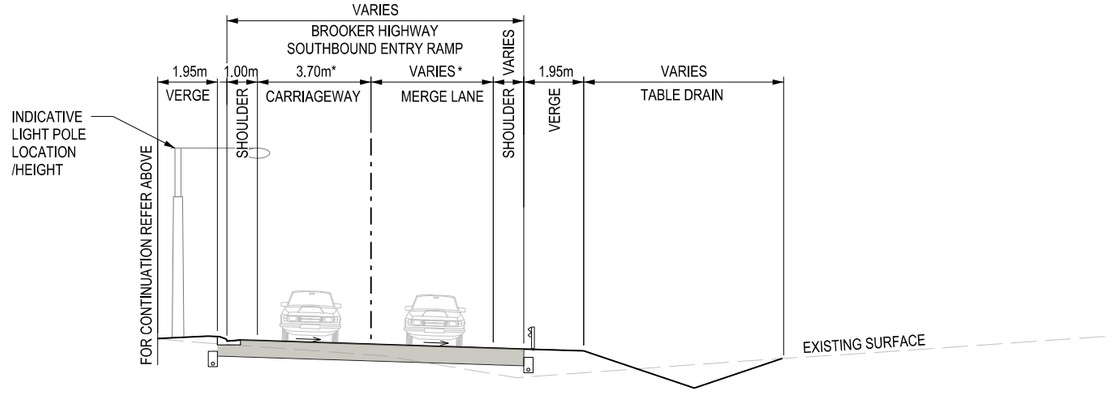

TYPICAL CROSS SECTION - MAIN CARRIAGEWAY - CH. 6602 LANES NORTHBOUND + 2 LANES SOUTHBOUND

SECTION A
1:200 27012

LEGEND:

* INCLUDES 0.2m OF CURVE WIDENING AS PER AGRD PART 3 SECTION 7

NOT FOR CONSTRUCTION

FOR INFORMATION

No.	Amendment Description	Initials	Date
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A	ISSUED FOR INFORMATION	T.L.	03/08/22
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SCALES
1:200 FULL SIZE A3

DESIGNED: B. MCGRATH REVIEWED:

Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

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PROJECT No. IA256601

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CREATIVE CONSTRUCTION™

Department of State Growth
MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
ROAD TYPICAL SECTIONS
SHEET 1

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27021	16\09\2022	27021

REGISTRATION NUMBER
A0087.062

REVISION D

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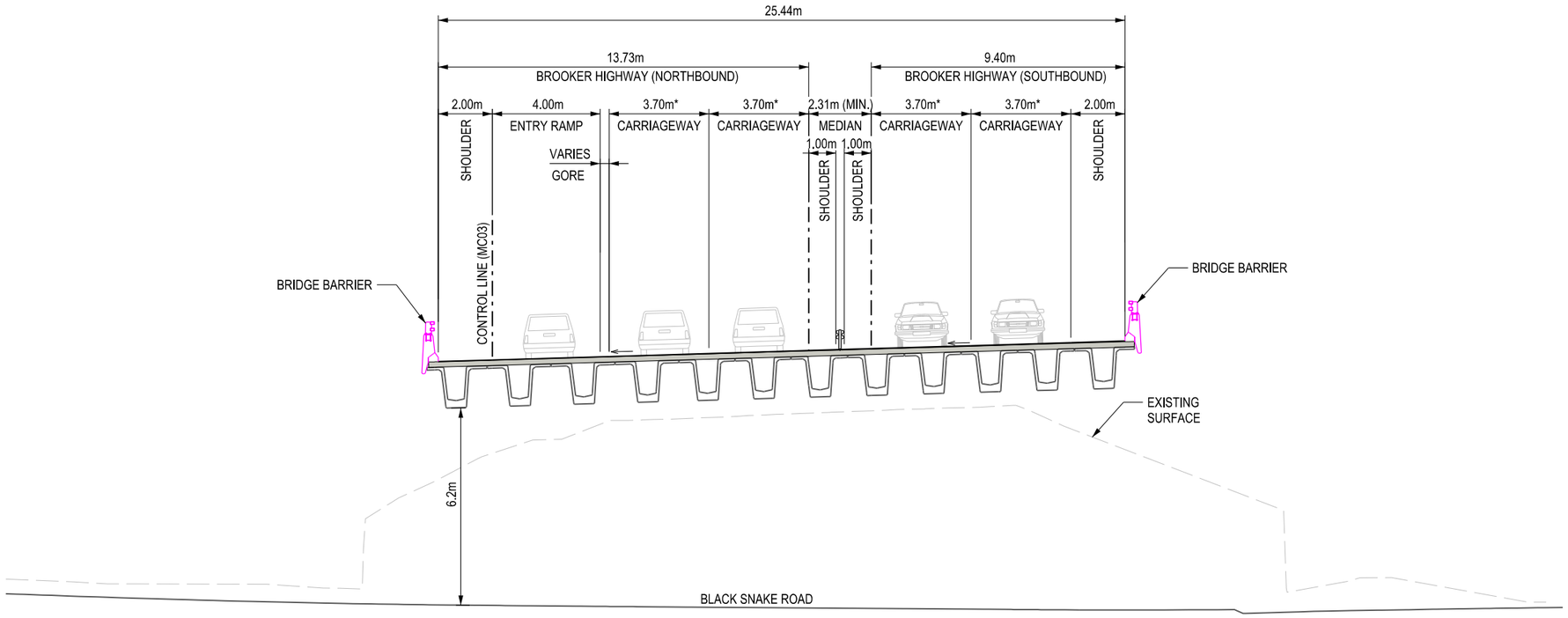

TYPICAL CROSS SECTION - MAIN CARRIAGEWAY OVER BLACK SNAKE ROAD BRIDGE - CH. 1000
2 LANES NORTHBOUND + 2 LANES SOUTHBOUND

SECTION B
1:200 27012

LEGEND:
* INCLUDES 0.2m OF CURVE WIDENING AS PER AGRD PART 3 SECTION 7

NOT FOR CONSTRUCTION
FOR INFORMATION

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A	ISSUED FOR INFORMATION	T.L.	03/08/22

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SCALES
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DESIGNED: G. DEARLING REVIEWED:
Co-ordinate System: GDA2020 MGA55 | Height Datum: AHD83

Jacobs
PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Department of State Growth
MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
ROAD TYPICAL SECTIONS
SHEET 2

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27022	16\09\2022	27022

REGISTRATION NUMBER
A0087.062

REVISION D

16\09\2022 4:44:01 PM

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WARNING

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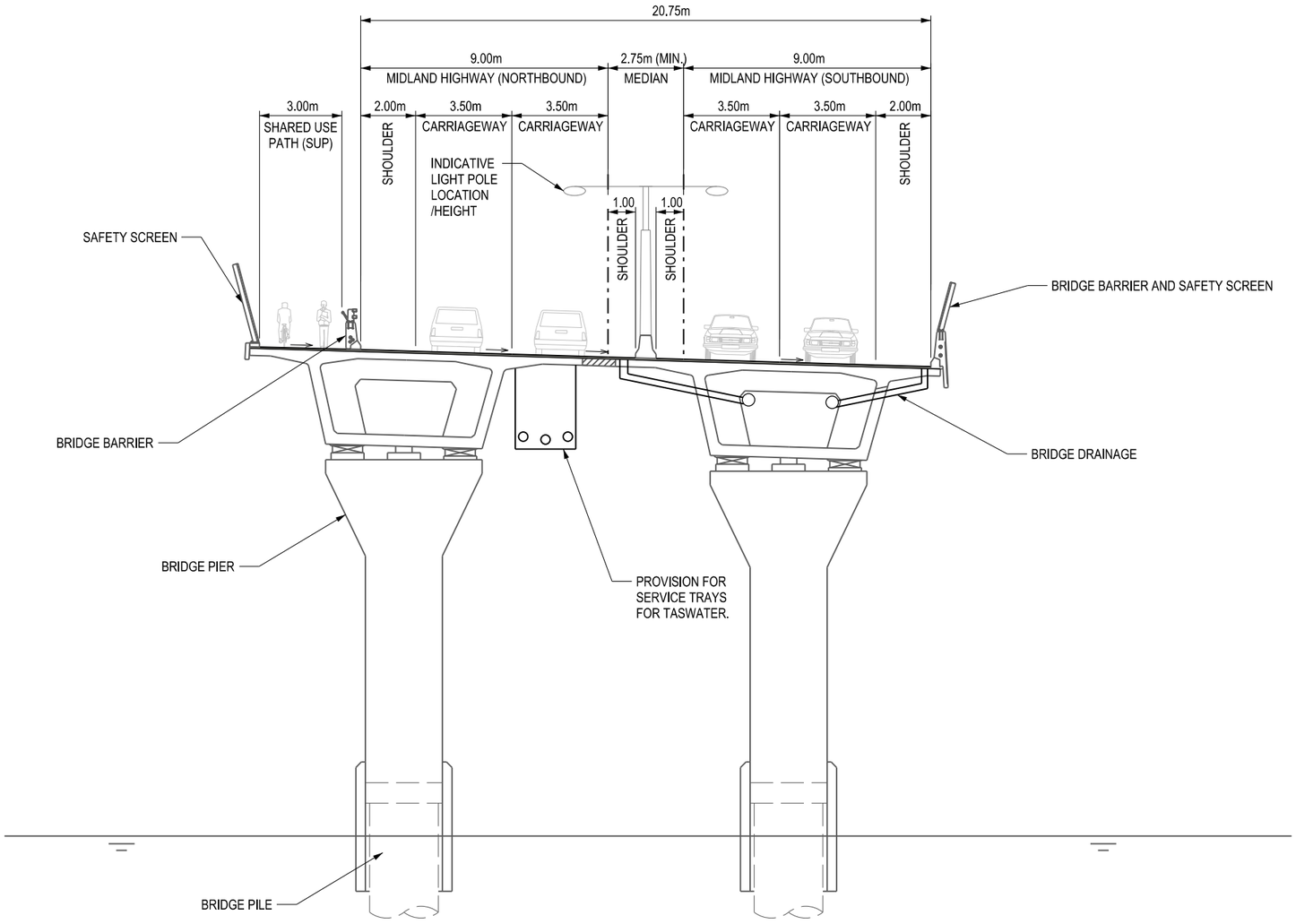

TYPICAL CROSS SECTION - MAIN CARRIAGEWAY OVER RIVER DERWENT BRIDGE - CH. 2000
2 LANES NORTHBOUND + 2 LANES SOUTHBOUND

SECTION C 27014
1:200

NOT FOR CONSTRUCTION

FOR INFORMATION

No.	Amendment Description	Initials	Date
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B	ISSUED FOR INFORMATION		12/08/22
A	ISSUED FOR INFORMATION	T.L.	03/08/22
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SCALES
1:200 FULL SIZE A3

DESIGNED: G. DEARLING REVIEWED:

Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

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PROJECT No. IA256601

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MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
ROAD TYPICAL SECTIONS
SHEET 3

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27023	16\09\2022	27023

REGISTRATION NUMBER
A0087.062

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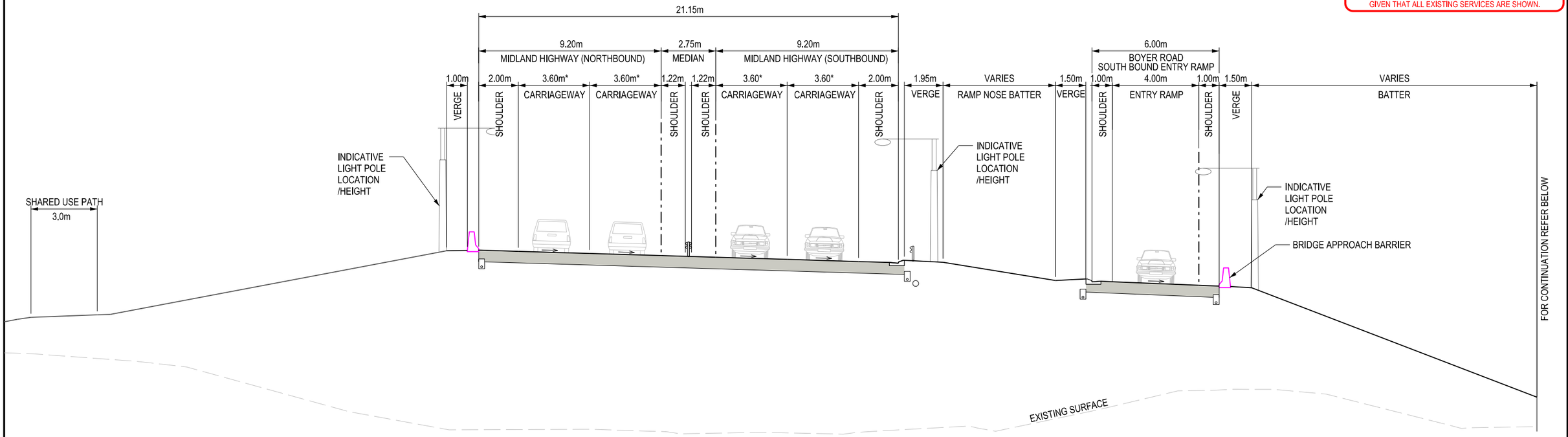

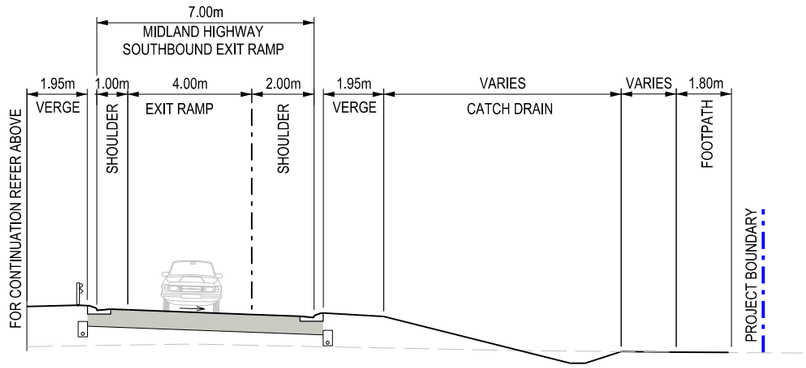

TYPICAL CROSS SECTION - MAIN CARRIAGEWAY - CH. 2650
2 LANES NORTHBOUND + 2 LANES SOUTHBOUND

SECTION D 27015
1:200

LEGEND:
* INCLUDES 0.1m OF CURVE WIDENING AS PER AGRD PART 3 SECTION 7
\# TRANSITIONS TO 1.00m ON THE STRAIGHT

NOT FOR CONSTRUCTION
FOR INFORMATION

No.	Amendment Description	Initials	Date
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SCALES
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DESIGNED: G. DEARLING REVIEWED:
Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

Jacobs
PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Department of State Growth
MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
ROAD TYPICAL SECTIONS
SHEET 4

