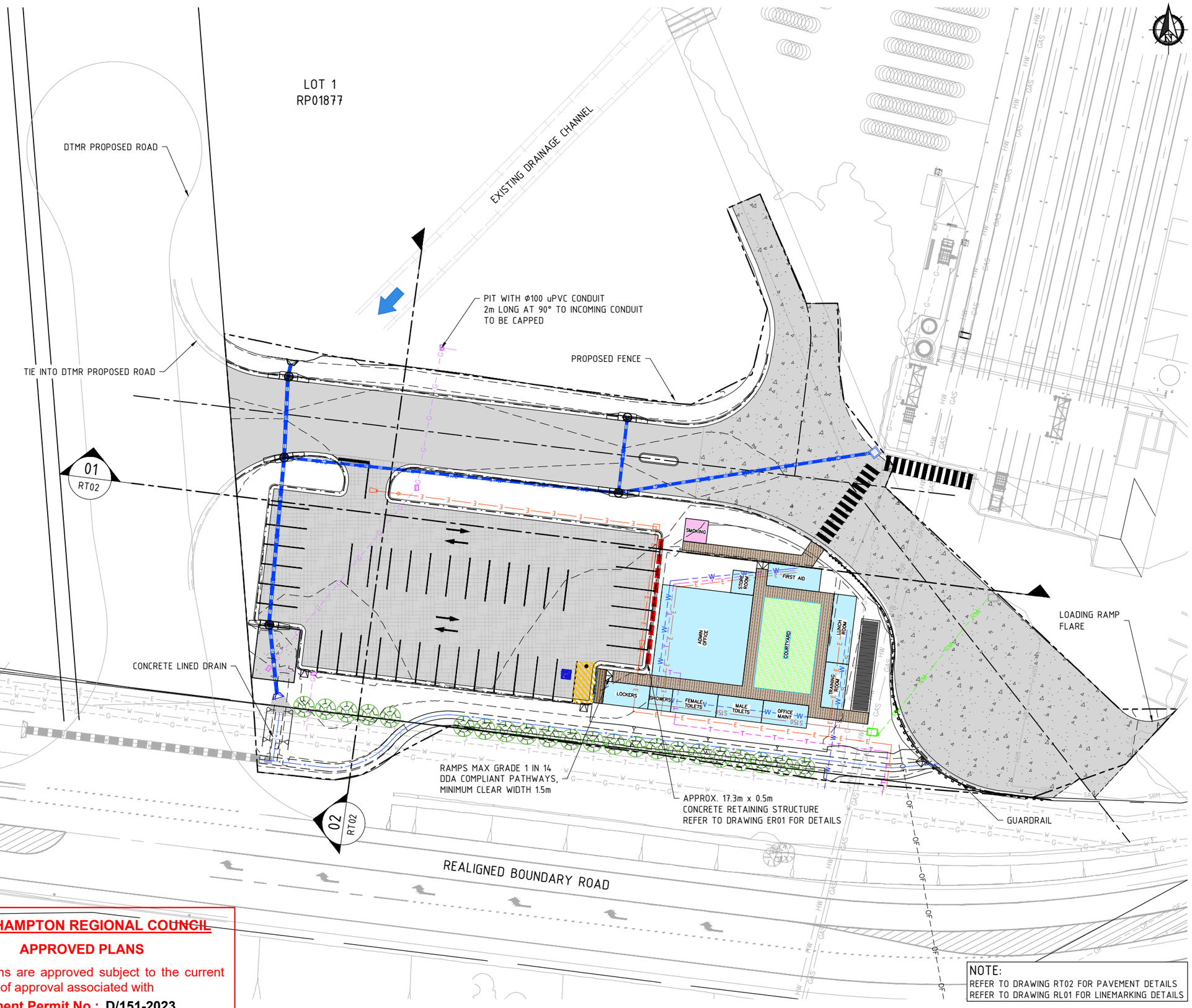

PLAN
SCALE A1 - 1 : 250
A3 - 1 : 500

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/151-2023

Dated: 12 June 2024

DWG - PRJ-0257-02-CI-GN04-KEYP.dwg

AUSTRAK

IMPERVIOUS AREAS:

BUILDINGS	609m2
PATHWAYS	472m2
PAVEMENT TYPE A DRIVEWAY	571m2
PAVEMENT TYPE B CARPARK	1,118m2
PAVEMENT TYPE C CONCRETE AREA	1,292m2

DO NOT SCALE OFF DRAWING

2.5 0 2.5 5.0 7.5 10 12.5m
SCALE 1:250

SCALE ORIG. SHEET SIZE A1

SURVEYOR VISION SURVEYS
PH: 13000VISION EMAIL: admin@visionsurveysqld.com.au
GRID & DATUM: MGA94 Z56

DOCUMENT CONTROL

REV.	DATE	DESCRIPTION	DRF	DES	VER
1	17.11.23	ISSUED FOR REVIEW	SW	SW	CC
2	22.12.23	REVISED DESIGN	SW	SW	CC
3	18.03.24	REVISED BUILDING LAYOUT	SW	SW	CC

FULL NAME
CHARLES COOK
RPEQ No
8480
DATE

APPROVED ON BEHALF OF HARTECS

Hartecs Group

ABN 27 158 351 663
PH: 1300 220 195
EMAIL: admin@hartecs.com.au
OFFICE: ROCKHAMPTON

CLIENT
AUSTRAK PTY LTD

PROJECT
AUSTRAK SITE EXPANSION
23 BOUNDARY ROAD
PARKHURST, QLD 4702

DRAWING TITLE
KEYPLAN

STATUS
NOT FOR CONSTRUCTION

PROJ - DWG. No. PRJ-0257-02-GN04
REV. C
SHEET NO. 4 OF 27

TREE LEGEND

SHADE TREES WITH EDGING SQUARE

SHADE TREES

SCREENING / BUFFER USING INDIGENOUS SHRUBS & TREES

SHRUB & GROUNDCOVER LEGEND

LARGE SCREENING SHRUBS

MEDIUM SHRUBS

SMALL SHRUBS

GROUND COVERS

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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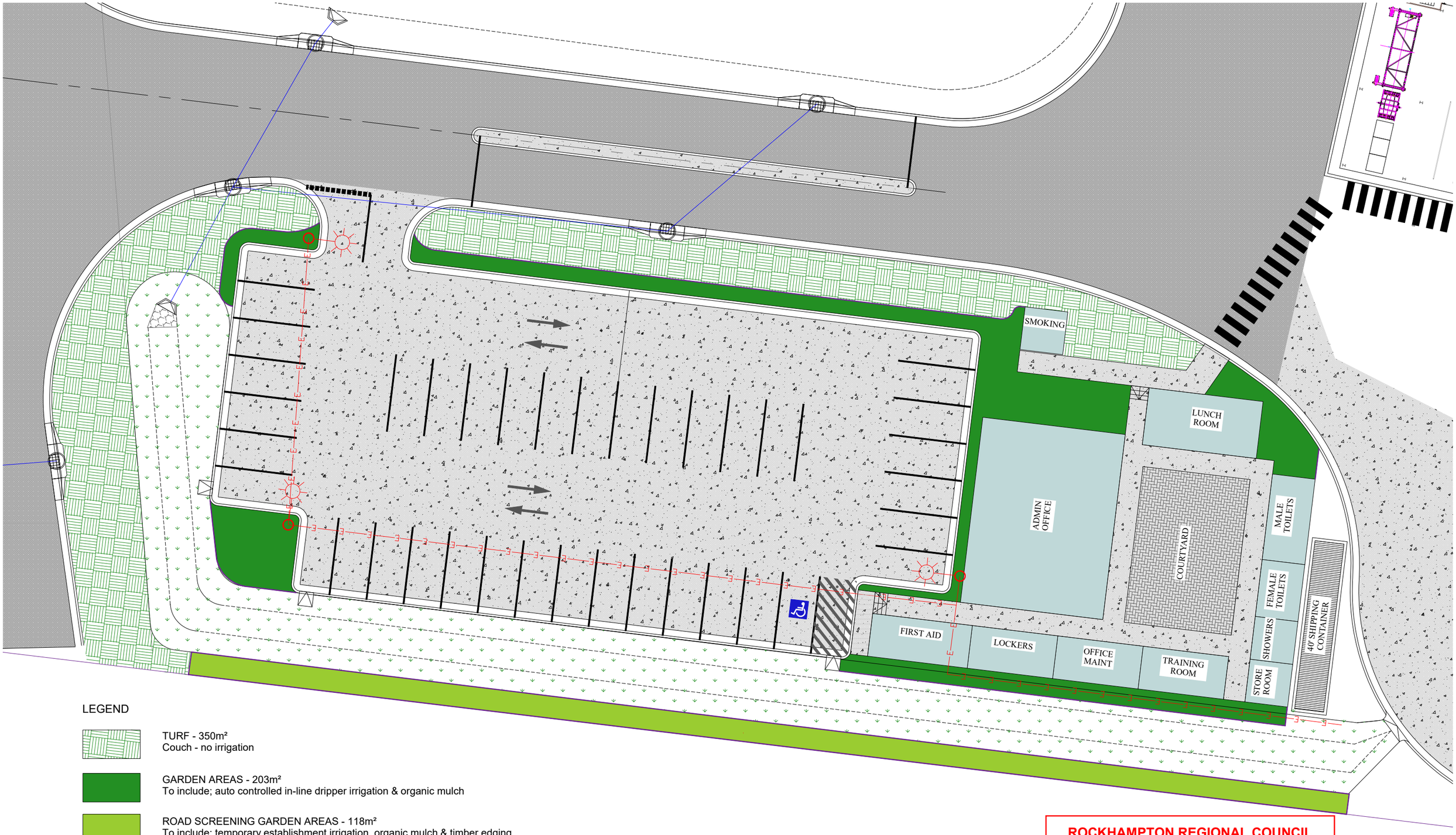
Development Permit No.: D/151-2023

Dated: 12 June 2024

Title	LANDSCAPE PLAN	**Job Number**	23082	**Issue Date**	05/09/2023	**Client:**		SCALE 1:250 @ A3	**REVISIONS** A FOR CLIENT REVIEW	* Do not scale from drawing * Verify the location of all services before commencement of works * All works to comply with Australian Standards * Works to comply with all relevant laws, regulations, building codes & approvals
Project	ANCILLARY OFFICES, AMENITIES & TRAINING FACILITIES 23 BOUNDARY RD, PARKHURST (LOT 1 on RP601877)	**Drawing Number**	LCP 02	**Revision**	A	AUSTRAK				

PO Box 1031,
Proserpine, QLD, 4800
M: 0417 195 059
E: jharper@jhld.com.au
W: jhld.com.au

JHLD
JOHN HARPER LANDSCAPE DESIGNS



LEGEND

TURF - 350m²
Couch - no irrigation

GARDEN AREAS - 203m²
To include; auto controlled in-line dripper irrigation & organic mulch

ROAD SCREENING GARDEN AREAS - 118m²
To include; temporary establishment irrigation, organic mulch & timber edging

SWALE - (refer to engineer)

GARDEN EDGING - 102m
Edging to consist of extruded concrete edging

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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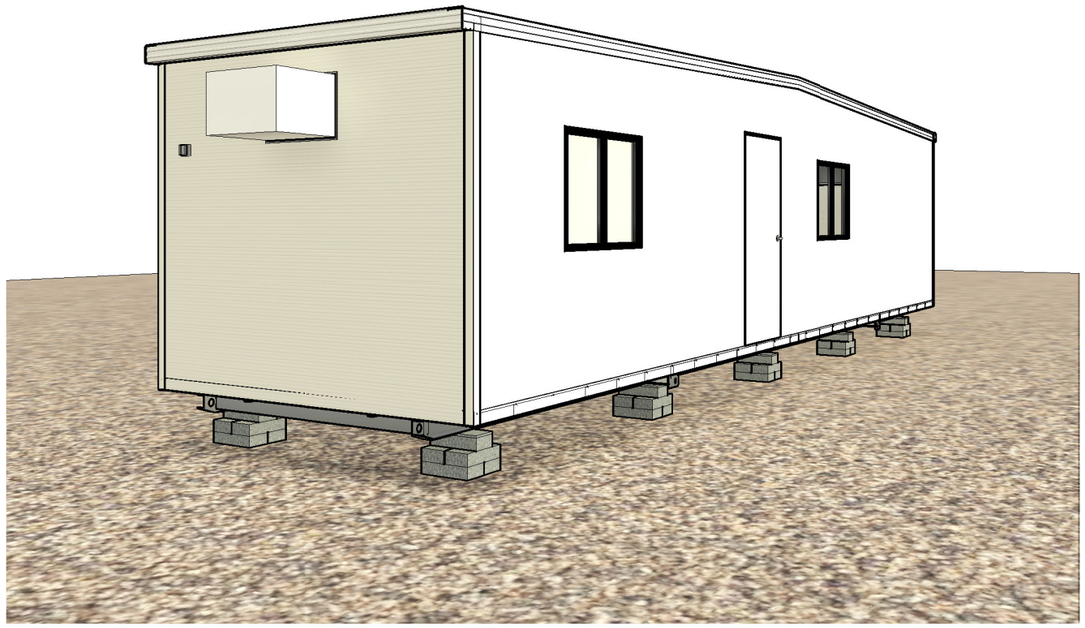
Dated: 12 June 2024

Title	SURFACE TREATMENTS PLAN	**Job Number**	23082	**Issue Date**	05/09/2023	**Client:**		SCALE 1:250 @ A3	**REVISIONS**	* Do not scale from drawing * Verify the location of all services before commencement of works * All works to comply with Australian Standards * Works to comply with all relevant laws, regulations, building codes & approvals	PO Box 1031, Proserpine, QLD, 4800 M: 0417 195 059 E: jharper@jhld.com.au W: jhld.com.au
Project	ANCILLARY OFFICES, AMENITIES & TRAINING FACILITIES 23 BOUNDARY RD, PARKHURST (LOT 1 on RP601877)	**Drawing Number**	LCP 01	**Revision**	A	AUSTRAK			A FOR CLIENT REVIEW		JHLD JOHN HARPER LANDSCAPE DESIGNS



View indicative only

OF-190-S

ATCO SPACE RENTAL - SALE

-

12.0 x 3.0m OFFICE

DRAWING LIST		
SHEET NUMBER	SHEET NAME	CURRENT REVISION
A000	TITLE PAGE	A
A200	PLAN	A
A300	ELEVATIONS	A
A500	SALES SCHEDULES	A

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/151-2023

Dated: 12 June 2024

ATCO STRUCTURES & LOGISTICS PTY. LTD.
55 TONKA STREET,
LUSCOMBE, QLD 4207
P.O. BOX 393, BEENLEIGH, QLD 4207
E-mail: ASLAu.Sales@atco.com

PHONE: (07) 3412 8600
FAX: (07) 3412 8699
ABN: 71 083 902 309

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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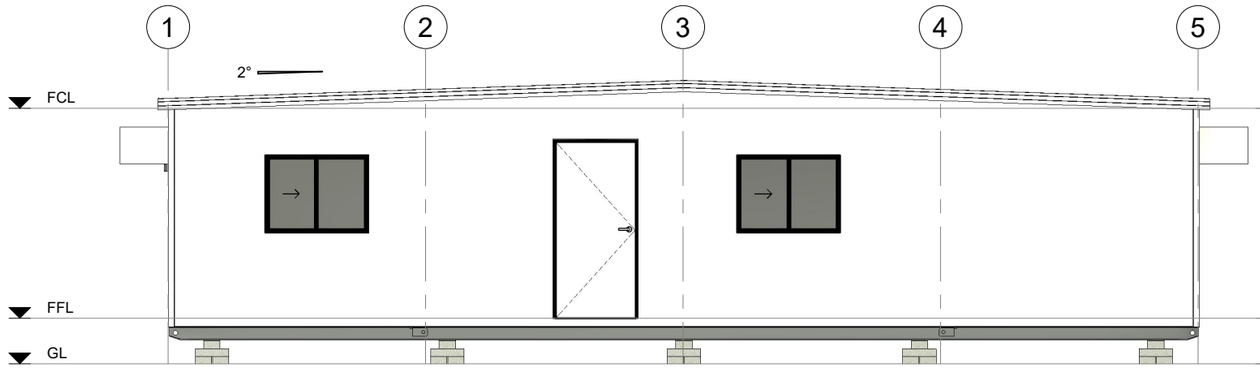
Dated: 12 June 2024



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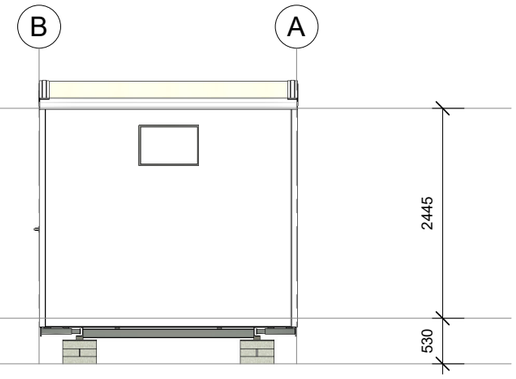
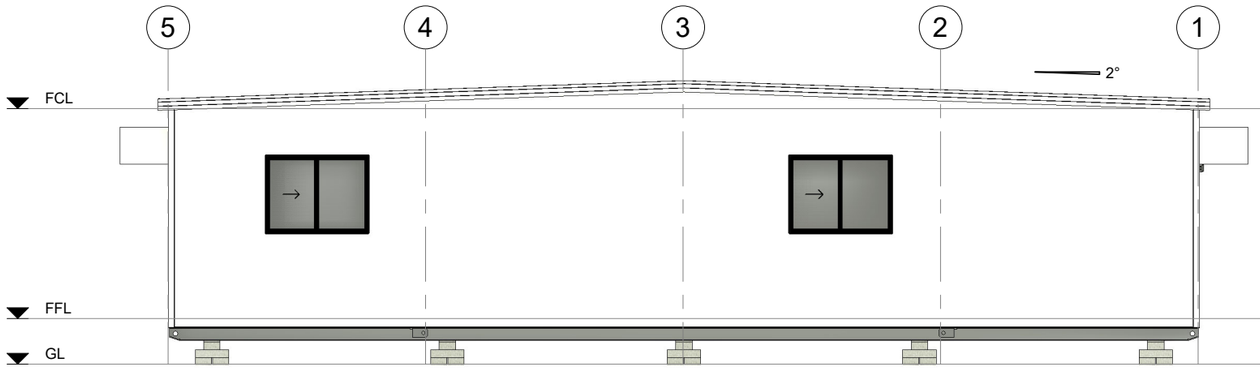


B A200 ELEVATION 1 : 50



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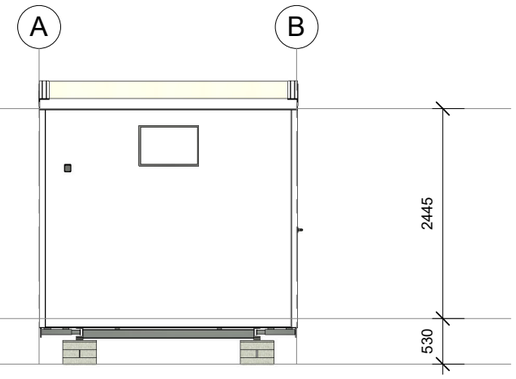

D A200 ELEVATION 1 : 50

CONFIRM DETAILS OF SET OUTS, LEVELS AND CRITICAL DIMENSIONS ON SITE PRIOR TO SHOP DRAWINGS AND FABRICATION.
QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531
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ALL CONSTRUCTION TO COMPLY WITH NATIONAL CONSTRUCTION CODE OF AUSTRALIA AND APPLICABLE AUSTRALIAN STANDARDS

REV	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR REVIEW	08.10.21	MA	VT

ATCO STRUCTURES & LOGISTICS PTY. LTD.
55 TONKA STREET,
LUSCOMBE, QLD 4207
P.O. BOX 393, BEENLEIGH, QLD 4207
E-mail: ASLAu.Sales@atco.com
PHONE: (07) 3412 8600
FAX: (07) 3412 8699
ABN: 71 083 902 309

CLIENT: ATCO SPACE RENTAL - SALE

DESCRIPTION: 12.0 x 3.0m OFFICE

ADDRESS: -

TITLE: ELEVATIONS

PROJECT No.: -

SCALE AT A2: 1 : 50

DRAWING NUMBER: OF-190-S -A300

REVISION: A

24/12/2021 11:45:08 AM

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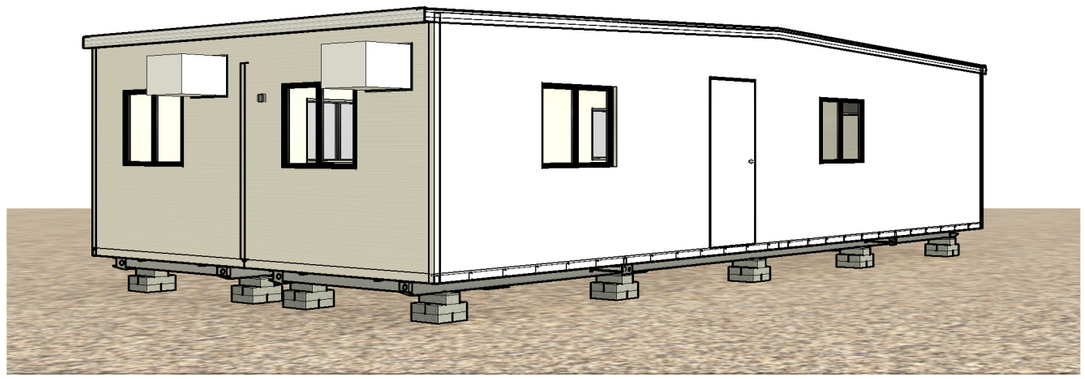

View indicative only

OF-510-S

ATCO SPACE RENTAL - SALE

-

12.0 x 6.0m OFFICE

DRAWING LIST		
SHEET NUMBER	SHEET NAME	CURRENT REVISION
A000	TITLE PAGE	A
A200	PLAN	A
A300	ELEVATIONS	A
A500	SALES SCHEDULES	A

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/151-2023

Dated: 12 June 2024

ATCO STRUCTURES & LOGISTICS PTY. LTD.
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PHONE: (07) 3412 8600
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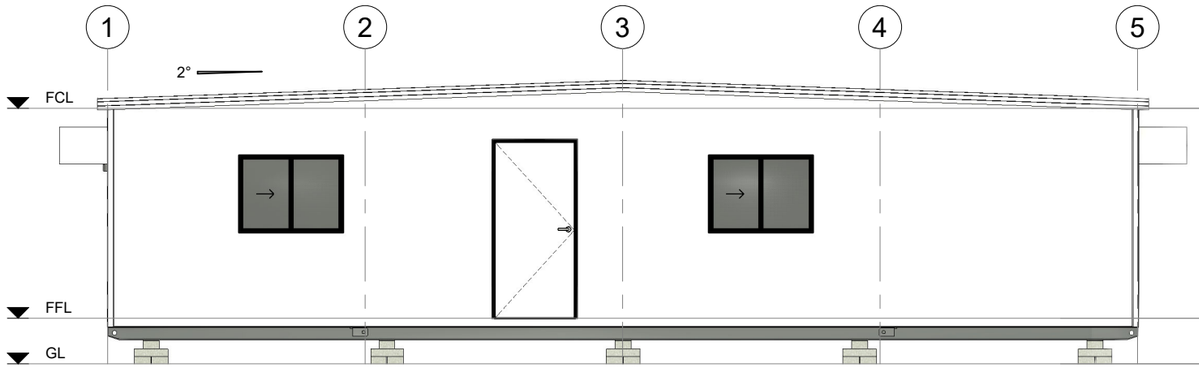
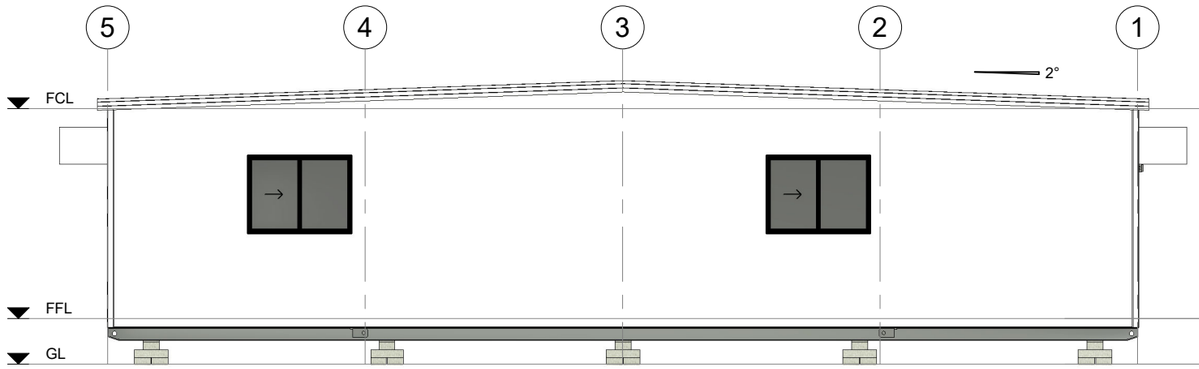
ABN: 71 083 902 309

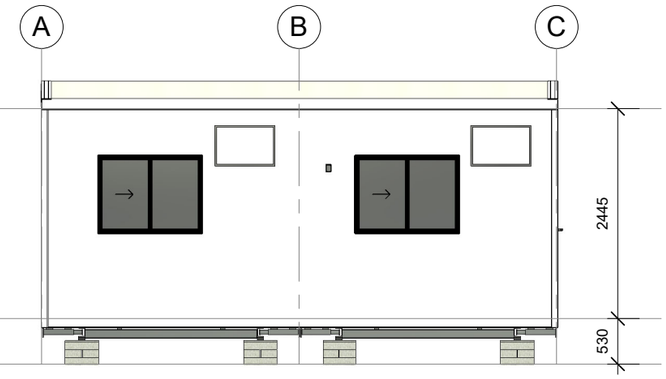


A ELEVATION
A200
1 : 50

B ELEVATION
A200
1 : 50



C ELEVATION
A200
1 : 50



D ELEVATION
A200
1 : 50

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/151-2023

Dated: 12 June 2024

CONFIRM DETAILS OF SET OUTS, LEVELS AND CRITICAL DIMENSIONS ON SITE PRIOR TO SHOP DRAWINGS AND FABRICATION.
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REV	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR REVIEW	08.10.21	MA	VT

ATCO STRUCTURES & LOGISTICS PTY. LTD.
55 TONKA STREET,
LUSCOMBE, QLD 4207
P.O. BOX 393, BEENLEIGH, QLD 4207
E-mail: ASLAu.Sales@atco.com
PHONE: (07) 3412 8600
FAX: (07) 3412 8699
ABN: 71 083 902 309

CLIENT: ATCO SPACE RENTAL - SALE
DESCRIPTION: 12.0 x 6.0m OFFICE
ADDRESS: -

TITLE: ELEVATIONS
PROJECT No.: -
SCALE AT A2: 1 : 50
DRAWING NUMBER: OF-510-S -A300
REVISION: A

24/12/2021 11:50:27 AM

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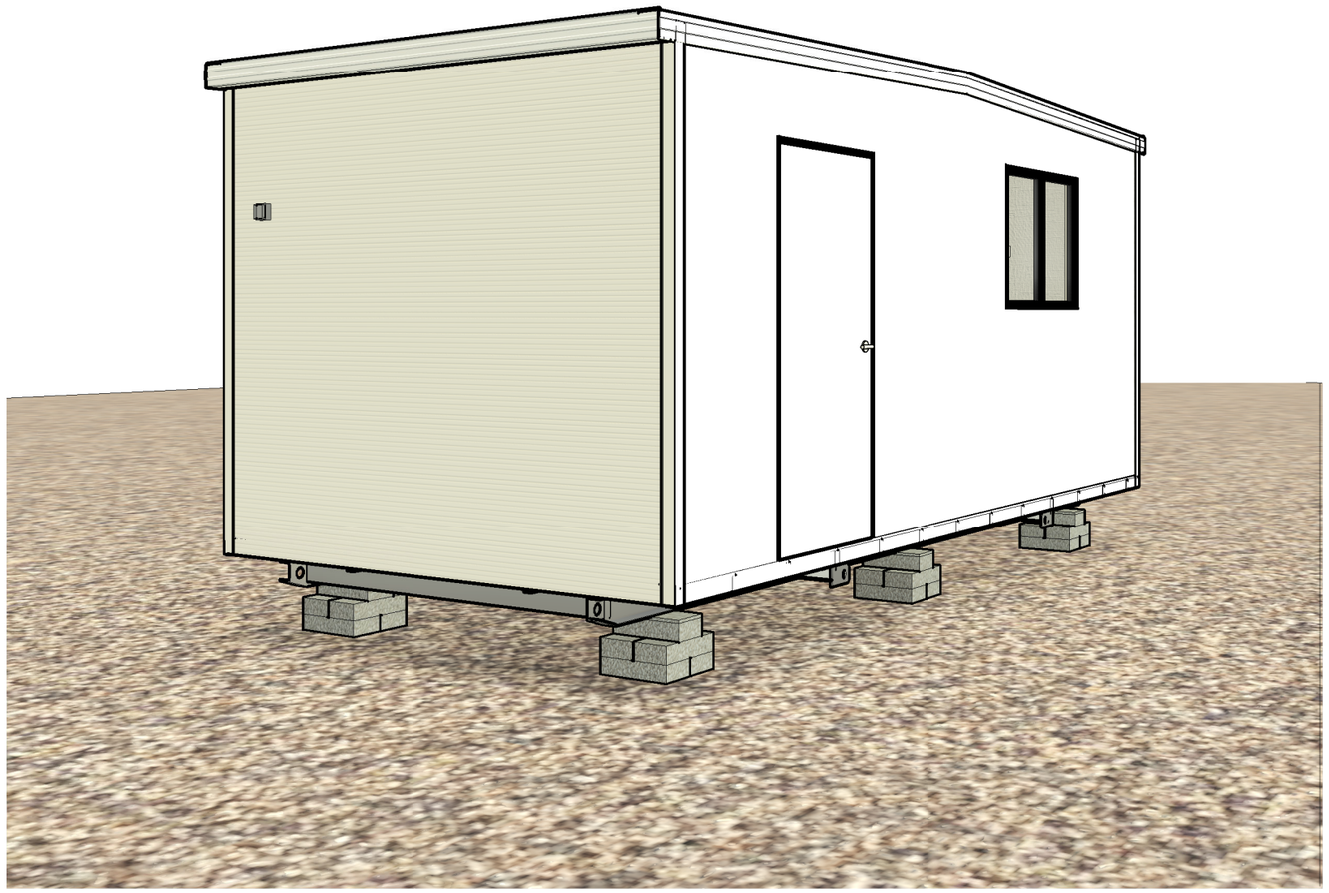

View indicative only

LR-018-S

ATCO SPACE RENTAL - SALE

DRAWING LIST		
SHEET NUMBER	SHEET NAME	CURRENT REVISION
A000	TITLE PAGE	A
A200	PLAN	A
A300	ELEVATIONS	A
A500	SALES SCHEDULES	A

