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Design Report

Croskell PSP and ICP Transport Concept Design and Costs

Prepared for: Victorian Planning Authority (VPA)
25 September 2024
Client Reference No. D/23/2507

SMEC INTERNAL REF. 30043407

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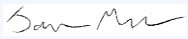
Signature	

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1. Introduction

The Victorian Planning Authority (VPA) are currently developing a Precinct Structure Plan (PSP) and Infrastructure Contributions Plans (ICP) for Croskell (PSP 1051) in Bunurong Country, approximately 40 km southeast of Melbourne's CBD. The precinct is bounded by Thompsons Road to the north, Berwick Cranbourne Road to the east, and Narre Warren Cranbourne Road to the west.

The vision for Croskell is a regionally significant commercial precinct with more than 5,500 jobs, along with a mix of housing types, community facilities, drainage infrastructure, roads, pedestrian/bike paths and open space that builds on the character of the surrounding Cranbourne and Clyde community.

SMEC was commissioned by the VPA to develop the road infrastructure items of the Croskell PSP in September 2023. SMEC's scope involved the development of the following infrastructure items for the interim and ultimate cases, and preparation of cost estimates for the interim works for the following infrastructure projects:

- 1 x Road boulevard
- 6 x Intersections
- 2 x Pedestrian operated signals
- 2 x Shared user paths
- 3 x Culverts

The following items were developed by Spiire and are included in concept drawings and costings:

- Casey Fields Boulevard: Victorian Desalination Project (VDP) assets crossing
- 3 x Shared User Path: Victorian Desalination Project (VDP) assets crossing

2. Project Scope

2.1 Road Projects

There is one proposed road project included within the PSP scope of works. Only an ultimate design is required for the road, since there is no interim arrangement for a connector boulevard. The designed form of the road layout is adopted from the template cross section layouts provided by the VPA.

The design of the road takes into consideration the following characteristics:

- The location of the existing road network
- Existing non-PSP property boundaries
- Land geometry and geotechnical constraints
- Waterway locations
- Proposed adjacent land use

2.2 Intersection Projects

There are 6 proposed intersection projects included within the scope of works. An interim and ultimate design is required for each intersection (except for IN-04 since Narre-Warren Cranbourne Road is assumed to be in its ultimate form with three lanes in each direction). The ultimate intersection layout will facilitate the location of the proposed Right of Way (ROW) boundaries to ensure that enough land is reserved. The interim design is used as the basis for the ICP costing exercise. SMEC did not undertake any traffic analysis for this commission, the designed form of the intersection layouts is adopted from the template intersection layouts and documents provided by the VPA and adjusted as required to fit the existing intersection arrangements.

The design of the intersections takes into consideration the following characteristics:

- The location of the existing road network

- Existing non-PSP property boundaries
- Land geometry and geotechnical constraints
- Waterway locations
- Proposed adjacent land use
- Minimise the redundant construction between interim and ultimate designs

2.3 Pedestrian Operated Signals

There are 2 proposed pedestrian operated signals projects, located on existing primary arterial roads. An interim and ultimate design is considered for PED-02. The ultimate intersection layout will ensure that enough land is reserved for the ultimate arrangement and the interim design is used as the basis for the ICP costing exercise. Only an ultimate design is required for PED-01 since Narre Warren – Cranbourne Road is assumed to be in its ultimate state with 3 lanes in each direction.

2.4 Shared User Path

There are 2 proposed shared use path projects included within the scope of works.

The design of the shared user paths takes into consideration the following characteristics;

- Connectivity to the existing road network and proposed PSP road
- The location of Melbourne Water underground assets
- Land geometry and geotechnical constraints
- Waterway locations
- Proposed adjacent land use

2.5 Culverts

The scope includes 3 new culvert projects which comprise 1 road culvert and 2 shared user path culverts. All culvert projects are over Melbourne Water DSS waterways. The designed form of the culvert layouts are adopted from the VPA benchmark items and cross section of the waterways.

2.6 Victorian Desalination Project (VDP) Asset Crossings

There are 4 proposed VDP asset crossings within the PSP scope of works which comprise 1 road crossing and 3 shared user path crossings. Design of the VDP asset crossings and costings were prepared by Spiire and have been included in the overall concept designs and costings.

3. Design Criteria and Methodology

3.1 Design Documents/Standards

The following design documents were adhered to throughout the development of the project concept designs.

- VPA Benchmark Infrastructure Costings Report for Infrastructure in Growth Areas December 2019
- VPA Benchmark Infrastructure Cost Guide October 2019
- VicRoads Guidance for Planning Road Networks in Growth Areas November 2015
- VicRoads Road Design Note RDN 04-01, Heavy Vehicle Network Access Considerations July 2019
- VicRoads supplement to the Austroads Guide to Road Design
- VicRoads Traffic Engineering Manual
- Austroads Guide to Road Design
- Australian Standards
- Rawlinsons Australian Construction Handbook January 2023

3.2 Design Methodology

Existing arterial road drawings have been provided by Department of Transport and Planning (DTP), Major Road Projects Victoria (MRPV) and City of Casey (Council).

PSP concept drawings have been prepared on an aerial base, with DTP/MRPV/Council designs overlaid, as the basis for interim and ultimate designs. The ultimate layout will facilitate the location of the proposed ROW boundaries to ensure enough land is reserved. The interim design is used as the basis for the ICP costing exercise.

3.3 Typical Cross Sections

Typical cross sections used in the road and intersection projects are shown in Figures 1-3.

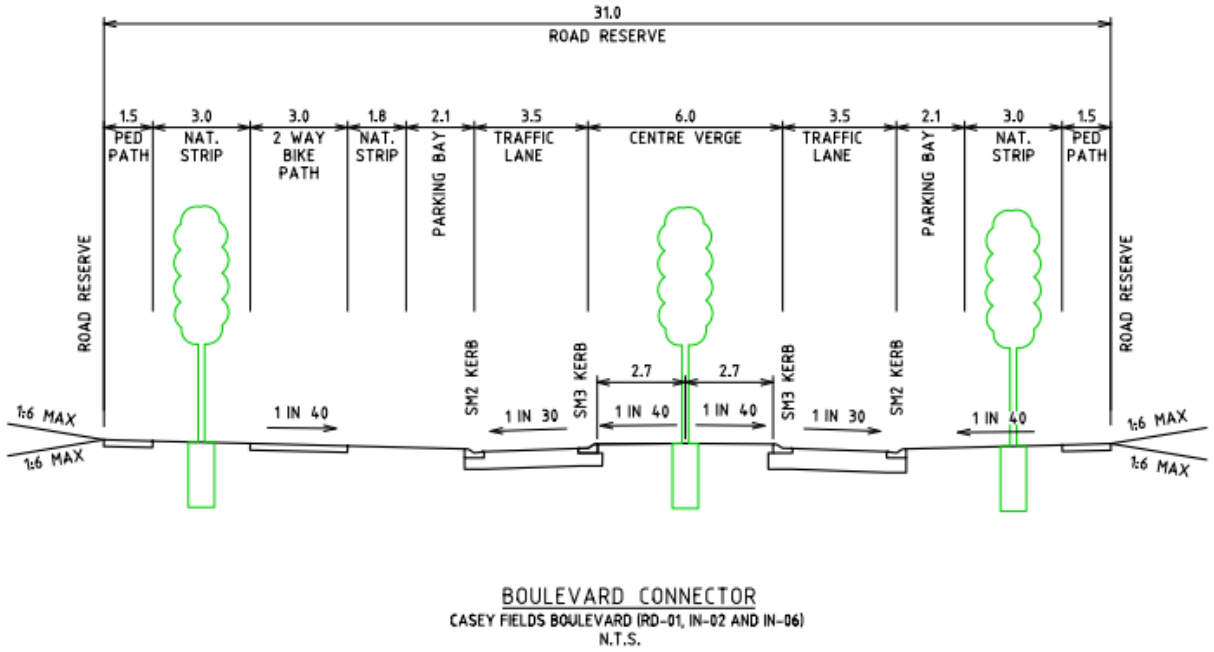


Figure 1: Cross-section Connector Boulevard - 31m Road Reserve

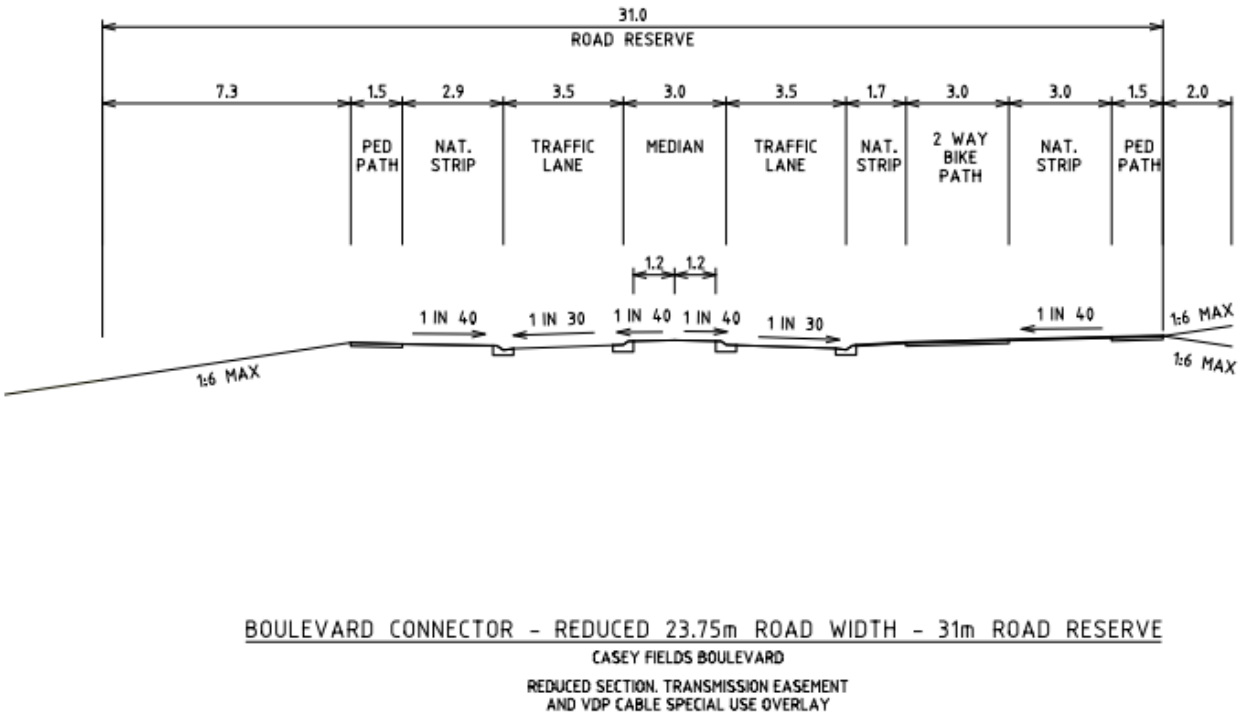


Figure 2: Cross-section Connector Boulevard– Reduced 23.75m Road Width

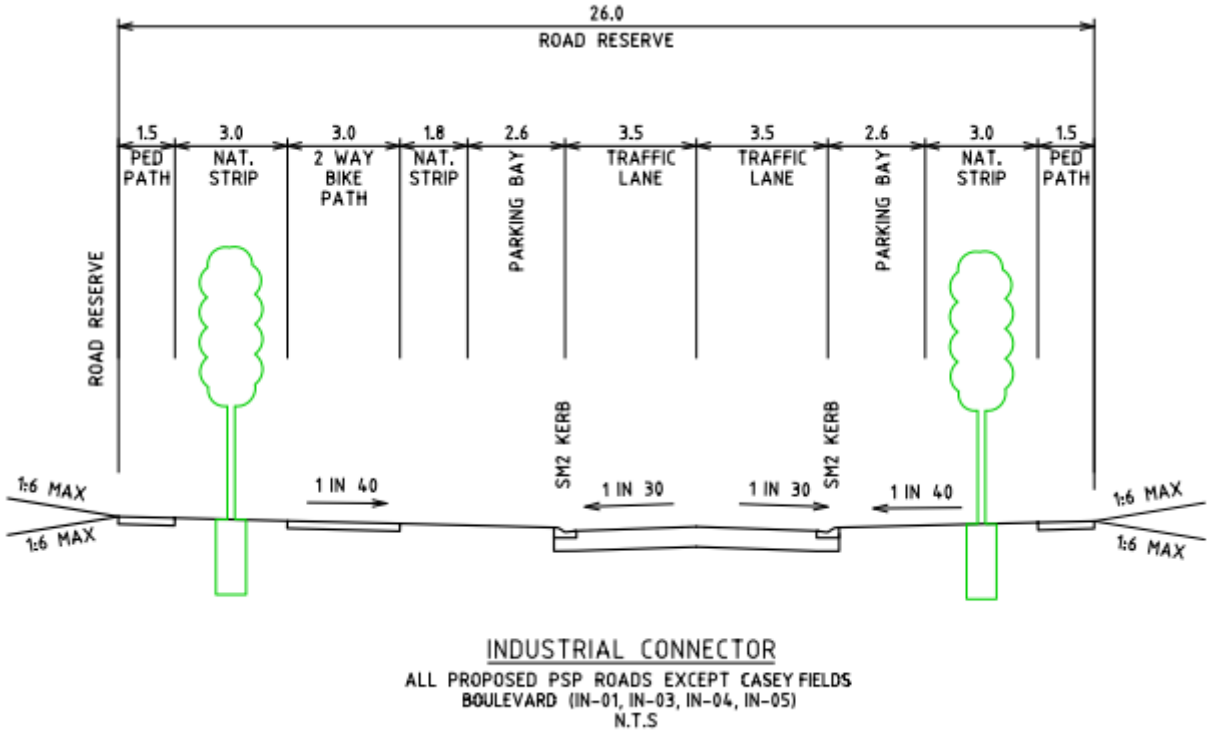


Figure 3: Cross-section Industrial Connector – 26m Road Reserve

3.4 Road Projects

Details of the Casey Fields Boulevard (RD-01) road project are shown in Table 1.

Table 1 – Road Projects

Project No.	Name	Classification	Road reserve width	Design speed	Road Length (PSP section)	Benchmark Infrastructure Report Item No.
RD-01	Casey Fields Boulevard	Connector Boulevard	31 m	50 km/h	898m	Item 3

Only an ultimate design is required for the RD-01, since there is no interim arrangement for a connector boulevard. The alignment of the RD-01 was designed to fit within existing property boundaries and to align with crossings over the Melbourne Water DSS waterways and VDP assets. The road reserve narrows from 31 m to 23.75m at the culvert crossing and VDP asset crossing, allowing the width of the crossings to be minimised.

The road crossing of VDP assets includes a thermal backfill treatment. The design of this treatments was prepared by Spiire and is included in the concept design drawings and sections.

3.5 Intersection Projects

Table 2 – Intersection Projects

Project No.	Location	Proposed Works	Classification	Design Vehicle	Check Vehicle	Benchmark Infrastructure Report Item No.
IN-01	Thompsons Road/Future Bray Blvd & Industrial Connector	Retrofit Industrial Connector leg into existing T Intersection to create a Signalised Cross Intersection	Primary Arterial (Principal Freight Network route) / Connector Boulevard	19 m prime mover and semi-trailer	26 m B-double	Item 7
IN-02	Thompsons Road & William Thwaites Blvd & Casey Fields Boulevard	Retrofit Connector Boulevard leg into existing T Intersection to create a Signalised Cross Intersection	Primary Arterial (Principal Freight Network route) / Connector Boulevard	19 m prime mover and semi-trailer	26 m B-double	Item 7
IN-03	Thompsons Road & Wheelers Park Dr & Industrial Connector	Retrofit Industrial Connector leg into existing T Intersection to create a Signalised Cross Intersection	Primary Arterial (Principal Freight Network route) / Connector Boulevard	19 m prime mover and semi-trailer	26 m B-double	Item 7
IN-04	Narre-Warren Cranbourne Road & Industrial Connector & Majestic Boulevard	Retrofit Industrial Connector leg into existing T Intersection to create a Signalised Cross Intersection	Primary Arterial / Connector Boulevard	12.5 m single unit truck / bus	19 m prime mover and semi-trailer	Item 7
IN-05	Berwick Cranbourne Road & Industrial Connector & Hamersley Drive	Retrofit Industrial Connector leg into planned T Intersection upgrade to create a Signalised Cross Intersection	Primary Arterial / Connector Boulevard	12.5 m single unit truck / bus	19 m prime mover and semi-trailer	Item 7
IN-06	Casey Fields Boulevard & Linsell Boulevard.	Retrofit Connector Boulevard leg into existing T Intersection to create a Signalized Cross Intersection	Secondary Arterial / Connector Boulevard	12.5 m single unit truck / bus	19 m prime mover and semi-trailer	Item 9

The development of each intersection has been adjusted to suit the local context and generally accord with VPA typical intersection typologies. This includes the provision for turn lanes and lengths.

Provisions have been made for pedestrian movements at each intersection as appropriate with median refuges provided. Median refuges are a minimum of 2.5 m wide, except at IN-03 where only 2.07 m width is provided. The skew of pedestrian cross walks are no greater than 15 degrees from the perpendicular.

Raised priority crossings are shown on the drawings to indicate pedestrian and cyclist priority. Alternative methods of priority can be investigated through the detailed design process.

The interim intersection designs have generally been developed to minimise the amount of redundant works when the intersection is upgraded to its ultimate configuration.

Design vehicles for the intersections are listed in Table 2 for each intersection. Design vehicle swept paths provide a minimum clearance offset from the extremities of the vehicle path to a kerb, pavement edge or centreline as detailed in Austroads GRD Part 4 and Part 4A.

Where double right hand turns in the same direction are required at an intersection, a design vehicle will turn from the left-hand right turn lane and a car will turn from the right-hand right turn lane, with 1 m clearance between the two vehicles as per Austroads GRD Part 4.

Swept path assessment has not provided for concurrent right turns due to the constraints of existing intersection designs and property boundaries.

3.6 Pedestrian Operated Signals

Pedestrian operated signals PED-01 and PED-02 are designed to align with a future east-west shared user path and are designed with a stagger in accordance with Austroads GRD Part 4.

PED-01 is located north of the beginning of the southbound right turn lane. The detailed design of PED-01 will need to consider the height of the overhead transmission lines.

Table 3 - Pedestrian Operated Signal Projects

Project No.	Location	Proposed Works
PED-01	Narre Warren Cranbourne Road	Mid-block Signalised Pedestrian Crossing.
PED-02	Berwick Cranbourne Road.	Mid-block Signalised Pedestrian Crossing

3.7 Shared User Paths

Details of the shared user path projects are listed in Table 4.

Table 4 – Shared User Path Projects

Project No.	Location	SUP width	SUP length	Benchmark Infrastructure Report Item No.
SUP-01	Melbourne Water Pipe Track	3 m	1184 m	N/A
SUP-02	South of Thompsons Road, between IN-02 and IN-03	3 m	587 m	N/A
SUP-03	VDP asset crossing	3 m	15 m	N/A
SUP-04	VDP asset crossing	3 m	15 m	N/A
SUP-05	VDP asset crossing	3 m	15 m	N/A

Alignment of shared user path SUP-01 (Melbourne Water Pipe Track) is designed along the Melbourne Water assets corridor and provides a south-west to north-east connection through the Croksell PSP. SUP-01 connects to RD-01 near the road culvert crossing (CU-01) to avoid additional waterway and VDP crossings for SUP-01.

Shared user path SUP-02 is designed to fit alongside the south side Thompsons Road within the PSP boundary.

Shared user path projects SUP-03, SUP-04 and SUP-05 are VDP asset crossings for future shared user paths. Designs for these treatments were developed by Spiire and locations are show on the key plan (drawing no. 2001).

3.8 Culverts

Details for culvert projects are listed in Table 5.

Table 5 – Culvert Projects

Project No.	Location	Culvert length	Culvert width	Culvert Size	Culvert Quantity	Benchmark Infrastructure Report Item No.
CU-01	RD-01	Varies (31.72m - 34.16m)	27 m	1800 x 3000	68 No. box culverts 55 No. link slabs	Item 28
CU-02	SUP-01	7.32 m	27 m	1800 x 3000	15 No. box culverts 12 No. link slabs	Item 28
CU-03	SUP-02	7.32 m	27 m	1800 x 3000	15 No. box culverts 12 No. link slabs	Item 28

The culvert projects have been designed based on the VPA infrastructure benchmark item 28 and adapted to the width and cross-sectional area of the proposed DSS waterways provided by Melbourne Water.

The road culvert crossing includes allowance for roadside safety barriers and shared user path culvert crossings include allowance for cyclist friendly safety fencing.

3.9 Cost Estimates

Costs estimates have been prepared based on rates from the benchmark rates from the VPA Benchmark Infrastructure Costings Report (2019) using P90 rates. The interim design is used as the basis for the costing. Costs were indexed in accordance with the VPA Benchmark Infrastructure Cost Guide.

Cost estimates are provided to the Victorian Planning Authority for budgeting purposes only for the Infrastructure Contributions Plan. SMEC Australia assumes no liability for losses incurred through changes to the quantities required construct the projects or increases in construction costs. These values are not intended for use in construction and do not constitute a bill of quantities.

3.9.1 Non-standard benchmark cost items

Traffic management costs for intersection projects IN-01 to IN-05 were increased to 10% (from VPA benchmark rate 5%) due to the increased traffic management required for existing arterial roads. An allowance of $30,000 was included for each of intersection projects IN-01 to IN-06 for protection of existing utility services. VDP asset crossing cost items were prepared by Spiire.