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27024	16\09\2022	27024

REGISTRATION NUMBER
A0087.062

REVISION D

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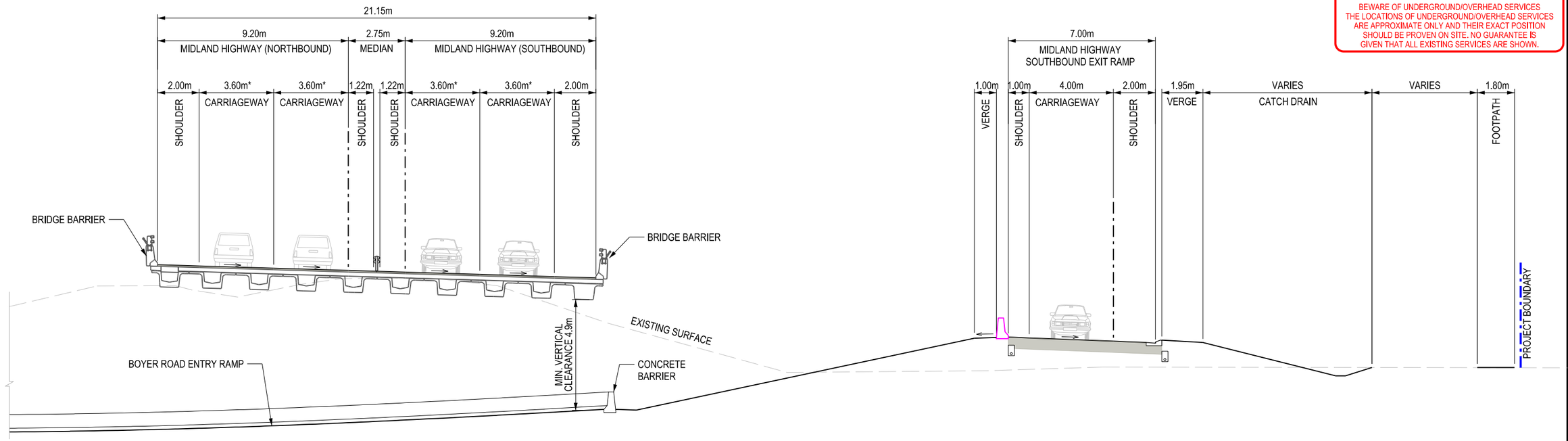

TYPICAL CROSS SECTION - MAIN CARRIAGEWAY - CH. 2730
2 LANES NORTHBOUND + 2 LANES SOUTHBOUND

SECTION E
1:200 27015

WARNING

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LEGEND:
- * INCLUDES 0.1m OF CURVE WIDENING AS PER AGRD PART 3 SECTION 7
- # INCLUDES 0.6m OF CURVE WIDENING AS PER AGRD PART 3 SECTION 7
- ^ TRANSITIONS TO 1.00m ON THE STRAIGHT

NOT FOR CONSTRUCTION
FOR INFORMATION

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A	ISSUED FOR INFORMATION	T.L.	03/08/22
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SCALES
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DESIGNED: G. DEARLING REVIEWED:
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Jacobs
PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Department of State Growth
MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
ROAD TYPICAL SECTIONS
SHEET 5

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27025	16\09\2022	27025

REGISTRATION NUMBER
A0087.062

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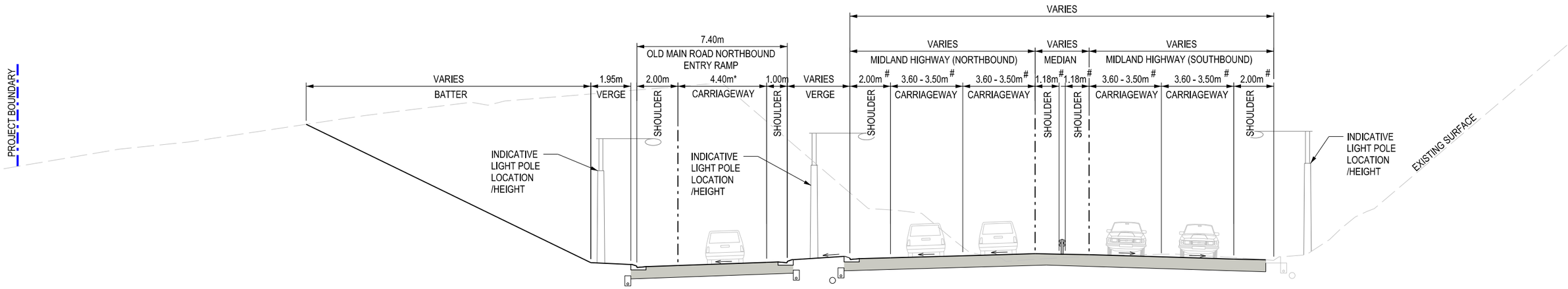

TYPICAL CROSS SECTION - MAIN CARRIAGEWAY - CH. 3100
2 LANES NORTHBOUND + 2 LANES SOUTHBOUND

SECTION F
1:200 27015

LEGEND:

* INCLUDES 0.1m OF CURVE WIDENING AS PER AGRD PART 3 SECTION 7

\# WIDTH VARYING FROM CURVE WIDENING TRANSITION

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FOR INFORMATION

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1:200 (1,0 0 1,0 2,0 3,0 4,0m) FULL SIZE A3

DESIGNED: G. DEARLING REVIEWED:

Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

Jacobs
PROJECT No. IA256601

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CREATIVE CONSTRUCTION™

Department of State Growth
MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
ROAD TYPICAL SECTIONS
SHEET 6

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27026	16\09\2022	27026

REGISTRATION NUMBER
A0087.062

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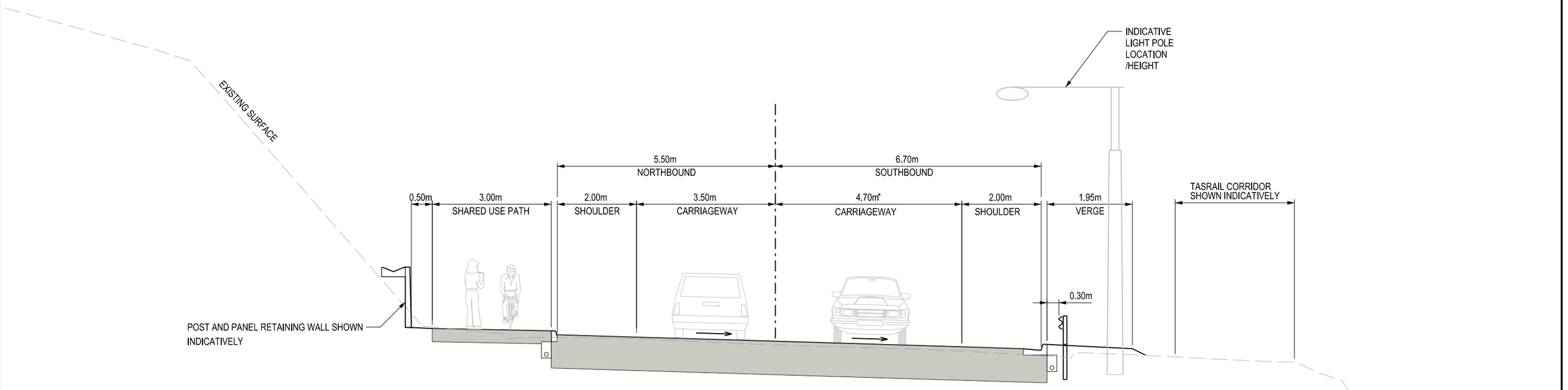
BEWARE OF UNDERGROUND/OVERHEAD SERVICES
THE LOCATIONS OF UNDERGROUND/OVERHEAD SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.



TYPICAL CROSS SECTION - CH 480
LYELL HWY
1 LANE BOTH DIRECTIONS

SECTION G 27013
1:100

NOT FOR CONSTRUCTION

FOR INFORMATION

No.	Amendment Description	Initials	Date
D	ISSUED FOR INFORMATION		19/09/22
C	ISSUED FOR INFORMATION		22/08/22
B	ISSUED FOR INFORMATION		12/08/22
A	ISSUED FOR INFORMATION	T.L.	03/08/22
A3 original	This sheet may be prepared using colour and may be incomplete if copied		

SCALES
0.5 0 0.5 1.0 1.5 2.0m
1 : 100 FULL SIZE A3

DESIGNED: G. DEARLING REVIEWED:

Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

Jacobs
PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Department of State Growth
MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
ROAD TYPICAL SECTIONS
SHEET 7

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27027	16\09\2022	27027

REGISTRATION NUMBER
A0087.062

REVISION D

16\09\2022 4:45:22 PM

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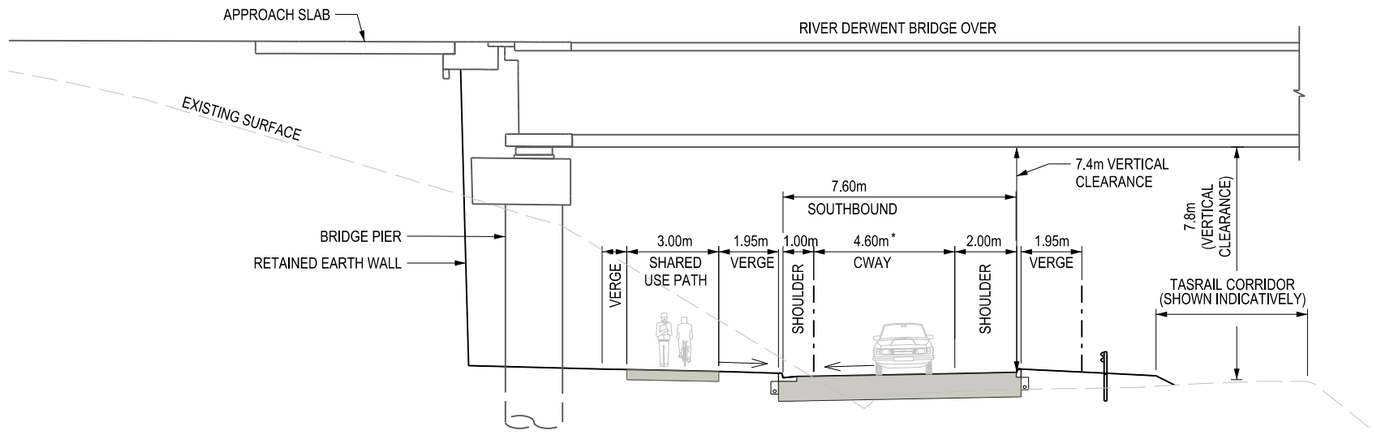
WARNING

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



* INCLUDES 1.1m OF CURVE WIDENING

TYPICAL CROSS SECTION - CH 130
LYELL HIGHWAY SOUTHBOUND CONNECTOR
1 LANE SOUTHBOUND

SECTION H
1:200 27013

NOT FOR CONSTRUCTION

FOR INFORMATION

No.	Amendment Description	Initials	Date
D	ISSUED FOR INFORMATION		19/09/22
C	ISSUED FOR INFORMATION		22/08/22
B	ISSUED FOR INFORMATION		12/08/22
A	ISSUED FOR INFORMATION	T.L.	03/08/22

A3 original | This sheet may be prepared using colour and may be incomplete if copied

SCALES
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1 : 200 FULL SIZE A3

DESIGNED: G. DEARLING REVIEWED:

Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

Jacobs
PROJECT No. IA256601

Tasmanian Government

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Department of State Growth

MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
PROJECT WIDE
ROAD TYPICAL SECTIONS
SHEET 8

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-JAC-1000-DRG-CIV-27028	16\09\2022	27028

REGISTRATION NUMBER
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REVISION D

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APPENDIX B – ARCHITECTURAL PLANS

Master Plan

- 2024-CMI-1085-DRG-ARC-0002_B – Master Plan

Finishes Schedule

- 2024-CMI-1085-DRG-ARC-0003_A – Finishes Schedule

General Arrangement

- 2024-CMI-1085-DRG-ARC-0005_A – General Arrangement – Sheet 1 of 5
- 2024-CMI-1085-DRG-ARC-0006_A – General Arrangement – Sheet 2 of 5
- 2024-CMI-1085-DRG-ARC-0007_B – General Arrangement – Sheet 3 of 5
- 2024-CMI-1085-DRG-ARC-0008_B – General Arrangement – Sheet 4 of 5
- 2024-CMI-1085-DRG-ARC-0009_B – General Arrangement – Sheet 5 of 5

Bridge Details

- 2024-CMI-1085-DRG-ARC-0015_B – Main Bridge Details
- 2024-CMI-1085-DRG-ARC-0020_B – Black Snake Road Bridge Details

Perspective Views

- 2024-CMI-1085-DRG-ARC-0030_A – Perspective Sheet 01
- 2024-CMI-1085-DRG-ARC-0031_A – Perspective Sheet 02
- 2024-CMI-1085-DRG-ARC-0032_A – Perspective Sheet 03
- 2024-CMI-1085-DRG-ARC-0034_B – Perspective Sheet 04

0 | KEY PLAN
SCALE 1:10000

LEGEND

- RETAINING WALL TYPE 1
- RETAINING WALL TYPE 2
- PEDESTRIAN RAIL
- NOISE WALL
- PEDESTRIAN SAFETY SCREEN
- BARRIER + SAFETY SCREEN
- BARRIER + PEDESTRIAN RAIL

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FOR INFORMATION

No.	Amendment Description	Initials	Date
B	ISSUED FOR DEVELOPED CONCEPT DESIGN	HNG	14/09/2022
A	ISSUED FOR DEVELOPED CONCEPT DESIGN	HNG	23/08/2022

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SCALE 1:10000@A3

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Co-ordinate System: GDA2020 / MGA55 | Height Datum: AHD83

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NEW BRIDGEWATER BRIDGE
BRIDGEWATER

MASTER PLAN

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-CMI-1085-DRG-ARC- 0002	14/09/2022	0002

REGISTRATION NUMBER
A0087.062

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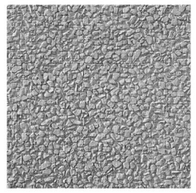
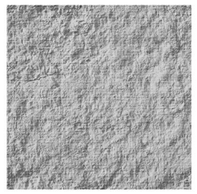
PRECAST CONCRETE
NATURAL FINISH



RSW WALL TYPE 1
PATTERN 1
RECKLI 2/41 MOSEL
CAST IN TEXTURE



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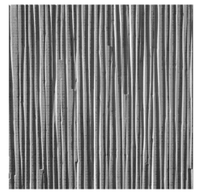
PATTERN 2
RECKLI 2/122 YUKON
CAST IN TEXTURE

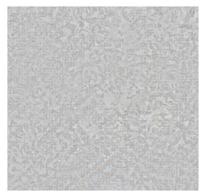
RSW WALL TYPE 1
PAINT FINISH
DULUX 'STONECROP' S14D5
PAINT FINISH



RSW WALL TYPE 2
PATTERN 1
RECKLI 2/32 INN
CAST IN TEXTURE

RSW WALL TYPE 2
PAINT FINISH
DULUX 'DOMINO' SG6G8
PAINT FINISH

NOISE WALL
PAINT FINISH (NATURAL TONE)
WITH CAST IN PATTERN



GALVANISED STEEL
NATURAL FINISH

GALVANISED STEEL
BLACK PAINT FINISH

THROWSCREEN MESH
TENSILE WEB-NET MESH

NOT FOR CONSTRUCTION

FOR INFORMATION

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25/08/2022

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SCALES
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DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 / MGA55 Height Datum: AHD83

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Department of State Growth

NEW BRIDGEWATER BRIDGE
BRIDGEWATER

FINISHES SCHEDULE

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-CMI-1085-DRG-ARC- 0003	25/08/2022	0003