6.0 x 3.0m LUNCHROOM

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Dated: 12 June 2024

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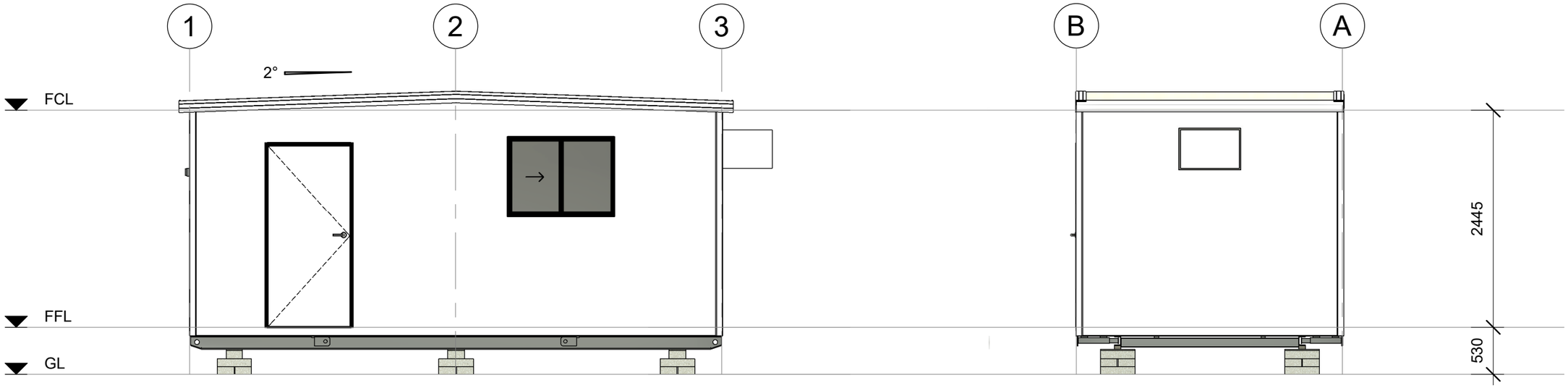
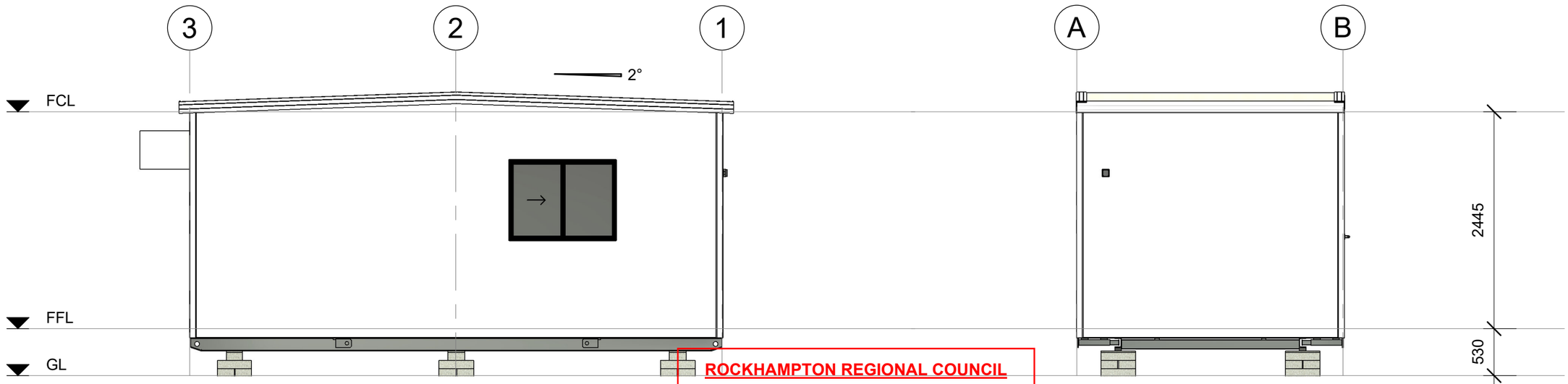


A / A200 ELEVATION

1 : 50

B / A200 ELEVATION

1 : 50



C / A200 ELEVATION

1 : 50

ROCKHAMPTON REGIONAL COUNCIL

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Dated: 12 June 2024

D / A200 ELEVATION

1 : 50

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REV	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR REVIEW	08.12.21	MA	VT

ATCO

ATCO STRUCTURES & LOGISTICS PTY. LTD.
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LUSCOMBE, QLD 4207
P.O. BOX 393, BEENLEIGH, QLD 4207
E-mail: ASLAu.Sales@atco.com

PHONE: (07) 3412 8600
FAX: (07) 3412 8699
ABN: 71 083 902 309

CLIENT: ATCO SPACE RENTAL - SALE

DESCRIPTION: 6.0 x 3.0m LUNCHROOM

ADDRESS:

TITLE: ELEVATIONS

PROJECT No.: -

SCALE AT A3: 1 : 50

DRAWING NUMBER: LR-018-S -A300

REVISION: A

9/12/2021 3:44:16 PM

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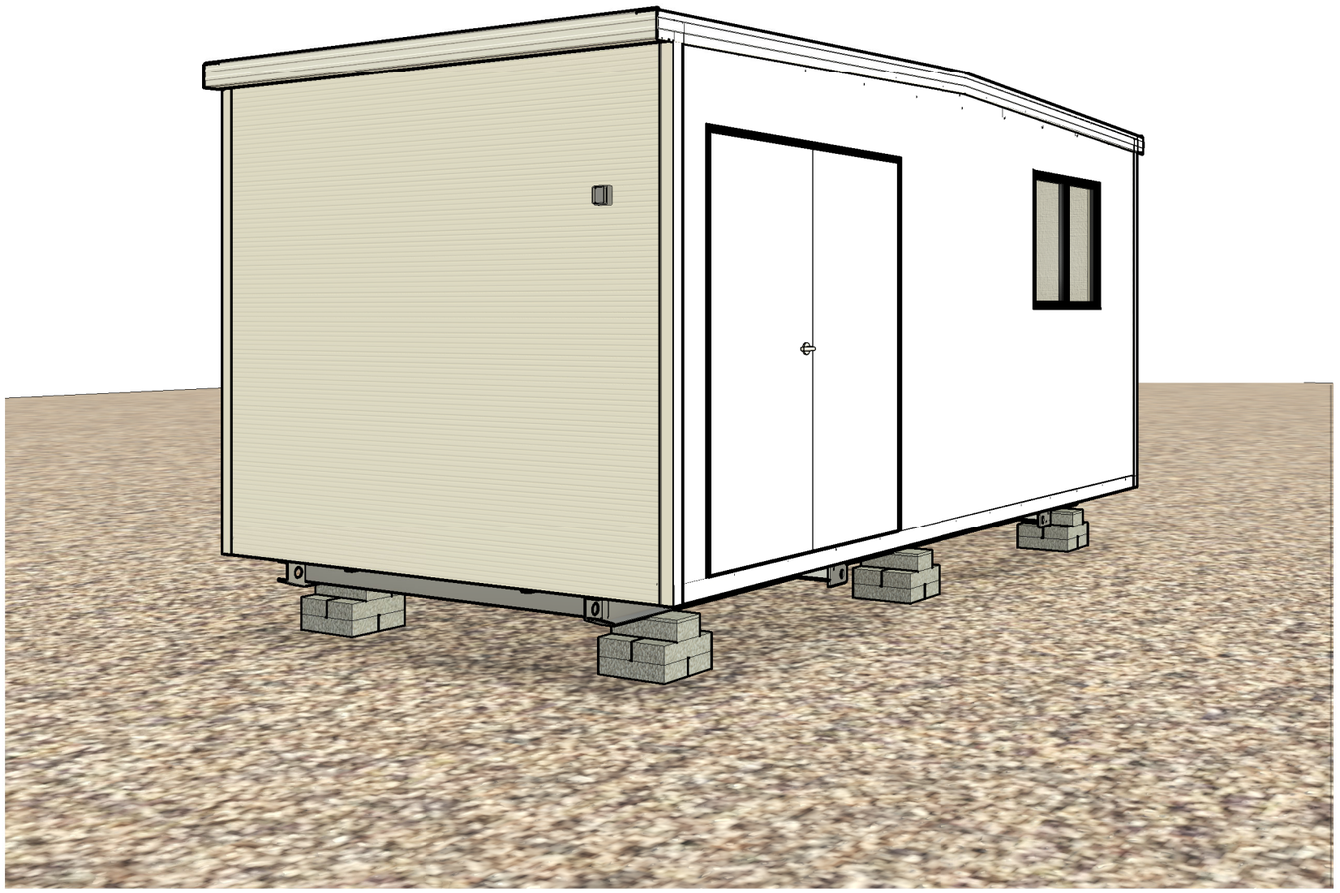

View indicative only

FA-025-S

ATCO SPACE RENTAL - SALE

DRAWING LIST		
SHEET NUMBER	SHEET NAME	CURRENT REVISION
A000	TITLE PAGE	A
A200	PLAN	A
A300	ELEVATIONS	A
A500	SALES SCHEDULES	A

6.0 x 3.0m FIRST AID

ROCKHAMPTON REGIONAL COUNCIL

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Dated: 12 June 2024

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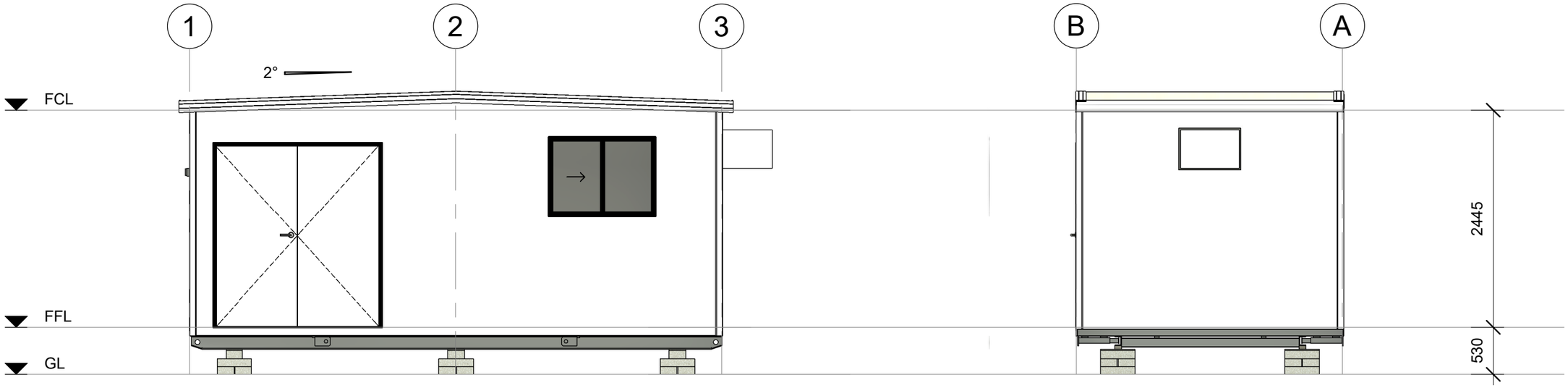
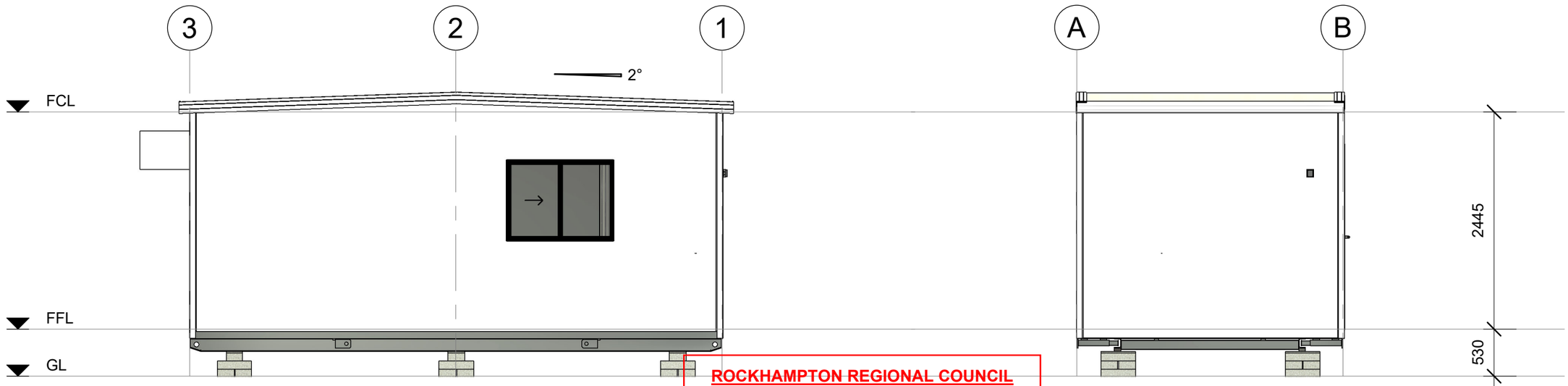


A / A200 ELEVATION

1 : 50

B / A200 ELEVATION

1 : 50



C / A200 ELEVATION

1 : 50

D / A200 ELEVATION

1 : 50

ROCKHAMPTON REGIONAL COUNCIL

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Dated: **12 June 2024**

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REV	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR REVIEW	09.12.21	MA	VT

ATCO

ATCO STRUCTURES & LOGISTICS PTY. LTD.
55 TONKA STREET,
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E-mail: ASLAu.Sales@atco.com

PHONE: (07) 3412 8600
FAX: (07) 3412 8699
ABN: 71 083 902 309

CLIENT: ATCO SPACE RENTAL - SALE

DESCRIPTION: 6.0 x 3.0m FIRST AID

ADDRESS:

TITLE: ELEVATIONS

PROJECT No.: -

SCALE AT A3: 1 : 50

DRAWING NUMBER: FA-025-S -A300

REVISION: A

11/01/2022 2:50:58 PM

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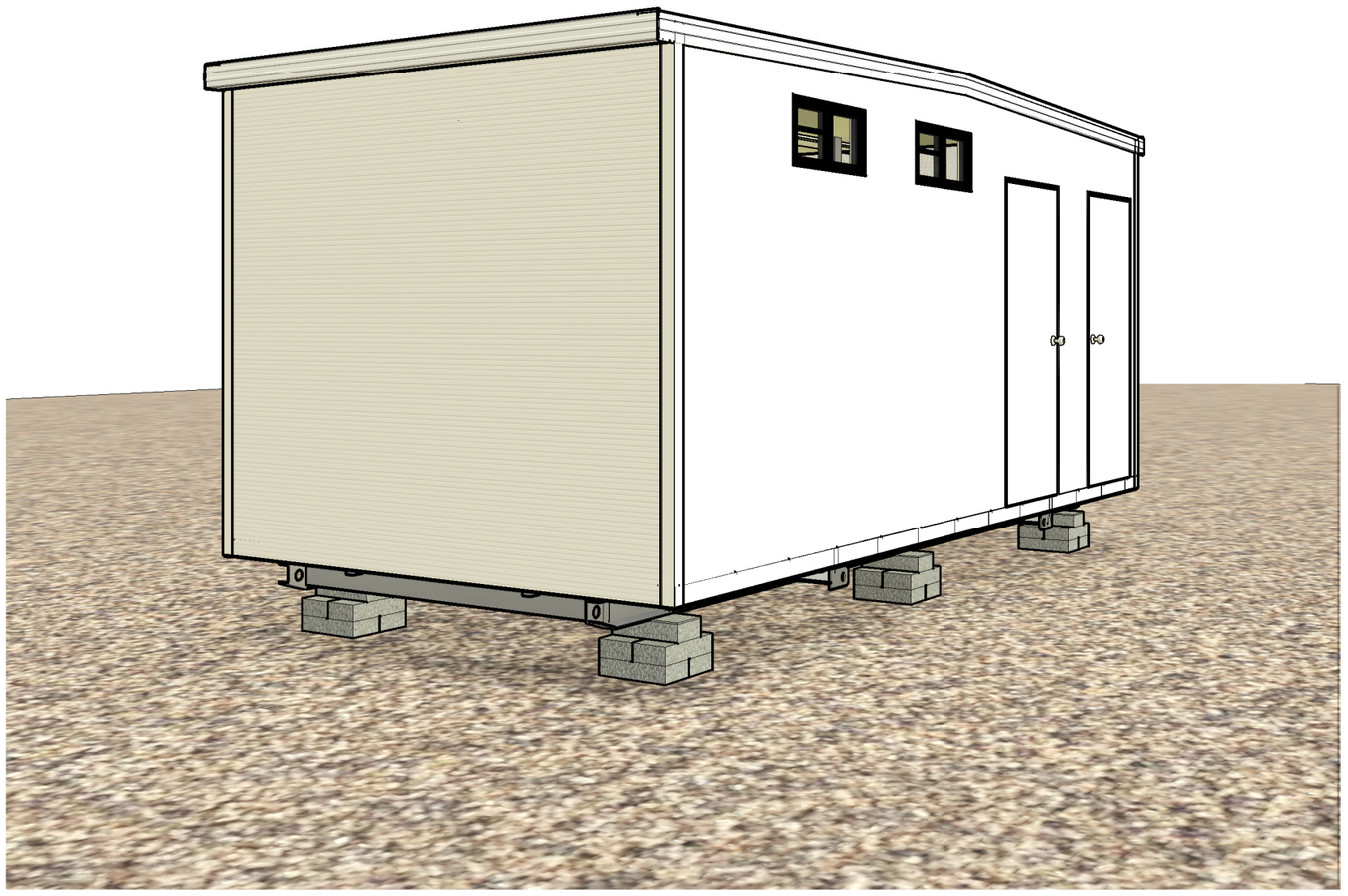

View indicative only

MFT-025-S

ATCO SPACE RENTAL - SALE

DRAWING LIST		
SHEET NUMBER	SHEET NAME	CURRENT REVISION
A000	TITLE PAGE	A
A200	PLAN	A
A300	ELEVATIONS	A
A500	SALES SCHEDULES	A

6.0 x 3.0m MALE/FEMALE TOILET

ROCKHAMPTON REGIONAL COUNCIL

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Dated: 12 June 2024

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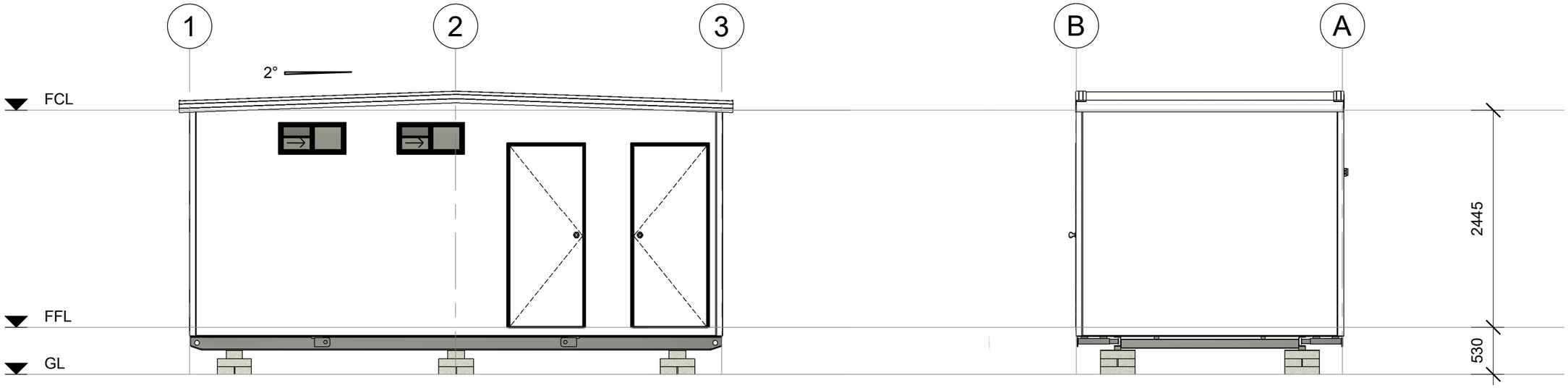
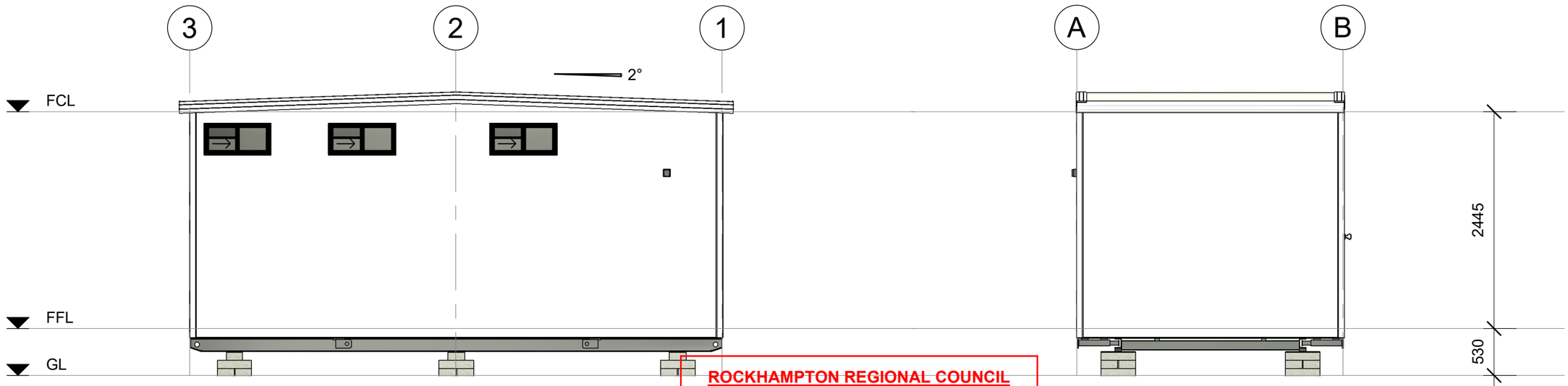


A / A200 ELEVATION

1 : 50

B / A200 ELEVATION

1 : 50



C / A200 ELEVATION

1 : 50

D / A200 ELEVATION

1 : 50

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: **D/151-2023**

Dated: **12 June 2024**

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REV	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR REVIEW	10.12.21	MA	VT

ATCO

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PHONE: (07) 3412 8600
FAX: (07) 3412 8699
ABN: 71 083 902 309

CLIENT: ATCO SPACE RENTAL - SALE

DESCRIPTION: 6.0 x 3.0m MALE/FEMALE TOILET

ADDRESS:

TITLE: ELEVATIONS

PROJECT No.: -

SCALE AT A3: 1 : 50

DRAWING NUMBER: MFT-025-S -A300

REVISION: A

16/12/2021 2:44:10 PM

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Premise

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: **D/151-2023**

Dated: **12 June 2024**

AUSTRAK PTY LTD

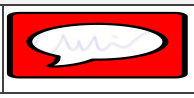
Austrak Parkhurst Facility

TRAFFIC IMPACT ASSESSMENT

Report No: MIS-1030/R01

Rev: A

9 March 2023

DOCUMENT AUTHORISATION					
Revision	**Revision Date**	**Report Details**			
A	09/03/23	For DA Submission			
Prepared By		**Reviewed By**		**Authorised By**	
Lawrence Mills		Bradley Jones		Chris Shields	

CONTENTS

FIGURES

TABLES

APPENDICES

1. INTRODUCTION

Premise Australia Pty Ltd (Premise) has been engaged by Austrak Pty Ltd (Austrak) to undertake a Traffic Impact Assessment for a development application to augment the Austrak Parkhurst Plant located at 23 Boundary Road, Parkhurst as a result of the Rockhampton Ring Road, in accordance with the Department of Transport and Main Roads' (TMR's) "Guide to Traffic Impact Assessment" (GTIA).

1.1 Background

The Rockhampton Ring Road (RRR) is a joint initiative of the Australian and Queensland governments which will provide a western road link of the Bruce Highway to the west of Rockhampton with key linkages into the city at the Capricorn Highway, West Rockhampton, Alexandra Street and Yaamba Road (Rockhampton – Yeppoon Road). Appendix A contains the Rockhampton Ring Road design map identifying key features of the project.

The Austrak Rockhampton site is accessed via Boundary Road at a location 100 metres southwest of the North Coast Line Rail Crossing. The site consists of a manufacturing plant for concrete rail sleepers and turnouts. The site entry point is mostly utilised by heavy vehicle types, consisting of either 19 m semi-trailers for raw material delivery or 26 m B-double vehicles for finished product pickup. The facility is located near the northern end of the RRR and TMR intends to utilize part of the development site for the RRR and Boundary Road Realignment. The resumption of land from the existing Austrak site results in the loss of road access to the facility.

As part of the Boundary Road Realignment, a material change of use (MCU) application is required to allow the adjacent land to be used as the new road access point and support relocation of infrastructure displaced by the land resumption. The MCU requires a TIA to be prepared to validate the appropriateness of the proposed site access and identify the impact on the Boundary Road / North Coast Line railway level crossing.

1.2 Scope and Study Area

Figure 1 shows the impact assessment area which consists of the Austrak facility and the adjacent Boundary Road / North Coast Line Rail Crossing.

Figure 1 – Impact assessment area

1.3 Pre-lodgement Meeting Minutes

Pre-lodgement advice from the State Assessment and Referral Agency (SARA) dated 2 September 2022 is attached in Appendix B. Page 6 of the Pre-lodgement advice states that information is required to address:

- The traffic distribution on the road network as a result of the proposed development.
- Identification of any railway level crossing/s likely to be impacted on by development generated traffic (including construction and operational traffic and staff movements).

2. EXISTING CONDITIONS

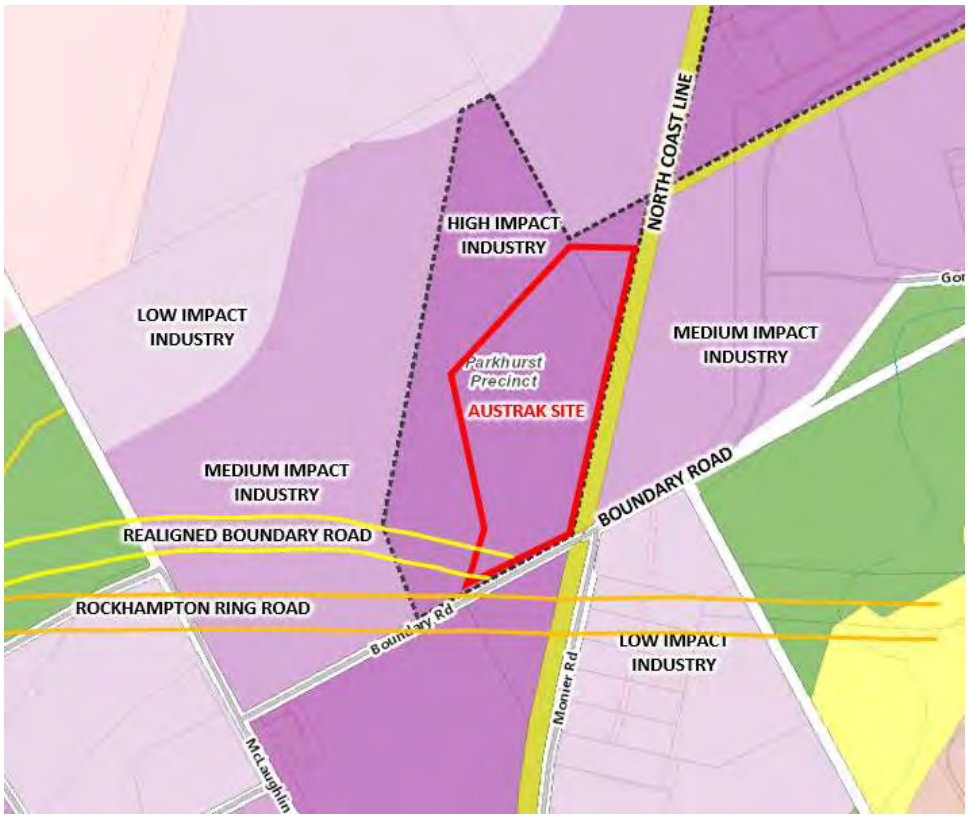
2.1 Land Use and Zoning

The subject site is currently zoned High Impact Industry in the Rockhampton Regional Council Planning Scheme and is occupied by the Austrak Rockhampton Facility.

2.2 Adjacent Land Uses / Approval

Land use surrounding the subject site is generally Low to High Impact Industry as shown by Figure 2.

Figure 2 – Surrounding area land use



2.3 Surrounding Road Network Details

The surrounding road network is shown by Figure 1.

The subject site has frontage to Boundary Road along the southern lot border.

Boundary Road is under the jurisdiction of Rockhampton Regional Council and is classed as a local street. It typically features an eight (8) metre wide, two-lane undivided carriageway (one lane each way). The posted speed limit on Boundary Road fronting the development site is 60km/h.

2.4 Traffic Volumes

TMR advised that 2022 Annual Average Daily Traffic (AADT) on Boundary Road 25m west of the rail line was 3,749 vehicles per day (vpd).

2.5 Site Access

The Austrak Rockhampton site is accessed via Boundary Road at a location 100 metres southwest of the North Coast Line Rail Crossing. The standard of the access is generally consistent with the provision of basic (BAR/BAL) turn treatments.

2.6 Public Transport

There are no bus services which utilise Boundary Road as their primary route. The closest public transport stop identified in Queensland Globe is a hail-n-ride stop on Yamba Road near Boundary Road over 1km to the northeast of the development.

2.7 Parking

The subject site has an designated car parking area adjacent to the existing site access.

2.8 Transport Infrastructure

The North Coast Rail Line level crossing with Boundary Road is shown in Figure 3. The North Coast Rail Line is a non-electrified single railway track owned by Queensland Rail. The track generally runs parallel to the Bruce Highway, running south to north between Nambour and Cairns. The North Coast Line forms the eastern boundary of the Austrak facility with the level crossing located at the southeast corner of the site. The level crossing is controlled by flashing signals on both approaches.

Figure 3 – Boundary Road / North Coast Rail Line Level Crossing

3. PROPOSED DEVELOPMENT DETAILS

3.1 Development Site Plan

The proposed realigned access and relocation of infrastructure displaced by the Boundary Road realignment resumption is shown in Appendix D. The proposed link will modify the road network by connecting Birkbeck Drive to the west of the site, into the existing Boundary Road carriageway adjacent to the west side of the rail level crossing.

3.2 Operational Details

Construction of the RRR is scheduled to commence in 2023 and includes realignment of Boundary Road necessitating the relocation of infrastructure and access.

3.3 Proposed Access and Parking

Road access to the site will be relocated to the adjacent western lot to allow for development of the RRR and Boundary Road Realignment. The development also provides 31 parking spaces including one (1) car parking space for people with disabilities to replace existing parking on land to be resumed.

Enclosed in Appendix E is the Austrak Access Basis of Design report by the Jacobs / SMEC joint venture which was supplied by TMR in conjunction with negotiation of RRR land resumption and documents assumptions used to produce the access layout. Though not explicit in the report, the layout appears to provide channelised right (short lane) and basic left (CHR(s)/BAL) turn treatments for a design speed of 70km/h.

4. DEVELOPMENT TRAFFIC

4.1 Traffic Generation

The proposed development consists of realigning the existing access and relocation of existing infrastructure to allow for the Boundary Road realignment in conjunction with the RRR implementation. The development does not consist of additional facilities that will increase the number of trips to and from the site.