The following non-standard items were included in the cost estimates were based on rates from the Rawlinsons Australian Construction Handbook January 2023:

- Raised priority crossing asphalt rate based on “Hot bituminous concrete including tack coat”
- Raised priority crossing surface treatment rate based on “Thermoplastric marking of bitumen paving”

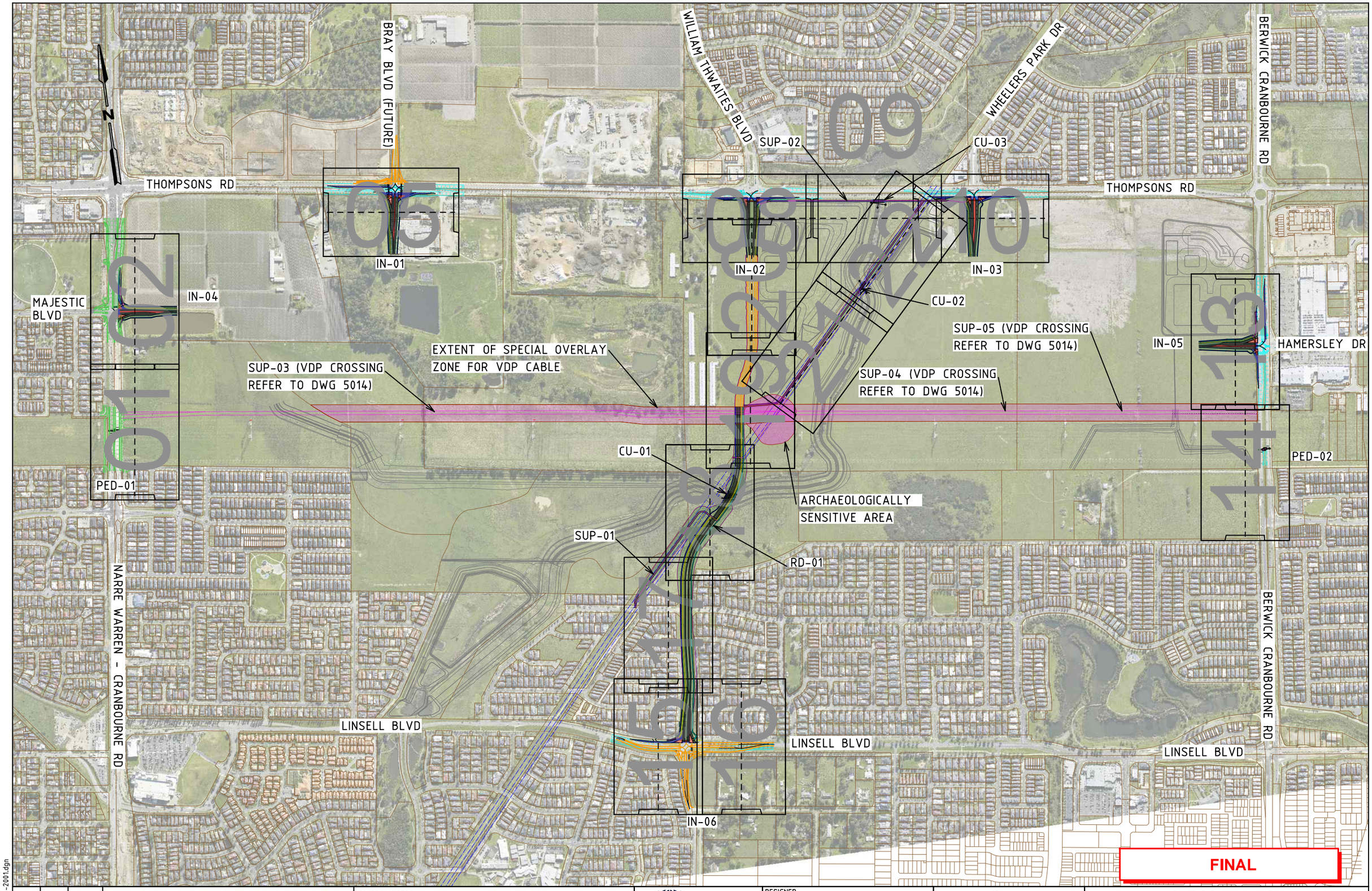
- Demolition of existing concrete kerbs, footpath, islands rate based on “Break up and remove reinforced concrete in open excavations”
- De-watering of dams rate based on “Dewatering - deep system (to reduce water level by over 1000mm)”
- Pedestrian fencing rate based on “1200mm high fence of galvanised welded mesh roll top panels and tubular posts”
- Cycle friendly safety fencing rate based on “Bridge balustrade”

3.9.2 Exclusions from the cost estimates

No allowance has been included for:

- Utility relocation works (an allowance for protection of existing utilities for intersections projects is provided)
- Geotechnical testing
- Water Sensitive Urban Design (WSUD)

Appendix A Concept Drawings



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D	JM	27.08.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
C	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
B	JM	01.05.24	FINAL CONCEPT DESIGN
A	JM	22.01.24	DRAFT CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

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Victorian Planning Authority

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PSP KEY PLAN

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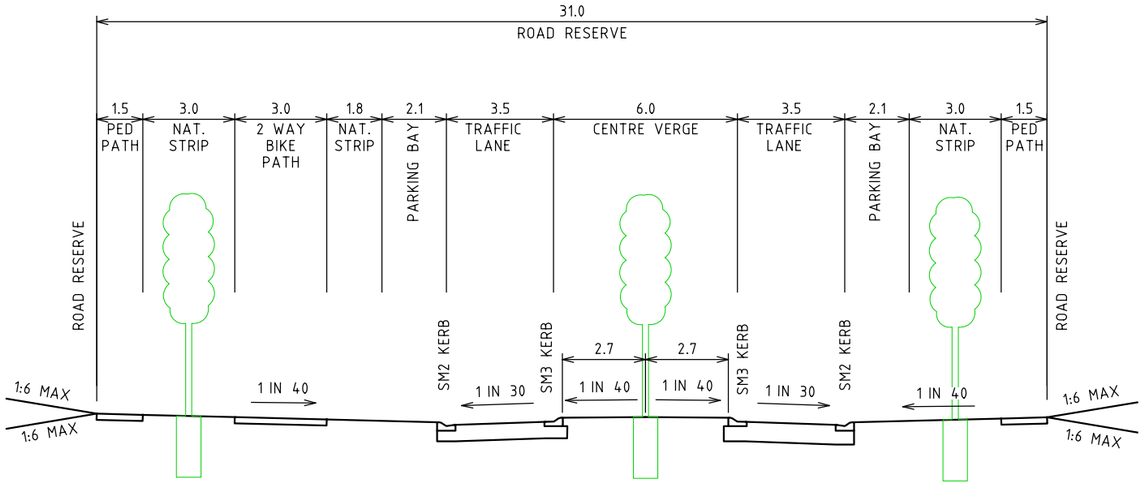
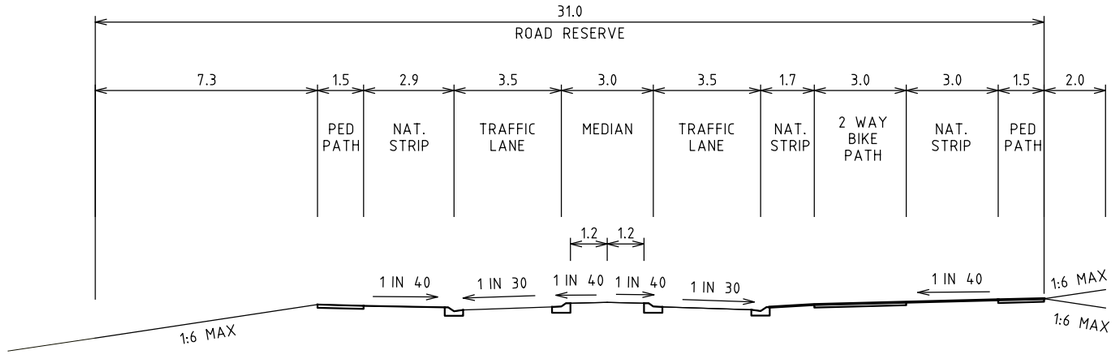


BOULEVARD CONNECTOR

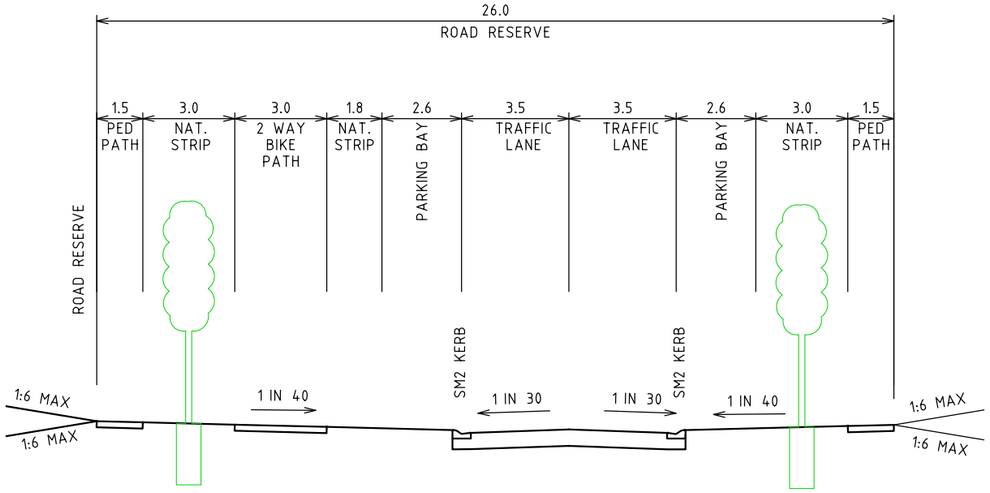
CASEY FIELDS BOULEVARD (RD-01, IN-02 AND IN-06)
N.T.S.



BOULEVARD CONNECTOR - REDUCED 23.75m ROAD WIDTH - 31m ROAD RESERVE

CASEY FIELDS BOULEVARD

REDUCED SECTION. TRANSMISSION EASEMENT
AND VDP CABLE SPECIAL USE OVERLAY



INDUSTRIAL CONNECTOR

ALL PROPOSED PSP ROADS EXCEPT CASEY FIELDS
BOULEVARD (IN-01, IN-03, IN-04, IN-05)
N.T.S

GENERAL NOTES:

1. PROPOSED ROW BOUNDARY BASED ON TYPICAL CROSS SECTION AND TYPICAL INTERSECTION WIDTHS.
2. ROAD CROSS SECTIONS HAVE BEEN ADOPTED FROM THE VPA TYPICAL CROSS SECTIONS.
3. THE CO-ORDINATE SYSTEM USED IN ALL DRAWINGS IS MGA2020 (ZONE 55).
4. NO ASSESSMENT OF EXISTING OR PLANNED UTILITY SERVICES HAS BEEN UNDERTAKEN IN THE DEVELOPMENT OF THE INTERSECTIONS.
5. LINEMARKING IS INDICATIVE AND REPRESENTATIVE OF THE FUNCTIONALITY OF THE INTERSECTION ONLY.
6. ALL LANE WIDTHS ARE 3.5m UNLESS STATED OTHERWISE.

LEGEND:

- INTERIM LAYOUT
- ULTIMATE LAYOUT
- WORKS BY OTHERS
- EXISTING CONDITIONS
- PROPOSED ROW BOUNDARY
- CADASTRAL BOUNDARY
- MELBOURNE WATER DSS ASSETS
- MELBOURNE WATER ASSETS
- VDP OPTIC FIBRE CABLE
- VDP 220 KV ELECTRIC CABLE
- 500 KV OVERHEAD TRANSMISSION LINES
- EXISTING ASSETS TO BE REMOVED
- EXTENT OF EARTHWORKS
- VDP CABLE EASEMENT
- PEDESTRIAN SAFTY FENCE
- CYCLIST FRIENDLY SAFETY FENCE

- ARTERIAL ROAD PAVEMENT
- SECONDARY ROAD PAVEMENT
- CONNECTOR ROAD PAVEMENT
- CONCRETE MEDIAN AND ISLAND
- 2 WAY BIKE PATH
- SHARED USE PATH
- FOOTPATH

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GENERAL NOTES

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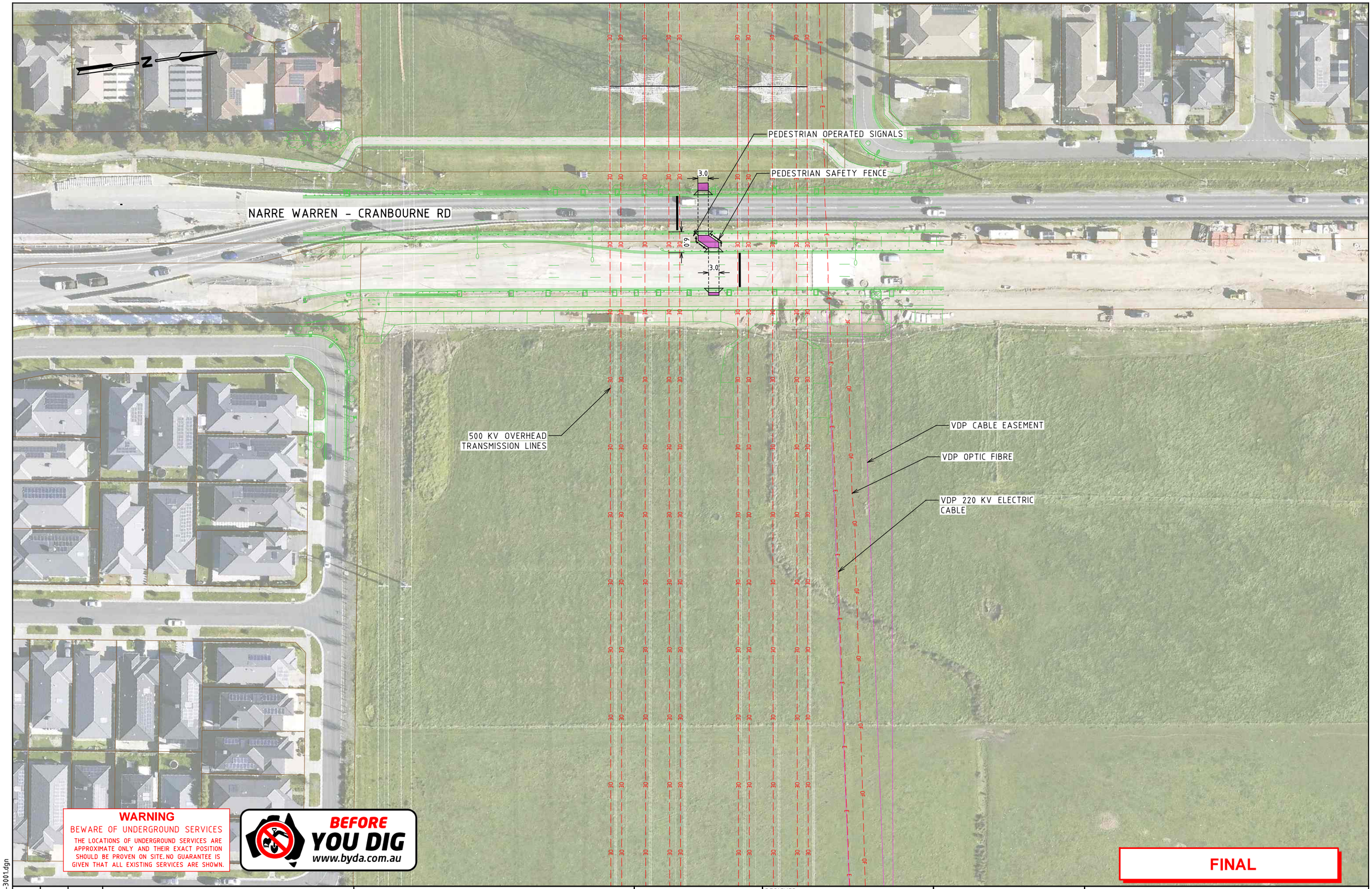

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PED-01 – NARRE WARREN CRANBOURNE RD GENERAL ALIGNMENT PLAN

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MAJESTIC BLVD

NARRE WARREN - CRANBOURNE RD

CONCRETE TRAFFIC ISLAND

CONCRETE TRAFFIC ISLAND

SUP

RAISED PRIORITY CROSSING

EXISTING KERB AND SUP TO BE REMOVED

2 WAY BIKEPATH

RAISED PRIORITY CROSSING

FOOTPATH

CONCRETE MEDIAN

FOOTPATH

DAM REMEDIATION DETAILS TBC, EMBANKMENT FILL TO DESIGN LEVELS AS PER VICROADS SECTION 204

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IN-04 - NARRE-WARREN CRANBOURNE RD GENERAL ALIGNMENT PLAN

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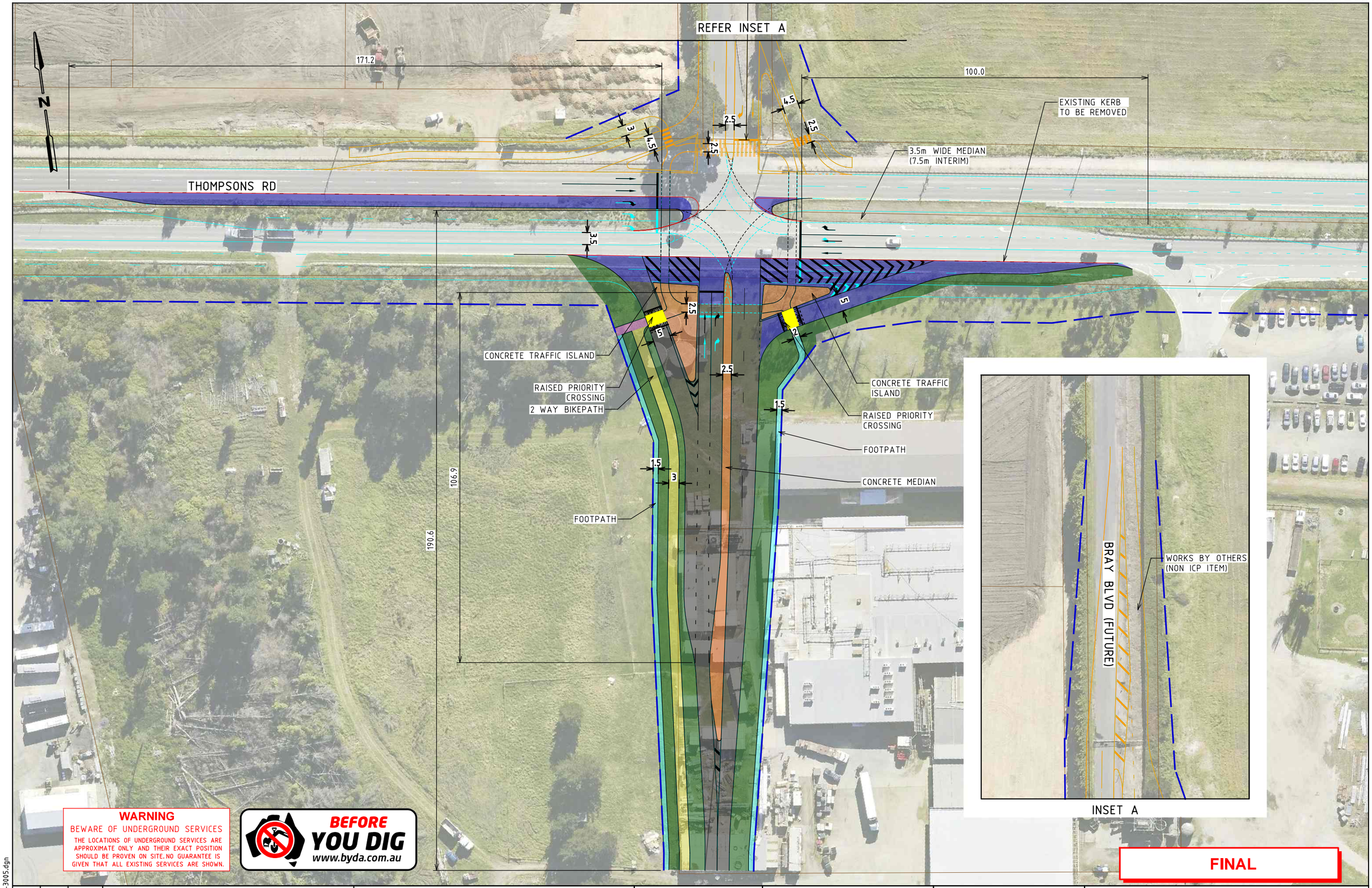

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D	JM	27.08.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
C	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
B	JM	01.05.24	FINAL CONCEPT DESIGN
A	JM	22.01.24	DRAFT CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

FILE: 30043407--3005.dgn

Victorian Planning Authority

SCALE OF METRES HOR 0 10 20 VER

CROSSKELL PSP

VICTORIAN PLANNING AUTHORITY

IN-01 - THOMPSONS RD/ CONNECTOR GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	5	-3005	D

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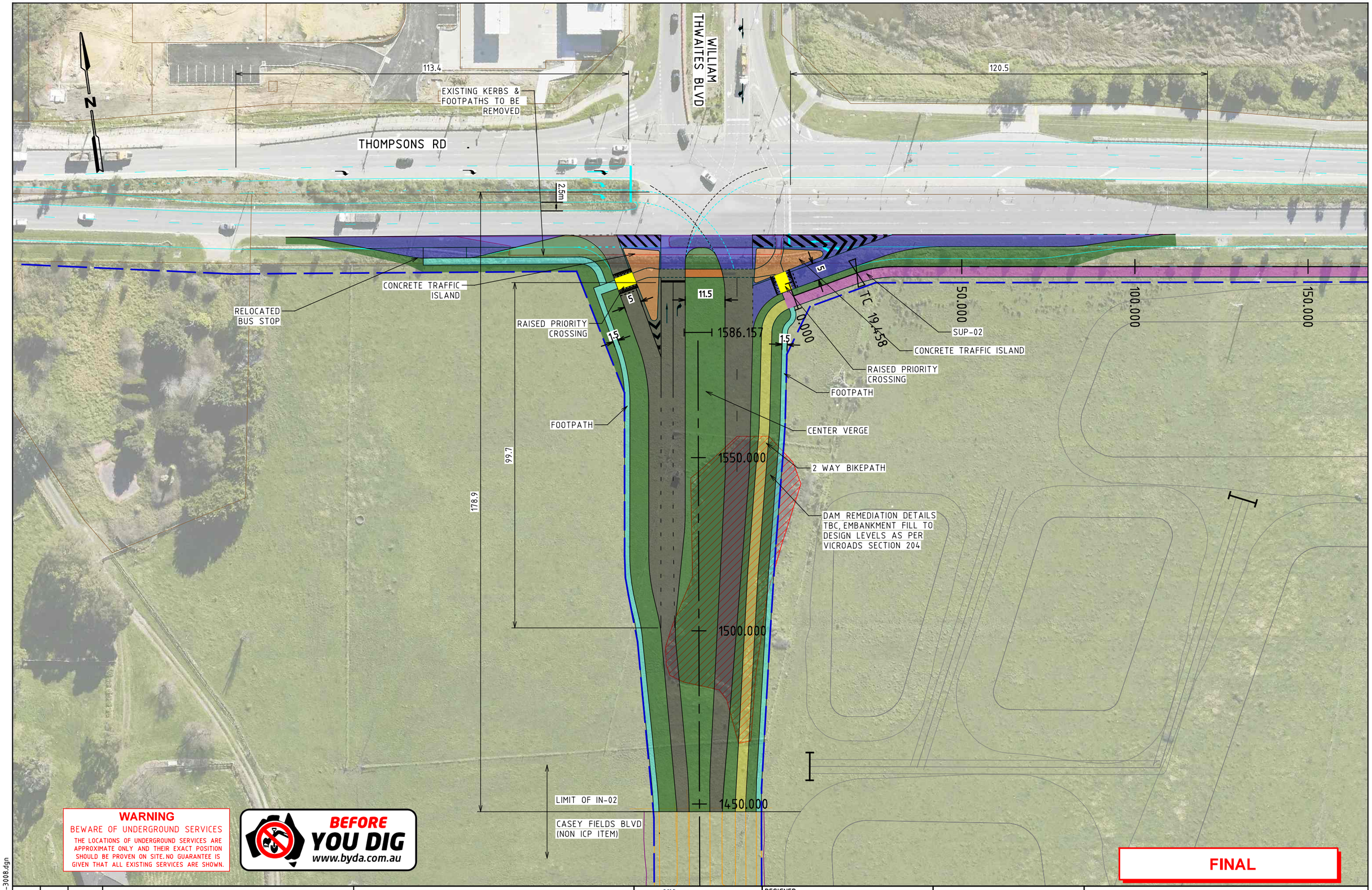

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATIONS OF UNDERGROUND 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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FINAL

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GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

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PROJ:

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Victorian Planning Authority