REGISTRATION NUMBER
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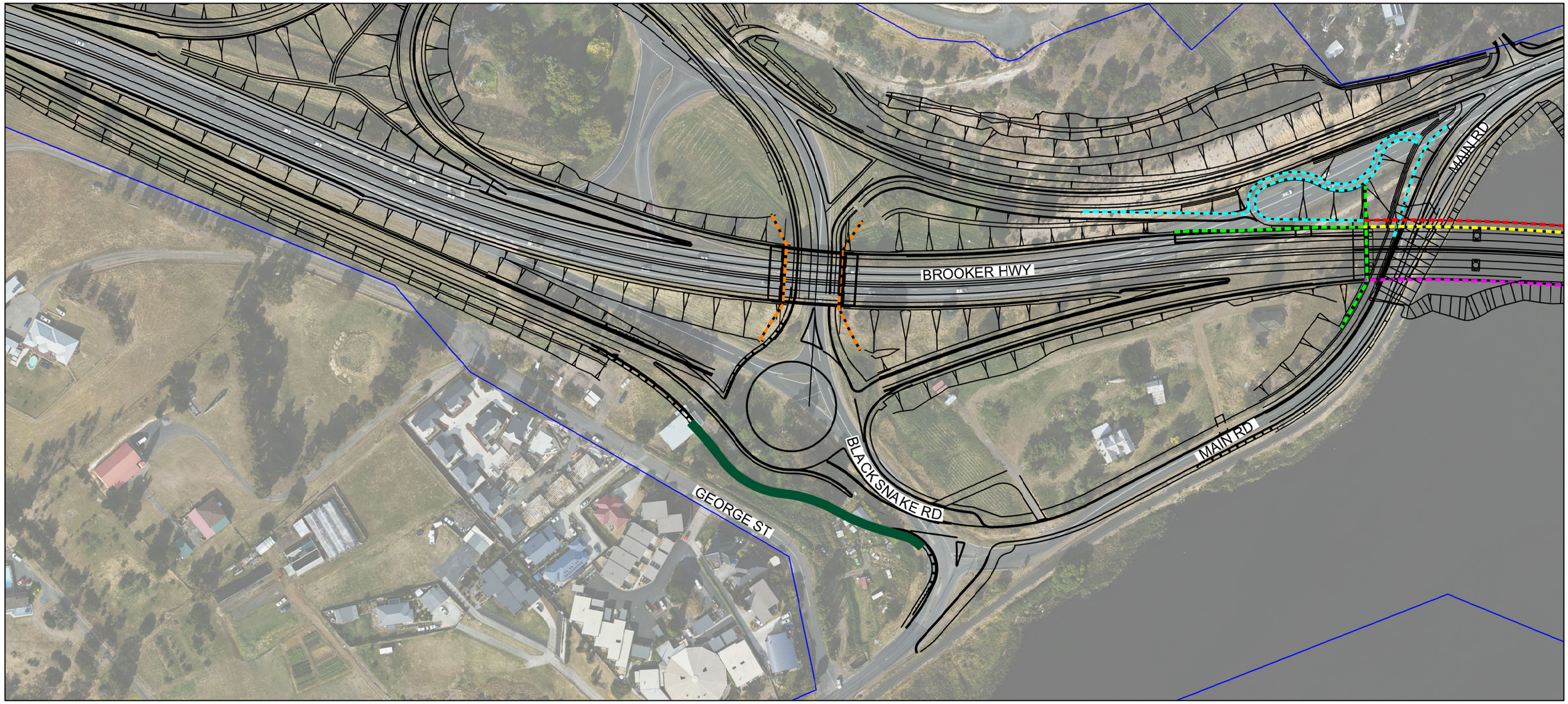

1 | GENERAL ARRANGEMENT PLAN
SCALE 1:2000

LEGEND

- RETAINING WALL TYPE 1
- RETAINING WALL TYPE 2
- PEDESTRIAN RAIL
- NOISE WALL
- PEDESTRIAN SAFETY SCREEN
- BARRIER + SAFETY SCREEN
- BARRIER + PEDESTRIAN RAIL

LOCATION KEY PLAN

NOT FOR CONSTRUCTION
FOR INFORMATION

No.	Amendment Description	Initials	Date
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DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 / MGA55 Height Datum: AHD83

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NEW BRIDGEWATER BRIDGE
BRIDGEWATER

GENERAL ARRANGEMENT
SHEET 1 OF 5

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-CMI-1085-DRG-ARC- 0005	26/08/2022	0005

REGISTRATION NUMBER
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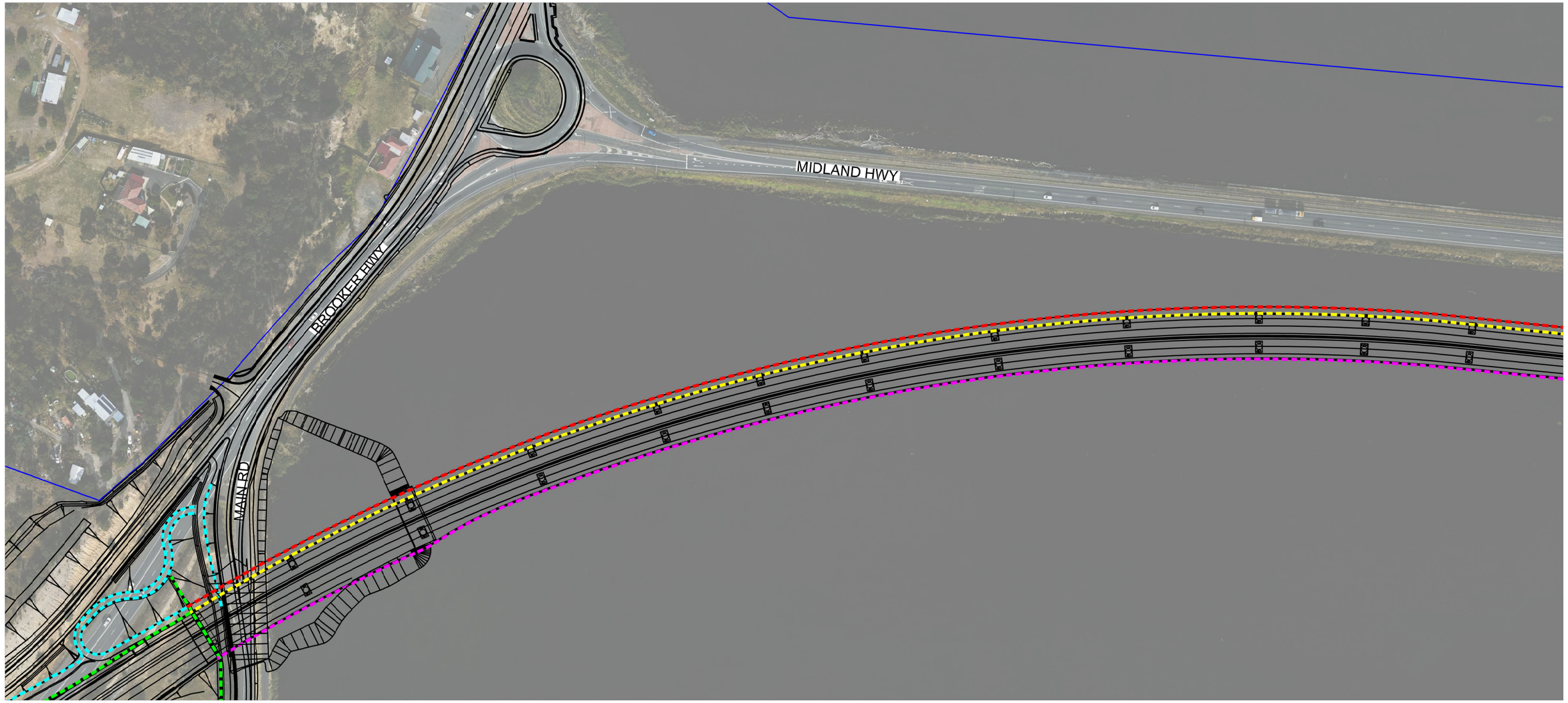
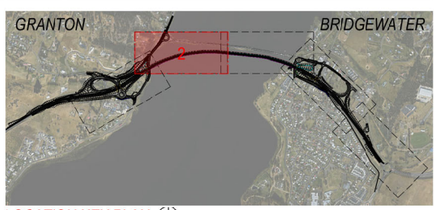


2 | GENERAL ARRANGEMENT PLAN
SCALE 1:2000

LEGEND

- RETAINING WALL TYPE 1
- RETAINING WALL TYPE 2
- PEDESTRIAN RAIL
- NOISE WALL
- PEDESTRIAN SAFETY SCREEN
- BARRIER + SAFETY SCREEN
- BARRIER + PEDESTRIAN RAIL



LOCATION KEY PLAN

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FOR INFORMATION

No.	Amendment Description	Initials	Date
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DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 / MGA55 Height Datum: AHD83

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Department of State Growth

NEW BRIDGEWATER BRIDGE
BRIDGEWATER

GENERAL ARRANGEMENT
SHEET 2 OF 5

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-CMI-1085-DRG-ARC- 0006	26/08/2022	0006

REGISTRATION NUMBER
A0087.062

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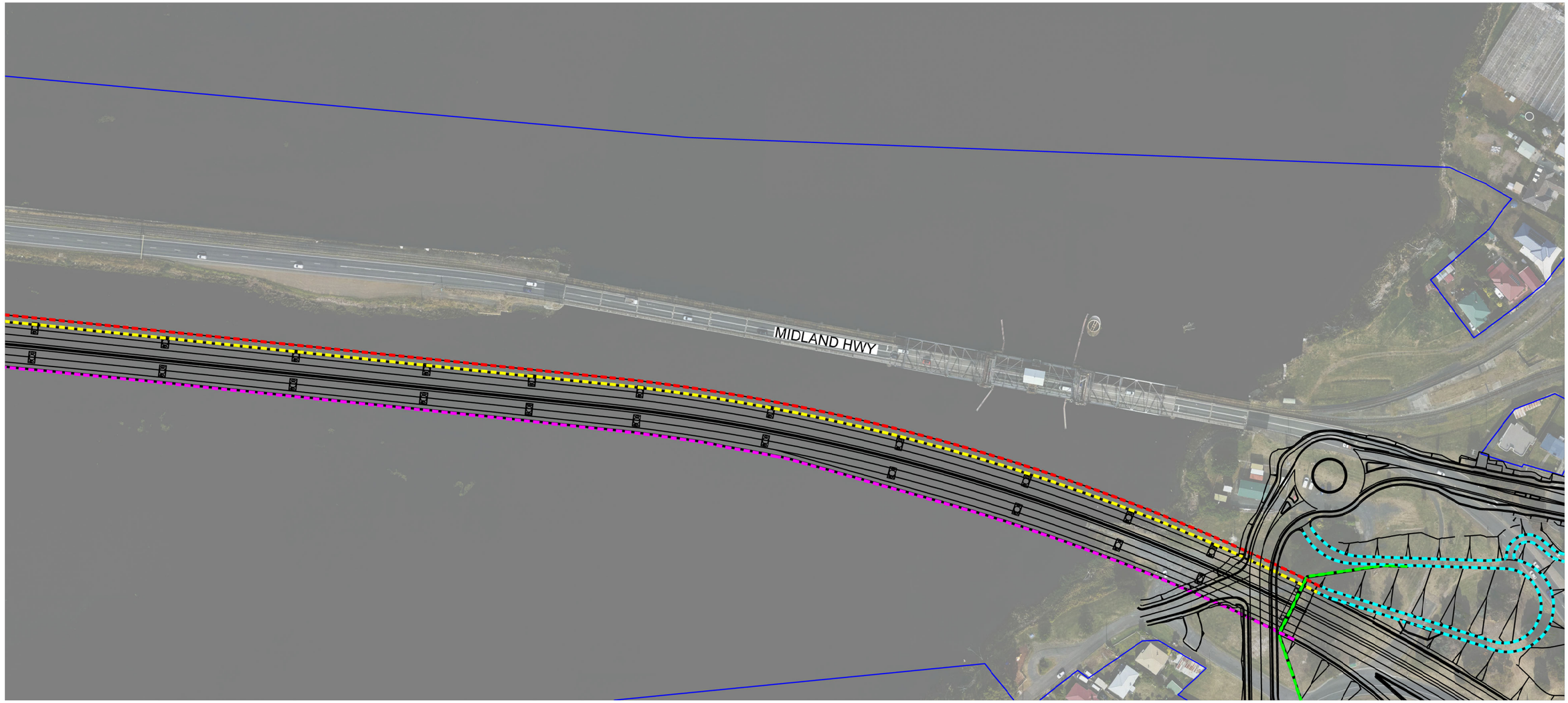
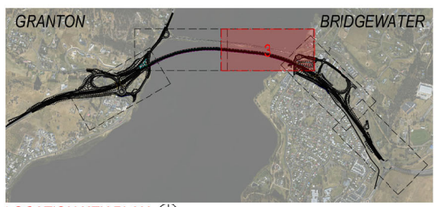


3 | GENERAL ARRANGEMENT PLAN
SCALE 1:2000

LEGEND

- RETAINING WALL TYPE 1
- RETAINING WALL TYPE 2
- PEDESTRIAN RAIL
- NOISE WALL
- PEDESTRIAN SAFETY SCREEN
- BARRIER + SAFETY SCREEN
- BARRIER + PEDESTRIAN RAIL



LOCATION KEY PLAN

NOT FOR CONSTRUCTION

FOR INFORMATION

No.	Amendment Description	Initials	Date
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A	ISSUED FOR DEVELOPED CONCEPT DESIGN	HNG	23/08/2022

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DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 / MGA55 Height Datum: AHD83

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NEW BRIDGEWATER BRIDGE
BRIDGEWATER