4.1.1 TRAFFIC GENERATION SURVEY

Access traffic was surveyed between Thursday, 6 October 2022 to Wednesday, 12 October 2022 for a full 24-hour period each day. Traffic survey data is enclosed in Appendix C and has the following key features:

- The weekday total traffic generation of the site ranged from 148vpd (Tuesday 11 October 2022) to 200vpd (Wednesday 12 October 2022) with the average being 178.8vpd.
- The weekday heavy vehicle traffic generation of the site ranged from 22HVpd (Tuesday 11 October 2022) to 78HVpd (Wednesday 12 October 2022) with the average being 49.8HVpd.
- The weekday light vehicle traffic generation of the site ranged from 122LVpd (Wednesday 12 October 2022) to 140LVpd (Monday 10 October 2022) with the average being 129LVpd.
- Daily traffic generation on Saturday was 38vpd with one (1) heavy vehicle and just one (1) light vehicle on Sunday.
- The busiest hour for site traffic generation was 3:15-4:15PM on Monday 10 October 2022 with a total of 30vph and a 50:50 directional split.
- The maximum one-way volume during a peak hour was 18vph outbound during the afternoon peak hour (3:15PM-4:15PM) on Thursday 6 October 2022.
- The morning commuter peak hour generally occurred between 7:00AM and 8:00AM with 16vph inbound and 4vph outbound.
- On Wednesday the morning peak hour occurred between 10:45AM and 11:45AM with 10vph inbound and 11vph outbound.

Based on the traffic count data it is concluded that the development peak hour is the afternoon commuter peak hour and fluctuations in site activity result in variations in the site's traffic generation outside of commuter peak periods. On a day of peak activity (Wednesday 12 October 2022) it appears that the sites traffic generation may be at a level comparable to morning commuter peak hour traffic generation throughout the working day.

4.1.2 FIRST PRINCIPLES ASSESSMENT

Appendix G contains a first principles assessment by Austrak of typical heavy vehicle generation by the site. This indicates that approximately 22 truck loads of material are required / produced by the development each day of production at the typical level which is approximately 60% of capacity. Assuming no backloading of heavy vehicles this corresponds to a typical heavy vehicle generation of 44HVpd which is slightly less than the average weekday heavy vehicle traffic generation of 49.8Hvpd observed in October 2022.

Extrapolating up to operations at 100% capacity with the site operating 5-days per week, 48-weeks per year, peak heavy vehicle traffic generation estimated from first principles is 77HVpd which is consistent with the peak heavy vehicle generation of 78Hvpd recorded on Wednesday 12 October 2022.

The first principles assessment confirms that the traffic generation survey data is representative of site operations.

4.1.3 DEVELOPMENT TRAFFIC GENERATION

Based on the traffic count, this report adopts the following conservative assumptions for development traffic generation:

- Peak hour traffic generation is 30vph during both the morning and evening commuter peak hours;
- The directional split during commuter peak hours is 60:40 (18vph : 12vph) with the peak direction being inbound in the morning and outbound in the evening.

Therefore, the existing traffic volumes shown in Figure 4 and Figure 5 have also been adopted as the development traffic generation.

4.2 Trip Distribution

The traffic survey data (refer Appendix C) indicates a reasonably balances distribution of traffic to / from the east and west with a slight bias towards the east (approximately 60:40) which is the direction of the existing Bruce Highway.

Design traffic volumes shown by Figure 2.1 of the Austrak Access Basis of Design report (refer Appendix E) suggest traffic the distribution of development traffic may in the future be biased towards the west (approximately 60:40). This shift in traffic distribution may arise due to construction of the RRR and realignment of Boundary Road, however, the credibility of development traffic estimates in the Austrak Access Basis of Design report is significantly undermined by peak hour traffic volumes which exceed the observed daily traffic volumes.

With consideration to the above discussion, this report adopts a 50:50 distribution noting that varying this distribution by 10 percentage points will result in a variation of less than 2vph in any individual turning movement.

4.3 Development Traffic Volumes on the Network

Figure 4 and Figure 5 show design development traffic volumes on the network during the morning and evening peak hours

Figure 4 – Morning Peak Hour Development Traffic Volumes

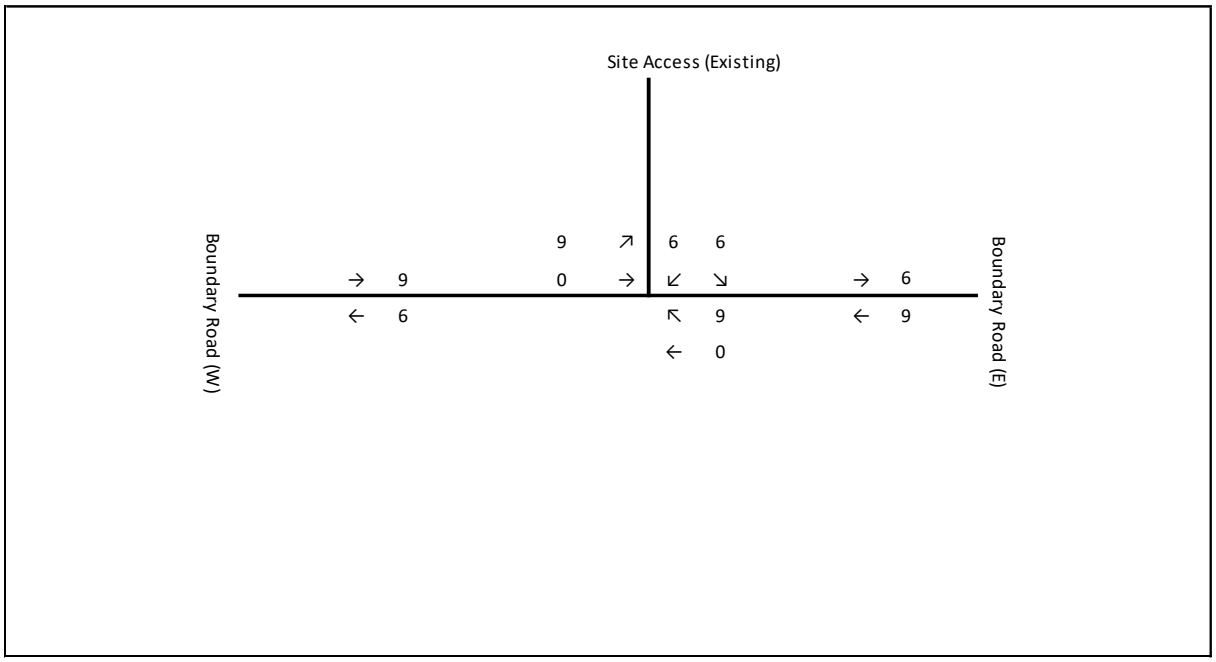
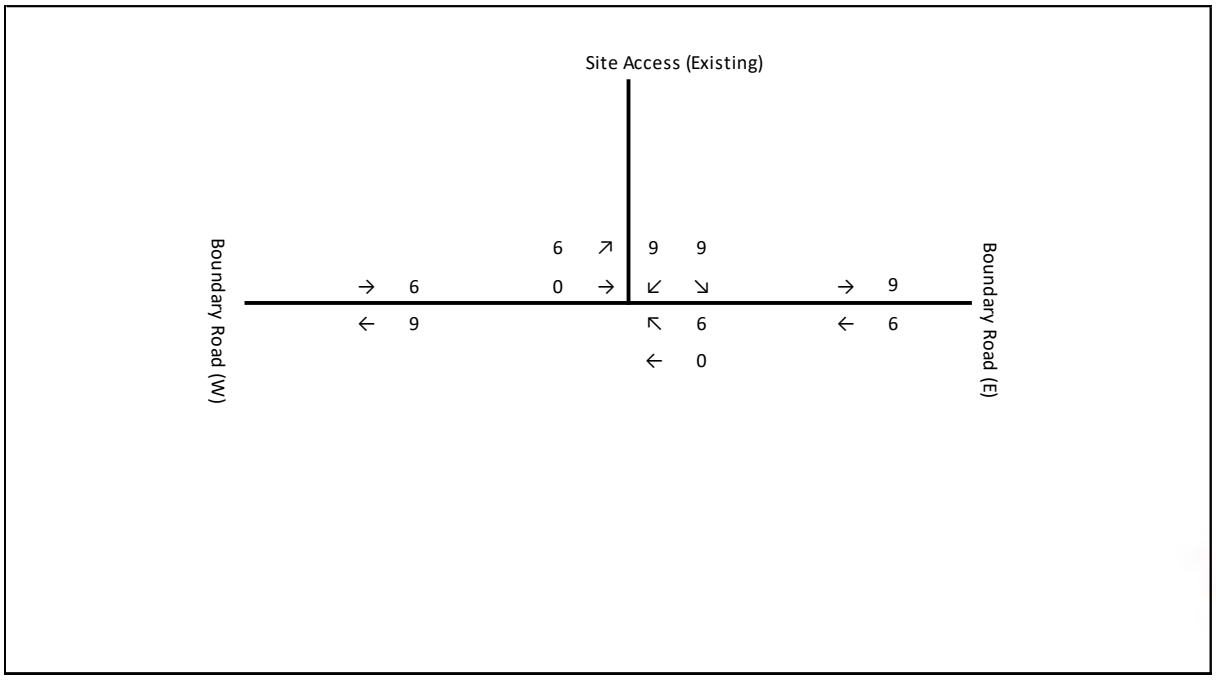


Figure 5 – Afternoon Peak Hour Development Traffic Volumes



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5. IMPACT ASSESSMENT AND MITIGATION

5.1 With and Without Development Traffic Volumes

Through traffic volumes on Boundary Road as shown by Figure 2.1 of the Austrak Access Basis of Design Report (refer Appendix E) for 2044 peak hours have been adopted as design year 'without development' traffic volumes.

The estimated 'with development' traffic volumes for the morning and evening peak hours are shown in Figure 6 and Figure 7. This traffic was estimated by combining development traffic volumes from Section 4.3 and 'without development' through traffic volumes on Boundary Road from the Austrak Access Basis of Design Report (refer Appendix E).

Figure 6 – Morning Peak Hour Traffic Volumes for Realigned Site Access – Design Year 2044

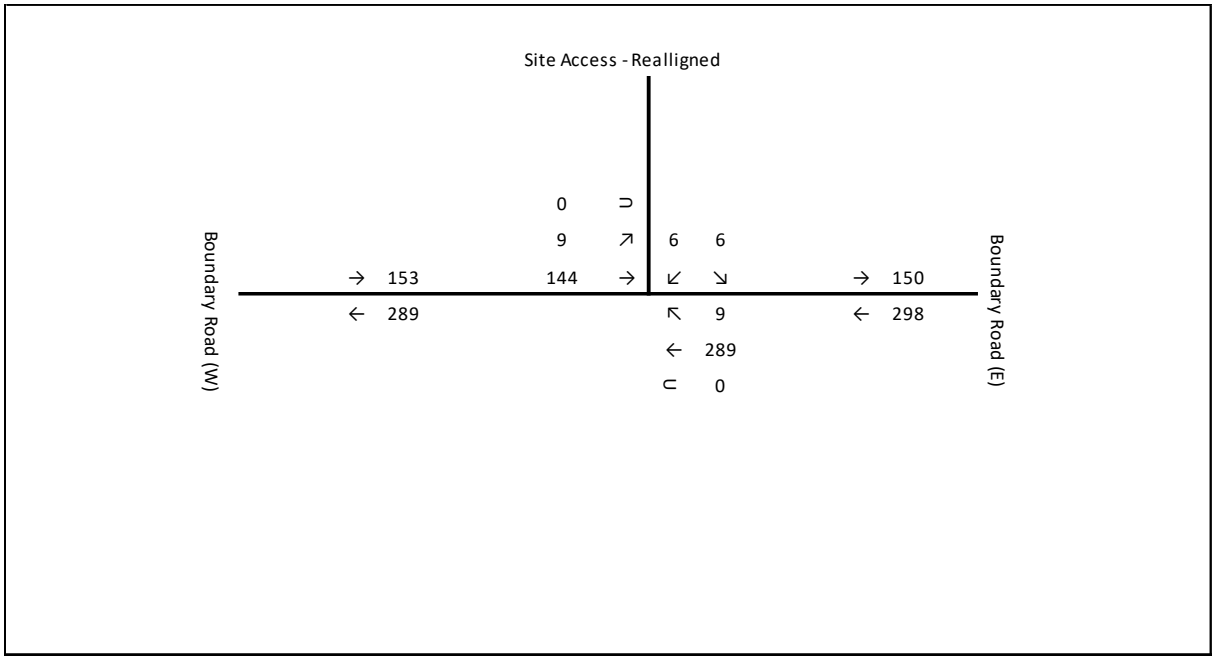
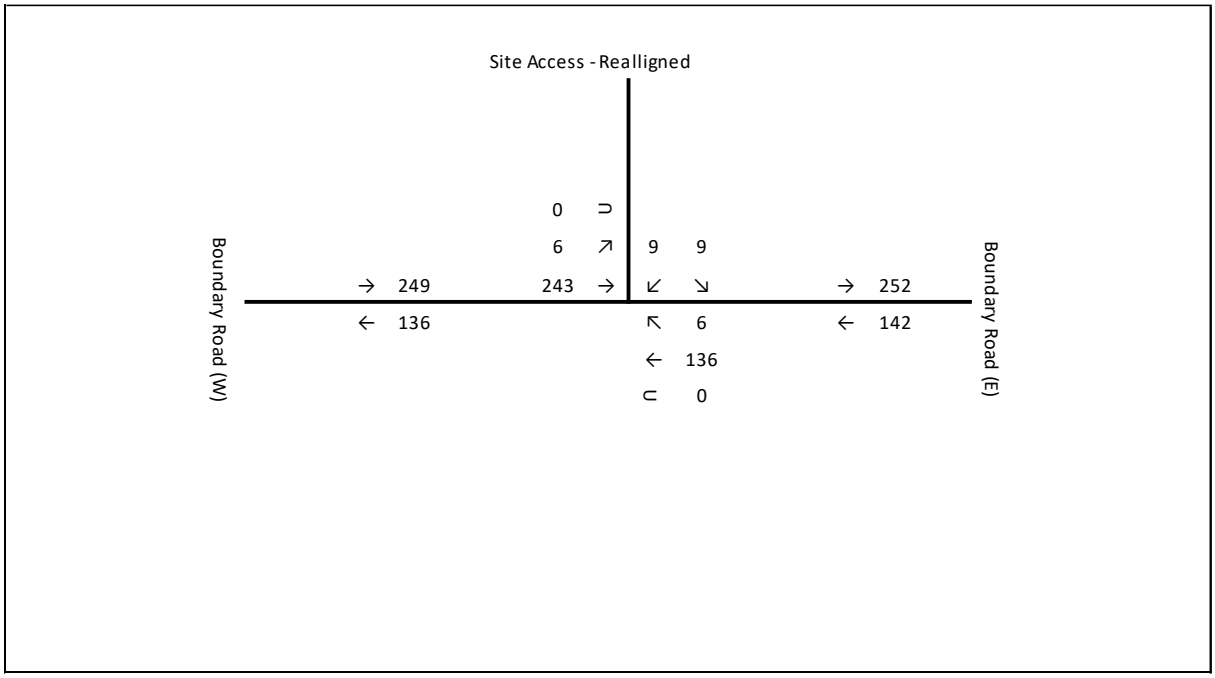


Figure 7 – Evening Peak Hour Traffic Volumes for Realigned Site Access – Design Year 2044



5.2 Road Safety Impact Assessment and Mitigation

The GTIA specifies the following two (2) stage process for assessment of road safety impacts:

1. Road Safety Risk Assessment to determine the change in risk profile associated with existing road safety issues as a result of the development; and
2. Road Environment Safety Assessment to determine if changes to infrastructure require either a road safety audit by an accredited road safety auditor (RSA) or a road safety assessment by either an RSA or a registered professional engineer of Queensland (RPEQ).

5.2.1 ROAD SAFETY RISK ASSESSMENT

As the Boundary Road realignment is not an existing road, a Road Safety Risk Assessment in accordance with the GTIA cannot be conducted.

5.2.2 ROAD ENVIRONMENT SAFETY ASSESSMENT

In accordance with the GTIA, Boundary Road is assessed as having a medium road environment risk rating based on having a posted speed limit of 60 km/h and an AADT of less than 8,000 vpd.

The proposed development is a Planning Act Development as defined by the GTIA and therefore, any changes to the road environment do not require a road safety audit but should be subject to a road safety assessment. A road safety assessment may be conducted by either an accredited road safety auditor or a Registered Professional Engineer of Queensland (RPEQ). This requirement would be satisfied by safety reports prepared in accordance with Section 295 of the Work Health and Safety Regulation 2011 as part of the design process.

5.3 Access and Frontage Impact Assessment and Mitigation

5.3.1 TURN WARRANT ASSESSMENT

Turn warrant assessments were undertaken for the proposed realigned access based on warrants contained in Austroads' "Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings" (AGTM06-20). The assessment is based on a design speed of 70 km/h, being 10km/h above the posted speed limit, and estimated 'with development' traffic volumes (refer Section 5.1). Figure 8 shows the major road turn treatment warrants in the normal design domain for a design speed of 70 km/h.

Figure 8 – Major Road Turn Warrants

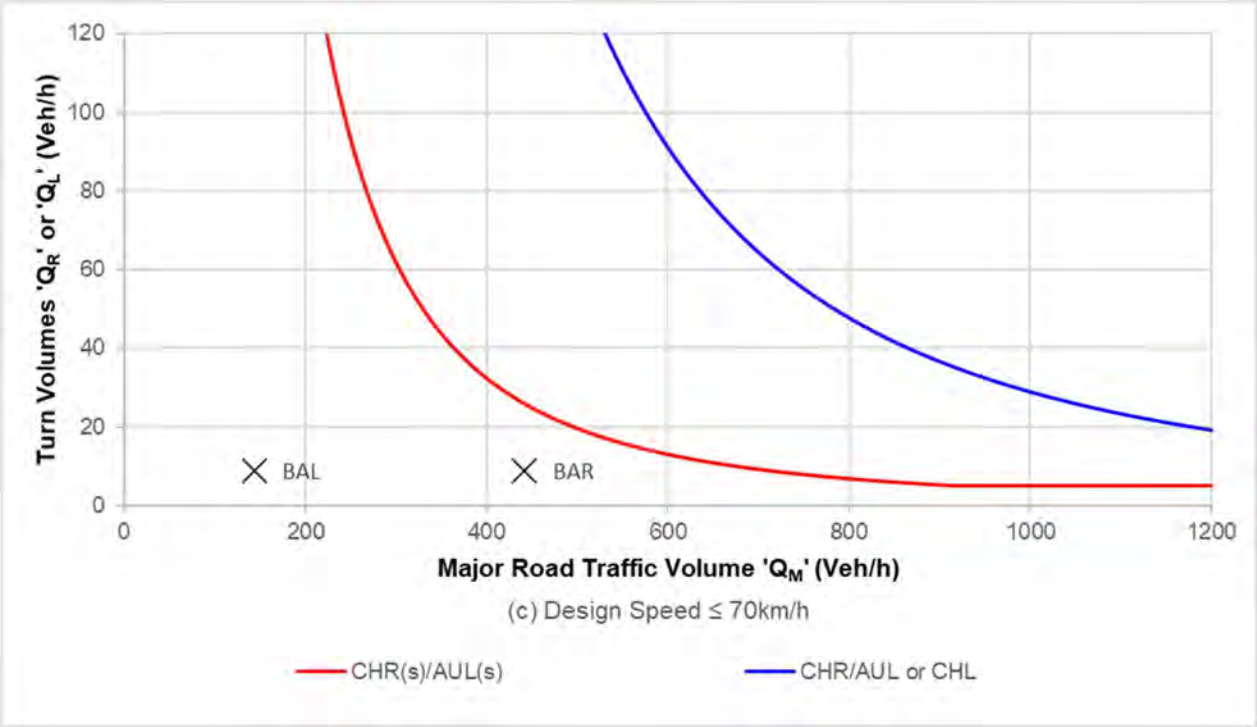


Table 1 lists design traffic volumes and warranted turn treatments at the development site access. Figure 3 includes points representing left and right turn volumes during the critical morning peak hour.

Table 1 – Design Year 'With Development' Warranted Turn Treatments

Intersection movements	AM Peak Hour Traffic			PM Peak Hour Traffic			Warranted Treatment
	Q_M (vph)	Q_R/ Q_L (vph)	Treatment	Q_M (vph)	Q_R/ Q_L (vph)	Treatment	
Boundary Road / Realigned Access							
Right turn	442	9	BAR	385	6	BAR	BAR
Left turn	144	9	BAL	243	6	BAL	BAL

As indicated in Table 1 Basic Right and Basic Left (BAR/BAL) turn treatments are required for each approach at the realigned intersection. As shown in the design drawings in Appendix E, the current design for the realigned access comprises channelised right (short lane) and basic left (CHR(s)/BAL) turn treatments. As the design turn treatments are equal or higher than those that are warranted for the development, the intersection form proposed by Jacobs / SMEC is sufficient to meet the demands of the proposed development.

5.3.2 INTERSECTION ANALYSIS

The 2009 edition of Austroads "Guide to Traffic Management Part 3: Traffic Studies and Analysis" (AGTM03-09) states that "at unsignalised intersections with minor roads where there are relatively low volumes of cross and turning traffic, capacity considerations are usually not significant, and capacity analysis is unnecessary." Table 2 reproduced from AGTM03-09 sets out details of intersection volumes below which capacity analysis is unnecessary.

Table 2 – Intersection Volumes Below Which Capacity Analysis is Unnecessary (AGTM03-09)

Type of road	Light cross and turning volumes maximum design hour volumes vehicles per hour (two way)		
Two-lane major road	400	500	650
Cross road	250	200	100
Four-lane major road	1000	1500	2000
Cross road	100	50	25

As indicated by Figure 6 and Figure 7, forecast traffic on Boundary Road is expected to be in the range 400vph to 500vph with peak development traffic conservatively estimated as 30vph. Therefore, in accordance with Table 2 and AGTM03-09, capacity analysis is unnecessary for the Austrak access.

5.3.3 SIGHT DISTANCES

The GTIA specifies minimum sight distance requirements for intersections as:

- Approach Sight Distance (ASD) required to the road surface at all intersections and accesses;
- Safe Intersection Sight Distance (SISD) desirable between a vehicle using a public road intersection and a vehicle approaching on the major road; and
- Minimum Gap Sight Distance (MGSD) acceptable between a vehicle using a public road intersection and a vehicle approaching on the major road.

ASD, SISD and MGSD are defined in the "Guide to Road Design Part 4A: Unsignalised and Signalised Intersections" (AGRD04A-17). Austroads also provides formulas for calculating the acceptable minimum sight distances.

ASD is the distance at which a driver can see any line marking on the road surface at the intersection. ASD should be sufficient to allow a driver to react to the intersection and, if necessary, come to a complete stop before entering the intersection. Minimum ASD is calculated using the formula

$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where:

- R_T = reaction time
  = 1.5sec alert driving conditions (high expectancy of stopping due to traffic signals);
- V = design speed;
- d = coefficient of acceleration
  = 0.36 (desirable value for most urban and rural road types); and
- a = longitudinal grade
  = -0.7% (west of proposed site access)
  = 0% (east of site).

To comply with the desirable ASD requirements specified by AGRD04A-17, a vehicle on Boundary Road should be able to see any line marking on the road surface at the intersection, at a distance of 84 m to the west of site access and 83 m to the east.

SISD is the distance at which a driver can see a vehicle moving into a collision situation and decelerate to a stop before reaching the collision point. Minimum SISD is calculated using the formula

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where the meaning of variables is as for ASD with decision time, D_T, being the sum of reaction time, R_T, and observation time, O_T (3.0 sec). To comply with the desirable SISD requirements specified by AGRD04A-17, a vehicle on Boundary Road should be able to see a vehicle exiting the realigned site access at 142 m to the west and 141 m to the east.

MGSD is based on distances corresponding to the critical acceptance gap that drivers are prepared to accept when undertaking a crossing or turning manoeuvre at intersections. MGSD is measured from the point of conflict between approaching and entering vehicles back along the centre of the travel lane of the approaching vehicle. The MGSD is dependent on the critical gap acceptance time (ta) that a driver of an entering vehicle accepts to see a vehicle in the conflicting streams to safely commence the desired manoeuvre. The critical gap acceptance in this case is 5.0sec for cars. According to Table 3.6 in AGRD04A-17, the minimum MGSD required for a design speed of 70 km/h and critical gap acceptance is 97 m.

The vertical geometry was assessed using the Jacobs / SMEC drawing 1167108-DJV-2RD10 (refer Appendix F) which shows the longitudinal section for the realigned Boundary Road. The overall grade for the proposed road is shown to be minor in the vicinity of the site. To the west of the site, the average grade is shown to be -0.7% for a distance of 555 metres to the west of the proposed access, with few significant crests likely to hinder visibility. To the east of the proposed access, the grade declines towards a minor crest at -0.3% before gently rising at 0.3% towards the merger with the existing Boundary Road. The overall negligible grade of the realigned road suggests that the vertical geometry would not hinder visibility between approaching vehicles at the proposed access.

The horizontal geometry has been assessed based on Drawing MIS-1030 SKC-001 (refer Appendix D). To the west of the proposed access, the road remains relatively straight for approximately 262 m before gradually diverging in a south-westerly direction. Sight distances in this direction are therefore expected to be ample. Visibility to the east will be more of concern as the road undergoes a relatively sharp turn to re-connect to the existing Boundary Road carriageway. Visibility may also be hindered by the presence of trees near the existing south-eastern lot boundary corner. The sight distance for this section was taken from the centre of the proposed access to the point on realigned Boundary Road prior to traversing around the existing group of trees. The overall sight distance was measured to be 169 m, which is well above the minimum 141 m.

Therefore, the sight distance to the east of the proposed access is sufficient to meet the ASD, SISD and MGSD requirements.

5.4 Transport Infrastructure Impact Assessment and Mitigation

The site access is in the vicinity of the Boundary Road / North Coast Rail Line. The Australian Level Crossing Assessment Model (ALCAM) will therefore be used by the rail manager (QR) to assess the impacts of development traffic on the existing level rail crossing. Traffic data for use in the ALCAM assessment is shown in Table 3.

Table 3 – ALCAM Assessment

AADT over railway level crossing (Prepare table for each impacted railway crossing)			
Year	Without development (background growth)	With Development	No. and dimensions/type of heavy vehicles.
2022 (current scenario)	3,749	3,749	B-Double
Commencement of Construction (2023)	3,749	3,749	B-Double
Commencement of the use (2023)	3,749	3,749	B-Double
Ten-year design horizon (Design year 2044)	4,480	4,480	B-Double

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of Impacts and Mitigation Measures

This TIA was prepared in order to address the impacts of the realigned Austrak access on the future road network and adjacent North Coast Rail line crossing. Road safety and access impact assessments completed in accordance with the GTIA, confirm that the proposed development complies with relevant standards and will not have an adverse impact on the future road network. The CHR(s)/ BAL turn treatments proposed by Jacobs / SMEC, are shown to be adequate to meet the anticipated traffic volumes of the development. Table 3 summarises traffic data for use in an ALCAM assessment to be undertaken by the rail manager.

6.2 Certification Statement and Authorisation

This report was prepared by Lawrence Mills under the direct supervision of Bradley Jones (RPEQ 19986).

The Traffic Impact Assessment Certification in accordance with the GTIA is attached in Appendix H.

APPENDIX A

ROCKHAMPTON RINK ROAD – DESIGN MAP

https://www.tmr.qld.gov.au/_/media/projects/r/rockhampton-ring-road/rrr-design-map.png

APPENDIX B

PRE-LODGEMENT MEETING NOTES

SARA reference: 2207-29833 SPL
Applicant reference: 22476

2 September 2022

Austrak Pty Ltd
PO Box 2103
CANNONVALE QLD 4802
andrea@visionsurveysqld.com.au

Attention: Andrea Henderson

Dear Austrak Pty Ltd

SARA Pre-lodgement advice - 23 Boundary Road, Parkhurst

I refer to the pre-lodgement meeting held on 27 July 2022 in which you sought advice from the State Assessment and Referral Agency (SARA) regarding the proposed development at the above address. This notice provides advice on aspects of the proposal that are of relevance to SARA.

SARA's understanding of the project

Material Change of Use – High Impact Industry (ancillary uses including offices, amenities, car park, driveway, weigh bridge, and new access) and related operational works. SARA DAMS mapping indicates the site is affected both future railway corridor and future state-controlled road and is within 25m of an existing state transport corridor (Railway corridor).

Supporting information

The advice in this letter is based on the following documentation that was submitted with the pre-lodgement request or tabled at the pre-lodgement meeting.

Drawing/report title	Prepared by	Date
MIS-0974-SKC001 to 0006 - 18May2022.pdf	Premise	12 July 2022

Pre-lodgement meeting record

Fitzroy/Central regional office
Level 2, 209 Bolsover Street,
Rockhampton
PO Box 113, Rockhampton QLD 4700

Meeting date	27 July 2022
Meeting location	Microsoft Teams
Meeting chair	Carl Porter
Meeting attendees	Refer to **Attachment 1**

Pre-lodgement meeting notes

Premise / Vision Surveys	
1.	• Regarding the railway corridor mapping is it intentional or historical and how would it effect the development on the site? • DTMR land resumption for Rockhampton Ring Road (ring road) taking away the existing front door access and it is the only front door to Austrak • Will also be taking away the front door parking and manoeuvring area. • Key features of the proposal: o Will need to recreate the car park o Move compound o New truck access for bringing concrete powder in and taking sleepers away o Services in Boundary Road will need to be realigned o New sewage pump station • What impact does the ring road have with flooding and overland flow? (Waiting on drainage and overland flow information from DTMR) • Cross drainage structures - what are they? • Access road indicated on plans is a future 13m access road by the landowner (not Austrak) and does not form part of current proposal. • Stormwater studies in support of the application to consider relevant catchments only, not the whole site. • Traffic is not increasing as a result of the proposal so no additional impact on corridor. • Preliminary approval for an MCU is still 'live' over the site as Council has extended it
Department of Transport and Main Roads (DTMR)	
2.	• Designation of lot 1 as railway corridor on SARA DAMS mapping is historical, given that the lot is now privately owned. • DTMR will flag the mapping for amendment. • Both the future railway corridor and ring road corridor need to remain clear including earthworks. • The Rockhampton Ring Road Project team has indicated no new concerns • The Rockhampton Ring Road Project team also confirmed that a new access to the existing facility will be provided from Boundary Road (as part of the Ring Road alignment). This access will be designed to facilitate the traffic impacts / vehicle movements associated with the existing facility. No future stages / developments will be considered as part of this works. • Furthermore, as part of the realignment of Boundary Road and the proposed road access works, the Rockhampton Ring Road Project team will also be looking at the relocation of other infrastructure within the road reserve, for example water, sewer and/or stormwater infrastructure. Further discussions and clarification regarding the new access and associated works will continue between Rockhampton Ring Road Project team and Austrak (if applicable). • DTMR (Rockhampton Ring Road Project Team) to advise when stormwater studies complete and will provide hydraulic and civil design inputs directly to Austrak (once available). • Application will need to address

	o no worsening of stormwater management impacts to existing and future railway corridor o rail level crossing assessment o traffic management plan and traffic information in regard to the level crossing on Boundary Road.
Rail and Public Transport Technical Advice Team (RAPTTA)	
3.	• The submitted Internal Traffic Management plan, prepared by Premise, dated 04/04/2022, drawing number SKC006 and revision 1 indicates that the proposed development area will be setback from the railway corridor by the existing Austrack leasehold area to a distance of approximately 111m. Therefore, there are no railway interface issues. • The site is accessed from Boundary Road. There is a railway level crossing of the North Coast Line (ID: LXR_05411). It is protected by flashing lights, signage and pavement marking. • The site includes the future railway corridor project 'Bruce Hwy - Rockhampton Ring Rd (Third River Crossing) –BC' as shown on the DAMS. This project is classified as Category C within TMR's PRISM planning. • The submitted Land Lease Areas plan, prepared by Premise, dated 07/04/2022, drawing number SKC005, revision 1 indicates that the proposed development area will be setback from the future railway corridor by approximately 400m. Upon submission of a formal development application, confirmation of the development setback from the future railway corridor is required to determine compliance. • Further guidance on what information needs to be supplied with a formal development application can be obtained from the Department of Transport and Main Roads' SDAP Supporting Information available at: https://www.tmr.qld.gov.au/Community-and-environment/Planning-and-development/Planning-and-development-assessment-under-the-Planning-Act/Assessable-development
Department of State Development, Infrastructure, Local Government and Planning (DSDILGP)	
4.	• DSDILGP to advise on triggers and fees.