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IN-02 - THOMPSONS RD/WILLIAM THWAITES BVD GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
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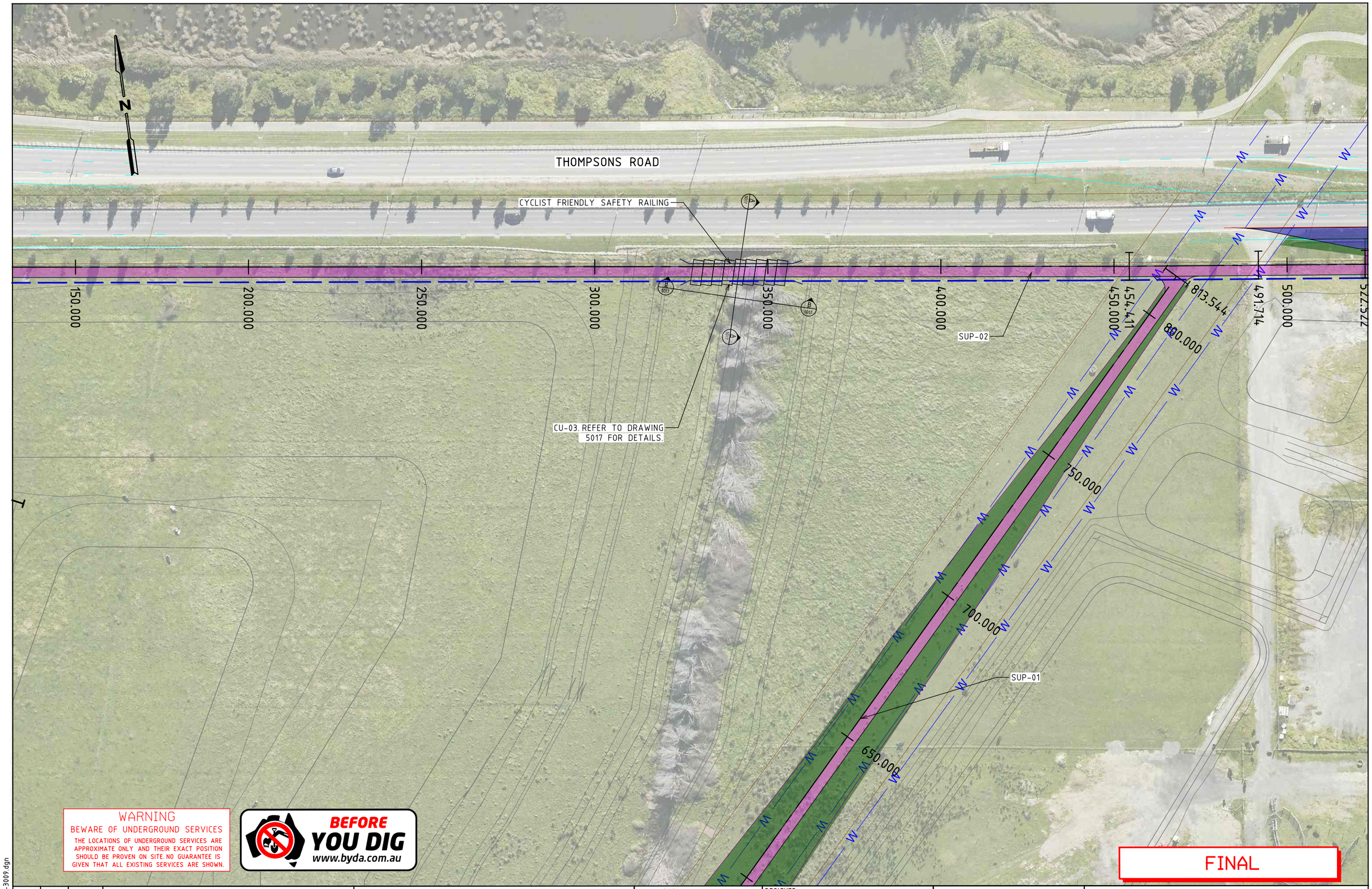

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ISSUE	APP'D	DATE	AMENDMENT
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GENERAL NOTES

SMEC Member of the Surbana Jurong Group

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APPROVED J MACKIE
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PROJ:
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Victorian Planning Authority

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SUP-02 - SHARED USE PATH
GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	9	-3009	C

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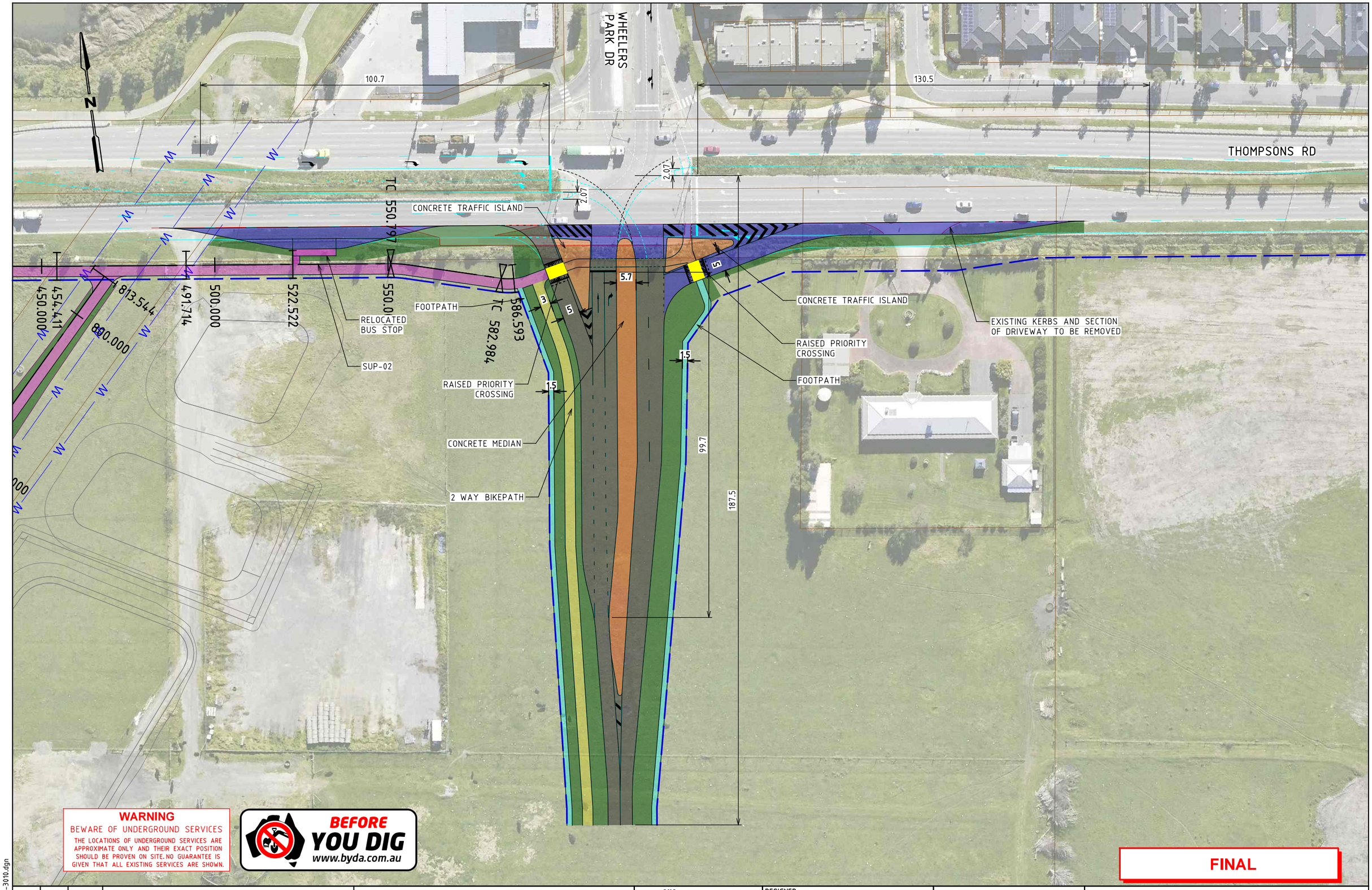

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GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

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Victorian Planning Authority

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VICTORIAN PLANNING AUTHORITY

IN-03 THOMPSONS RD/WHEELERS PARK DR GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	10	-3010	D

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HD16335 Standard_VR_PDF_SMEC.pltcfg mscol2.tbl V:_Vault\Projects\3004\30043407\110_CADD\CAD\DRAWINGS\30043407--3010.dgn

N

186.3

99.7

CONCRETE MEDIAN

FOOTPATH

RAISED PRIORITY CROSSING

EXISTING KERBS TO BE REMOVED

CONCRETE TRAFFIC ISLAND

2 WAY BIKEPATH

RAISED PRIORITY CROSSING

SUP

RELOCATED BUS STOP

CONCRETE TRAFFIC ISLAND

BERWICK CRANBOURNE RD

HAMERSLEY DR

2

5

1.5

5

2.4

3

3

3.5

142.8

171.5

WARNING

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GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

FILE: 30043407--3013.dgn

Victorian Planning Authority

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VICTORIAN PLANNING AUTHORITY

IN-05 BERWICK CRANBOURNE RD/HAMERSLEY DR GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	13	-3013	C

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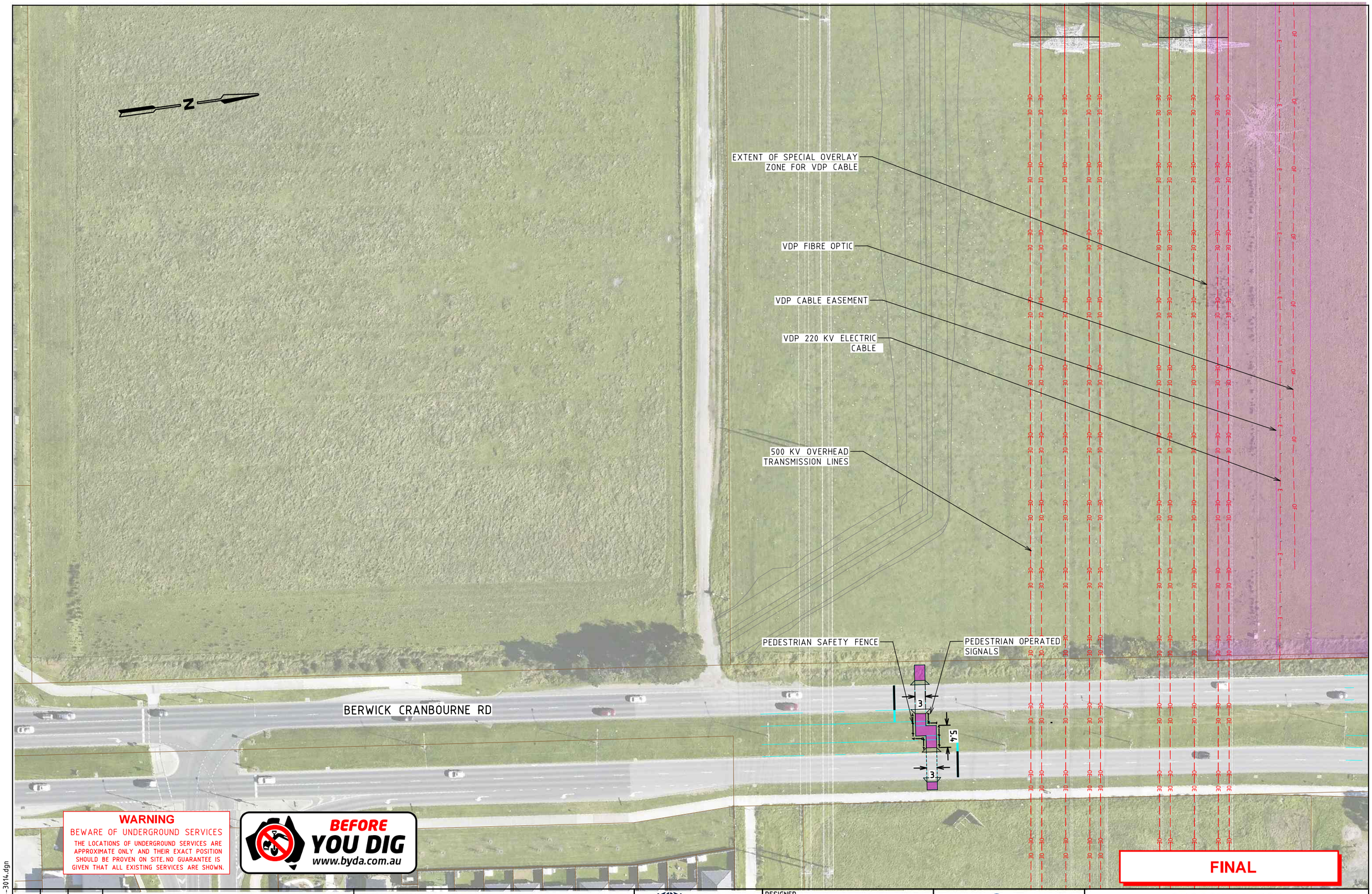

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GENERAL NOTES

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APPROVED J MACKIE
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PROJ:
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Victorian Planning Authority

SCALE OF METRES
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CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

PED-02 - BERWICK CRANBOURNE RD GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	14	-3014	C

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ISSUE	APP'D	DATE	AMENDMENT
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GENERAL NOTES

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Victorian Planning Authority

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VICTORIAN PLANNING AUTHORITY

IN-06 - CASEY FIELDS BVD/LINSELL BVD GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	15	-3015	C

HD16335 Standard_VR_PDF_SMEC.pltcfg mscol2.tbl V:_Vault\Projects\3004\30043407\110_CADD\CAD\DRAWINGS\30043407--3015.dgn

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Victorian Planning Authority

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VICTORIAN PLANNING AUTHORITY

IN-06 - CASEY FIELDS BVD/LINSELL BVD
GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	16	-3016	B

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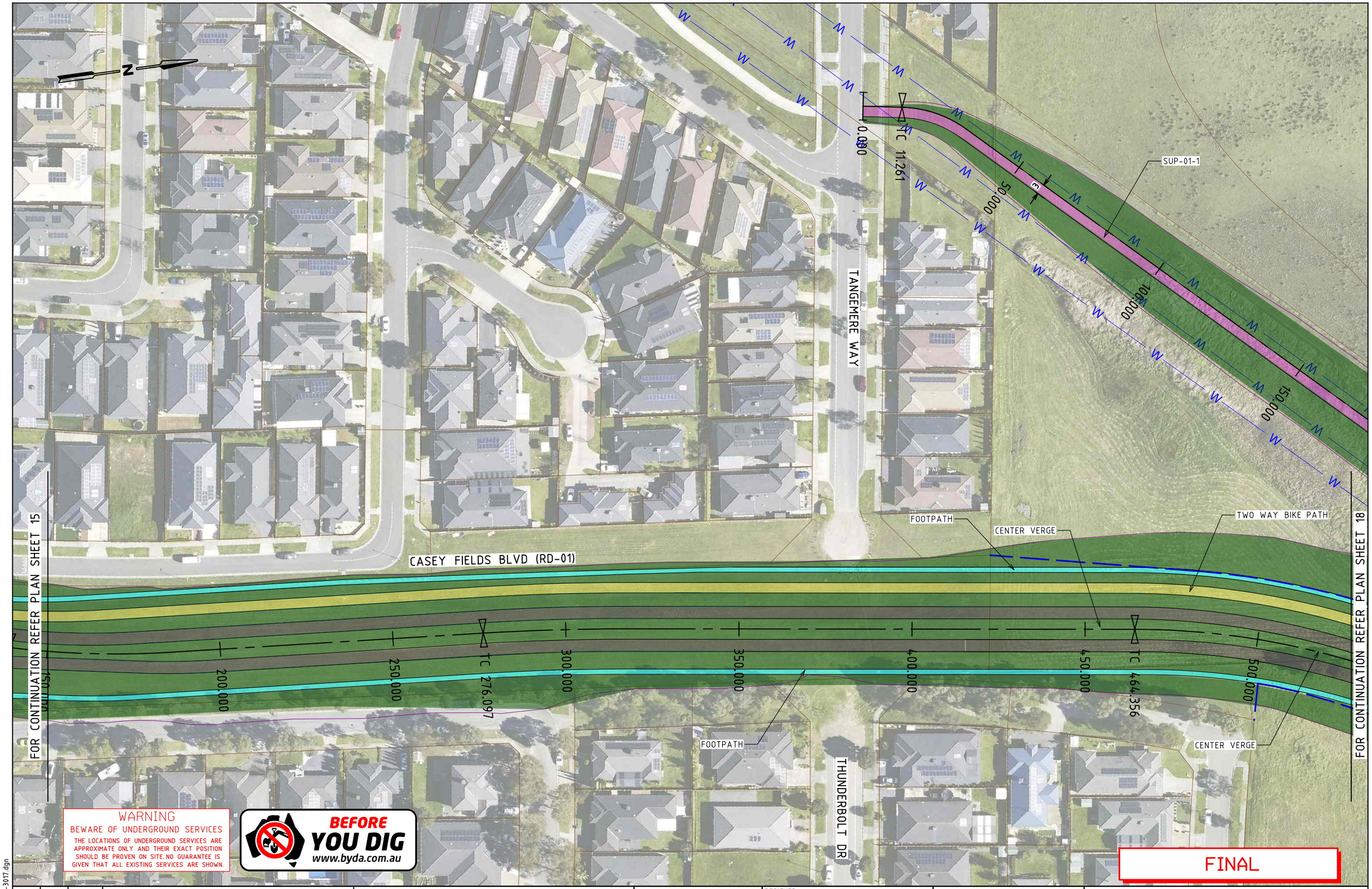

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RD-01 - CASEY FIELDS BOULEVARD
GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	17	-3017	B

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N

TWO WAY BIKE PATH

SUP-01

WATERWAY (MELBOURNE WATER DSS)

FOOTPATH

CENTER VERGE

FOR CONTINUATION REFER PLAN SHEET 17

CASEY FIELDS BLVD (RD-01)

FOOTPATH

SUP-01 TERMINATES

FOOTPATH

INDICATIVE SUP CROSSING LOCATION ONLY, CROSSING DETAILS TBC AT FUTURE PLANNING STAGES

OH TRANSMISSION LINES

INDICATIVE SUP CROSSING LOCATION ONLY, CROSSING DETAILS TBC AT FUTURE PLANNING STAGES

FOOTPATH

TWO WAY BIKE PATH

REDUCED CENTER VERGE

CU-01. REFER TO DRAWING 5015 FOR DETAILS.

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APPROVED J MACKIE

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RD-01 - CASEY FIELDS BOULEVARD GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	18	-3018	C

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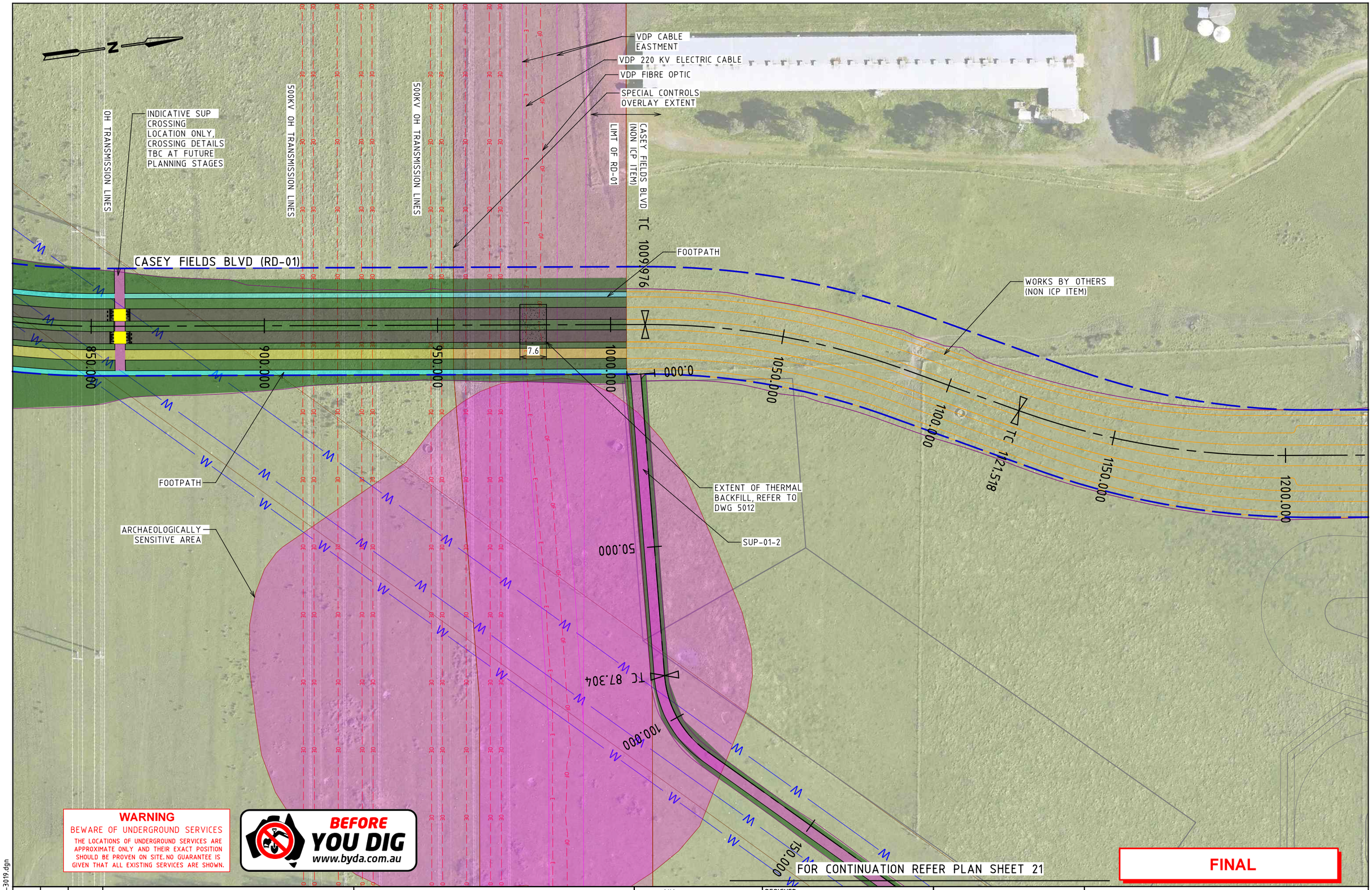