GENERAL ARRANGEMENT
SHEET 3 OF 5

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
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REGISTRATION NUMBER
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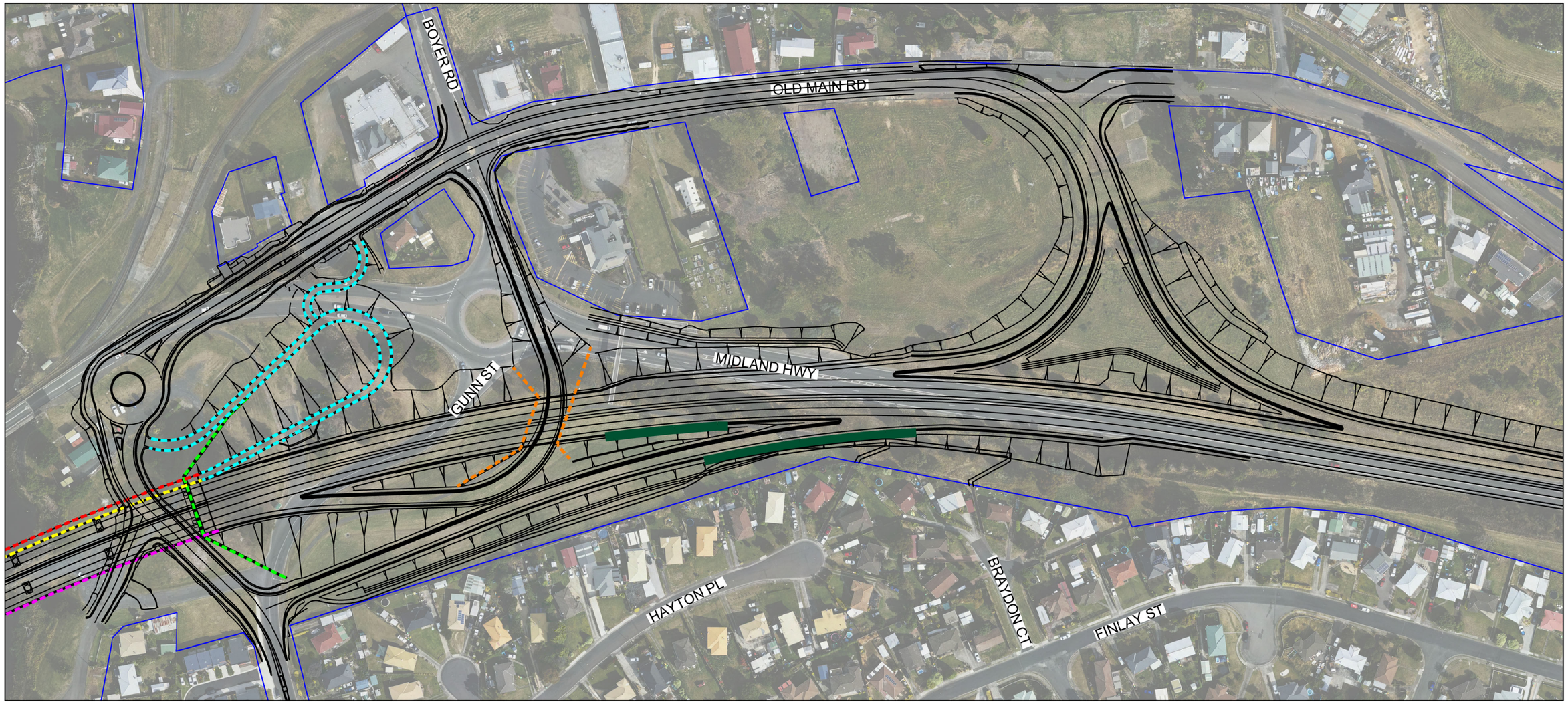

4 | GENERAL ARRANGEMENT PLAN
SCALE 1:2000

LEGEND

- RETAINING WALL TYPE 1
- RETAINING WALL TYPE 2
- PEDESTRIAN RAIL
- NOISE WALL
- PEDESTRIAN SAFETY SCREEN
- BARRIER + SAFETY SCREEN
- BARRIER + PEDESTRIAN RAIL

LOCATION KEY PLAN

NOT FOR CONSTRUCTION

FOR INFORMATION

No.	Amendment Description	Initials	Date
B	ISSUED FOR DEVELOPED CONCEPT DESIGN	HNG	14/09/2022
A	ISSUED FOR DEVELOPED CONCEPT DESIGN	HNG	23/08/2022

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Co-ordinate System: GDA2020 / MGA55 Height Datum: AHD83

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NEW BRIDGEWATER BRIDGE
BRIDGEWATER

GENERAL ARRANGEMENT
SHEET 4 OF 5

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-CMI-1085-DRG-ARC- 0008	14/09/2022	0008

REGISTRATION NUMBER
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REVISION B

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5 | GENERAL ARRANGEMENT PLAN
SCALE 1:2000

LEGEND

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- RETAINING WALL TYPE 2
- PEDESTRIAN RAIL
- NOISE WALL
- PEDESTRIAN SAFETY SCREEN
- BARRIER + SAFETY SCREEN
- BARRIER + PEDESTRIAN RAIL

LOCATION KEY PLAN

NOT FOR CONSTRUCTION

FOR INFORMATION

No.	Amendment Description	Initials	Date
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A	ISSUED FOR DEVELOPED CONCEPT DESIGN	HNG	23/08/2022
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DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 / MGA55 Height Datum: AHD83

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Department of State Growth

NEW BRIDGEWATER BRIDGE
BRIDGEWATER

GENERAL ARRANGEMENT
SHEET 5 OF 5

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-CMI-1085-DRG-ARC- 0009	14/09/2022	0009

REGISTRATION NUMBER
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FOR INFORMATION

No.	Amendment Description	Initials	Date
B	ISSUED FOR DEVELOPED CONCEPT DESIGN	HNG	14/09/2022
A	ISSUED FOR DEVELOPED CONCEPT DESIGN	HNG	23/08/2022

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SCALES: NTS

DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 / MGA55 Height Datum: AHD83

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Department of State Growth

MAIN BRIDGE DETAILS

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-CMI-1085-DRG-ARC- 0015	14/09/2022	0015

REGISTRATION NUMBER A0087.062

REVISION B

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FOR INFORMATION

No.	Amendment Description	Initials	Date
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A	ISSUED FOR DEVELOPED CONCEPT DESIGN	HNG	23/08/2022

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DESIGNED: REVIEWED:

Co-ordinate System: GDA2020 / MGA55 Height Datum: AHD83

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BLACK SNAKE ROAD BRIDGE DETAILS

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
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REGISTRATION NUMBER A0087.062

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26/08/2022

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DESIGNED: REVIEWED:

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PERSPECTIVE SHEET 01

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
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REGISTRATION NUMBER: A0087.062

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FOR INFORMATION

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FOR INFORMATION

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14/09/2022

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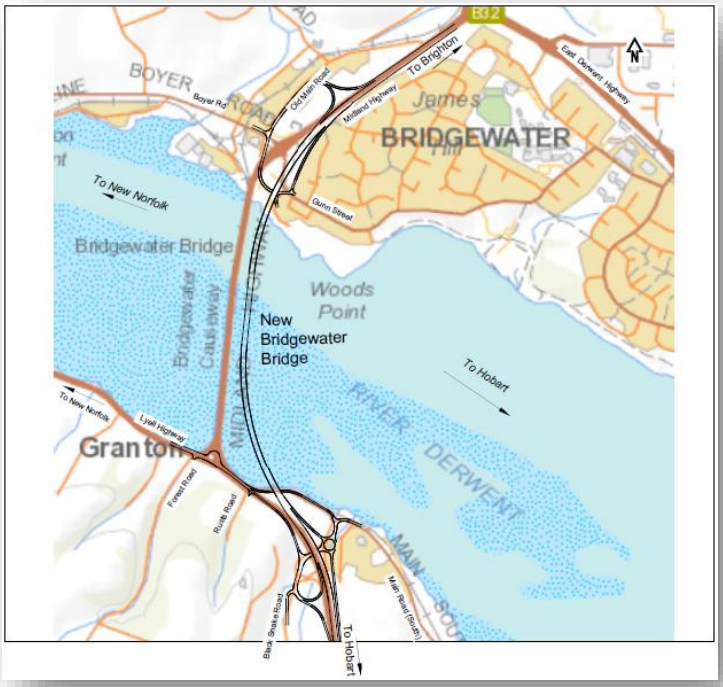
APPENDIX C – ROAD SAFETY AUDIT

Road Safety Audit

- Initial Assessment dated 28th July 2021

Road Safety Audit Report



Project: **New Bridgewater Bridge, Bridgewater**

Audit Stage: **Functional Design – Tender Stage**

Client: **McConnell Dowell Constructors**

Report Issue Date: 28 July 2021

RSA Reference: 11373

Road Safety Audits
8/79 Manningham Rd
Bulleen, Victoria 3105
ABN 86 216 469 930
www.rsaudits.com.au

Contact
Raj Muthusamy
0417 310 907
raj@rsaudits.com.au

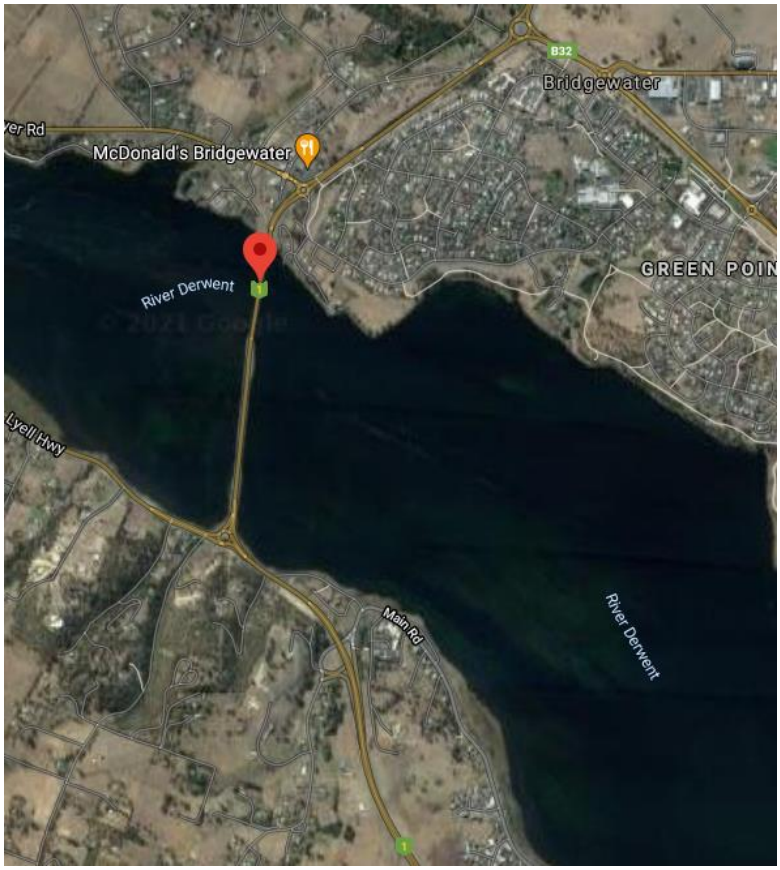
Specialised
Practical
Independent

Road Safety Audit Report

New Bridgewater Bridge, Bridgewater

McConnell Dowell Constructors

RSA Reference: 11373



Google Maps

Document Record

Revision	Delivered	Road Safety Auditors	Contact
A	28 July 2021	Raj Muthusamy Bob Cumming	Raj Muthusamy

Road Safety Audits
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CONTENTS

PROJECT BACKGROUND

INTRODUCTION

This is a functional design stage road safety audit of New Bridgewater Bridge, Bridgewater.

The audit has been undertaken by Road Safety Audits, commissioned by McConnell Dowell Constructors.

It has been carried out in accordance with "Austroads Guide to Road Safety, Part 6 and 6A: Road Safety Audit 2019" guidelines.

PROJECT

New Bridgewater Bridge

As part of the Hobart City Deal, the Australian and Tasmanian governments have committed $576 million for a new Bridgewater Bridge. This is the largest ever investment in a single transport infrastructure project in Tasmania's history.

The Bridgewater Bridge is a critical part of the transport and freight link between the northern and southern regions of Tasmania.

Hobart's outer suburbs are growing rapidly, and the increasing traffic is causing frustration, with congestion impacting travel time reliability and delaying locals, commuters and freight vehicles.

Building a new Bridgewater Bridge will improve safety and reduce congestion for the thousands of people who travel across the bridge and on surrounding roads each day.

The design requirements are:

1. *The project will provide a new river crossing between the Brooker Highway and Midland Highway, including connections to the Lyell Highway.*
2. *The new bridge will have a minimum design speed of 80km/h.*
3. *The new bridge will include two lanes in each direction.*
4. *The project will include the grade separation of the Lyell Highway Junction at Granton and Black Snake Road at Granton.*
5. *The new bridge will have a minimum airdraft clearance consistent with the navigable clearance under the Bowen Bridge.*
6. *The new bridge will include a shared path for pedestrians and cyclists.*
7. *The new bridge will include safety screens and barriers.*
8. *The new bridge will not preclude the future use of the existing rail corridor.*

Department of State Growth website


SOUTHERN
INTERCHANGE


MAIN BRIDGE SPAN


NORTHERN
INTERCHANGE

PROJECT-SPECIFIC AUDIT FOCUS

The main area of focus of this audit at the tender design stage (functional design) is to undertake a high level assessment of the design based on the design information that is available to identify any fundamental road safety related deficiencies that, if not identified now, could not be easily addressed at later stages of the design.

The audit has contemplated a range of criteria / issues associated with the project, including but not limited to the following:

- Geometric design
- Sight distance
- Ramp sight distance and lengths
- Deceleration lanes and storage lengths for turn lanes
- SUP connectivity
- Exit ramp tapers
- Entry ramp merge lengths
- Signs & Linemarking
- Typical cross section
- Safety Barrier

COMMENCEMENT MEETING

Telephone discussions with Bruce Sweet of McConnell Dowell Constructors during the week commencing 26 July 2021.

CONSTRAINTS AND EXCLUSIONS

It should be noted that information is limited at this stage of the design and hence details related to the following could not be assessed. These details are expected to be addressed in the following preliminary and detailed design stages:

- Whether longitudinal grades along SUP would be DDA compliant;
- Lighting details and potential conflict between frangible light poles with safety barrier or its terminals;
- Superelevation on low radius entry looped ramps;
- This audit may cover lighting issues, but is not a full lighting assessment of the site to AS1158, of the type that would be done by a lighting specialist.
- Landscaping and any potential conflict with sight distance, safety barrier, safety barrier terminals, etc.
- Stormwater overpavement flow lengths and depths.

CONDUCT OF THE SITE INSPECTION

The site was not inspected as part of the tender design audit. The audit was based on the design drawing suppled and Google Streetview.

DOCUMENTATION PROVIDED FOR THE AUDIT

The following documents were provided by the client to facilitate the audit:

- Typical Cross Sections – drawing numbers 1101 to 1114, all Rev B;
- Tender Design Drawings List and Overview – drawing numbers 1001, 1002, 1011 to 1014, 1021 to 1024, all Rev B;
- Signs & Linemarking – drawing numbers 1801 to 1821, all Rev B;
- 1301 to 1341, all Rev B
- PSTR Appendices
    - Appendix 03 Bridge & Roadwork
    - Appendix 10 Reference Documents
    - Appendix 15 Design Speeds & Limits
    - Appendix 16 Design Vehicles
    - Appendix 17 Intersection and Interchange Design Criteria
    - Appendix 21 Requirements for Signposting, Linemarking and Roadside Barrier
    - Appendix 27 Typical Cross Sections & Clearances
- A listing of Road Geometry PSTR Departures.

Previous road safety audits:

- None supplied.

AUDIT FINDINGS AND TREATMENT OPTIONS

Audit Point 1. Geometric Design

It is noted from the PSTR departures table that the required design speed is not achievable at the initial length of Brooker Highway northbound on-ramp (southern interchange), Midland Highway northbound off-ramp and northbound on-ramp (northern interchange). Site constraints are recognised and the justification provided in the departures table are considered to be acceptable.

There are no obvious road safety issues identified in relation to the horizontal and vertical alignment of the main carriageway, the associated ramps and ramp terminals at the southern and northern interchanges.