Pre-lodgement advice

The following advice outlines the aspects of the proposal that are of relevance to SARA.

SARA's jurisdiction and fees	
1.	The application will require referral to SARA under the following provisions of the Planning Regulation 2017: • Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, item 1 – State transport corridor This will require a fee of 1,714* fee units to be paid in accordance with Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 8 (b)(ii). This will also require a fee of 3,428* fee units to be paid in accordance with Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 8 (e)(ii). The application may require referral to SARA under the following provisions of the Planning Regulation 2017: • Schedule 10, Part 9, division 4, subdivision 1, table 1 (Planning Regulation 2017)— Development application for a material change of use for an aspect of development stated in Schedule 20: Development impacting on State transport infrastructure and thresholds This will require a fee of 1,714 fee units to be paid in accordance with Schedule 10, Part 9, Division 4, Subdivision 1, Table 1, Item 8 (a)(ii).

	**At the time of issue the fee unit value is currently $1.025. From 1 July each year the fee unit value will be updated to reflect the Government Indexation Rate and will increase. The value of the fee unit is prescribed in the Acts Interpretation (Fee Unit) Regulation 2022.* SARA would be a referral agency for the proposed application.
Key matters and action items	
2.	**State-controlled Road (future state-controlled road corridor)** (i) When lodging a formal development application, the applicant is required to provide scaled and sufficiently detailed plans and supporting documentation which clearly identify all aspects of the proposed development in relation to the road corridor. It is however understood that the Rockhampton Ring Road Team will be facilitating a new access design, and access location, to facilitate the existing use on the subject site. (ii) The development must address any drainage and flooding impacts the proposal might have onto the state-controlled road network and how this will be mitigated. It is however understood that the Rockhampton Ring Road Project team is busy with ongoing discussions with Austrak regarding hydraulic and civil design inputs. This information will be provided directly to Austrak, once finalised via the Rockhampton Ring Road Project team.
3.	**Railway Corridor** Based on the referral triggers, a formal development application should demonstrate compliance with the performance outcomes of the relevant modules of the State Development Assessment Provisions (SDAP). Further guidance on what information needs to be supplied with a formal development application can be obtained from the Department of Transport and Main Roads' SDAP Supporting Information available at: https://www.tmr.qld.gov.au/Community-and-environment/Planning-and-development/Planning-and-development-assessment-under-the-Planning-Act/Assessable-development *Proposal Plans* When lodging a formal development application, the applicant is required to provide scaled and sufficiently detailed plans and supporting documentation which clearly identify all aspects of the proposed development in relation to the railway corridor. In particular, this should include the following amongst other relevant considerations • the railway corridor and future railway corridor boundary should be clearly shown. Works should be located outside the railway corridor and future railway corridor. The future railway corridor alignment is available on the SARA on-line mapping system of the Department of State Development, Manufacturing, Infrastructure and Planning website (available at: https://dams.dsdip.esriaustraliaonline.com.au/damappingsystem/) • proposed service and utility connections in relation to the railway corridor. Any proposed connections to services and utilities in the railway corridor (including stormwater discharge) will rely on gaining relevant approvals from the railway manager under section 225 of the *Transport Infrastructure Act 1994* • the extent of any works in relation to the railway corridor and future railway corridor such as for earthworks and stormwater management. If bulk earthworks are required to achieve flood immunity the extent of the building pad should be shown. This information is required to assess the proposal against the provisions of State Code 2:

Development in a Railway Environment of the State Development Assessment Provisions. Once proposal plans are provided illustrating the proposed development on the site, further additional information may need to be provided.

Stormwater and Flooding

When lodging a formal development application, the applicant is requested to provide a Stormwater Management Plan including Flood Impact Assessment to demonstrate compliance with PO12 - PO16, and PO56, State Code 2: Development in a Railway Environment of the State Development Assessment Provisions.

The Stormwater Management Plan, including Flood Impact Assessment, should demonstrate that the management of stormwater and flooding post development can achieve a no worsening impact (on the pre-development condition) for all flood and stormwater events that exist prior to development and up to a 1% Annual Exceedance Probability (AEP). This should include at least the following flood and stormwater events: 63.2%, 50%, 20%, 10%, 5%, 2% and 1% AEP. Stormwater management for the proposed development must ensure no worsening or actionable nuisance to the railway corridor, including rail transport infrastructure, and future railway corridor, caused by peak discharges, flow velocities, water quality, sedimentation and scour effects. The report should also demonstrate that flood storage capacity is maintained on the site with the development. Overland flow paths/ hydraulic conveyance should be maintained on the site as part of the proposed development.

In particular, the following should be addressed:

(i) *Verify the pre-development condition.* Verify the existing drainage characteristics of the site, particularly in relation to the railway corridor and future railway corridor. All relevant legal points of discharge for the development site should be identified.

(ii) *Catchment Analysis.* Provide pre-development and post-development catchment plans that clearly identify all internal catchments on the site, external catchments draining into the site, the flow paths (direction of flow) within each catchment, the size of each catchment and the legal point of discharge for each catchment.

(iii) *Flood impact assessment.* Provide a hydraulic and hydrological analysis demonstrating the design flood peak discharges for the site and surrounding area which exist in the pre and post development scenarios for all flood and stormwater events up to a 1% Annual Exceedance Probability. This should include at least the following flood and stormwater events: 63.2%, 50%, 20%, 10%, 5%, 2% and 1% AEP. The flood model needs to adequately encompass the railway corridor and future railway corridor. Mapping (afflux, water level/depth and velocity impact maps) should be provided to clearly illustrate the pre-development scenario, and the post development impacts for all relevant design events.

(iv) *Maintain the pre-development condition.* The pre-development flow scenario will need to be replicated in the post development condition. The proposed development should not impede or interfere with any drainage, stormwater or floodwater flows, including sheet flows, from the railway corridor or vice versa. Retaining structures, filling/excavation, landscaping, buildings and structures or any other works to the land should be designed to include provision for drainage so as not to adversely impact on the railway corridor. The development design will need to address any concentration of flows, potential for back-up/ponding and scour/erosion which may undermine the railway

corridor and future railway corridor.

(v) *Water quantity assessment.* The peak discharge analysis should provide adequate details of the pre and post development impervious area of the site and give adequate consideration to the detention basin requirements of the QUDM, Fourth Edition.

(vi) *Conceptual drainage layout.* Provide a conceptual stormwater drainage layout plan showing the proposed internal stormwater network on the site, including roofwater connections, pit and pipe network, field inlets and any detention basins/tanks and

(vii) *Mitigation measures.* include details of the mitigation measures proposed to address any potential stormwater and flooding impacts of the proposed development. The design flood peak discharges should be shown for the mitigated case to demonstrate there is no worsening impact on the railway corridor and future railway corridor. All mitigation measures must be located on the site and not in the railway corridor or future railway corridor.

Railway Level Crossing Safety

When lodging a formal development application, further information is required to demonstrate how the proposed development will achieve compliance with PO35 to PO38 of State Code 2: Development in a Railway Environment of the State Development Assessment Provisions. Railway level crossings could be adversely impacted on by development generated traffic.

In particular, traffic information will be required to address the following:

- the expected traffic distribution on the road network as a result of the proposed development. This should identify the roads intended to be used by development generated traffic including the likely origin and destination of vehicles accessing the development.
- identification of any railway level crossing/s likely to be impacted on by development generated traffic (including construction and operational traffic and staff movements). The proportion of development generated traffic that is likely to use the identified railway level crossing/s should be identified.

Should the transportation routes likely to be used by development generated traffic involve existing railway level crossing/s, the following information should be provided:

- the expected timeframe for the delivery of the proposed development including the commencement of construction and the completion of the development (including any stages);
- existing traffic flows (expressed as vehicles per day) over the impacted railway level crossing/s, including daily (peak hour) fluctuations, and number and percentage of heavy vehicles;
- the expected background traffic growth (expressed as vehicles per day) over the impacted railway level crossing/s, including the number and percentage of heavy vehicles. This should include background traffic growth from the anticipated commencement of construction and each development stage to a ten year horizon;
- the expected development generated traffic (expressed as vehicles per day), including daily fluctuations (peak hour) and percentage of heavy vehicles, that will pass over the impacted railway level crossing/s from the commencement of construction, and each development stage to a ten year design horizon;
- the maximum size and type of vehicle (including length, width, height and weight) anticipated over the impacted railway level crossings as a result of the development during construction and on-going operation (including any stages);

- the following data table is required to be populated for each impacted railway level crossing:

AADT over railway level crossing (Prepare table for each impacted railway level crossing)			
Year	Without development (background growth)	With development	No. and dimensions/type of heavy vehicles
2022 (current scenario)			
Commencement of Construction (prepare for each stage)			
Commencement of the use (prepare for each stage)			
Ten year design horizon			

- demonstrate how the development generated traffic will not worsen vehicular queuing (short stacking) issues over the impacted railway level crossing/s. In particular, demonstrate that there is sufficient clearance between the railway level crossing and the relevant intersection/site access point to allow the maximum size of vehicle used in the operation to queue. The minimum clearance should be 5m from the edge running rail (of the closest railway track) as per Section 5.4 – Short Stacking and Figure 3.2 – Yellow Box Marking of AS1742.7:2016 *Manual of Uniform Traffic Control Devices, Part 7: Railway* plus the length of the maximum design vehicle.
- confirmation of sight distances on each side of the impacted railway level crossing/s.

Please contact The Rail and Public Transport Technical Advice Team of the Department of Transport and Main Roads at RAPTTA@tmr.qld.gov.au should you require any assistance in addressing these items.

Lodgement material

4. It is recommended that the following information is submitted when referring the application to SARA:
   - DA form 1.
   - A full response to the relevant sections of SDAP:
     - State code 1: Development in a state-controlled road environment
     - State code 2: Development in a railway environment
     - State code 6: Protection of state transport networks (*if required*)
   - Landowner's consent
   - Relevant plans as per the DA Forms guide

This advice outlines aspects of the proposed development that are relevant to SARA's jurisdiction. This advice is provided in good faith and is:

- based on the material and information provided to SARA
- current at the time of issue

- not applicable if the proposal is changed from that which formed the basis of this advice.

The advice in this letter does not constitute an approval or an endorsement that SARA supports the development proposal. Additional information may be required to allow SARA to properly assess the development proposal after a formal application has been lodged.

For further information please contact Carl Porter, Principal Planning Officer, on 07 3243 1666 or via email RockhamptonSARA@dsdilgp.qld.gov.au who will be pleased to assist.

Yours sincerely

Signature placeholder

Anthony Walsh
Manager Planning

enc Attachment 1 – Pre-lodgement meeting attendance record

Development details	
Proposal:	Material Change of Use – High Impact Industry (ancillary uses including offices, amenities, car park, driveway, weigh bridge, and new access) and related operational works.
Street address:	23 Boundary Road, Parkhurst
Real property description:	1RP601877
SARA role:	Referral agency
Assessment Manager:	Rockhampton Regional Council
Assessment criteria:	State Development Assessment Provisions (SDAP): State code 1: Development in a state-controlled road environment State code 2: Development in a railway environment State code 6: Protection of state transport networks *(if required)*
Existing use:	Existing Austrak facility and vacant land
Relevant site history:	The subject lot includes future rail corridor and future state controlled road corridor (Rockhampton Ring Road).

Attachment 1 — Pre-lodgement meeting attendance record

Meeting attendees:

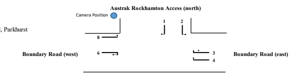
Name	Position	Organisation
Carl Porter	Principal Planning Officer	DSDILGP
Tammy Shaw	Business Support Officer	DSDILGP
Anton Z De Klerk	Principal Planner	DTMR
Emma E Martin	Railway public transport advice team	DTMR
Victoria L Stavar	Railway public transport advice team	DTMR
Chris Shields	Civil Engineer	Premise
Lee Glindemann	Principal planner	Vision Surveys
Andrea Henderson	Senior Planner	Vision Surveys

APPENDIX C

TRAFFIC DATA

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 1 **Weather:** Fine
Location: Access of Austrak Rockhamton, at no.23 Boundary Road, Parkhurst
Day/Date: Friday, 7 October 2022
AM Peak: *Hour ending - 8:00 AM*
PM Peak: *Hour ending - 3:30 PM*



Movement 1

TIME (1/4 hr end)	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	1
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	1
7:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	3	0	0	0	3
9:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	1	0	0	0	0	0	0	0	0	1	0	0	2
10:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	1
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	2	0	0	1	0	0	0	0	0	0	0	0	3
11:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
1:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
1:15 PM	1	0	1	0	0	0	0	0	0	0	0	0	2
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
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3:45 PM	2	0	0	0	0	0	0	0	0	0	0	0	2
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4:15 PM	2	0	0	0	0	0	0	0	0	0	0	0	2
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4:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
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5:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
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6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
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7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
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7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
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8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
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10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr Total	26	0	5	3	0	0	0	0	4	2	0	0	40
AM Peak	1	0	2	0	0	0	0	0	0	0	0	0	3
PM Peak	2	0	1	1	0	0	0	0	0	0	0	0	4

Movement 2

TIME (1/4 hr end)	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
1:00 AM	4	0	0	0	0	0	0	0	0	0	0	0	4
1:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
1:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
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7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
9:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	1	0	0	0	0	0	0	0	1	0	0	0	2
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	2	0	0	0	0	0	0	0	0	0	0	0	2
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	1	0	0	0	0	0	0	0	1	0	0	0	2
2:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
3:00 PM	4	0	0	0	0	0	0	0	0	0	0	0	4
3:15 PM	2	0	0	0	0	0	0	0	1	0	0	0	3
3:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	2	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	3	0	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	3	0	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	3	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	3	0	0	0	0	0	0	0	0	0	0	0	3
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr Total	37	0	0	0	2	0	0	0	9	0	0	0	48
AM Peak	0	0	0	0	0	0	0	0	1	0	0	0	1
PM Peak	7	0	0	0	1	0	0	0	1	0	0	0	9

Movement 3

TIME (1/4 hr end)	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr Total	1	0	0	0	0	0	0	0	0	0	0	0	1
AM Peak	0	0	0	0	0	0	0	0	0	0	0	0	0
PM Peak	0	0	0	0	0	0	0	0	0	0	0	0	0

Movement 4

TIME (1/4 hr end)	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	5	0	0	0	1	0	0	0	0	0	0	0	6
5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
5:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
6:00 AM	3	0	0	0	0	0	0	0	1	0	0	0	4
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	2	0	0	0	0	0	0	0	0	0	0	0	2
6:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
7:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	1	0	0	0	0	0	0	0	1	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	3	0	0	0	0	0	0	0	1	0	0	0	4
8:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
9:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
10:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
10:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	1	0	0	0	0	0	0	0	1	0	0	0	2
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	2	0	0	0	0	0	0	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	5	0	0	0	0	0	0	0	0	0	0	0	5
3:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	2	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr Total	39	0	0	0	1	0	0	0	11	0	0	0	51
AM Peak	5	0	0	0	0	0	0	0	2	0	0	0	7
PM Peak	5	0	0	0	0	0	0	0	1	0	0	0	6

Movement 5

TIME (1/4 hr end)	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total
12:15 AM – 12:00 AM, 24 hr Total, AM Peak, PM Peak													

Movement 6

TIME (1/4 hr end)	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr Total	0	0	0	0	0	0	0	0	0	0	0	0	0
AM Peak	0	0	0	0	0	0	0	0	0	0	0	0	0
PM Peak	0	0	0	0	0	0	0	0	0	0	0	0	0

Movement 7

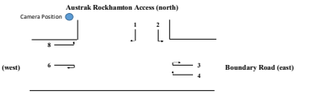
TIME (1/4 hr end)	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total
12:15 AM – 12:00 AM, 24 hr Total, AM Peak, PM Peak													

Movement 8

TIME (1/4 hr end)	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	2
5:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
6:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	1	0	0	1	0	0	0	0	0	0	0	0	2
6:45 AM	1	0	1	0	0	0	0	0	0	0	0	0	2
7:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	1	0	1	0	0	0	0	0	0	0	0	0	2
7:30 AM	2	0	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	2	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	2	0	0	0	2
8:15 AM	1	0	0	0	0	0	0	0	0	1	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	1	0	0	0	0	0	0	0	0	1	0	0	2
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	1	0	1	0	0	0	0	0	0	0	0	0	2
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	1	1	1	0	0	0	0	0	0	0	3
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	2	0	0	0	0	0	0	0	0	0	0	0	2
3:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	1
3:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr Total	23	0	5	3	1	0	0	0	3	2	0	0	37
AM Peak	5	0	1	0	0	0	0	0	2	0	0	0	8
PM Peak	2	0	2	1	1	0	0	0	0	0	0	0	6

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 1 **Weather:** Fine
Location: Access of Austrak Rockhamton, at no.23 Boundary Road, Parkhurst
Day/Date: Saturday, 8 October 2022
AM Peak: *Hour ending - 1:15 AM*
PM Peak: *Hour ending - 12:15 PM*



TIME (1/4 hr end)	Movement 1													Movement 2												Movement 3											
	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 1 **Weather:** Fine
Location: Access of Austrak Rockhamton, at no.23 Boundary Road, Parkhurst
Day/Date: Sunday, 9 October 2022
AM Peak: *Hour ending - 1:00 PM*
PM Peak: *Hour ending - 12:15 PM*

TIME (1/4 hr end)	Movement 1													Movement 2												Movement 3											
	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total

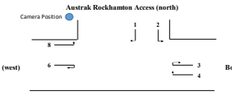
AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 1 **Weather:** Fine
Location: Access of Austrak Rockhamton, at no.23 Boundary Road, Parkhurst
Day/Date: Monday, 10 October 2022
AM Peak: *Hour ending - 5:30 AM*
PM Peak: *Hour ending - 4:15 PM*

TIME (1/4 hr end)	Movement 1													Movement 2												Movement 3											
	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total

AUSTRAFFIC VIDEO INTERSECTION COUNT

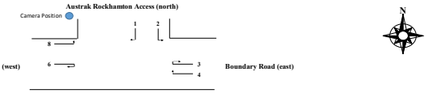
Site No.: 1 **Weather:** Fine
Location: Access of Austrak Rockhamton, at no.23 Boundary Road, Parkhurst
Day/Date: Tuesday, 11 October 2022
AM Peak: *Hour ending - 8:00 AM*
PM Peak: *Hour ending - 4:15 PM*



TIME (15/4 hr end)	Movement 1													Movement 2												Movement 3											
	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total

AUSTRAFFIC VIDEO INTERSECTION COUNT

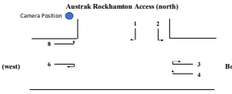
Site No.: 1 **Weather:** Fine
Location: Access of Austrak Rockhamton, at no.23 Boundary Road, Parkhurst
Day/Date: Wednesday, 12 October 2022
AM Peak: *Hour ending - 11:45 AM*
PM Peak: *Hour ending - 4:15 PM*



TIME (15/4 hr end)	Movement 1													Movement 2												Movement 3											
	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total

AUSTRAFFIC VIDEO INTERSECTION COUNT

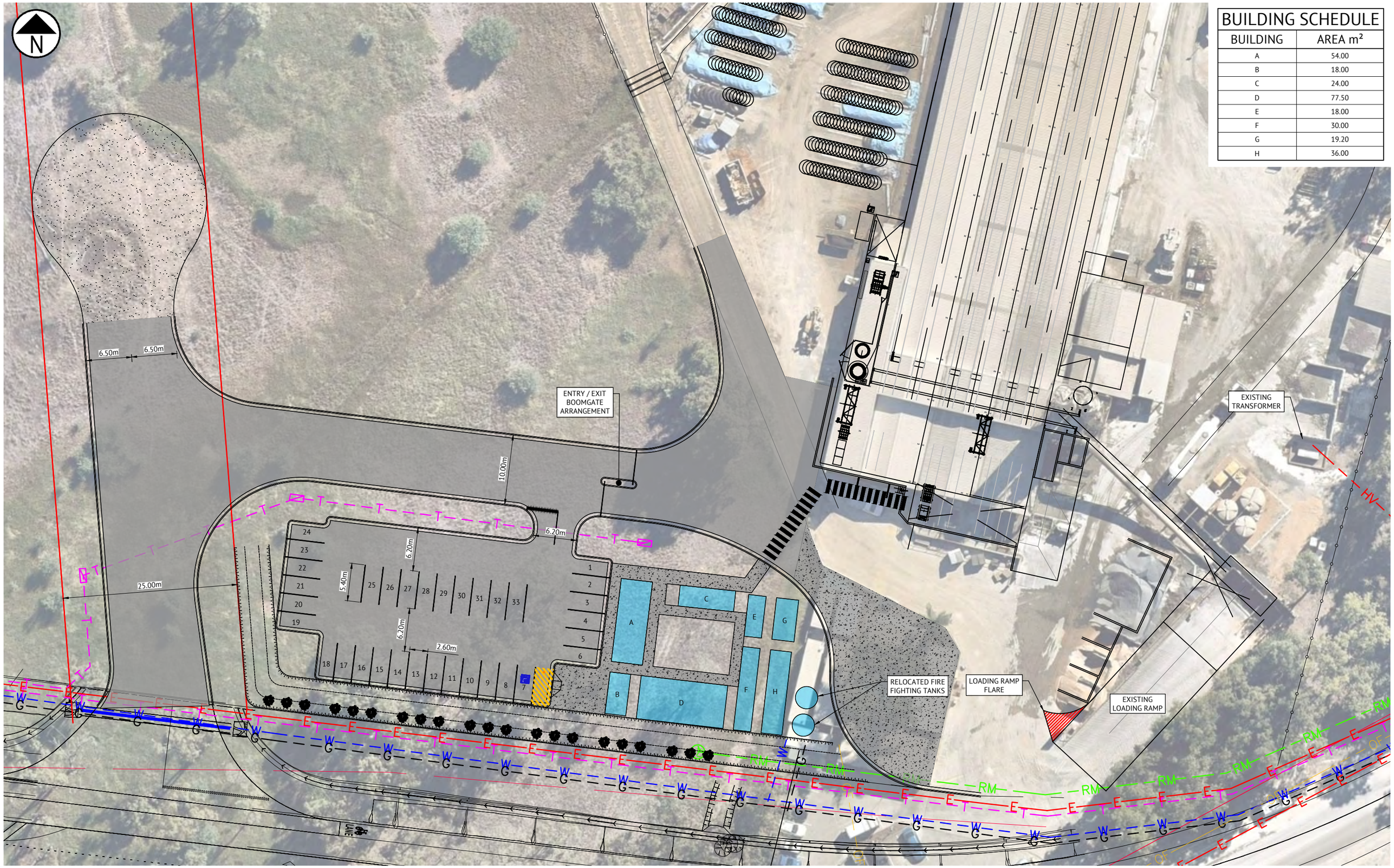
Site No.: 1 **Weather:** Fine
Location: Access of Austrak Rockhamton, at no.23 Boundary Road, Parkhurst
Day/Date: Thursday, 6 October 2022
AM Peak: *Hour ending - 8:30 AM*
PM Peak: *Hour ending - 4:15 PM*



TIME (15/4 hr end)	Movement 1													Movement 2												Movement 3											
	Short	Short - Towing	Two Axle Truck or Bus	Three Axle Truck or Bus	Four Axle Truck	Three Axle Articulated	Four Axle Articulated	Five Axle Articulated	Six Axle Articulated	B Double	Double Road Train	Triple Road Train	Total

APPENDIX D

DEVELOPMENT SITE PLAN



BUILDING SCHEDULE	
BUILDING	AREA m²
A	54.00
B	18.00
C	24.00
D	77.50
E	18.00
F	30.00
G	19.20
H	36.00

PRELIMINARY - NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	REC	APP
06/02/2023	3	PRELIMINARY - NOT FOR CONSTRUCTION	AB	CWS
31/01/2022	2	PRELIMINARY - NOT FOR CONSTRUCTION	AB	CWS
29/03/2022	1	PRELIMINARY - NOT FOR CONSTRUCTION	AB	CWS

REVISIONS

Premise

ROCKHAMPTON OFFICE
21 EAST STREET
PO BOX 264
ROCKHAMPTON, QLD, 4700
PH: (07) 4829 3660
WEB: www.premise.com.au

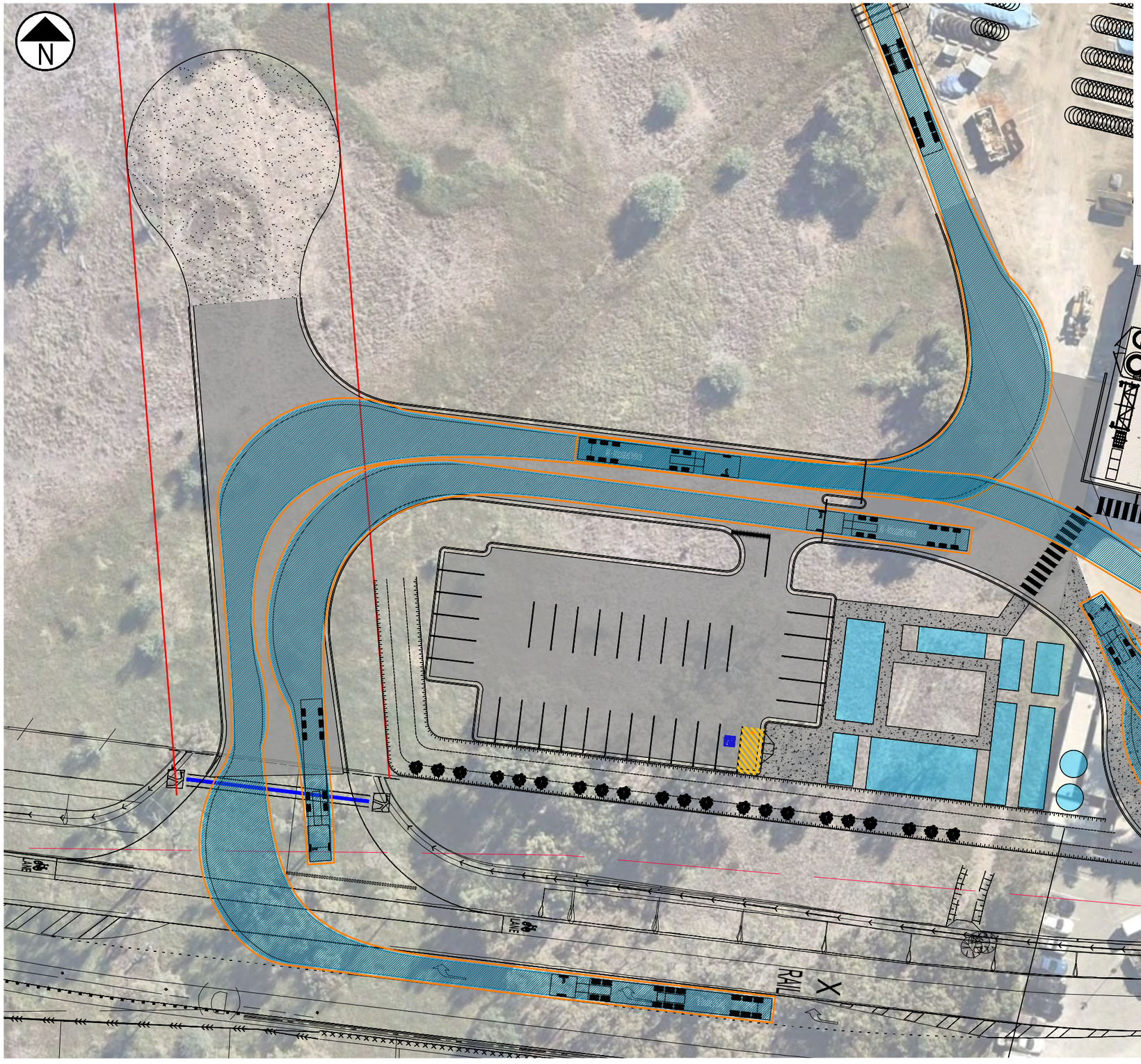
DESIGNED A BURGGRAAFF
CHECKED C SHIELDS
PROJECT MANAGER CHRIS SHIELDS
CHRIS SHIELDS RPEQ 9347

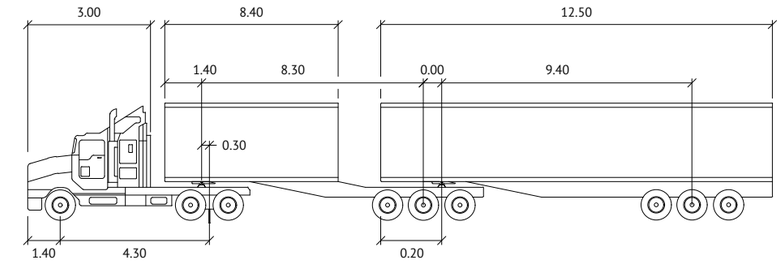
CHRIS SHIELDS RPEQ 9347

SCALE 0 5 10 15m
SCALE 1:250 (A1)
ORIGINAL SHEET SIZE A1

CLIENT AUSTRAK PTY LTD
PROJECT AUSTRAK SITE EXPANSION CONCEPT
LOCATION BOUNDARY ROAD, PARKHURST
SHEET TITLE GENERAL ARRANGEMENT

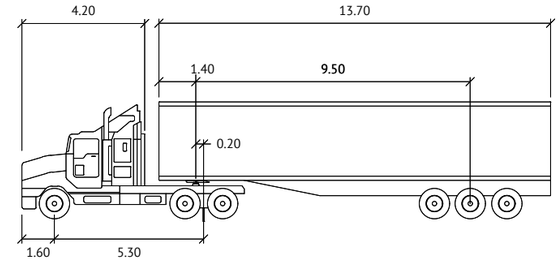
JOB CODE MIS-1030
SHEET NUMBER SKC001
REV 3





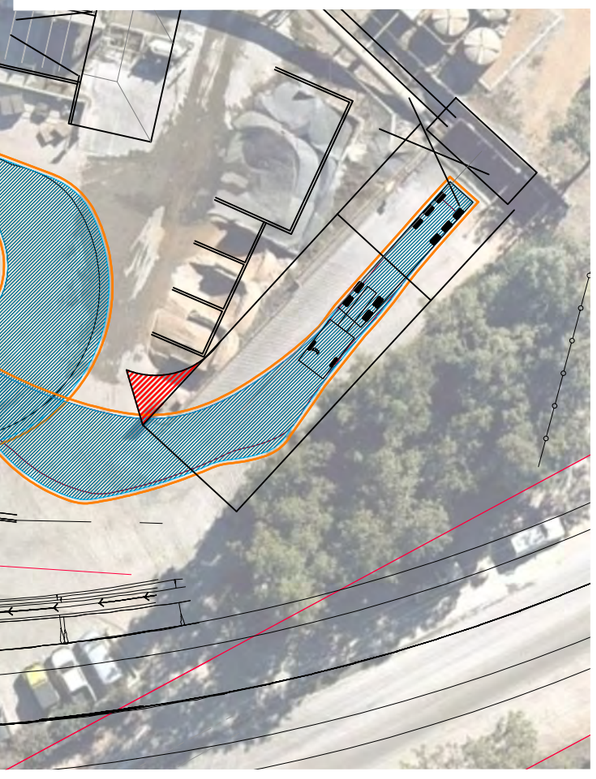
B-DOUBLE 26M

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 22.2
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		



S ARTICULATED 19M

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.7
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		



PRELIMINARY - NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	REC	APP
06/02/2023	2	PRELIMINARY - NOT FOR CONSTRUCTION	AB	CWS
31/01/2022	1	PRELIMINARY - NOT FOR CONSTRUCTION	AB	CWS

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Premise

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DESIGNED A BURGGRAAFF
CHECKED C SHIELDS
PROJECT MANAGER CHRIS SHIELDS
CHRIS SHIELDS RPEQ 9347

CHRIS SHIELDS RPEQ 9347

SCALE 0 5 10 15m
SCALE 1:250 (A1)
ORIGINAL SHEET SIZE A1

CLIENT AUSTRAK PTY LTD
PROJECT AUSTRAK SITE EXPANSION CONCEPT
LOCATION BOUNDARY ROAD, PARKHURST
SHEET TITLE 19M SEMI VEHICLE SWEPT PATHS

JOB CODE MIS-1030
SHEET NUMBER SKC003
REV 2

APPENDIX E

AUSTRAK ACCESS BASIS OF DESIGN

Rockhampton Ring Road

Report - Austrak Access Basis of Design

1167108-DJV-0RD00-RPT-000008 | 01

8 August 2022

Department of Transport and Main Roads

Rockhampton Ring Road

Project No:	1167108
Document Title:	Report - Austrak Access Basis of Design
Document No.:	1167108-DJV-0RD00-RPT-000008
Revision:	01
Date:	8 August 2022
Client Name:	Department of Transport and Main Roads
Client No:	
Project Manager:	Darren Leeson
Author:	Thomas Kavanagh
File Name:	1167108-DJV-0RD00-RPT-000008

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
01	08.08.2022	Initial Issue	T.K.	B.C.	B.C.	E.V.D.