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RD-01 - CASEY FIELDS BOULEVARD GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
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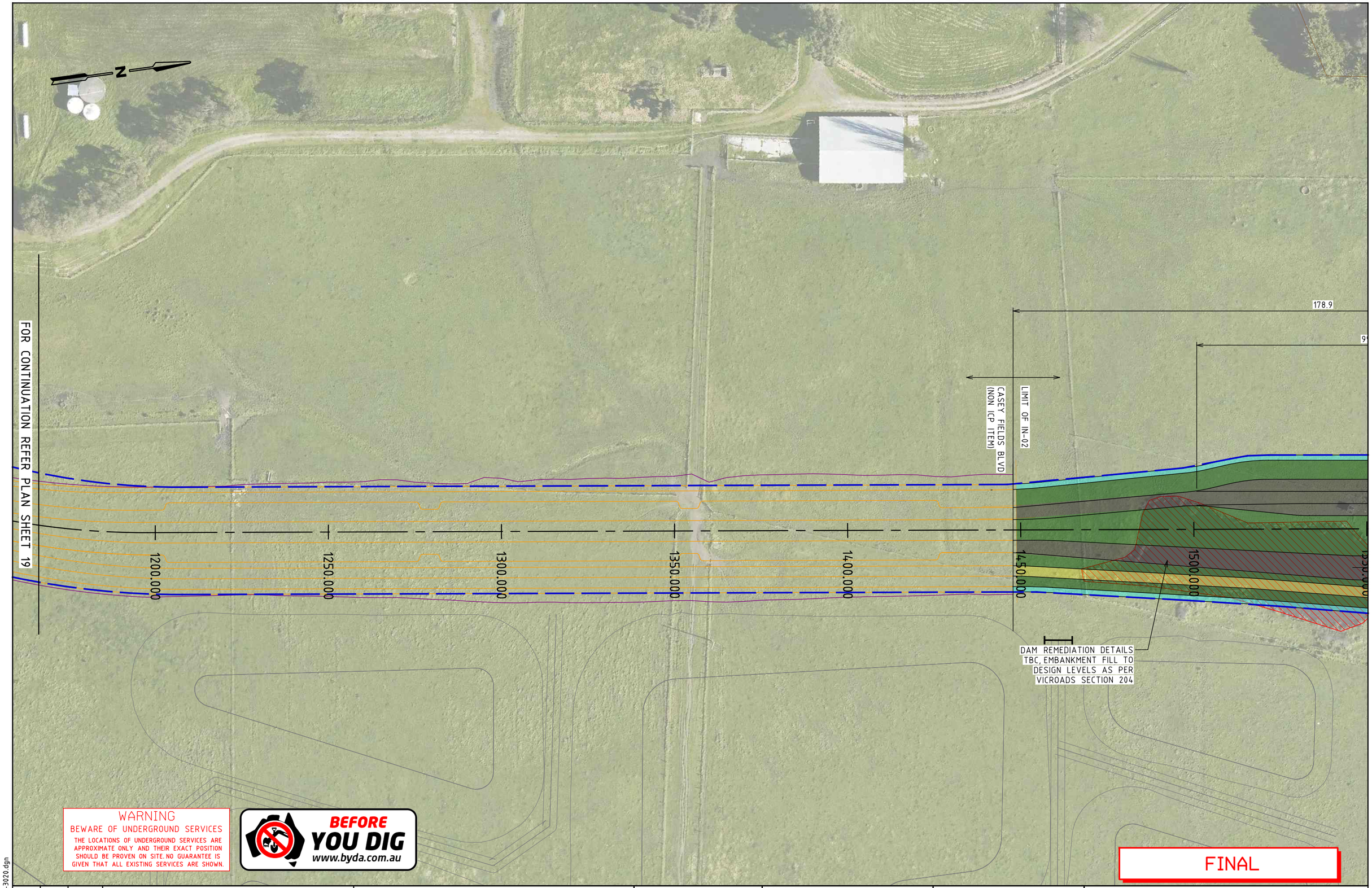

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NON ICP ITEM - CASEY FIELDS BOULEVARD
GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	20	-3020	B

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ISSUE	APP'D	DATE	AMENDMENT
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GENERAL NOTES

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Victorian Planning Authority

SCALE OF METRES
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VICTORIAN PLANNING AUTHORITY

SUP-01 - SHARED USE PATH
GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	21	-3021	B

23/08/2024 5:37:33 PM Default 30043407--3021.dgn

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GENERAL NOTES

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DESIGNED A GREENWOOD

APPROVED J MACKIE

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SUP-01 - SHARED USE PATH GENERAL ALIGNMENT PLAN

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	22	-3022	B

23/08/2024 5:37:33 PM Default 30043407--3022.dgn

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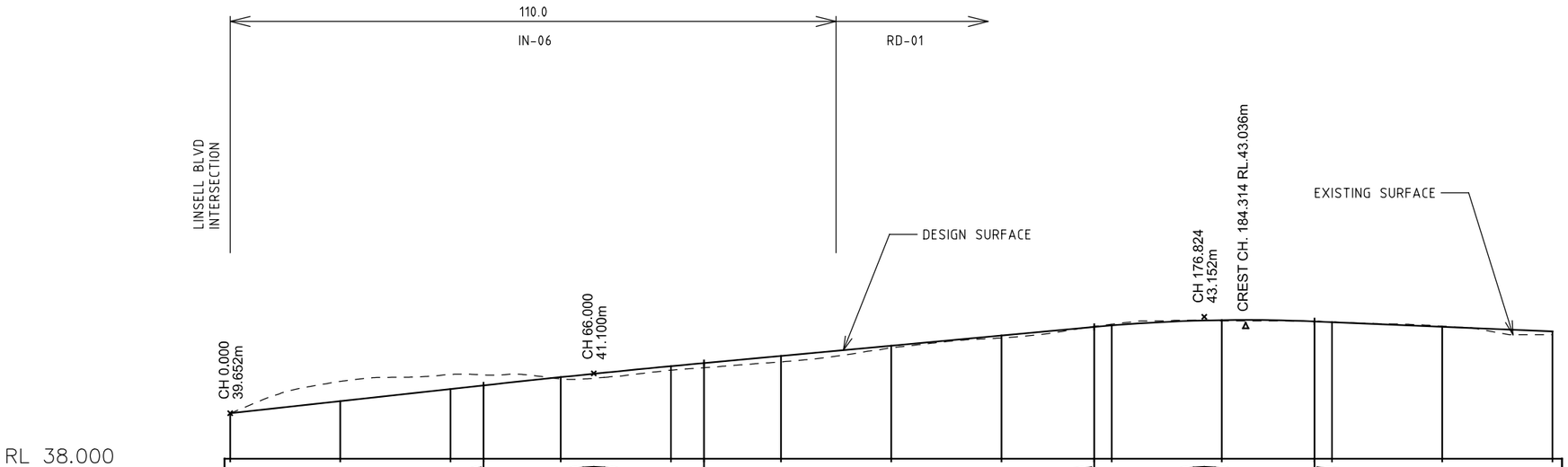

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EXISTING SURFACE LEVELS	39.642	40.808	41.060	41.039	40.896	41.214	41.305	41.512	42.023	42.379	42.801	42.881	43.000	42.998	42.963	42.808	42.500						
CHAINAGE	0.000	20.000	40.000	46.000	60.000	80.000	86.000	100.000	120.000	140.000	156.824	160.000	180.000	196.824	200.000	220.000	240.000						

LONGITUDINAL SECTION RD–01 – CASEY FIELDS BLVD

H 1:1000 V 1:200

FINAL

ISSUE	APP'D	DATE	AMENDMENT
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GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

FILE: 30043407--5001.dgn

Victorian Planning Authority

SCALE OF METRES
HOR 0 10 20
VER 0 2 4

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LONGITUDINAL SECTION
RD-01 - CASEY FIELDS BLVD - SHEET 1

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	-	-5001	C

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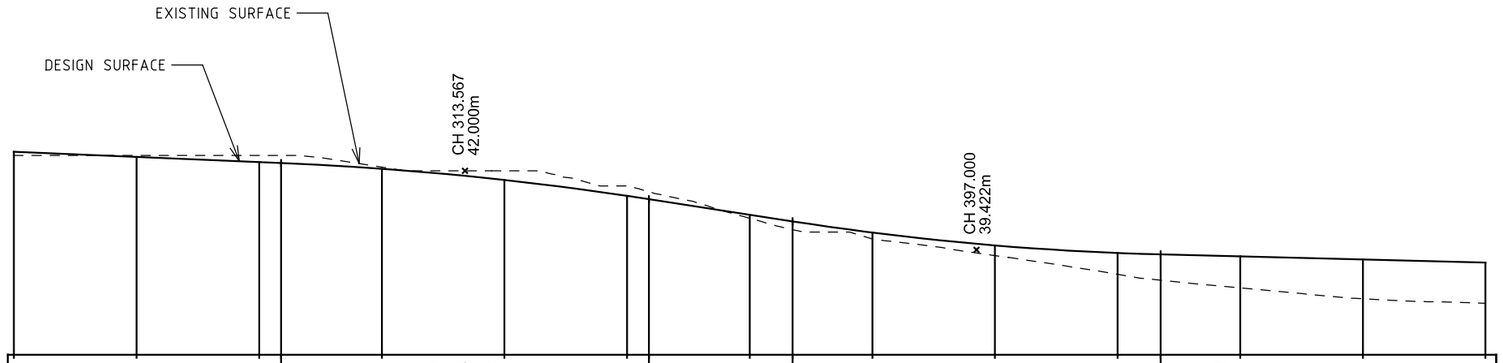
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DESIGN SURFACE
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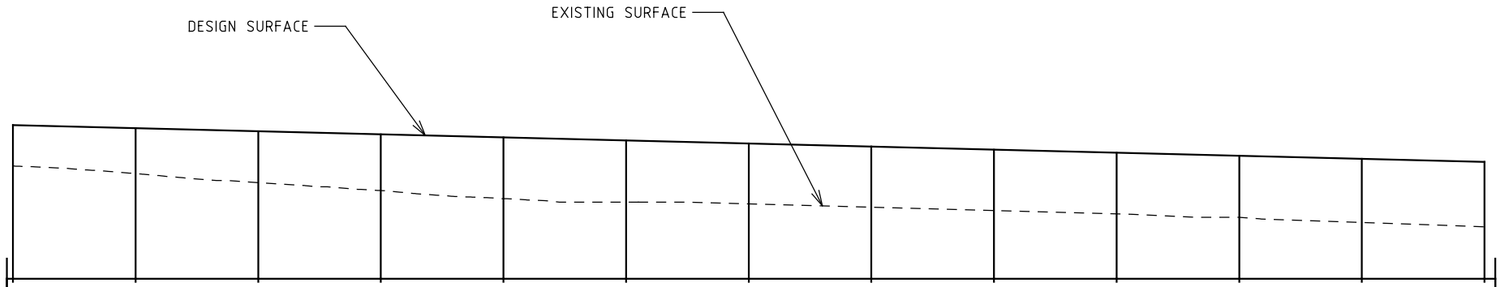

RL 34.000													
VERTICAL GEOMETRY													
HORIZONTAL GEOMETRY													
DESIGN SURFACE LEVELS	39.007	38.907	38.807	38.707	38.607	38.507	38.407	38.307	38.207	38.107	38.007	37.907	37.807
EXISTING SURFACE LEVELS	37.674	37.428	37.135	36.875	36.611	36.500	36.443	36.333	36.224	36.115	35.999	35.834	35.694
CHAINAGE	480.000	500.000	520.000	540.000	560.000	580.000	600.000	620.000	640.000	660.000	680.000	700.000	720.000

LONGITUDINAL SECTION RD-01 – CASEY FIELDS BLVD

H 1:1000 V 1:200

FINAL

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PROJ:

FILE: 30043407--5003.dgn

Victorian Planning Authority

SCALE OF METRES
HOR 0 10 20
VER 0 2 4

CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

LONGITUDINAL SECTION
RD-01 - CASEY FIELDS BLVD - SHEET 3

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	-	-5003	C

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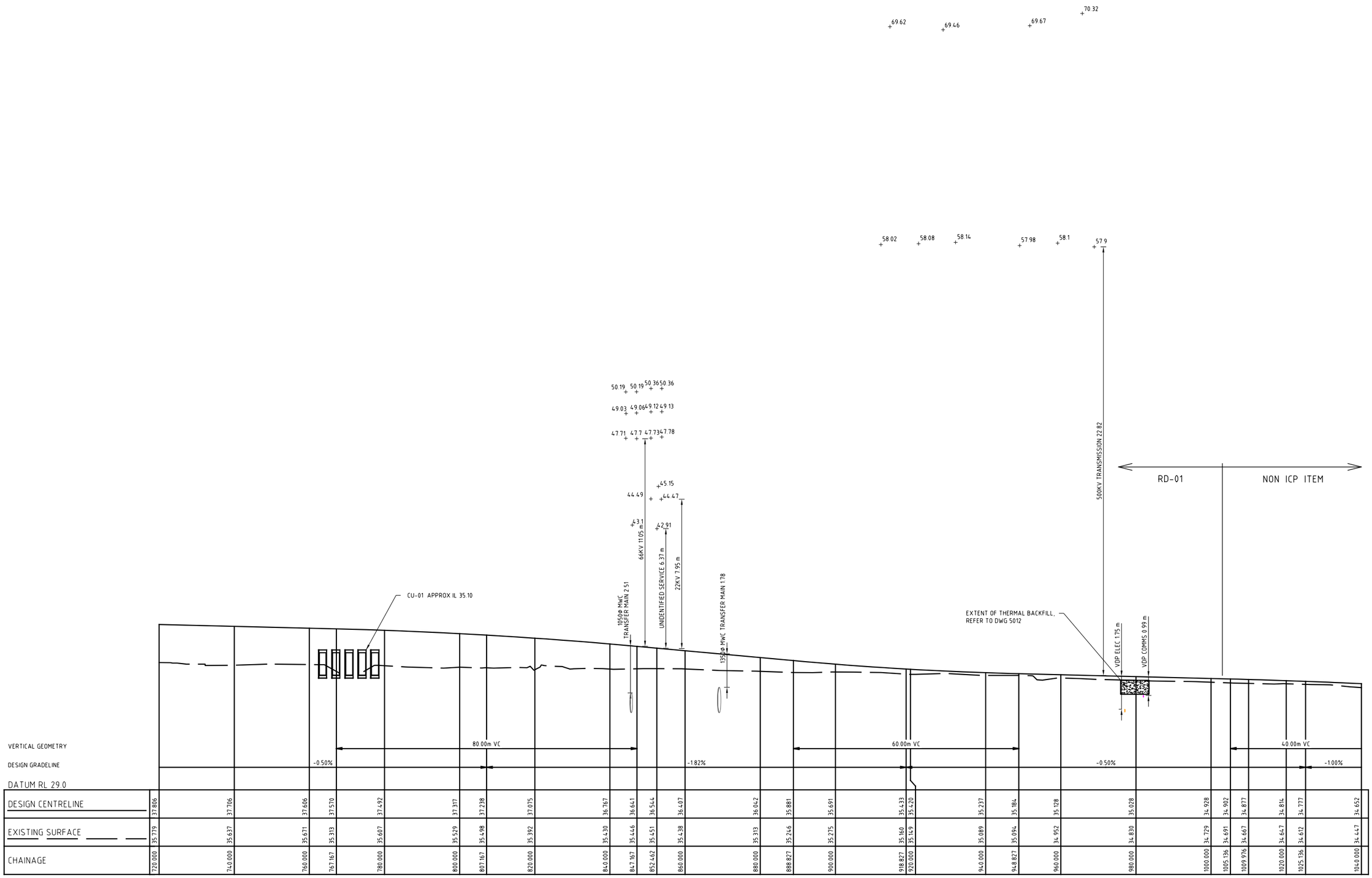

DESIGN CENTRELINE	37.806	37.706	37.606
EXISTING SURFACE	35.779	35.637	35.671
CHAINAGE	720.000	740.000	760.000

DESIGN CENTRELINE	37.570	37.492	37.317
EXISTING SURFACE	35.313	35.607	35.529
CHAINAGE	767.167	780.000	800.000

DESIGN CENTRELINE	37.238	37.075	36.767
EXISTING SURFACE	35.498	35.392	35.430
CHAINAGE	807.167	820.000	840.000

DESIGN CENTRELINE	36.641	36.544	36.407
EXISTING SURFACE	35.446	35.451	35.438
CHAINAGE	847.167	852.462	860.000

DESIGN CENTRELINE	36.042	35.881	35.691
EXISTING SURFACE	35.313	35.246	35.275
CHAINAGE	880.000	888.827	900.000

DESIGN CENTRELINE	35.433	35.420	35.237
EXISTING SURFACE	35.160	35.149	35.089
CHAINAGE	918.827	920.000	940.000

DESIGN CENTRELINE	35.184	35.128	35.028
EXISTING SURFACE	35.094	34.952	34.830
CHAINAGE	948.827	960.000	980.000

DESIGN CENTRELINE	34.928	34.902	34.877
EXISTING SURFACE	34.729	34.691	34.667
CHAINAGE	1000.000	1005.136	1009.976

DESIGN CENTRELINE	34.814	34.777	34.652
EXISTING SURFACE	34.647	34.612	34.447
CHAINAGE	1020.000	1025.136	1040.000

LONGITUNDIAL SECTION RD-01 - CASEY FIELDS BLVD

FINAL

ISSUE	APP'D	DATE	AMENDMENT
C	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
B	JM	01.05.24	FINAL CONCEPT DESIGN
A	JM	22.01.24	DRAFT CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

FILE: 30043407--5004.dgn

Victorian Planning Authority

SCALE OF METRES
HOR 0 10 20
VER 0 2 4

CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

LONGITUDINAL SECTION
RD-01 - CASEY FIELDS BLVD - SHEET 4

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
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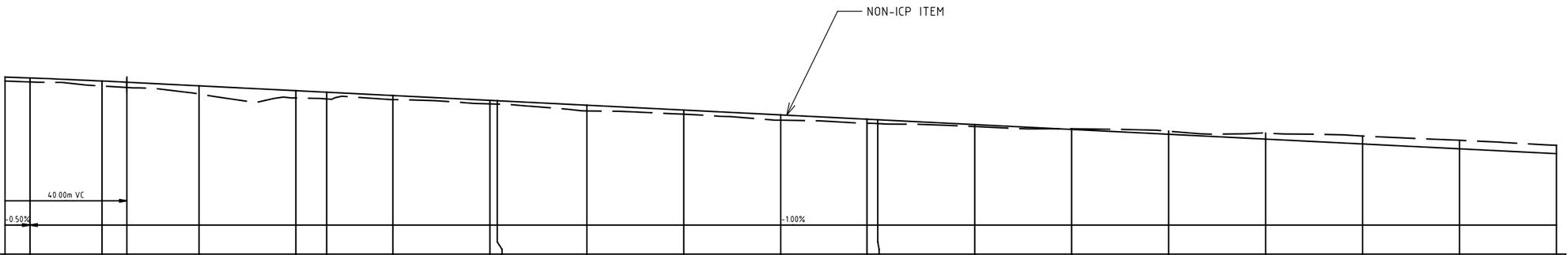
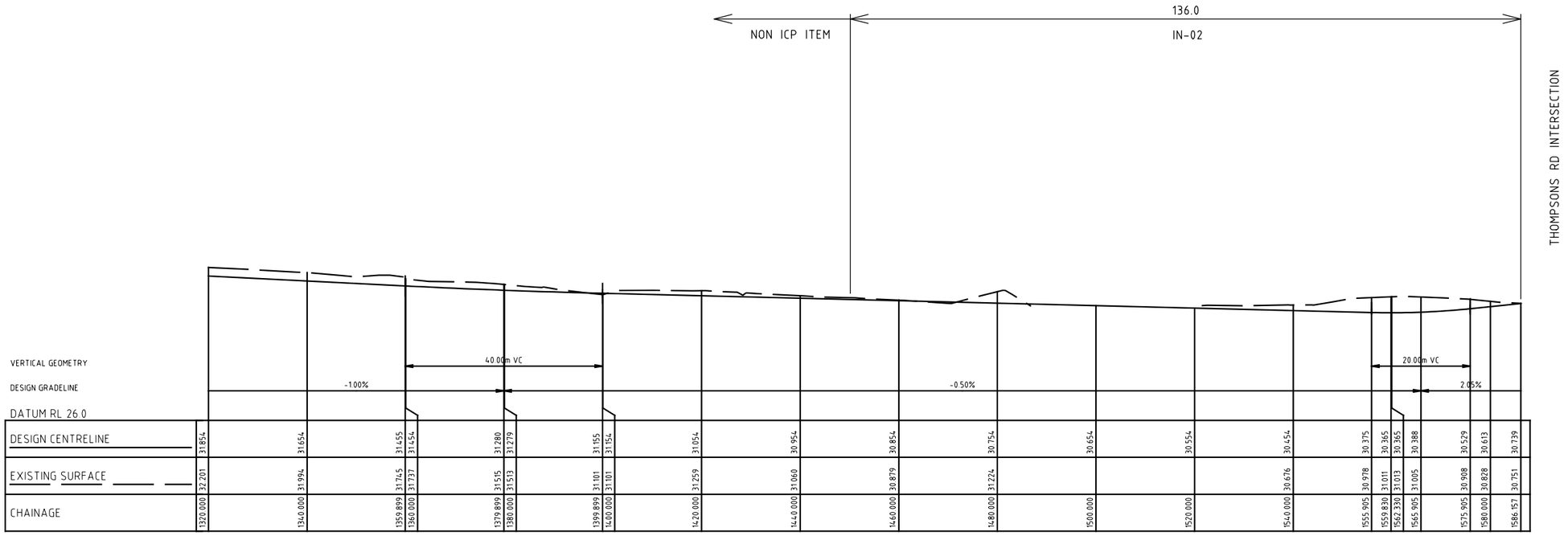
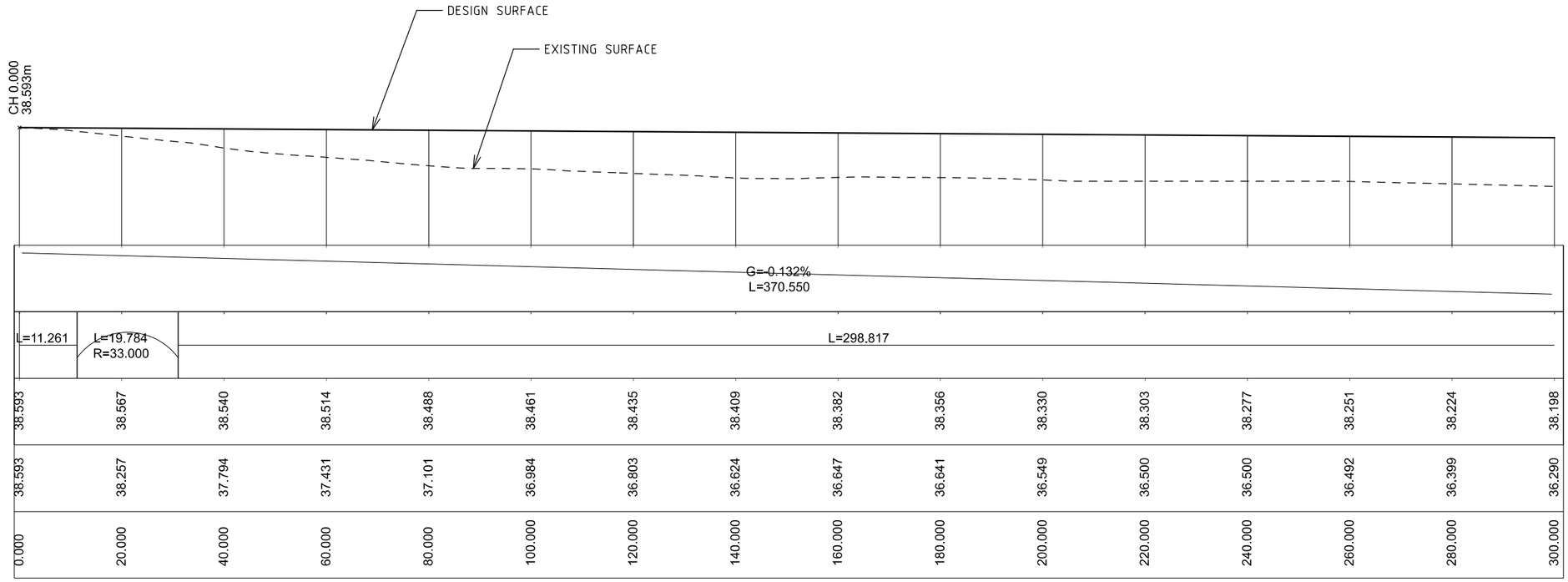

NON-ICP ITEM
VERTICAL GEOMETRY
40.00m VC
DESIGN GRADELINE
-0.50%
-1.00%
DATUM RL 27.5

| | | |


136.0
NON ICP ITEM
IN-02
THOMPSONS RD INTERSECTION
VERTICAL GEOMETRY
DESIGN GRADELINE
DATUM RL 26.0
40.00m VC
20.00m VC
-1.00%
-0.50%
2.05%

| | | |



LONGITUDINAL SECTION – SUP–01–1

H 1:1000 V 1:200

FINAL

ISSUE	APP'D	DATE	AMENDMENT
B	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
A	JM	01.05.24	FINAL CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