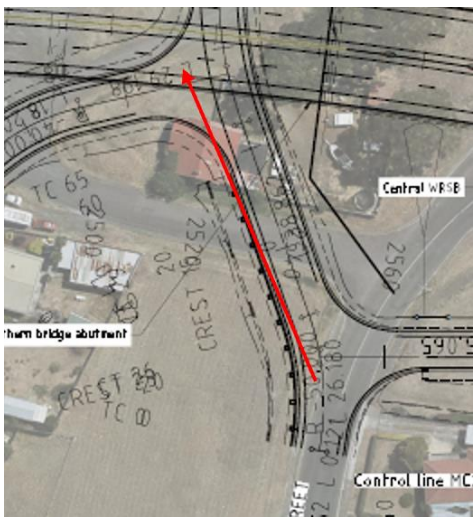
However, given that detailed cross sections are not available at this stage of the design (only typical cross sections are available), it is not possible to assess if adequate superelevation is available at the low radius entry and exit ramps at the respective interchanges. It is expected that appropriate superelevation will be incorporated in the later stages of design. Ensure that maximum crossfall does not exceed 6%, given the expected truck use.

Treatment option: Nil. Note only. For consideration during later stages of design.

Austroads GRS6A Risk Rating
☒ Not relevant
☐ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 2. Sight Distance

It appears that the required sight distances to the exit ramp noses, entry ramp merges, at ramp terminals and other intersections at the southern and northern interchanges are achieved for the nominated design speeds. The only location where there may be restricted SISD due to the safety barrier is at the intersection of Gunn Street and Nelson Esplanade.



Treatment option: Review and ensure that safety barrier does not restrict SISD.

Austroads GRS6A Risk Rating
☐ Not relevant
☒ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 3. Safety Barrier

It is not obvious from the design as to what test criteria safety barrier is required to meet for this project. It is likely that the barriers proposed must meet MASH criteria as compared to the previous NCHRP350 test criteria. This not a road safety issue per say, but it could have implications on the design as MASH tested and approved barrier products will require a greater dynamic deflection width and hence adequate verge widths and clearances to rigid objects need to be provided in the design. If MASH tested and approved products are to be used, then the design should also allow for the use of appropriate terminal treatments.

Treatment option: Clarify what test criteria safety barrier and terminals must meet and ensure that provisions are made within the design to accommodate the performance requirement of the barrier products.

Austroads GRS6A Risk Rating
☒ Not relevant
☐ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 4. Safety Barrier

It is noted that wire rope safety barrier (WRSB) is proposed along the median of the main alignment other than on the structure, where concrete barrier is proposed. It is not clear as to how the WRSB will transition and overlap the concrete barrier given the relatively narrow median width.

Treatment option: Review and clarify how the transition between WRSB and the concrete barrier can be accommodated.

Austroads GRS6A Risk Rating
☐ Not relevant
☐ Low
☒ Medium
☐ High
☐ Intolerable

Audit Point 5. Safety Barrier and SUP

There are many sections throughout the project limits where guard fence installation appears to have minimal offset from the edge of the SUP. There is potential for SUP users to strike the guard fence posts.

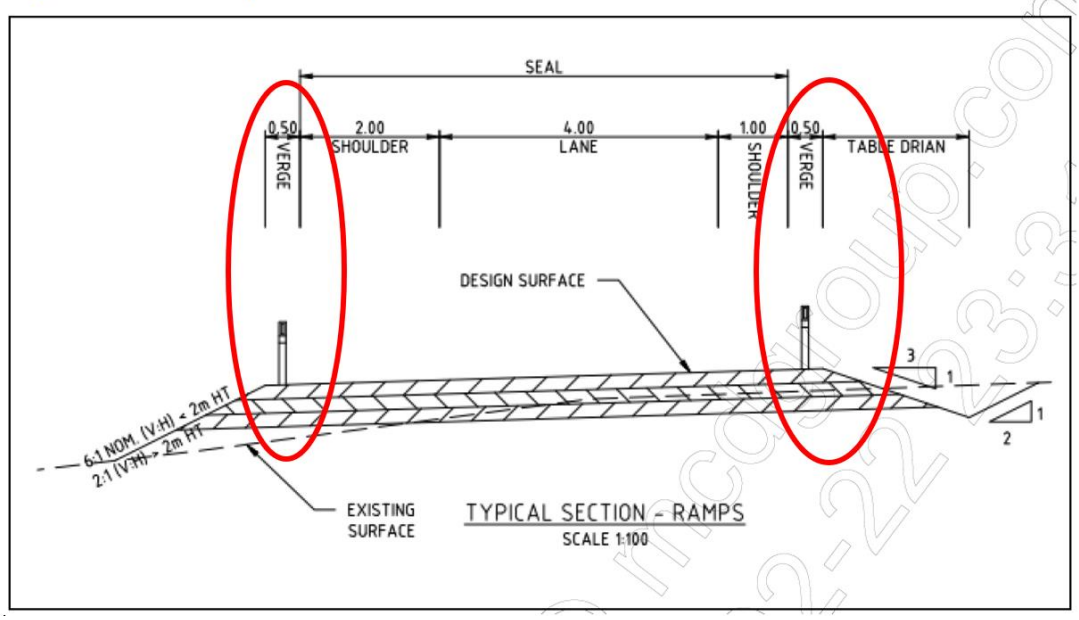
Treatment option: Incorporate rub rail along the back of the guard fence so that SUP users are not able to come in contact with the posts.

Austroads GRS6A Risk Rating
☐ Not relevant
☒ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 6. Safety Barrier – PSTR Typical Cross Section Fig 27.5.1

The 0.5m verge width indicated for WRSB to be installed is considered to be too narrow. The WRSB deflection width will encroach onto the fill batter that can be at a slope of 2:1. This can adversely affect the crash performance of the WRSB.

Figure 27.5.1 – Ramp Cross-Sections

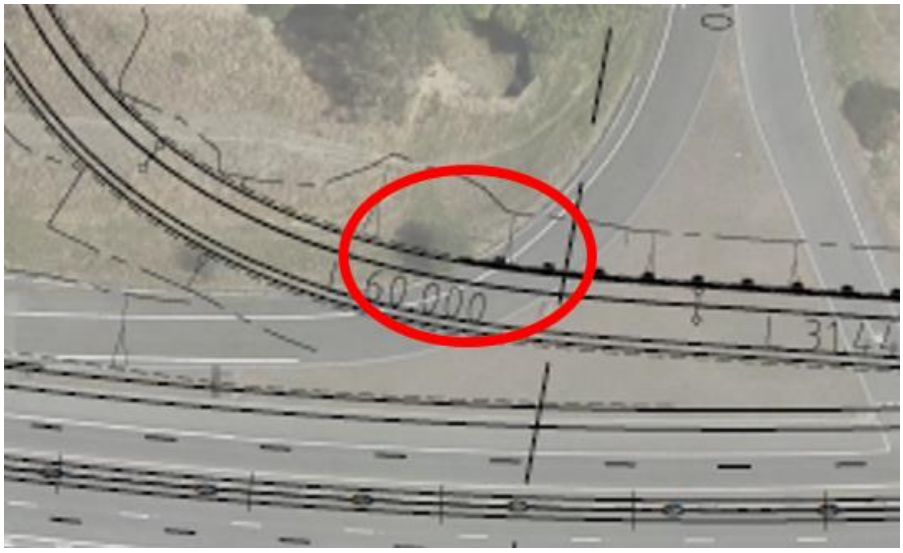


Treatment option: Clarify the typical cross section shown with Department of State Growth prior to adopting it in the design.

Austroads GRS6A Risk Rating
☒ Not relevant
☐ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 7. Safety Barrier

There are many locations where guard fence is shown to terminate along a fill batter slope. Location of a GREAT where there is a fill batter or a lack of clear run-out area is not consistent with current guidelines.



Treatment option: Review and ensure guard fence terminals are located where there is a clear run-out area behind them.

Austroads GRS6A Risk Rating
☐ Not relevant
☐ Low
☒ Medium
☐ High
☐ Intolerable

Audit Point 8. Safety Barrier

In the absence of detailed cross sections, it is not possible to determine if unshielded fill batters are at a recoverable slope. There are many areas within the limit of the project where fill batters are not shown to be shielded such along some of the low radius ramps. Furthermore, even if these fill batters are gentler than 4:1, if Safe System Approach is adopted, such batter slopes would warrant the installation of safety barrier.

Treatment option: Safety barrier lengths may have to be extended depending on fill batter slopes. Discuss with Department of State Growth to determine if Safe System Approach is to be adopted for the design. If so, safety barrier lengths will increase significantly within the project limits.

Austroads GRS6A Risk Rating
☒ Not relevant
☐ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 9. Safety Barrier and Light Poles

Lighting details are typically not available at this stage of the design. However, given that that lighting design is often conducted at later stages of the design, it is common for designers to overlook the potential for clash between frangible poles with safety barrier and safety barrier terminals.

Treatment option: Ensure that frangible light poles are not located within the dynamic deflection width of safety barrier or in front of the barrier. Frangible light poles should also not be located on the approach or within the gating length of the terminal treatment.

Austroads GRS6A Risk Rating
☒ Not relevant
☐ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 10. Safety Barrier, Landscaping and Sight Distance

As already identified in audit point 2, safety barrier installation can restrict sight distance. Similarly, landscaping also has the same potential. In addition, incorrectly positioned trees or shrubs could also adversely affect the crash performance of safety barrier and its terminals.

Treatment option: Ensure that safety barrier and landscaping do not restrict sight distance at intersections. In addition, insure that plantings are clear of the dynamic deflection width of the safety barrier and its terminals.

Austroads GRS6A Risk Rating
☒ Not relevant
☐ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 11. Deceleration Lane lengths/Taper Lengths

Generally, proposed deceleration lengths are adequate for the applicable design speeds. However, the lengths at the following location appear short:

a) Brooker Highway southbound off-ramp to Gunn Street – Northern Interchange.

b) Right turn into Old Main Road – Northern Interchange

c) Right turn into Lyell Highway from Main Road – Southern Interchange

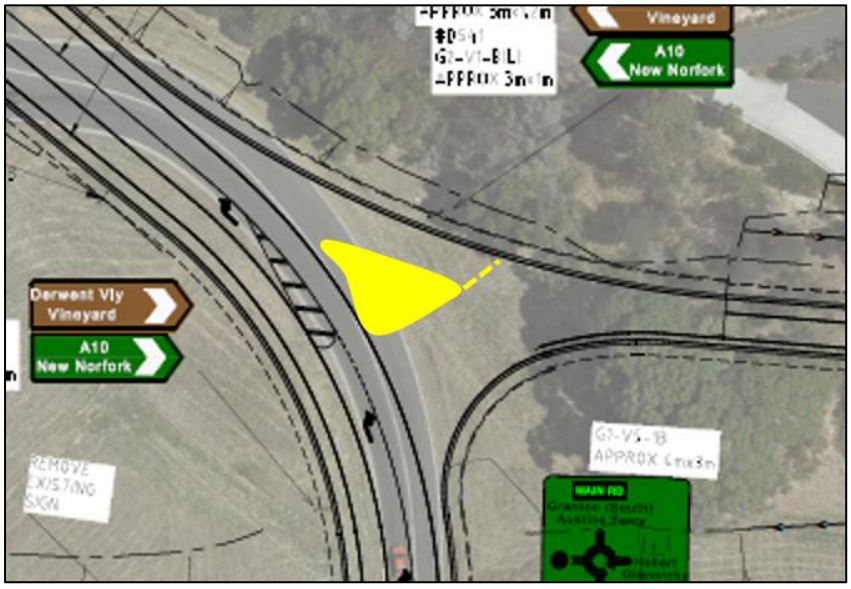
Treatment option:

a) Extend exit taper length.
b) Extend right turn lane by cutting back and modifying the island.
c) Review and confirm adequacy of the proposed length for the right turn lane.

Austroads GRS6A Risk Rating
☐ Not relevant
☐ Low
☒ Medium
☐ High
☐ Intolerable

Audit Point 12. Main Road/Lyell Highway Intersection

The throat of the intersection is wide and could result in high speed turns from Main Road. This can increase the potential for conflict between left and right turning traffic.



Treatment option:

Include a physical island to reduce entry width and to formalise give way conditions between right and left turning traffic.

Austroads GRS6A Risk Rating
☐ Not relevant
☒ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 13. Rusts Road/Lyell Highway Intersection

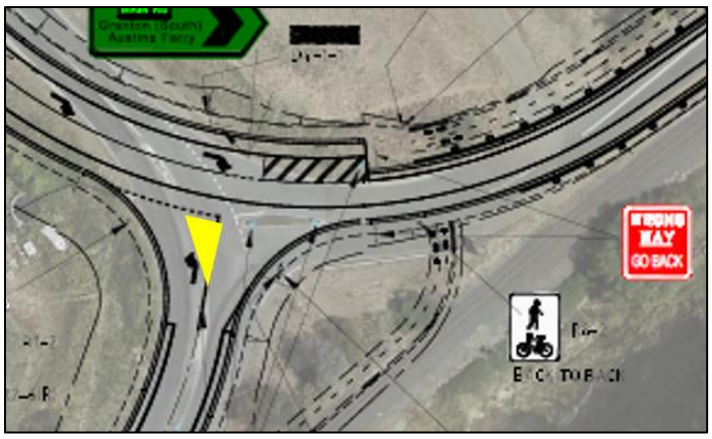
It is expected that drivers exiting Rusts Road are likely to ignore the right turn ban and turn right by bypassing the island nose to travel south to access the northbound on-ramp or southbound on-ramp to Brooker Highway, instead of turning left and utilising the U turn provision.

Treatment option: Extend the physical nose of the island to as well as include a physical island on Rusts Road to channel drivers to only turn left out.

Austroads GRS6A Risk Rating	Safe System Crash Limits Exceeded	Safe System Treatment Alignment
☐ Not relevant ☐ Low ☒ Medium ☐ High ☐ Intolerable	☐ 30 km/h vulnerable road user ☐ 40 km/h side impact rigid object ☒ 50 km/h side impact vehicle ☐ 70 km/h head-on collision	☐ *Primary* Practically eliminates exceeding crash limits ☐ *Supporting (step towards)*: Improved safety + improved potential for future SS treatment ☐ *Supporting* Improved safety + no change re: future SS treatment ☒ *Non-SS Treatment* Does not improve safety / reduced potential for future SS treatment

Audit Point 14. Lyell Highway Southbound/Main Road Intersection

Traffic exiting Main Road are required to only turn left given the one-way flow entering from Lyell Highway. The proposed layout is supported but there is potential for a driver exiting Main Road to turn right into on-coming traffic, irrespective of the proposed signage.

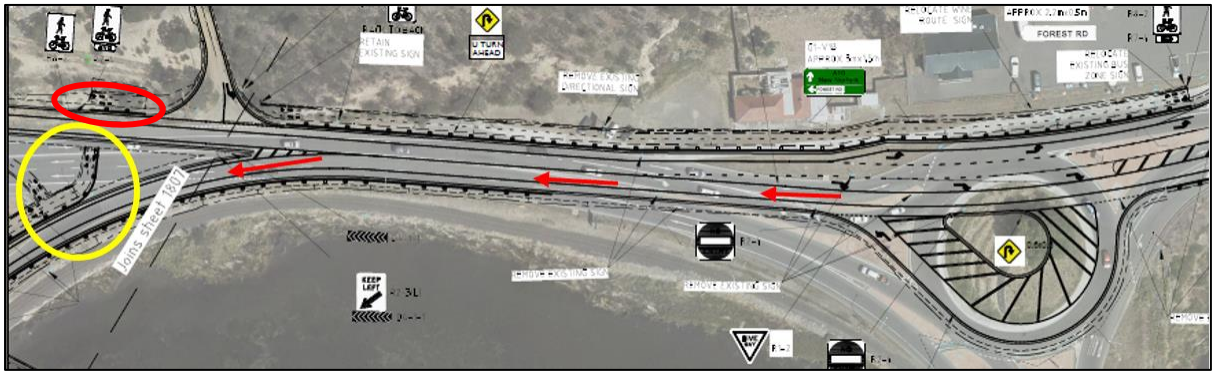


Treatment option: Review and include a physical island on Main Road to channel drivers to turn left only and to reinforce the right turn ban.