Contents

List of Tables

Glossary

Reference	Definition
The Client or the Principal	Department of Transport and Main Roads
Project or RRR	Rockhampton Ring Road
CMDG	Capricorn Municipal Development Guidelines
DBC	Detailed Business Case
DD	Detailed Design
Design Documentation	Design deliverables prepared by the project team to specify the design.
Design Package	Collation of Design Documents for submission for an element or aspect of the Works at a Design Stage.
Design Package Number	Number assigned to the Item Codes by the JSDJV, to assist with the delivery of items in the Functional Specification. Relates to document numbering and delivery workflows.
Design Stage	Defined stages in the development of the design as follows: ▪ Preliminary Design Stage (PDS) 50% ▪ Detailed Design Stage (DDS) 100% ▪ Issued for Construction (IFC) Certified 100% Design
JSDJV/DJV	Jacobs SMEC Design Joint Venture. An organisation preparing Design Documents for the project on behalf of the Department of Transport and Main Roads
PDS	Preliminary Design Submission
RPDM 2nd	Road Planning Design Manual 2nd Edition
RPEQ	Registered Professional Engineer, Queensland
RRC	Rockhampton Regional Council
TMR	Department of Transport and Main Roads

1. Purpose of this Document

The purpose of the Austrak Access Basis of Design (BoD) report is to describe the criteria and approach of elements of the RRR project that have been used to provide a new access to the Austrak facility. This BoD has been written to summarise the criteria adopted by the Jacobs SMEC Design Joint Venture (JSDJV) as a result of the project resumption no longer allowing use of the existing access to the Austrak facility.

2. Design Criteria

2.1 Road Status

Table 2-1 lists the access and its designation.

Table 2-1: Proposed Access

Access	Controlling Authority	Road Status
Austrak	Austrak under lease from land developer (Bushflower)	Private Access (from property boundary)

2.2 Control Lines

The control lines associated with Austrak access are outlined in Table 2-2.

Table 2-2: Proposed Roads

Control Line	Description
MC2M50	Austrak Access
MK2M50	Left hand edge of pavement control line
MK2M51	Right hand edge of pavement control line
MC2M10	Realigned Boundary Road (MC2M50 ties into this control line)

2.3 Design Speed

Operating speeds for roads are determined based on the horizontal geometry, roadside environment, and engineering judgment and are outlined in Table 2-3.

Table 2-3: Design Speed

Access	Design Speed[(i)]
Austrak Access	Design speed not applicable for access stub

2.4 Design Vehicles

Table 2-4 summarises the design vehicles for the Austrak access. Vehicle turning templates have been plotted using approved vehicle path software and vehicle parameters specified in Austroads 2013 libraries.

Table 2-4: Design Vehicles

Access	Design Vehicle	Design turning radii[(i)]
Austrak	B-Double (26.0 m)	R15 m

Note (i) This is the minimum radii that shall be applied. Vehicle turn path radius is measured to the path of the outer front wheel. For additional detail refer to AGRD Part 4 Section 5.6.1.

2.5 Cross Section

The access has an approximate 15 m pavement width at the property boundary and has widened corners to cater for the swept path B-Double vehicles to enter and leave the property at the same time. The RRR project will construct the access to the new project boundary with the developer / Austrak to design and construct the access into the facility.

2.6 Horizontal Alignment

The horizontal alignment of the main control line (MC2M50) is straight between its intersection with realigned Boundary Road (MC2M10) and the property boundary. The alignment of the access inside the property boundary is at the discretion of the property developer/Austrak.

A turn warrants assessment, from traffic volumes in Figure 2-1 required only a CHR(s) and BAL widened shoulder to be designed on Boundary Road for the 2044 year. The 2.0 m shoulder / cycle lane is continued through the intersection. As per TMR instruction, the BAL has not been widened an additional 2.0 m to account for the shoulder / cycle lane.

Figure 2-1 Austrak Access Traffic Volumes 2044

2.7 Vertical Alignment

The vertical alignment of the access has been designed considering tie in levels with realigned boundary Road (MC2M10) and the existing topography at the location of the access. This includes a 3% grade down from the realigned boundary road on a K5 (sag) vertical curve. A long section is presented on design drawing N-PA-04.

3. Pavement Design

3.1 Pavement Design Basis

Pavement type 3 (Asphalt surfaced Lightly Bound pavement) has been designed for the Austrak access to match the realigned Boundary Road (MC2M10). Refer Table 3-1 for pavement configuration.

Table 3-1: Pavement Type 3 – TMR PDS Pavement Type ALBB – Pavement Configuration

Pavement Layer	Material	Thickness (mm)	Relevant Specification
Wearing Course	Dense Graded Asphalt AC14M (A15E)	50	MRTS30
Seal	C170 Sprayed Seal with 10 mm cover aggregate (Note 2) Nominal binder Spray Rate: 1.1 L/m^2 Nominal aggregate Spread Rate: 140 m^2/m^3	7 (Note 1)	MRTS11, MRTS22
Prime	AMC0 Prime (Note 3) Nominal Spray Rate: 0.8 L/m^2	-	MRTS11
Base Layer	Lightly Bound Sub-type 2.1 material	200	MRTS05
Subbase Layer	Lightly Bound Sub-type 2.3 material	200 or 150	MRTS05
Subgrade	Design Subgrade CBR ≥ 3% (Note 3) and < 5% or ≥ 5%	Semi-infinite	MRTS04

Notes:

(1) Thickness of seal will be a function of aggregate ALD and embedment into underlying layer.

(2) Nominal bitumen spray and aggregate spread rates should only be used for estimation purposes only. Contractor to design the spray seal bitumen and aggregate application rates to suit conditions at the time of construction.

(3) Subgrade treatment will be required where the soaked CBR is < 3% or the soaked swell is > 2.5%. as per PDS-18 Section 5.9. The effective subgrade design CBR after treatment is 3%. The subgrade treatment at time of construction to provide a stable platform is required when in-situ CBR is less than 3% as per PDS-21 Section 3.14.1.

4. Drainage Design

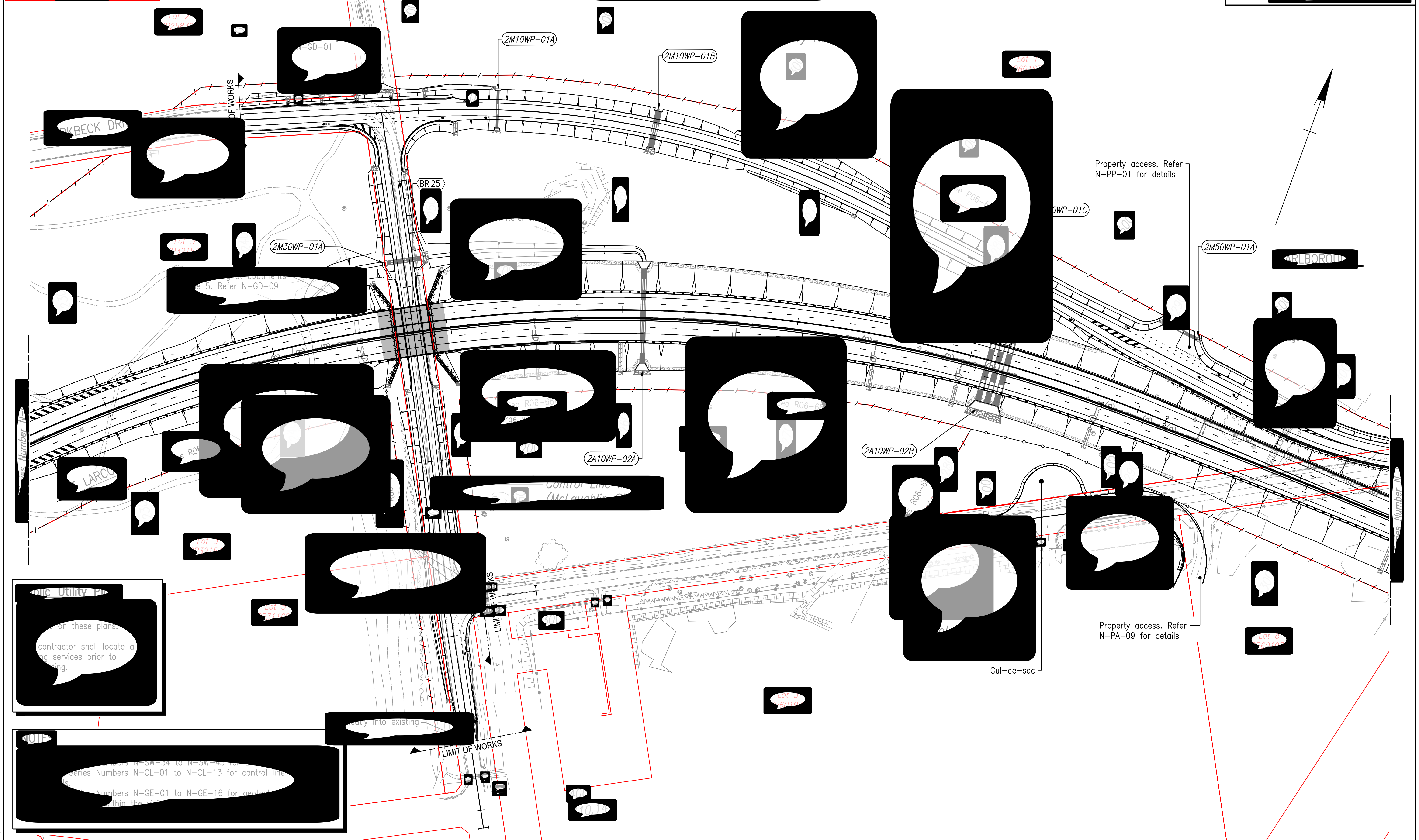
4.1 Culvert and Swale/Channel Design

The cross-drainage structure on the Austrak access is a box culvert. Refer to Table 4-1 for details. Grass lined swale drains are on either side of the access to capture water from the realigned Boundary Road and access stub and direct it to other cross-drainage elements under the realigned Boundary Road and RRR.

Table 4-1: Cross Drainage Summary Schedule

DD Culvert ID	Type	Number of cells	Dimensions (m)	Length (m)	Control Line	Chainage
2M10WP-01A	RCBC	2	1.2 x 0.45	33.6	MC2M50	15

NOT FOR CONSTRUCTION
[redacted]



Jacobs
SMEC
Member of the Surbana Jurong Group
[redacted]

[redacted]

Queensland Government
[redacted]

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NOT FOR CONSTRUCTION

[redacted]

[redacted]

Jacobs SMEC

Member of the Surbana Jurong Group

[redacted]

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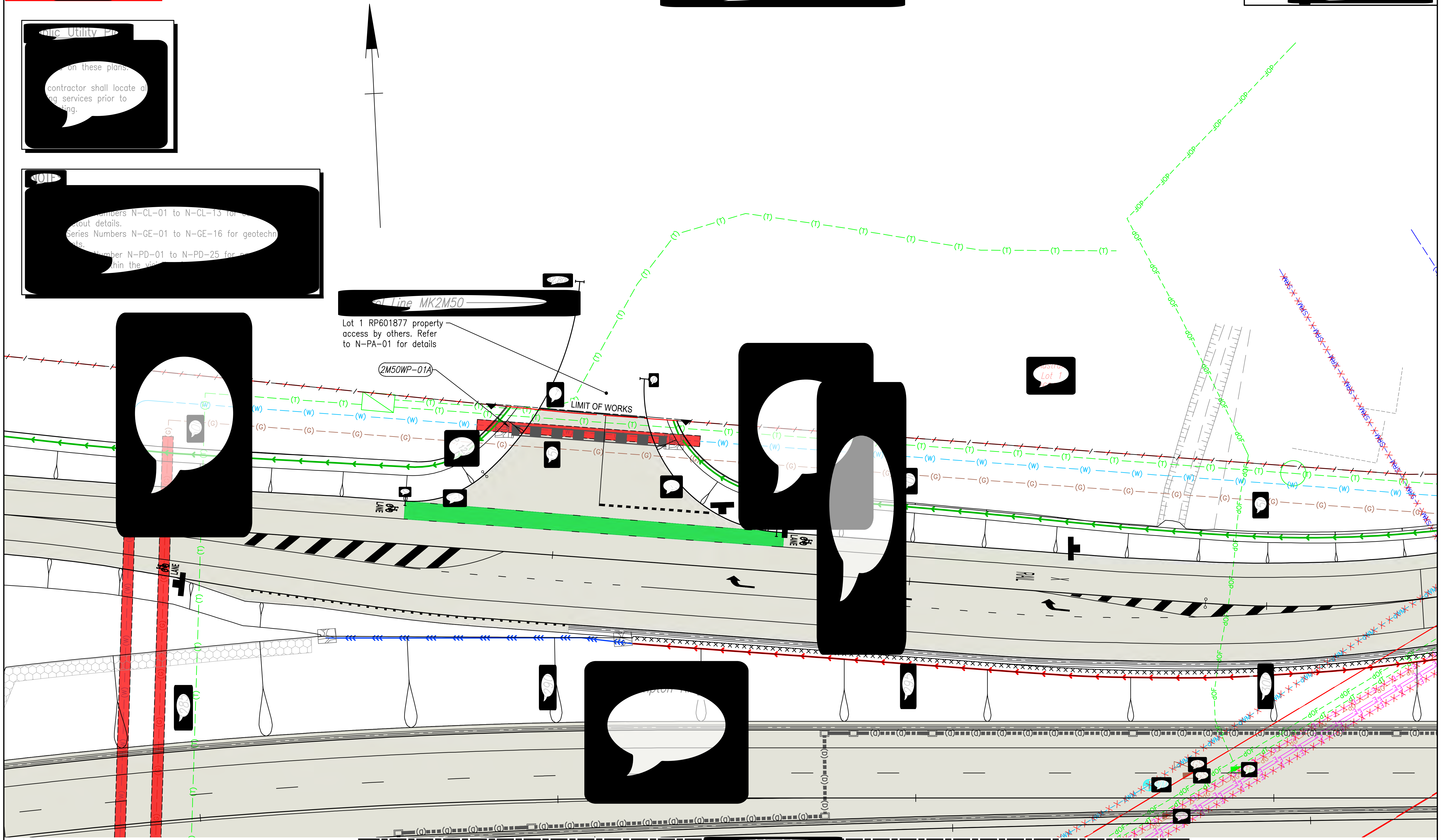
[redacted]



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Queensland Government

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Last Modified :- Mar 16, 2022 - 9:02am

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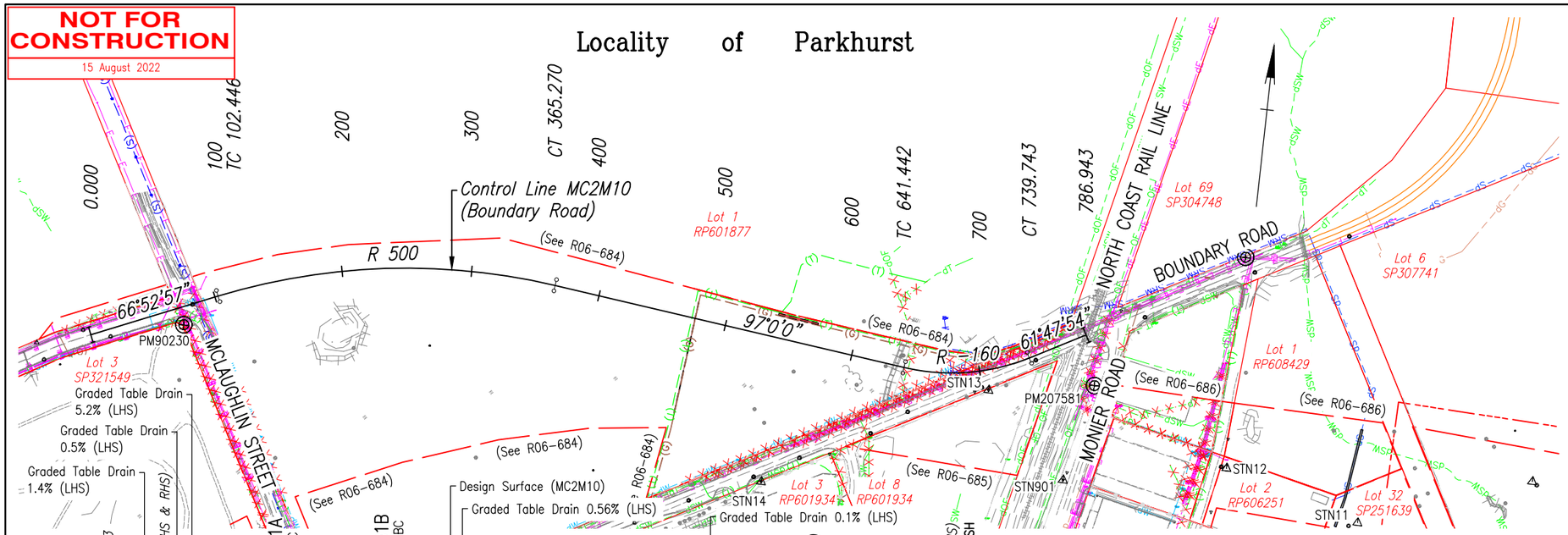
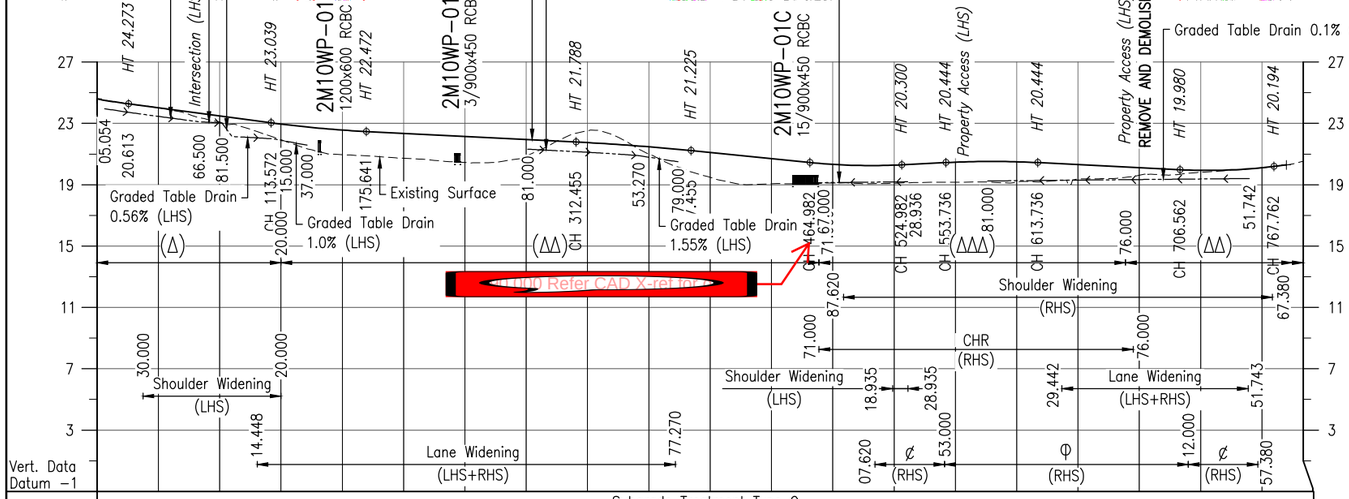
APPENDIX F

ROCKHAMPTON RING ROAD – NORTH WORKING PLAN.

NOT FOR CONSTRUCTION
15 August 2022

Locality of Parkhurst





Subgrade Treatment Type C

AL | T | AL

Ewks.	Cut	307	214	14	5	0	0	0	431	720	18	0	0	0	0	0	0	0	35	136	36				
	Fill	13	16	396	973	1126	1176	1050	153	28	653	1131	824	689	750	980	980	585	101	5	0				
Design Height		24.594	24.281	24.016	23.750	23.485	23.219	22.956	22.735	22.566	22.450	22.350	22.250	22.150	22.050	21.950	21.850	21.748	21.625	21.475	21.298	21.100	20.900	20.700	20.500	20.328	20.253	20.278	20.375	20.472	20.518	20.497	20.412	20.312	20.212	20.112	20.012	19.937	19.968	20.109		
Natural Surface		24.599	24.291	24.016	23.587	23.094	22.619	21.935	21.273	20.959	20.857	20.725	20.592	20.451	20.450	20.876	21.835	22.525	22.086	20.994	20.138	19.481	19.036	19.064	19.069	19.116	19.070	19.098	19.154	19.163	19.182	19.171	19.226	19.372	19.407	19.619	19.633	19.810	19.955	20.100	20.360	20.503
Chainage	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	720	740	760	780	786.943	

Horiz.Data: R500 | R-160

Operating Speed: DESIGN SPEED 70km/h

Refer Series Number N-GD-27 for independent lane rotation

Superelev.: RHS -3% | LHS and RHS -3% | LHS 3% | RHS -3% | LHS and RHS -3% | RHS 3% | LHS -3%

(Δ) PAVEMENT TYPE 3
2/Varying width through lanes + varying width RHS and LHS shoulder + McLaughlin Street intersection RHS
50mm AC14M (A15E) Asphalt
Seal: Size 10mm agg. at 140m²/m³ & C170 binder at 1.1L/m²
Prime: AMC0 at nominal 0.8L/m²
200mm Lightly Bound Sub-type 2.1 Base
205mm Subtype 2.3 Lightly Bound Subbase
for 3% Subgrade

(ΔΔ) PAVEMENT TYPE 3
2/Varying width through lanes + varying width RHS and LHS shoulder
50mm AC14M (A15E) Asphalt
Seal: Size 10mm agg. at 140m²/m³ & C170 binder at 1.1L/m²
Prime: AMC0 at nominal 0.8L/m²
200mm Lightly Bound Sub-type 2.1 Base
205mm Subtype 2.3 Lightly Bound Subbase
for 3% Subgrade

(ΔΔΔ) PAVEMENT TYPE 3
2/Varying width through lanes + varying width turn land + varying width RHS and LHS shoulder + Austrak intersection LHS
50mm AC14M (A15E) Asphalt
Seal: Size 10mm agg. at 140m²/m³ & C170 binder at 1.1L/m²
Prime: AMC0 at nominal 0.8L/m²
200mm Lightly Bound Sub-type 2.1 Base
205mm Subtype 2.3 Lightly Bound Subbase
for 3% Subgrade

Public Utility Plant

There is no guarantee all services located in this area have been indicated on these plans.

The contractor shall locate all existing services prior to constructing.

Dial Before You Dig (DBYD)
Phone: 1100

LEGEND

- Cultural Heritage Item
- High ecological significance wetland

NOTES

1. Refer Series Numbers N-DI-10 to N-DI-11 for General Notes.
2. Refer Series Numbers N-CL-01 to N-CL-23 for control line setout details.
3. Refer Series Numbers N-TC-01 to N-TC-18 for typical sections.
4. Refer Series Numbers N-GA-01 to N-GA-12 for general arrangements.
5. Refer Series Numbers N-RF-01 to N-RF-34 for barrier setout details.
6. Refer Series Numbers N-SL-01 to N-SL-37 for Signs and Pavement marking Details.
7. Refer Series Numbers N-PD-01 to N-PD-40 for Pavement Details.
8. Refer Series Numbers N-GE-01 to N-GE-26 for Geotechnical Details.
9. Refer Series Numbers N-SW-01 to N-SW-78 for Stormwater Details.
10. Refer Series Numbers N-GD-01 to N-GD-34 for General Details.

Jacobs | SMEC — Member of the Surbana Jurong Group

DJV Doc No 1167108-DJV-2RD10-DRG-201019

5	TOC Issue	17/08/22
4	Issue for Tender	15/03/22
3	Detailed Design Issue	3/11/21
1	Preliminary Design Issue	07/06/21
A	Issued For Construction	

Revisions/Descriptions | Name or RPEQ No. | Signature | Date

TOC ISSUE 17 AUGUST 2022

Associated Job Nos

Auxiliary Drg Nos

Survey Data	
Horiz. Datum	GDA94
Horiz. Grid	MGA Z56
Height Datum	AHD Derived
Survey Books	MR102635

Scales: 0 20 40 60 80m Horz. | 0 2 4 6 8m Vert.

Dimensions shown in metres except where shown otherwise

CAD FILES: C:\Users\Public\appdata\local\projectwise\jacobs_anz_ie\d0424334\1167108-DJV-2RD10-DRG-201019.dwg

Last Modified :- Aug 15, 2022 - 7:54pm

ROCKHAMPTON REGIONAL COUNCIL
ROCKHAMPTON RING ROAD
CTL CHGE 119315.846 TO 134064.742

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
16A/1	2.357	14.748	0.00	10F/4

Through Chainage from 10D/10E 119.315km to 134.064km

ROCKHAMPTON RING ROAD – NORTH
WORKING PLAN – MC2M10
LAYOUT – SHEET 01

Drawn: A. Fourie
Designed: B. Verkman

ENGINEERING CERTIFICATION (RPEQ)				
ENG. AREA	NAME	SIGNATURE	No.	DATE
Civil				

Queensland Government

Job No.	279/10F/1167108
Contract No.	CN-18292
Drawing No.	— 5
Series Number	N-WP-19 of 32

APPENDIX G

TRUCK MOVEMENT FIRST PRINCIPLES ASSESSMENT

Bradley Jones

From: Eckhardt, Sebastian <Sebastian.Eckhardt@vossloh.com>
Sent: Monday, 16 January 2023 11:18 AM
To: Chris Shields
Cc: Caires, Rafael; Bradley Jones; Lawrence Mills
Subject: RE: [#MIS-1030] Austrak Anecdotal Truck Movement Info

Follow Up Flag: Follow up
Flag Status: Flagged

HI Chris,

Apologies for the delay, I put this together to show the average movements at 60% output:

Raw Materials:

	Amount	Trucks Annually	Trucks weekly	Trucks Daily
Agg	27843	994	20	4
Sand	15047	537	11	2
Wire	1775	68	1.4	
Admix	177	12	0.2	
Cement	10100	439	9	2
Ash	3150	137	3	1
FG				
Sleepers	200000	2000	40	8
Turnout in T	9130	247	5	1
Water Truck			15	3
Deliveries			8	2
		Total Daily Trucks		22

Thanks
Seb

Sebastian Eckhardt

Factory Manager - Rockhampton
AUSTRAK
PO Box 5675 Red Hill QLD 4702 Australia
fax: +61 7 4936 2205
mobile: +61 408 317 118
e-mail: Sebastian.Eckhardt@vossloh.com **web:** austrak.com

vossloh

From: Chris Shields <chris.shields@premise.com.au>
Sent: Saturday, 14 January 2023 4:38 PM
To: Eckhardt, Sebastian <Sebastian.Eckhardt@vossloh.com>

APPENDIX H

TRAFFIC IMPACT ASSESSMENT CERTIFICATION

CERTIFICATION OF TRAFFIC IMPACT ASSESSMENT REPORT

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND

FOR

Project Title	**Austrak Parkhurst Facility: Traffic Impact Assessment**

As a professional engineer registered by the Board of Professional Engineers of Queensland pursuant to the Professional Engineers Act 2002 as competent in my areas of nominated expertise, I understand and recognise:

- The significant role of engineering as a profession; and that
- The community has a legitimate expectation that my certification affixed to this engineering work can be trusted; and that
- I am responsible for ensuring its preparation has satisfied all necessary standards, conduct and contemporary practice.

As the responsible RPEQ, I certify:

i) I am satisfied that all submitted components comprising this traffic impact assessment, listed in the following table, have been completed in accordance with the Guide to Traffic Impact Assessment published by the Queensland Department of Transport and Main Roads and using sound engineering principles; and

ii) Where specialised areas of work have not been under my direct supervision, I have reviewed the outcomes of the work and consider the work and its outcomes as suitable for the purposes of this traffic impact assessment; and that

iii) The outcomes of this traffic impact assessment are a true reflection of results of assessment; and that

iv) I believe the strategies recommended for mitigating impacts by this traffic impact assessment, embrace contemporary practice initiatives and will deliver the desired outcomes.