FILE: 30043407--5007.dgn

Victorian Planning Authority

SCALE OF METRES HOR 0 10 20 VER 0 2 4

CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

LONGITUDINAL SECTION
SUP-01 - SHARED USE PATH - SHEET 1

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
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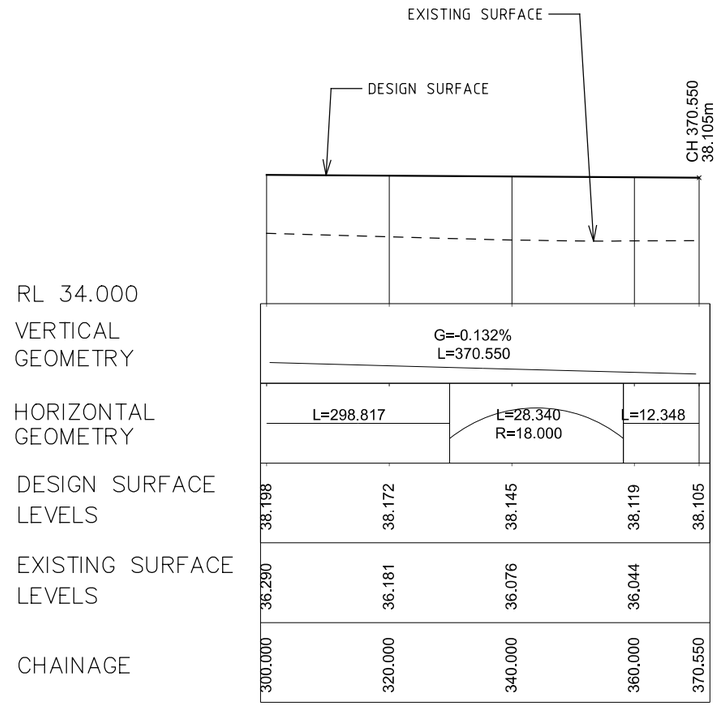

LONGITUDINAL SECTION – SUP–01–1

H 1:1000 V 1:200

FINAL

ISSUE	APP'D	DATE	AMENDMENT
B	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
A	JM	01.05.24	FINAL CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

FILE: 30043407--5008.dgn

Victorian Planning Authority

SCALE OF METRES

HOR 0 10 20

VER 0 2 4

CROSSKELL PSP

VICTORIAN PLANNING AUTHORITY

LONGITUDINAL SECTION

SUP-01 - SHARED USE PATH - SHEET 2

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	-	-5008	B

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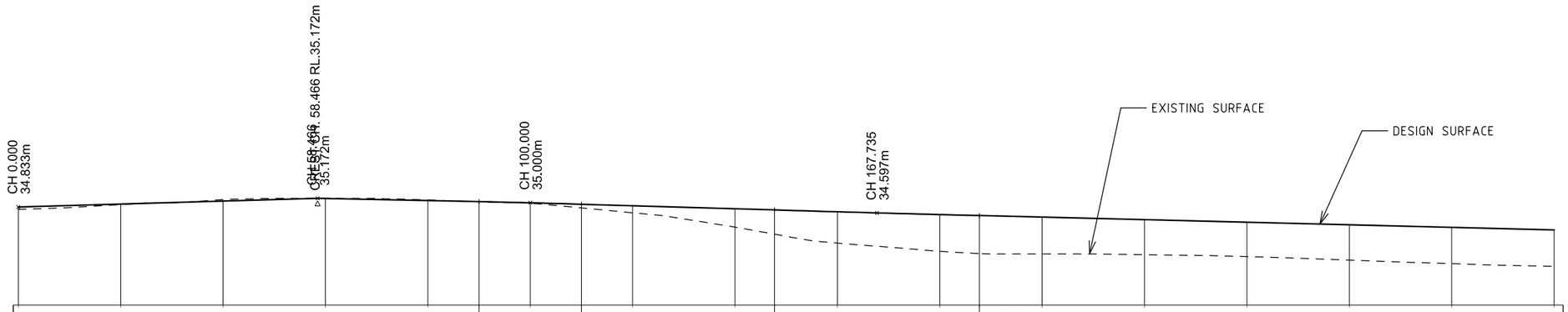

RL 31.000																						
VERTICAL GEOMETRY	G=0.579% L=58.466			G=-0.414% L=31.534		L=20.000 K=110.3		G=-0.595% L=37.736		L=40.000 K=420.9			G=-0.500% L=358.451									
HORIZONTAL GEOMETRY	L=87.304					L=26.126 R=-30.000							L=700.115									
DESIGN SURFACE LEVELS	34.833	34.949	35.065	35.165	35.083	35.041	34.995	34.941	34.881	34.762	34.716	34.645	34.536	34.497	34.436	34.336	34.236	34.136	34.036	33.936		
EXISTING SURFACE LEVELS	34.740	34.924	35.122	35.171	35.107	35.037	34.983	34.797	34.605	34.046	33.768	33.422	33.099	33.015	33.000	32.969	32.894	32.754	32.615	32.511		
CHAINAGE	0.000	20.000	40.000	60.000	80.000	90.000	100.000	110.000	120.000	140.000	147.735	160.000	180.000	187.735	200.000	220.000	240.000	260.000	280.000	300.000		

LONGITUDINAL SECTION – SUP–01–2

H 1:1000 V 1:200

FINAL

ISSUE	APP'D	DATE	AMENDMENT
B	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
A	JM	01.05.24	FINAL CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

FILE: 30043407--5009.dgn

Victorian Planning Authority

SCALE OF METRES HOR 0 10 20 VER 0 2 4

CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

LONGITUDINAL SECTION
SUP-01 - SHARED USE PATH - SHEET 3

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	-	-5009	B

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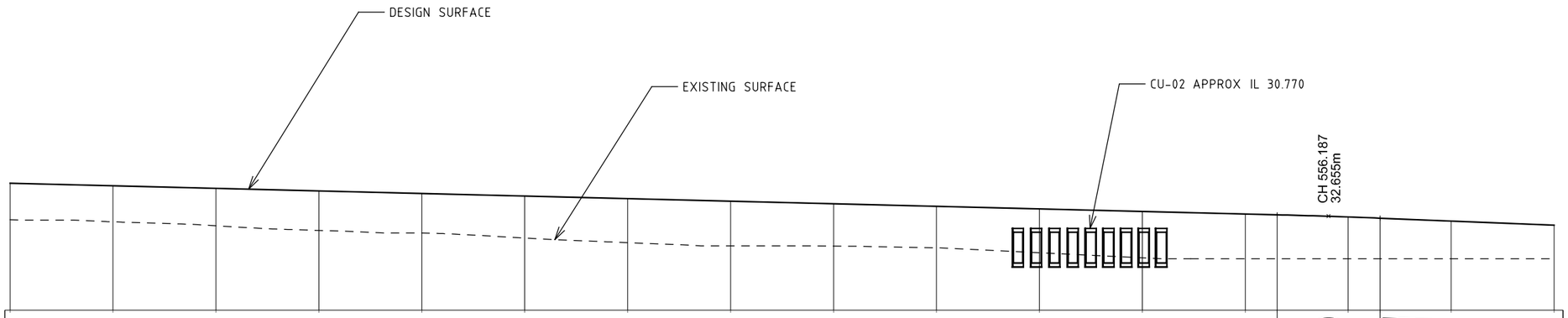

RL 29.000

VERTICAL GEOMETRY: G=-0.500% L=358.451 | L=20.000 K=64.2 | G=-0.811% L=247.358

HORIZONTAL GEOMETRY: L=700.115

CHAINAGE	DESIGN SURFACE LEVELS	EXISTING SURFACE LEVELS
300.000	33.936	32.511
320.000	33.836	32.431
340.000	33.736	32.278
360.000	33.636	32.099
380.000	33.536	31.999
400.000	33.436	31.806
420.000	33.336	31.622
440.000	33.236	31.500
460.000	33.136	31.492
480.000	33.036	31.423
500.000	32.936	31.232
520.000	32.836	31.037
540.000	32.736	31.000
546.187	32.705	31.000
560.000	32.621	31.000
566.187	32.574	31.000
580.000	32.462	31.000
600.000	32.299	31.000

LONGITUDINAL SECTION – SUP–01–2

H 1:1000 V 1:200

FINAL

ISSUE	APP'D	DATE	AMENDMENT
B	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
A	JM	01.05.24	FINAL CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

FILE: 30043407--5010.dgn

Victorian Planning Authority

SCALE OF METRES HOR 0 10 20 VER 0 2 4

CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

LONGITUDINAL SECTION
SUP-01 - SHARED USE PATH - SHEET 4

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
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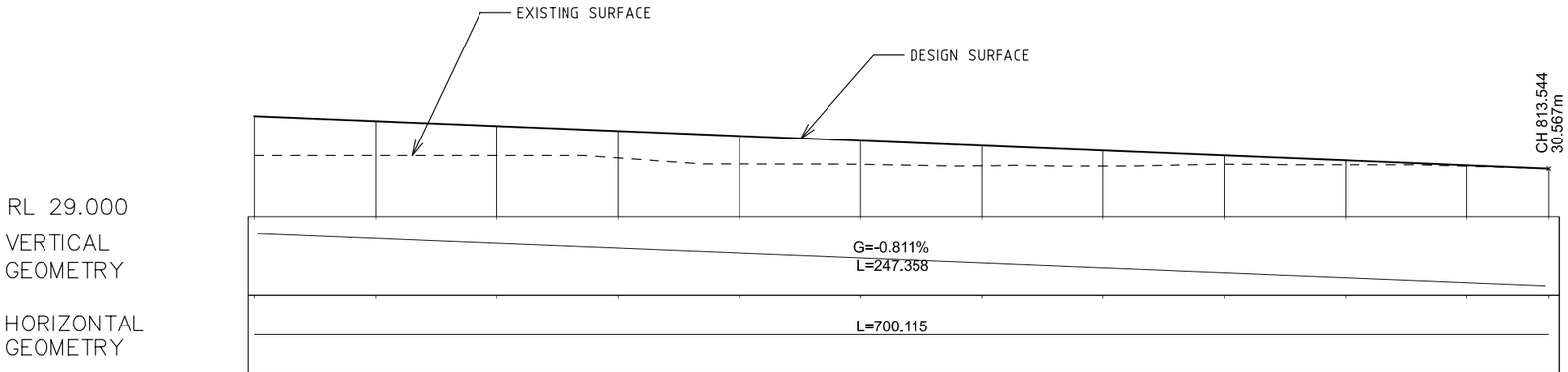

RL 29.000												
VERTICAL GEOMETRY												
HORIZONTAL GEOMETRY												
DESIGN SURFACE LEVELS	32.299	32.137	31.975	31.813	31.650	31.488	31.326	31.164	31.001	30.839	30.677	30.567
EXISTING SURFACE LEVELS	31.000	31.000	31.000	30.920	30.720	30.707	30.660	30.649	30.705	30.696	30.646	30.567
CHAINAGE	600.000	620.000	640.000	660.000	680.000	700.000	720.000	740.000	760.000	780.000	800.000	813.544

LONGITUDINAL SECTION – SUP–01–2

H 1:1000 V 1:200

FINAL

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ISSUE	APP'D	DATE	AMENDMENT
B	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
A	JM	01.05.24	FINAL CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

FILE: 30043407--5011.dgn

Victorian Planning Authority

SCALE OF METRES
HOR 0 10 20
VER 0 2 4

CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

LONGITUDINAL SECTION
SUP-01 - SHARED USE PATH - SHEET 5

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
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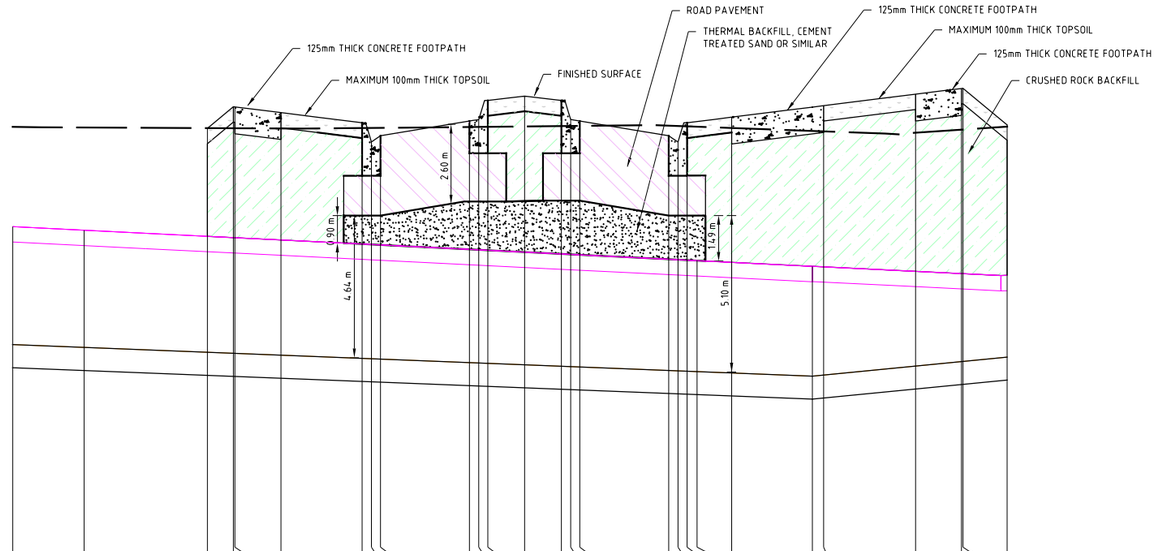
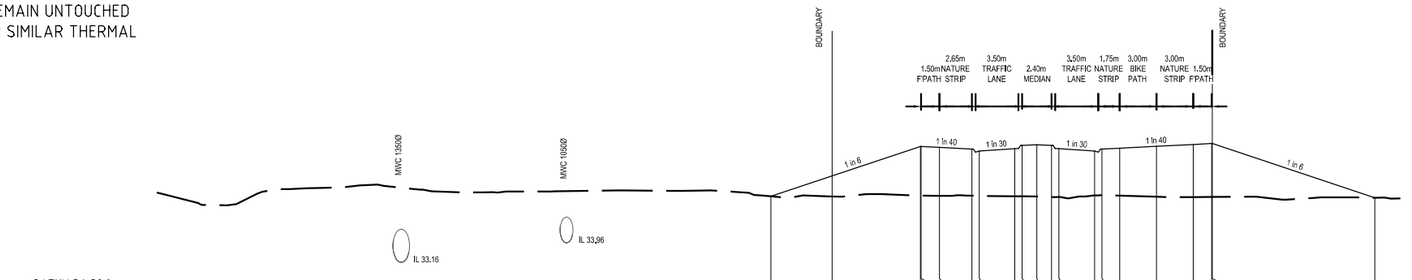

125mm THICK CONCRETE FOOTPATH
MAXIMUM 100mm THICK TOPSOIL
FINISHED SURFACE
ROAD PAVEMENT
THERMAL BACKFILL, CEMENT TREATED SAND OR SIMILAR
125mm THICK CONCRETE FOOTPATH
MAXIMUM 100mm THICK TOPSOIL
125mm THICK CONCRETE FOOTPATH
CRUSHED ROCK BACKFILL
2.60 m
0.90 m
1.49 m
4.64 m
5.10 m

DATUM RL 32.0

| | | |

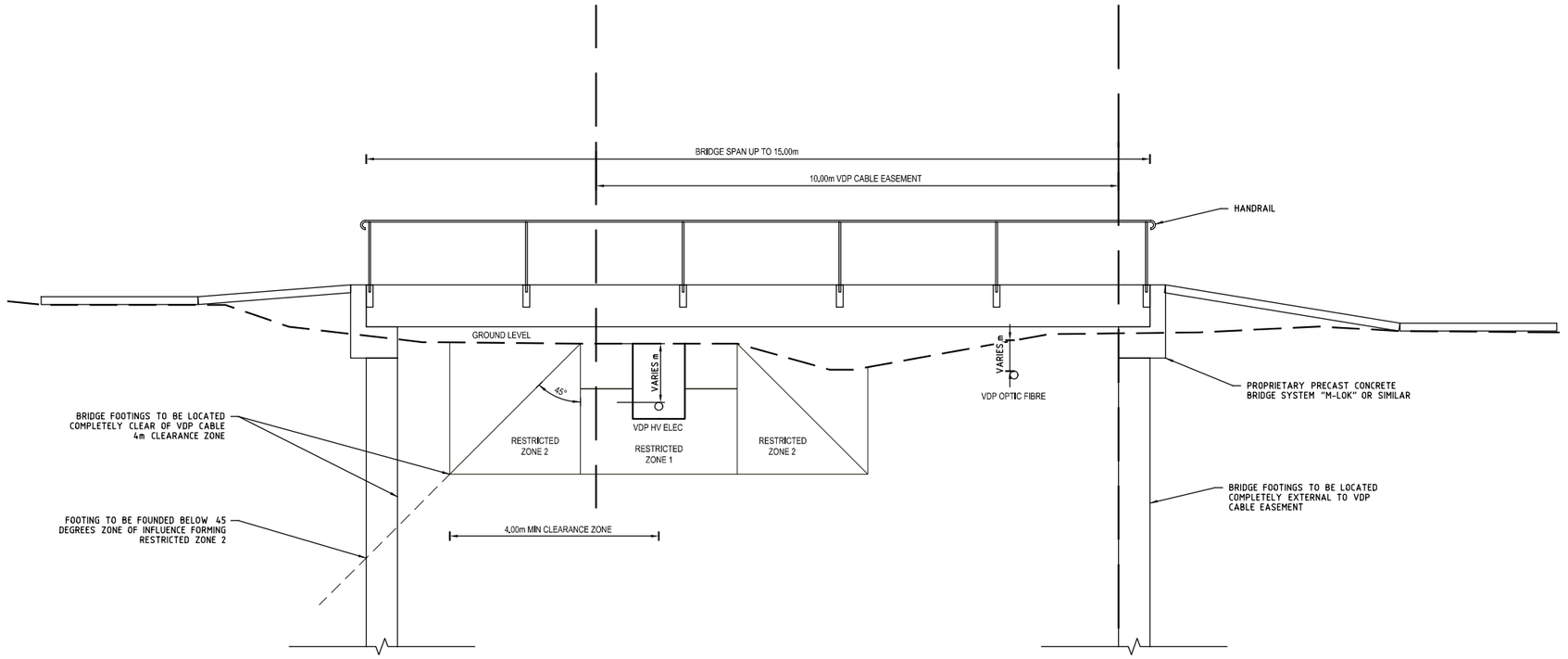
PROPOSED CONSTRUCTION METHODOLOGY

1. EXCAVATE EASEMENT CROSSING DOWN TO EXISTING POLYMERIC PROTECTIVE TILES ABOVE VDP CABLES. EXISTING POLYMERIC TILES AND BACKFILL BELOW TO REMAIN UNTOUCHED
2. IN TRAFFICABLE AREAS BACKFILL WITH CEMENT TREATED SAND OR SIMILAR THERMAL BACKFILL TO ROAD PAVEMENT SUBGRADE LEVEL
3. IN NON TRAFFICABLE AREAS BACKFILL WITH CRUSHED ROCK

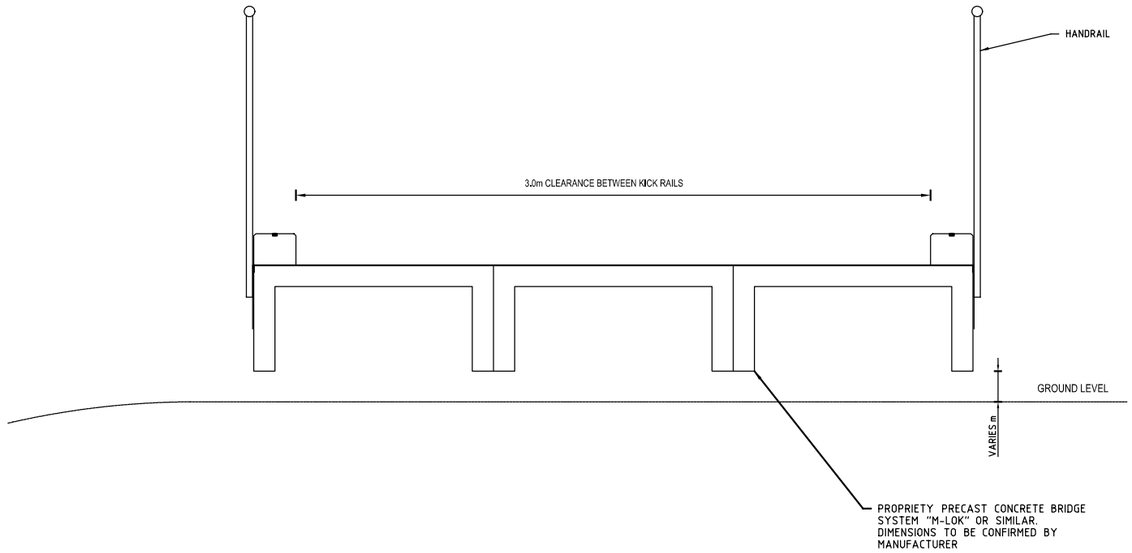


DATUM R.L.32.0

| | | |



INDICATIVE SHARED PATH TYPICAL SECTIONS
N.T.S



INDICATIVE SHARED PATH ELEVATION
N.T.S

FINAL

ISSUE	APP'D	DATE	AMENDMENT
B	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
A	JM	01.05.24	FINAL CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD
APPROVED J MACKIE
CAT:
PROJ:
FILE: 30043407--5014.dgn

Victorian Planning Authority

SCALE OF METRES
HOR
VER

CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

TYPICAL DETAILS (SUP-03, SUP-04, SUP-05)
SHARED USE PATH VDP CROSSING

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	-	-5014	B

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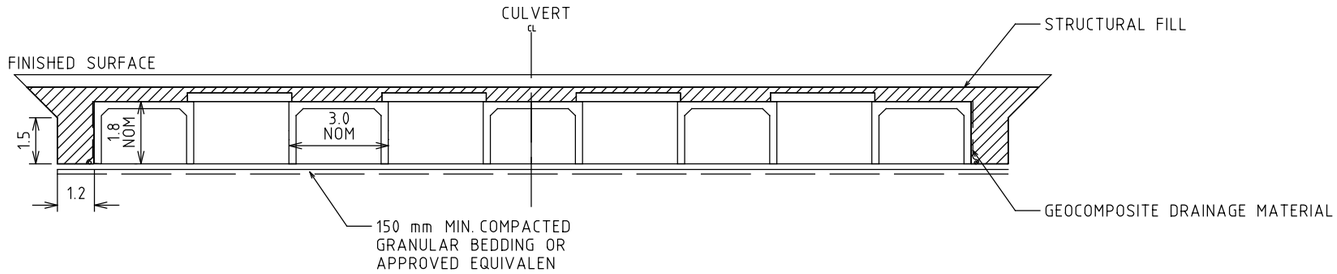
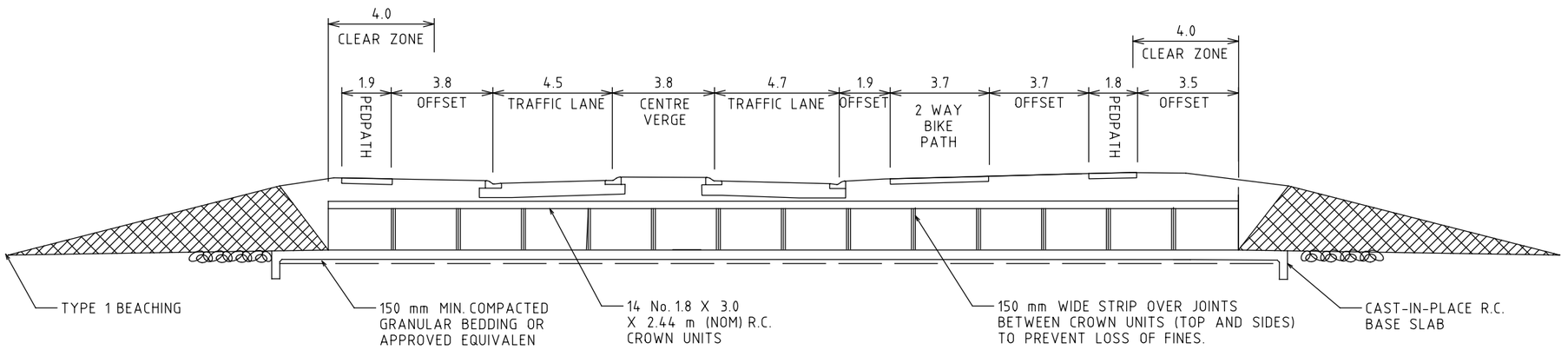