Austroads GRS6A Risk Rating
☐ Not relevant
☐ Low
☒ Medium
☐ High
☐ Intolerable

Audit Point 15. SUP/Bike Lane

There is currently a bike lane on Lyell Highway for cyclists wanting to access the existing Bridgewater Bridge. The design does not appear to maintain access for cyclists from the west to be able to enter the new SUP connection onto the new bridge. It is not obvious as to how a cyclist from the west would be able safely access the SUP providing access to the new bridge.



Another note is the guard fence length along the SUP shown highlighted by the red circle is too short to be effective as a barrier.

Treatment option: Review and clarify how bicycle access will be facilitated for riders from the west wanting to access the SUP and onto the new bridge.

Omit the short length of guard fence.

Austroads GRS6A Risk Rating
☐ Not relevant
☐ Low
☒ Medium
☐ High
☐ Intolerable

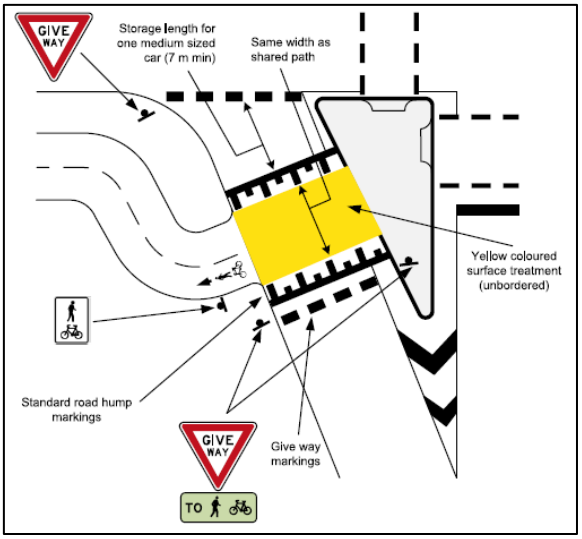
Safe System Crash Limits Exceeded
☒ 30 km/h vulnerable road user
☐ 40 km/h side impact rigid object
☐ 50 km/h side impact vehicle
☐ 70 km/h head-on collision

Safe System Treatment Alignment
☐ *Primary*
Practically eliminates exceeding crash limits
☐ *Supporting (step towards)*:
Improved safety + improved potential for future SS treatment
☐ *Supporting*
Improved safety + no change re: future SS treatment
☒ *Non-SS Treatment*
Does not improve safety / reduced potential for future SS treatment

Audit Point 16. SUP Crossings

It is noted that the SUP intersects a number of roads and SUP users are required to give way at the subject locations. This approach is not consistent with Safe System Approach, where the intent is to force down traffic operating speeds and to minimise severity of injury to vulnerable road users.

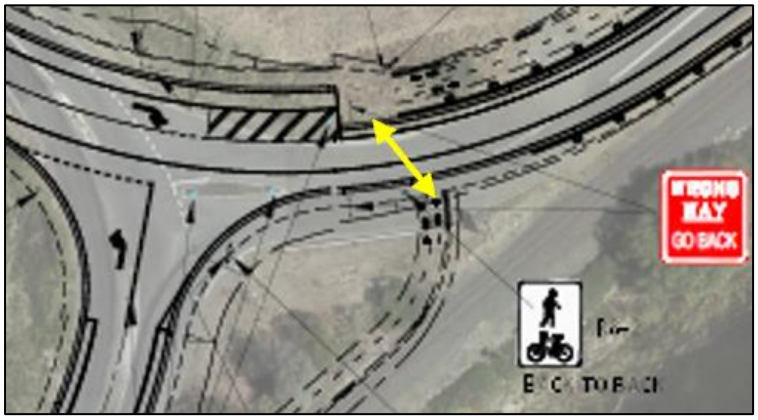
Treatment option: Review project intent. Consider incorporating formal SUP crossings such as the layout shown in VicRoads RDN 03-07 Fig. 7, to not only give priority for SUP users but to also reduce traffic operating speeds in the vicinity of the crossing and also at some intersections.



Austroads GRS6A Risk Rating	Safe System Crash Limits Exceeded	Safe System Treatment Alignment
☐ Not relevant ☐ Low ☒ Medium ☐ High ☐ Intolerable	☒ 30 km/h vulnerable road user ☐ 40 km/h side impact rigid object ☐ 50 km/h side impact vehicle ☐ 70 km/h head-on collision	☐ *Primary* Practically eliminates exceeding crash limits ☐ *Supporting (step towards)*: Improved safety + improved potential for future SS treatment ☐ *Supporting* Improved safety + no change re: future SS treatment ☒ *Non-SS Treatment* Does not improve safety / reduced potential for future SS treatment

Audit Point 17. SUP Crossing at Main Road and Lyell Highway Intersection

The crossing points between the northern and southern side SUPs do not align. This can lead to path users crossing diagonally. In addition, the guard fence installation appears to interfere with the paths aligning.



Treatment option: Review and align the paths to meet directly opposite each other and adjust the length of guard fence accordingly. The inclusion of a raised SUP crossing as discussed in audit point 16 would reduce traffic operating speeds and can result in an overall risk reduction at this intersection.

Austroads GRS6A Risk Rating
☐ Not relevant
☒ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 18. SUP Grades and Crossfall

It is not possible to assess the proposed grades for the SUP.

Treatment option: Ensure that grades and crossfalls are DDA compliant.

Austroads GRS6A Risk Rating
☒ Not relevant
☐ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 19. Barrier Fence Along SUP

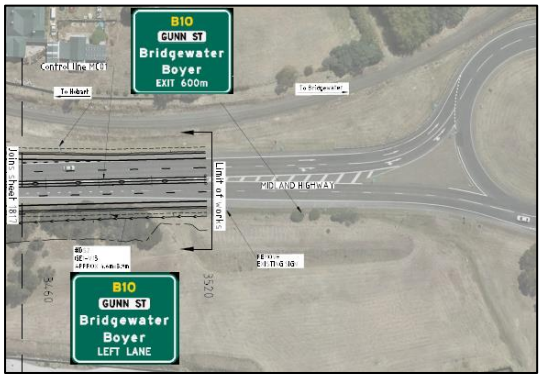
There is no indication in the drawings in relation to the installation of fencing along the SUP, on sections where low radius curves and batter slopes are present such as at the northern interchange.

Treatment option: Ensure that barrier fencing is installed where required.

Austroads GRS6A Risk Rating	Safe System Crash Limits Exceeded	Safe System Treatment Alignment
☐ Not relevant ☒ Low ☐ Medium ☐ High ☐ Intolerable	☒ 30 km/h vulnerable road user ☐ 40 km/h side impact rigid object ☐ 50 km/h side impact vehicle ☐ 70 km/h head-on collision	☐ *Primary* Practically eliminates exceeding crash limits ☐ *Supporting (step towards)*: Improved safety + improved potential for future SS treatment ☐ *Supporting* Improved safety + no change re: future SS treatment ☒ *Non-SS Treatment* Does not improve safety / reduced potential for future SS treatment

Audit Point 20. Signs and Linemarking

Proposed direction signs to Gunn Street, B10 on Midland Highway (eastbound) are located too close to each other.

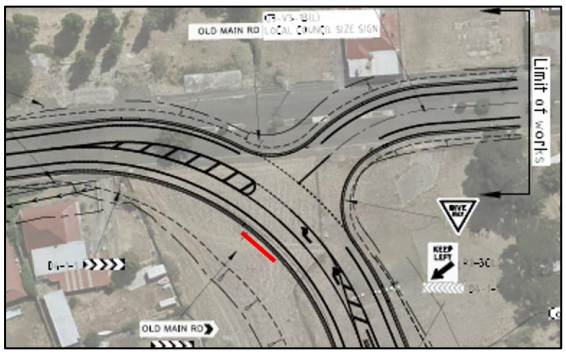


Treatment option: Review and omit one of the signs as they essentially provide the same information.

Austroads GRS6A Risk Rating
☒ Not relevant ☐ Low ☐ Medium ☐ High ☐ Intolerable

Audit Point 21. Signs and Linemarking

There is no direction/destination sign proposed at the top of the T intersection facing traffic approaching from Old Main Road.

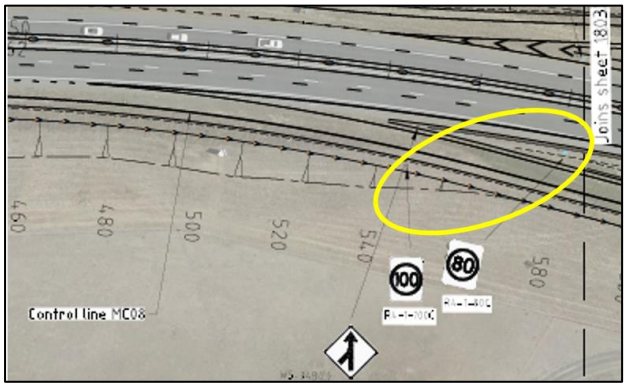


Treatment option: Install direction/destination sign. The sign will also improve delineation and improve conspicuity of the terminating leg at the intersection.

Austroads GRS6A Risk Rating
☒ Not relevant
☐ Low
☐ Medium
☐ High
☐ Intolerable

Audit Point 22. Signs and Linemarking

The proposed 80km/h and 100km/h speed limit signs on the Brooker Highway southbound on-ramp appears to be too close.



Treatment option: Increase separation between the signs.

Austroads GRS6A Risk Rating
☒ Not relevant
☐ Low
☐ Medium
☐ High
☐ Intolerable

RESPONSE TABLE

Road Safety Audits				McConnell Dowell Constructors	
Point	**Issue**	**Risk**	**Treatment Option**	**Response**	
New Bridgewater Bridge, Bridgewater				Accept / Reject	Comment / Status
Findings in this table are only a summary and reference should be made to the main report for more detailed discussion of the issues and suggested treatments.					
1.	Geometric Design – generally no issues identified but superelevation on curves could not be assessed.	N/A	Nil. Note only. For consideration during later stages of design.	Noted	Noted, superelevation on curves will be developed during detailed design
2.	Sight distance generally good. May have SISD restriction at Main Rd/Nelson Esplanade.	Low	Review and ensure safety barrier does not restrict sight distance.	Accept	Sight distance will be reviewed during detailed design phases. SISD at Main Road/Neilson Esp is noted and has been addressed in the design
3.	Unclear what test criteria barrier needs to meet.	N/A	Clarify with Dept of State Growth.	Reject	No barrier test level has been specified, but design has adopted a min. MASH TL-3 in line with VicRoads and DSG reference documents
4.	It is unclear as to how median WRSB will transition into concrete barrier on structure.	Medium	Review and clarify.	Accept	This is noted. Detailed design has decided to utilise a guardfence within the main carriageway median to ensure a suitable connection can be made between the barriers
5.	Appears to be minimal offset between back of guard fence and SUP at some locations.	Low	Include rub rails.	Reject	Where guardfence is provided adacjent to footpath and SUP's, it will be positioned outside the GF working width i.e. 1.65m, which should remove this risk. This will also position the GF more than a metre from the edge of path, compliant with AGRD Part 6A
6.	0.5 verge width for installation of WRSB in the PSTR does not appear to be consistent with current guidelines.	N/A	Clarify with Dept of State Growth.	Reject	The posts within the PS&TR are actually guide posts, not WRSB. Nonetheless, WRSB is not proposed to be used along ramps. GF is the preferred barrier treatment

Road Safety Audits				McConnell Dowell Constructors	
Point	Issue	Risk	Treatment Option	Response	
New Bridgewater Bridge, Bridgewater				Accept / Reject	Comment / Status
7.	Guard fence terminals may be incorrectly located on fill batter slopes or at locations where there is insufficient clear run-out area.	Medium	Review.	Accept	Noted, this will be considered during detailed design phase to ensure adequate run-out areas are provided near terminals
8.	Fill batter along sections of road and low radius ramps are not shown to be shielded.	N/A	Review and clarify with Dept of State Growth if Safe System Approach is to be adopted for this project.	Reject	Noted and barrier provided where fill batters exceed 4:1 in accordance with AGRD Part 6 2010. Where 4:1 fill batters are provided with no safety barrier, verge rounding (1m+1m) will be adopted in line with RSA recommendation and AGRD Part 3 Section 4.4.3
9.	Potential clash between frangible light poles, safety barrier and terminals.	N/A	Ensure that clashes are avoided.	Accept	Noted, frangible light poles will not be located within the working width of the barrier. If necessary, reduced post spacing may be used to reduce working width and ensure posts remain outside working width
10.	Potential sight distance restrictions due to safety barrier installation, landscaping. Potential conflict between landscaping and safety barrier.	N/A	Ensure sight distance restrictions and conflicts are avoided.	Accept	Noted, will be checked during the detailed design stages and monitored to ensure that barriers/landscaping do not reduce sight lines below minimum levels
11.	Deceleration and taper lengths appear short at some locations.	Medium	Refer to actions in the main report.	Accept Accept Reject	a) Has been designed as per AGRD guidelines b) Turn lane now exceeds deceleration length c) Expected operating speed from roundabout is very low and constrained environment limits the length that can be provided
12.	Wide intersection at Main Rd/Lyell Hwy.	Low	Modify intersection.	Accept	Design has been amended to include island within intersection
13.	Possible right turns out of Rusts Rd into Lyell Hwy.	Medium	Extend nose at island and also include a left out only island on Rusts Rd.	Reject	Design has been amended to pull back the median island and allow right turn movement out of Rusts Road, so issue does not exist anymore
14.	Possible right turn at Main Rd/Lyell Hwy intersection.	Medium	Include left turn island on Main Road.	Accept	Agree, splitter island will be introduced to reinforce one way road

Road Safety Audits				McConnell Dowell Constructors	
Point	Issue	Risk	Treatment Option	Response	
New Bridgewater Bridge, Bridgewater				Accept / Reject	Comment / Status
15.	Appears to be no connectivity and access for cyclists from the west to the new bridge at the southern interchange.	Medium	Review.	Accept	Agree, bicycle ramp and crossing provided at this corner to allow access to the SUP on the bridge
16.	SUP crossings are not proposed.	Medium	Review and consider raised SUP crossings.	Reject	it would be inappropriate for raised crossings to be provided on high volumes, main road links within these packages
17.	Misaligned SUP crossing at Main Rd/Lyell Hwy intersection.	Low	Realign and adjust guard fence.	Accept	Crossing to be squared up' in the detailed design submission
18.	SUP grades and crossfall.	N/A	Ensure that grades and crossfalls are DDA compliant.	Accept	Project to ensure SUP grades and crossfall are DDA compliant
19.	Fencing not proposed along SUP.	Low	Ensure fencing is installed where required.	Accept	Fencing along SUP to be provided where required by AGRD Part 6A
20.	Gunn St exit signs spaced too close to each other on Midland Highway.	N/A	Review.	Accept	Overall wayfinding and exit signage to be reviewed and consolidated during the detailed design
21.	No signage proposed at the top of the T intersection facing traffic approaching from Old Main Rd.	N/A	Install sign.	Accept	Overall signage strategy and design to be reviewed during the detailed design
22.	80km/h and 100km/h speed limit signs spaced to close on the Brooker Hwy southbound on-ramp.	N/A	Increase separation.	Accept	Noted, Jacobs in discussion with DSG regarding a suitable merge speed
RSA Reference: 11373					

FINALISATION

CONCLUDING STATEMENT

There are no obvious road safety issues identified in relation to the geometric design and the design in general. However, the issues raised in the audit report should be considered and actioned accordingly.