Name	Bradley Jones
RPEQ No.	19986
RPEQ Competencies	Civil
Email	Bradley.jones@premise.com.au
Postal Address	PO Box 1110, Townsville QLD 4810
Signature	
Date	09 March 2023

Traffic impact assessment components to which this certification applies	☒
1. Introduction	
Background	☒
Scope and study area	☒
Pre-lodgement meeting notes	☒
2. Existing Conditions	
Land use and zoning	☒
Adjacent land uses / approvals	☒
Surrounding road network details	☒
Traffic volumes	☒
Intersection and network performance	☐
Road safety issues	☐
Site access	☒
Public transport (if applicable)	☒
Active transport (if applicable)	☐
Parking (if applicable)	☒
Pavement (if applicable)	☐
Transport infrastructure (if applicable)	☒
3. Proposed Development Details	
Development site plan	☒
Operational details (including year of opening each stage and any relevant catchment / market analysis)	☒
Proposed access and parking	☒
4. Development Traffic	
Traffic generation (by development stage if relevant and considering light and heavy vehicle trips)	☒
Trip distribution	☒
Development traffic volumes on the network	☒
5. Impact Assessment and Mitigation	
With and without development traffic volumes	☒
Construction traffic impact assessment and mitigation (if applicable)	☐
Road safety impact assessment and mitigation	☒
Access and frontage impact assessment and mitigation	☒
Intersection delay impact assessment and mitigation	☐
Road link capacity assessment and mitigation	☐
Pavement impact assessment and mitigation	☐
Transport infrastructure impact assessment and mitigation	☒
Other impacts assessment relevant to the specific development type / location (if applicable)	☐
6. Conclusions and Recommendations	
Summary of impacts and mitigation measures proposed	☒
Certification statement and authorisation	☒

Premise

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/151-2023

Dated: 12 June 2024

AUSTRAK PTY LTD

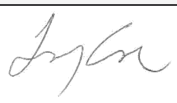
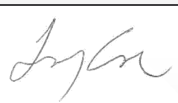
23 BOUNDARY ROAD, PARKHURST

STORMWATER MANAGEMENT PLAN AND HYDRAULIC IMPACT ASSESSMENT

Report No: MIS1030/R02

Rev: A

10 March 2023

DOCUMENT AUTHORISATION					
Revision	**Revision Date**	**Report Details**			
A	10/03/23	Stormwater Management Plan and Hydraulic Impact Assessment			
Prepared By	**Initial**	**Reviewed By**	**Initial**	**Authorised By**	**Signature**
Lewis Hamilton	LH	Jeremy Cox		Jeremy Cox	

CONTENTS

FIGURES

TABLES

APPENDICES

1. INTRODUCTION

Premise Australia Pty Ltd (here within referred to as "Premise") has been commissioned by Austrak Pty Ltd to prepare a Stormwater Management Plan and Hydraulic Impact Assessment (SMP/HIA) in support of the proposed development application to augment the Austrak Plant located at on Boundary Road in Parkhurst. The site is located within the Rockhampton Regional Council (RRC) Local Government Area (LGA) and is comprised of the following lots; Lot 1 on RP601877, Lot 1 on RP606318, Lot 1 on RP601695, and Lot 3 on RP601963.

This report has been developed to address the below planning framework:

- Rockhampton Region Planning Scheme (2015) - Version 2.2;
- State Development Assessment Provisions (SDAP v3.0);
- Planning Act 2016 and the associated State Planning Policy (SPP, DILGP, 2017); and
- Environmental Protection Act 1994, Environmental Protection (Water) Policy 2009 (EP water).

The assessment has been undertaken following best practice guidelines recommended within

- RRC Planning scheme policies:
    - SC6.10 Flood hazard planning scheme policy; and
    - SC6.18 Stormwater management planning scheme policy
- Capricorn Municipal Development Guidelines;
- Queensland Urban Drainage Manual (IPWEA, 2017);
- Australian Rainfall and Runoff: A Guide to Flood Estimation (Babister et al, 2019) (ARR19); and
- MUSIC Modelling Guidelines (Water By Design, 2018)

1.1 Study Objectives

This SMP/HIA describes the assessment of stormwater quantity, quality and flood management undertaken to address the potential impacts caused by the development. The aim of this report is to:

- Review existing information and studies for the subject site and adjacent catchment;
- Assess the site for stormwater quantity and quality management purposes;
- Hydrologic modelling of the catchment runoff using the XP-RAFTS rainfall-runoff modelling package and model files provided by RRC;
- Combined 1D/2D hydraulic modelling of the development using the TUFLOW hydraulic modelling package and model files provided by RRC;
- Update the 'base case' hydrologic and hydraulic models to represent a post-development scenario to determine any impacts on stormwater quantity or flooding as a result of the proposed development;
- Analyse the pre and post-development scenarios for the 63%, 39%, 18%, 10%, 5%, 2% and 1% AEP events; and
- Propose mitigation measures for any impacts on stormwater quantity or flooding

2. DATA

In the preparation of this report, information about the site was gathered from the following sources:

- Aerial LiDAR data of the Anzlic Committee On Survey and Mapping (ELVIS, https://elevation.fsdf.org.au/);
- Limestone Creek Flood Study data obtained from Rockhampton Regional Council;
- Detailed Survey;
- Development Layout prepared by Premise;
- Design inputs for hydrologic and hydraulic modelling from the Australian Rainfall and Runoff Data Hub;
- Rainfall and Meteorological data by the Australian Bureau of Meteorology; and
- Aerial Imagery and map data from Queensland Globe, Google and Nearmap (Accessed January 2023)

3. SITE CHARACTERISTICS

3.1 Site Area and Location

The site has a total area of approximately 94.5ha, is located within Low, Medium and High Impact Industry Zoned land, with the eastern portion currently occupied by the Austrak Rockhampton Facility. The site has road frontage to Boundary Road to the south. The site is shown in **Figure 1** in its local context.

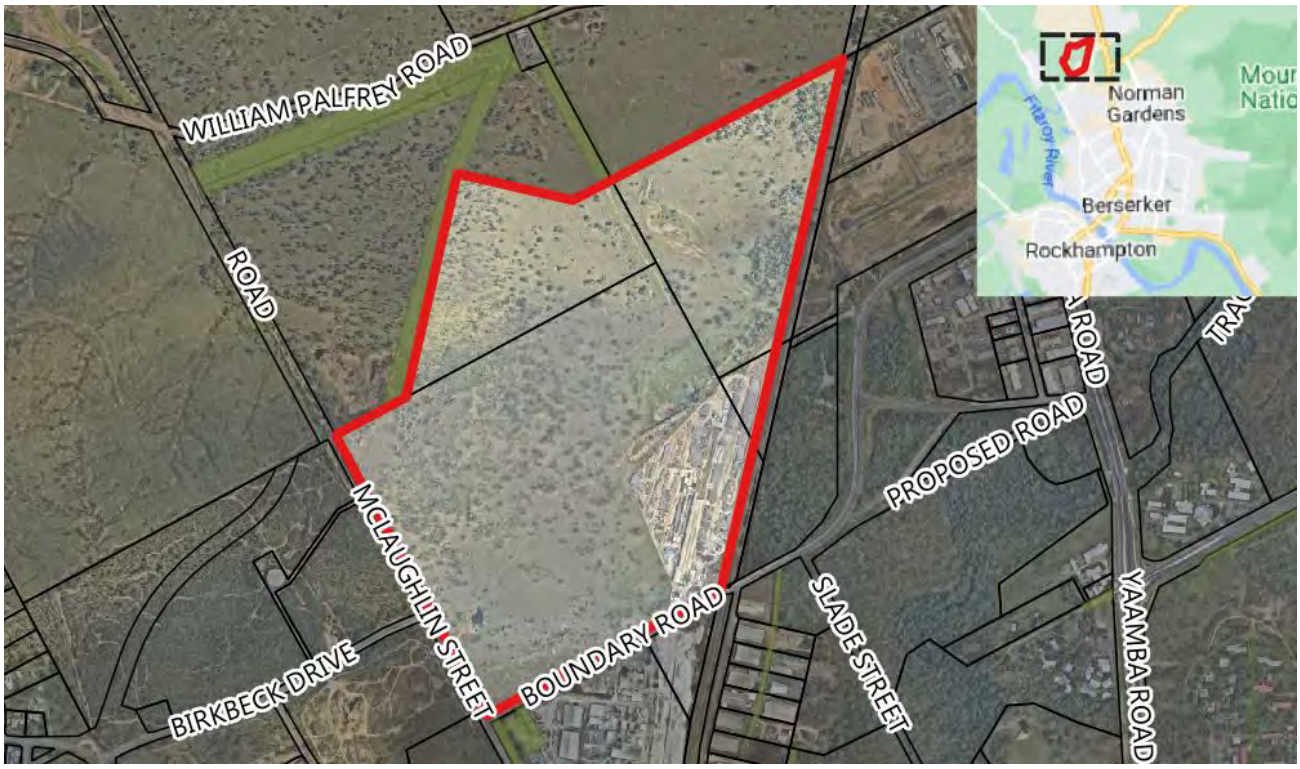


Figure 1: Aerial Image of Site Location (Source: QGIS)

3.2 Existing Drainage and Topography

The site is located within the Limestone Creek catchment. Local upstream catchments of approximately 7.95ha and 22.1ha contribute to the site from the west and north respectively. Drainage lines are fairly well defined, with multiple discharge locations across the site boundary. With regards to the development area within the site, runoff from the upstream catchment, including the existing Austrak site, discharges from the north-east via an open channel towards the southern boundary. Runoff is then conveyed south-east approximately 1.1km to Limestone Creek and eventually ends up in Fitzroy River.

Based on survey and LiDAR information, elevations in the proposed development area range from 19.2m to 19.5m AHD, while elevations across the larger site area range from 18.0m to 55.6m AHD. The gradient is quite flat over the development area, and the undulating topography of the overall site has an approximate slope of 1-30%.

Refer to **Appendix B** for the existing drainage regime, as well as the existing discharge location to complete an analysis of pre and post-development drainage characteristics.

3.3 Proposed Development

The Department of Main Roads and Transport (DTMR) intends to utilize part of the site for the development of the Rockhampton Ring Road and Boundary Road Realignment, thereby removing front door access to the facility. As part of the Boundary Road Realignment, a material change of use (MCU) application is required to allow the adjacent land to be used as the new primary access point. The proposed engineering works are as follows:

- Earthworks filling and excavation to achieve the development footprint;
- Construction of stormwater conveyance infrastructure; and
- Internal roads and services

The proposed development plan is included in **Appendix A**.

3.4 Proposed Drainage

Surface and roofwater runoff will generally be discharged to stormwater infrastructure and the internal access road, where it will be conveyed to the Lawful Point of Discharge. The minor drainage system will be designed with sufficient capacity to convey 0.5EY (2-year ARI) event runoff from the site and upstream catchment in accordance with Table D05.04.1 of the CMDG – D5. The proposed drainage layout can be seen on Premise civil drawings in **Appendix A**. Detailed design will be confirmed at the operational works phase of the development.

4. STORMWATER QUANTITY MANAGEMENT

4.1 Lawful Points of Discharge

In accordance with QUDM (2017) section 3.9, lawful discharge of stormwater is required. A Lawful Point of Discharge Test (LPD Test) is outlined in Section 3.9.1 to ensure the stormwater is discharged from the site lawfully and at lawful locations in addition to needing to meet other statutory requirements such as the SPP and Planning Act.

The test in Section 3.9.1 of QUDM is in sequential order. If a condition can be met, then subsequent items need not be tested. This should be read in full but is summarised here to provide context for this site. It can be summarised as:

Test 1: Will the proposed development alter the site's stormwater discharge characteristics in a manner that may substantially damage a third-party property? (if yes go to Test 2, if not then LPD is satisfied)

Test 2: Is the location of the discharge from the development site under the lawful control of the local government or other statutory authority from whom permission to discharge has been received?

Test 3: An authority to discharge over affected properties will be necessary.

The lawful point of discharge for the development area is the proposed Boundary Road and Rockhampton Ring Road corridor in accordance with the LPD Test 2 and is shown in **Appendix B**. This location is considered appropriate as it currently receives runoff from the site, and allows for the development area to drain freely.

4.2 Hydrologic Assessment

RRC has supplied Premise a copy of the XP-RAFTS model used for the Limestone Creek Flood Study. As per the supplied model, the regional sub-catchments were reviewed to determine the relevant sub-catchments with influencing flows over the site, to run the appropriate hydrological simulations, for critical duration adoption purposes. As seen in the Limestone Creek catchment delineation data in **Figure 2**, the main sub-catchments pertaining to the development area are LIM-19 and LIM-20. It is deemed no other sub-catchments contribute flow to the site, or the sub-catchments.

4.2.1 SUB-CATCHMENT CHARACTERISTICS

The regional catchment delineation was further refined to ensure that all relevant local flows were adequately represented. For the pre-development case model, the catchment areas of LIM-19 AND LIM-20 have been reduced and the development area has been represented as its own node within XP-RAFTS. The proposed development has been represented by an increase in impervious fraction in the post-development scenario. A summary of model input parameters is provided in **Table 1**. The adopted pervious initial and continuing losses of 15mm and 1mm/hour respectively were retained for each design storm event.

Table 1: Summary of Sub-Catchment Characteristics

Catchment	RRC Model		Pre-Development		Post-Development	
	Area (ha)	Fraction Imp (%)	Area (ha)	Fraction Imp (%)	Area (ha)	Fraction Imp (%)
Site	-	-	0.524	0.5	0.524	**70**
LIM-19	118.28	7.08	**118.132**	7.08	118.28	7.08
LIM-20	162.15	67.77	**161.774**	67.77	161.626	67.77

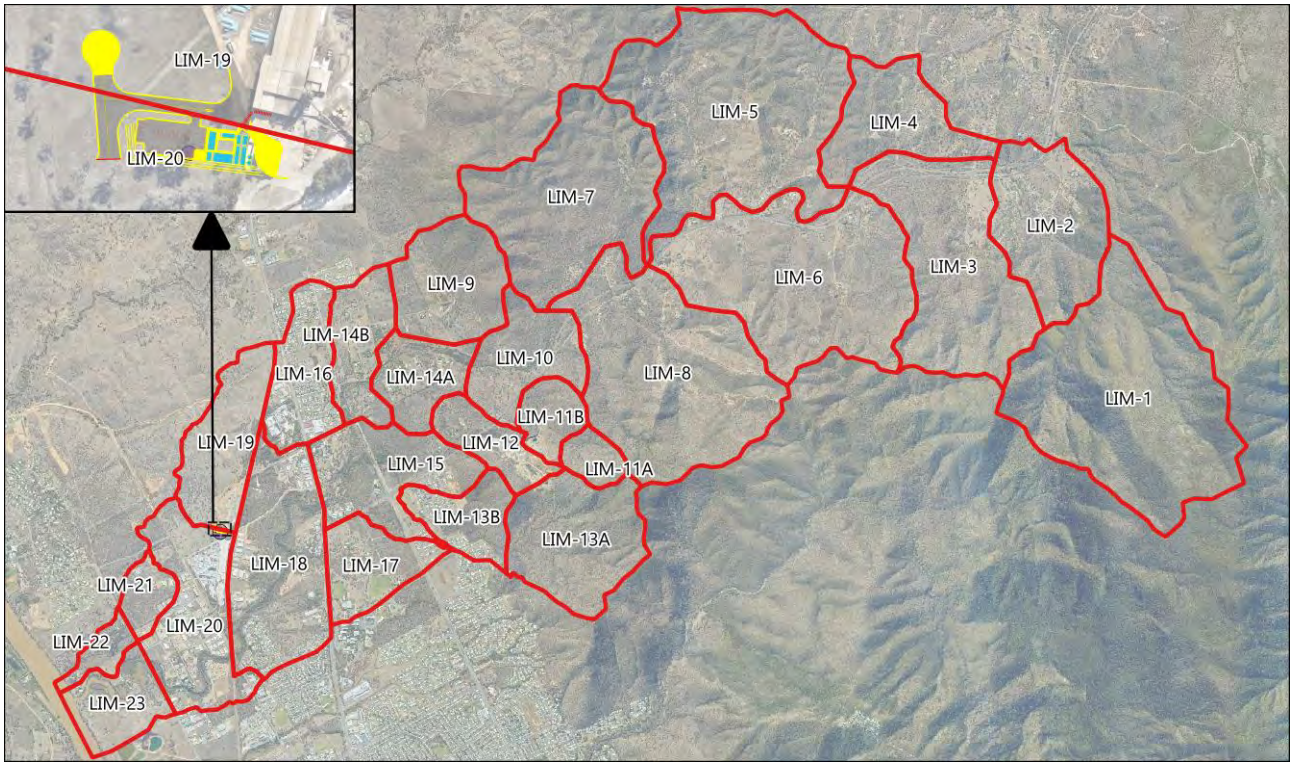


Figure 2: Location of Development within Limestone Creek Regional Catchments

4.3 Hydrologic Model Results

To understand the impact of the development, peak discharges for pre and post-development have been assessed for the lawful point of discharge. The peak discharge represents local runoff from the development area only, as the interaction with regional runoff is assessed later in the report. A comparison of peak discharges for the pre and post-development scenarios is shown in **Table 2**.

Table 2: Peak Discharge Summary – Local Catchment

Annual Exceedance Probability (AEP)	Peak Discharge (m^3/s)		Impact	
	Pre	Post	(m^3/s)	%
63.2%	0.024	0.07	0.046	192%
50%	0.037	0.093	0.056	151%
20%	0.055	0.121	0.066	120%
10%	0.066	0.138	0.072	109%
5%	0.083	0.162	0.079	95%
2%	0.097	0.172	0.075	77%
1%	0.105	0.133	0.028	27%

It can be seen in **Table 2** that the peak discharge to the LPoD sees an increase as a result of the development. This is an expected increase due to the increase in impervious area within the site. It is proposed to provide hydraulic control of runoff through the site as part of the stormwater infrastructure design to manage the increase in peak discharges.

Due to the complex nature of the flow regime within the catchment, as well as the interaction of timing of local and regional runoff within the catchment, analysis has been undertaken in a 1D/2D combined hydraulic model to demonstrate the adequacy of the proposed stormwater management strategy.

5. HYDRAULIC ASSESSMENT

Analysis has been undertaken to demonstrate the adequacy of the stormwater management strategy in achieving no adverse flood impact or no actionable nuisance to downstream or adjacent properties or infrastructure as a result of the development.

The assessment has been undertaken using a combined 1D/2D hydraulic model to analyse both pre and post-development conditions. A comparison of the results of both scenarios demonstrates the effectiveness of the stormwater management strategy to ensure mitigation of flows before leaving the site.

The Limestone Creek Flood Study model provided by RRC was used as the base model in for the assessment. The model was developed using the TUFLOW modelling package and is considered appropriate due the programs ability to model detailed 1D hydraulic structures in conjunction with the 2D terrain, and allows for rapid interpretation of model results.

The hydraulic model was used to estimate the inundation extents and flow characteristics of the 1yr ARI (63% AEP), 2yr ARI (39% AEP), 5yr ARI (18% AEP), 10yr ARI (10% AEP), 20yr ARI (5% AEP), 50yr ARI (2% AEP) and 100yr ARI (1% AEP) critical design storm events.

5.1 Model Consistency

To ensure consistency between the model data supplied by RRC and this analysis, all TUFLOW inputs were based on the supplied information. The Limestone Creek TUFLOW model was constructed using the Direct Rainfall (rain on grid) method for critical storms listed in **Table 3**. Temporal patterns and model losses have not been adjusted from those adopted by RRC.

Table 3: Critical Storm Durations - Limestone Creek Model

Annual Exceedance Probability (AEP)	Storm Duration (hr)
63%	3
39%	3
18%	3
10%	3
5%	3
2%	3
1%	1, 1.5, 2, 3, 4.5, 6

The supplied TUFLOW model has been setup to run utilising the TUFLOW Classic solver. To provide a much faster runtime, TUFLOW's Heavily Parallelised Compute (HPC) functionality with GPU processing has been adopted within the hydraulic modelling. A comparison of the maximum water surface elevations from the 1% AEP, 60-minute duration event between the TUFLOW classic and HPC results is shown in **Appendix D**. The comparison demonstrates the modelling outcomes are reasonably similar, and suitable for adoption for the hydraulic assessment.

5.2 Model Topography

A Digital Terrain Model (DTM) provided by RRC has been adopted for the model with a grid size of 3m, which is considered adequate for describing flooding behaviour for the purposes of this study. This resolution also adequately represents the main features of the site and major hydraulic structures. All stormwater pipes and culverts are expressed as 1D elements within the model. A minimum adaptive computational time step of 1.5 seconds has been adopted, which is appropriate for a model of this size and is consistent with TUFLOW recommendations.

Refer to **Appendix D** for an overview of the TUFLOW model topography.

5.3 Hydraulic Model Roughness

The model roughness of the streams and floodplains in the catchments was represented by the Manning's roughness coefficient, n, in the TUFLOW material file. The material file within the model holds all the information pertaining to the ground surface conditions for various areas, including the manning's "n" and infiltration losses at varying flow depths. The material type adopted for the development area in the Limestone Creek model is Light Density Vegetation. This is considered appropriate to represent the development area in its pre-development state, being completely pervious and infiltrating rainfall. The remaining Manning's 'n' hydraulic roughness parameters have been maintained from the Limestone Creek model and are outlined in **Table 4**.

Refer to **Appendix D** for an overview of the TUFLOW 2D Manning's 'n' roughness.

Table 4: Manning's Rougness Coefficients - Limestone Creek Model

Material	Manning's 'n'
High Density Residential	0.070-0.150
Medium Density Residential	0.060-0.120
Low Density Residential	0.050-0.090
Commercial/Industrial	0.030-0.060
Dense Vegetation	0.060-0.100
Medium Vegetation	0.050-0.080
Light Vegetation	0.045-0.080
Channel	0.050-0.060
Riparian Corridor (sluggish areas)	0.070-0.100
Maintained Grass	0.035
Road Reserve	0.025
Rail Reserve	0.030
Fitzroy River Bed (at DS boundary)	0.022
Long Grass	0.035-0.045
Buildings	0.018-0.500
Steep Slopes	0.075-0.090

5.4 Post-Development Mitigated Scenario

Due to external overland flows entering the development area from the north-east, a constructed channel drain is proposed to convey internal and external flows through the site to the southern discharge location. A 1200 x 375mm box culvert has been included at the location where the upstream flows intersect the internal driveway access. It is proposed to utilise this culvert as a hydraulic control point to attenuate runoff and ensure there are no increases in peak discharge or flood levels.

In the post-development scenario, the proposed access and parking areas have been raised by approximately 500mm to manage hydraulic hazard and ensure vehicular and pedestrian safety up to the designated flood event. The topographical modifications were undertaken using TUFLOW modelling tools, and it is noted that further refinement of the earthworks design can be undertaken at the operational works phase.

The 2D Manning's roughness 'n' has been updated in proposed development areas, to account for impervious surfaces and roads. The Mannings "n" for buildings was increased to 0.5 to reflect the impediment to flows that would be caused by the proposed structures. This method is considered appropriate for a 2D model when using the rain on grid rainfall methodology.

The internal minor drainage network has not been included explicitly in the model. This is considered appropriate as it is anticipated detailed sizing of the minor drainage system will be undertaken at the operational works phase, as well as the 3m grid resolution not providing as accurate a representation of the fine detail of the road corridors (kerb and channel) comprising the local overland flow paths within the site.

Future detailed design will consider the capacity of the combined minor and major drainage system internal to the site to comply with safety criteria outlined in the Rock-e-Plan, CMDG and QUDM.

5.5 Hydraulic Assessment Results

Flood mapping has been produced for peak flood levels, depth, velocity, hazard and flood afflux for the 63%, 18%, 10%, 5%, 2%, and 1%, AEP events for both the pre and post development scenarios.

For the hydraulic model results, refer to:

- **Appendix E** for pre-development maps;
- **Appendix F** for post-development maps; and
- **Appendix G** for impact assessment maps.

5.5.1 HYDRAULIC IMPACT ASSESSMENT

As shown in **Appendix G**, the impact assessment demonstrates that the project results in minor variations to the existing flood regime within the Future Road corridor, and largely a reduction of flood levels on downstream properties. The afflux within the future road is attributed to the development of the site up to the future boundary to be conveyed to the allocated channels in the TMR dedicated stormwater channels.

The afflux demonstrated has a maximum value of approximately 12mm. Correspondence with TMR has confirmed the Flood Impact Assessment in Vicinity of Birkbeck/Boundary Connection Road for the Rockhampton Ring Road results in an afflux of 122mm within the development area. It considered the afflux as a result of the development is very minor and localised.

Accordingly, the afflux results shown in the stormwater channel regions are deemed to be generally contained in the TMR road corridor, and therefore not deemed to affect the trafficability of the proposed design works. There is also afflux demonstrated within the subject site boundaries, however this is deemed to be acceptable.

5.5.2 MANAGEMENT OF INCREASED RUNOFF

Appendix G contains a comparison of hydrographs extracted from the hydraulic model results downstream of the development area, within the future TMR road corridor. It is demonstrated the hydraulic control provided by the earthworks and culvert crossing of the internal access area provides sufficient attenuation of runoff, and peak discharges are reduced as a result of the proposed development.

Overall, this assessment indicates that there are no actionable or adverse impacts to neighbouring properties or transport infrastructure, in particular the future railway corridor and future road corridor for all design events. Accordingly, it is deemed that the requirements by the State Assessment and Referral Agency (SARA) have been satisfied, in accordance with the State Development Assessment Codes.

5.5.3 DESIGNATED FLOOD PLANNING LEVELS

The Defined Flood (Event) Level (DFL) for the site is determined via the 1 in 100yr ARI (1% AEP) storm event as defined in the Rock-e-Plan, CMDG and QUDM. Given the topographical changes across the site and the flooding source, the post-development DFL for the site varies across the channel chainages, and the respective depth along the chainage. Accordingly, the detailed civil design is to adhere to the minimum DFL level requirements as shown in the post-development modelling peak mapping results.

It should be noted that the internal access area subject to vehicular traffic is not required to be completely immune in the DFE and is considered to be low hazard in terms of flooding.

6. STORMWATER QUALITY

As the proposed development is a material change of use that results in an impervious area of less than 25% of the net developable area, the management of stormwater quality for the operational phase is not required to comply with the Queensland Government's State Planning Policy (SPP) (Queensland Government 2017), and in particular the outcomes of the SPP code: Water Quality (Appendix 2).

6.1 Construction phase

During the construction phase various pollutants are generated which can find their way into the stormwater runoff. These pollutants can affect the quality of the stormwater runoff and hence pollute both the site and the downstream receiving environment. **Table 5** below outlines the major sources of pollutants.

Table 5: Typical Construction Phase Pollutants

Construction Phase Pollutants
Litter from construction packaging, paper, food packaging, off cuts, etc.
Sediment from erosion of exposed soils and stockpiles.
Hydrocarbons - from fuel and oil spills, leaks from construction equipment.
Toxic Materials - cement slurry, solvents, cleaning agents, wash waters.
pH altering substances - cement slurry, wash waters.

Erosion and sediment control measures used during the construction phase of the development will be designed and installed in accordance with International Erosion Control Association (Australasia) - "Best Practice Erosion & Sediment Control – for building and construction sites" November 2008 and Whitsunday Regional Council's requirements for Erosion and Sediment Control.

6.1.1 TEMPORARY SEDIMENT BASINS

Temporary sediment basins are recommended to cater for runoff from disturbed areas during construction. It is recommended that High Efficiency Sediment (HES) basins are sized based on the maximum disturbed area within each basin's catchment at any one time during construction. Alternative treatment methods can be utilised at the Operational Works Phase, provided that the State Planning Policy 2017 objectives are met.

The State Planning Policy 2017 (SPP) outlines stormwater management design objectives for sediment control on construction sites. The design objective by the SPP states that all exposed areas greater than 2500 m^2 must be provided with sediment controls which are designed, implemented and maintained to a standard which would achieve at least 80% of the average annual runoff volume of the contributing catchment treated (i.e. 80% hydrologic effectiveness) to 50mg/L Total Suspended Solids (TSS) or less, and pH in the range (6.5–8.5).

6.1.2 GENERAL EROSION AND SEDIMENT CONTROL MEASURES

The principal contractor should ensure the following erosion and sediment control measures are followed at a minimum during construction:

- Clean stormwater runoff is to be diverted away from areas of disturbance using cut off drains or bunds;
- Sediment runoff prevention from areas of disturbance via effective installation of silt fences, sediment basins or other controls as deemed appropriate;
- Shakedown points should be established at vehicular access points with sediment removed to maintain operation;
- Where stockpiling of spoil is required, stockpiles should be established away from stormwater inlets and surrounded with appropriate erosion and sediment control measures; and
- Site inductions should include information of the erosion and sediment control measures, and a reporting system through which site personnel can report perceived erosion and sediment control issues

7. CONCLUSION

This Site Based Stormwater Management Plan and Hydraulic Impact Assessment Report details the proposed stormwater management strategy and infrastructure for the project in accordance with the Queensland Urban Drainage Manual, Australian Rainfall & Runoff 2019 and Rockhampton Regional Council Guidelines.

This report demonstrates that the proposed development is adequate to satisfy the 'lawful point of discharge'. It is demonstrated that the proposed stormwater infrastructure has sufficient capacity to convey the flows from the developed site catchment without causing an actionable nuisance to adjoining properties as peak discharges are to be attenuated through on-site mitigation.

Hydrologic and hydraulic modelling was undertaken to demonstrate the development does not have an actionable nuisance impact on the external to the site.

8. QUALIFICATIONS

Our analysis and overall approach have been specifically catered for the requirements of Austrak Pty Ltd and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from Premise.

Premise has relied on the following information as outlined in **Section 2** of this Report.

While Premise's report accurately assesses peak flows from design storms in accordance with current industry standards and guidelines, the sites future observed flows may vary from that predicted. For these reasons appropriate freeboards should be adopted.

9. RPEQ CERTIFICATION

As Registered Professional Engineer of Queensland (RPEQ) for this project, on behalf of Premise Australia Pty Ltd, I certify that the modelling undertaken as part of this assessment has been undertaken in accordance with current engineering best practice as recommended in the QUDM, ARR19, CMDG and Rockhampton Regional Council Guidelines.