SECTION ELEVATION
CULVERT CU-01 B-B



SIDE ELEVATION
CULVERT CU-01 A-A

FINAL

ISSUE	APP'D	DATE	AMENDMENT
B	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
A	JM	01.05.25	FINAL CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD
APPROVED J MACKIE
CAT:
PROJ:
FILE: 30043407--5015.dgn

Victorian Planning Authority

SCALE OF METRES
HOR 0 2 4
VER 0 2 4

CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

BOX CULVERT 1800 X 3000
TYPICAL DETAILS (CU-01)

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	-	-5015	B

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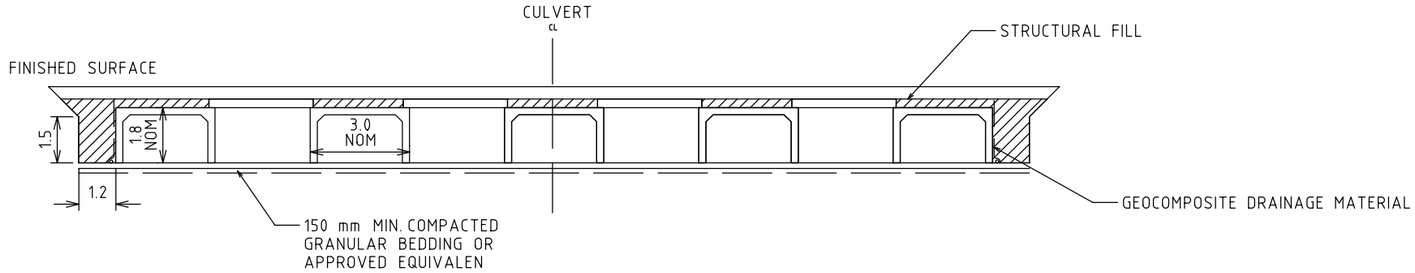
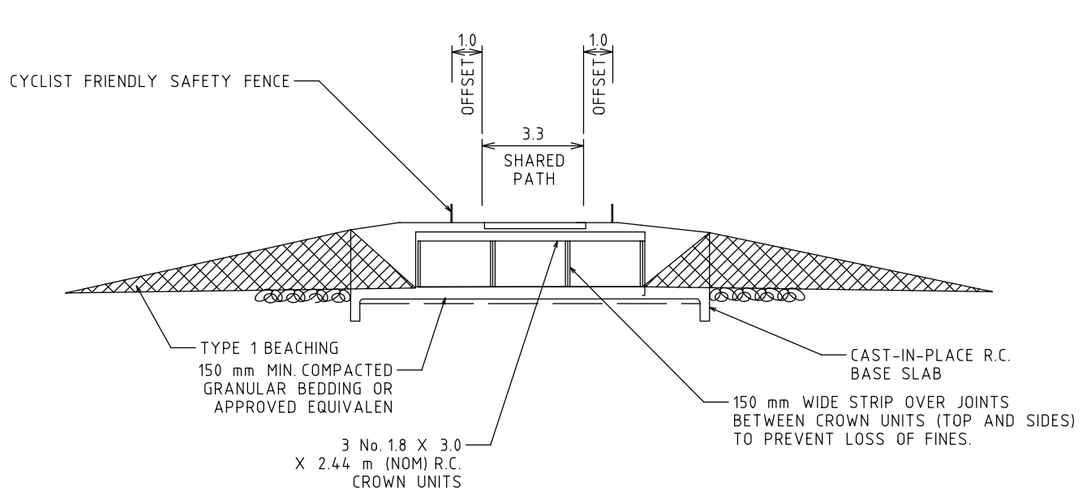


SECTION ELEVATION
CULVERT CU-02 B-B



SIDE ELEVATION
CULVERT CU-02 A-A

FINAL

ISSUE	APP'D	DATE	AMENDMENT
B	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
A	JM	01.05.26	FINAL CONCEPT DESIGN

GENERAL NOTES

SMEC Member of the Surbana Jurong Group

DESIGNED A GREENWOOD

APPROVED J MACKIE

CAT:

PROJ:

FILE: 30043407--5016.dgn

Victorian Planning Authority

SCALE OF METRES
HOR 0 2 4
VER 0 2 4

CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

BOX CULVERT 1800 X 3000
TYPICAL DETAILS (CU-02)

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	-	-5016	B

23/08/2024 5:37:39 PM Default 30043407--5016.dgn

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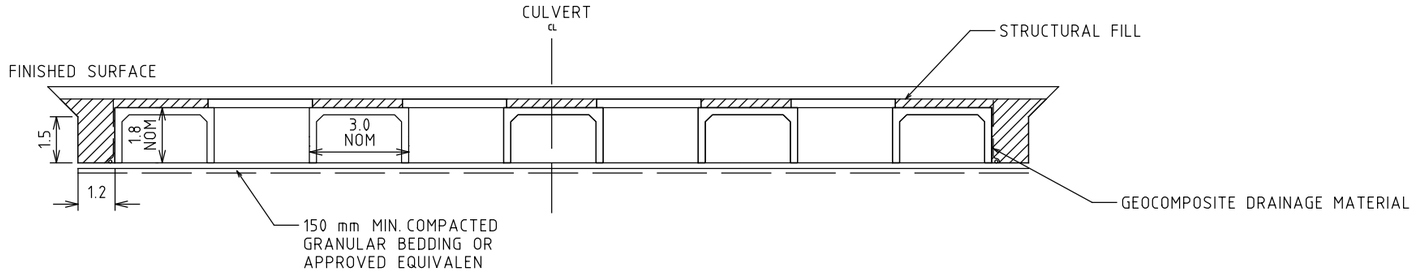
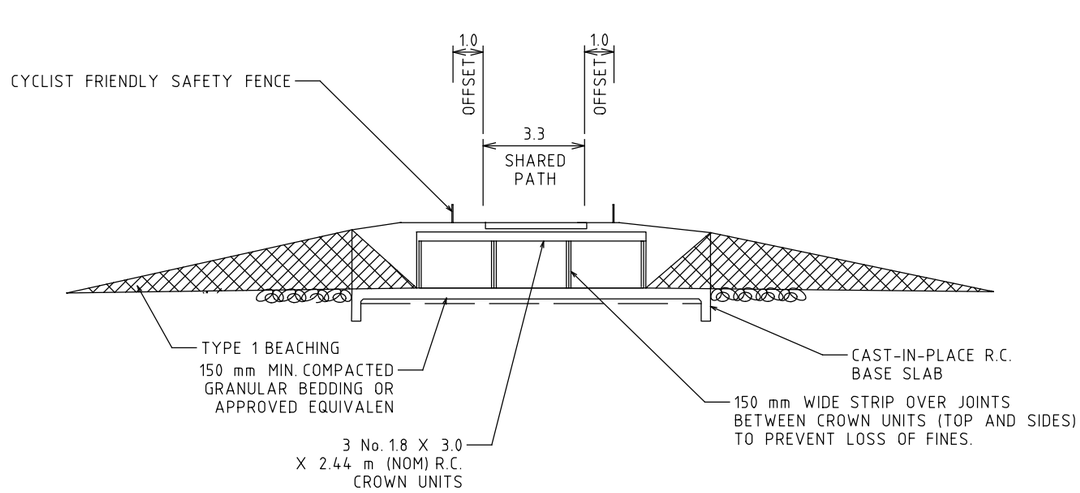


SECTION ELEVATION
CULVERT CU-03 B-B



SIDE ELEVATION
CULVERT CU-03 A-A

FINAL

ISSUE	APP'D	DATE	AMENDMENT
B	JM	26.07.24	CHANGES BASED ON STAKEHOLDER FEEDBACK
A	JM	01.05.27	FINAL CONCEPT DESIGN

GENERAL NOTES

SMEC
Member of the Surbana Jurong Group

DESIGNED
A GREENWOOD

APPROVED
J MACKIE

CAT:
PROJ:
FILE: 30043407--5017.dgn

Victorian Planning Authority

SCALE OF METRES
HOR 0 2 4
VER 0 2 4

CROSSKELL PSP
VICTORIAN PLANNING AUTHORITY

BOX CULVERT 1800 X 3000
TYPICAL DETAILS (CU-03)

FILE NO.	CONTRACT NO.	SHEET NO.	DRAWING NO.	ISSUE
30043407	-	-	-5017	B

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HD16335 Standard VR PDF SMEC.pltcfg mscol2.tbl V:\ Vault\Projects\3004\30043407\110 CADD\CAD\DRAWINGS\30043407--5017.dgn

Appendix B Cost Estimates

Croskell PSP - ICP - Interim Costs Summary

Project	Description	Estimated Cost
IN-01	Thompsons Road & Future Bray Blvd & Connector Road	$ 2,774,590.86
IN-02	Thompsons Road & William Thwaites Blvd & Casey Fields Blvd	$ 2,986,223.21
IN-03	Thompsons Road & Wheelers Park Dr & Connector Road	$ 2,516,981.52
IN-04	Narre-Warren Cranbourne Road & Connector Road	$ 2,700,643.13
IN-05	Berwick Cranbourne Road & Connector Road	$ 2,573,597.02
IN-06	Casey Fields Boulevard & Linsell Boulevard	$ 1,846,909.20
	TOTAL INTERSECTION COST	$ 15,398,944.93
PED-01	Pedestrian Crossing on Narre Warren - Cranbourne Road	$ 392,048.36
PED-02	Pedestrian Crossing on Berwick - Cranbourne Road	$ 394,999.14
	TOTAL PEDESTRIAN CROSSING COST	$ 787,047.50
SUP-01	Shared Use Path - Melbourne Water Pipe Track	$ 3,069,827.01
SUP-02	Shared Use Path along Thompsons Road	$ 559,627.01
	TOTAL SHARED USE PATH COST	$ 3,629,454.02
CU01	Culvert - Casey Fields Blvd (RD-01) over constructed waterway	$ 2,614,082.61
CU02	Culvert - Shared Use Path (SUP-01) over constructed waterway	$ 849,295.73
CU03	Culvert - Shared Use Path (SUP-02) over constructed waterway	$ 849,295.73
	TOTAL CULVERT COST	$ 4,312,674.07

RD-01	Casey Fields Boulevard	$ 9,013,760.77
	TOTAL ROAD SECTION COST	$ 9,013,760.77

RD-01(VDP)	Casey Fields Boulevard VDP Crossing	$ 344,780.50
SUP-03	Shared Use Path VDP Crossing	$ 343,382.75
SUP-04	Shared Use Path VDP Crossing	$ 343,382.75
SUP-05	Shared Use Path VDP Crossing	$ 343,382.75
	TOTAL VDP CROSSINGS COST	$ 1,374,928.75

	TOTAL PROJECT COST	$ 34,516,810.04

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IN-01 - Thompsons Road & Future Bray Blvd & Connector Road
Intersection - Primary - Connector Intersection (Benchmark Item 7)

Indexation factor for VPA benchmark items (July 2024): 1.29
Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	8420	m2	4.96	1.29	$ 53,872.89	Sum of pavement, paths and landscape areas
	1.2	Earthworks	2950	m3	40.52	1.29	$ 154,212.91	Excavation depths 735mm for primary arterial pavements, 535mm collector arterial pavements, 200mm traffic island and paths
Road Pavement	2.1	Primary Arterial Pavement	1836	m2	186.26	1.29	$ 441,145.63	
	2.2	Collector Arterial Pavement	2428	m2	112.44	1.29	$ 352,175.57	
	2.3	Subgrade Preparation	957	m2	16.16	1.29	$ 19,955.30	20% of pavement area
	2.4	Raised Priority Crossing - asphalt	60	m2	78	1.06	$ 4,957.51	Hot bituminous concrete including tack coat: 50mm thick multiplied by 3 (Rawlinsons 2023)
	2.5	Raised Priority Crossing - surface treatment	60	m2	21.5	1.06	$ 1,366.49	Thermoplastic marking of bitumen paving (Rawlinsons 2023)
Concrete Works	3.1	Kerb and Channel	1072	m	60.9	1.29	$ 84,214.03	
	3.2	Traffic Island	689	m2	84.07	1.29	$ 74,757.52	
	3.3	SUP/footpath	529	m2	73.63	1.29	$ 50,285.67	
	3.4	Cycle Path	474	m2	91.94	1.29	$ 56,217.63	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	55	m	197.96	1.29	$ 14,045.26	25% of benchmark item (one leg)
	4.2	Drainage Pipe 375mm CR Bfilled	0	m	282.96	1.29	$ -	25% of benchmark item (one leg)
	4.3	Drainage Pipe 450mm CR Bfilled	114	m	334.33	1.29	$ 49,166.57	25% of benchmark item (one leg)
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	25% of benchmark item (one leg)
	4.5	Drainage - Pits	7	No.	2806.1	1.29	$ 25,339.08	25% of benchmark item (one leg)
	4.6	Drainage - Subsoil Drainage	1072	m	43.4	1.29	$ 60,014.60	Based on total kerb length
Traffic	5.1	Traffic Signals	1	Item/ per leg	128786.34	1.29	$ 166,134.38	
Landscape	6.1	Trees	13	No.	363.01	1.29	$ 6,087.68	25% of benchmark item (one leg)
	6.2	Landscaping	2463	m2	25.16	1.29	$ 79,940.11	
	6.3	Topsoil Seeding	2463	m2	8.44	1.29	$ 26,816.16	
Street Lighting	7.1	Street Lighting	1	Item/ per leg	55617.74	1.29	$ 71,746.88	
Utilities	8.1	Allowance for utility services protection	1	Item	30000	1.00	$ 30,000.00	
Miscellaneous	9.1	Linemarking	4738	m2 of pavement	4.09	1.29	$ 24,998.16	
	9.2	Regulatory Signage	4	Item	380.39	1.29	$ 1,962.81	25% of benchmark item (one leg)
	9.4	Landscape Maintenance (intersections)	0.25	Item	88131.43	1.29	$ 28,422.39	25% of benchmark item (one leg)
	9.6	Tactile Pavers (Hazard only)	6	Item	319.78	1.29	$ 2,475.10	25% of benchmark item (one leg)
Other	10.1	Demolition of existing concrete kerbs, footpath, islands	69	m3	230	1.06	$ 16,845.80	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
Delivery	11.1	Council Fees	1	%	3.25	-	$ 61,657.57	
	11.2	VicRoads Fees	1	%	1	-	$ 18,971.56	
	11.3	Traffic Management	1	%	10	-	$ 189,715.61	
	11.4	Environmental Management	1	%	0.5	-	$ 9,485.78	
	11.5	Survey/Design	1	%	5	-	$ 94,857.81	
	11.6	Supervision and Project Management	1	%	9	-	$ 170,744.05	
	11.7	Site Establishment	1	%	2.5	-	$ 47,428.90	
	11.8	Contingency	1	%	15	-	$ 284,573.42	
Total		Excluding Delivery					$ 1,897,156.14	
		Including Delivery					$ 2,774,590.86	

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IN-02 - Thompsons Rd & William Thwaites Blvd & Casey Fields Blv

Intersection - Primary - Connector Intersection (Benchmark Item 7)

Indexation factor for VPA benchmark items (July 2024): 1.29

Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	9152	m2	4.96	1.29	$ 58,558.16	Sum of pavement, paths and landscape areas
	1.2	Earthworks	2400	m3	40.52	1.29	$ 125,447.57	Excavation depths 735mm for primary arterial pavements, 535mm collector arterial pavements, 200mm traffic island and paths
Road Pavement	2.1	Primary Arterial Pavement	1198	m2	186.26	1.29	$ 287,849.93	
	2.2	Collector Arterial Pavement	2391	m2	112.44	1.29	$ 346,808.81	
	2.3	Subgrade Preparation	720	m2	16.16	1.29	$ 15,000.88	20% of pavement area
	2.4	Raised Priority Crossing - asphalt	60	m2	78	1.06	$ 4,957.51	Hot bituminous concrete including tack coat: 50mm thick multiplied by 3 (Rawlinsons 2023)
	2.5	Raised Priority Crossing - surface treatment	60	m2	21.5	1.06	$ 1,366.49	Thermoplastic marking of bitumen paving (Rawlinsons 2023)
Concrete Works	3.1	Kerb and Channel	967	m	60.9	1.29	$ 75,968.49	
	3.2	Traffic Island	242	m2	84.07	1.29	$ 26,244.97	
	3.3	SUP/footpath	626	m2	73.63	1.29	$ 59,459.17	
	3.4	Cycle Path	453	m2	91.94	1.29	$ 53,726.98	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	55	m	197.96	1.29	$ 14,045.26	25% of benchmark item (one leg)
	4.2	Drainage Pipe 375mm CR Bfilled	0	m	282.96	1.29	$ -	25% of benchmark item (one leg)
	4.3	Drainage Pipe 450mm CR Bfilled	114	m	334.33	1.29	$ 49,166.57	25% of benchmark item (one leg)
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	25% of benchmark item (one leg)
	4.5	Drainage - Pits	7	No.	2806.1	1.29	$ 25,339.08	25% of benchmark item (one leg)
	4.6	Drainage - Subsoil Drainage	967	m	43.4	1.29	$ 54,138.46	Based on total kerb length
Traffic	5.1	Traffic Signals	1	Item/ per leg	128786.34	1.29	$ 166,134.38	
Landscape	6.1	Trees	13	No.	363.01	1.29	$ 6,087.68	25% of benchmark item (one leg)
	6.2	Landscaping	4242	m2	25.16	1.29	$ 137,680.05	
	6.3	Topsoil Seeding	4242	m2	8.44	1.29	$ 46,185.20	
Street Lighting	7.1	Street Lighting	1	Item/ per leg	55617.74	1.29	$ 71,746.88	
Utilities	8.1	Allowance for utility services protection	1	Item	30000	1.00	$ 30,000.00	
Miscellaneous	9.1	Linemarking	4042	m2 of pavement	4.09	1.29	$ 21,326.00	
	9.2	Regulatory Signage	4	Item	380.39	1.29	$ 1,962.81	25% of benchmark item (one leg)
	9.4	Landscape Maintenance (intersections)	0.25	Item	88131.43	1.29	$ 28,422.39	25% of benchmark item (one leg)
	9.6	Tactile Pavers (Hazard only)	6	Item	319.78	1.29	$ 2,475.10	25% of benchmark item (one leg)
Other	10.1	Demolition of existing concrete kerbs, footpath, islands	69	m3	230	1.06	$ 16,774.50	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
	10.2	Dewatering dam	1737	m2	72.5	1.06	$ 133,399.95	Dewatering - deep system (to reduce water level by over 1000mm) (Rawlinsons 2023)
	10.3	Additional earthworks to fill dam	3474	m3	40.52	1.29	$ 181,588.76	Assumed 2m depth of fill
Delivery	11.1	Council Fees	1	%	3.25	-	$ 66,360.52	
	11.2	VicRoads Fees	1	%	1	-	$ 20,418.62	
	11.3	Traffic Management	1	%	10	-	$ 204,186.20	
	11.4	Environmental Management	1	%	0.5	-	$ 10,209.31	
	11.5	Survey/Design	1	%	5	-	$ 102,093.10	
	11.6	Supervision and Project Management	1	%	9	-	$ 183,767.58	
	11.7	Site Establishment	1	%	2.5	-	$ 51,046.55	
	11.8	Contingency	1	%	15	-	$ 306,279.30	
Total		Excluding Delivery					$ 2,041,862.02	
		Including Delivery					$ 2,986,223.21	

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IN-03 - Thompsons Road & Wheelers Park Dr & Connector Road

Intersection - Primary - Connector Intersection (Benchmark Item 7)

Indexation factor for VPA benchmark items (July 2024): 1.29

Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	8183	m2	4.96	1.29	$ 52,355.80	Sum of pavement, paths and landscape areas
	1.2	Earthworks	2535	m3	40.52	1.29	$ 132,484.68	Excavation depths 735mm for primary arterial pavements, 535mm collector arterial pavements, 200mm traffic island and paths
Road Pavement	2.1	Primary Arterial Pavement	1164	m2	186.26	1.29	$ 279,680.57	
	2.2	Collector Arterial Pavement	2477	m2	112.44	1.29	$ 359,282.91	
	2.3	Subgrade Preparation	740	m2	16.16	1.29	$ 15,420.43	20% of pavement area
	2.4	Raised Priority Crossing - asphalt	60	m2	78	1.06	$ 4,957.51	Hot bituminous concrete including tack coat: 50mm thick multiplied by 3 (Rawlinsons 2023)
	2.5	Raised Priority Crossing - surface treatment	60	m2	21.5	1.06	$ 1,366.49	Thermoplastic marking of bitumen paving (Rawlinsons 2023)
Concrete Works	3.1	Kerb and Channel	932	m	60.9	1.29	$ 73,232.72	
	3.2	Traffic Island	905	m2	84.07	1.29	$ 98,108.48	
	3.3	SUP/footpath	507	m2	73.63	1.29	$ 48,156.23	
	3.4	Cycle Path	474	m2	91.94	1.29	$ 56,217.63	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	55	m	197.96	1.29	$ 14,045.26	25% of benchmark item (one leg)
	4.2	Drainage Pipe 375mm CR Bfilled	0	m	282.96	1.29	$ -	25% of benchmark item (one leg)
	4.3	Drainage Pipe 450mm CR Bfilled	114	m	334.33	1.29	$ 49,166.57	25% of benchmark item (one leg)
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	25% of benchmark item (one leg)
	4.5	Drainage - Pits	7	No.	2806.1	1.29	$ 25,339.08	25% of benchmark item (one leg)
	4.6	Drainage - Subsoil Drainage	932	m	43.4	1.29	$ 52,188.83	Based on total kerb length
Traffic	5.1	Traffic Signals	1	Item/ per leg	128786.34	1.29	$ 166,134.38	
Landscape	6.1	Trees	13	No.	363.01	1.29	$ 6,087.68	25% of benchmark item (one leg)
	6.2	Landscaping	2656	m2	25.16	1.29	$ 86,204.20	
	6.3	Topsoil Seeding	2656	m2	8.44	1.29	$ 28,917.47	
Street Lighting	7.1	Street Lighting	1	Item/ per leg	55617.74	1.29	$ 71,746.88	
Utilities	8.1	Allowance for utility services protection	1	Item	30000	1.00	$ 30,000.00	
Miscellaneous	9.1	Linemarking	4115	m2 of pavement	4.09	1.29	$ 21,711.15	
	9.2	Regulatory Signage	4	Item	380.39	1.29	$ 1,962.81	25% of benchmark item (one leg)
	9.4	Landscape Maintenance (intersections)	0.25	Item	88131.43	1.29	$ 28,422.39	25% of benchmark item (one leg)
	9.6	Tactile Pavers (Hazard only)	6	Item	319.78	1.29	$ 2,475.10	25% of benchmark item (one leg)
Other	10.1	Demolition of existing concrete kerbs, footpath, islands	63	m3	230	1.06	$ 15,347.75	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
Delivery	11.1	Council Fees	1	%	3.25	-	$ 55,932.92	
	11.2	VicRoads Fees	1	%	1	-	$ 17,210.13	
	11.3	Traffic Management	1	%	10	-	$ 172,101.30	
	11.4	Environmental Management	1	%	0.5	-	$ 8,605.07	
	11.5	Survey/Design	1	%	5	-	$ 86,050.65	
	11.6	Supervision and Project Management	1	%	9	-	$ 154,891.17	
	11.7	Site Establishment	1	%	2.5	-	$ 43,025.33	
	11.8	Contingency	1	%	15	-	$ 258,151.95	
Total		Excluding Delivery					$ 1,721,013.00	
		Including Delivery					$ 2,516,981.52	