- The audit has attempted to balance the safety needs of all road users within the site/design constraints. As per Austroads guidelines, the treatment options provided have attempted to be realistic, feasible, and commensurate with the risk posed.
- The audit attempts to raise all potential safety risks, however at times this is not possible due to a limited knowledge of the site and the design.
- Agreement to the issues and/or suggestions does not necessarily eliminate risk.
- The project team should incorporate audit findings into the broader design process and ask the audit team further questions where necessary.

Raj Muthusamy

Senior Road Safety Auditor
CPEng, RPEQ, NER,
BE (Civil)

Bob Cumming

Senior Road Safety Auditor
BE (Civil),
BA (Geog. / Env.St.)

RESPONDING TO THE ROAD SAFETY AUDIT

The audit findings should be carefully considered in combination with the knowledge and insight from the responding entity (client) and other stakeholders. The responding entity does not have to agree to the audit findings; however, a written response should be made to the audit findings raised. When responding to the audit, the responding entity is encouraged to focus on the 'audit finding', not the 'treatment option'. This is due to various options usually being available and Road Safety Audits having limited knowledge of the project background and constraints.

Road Safety Audits does not change the substance of the audit findings, or sign off on the responses from the responding entity. However, the client is encouraged to provide the responses to RSA to check that each audit point has been fully understood.

ROAD SAFETY AUDIT BACKGROUND

ROAD SAFETY AUDIT: OVERVIEW

A road safety audit is an independent examination of a design or condition to evaluate potential safety issues for all road user types. It is carried out by a team of suitably qualified people and can provide treatment options for consideration by the client.

A road safety audit is fundamentally a qualitative process highly influenced by the experience and views of the individual team members in combination with contemporary evidence-based knowledge on road crash types and countermeasures.

ROAD SAFETY AUDIT TEAM AND QUALITY ASSURANCE

The road safety audit was carried out by Raj Muthusamy and Bob Cumming. Raj Muthusamy and Bob Cumming both carry out road safety audits full-time in various states of Australia and have extensive experience in all stages of road safety audits, leading or participating in several hundred audits and risk assessments every year.

Road Safety Audits is accredited for the conduct of road safety audits under VicRoads' professional services register. Raj Muthusamy and Bob Cumming are accredited Senior Road Safety Auditors under VicRoads pre-qualified senior road safety audit scheme.

Road Safety Audits' quality assurance process encompasses three key areas:

- Staff: Utilising highly experienced road safety practitioners
- Staff: Customising the audit team for the project to inject the necessary skill-set.
- Processes: Utilise customised checklists designed for niche areas in traffic engineering and road design such as safety barriers, public transport hubs, CBD / inner-urban, and cyclists.
- Training: Regular in-house and external training.
- Review: Up to four-layer review: 1. On-site auditor evaluation; 2. Media and data review; 3. Specialist auditor input; and 4. Blinded reviews.

AUDIT TYPE

A functional design stage road safety audit tends to examine the broad design for more fundamental issues that can't be changed later by minor signs or linemarking changes. This includes intersection layouts and types, horizontal and vertical alignments, access points, and all road user groups.

SCOPE: GENERAL

Road Safety Audits utilises a high experience base and focus on high-level fundamental safety issues affecting road safety, based on likely road user behaviour and expectations.

Checking compliance to road design guidelines is incorporated within the audit but forms a secondary consideration. "A Road Safety Audit is not a check of compliance to standards. Rather than checking for compliance, a road safety audit is checking fitness for purpose: will the road or treatment work safely for its expected road users?" (AGRS RSA 2019).

The scope is generally limited to the *safety* effects of the proposed changes, and does not look beyond the limits of works to try to improve substandard conditions outside of the general scope of the works.

Where suggestions are provided, they are made from a safety perspective only, and are made in the absence of full project knowledge and design constraints. Road Safety Audits can provide a detailed risk assessment / issue evaluation report upon request.

Generally, a road safety audit only raises *issues* and does not discuss design elements if they are *not* safety issues. i.e. if a topic (such as 'drainage') is not mentioned, then it means that there are no issues of concern on that topic.

SCOPE: SAFE SYSTEM

Austroads guidelines encourage practitioners to adopt safe system principles within design and within road safety audits. Safe system (roads) calls for a design to not allow serious injury and fatalities to occur for the expected road users and the typical crash types expected for that design type. This design-objective is considered within this road safety audit and is detailed in the Risk Ratings section. However, a road safety audit by definition is not a 'Safe System Assessment'.

REFERENCES

Relevant guidelines, standards, Codes, road rules, and policy documents, including:

- Austroads Guide to Road Safety – Road Safety Audit – 2019
- State-specific road safety audit guides where applicable (e.g. NSW *Guidelines for Road Safety Audit Practices*)
- Austroads Guide to Road Design Series (AGRD)
- Austroads Guide to Traffic Management Series (AGTM)
- Austroads Guide to Road Safety Series (AGRS)
- Miscellaneous Austroads Publications relating to road trauma, crash causality and statistics, traffic engineering treatments and Safe System
- AS 1742 Manual of Uniform Traffic Control Devices
- State road authority supplements to above documents
- State road authority technical publications including standard drawings, road design notes and other publications

- Other industry knowledge as disseminated through industry conferences, seminars, workshops via organisations including ITE, ACRS, AITPM, TMAA and IRF

RISK RATINGS

Traditional Approach

Austroads Road Safety Audit Part 6 suggests that the organisation responding to the audit uses the following risk assessment method as a tool to give an indication of risk. Road Safety Audits will typically offer its own evaluation of risk based on 'severity' and 'frequency', for the responder to use as a guide.

How often the problem is likely to lead to a crash

Frequency	Description
Frequent	Once or more per week
Probable	Once or more per year (but less than once a week)
Occasional	Once every five or ten years
Improbable	Less often than once every ten years

Likely severity of the resulting crash type

Severity	Description	Examples
Catastrophic	Likely multiple deaths	High-speed, multi-vehicle crash on a freeway. Car runs into crowded bus stop. Bus and petrol tanker collide. Collapse of a bridge or tunnel.
Serious	Likely death or serious injury	High or medium-speed vehicle/vehicle collision. High or medium-speed collision with a fixed roadside object. Pedestrian or cyclist struck by a car.
Minor	Likely minor injury	Some low-speed vehicle collisions. Cyclist falls from bicycle at low speed. Left-turn rear-end crash in a slip lane.
Limited	Likely trivial injury or property damage only.	Some low-speed vehicle collisions. Pedestrian walks into object (no head injury). Car reverses into post.

Resulting level of risk

	Frequent	Probable	Occasional	Improbable
Catastrophic	Intolerable	Intolerable	Intolerable	High
Serious	Intolerable	Intolerable	High	Medium
Minor	Intolerable	High	Medium	Low
Limited	High	Medium	Low	Low

Treatment Approach

Risk	Suggested treatment approach
Intolerable	Must be corrected.
High	Should be corrected or the risk significantly reduced, even if the treatment costs is high.
Medium	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.
Low	Should be corrected or the risk reduced, if the treatment cost is low.

A risk cannot always be assigned to an issue when there is a highly indirect relationship between the issue 'leading to a crash'. However, the issue may still be *important* for the design, the project, general safety and amenity. Other common language used and its meaning are as follows:

- 'Urgent': Needs immediate attention / changes as per RSA suggestion or similar.
- 'Recommend' / 'Serious' / 'Important': Must be robustly reviewed. Most likely requires a change to avoid a high-risk road environment for one or more user groups.
- 'Should' / 'Suggest' / 'Significant': Based on the view of the RSA team the suggestion should be done, but it concedes that there could be reasons why inaction or alternative action is equally correct. Must be robustly reviewed by contractor and where relevant key traffic engineering project stakeholders.
- 'Review': RSA is raising an observation but has no *strong* opinion on need for changes due to limitations in knowledge on the site / design /constraints.
- 'Minor': Typically, a low road-safety consequence / compliance issues (to guidelines or plans) / administrative controls. Unlikely to increase risk of crash.
- 'Note': Little or no road safety significance. Typically added to give a complete picture of the design, site, context, analysis, auditors understanding.

Approach Post February 2019 with the release of Austroads GRS: RSA 6

Safe system alignment ratings are assigned using the Austroads Road Safety Audit Part 6 systems as follows.

The predominant crash types that result in deaths and serious injuries in Australia are:

- Head-on (crashes that occur when one vehicle crosses onto the opposing side and impacts another vehicle, including head-on crashes at intersections)
- Intersection (crashes at intersections including side-impacts involving vehicles from adjacent directions and turning vehicles)
- Run-off-road (crashes that occur when a vehicle leaves the carriageway without impacting another vehicle, including run-off-road crashes at intersections)
- Vulnerable road user (crashes involving pedestrians, cyclists, motorcyclists, the elderly, children and people with special needs).

For these crash types:
- Is it possible to have a head-on crash at a speed greater than 70 km/h?
- Is it possible to have an intersection (right-angle) crash at a speed greater than 50 km/h?
- Is it possible to have a run-off-road (side impact with a rigid object) crash at a speed greater than 40 km/h?
- Is it possible to have a vulnerable road user (e.g. pedestrian, cyclist and motorcyclist) crash at a speed greater than 30 km/h?

If the answer is yes to any of the above, then this is a high severity risk and safe system thresholds are not met, and this is noted in the report.

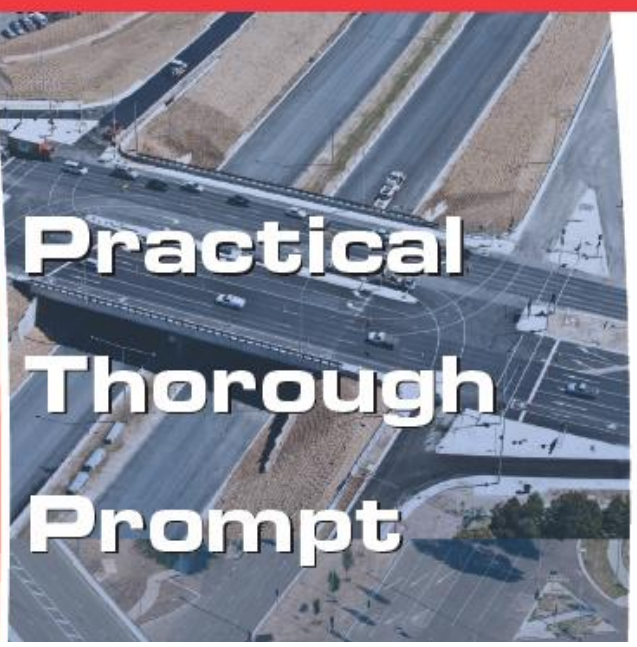
Furthermore, suggested treatment options are given a safe system treatment ranking as follows:

Primary Treatment	• Road planning, design and management considerations that practically eliminate the potential of fatal and serious injuries occurring in association with the foreseeable crash types
Supporting (step towards)	• Road planning, design and management considerations that improve the overall level of safety associated with foreseeable crash types, but not expected to virtually eliminate the potential of fatal and serious injuries occurring • Improves the ability for a Primary Treatment to be implemented in the future
Supporting Treatment	• Road planning, design and management considerations that improve the overall level of safety associated with foreseeable crash types, but not expected to virtually eliminate the potential of fatal and serious injuries occurring • Does not change the ability for a Primary Treatment to be implemented in the future
Non-Safe System Treatment	• Road planning, design and management considerations that are not expected to achieve an overall improvement in the level of safety associated with foreseeable crash types occurring • Reduces the ability for a primary treatment to be implemented in the future

The above table and much of the above text is from Austroads Guide to Road Safety: Road Safety Audit 6.

RSA

Road Safety Audits



Practical

Thorough

Prompt

APPENDIX D – ROCKFALL PROTECTION NETTING

See attached technical data sheet of a typical rockfall protection netting system that will be adopted on batters where required.

- Maccaferri – Double Twist Rockfall Protection Netting

DOUBLE TWIST ROCKFALL PROTECTION NETTING

GALMAC & PVC COATED

Steel woven wire mesh netting is used as a drapery system to prevent rocks and debris from falling onto roads and railways. The mesh consists of Galmac coated double twisted steel woven wire with mechanical characteristics higher than the ones suggested in EN10223-3. The steel wire used in the manufacture of the mesh is heavily galvanized with Galmac, a Zn-5%Al alloy.
Due to the characteristics of the double twist, the steel wire mesh can withstand the force of the falling rocks without unravelling in the event of wire breakage.
The standard specifications for the wire-mesh are shown in Tables 2, 3, 4.

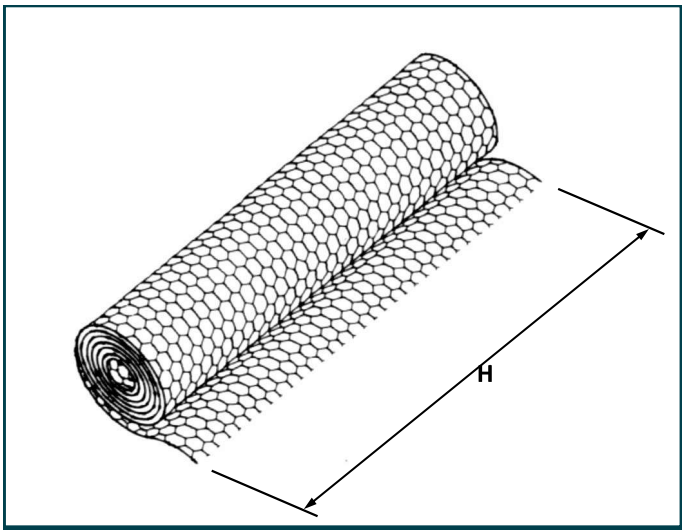


Figure 1

Wire

All tests on wire must be performed prior to manufacturing the mesh.

1. **Tensile strength:** the wire used for the manufacture of rockfall protection shall have a tensile strength between 380 -550 N/mm^2 exceeding, in order to increase the tensile resistance of the finished products, as suggested in EN 10223 -3. Wire tolerances (Table 4) are in accordance with EN10218 (Class T1).
2. **Elongation:** Elongation shall not be less than 10%, according to EN 10223-3. Test must be carried out on a sample at least 25 cm long.
3. **Galmac coating:** minimum quantities of Galmac shown at Table 4 meet the requirements of EN 10244-2 (Table 2 and Class A).
4. **Adhesion of Galmac:** the adhesion of the Galmac coating to the wire shall be such that, when the wire is wrapped six turns around a mandrel having four times the diameter of the wire, it does not flake or crack when rubbing it with the bare fingers, in accordance with EN 10244.
5. **Outwearing accelerated aging test** in a general condensation of moisture containing sulfur dioxide (28 cycles) according to EN ISO 6988 (without showing signs of red rust).