Name: Jeremy Cox RPEQ No: 14732 Date: 10 March 2023

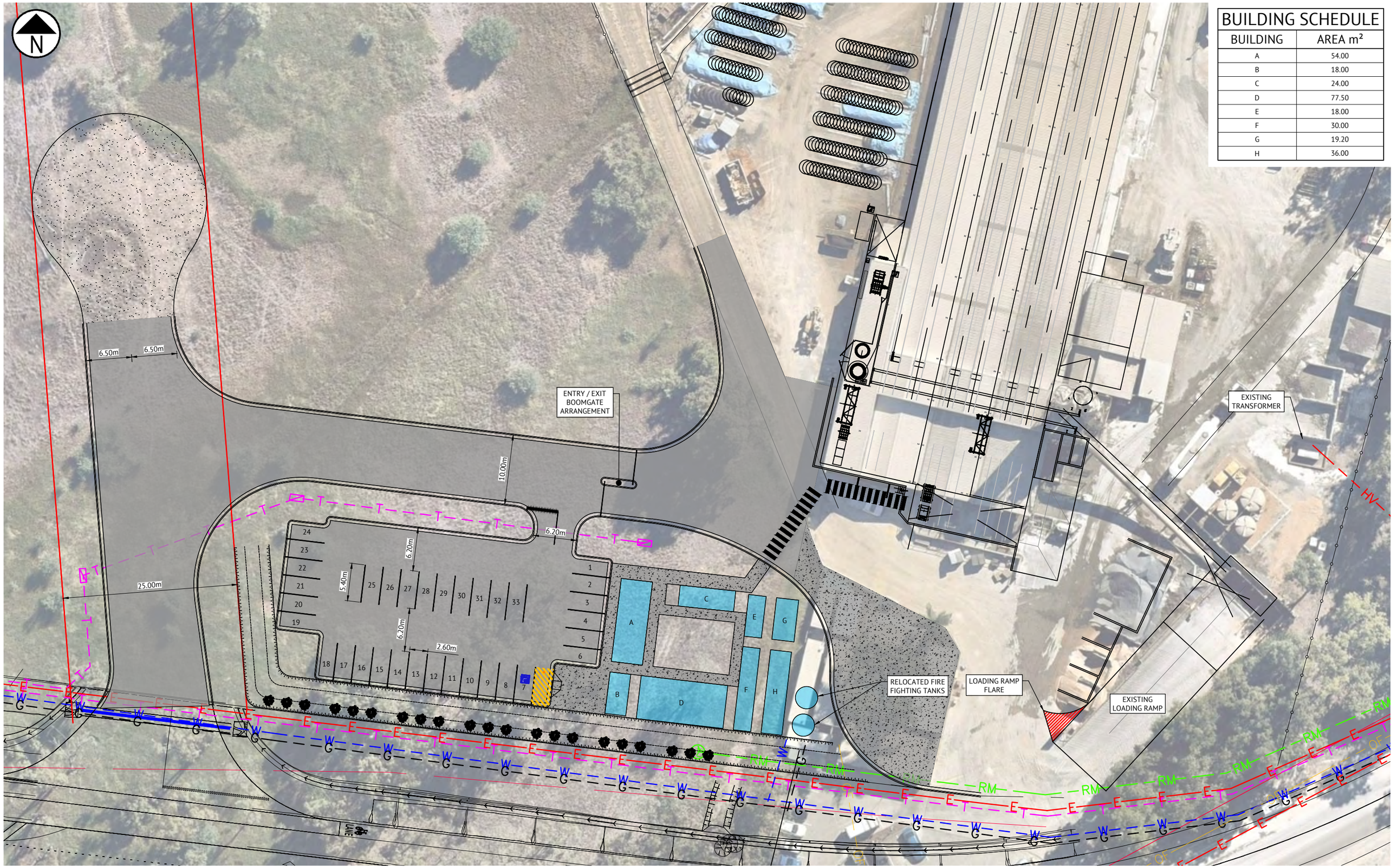
Signature: _____

10. REFERENCES

1. Institute of Public Works Engineering Australasia (QLD Division), et al, 2016. *Queensland Urban Drainage Manual (QUDM), Fourth Edition*. Brisbane.
2. CRC for Catchment Hydrology, 2002. *Model for Urban Stormwater Improvement Conceptualisation (MUSIC)*. CRC for Catchment Hydrology, Melbourne.
3. Water by Design, 2010. *MUSIC Modelling Guidelines*, SEQ Healthy Water Ways Partnership, Brisbane
4. Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia (Geoscience Australia), 2016, Canberra.
5. Bureau of Meteorology, *2016 IFDs – Rainfall Data.* Available at: http://www.bom.gov.au/water/designRainfalls/revised-ifd/?year=2016
6. Department of Infrastructure, Local Government and Planning, July 2017. *State Planning Policy (SPP),* Brisbane.

APPENDIX A

PROPOSED LAYOUT PLAN



PRELIMINARY - NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	REC	APP
06/02/2023	3	PRELIMINARY - NOT FOR CONSTRUCTION	AB	CWS
31/01/2022	2	PRELIMINARY - NOT FOR CONSTRUCTION	AB	CWS
29/03/2022	1	PRELIMINARY - NOT FOR CONSTRUCTION	AB	CWS

REVISIONS

Premise

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DESIGNED A BURGGRAAFF
CHECKED C SHIELDS
PROJECT MANAGER CHRIS SHIELDS
CHRIS SHIELDS RPEQ 9347

CHRIS SHIELDS RPEQ 9347

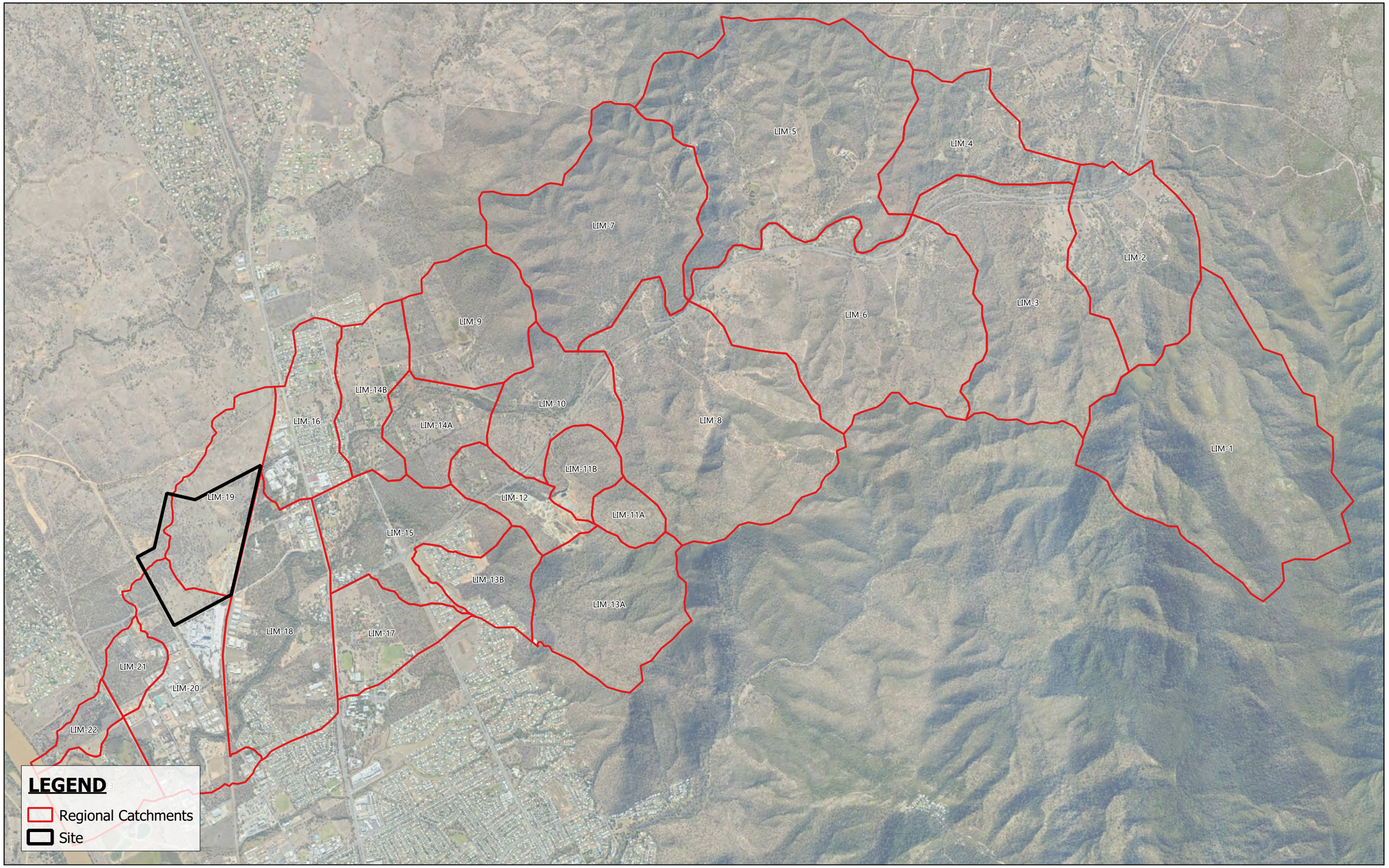
SCALE 0 5 10 15m
SCALE 1:250 (A1)
ORIGINAL SHEET SIZE A1

CLIENT AUSTRAK PTY LTD
PROJECT AUSTRAK SITE EXPANSION CONCEPT
LOCATION BOUNDARY ROAD, PARKHURST
SHEET TITLE GENERAL ARRANGEMENT

JOB CODE MIS-1030
SHEET NUMBER SKC001
REV 3

APPENDIX B

CATCHMENTS



Premise

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08.03.2023

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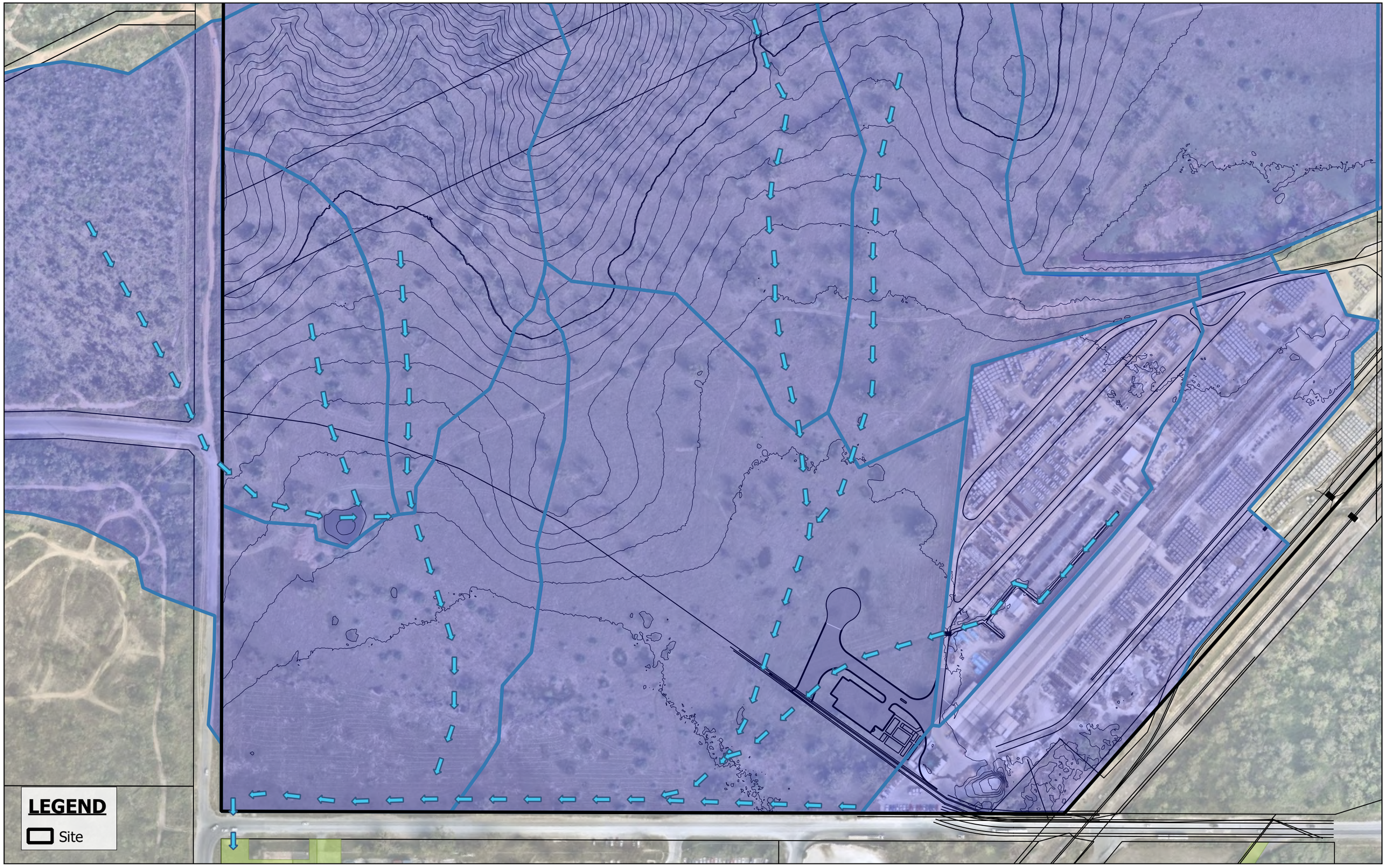
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
Catchments - Regional	**B001**



Premise

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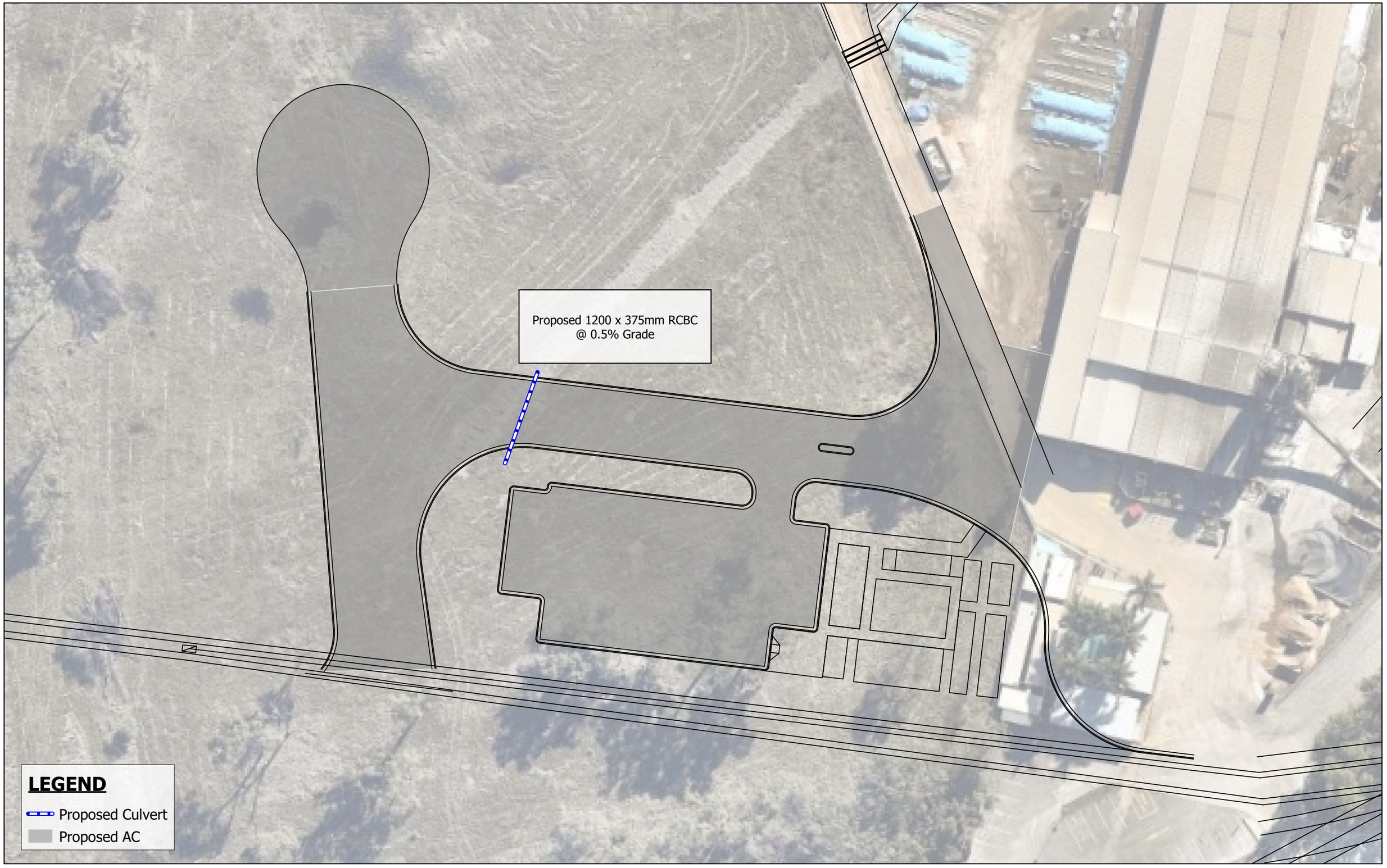
08.03.2023

AUSTRAK PTY LTD	**Mar 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
Catchments - Local	**B002**

APPENDIX C

CONCEPT STORMWATER PLAN



Premise

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10.03.2023

AUSTRAK PTY LTD	**Mar 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
Concept Stormwater Layout Plan	**C001**

APPENDIX D

MODEL DATA

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AUSTRAK PTY LTD	Mar 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
TUFLOW Model Topography - Pre-Development	D001

Premise

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Scale 1:500

10.03.2023

AUSTRAK PTY LTD	**Mar 2023**
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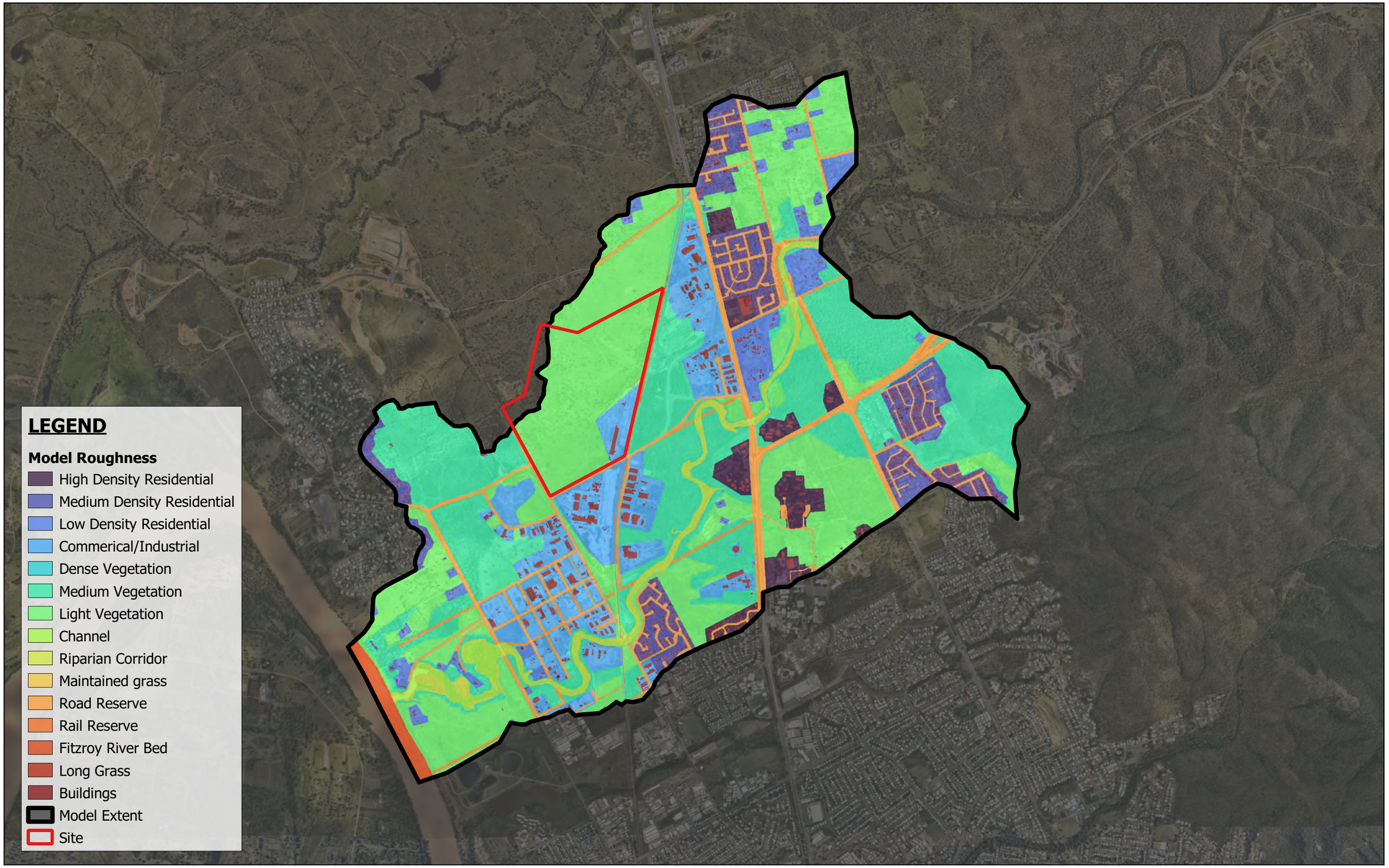
TUFLOW Model Topography - Post-Development	**D002**



Premise

0 1250 2500 m

Scale 1:25,000

08.03.2023

AUSTRAK PTY LTD	**Mar 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
TUFLOW Model Roughness - Pre-Development	**D003**

Premise

0 25 50 m

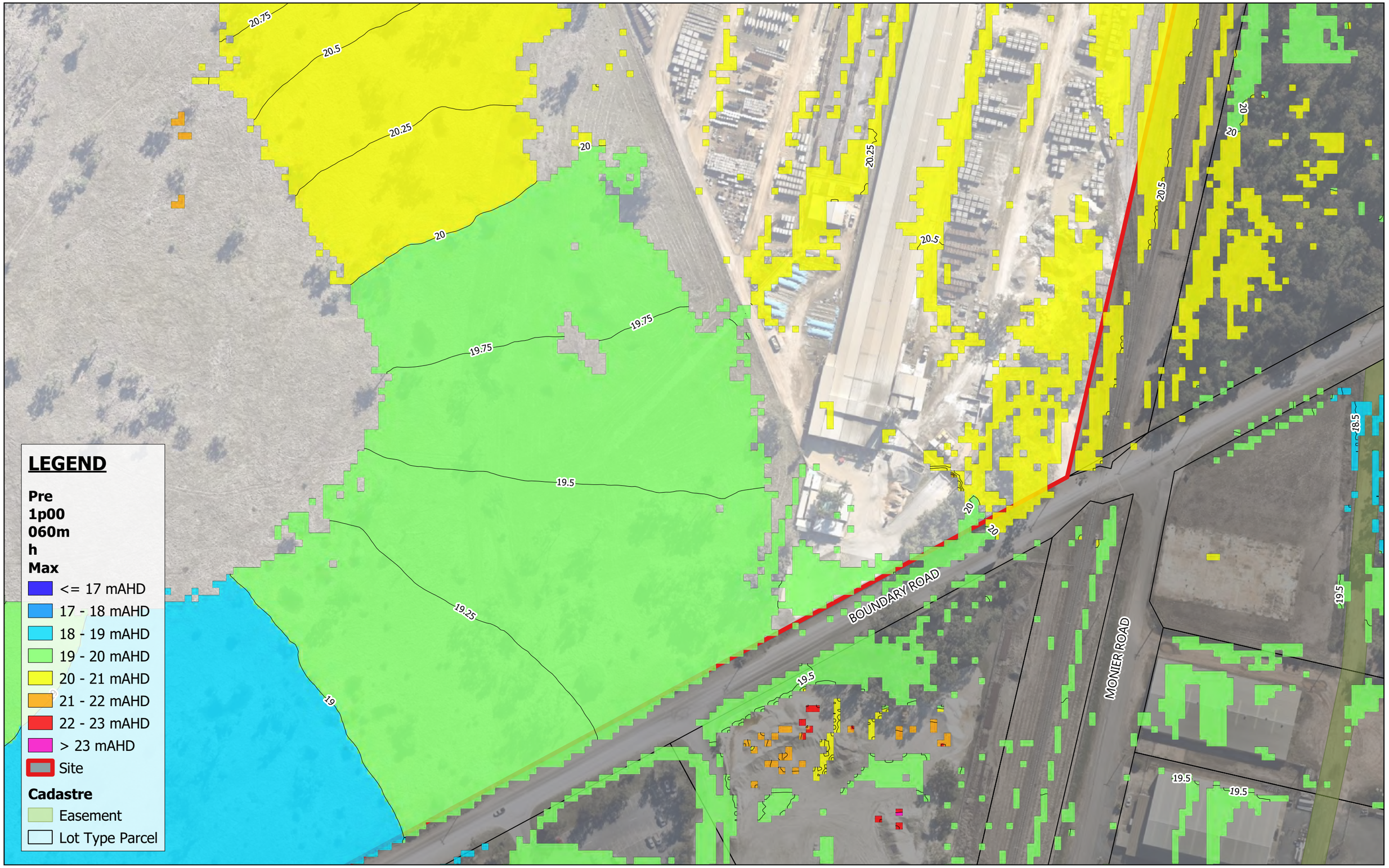
Scale 1:500

10.03.2023

AUSTRAK PTY LTD	**Mar 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
TUFLOW Model Roughness - Post-Development	**D004**

APPENDIX E

PRE-DEVELOPMENT HYDRAULIC MODEL RESULTS



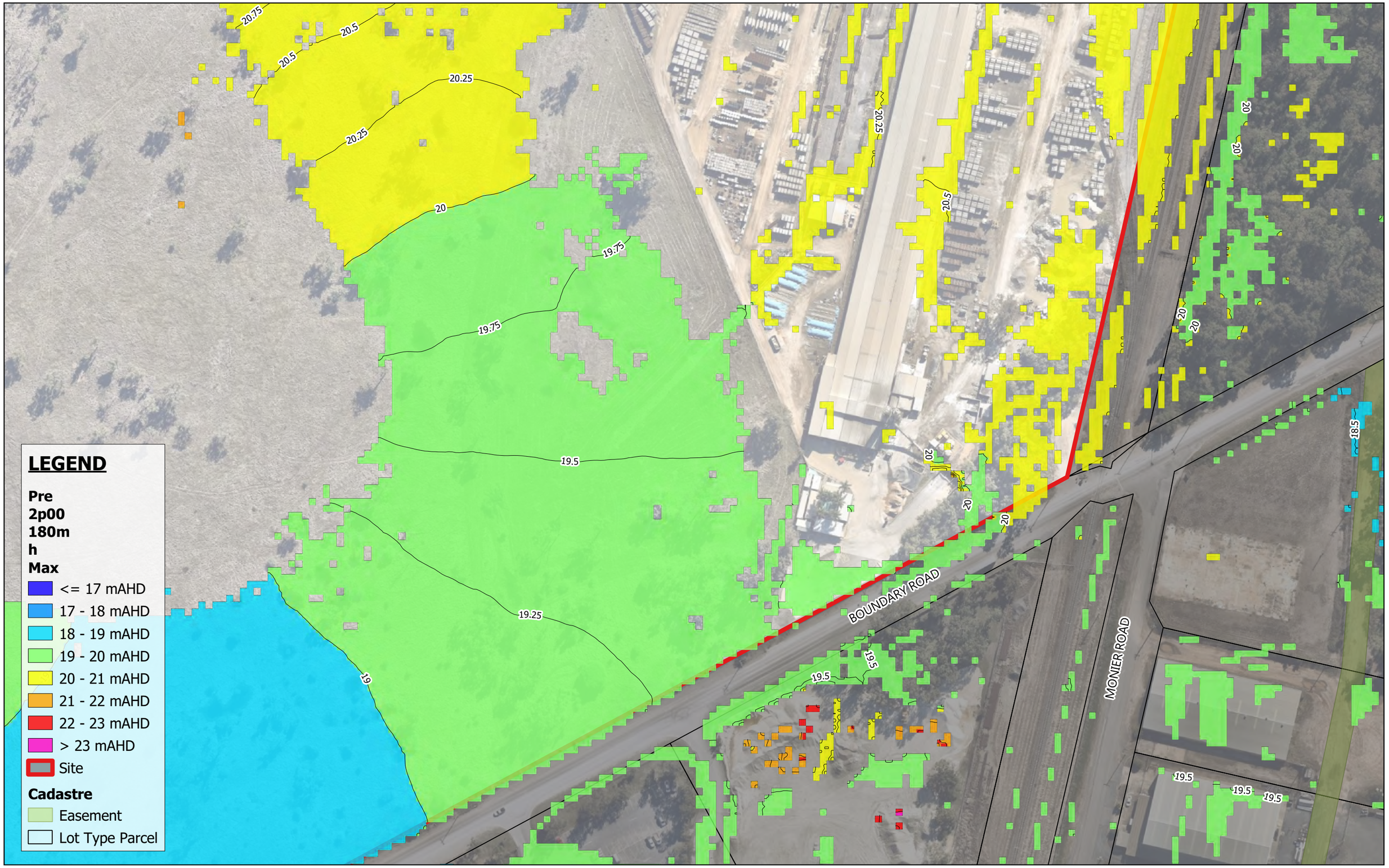
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
1% AEP Event Flood Elevation - Pre-Development	**E001**



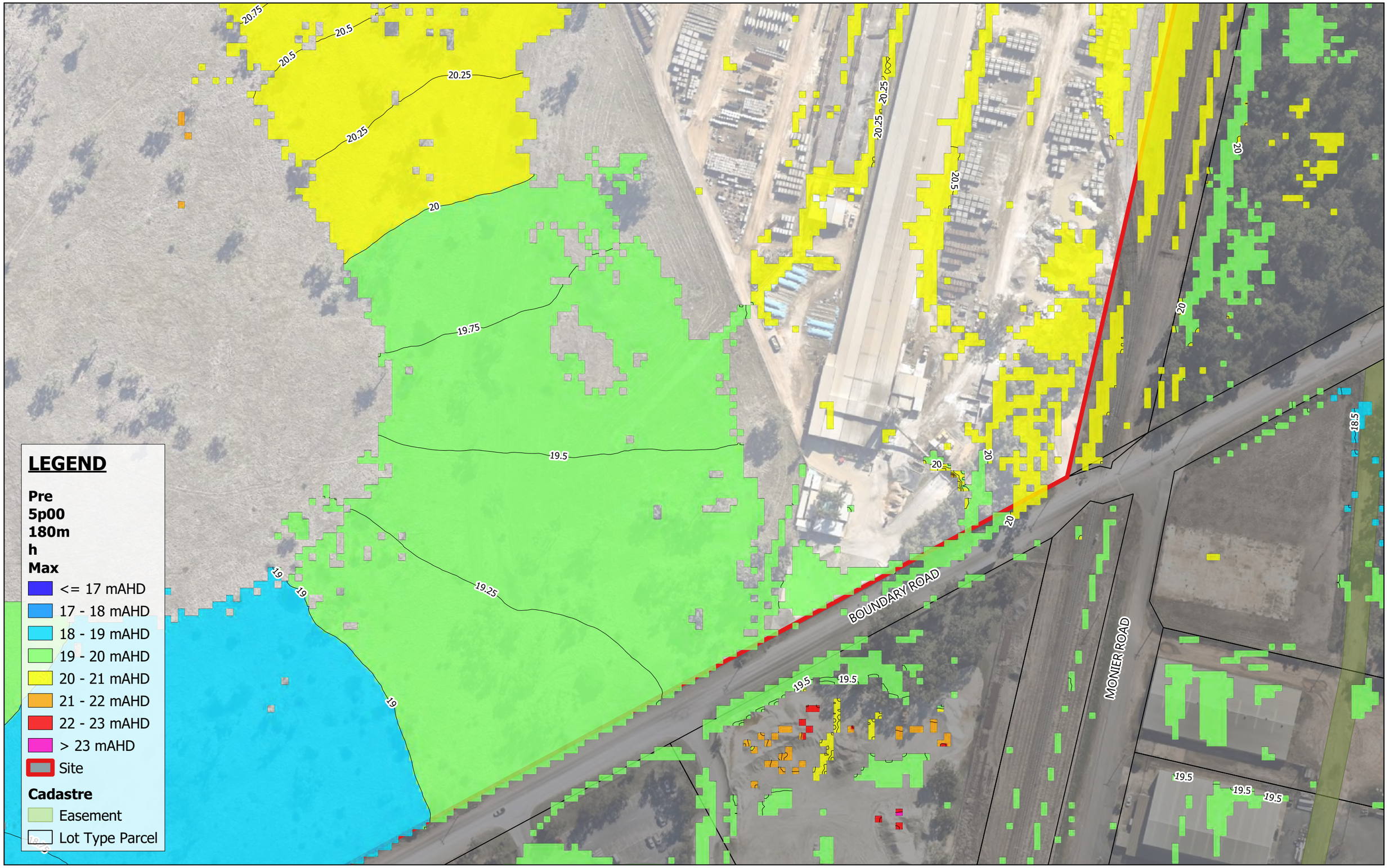
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
2% AEP Event Flood Elevation - Pre-Development	**E002**