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IN-04 - Narre-Warren Cranbourne Road & Connector Road
Intersection - Primary - Connector Intersection (Benchmark Item 7)

Indexation factor for VPA benchmark items (July 2024): 1.29
Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	7199	m2	4.96	1.29	$ 46,064.19	Sum of pavement, paths and landscape areas
	1.2	Earthworks	1986	m3	40.52	1.29	$ 103,788.16	Excavation depths 735mm for primary arterial pavements, 535mm collector arterial pavements, 200mm traffic island and paths
Road Pavement	2.1	Primary Arterial Pavement	625	m2	186.26	1.29	$ 150,172.13	
	2.2	Collector Arterial Pavement	2107	m2	112.44	1.29	$ 305,615.29	
	2.3	Subgrade Preparation	522	m2	16.16	1.29	$ 10,884.26	20% of pavement area
	2.4	Raised Priority Crossing - asphalt	60	m2	78	1.06	$ 4,957.51	Hot bituminous concrete including tack coat: 50mm thick multiplied by 3 (Rawlinsons 2023)
	2.5	Raised Priority Crossing - surface treatment	60	m2	21.5	1.06	$ 1,366.49	Thermoplastic marking of bitumen paving (Rawlinsons 2023)
Concrete Works	3.1	Kerb and Channel	820	m	60.9	1.29	$ 64,420.02	
	3.2	Traffic Island	700	m2	84.07	1.29	$ 75,950.93	
	3.3	SUP/footpath	889	m2	73.63	1.29	$ 84,439.62	
	3.4	Cycle Path	468	m2	91.94	1.29	$ 55,506.02	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	55	m	197.96	1.29	$ 14,045.26	25% of benchmark item (one leg)
	4.2	Drainage Pipe 375mm CR Bfilled	0	m	282.96	1.29	$ -	25% of benchmark item (one leg)
	4.3	Drainage Pipe 450mm CR Bfilled	114	m	334.33	1.29	$ 49,166.57	25% of benchmark item (one leg)
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	25% of benchmark item (one leg)
	4.5	Drainage - Pits	7	No.	2806.1	1.29	$ 25,339.08	25% of benchmark item (one leg)
	4.6	Drainage - Subsoil Drainage	820	m	43.4	1.29	$ 45,908.52	Based on total kerb length
Traffic	5.1	Traffic Signals	1	Item/ per leg	128786.34	1.29	$ 166,134.38	
Landscape	6.1	Trees	13	No.	363.01	1.29	$ 6,087.68	25% of benchmark item (one leg)
	6.2	Landscaping	2410	m2	25.16	1.29	$ 78,219.92	
	6.3	Topsoil Seeding	2410	m2	8.44	1.29	$ 26,239.12	
Street Lighting	7.1	Street Lighting	1	Item/ per leg	55617.74	1.29	$ 71,746.88	
Utilities	8.1	Allowance for utility services protection	1	Item	30000	1.00	$ 30,000.00	
Miscellaneous	9.1	Linemarking	3200	m2 of pavement	4.09	1.29	$ 16,883.52	
	9.2	Regulatory Signage	4	Item	380.39	1.29	$ 1,962.81	25% of benchmark item (one leg)
	9.4	Landscape Maintenance (intersections)	0.25	Item	88131.43	1.29	$ 28,422.39	25% of benchmark item (one leg)
	9.6	Tactile Pavers (Hazard only)	6	Item	319.78	1.29	$ 2,475.10	25% of benchmark item (one leg)
Other	10.1	Demolition of existing concrete kerbs, footpath, islands	104	m3	230	1.06	$ 25,370.06	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
	10.2	Dewatering dam	1960	m2	72.5	1.06	$ 150,526.13	Dewatering - deep system (to reduce water level by over 1000mm) (Rawlinsons 2023)
	10.3	Additional earthworks to fill dam	3920	m3	40.52	1.29	$ 204,901.54	Assumed 2m depth of fill
Delivery	11.1	Council Fees	1	%	3.25	-	$ 60,014.29	
	11.2	VicRoads Fees	1	%	1	-	$ 18,465.94	
	11.3	Traffic Management	1	%	10	-	$ 184,659.36	
	11.4	Environmental Management	1	%	0.5	-	$ 9,232.97	
	11.5	Survey/Design	1	%	5	-	$ 92,329.68	
	11.6	Supervision and Project Management	1	%	9	-	$ 166,193.42	
	11.7	Site Establishment	1	%	2.5	-	$ 46,164.84	
	10.8	Contingency	1	%	15	-	$ 276,989.04	
Total		Excluding Delivery					$ 1,846,593.59	
		Including Delivery					$ 2,700,643.13	

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IN-05 - Berwick Cranbourne Road & Connector Road
Intersection - Primary - Connector Intersection (Benchmark Item 7)

Indexation factor for VPA benchmark items (July 2024): 1.29
Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	8015	m2	4.96	1.29	$ 51,285.45	Sum of pavement, paths and landscape areas
	1.2	Earthworks	2593	m3	40.52	1.29	$ 135,518.11	Excavation depths 735mm for primary arterial pavements, 535mm collector arterial pavements, 200mm traffic island and paths
Road Pavement	2.1	Primary Arterial Pavement	1289	m2	186.26	1.29	$ 309,714.99	
	2.2	Collector Arterial Pavement	2426	m2	112.44	1.29	$ 351,885.48	
	2.3	Subgrade Preparation	776	m2	16.16	1.29	$ 16,183.54	20% of pavement area
	2.4	Raised Priority Crossing - asphalt	60	m2	78	1.06	$ 4,957.51	Hot bituminous concrete including tack coat: 50mm thick multiplied by 3 (Rawlinsons 2023)
	2.5	Raised Priority Crossing - surface treatment	60	m2	21.5	1.06	$ 1,366.49	Thermoplastic marking of bitumen paving (Rawlinsons 2023)
Concrete Works	3.1	Kerb and Channel	1101	m	60.9	1.29	$ 86,499.59	
	3.2	Traffic Island	671	m2	84.07	1.29	$ 72,808.63	
	3.3	SUP/footpath	720	m2	73.63	1.29	$ 68,387.54	
	3.4	Cycle Path	474	m2	91.94	1.29	$ 56,217.63	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	55	m	197.96	1.29	$ 14,045.26	25% of benchmark item (one leg)
	4.2	Drainage Pipe 375mm CR Bfilled	0	m	282.96	1.29	$ -	25% of benchmark item (one leg)
	4.3	Drainage Pipe 450mm CR Bfilled	114	m	334.33	1.29	$ 49,166.57	25% of benchmark item (one leg)
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	25% of benchmark item (one leg)
	4.5	Drainage - Pits	7	No.	2806.1	1.29	$ 25,339.08	25% of benchmark item (one leg)
	4.6	Drainage - Subsoil Drainage	1101	m	43.4	1.29	$ 61,643.39	Based on total kerb length
Traffic	5.1	Traffic Signals	1	Item/ per leg	128786.34	1.29	$ 166,134.38	
Landscape	6.1	Trees	13	No.	363.01	1.29	$ 6,087.68	25% of benchmark item (one leg)
	6.2	Landscaping	2435	m2	25.16	1.29	$ 79,031.33	
	6.3	Topsoil Seeding	2435	m2	8.44	1.29	$ 26,511.31	
Street Lighting	7.1	Street Lighting	1	Item/ per leg	55617.74	1.29	$ 71,746.88	
Utilities	8.1	Allowance for utility services protection	1	Item	30000	1.00	$ 30,000.00	
Miscellaneous	9.1	Linemarking	4189	m2 of pavement	4.09	1.29	$ 22,101.58	
	9.2	Regulatory Signage	4	Item	380.39	1.29	$ 1,962.81	25% of benchmark item (one leg)
	9.4	Landscape Maintenance (intersections)	0.25	Item	88131.43	1.29	$ 28,422.39	25% of benchmark item (one leg)
	9.6	Tactile Pavers (Hazard only)	6	Item	319.78	1.29	$ 2,475.10	25% of benchmark item (one leg)
Other	10.1	Demolition of existing concrete kerbs, footpath, islands	83	m3	230	1.06	$ 20,231.73	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
Delivery	11.1	Council Fees	1	%	3.25	-	$ 57,191.04	
	11.2	VicRoads Fees	1	%	1	-	$ 17,597.24	
	11.3	Traffic Management	1	%	10	-	$ 175,972.45	
	11.4	Environmental Management	1	%	0.5	-	$ 8,798.62	
	11.5	Survey/Design	1	%	5	-	$ 87,986.22	
	11.6	Supervision and Project Management	1	%	9	-	$ 158,375.20	
	11.7	Site Establishment	1	%	2.5	-	$ 43,993.11	
	11.8	Contingency	1	%	15	-	$ 263,958.67	
Total		Excluding Delivery					$ 1,759,724.46	
		Including Delivery					$ 2,573,597.02	

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IN-06 - Casey Fields Boulevard & Linsell Boulevard

Intersection - Secondary - Connector Intersection (Benchmark Item 9)

Indexation factor for VPA benchmark items (July 2024): 1.29

Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	5937	m2	4.96	1.29	$ 37,989.49	Sum of pavement, paths and landscape areas
	1.2	Earthworks	1714	m3	40.52	1.29	$ 89,605.42	Excavation depths 635mm for secondary arterial pavements, 535mm collector arterial pavements, 200mm traffic island and paths
Road Pavement	2.1	Secondary Arterial Pavement	737	m2	133.78	1.29	$ 127,122.60	
	2.2	Collector Arterial Pavement	1715	m2	112.44	1.29	$ 248,788.62	
	2.3	Subgrade Preparation	490	m2	16.16	1.29	$ 10,218.37	20% of pavement area
	2.4	Raised Priority Crossing - asphalt	60	m2	78	1.06	$ 4,957.51	Hot bituminous concrete including tack coat: 50mm thick multiplied by 3 (Rawlinsons 2023)
	2.5	Raised Priority Crossing - surface treatment	60	m2	21.5	1.06	$ 1,366.49	Thermoplastic marking of bitumen paving (Rawlinsons 2023)
Concrete Works	3.1	Kerb and Channel	726	m	60.9	1.29	$ 57,035.29	
	3.2	Traffic Island	934	m2	84.07	1.29	$ 101,286.32	
	3.3	SUP/footpath	401	m2	73.63	1.29	$ 38,121.57	
	3.4	Cycle Path	309	m2	91.94	1.29	$ 36,648.20	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	53	m	197.96	1.29	$ 13,534.53	25% of benchmark item (one leg)
	4.2	Drainage Pipe 375mm CR Bfilled	0	m	282.96	1.29	$ -	25% of benchmark item (one leg)
	4.3	Drainage Pipe 450mm CR Bfilled	135	m	334.33	1.29	$ 58,223.57	25% of benchmark item (one leg)
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	25% of benchmark item (one leg)
	4.5	Drainage - Pits	6	No.	2806.1	1.29	$ 21,719.21	25% of benchmark item (one leg)
	4.6	Drainage - Subsoil Drainage	726	m	43.4	1.29	$ 40,645.84	Based on total kerb length
Traffic	5.1	Traffic Signals	1	Item/ per leg	128786.34	1.29	$ 166,134.38	
Landscape	6.1	Trees	11	No.	363.01	1.29	$ 5,151.11	25% of benchmark item (one leg)
	6.2	Landscaping	1841	m2	25.16	1.29	$ 59,759.04	
	6.3	Topsoil Seeding	1841	m2	8.44	1.29	$ 20,046.36	
Street Lighting	7.1	Street Lighting	1	Item/ per leg	55617.74	1.29	$ 71,746.88	
Utilities	8.1	Allowance for utility services protection	1	Item	30000	1.00	$ 30,000.00	
Miscellaneous	9.1	Linemarking	2761	m2 of pavement	4.09	1.29	$ 14,566.46	
	9.2	Regulatory Signage	3	Item	380.39	1.29	$ 1,472.11	25% of benchmark item (one leg)
	9.4	Landscape Maintenance (intersections)	0.25	Item	88131.43	1.29	$ 28,422.39	25% of benchmark item (one leg)
	9.6	Tactile Pavers (Hazard only)	6	Item	319.78	1.29	$ 2,475.10	25% of benchmark item (one leg)
Other	10.1	Demolition of existing concrete kerbs, footpath, islands	84	m3	230	1.06	$ 20,509.48	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
Delivery	11.1	Council Fees	1	%	3.25	-	$ 42,495.26	
	11.2	VicRoads Fees	1	%	1	-	$ 13,075.46	
	11.3	Traffic Management	1	%	5	-	$ 65,377.32	
	114	Environmental Management	1	%	0.5	-	$ 6,537.73	
	11.5	Survey/Design	1	%	5	-	$ 65,377.32	
	11.6	Supervision and Project Management	1	%	9	-	$ 117,679.17	
	11.7	Site Establishment	1	%	2.5	-	$ 32,688.66	
	11.8	Contingency	1	%	15	-	$ 196,131.95	
Total		Excluding Delivery					$ 1,307,546.34	
		Including Delivery					$ 1,846,909.20	

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PED-01 - Pedestrian Crossing on Narre Warren - Cranbourne Road
Pedestrian Operated Signals

Indexation factor for VPA benchmark items (July 2024): 1.29
Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	950	m2	4.96	1.29	$ 6,078.48	Based on project area
	1.2	Earthworks	15	m3	40.52	1.29	$ 784.06	Excavation depth 200mm for paths
Road Pavement	2.1	Primary Arterial Pavement	0	m2	186.26	1.29	$ -	
	2.2	Collector Arterial Pavement	0	m2	112.44	1.29	$ -	
	2.3	Subgrade Preparation	0	m2	16.16	1.29	$ -	
Concrete Works	3.1	Kerb and Channel	24	m	60.9	1.29	$ 1,885.46	
	3.2	Traffic Island	0	m2	84.07	1.29	$ -	
	3.3	SUP/footpath	75	m2	73.63	1.29	$ 7,123.70	
	3.4	Cycle Path	0	m2	91.94	1.29	$ -	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	0	m	197.96	1.29	$ -	
	4.2	Drainage Pipe 375mm CR Bfilled	0	m	282.96	1.29	$ -	
	4.3	Drainage Pipe 450mm CR Bfilled	0	m	334.33	1.29	$ -	
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	
	4.5	Drainage - Pits	0	No.	2806.1	1.29	$ -	
	4.6	Drainage - Subsoil Drainage	0	m	43.4	1.29	$ -	
Traffic	5.1	Traffic Signals	1	Item/ per leg	128786.34	1.29	$ 166,134.38	Based on the cost of one leg of a primary signalised intersection
Landscape	6.1	Trees	0	No.	363.01	1.29	$ -	
	6.2	Landscaping	150	m2	25.16	1.29	$ 4,868.46	1m wide on both sides of path
	6.3	Topsoil Seeding	150	m2	8.44	1.29	$ 1,633.14	1m wide on both sides of path
Street Lighting	7.1	Street Lighting	1	Item/ per leg	55617.74	1.29	$ 71,746.88	
Miscellaneous	8.1	Linemarking	300	m2 of pavement	4.09	1.29	$ 1,582.83	
	8.2	Regulatory Signage	0	Item	380.39	1.29	$ -	
	8.3	Landscape Maintenance (intersections)	0.1	Item	88131.43	1.29	$ 11,368.95	10% of benchmark item 7 landscape maintenance
	8.4	Tactile Pavers (Hazard only)	4	Item	319.78	1.29	$ 1,650.06	
	8.5	Pedestrian fencing	12	m	102	1.06	$ 1,296.58	1200mm high fence of galvanised welded mesh roll top panels and tubular posts (Rawlinsons 2023)
Other	9.1	Demolition of existing concrete kerbs, footpath, islands	5.76	m3	230	1.06	$ 1,403.36	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
Delivery	10.1	Council Fees	1	%	3.25	-	$ 9,020.58	
	10.2	VicRoads Fees	1	%	1	-	$ 2,775.56	
	10.3	Traffic Management	1	%	5	-	$ 13,877.82	
	10.4	Environmental Management	1	%	0.5	-	$ 1,387.78	
	10.5	Survey/Design	1	%	5	-	$ 13,877.82	
	10.6	Supervision and Project Management	1	%	9	-	$ 24,980.07	
	10.7	Site Establishment	1	%	2.5	-	$ 6,938.91	
	10.8	Contingency	1	%	15	-	$ 41,633.45	
Total		Excluding Delivery					$ 277,556.36	
		Including Delivery					$ 392,048.36	

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PED-02 - Pedestrian Crossing on Berwick - Cranbourne Road
Pedestrian Operated Signals

Indexation factor for VPA benchmark items (July 2024): 1.29
Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	950	m2	4.96	1.29	$ 6,078.48	Based on project area
	1.2	Earthworks	16	m3	40.52	1.29	$ 815.42	Excavation depth 200mm for paths
Road Pavement	2.1	Primary Arterial Pavement	0	m2	186.26	1.29	$ -	
	2.2	Collector Arterial Pavement	0	m2	112.44	1.29	$ -	
	2.3	Subgrade Preparation	0	m2	16.16	1.29	$ -	
Concrete Works	3.1	Kerb and Channel	24	m	60.9	1.29	$ 1,885.46	
	3.2	Traffic Island	0	m2	84.07	1.29	$ -	
	3.3	SUP/footpath	78	m2	73.63	1.29	$ 7,408.65	
	3.4	Cycle Path	0	m2	91.94	1.29	$ -	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	0	m	197.96	1.29	$ -	
	4.2	Drainage Pipe 375mm CR Bfilled	0	m	282.96	1.29	$ -	
	4.3	Drainage Pipe 450mm CR Bfilled	0	m	334.33	1.29	$ -	
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	
	4.5	Drainage - Pits	0	No.	2806.1	1.29	$ -	
	4.6	Drainage - Subsoil Drainage	0	m	43.4	1.29	$ -	
Traffic	5.1	Traffic Signals	1	Item/ per leg	128786.34	1.29	$ 166,134.38	Based on the cost of one leg of a primary signalised intersection
Landscape	6.1	Trees	0	No.	363.01	1.29	$ -	
	6.2	Landscaping	156	m2	25.16	1.29	$ 5,063.20	1m wide on both sides of path
	6.3	Topsoil Seeding	156	m2	8.44	1.29	$ 1,698.47	1m wide on both sides of path
Street Lighting	7.1	Street Lighting	1	Item/ per leg	55617.74	1.29	$ 71,746.88	
Miscellaneous	8.1	Linemarking	300	m2 of pavement	4.09	1.29	$ 1,582.83	
	8.2	Regulatory Signage	0	Item	380.39	1.29	$ -	
	8.3	Landscape Maintenance (intersections)	0.1	Item	88131.43	1.29	$ 11,368.95	10% of benchmark item 7 landscape maintenance
	8.4	Tactile Pavers (Hazard only)	4	Item	319.78	1.29	$ 1,650.06	
	8.5	Pedestrian fencing	26	m	102	1.06	$ 2,809.26	1200mm high fence of galvanised welded mesh roll top panels and tubular posts (Rawlinsons 2023)
Other	9.1	Demolition of existing concrete kerbs, footpath, islands	5.76	m3	230	1.06	$ 1,403.36	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
Delivery	10.1	Council Fees	1	%	3.25	-	$ 9,088.48	
	10.2	VicRoads Fees	1	%	1	-	$ 2,796.45	
	10.3	Traffic Management	1	%	5	-	$ 13,982.27	
	10.4	Environmental Management	1	%	0.5	-	$ 1,398.23	
	10.5	Survey/Design	1	%	5	-	$ 13,982.27	
	10.6	Supervision and Project Management	1	%	9	-	$ 25,168.09	
	10.7	Site Establishment	1	%	2.5	-	$ 6,991.14	
	10.8	Contingency	1	%	15	-	$ 41,946.81	
Total		Excluding Delivery					$ 279,645.41	
		Including Delivery					$ 394,999.14	

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SUP-01 - Shared Use Path - Melbourne Water Pipe Track (1184m)

Shared Use Path

Indexation factor for VPA benchmark items (July 2024): 1.29

Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	17309	m2	4.96	1.29	$ 110,749.91	Sum of pavement, paths and landscape areas
	1.2	Earthworks	19093	m3	40.52	1.29	$ 997,997.13	Fill volume from 12d minus 200mm depth to subgrade
Road Pavement	2.1	Primary Arterial Pavement	0	m2	186.26	1.29	$ -	
	2.2	Collector Arterial Pavement	0	m2	112.44	1.29	$ -	
	2.3	Subgrade Preparation	0	m2	16.16	1.29	$ -	
Concrete Works	3.1	Kerb and Channel	0	m	60.9	1.29	$ -	
	3.2	Traffic Island	0	m2	84.07	1.29	$ -	
	3.3	SUP/footpath	3554	m2	73.63	1.29	$ 337,568.52	
	3.4	Cycle Path	0	m2	91.94	1.29	$ -	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	0	m	197.96	1.29	$ -	No allowance for drainage
	4.2	Drainage Pipe 375mm CR Bfilled	0	m	282.96	1.29	$ -	
	4.3	Drainage Pipe 450mm CR Bfilled	0	m	334.33	1.29	$ -	
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	
	4.5	Drainage - Pits	0	No.	2806.1	1.29	$ -	
	4.6	Drainage - Subsoil Drainage	0	m	43.4	1.29	$ -	
Traffic	5.1	Traffic Signals	0	Item/ per leg	128786.34	1.29	$ -	
Landscape	6.1	Trees	118	No.	363.01	1.29	$ 55,444.70	Trees at 20m spacing on both sides
	6.2	Landscaping	13755	m2	25.16	1.29	$ 446,437.78	Area of fill batters
	6.3	Topsoil Seeding	13755	m2	8.44	1.29	$ 149,758.94	Area of fill batters
Street Lighting	7.1	Street Lighting	0	Item/ per leg	55617.74	1.29	$ -	No allowance for lighting
Miscellaneous	8.1	Linemarking	3554	m2 of pavement	4.09	1.29	$ 18,751.26	
	8.2	Regulatory Signage	8	Item	380.39	1.29	$ 3,925.62	1 sign at each path start/end
	8.4	Landscape Maintenance (road)	13755	m2	2.9	1.29	$ 51,457.46	
	8.6	Tactile Pavers (Hazard only)	3	Item	319.78	1.29	$ 1,237.55	
Other	9.1	Demolition of existing concrete kerbs, footpath, islands	0	m3	230	1.06	$ -	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
Delivery	10.1	Council Fees	1	%	3.25	-	$ 70,633.19	
	10.2	VicRoads Fees	1	%	1	-	$ 21,733.29	
	10.3	Traffic Management	1	%	5	-	$ 108,666.44	
	10.4	Environmental Management	1	%	0.5	-	$ 10,866.64	
	10.5	Survey/Design	1	%	5	-	$ 108,666.44	
	10.6	Supervision and Project Management	1	%	9	-	$ 195,599.60	
	10.7	Site Establishment	1	%	2.5	-	$ 54,333.22	
	10.8	Contingency	1	%	15	-	$ 325,999.33	
Total		Excluding Delivery					$ 2,173,328.86	
		Including Delivery					$ 3,069,827.01	