The tolerance on the opening of mesh 'D' being the distance between the axis of two consecutive twists, is according

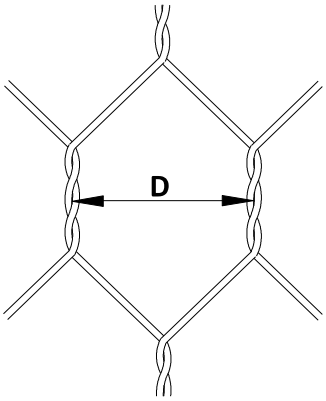


Figure 2

P.V.C. (Polyvinyl Chloride) Coating

The tecnical caracteristics and the resistance of the PVC to ageing meet the relevant standards. The main values for the PVC material, according to EN 10245-2, are as follows:
Specific weight: 1.30-1.35 kg/dm^3 according to ISO 1183;
Hardness: between 50 and 60 Shore D, according to ISO 868
Tensile strength: higher than 21N/mm^2, according to ISO 527
Elongation at break: not less than 200%, in accordance with ISO 527;
Colour: grey-RAL 7037
Resistance to UV radiation: After 4000 hours of exposure to UV light according to ISO 4892-2 or ISO 4892-3, the tensile strength and elongation at break can not be more variable than 25%.

Example of DT Net protection

Product Certification
BUREAU VERITAS
Certification

n° 226/001

1. Table of sizes	
L=Length (m)	W=Width (m)
50	2

All sizes and dimensions are nominal.
Tolerances of 0/+1m of the length, and ±D of the height shall be

2. Standard Mesh-Wire			
Type	D (mm)	Tolerance	ø Wire (mm)
6x8	60	+16%/-4%	Int.2.2/Ext.3.2
8x10	80	+16%/-4%	Int.2.7/Ext.3.7

3. Standard Wire Diameters			
Type	ø Lacing Wire (mm)	ø Mesh Wire (mm)	ø Selvedge Wire (mm)
6x8	Int.2.2/Ext.3.2	Int.2.2/Ext.3.2	Int.2.7/Ext.3.7
8x10	Int.2.2/Ext.3.2	Int.2.7/Ext.3.7	Int.3.4/Ext.4.4

4. Wire tolerances and coating				
Internal Wire diameter	mm	2.2	2.7	3.4
Wire tolerance	(±) ø mm	0.06	0.06	0.07
Min.Q.ty of Galmac	gr/m^2	230	245	265

Lacing Operations

Lacing operations can be made by using the tools shown in Fig.5. Galmac coated steel rings having the following specification can be used instead of lacing wire (Figs. 3, 4):

- diameter: 3.00 mm
- tensile strength: 170 kg/mm^2.

Quantity Request

When requesting a quote, please specify:

- size of rolls (length x height, see Fig.1),
- type of mesh,
- type of coating

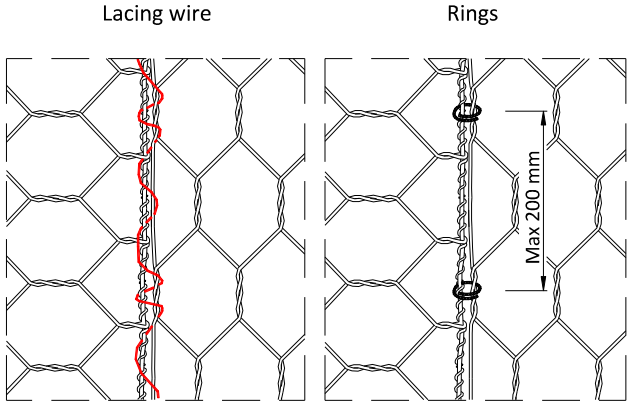


Figure 3

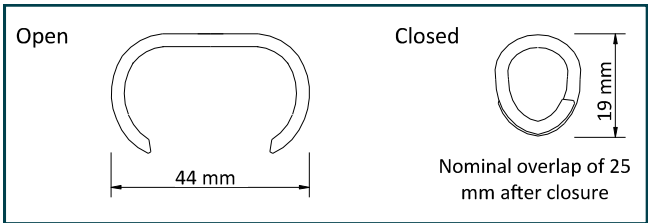
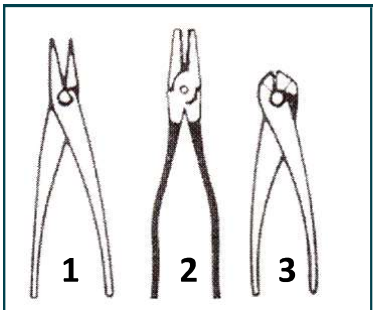
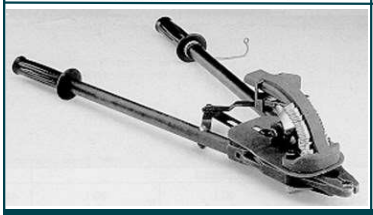


Figure 4



A
1. Pliers
2. Pliers with nipper
3. Nipper

B Pneumatic Spenax tool



C Manual tool

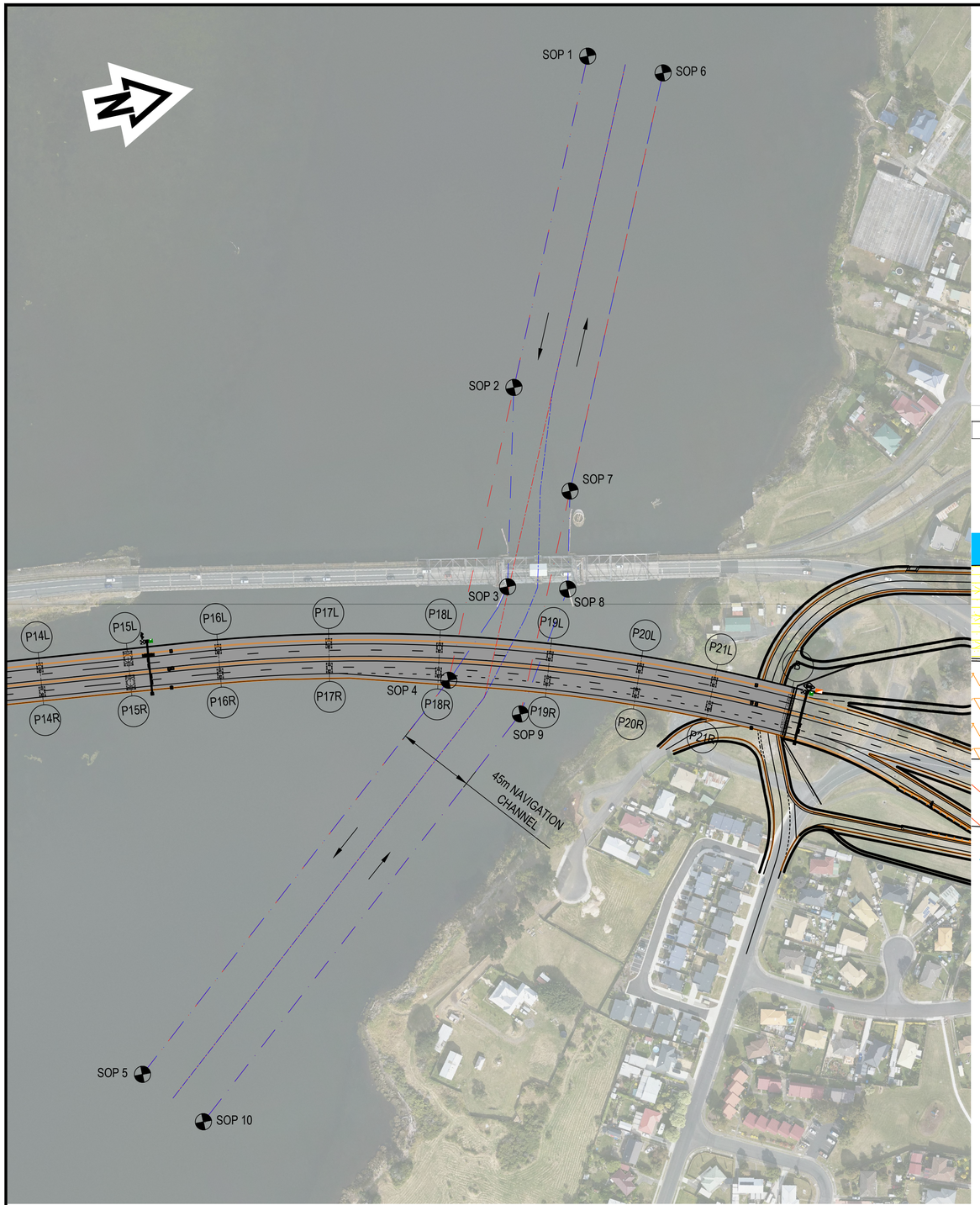
Figure 5

Geofabrics New Zealand Ltd
14 Goodman Place, PO Box 12536, Penrose, Auckland, New Zealand
T: (+64) 9 6436495 F: (+64) 9 634 6492, FREEPHONE 0800 60 60 20
E: sales@geofabrics.co.nz
www.geofabrics.co.nz

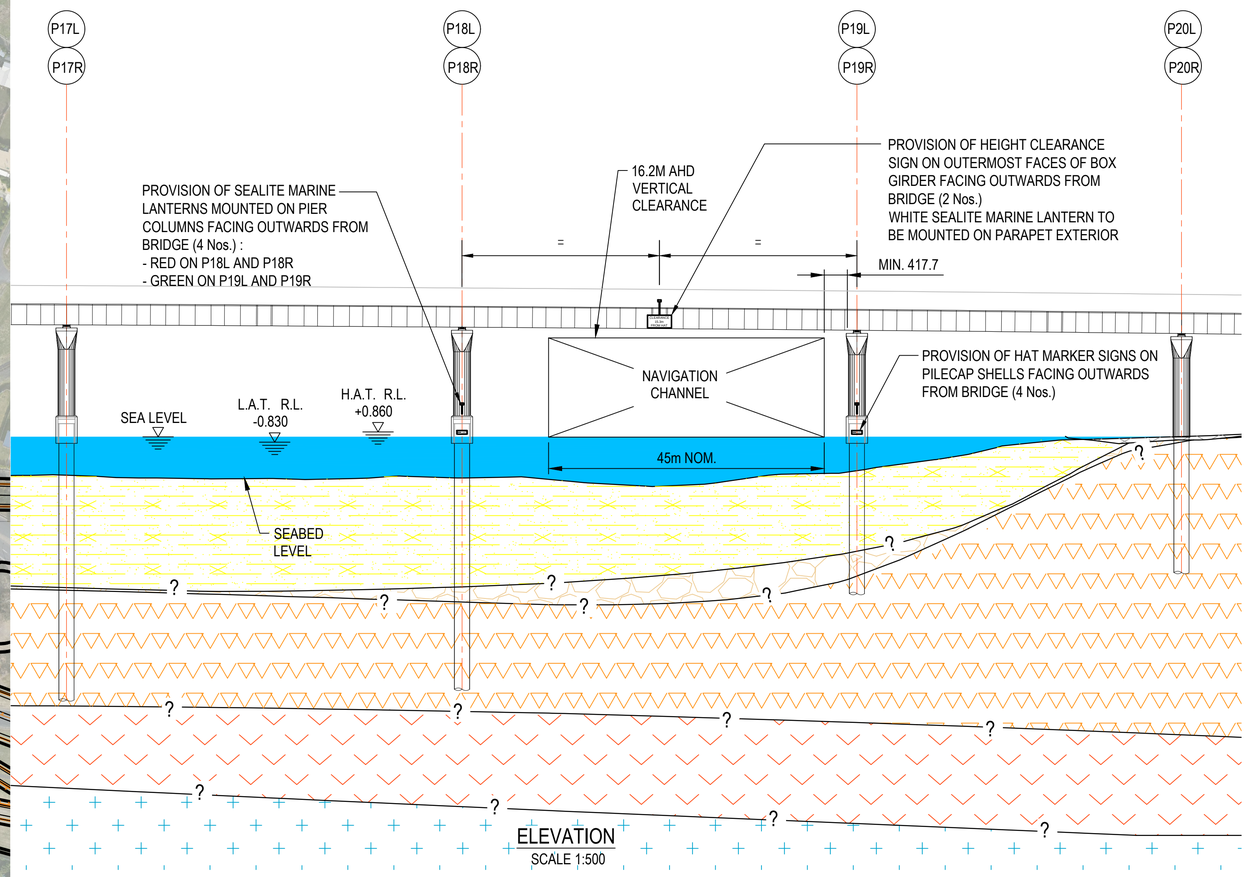
APPENDIX E – RIVER DERWENT BRIDGE – NAVIGATION CHANNEL

Navigation Channel

- 2024-TGP-4000-DRG-BRG-60986_B – Navigation Channel



PLAN
SCALE 1:1500



ELEVATION
SCALE 1:500

SETOUT POINT	EASTING	NORTHING
SOP 1	518193.8682	5268038.7963
SOP 2	518373.8607	5267957.1945
SOP 3	518486.6311	5267929.7845
SOP 4	518532.9519	5267885.0685
SOP 5	518720.9236	5267663.3899
SOP 6	518212.4491	5268079.7810
SOP 7	518439.6225	5267976.7892
SOP 8	518495.1814	5267963.7917
SOP 9	518560.7376	5267921.8801
SOP 10	518755.2456	5267692.4931

LEGEND :

NAVIGATION CHANNEL AFTER CAUSEWAY IS REMOVED

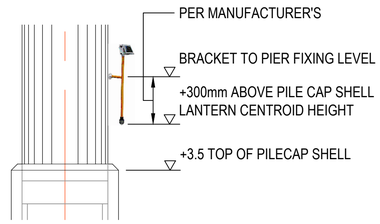
REVISED NAVIGATION CHANNEL

HAT

HAT MARKER SIGN

CLEARANCE 15.3m FROM HAT

HEIGHT CLEARANCE SIGN



SEALITE MARINE LANTERN (SOLAR POWERED)
SCALE 1:50

NOTES:

1. FOR GENERAL NOTES SEE SHEET No. 60020 & 60021.

WARNING

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

NOT FOR CONSTRUCTION

SUBSTANTIAL DETAILED DESIGN

No.	Amendment Description	Initials	Date
B	ISSUED FOR SUBSTANTIAL DETAILED DESIGN	NJS	18/07/22
A	ISSUED FOR DEVELOPED CONCEPT DESIGN	NJS	11/04/22

A1 original | This sheet may be prepared using colour and may be incomplete if copied

SCALES

DESIGNED: DMK REVIEWED: RKHL

Co-ordinate System: GDA2020 MGA55 Height Datum: AHD83

Tony Gee | Tasmanian Government | McCONNELL DOWELL CREATIVE CONSTRUCTION™

Department of State Growth

MIDLAND HIGHWAY (A0087)
BRIDGEWATER BRIDGE REPLACEMENT
RIVER DERWENT BRIDGE
NAVGIATION CHANNEL

CONTRACT No.	DRAWING NO.	PRINTED DATE	SHEET No.
3210	2024-TGP-4000-DRG-BRG-60985	13/07/2022	60985

REGISTRATION NUMBER
A0087.062

REVISION B

13/07/2022 9:34:57 am

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