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SUP-02 - Shared Use Path along Thompsons Road (587m)

Shared Use Path

Indexation factor for VPA benchmark items (July 2024): 1.29

Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	4156	m2	4.96	1.29	$ 26,591.75	Sum of pavement, paths and landscape areas
	1.2	Earthworks	904	m3	40.52	1.29	$ 47,252.80	Allowance for cut/fill based on path area multiplied by 0.5m depth
Road Pavement	2.1	Primary Arterial Pavement	0	m2	186.26	1.29	$ -	
	2.2	Collector Arterial Pavement	0	m2	112.44	1.29	$ -	
	2.3	Subgrade Preparation	0	m2	16.16	1.29	$ -	
Concrete Works	3.1	Kerb and Channel	0	m	60.9	1.29	$ -	
	3.2	Traffic Island	0	m2	84.07	1.29	$ -	
	3.3	SUP/footpath	1808	m2	73.63	1.29	$ 171,728.72	
	3.4	Cycle Path	0	m2	91.94	1.29	$ -	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	0	m	197.96	1.29	$ -	No allowance for drainage
	4.2	Drainage Pipe 375mm CR Bfilled	0	m	282.96	1.29	$ -	
	4.3	Drainage Pipe 450mm CR Bfilled	0	m	334.33	1.29	$ -	
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	
	4.5	Drainage - Pits	0	No.	2806.1	1.29	$ -	
	4.6	Drainage - Subsoil Drainage	0	m	43.4	1.29	$ -	
Traffic	5.1	Traffic Signals	0	Item/ per leg	128786.34	1.29	$ -	
Landscape	6.1	Trees	61	No.	363.01	1.29	$ 28,565.26	Trees at 20m spacing on both sides
	6.2	Landscaping	2348	m2	25.16	1.29	$ 76,207.63	Area of fill batters
	6.3	Topsoil Seeding	2348	m2	8.44	1.29	$ 25,564.08	Area of fill batters
Street Lighting	7.1	Street Lighting	0	Item/ per leg	55617.74	1.29	$ -	No allowance for lighting
Miscellaneous	8.1	Linemarking	1808	m2 of pavement	4.09	1.29	$ 9,539.19	
	8.2	Regulatory Signage	4	Item	380.39	1.29	$ 1,962.81	1 sign at each path start/end
	8.4	Landscape Maintenance (road)	2348	m2	2.9	1.29	$ 8,783.87	
	8.6	Tactile Pavers (Hazard only)	0	Item	319.78	1.29	$ -	
Other	9.1	Demolition of existing concrete kerbs, footpath, islands	0	m3	230	1.06	$ -	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
Delivery	10.1	Council Fees	1	%	3.25	-	$ 12,876.37	
	10.2	VicRoads Fees	1	%	1	-	$ 3,961.96	
	10.3	Traffic Management	1	%	5	-	$ 19,809.81	
	10.4	Environmental Management	1	%	0.5	-	$ 1,980.98	
	10.5	Survey/Design	1	%	5	-	$ 19,809.81	
	10.6	Supervision and Project Management	1	%	9	-	$ 35,657.65	
	10.7	Site Establishment	1	%	2.5	-	$ 9,904.90	
	10.8	Contingency	1	%	15	-	$ 59,429.42	
Total		Excluding Delivery					$ 396,196.11	
		Including Delivery					$ 559,627.01	

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SUP-03
Shared Use Path VDP Crossing

Indexation factor for cost items provided by Spiire: 1.00

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Precast Shared Use Bridge	1.1	15m precast beam (supply only)	3	No.	16500	1.00	$ 49,500.00	
	1.2	Headstock Unit	2	No.	10300	1.00	$ 20,600.00	
	1.3	Hardware	1	No.	2500	1.00	$ 2,500.00	
	1.4	Piles (10m)	6	No.	6000	1.00	$ 36,000.00	
	1.5	Handrail	30	No.	350	1.00	$ 10,500.00	
	1.6	Delivery to Site	1	No.	20000	1.00	$ 20,000.00	
	1.7	Installation	1	No.	100000	1.00	$ 100,000.00	
Ancillaries	2.1	Structural Design Piles/footings	1	Item	10000	1.00	$ 10,000.00	
	2.2	Geotechnical Investigations	1	Item	10000	1.00	$ 10,000.00	
Delivery	3.1	Council Fees	1	%	3.25	-	$ 7,770.75	
	3.2	Environmental Management	1	%	0.5	-	$ 1,195.50	
	3.3	Surveying and design	1	%	5	-	$ 11,955.00	
	3.4	Supervision and project management	1	%	9	-	$ 21,519.00	
	3.5	Site establishment	1	%	2.5	-	$ 5,977.50	
	3.8	Contingency	1	%	15	-	$ 35,865.00	
Total		Excluding Delivery and Ancillaries					$ 239,100.00	
		Including Delivery and Ancillaries					$ 343,382.75	

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SUP-04
Shared Use Path VDP Crossing

Indexation factor for cost items provided by Spiire: 1.00

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Precast Shared Use Bridge	1.1	15m precast beam (supply only)	3	No.	16500	1.00	$ 49,500.00	
	1.2	Headstock Unit	2	No.	10300	1.00	$ 20,600.00	
	1.3	Hardware	1	No.	2500	1.00	$ 2,500.00	
	1.4	Piles (10m)	6	No.	6000	1.00	$ 36,000.00	
	1.5	Handrail	30	No.	350	1.00	$ 10,500.00	
	1.6	Delivery to Site	1	No.	20000	1.00	$ 20,000.00	
	1.7	Installation	1	No.	100000	1.00	$ 100,000.00	
Ancillaries	2.1	Structural Design Piles/footings	1	Item	10000	1.00	$ 10,000.00	
	2.2	Geotechnical Investigations	1	Item	10000	1.00	$ 10,000.00	
Delivery	3.1	Council Fees	1	%	3.25	-	$ 7,770.75	
	3.2	Environmental Management	1	%	0.5	-	$ 1,195.50	
	3.3	Surveying and design	1	%	5	-	$ 11,955.00	
	3.4	Supervision and project management	1	%	9	-	$ 21,519.00	
	3.5	Site establishment	1	%	2.5	-	$ 5,977.50	
	3.8	Contingency	1	%	15	-	$ 35,865.00	
Total		Excluding Delivery and Ancillaries					$ 239,100.00	
		Including Delivery and Ancillaries					$ 343,382.75	

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SUP-05
Shared Use Path VDP Crossing

Indexation factor for cost items provided by Spiire: 1.00

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Precast Shared Use Bridge	1.1	15m precast beam (supply only)	3	No.	16500	1.00	$ 49,500.00	
	1.2	Headstock Unit	2	No.	10300	1.00	$ 20,600.00	
	1.3	Hardware	1	No.	2500	1.00	$ 2,500.00	
	1.4	Piles (10m)	6	No.	6000	1.00	$ 36,000.00	
	1.5	Handrail	30	No.	350	1.00	$ 10,500.00	
	1.6	Delivery to Site	1	No.	20000	1.00	$ 20,000.00	
	1.7	Installation	1	No.	100000	1.00	$ 100,000.00	
Ancillaries	2.1	Structural Design Piles/footings	1	Item	10000	1.00	$ 10,000.00	
	2.2	Geotechnical Investigations	1	Item	10000	1.00	$ 10,000.00	
Delivery	3.1	Council Fees	1	%	3.25	-	$ 7,770.75	
	3.2	Environmental Management	1	%	0.5	-	$ 1,195.50	
	3.3	Surveying and design	1	%	5	-	$ 11,955.00	
	3.4	Supervision and project management	1	%	9	-	$ 21,519.00	
	3.5	Site establishment	1	%	2.5	-	$ 5,977.50	
	3.8	Contingency	1	%	15	-	$ 35,865.00	
Total		Excluding Delivery and Ancillaries					$ 239,100.00	
		Including Delivery and Ancillaries					$ 343,382.75	

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RD-01 - Casey Fields Boulevard (898m long)
Road - Connector Boulevard - 800m (Benchmark Item 3)

Indexation factor for VPA benchmark items (July 2024): 1.29
Indexation factor for Rawlinsons items (March 2024): 1.06

Group	Item	Description	Quanity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	36910	m2	4.96	1.29	$ 236,164.94	Sum of pavement, paths and landscape areas
	1.2	Earthworks	31254	m3	40.52	1.29	$ 1,633,671.58	Cut and fill volumes from 12d
Road Pavement	2.1	Primary Arterial Pavement	0	m2	186.26	1.29	$ -	
	2.2	Collector Arterial Pavement	6305	m2	112.44	1.29	$ 914,525.12	
	2.3	Subgrade Preparation	1261	m2	16.16	1.29	$ 26,287.31	20% of pavement area
	2.4	Raised Priority Crossing - asphalt	120	m2	78	1.06	$ 9,915.02	Hot bituminous concrete including tack coat: 50mm thick multiplied by 3 (Rawlinsons 2023)
	2.5	Raised Priority Crossing - surface treatment	120	m2	21.5	1.06	$ 2,732.99	Thermoplastic marking of bitumen paving (Rawlinsons 2023)
Concrete Works	3.1	Kerb and Channel	3592	m	60.9	1.29	$ 282,191.11	
	3.2	Traffic Island	0	m2	84.07	1.29	$ -	
	3.3	SUP/footpath	2655	m2	73.63	1.29	$ 252,179.07	
	3.4	Cycle Path	2819	m2	91.94	1.29	$ 334,340.73	
Drainage	4.1	Drainage Pipe 300mm CR Bfilled	225	m	197.96	1.29	$ 57,330.21	Scaled up from benchmark item 3
	4.2	Drainage Pipe 375mm CR Bfilled	1019	m	282.96	1.29	$ 372,037.70	Scaled up from benchmark item 3
	4.3	Drainage Pipe 450mm CR Bfilled	786	m	334.33	1.29	$ 338,882.74	Scaled up from benchmark item 3
	4.4	Drainage Pipe 525mm CR Bfilled	0	m	448.03	1.29	$ -	Scaled up from benchmark item 3
	4.5	Drainage - Pits	36	No.	2806.1	1.29	$ 130,025.69	Scaled up from benchmark item 3
	4.6	Drainage - Subsoil Drainage	3592	m	43.4	1.29	$ 201,101.71	Based on total kerb length
Traffic	5.1	Traffic Signals	0	Item/ per leg	128786.34	1.29	$ -	
Landscape	6.1	Trees	216	No.	363.01	1.29	$ 100,924.33	Scaled up from benchmark item 3
	6.2	Landscaping	25131	m2	25.16	1.29	$ 815,661.79	Area of fill batters and verges
	6.3	Topsoil Seeding	25131	m2	8.44	1.29	$ 273,616.28	Area of fill batters and verges
Street Lighting	7.1	Street Lighting	898	m	225.67	1.29	$ 261,420.64	Based on length of road
Miscellaneous	8.1	Linemarking	6305	m2 of pavement	4.09	1.29	$ 33,265.81	
	8.2	Regulatory Signage	12	Item	380.39	1.29	$ 5,888.44	Scaled up from benchmark item 3
	8.3	Landscape Maintenance (road)	25131	m2	2.96	1.29	$ 95,960.21	
	8.4	Tactile Pavers (Hazard only)	8	Item	319.78	1.29	$ 3,300.13	
Other	9.1	Demolition of existing concrete kerbs, footpath, islands	0	m3	230	1.06	$ -	Break up and remove reinforced concrete in open excavations (Rawlinsons 2023)
Delivery	10.1	Council Fees	1	%	3.25	-	$ 207,396.27	
	10.2	VicRoads Fees	1	%	1	-	$ 63,814.24	
	10.3	Traffic Management	1	%	5	-	$ 319,071.18	
	10.4	Environmental Management	1	%	0.5	-	$ 31,907.12	
	10.5	Survey/Design	1	%	5	-	$ 319,071.18	
	10.6	Supervision and Project Management	1	%	9	-	$ 574,328.12	
	10.7	Site Establishment	1	%	2.5	-	$ 159,535.59	
	10.8	Contingency	1	%	15	-	$ 957,213.53	
		Excluding Delivery					$ 6,381,423.55	
		Including Delivery					$ 9,013,760.77	

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RD-01 VDP CROSSING

Road VDP cable/conduit crossing

Indexation factor for cost items provided by Spiire: 1.00

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Preliminary Site & Earthworks	1.1	Service Proving	1	Item	25000	1.00	$ 25,000.00	
	1.2	Site Preparation	0	m2	7	1.00	$ -	
	1.3	Earthworks	80	m3	50	1.00	$ 4,000.00	
Road Pavement	2.1	Subgrade preparation	120	m2	10	1.00	$ 1,200.00	
	2.2	Thermal backfill	80	m3	175	1.00	$ 14,000.00	
Ancillaries	3.1	Structural Design HV Crossing	1	Item	10000	1.00	$ 10,000.00	
	3.2	Proof Engineering (Nexans Olex)	1	Item	15000	1.00	$ 15,000.00	
	3.3	Permits/Insurance	1	Item	250000	1.00	$ 250,000.00	
	3.4	Construction certification of independent reviewer	1	Item	10000	1.00	$ 10,000.00	
Delivery	8.1	Council Fees	1	%	3.25	-	$ 1,436.50	
	8.2	Environmental Management	1	%	0.5	-	$ 221.00	
	8.3	Survey/Design	1	%	5	-	$ 2,210.00	
	8.4	Supervision and Project Management	1	%	9	-	$ 3,978.00	
	8.5	Site Establishment	1	%	2.5	-	$ 1,105.00	
	8.6	Contingency	1	%	15	-	$ 6,630.00	
Total		Excluding Delivery and Ancillaries					$ 44,200.00	
		Including Delivery and Ancillaries					$ 344,780.50	

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CU-01 - Culvert - (RD-01) over constructed waterway

Culvert Option 4 - Item 28

VPA benchmark indexation factor (July 2024): 1.29
Rawlinsons items indexation factor (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	1120.5	m2	4.23	1.29	$ 6,114.23	Scaled up from benchmark item 28
	1.2	Diversion works	1	Item	20125	1.29	$ 25,961.25	As per benchmark item 28
	1.3	Waterway re-shaping	1	Item	4600	1.29	$ 5,934.00	As per benchmark item 28
	1.4	Stripping of topsoil	1620	m2	4.49	1.29	$ 9,383.20	Scaled up from benchmark item 28
	1.5	Excavation	5647.5	m3	42.55	1.29	$ 309,988.45	Scaled up from benchmark item 28
	1.6	Formation of batters	292	m3	17.25	1.29	$ 6,497.73	As per benchmark item 28
Drainage Structure	2.1	Box culvert units 1200 x 2100 (No.)	68	No.	4830	1.29	$ 423,687.60	Scaled up from benchmark item 28
	2.2	Link slab 1200 x 2100 (No.)	55	No.	2839.35	1.29	$ 201,451.88	Scaled up from benchmark item 28
	2.3	Foundation slab 1200 x 2100 (200mm)	1410	m2	243.8	1.29	$ 443,447.82	Scaled up from benchmark item 28
	2.4	Granular Bedding 150 mm thick crushed	1410	m2	19.84	1.29	$ 36,086.98	Scaled up from benchmark item 28
	2.5	Apron slab (m2)	229.5	m2	253.29	1.29	$ 74,987.77	Scaled up from benchmark item 28
	2.6	Wing wall (m2)	33	m2	805	1.29	$ 34,268.85	As per benchmark item 28
	2.7	End wall (m2)	60	m2	805	1.29	$ 62,307.00	Scaled up from benchmark item 28
On Structure	3.1	Structural Fill (m3)	1545	m3	86.25	1.29	$ 171,900.56	Scaled up from benchmark item 28
	3.2	Vehicle Barrier	96	lm	284.63	1.29	$ 35,248.58	Scaled up from benchmark item 28
	3.3	Signs (Item)	1	Item	2645	1.29	$ 3,412.05	As per benchmark item 28
Delivery	4.1	Council Fees	1	%	3.25	-	$ 60,147.03	
	4.2	VicRoads Fees	1	%	1	-	$ 18,506.78	
	4.3	Traffic Management	1	%	5	-	$ 92,533.90	
	4.4	Environmental Management	1	%	0.5	-	$ 9,253.39	
	4.5	Survey/Design	1	%	5	-	$ 92,533.90	
	4.6	Supervision and Project Management	1	%	9	-	$ 166,561.02	
	4.7	Site Establishment	1	%	2.5	-	$ 46,266.95	
	4.8	Contingency	1	%	15	-	$ 277,601.69	
		Excluding Delivery					$ 1,850,677.96	
		Including Delivery					$ 2,614,082.61	

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CU-02 - Culvert - (SUP-01) over constructed waterway
Culvert Option 4 - Item 28

VPA benchmark indexation factor (July 2024): 1.29
Rawlinsons items indexation factor (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	261.45	m2	4.23	1.29	$ 1,426.65	Scaled down from benchmark item 28
	1.2	Diversion works	1	Item	20125	1.29	$ 25,961.25	As per benchmark item 28
	1.3	Waterway re-shaping	1	Item	4600	1.29	$ 5,934.00	As per benchmark item 28
	1.4	Stripping of topsoil	378	m2	4.49	1.29	$ 2,189.41	Scaled down from benchmark item 28
	1.5	Excavation	1317.75	m3	42.55	1.29	$ 72,330.64	Scaled down from benchmark item 28
	1.6	Formation of batters	292	m3	17.25	1.29	$ 6,497.73	As per benchmark item 28
Drainage Structure	2.1	Box culvert units 1200 x 2100 (No.)	15	No.	4830	1.29	$ 93,460.50	Scaled down from benchmark item 28
	2.2	Link slab 1200 x 2100 (No.)	12	No.	2839.35	1.29	$ 43,953.14	Scaled down from benchmark item 28
	2.3	Foundation slab 1200 x 2100 (200mm)	329	m2	243.8	1.29	$ 103,471.16	Scaled down from benchmark item 28
	2.4	Granular Bedding 150 mm thick crushed	329	m2	19.84	1.29	$ 8,420.29	Scaled down from benchmark item 28
	2.5	Apron slab (m2)	229.5	m2	253.29	1.29	$ 74,987.77	Scaled up from benchmark item 28
	2.6	Wing wall (m2)	33	m2	805	1.29	$ 34,268.85	As per benchmark item 28
	2.7	End wall (m2)	60	m2	805	1.29	$ 62,307.00	Scaled up from benchmark item 28
On Structure	3.1	Structural Fill (m3)	360.5	m3	86.25	1.29	$ 40,110.13	Scaled down from benchmark item 28
	3.2	Safety barrier	70	lm	350	1.06	$ 25,952.78	Bridge balustrade (Rawlinsons 2023)
	3.3	Signs (Item)	0	Item	2645	1.29	$ -	No allowance for signage
Delivery	4.1	Council Fees	1	%	3.25	-	$ 19,541.32	
	4.2	VicRoads Fees	1	%	1	-	$ 6,012.71	
	4.3	Traffic Management	1	%	5	-	$ 30,063.57	
	4.4	Environmental Management	1	%	0.5	-	$ 3,006.36	
	4.5	Survey/Design	1	%	5	-	$ 30,063.57	
	4.6	Supervision and Project Management	1	%	9	-	$ 54,114.42	
	4.7	Site Establishment	1	%	2.5	-	$ 15,031.78	
	4.8	Contingency	1	%	15	-	$ 90,190.70	
		Excluding Delivery					$ 601,271.31	
		Including Delivery					$ 849,295.73	

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CU-03 - Culvert - (SUP-02) over constructed waterway
Culvert Option 4 - Item 28

VPA benchmark indexation factor (July 2024): 1.29
Rawlinsons items indexation factor (March 2024): 1.06

Group	Item	Description	Quantity	Unit	Rate ($)	Indexation factor	Cost ($)	Comments
Siteworks and Earthworks	1.1	Site Preparation	261.45	m2	4.23	1.29	$ 1,426.65	Scaled down from benchmark item 28
	1.2	Diversion works	1	Item	20125	1.29	$ 25,961.25	As per benchmark item 28
	1.3	Waterway re-shaping	1	Item	4600	1.29	$ 5,934.00	As per benchmark item 28
	1.4	Stripping of topsoil	378	m2	4.49	1.29	$ 2,189.41	Scaled down from benchmark item 28
	1.5	Excavation	1317.75	m3	42.55	1.29	$ 72,330.64	Scaled down from benchmark item 28
	1.6	Formation of batters	292	m3	17.25	1.29	$ 6,497.73	As per benchmark item 28
Drainage Structure	2.1	Box culvert units 1200 x 2100 (No.)	15	No.	4830	1.29	$ 93,460.50	Scaled down from benchmark item 28
	2.2	Link slab 1200 x 2100 (No.)	12	No.	2839.35	1.29	$ 43,953.14	Scaled down from benchmark item 28
	2.3	Foundation slab 1200 x 2100 (200mm)	329	m2	243.8	1.29	$ 103,471.16	Scaled down from benchmark item 28
	2.4	Granular Bedding 150 mm thick crushed	329	m2	19.84	1.29	$ 8,420.29	Scaled down from benchmark item 28
	2.5	Apron slab (m2)	229.5	m2	253.29	1.29	$ 74,987.77	Scaled up from benchmark item 28
	2.6	Wing wall (m2)	33	m2	805	1.29	$ 34,268.85	As per benchmark item 28
	2.7	End wall (m2)	60	m2	805	1.29	$ 62,307.00	Scaled up from benchmark item 28
On Structure	3.1	Structural Fill (m3)	360.5	m3	86.25	1.29	$ 40,110.13	Scaled down from benchmark item 28
	3.2	Safety barrier	70	lm	350	1.06	$ 25,952.78	Bridge balustrade (Rawlinsons 2023)
	3.3	Signs (Item)	0	Item	2645	1.29	$ -	No allowance for signage
Delivery	4.1	Council Fees	1	%	3.25	-	$ 19,541.32	
	4.2	VicRoads Fees	1	%	1	-	$ 6,012.71	
	4.3	Traffic Management	1	%	5	-	$ 30,063.57	
	4.4	Environmental Management	1	%	0.5	-	$ 3,006.36	
	4.5	Survey/Design	1	%	5	-	$ 30,063.57	
	4.6	Supervision and Project Management	1	%	9	-	$ 54,114.42	
	4.7	Site Establishment	1	%	2.5	-	$ 15,031.78	
	4.8	Contingency	1	%	15	-	$ 90,190.70	
		Excluding Delivery					$ 601,271.31	
		Including Delivery					$ 849,295.73	

The estimated construction costs provided in this document have been issued to the Victorian Planning Authority for budgeting purposes only for the Infrastructure Contributions Plan. Rates are based on VPA Benchmark Infrastructure Report 11 April 2019 indexed to 1 July 2024 (based on VPA indexation rates) and Rawlinsons indexed to March 2024 (based on Australian Bureau of Statistics Producer Price Index for Road and Bridge Construction – Victoria). No allowance has been included for utility relocation works, geotechnical testing or WSUD. An allowance for utility services protection has been provided at intersections. Costing for VDP cable crossing items were prepared by Spiire. SMEC Australia assumes no liability for losses incurred through changes to the quantities required to construct the intersection or increases in construction costs. These values are not intended for use in construction pricing and do not constitute a Bill of Quantities.

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