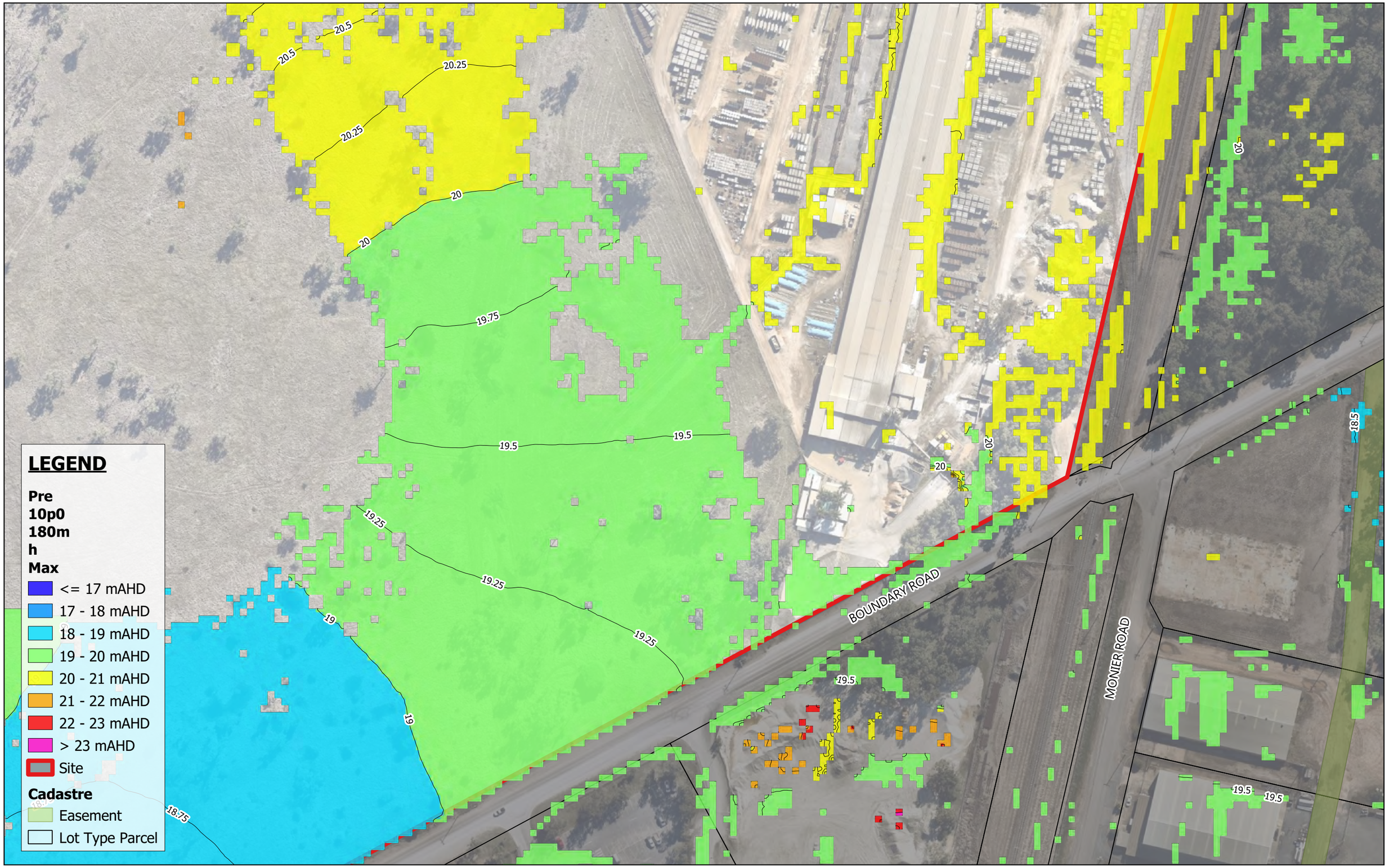
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
5% AEP Event Flood Elevation - Pre-Development	E003



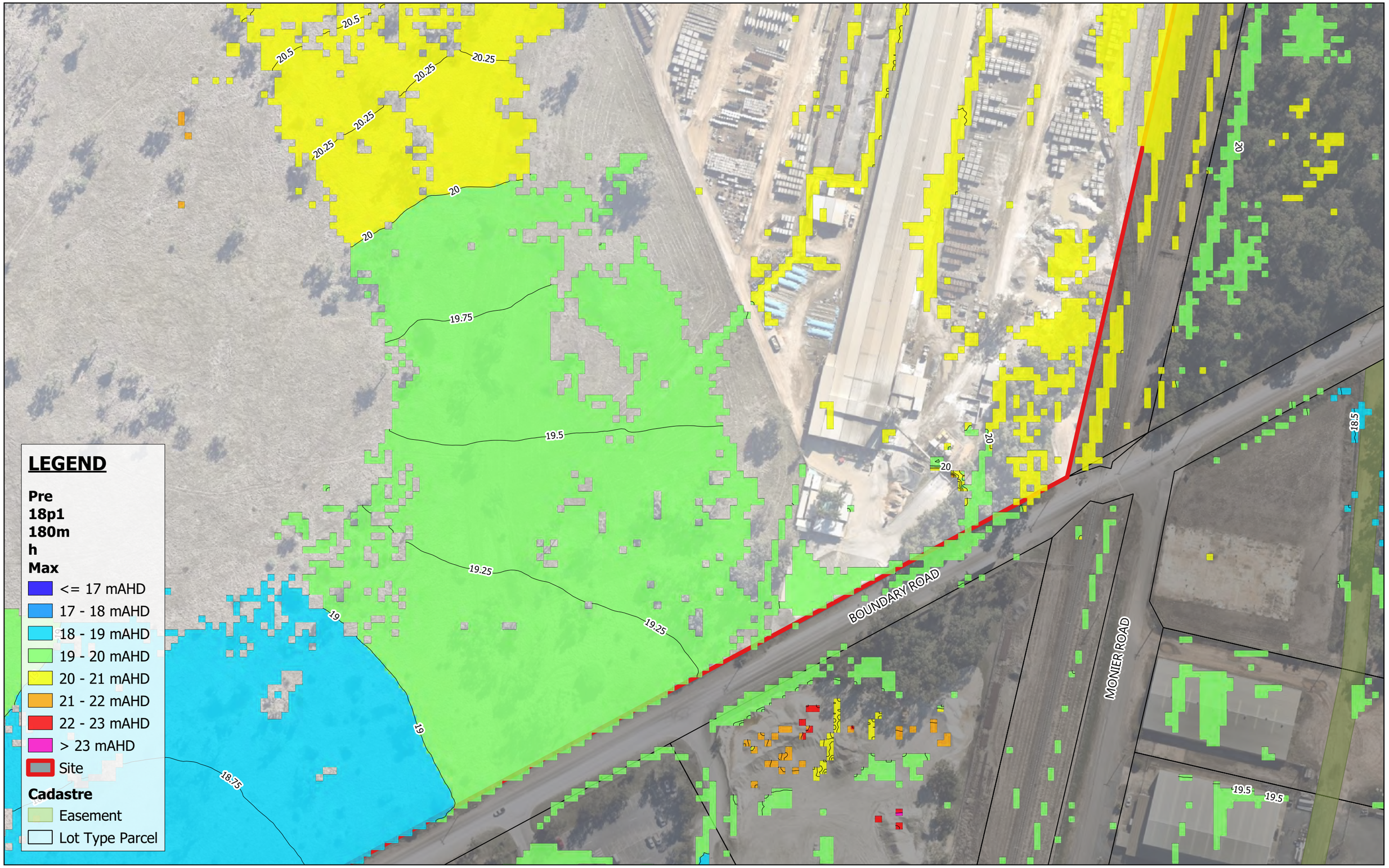
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
10% AEP Event Flood Elevation - Pre-Development	**E004**



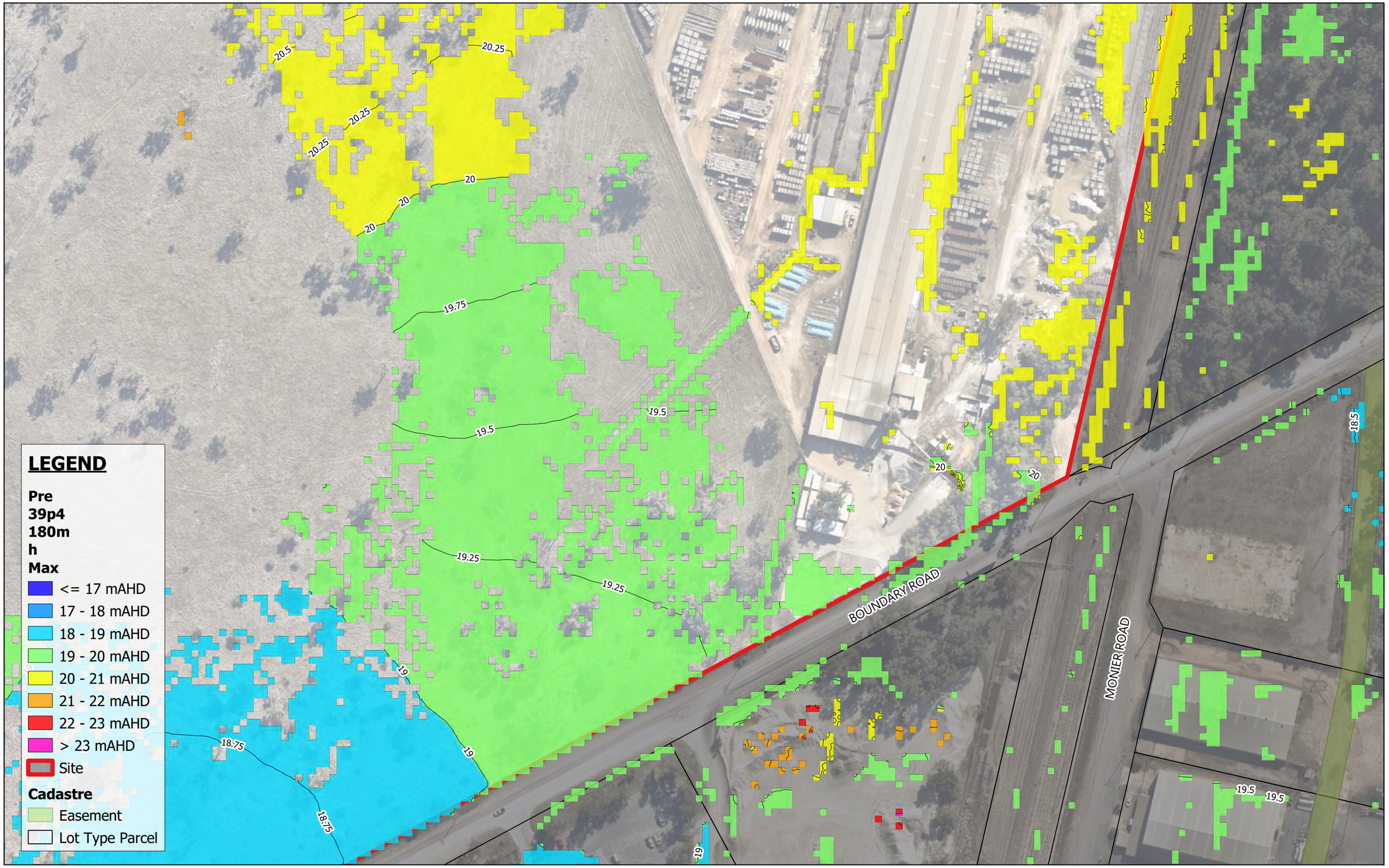
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
18% AEP Event Flood Elevation - Pre-Development	**E005**



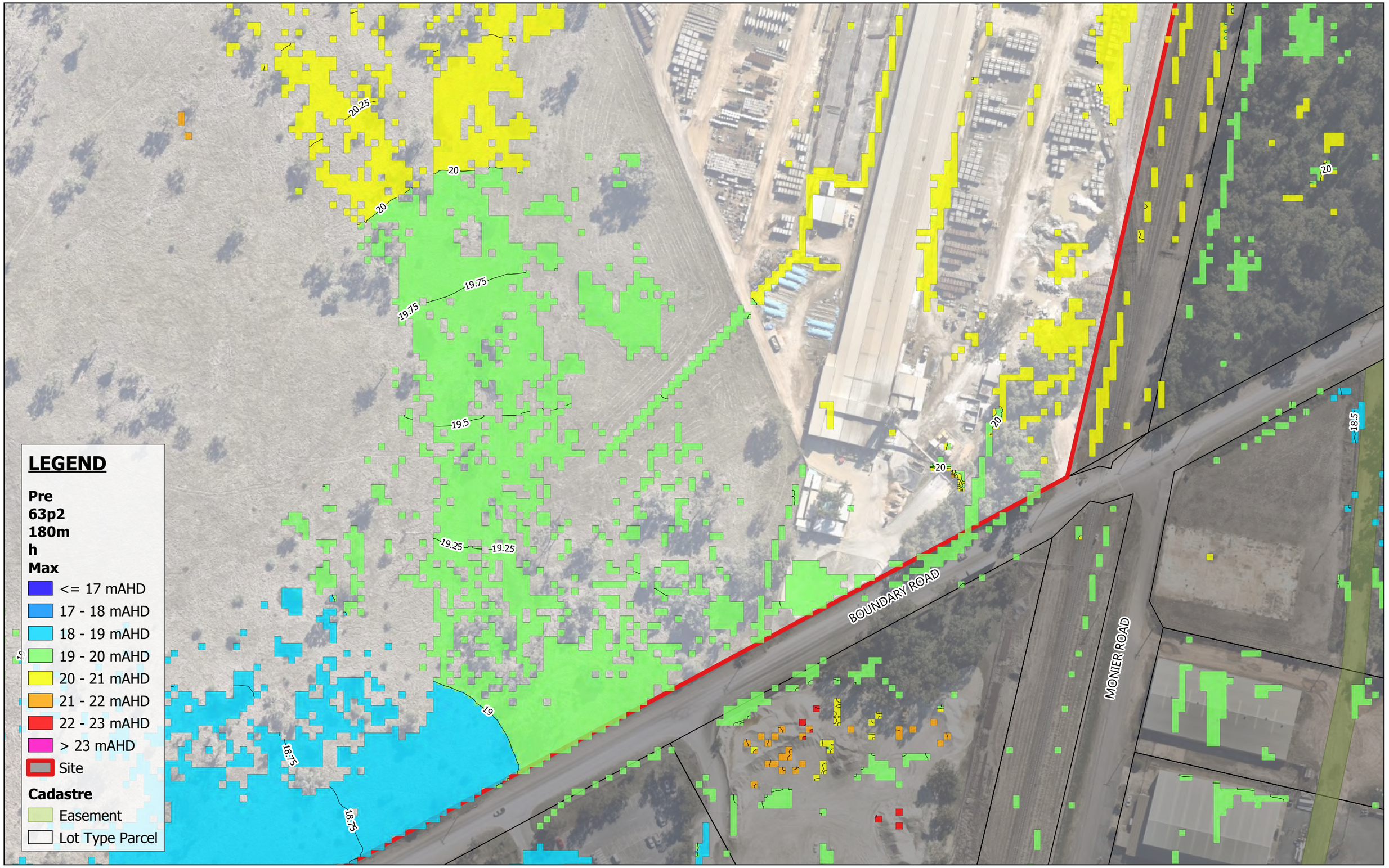
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
39% AEP Event Flood Elevation - Pre-Development	E006



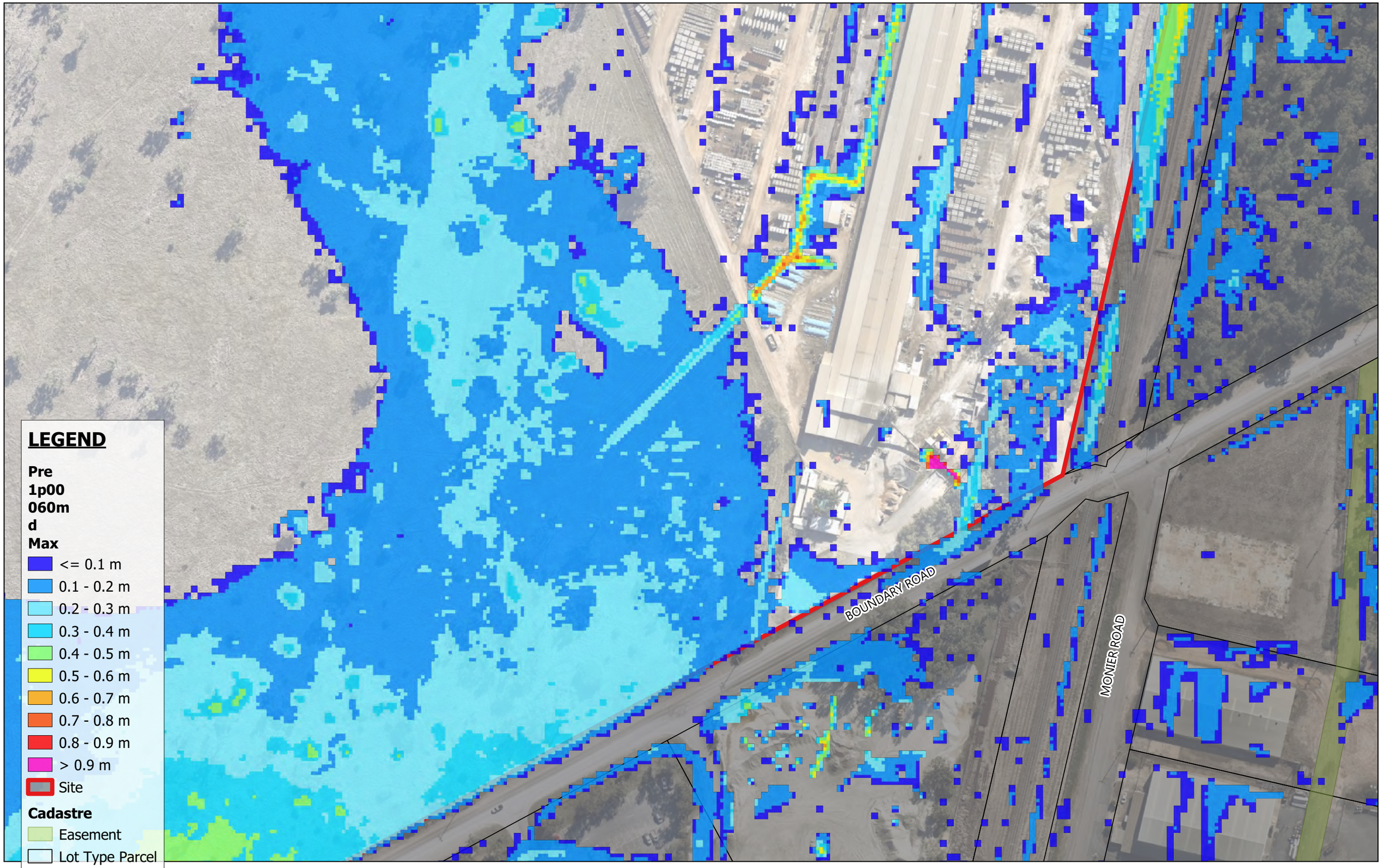
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
63% AEP Event Flood Elevation - Pre-Development	**E007**



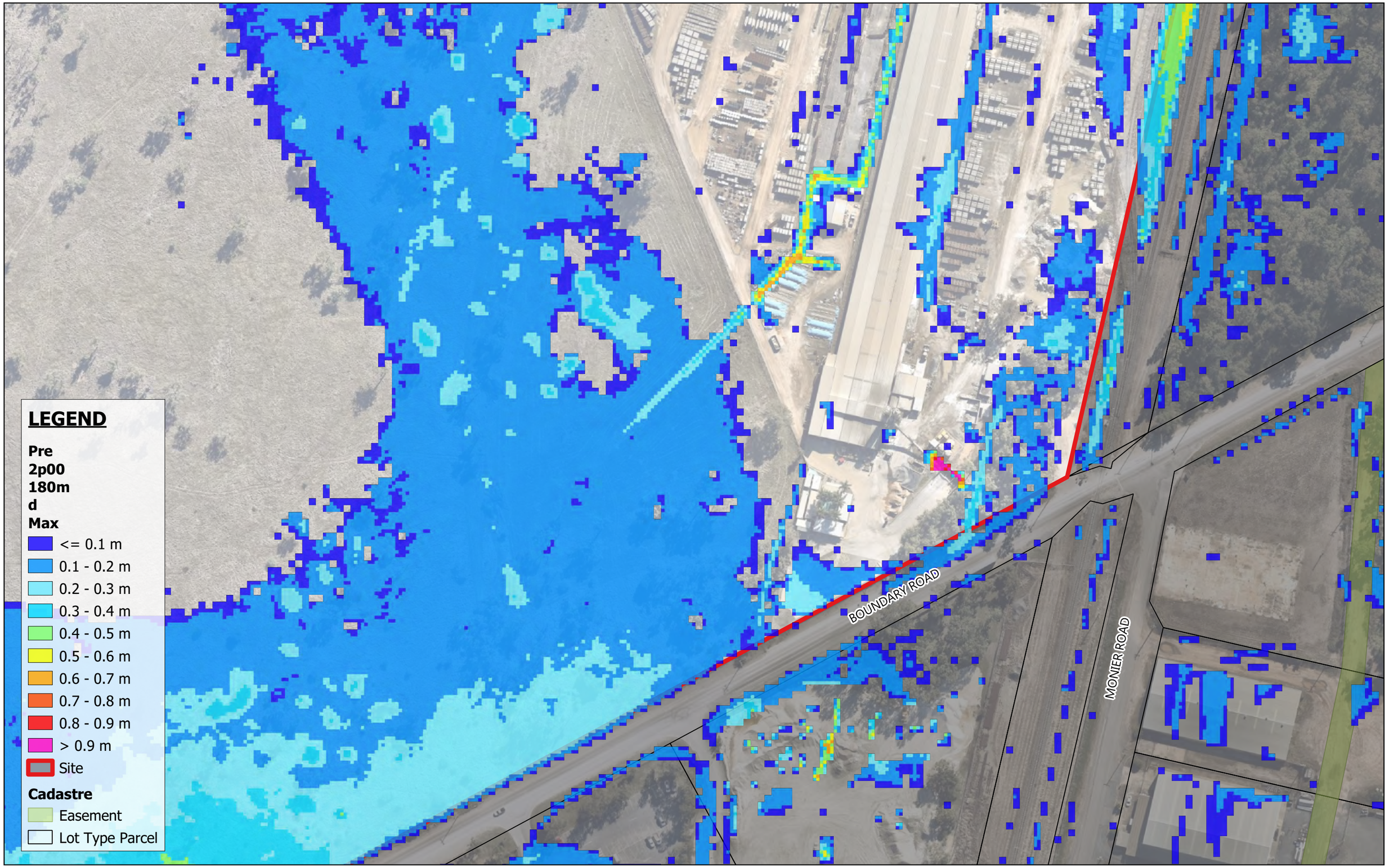
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
1% AEP Event Flood Depth - Pre-Development	E008



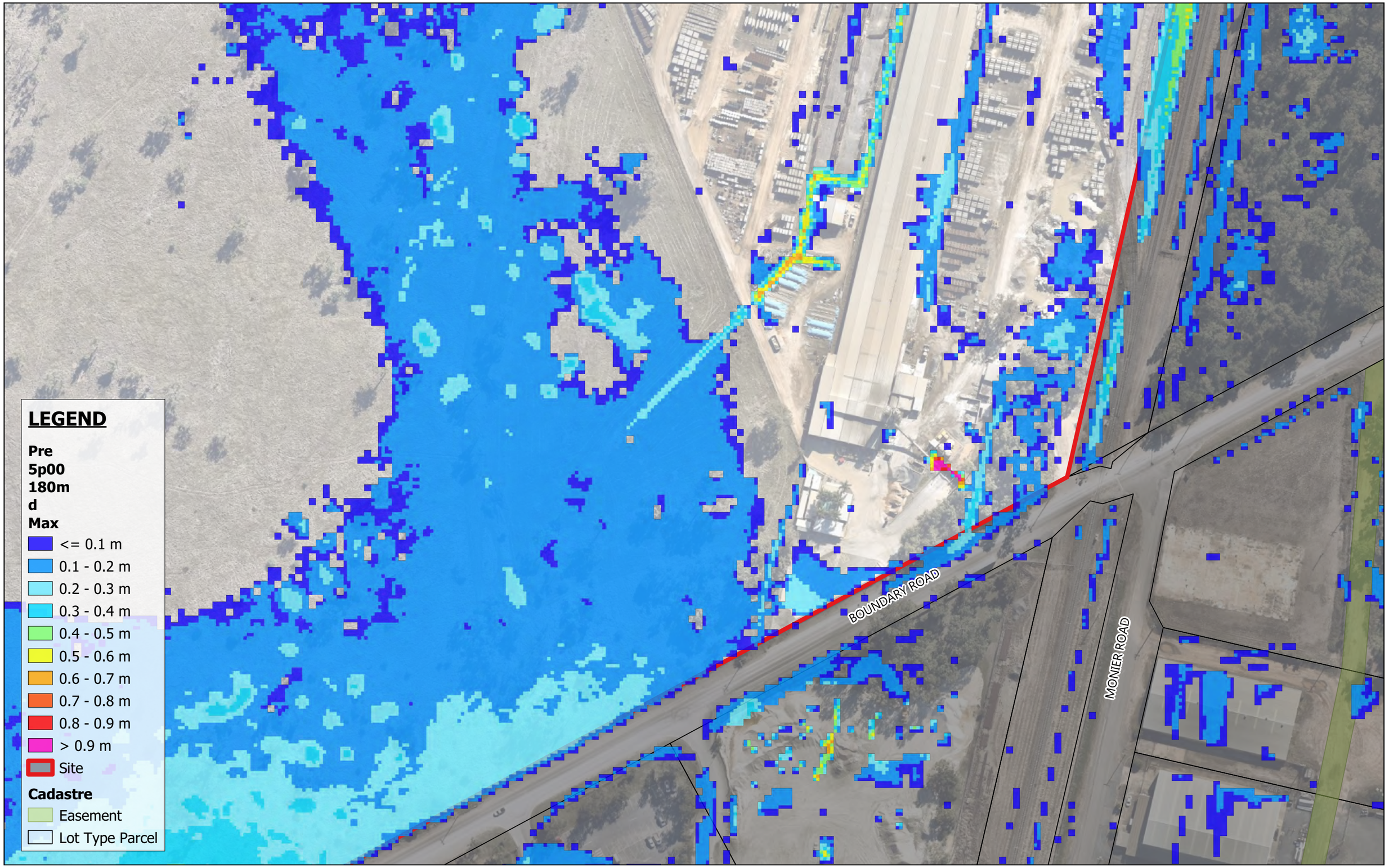
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
2% AEP Event Flood Depth - Pre-Development	**E009**



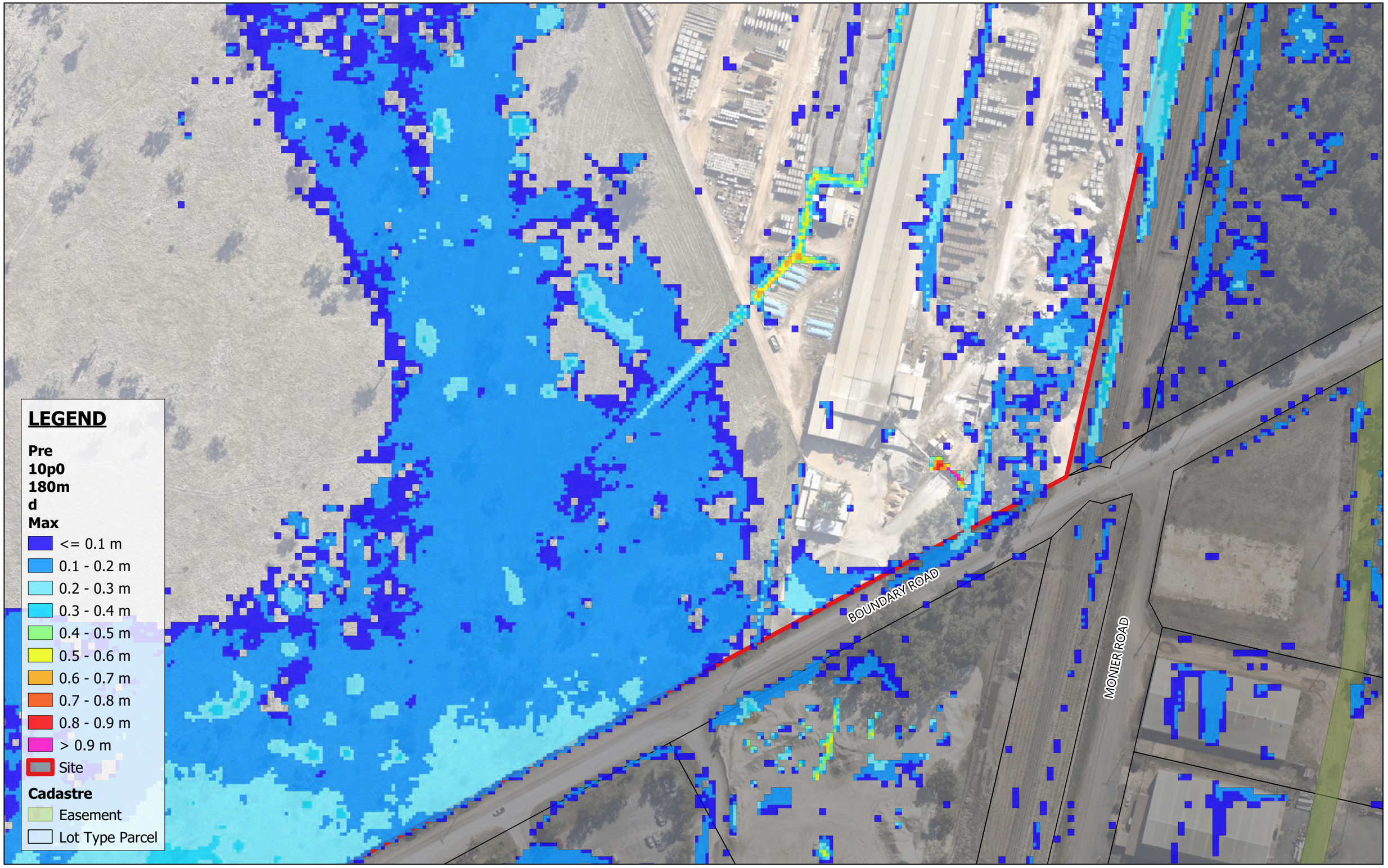
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
5% AEP Event Flood Depth - Pre-Development	E010



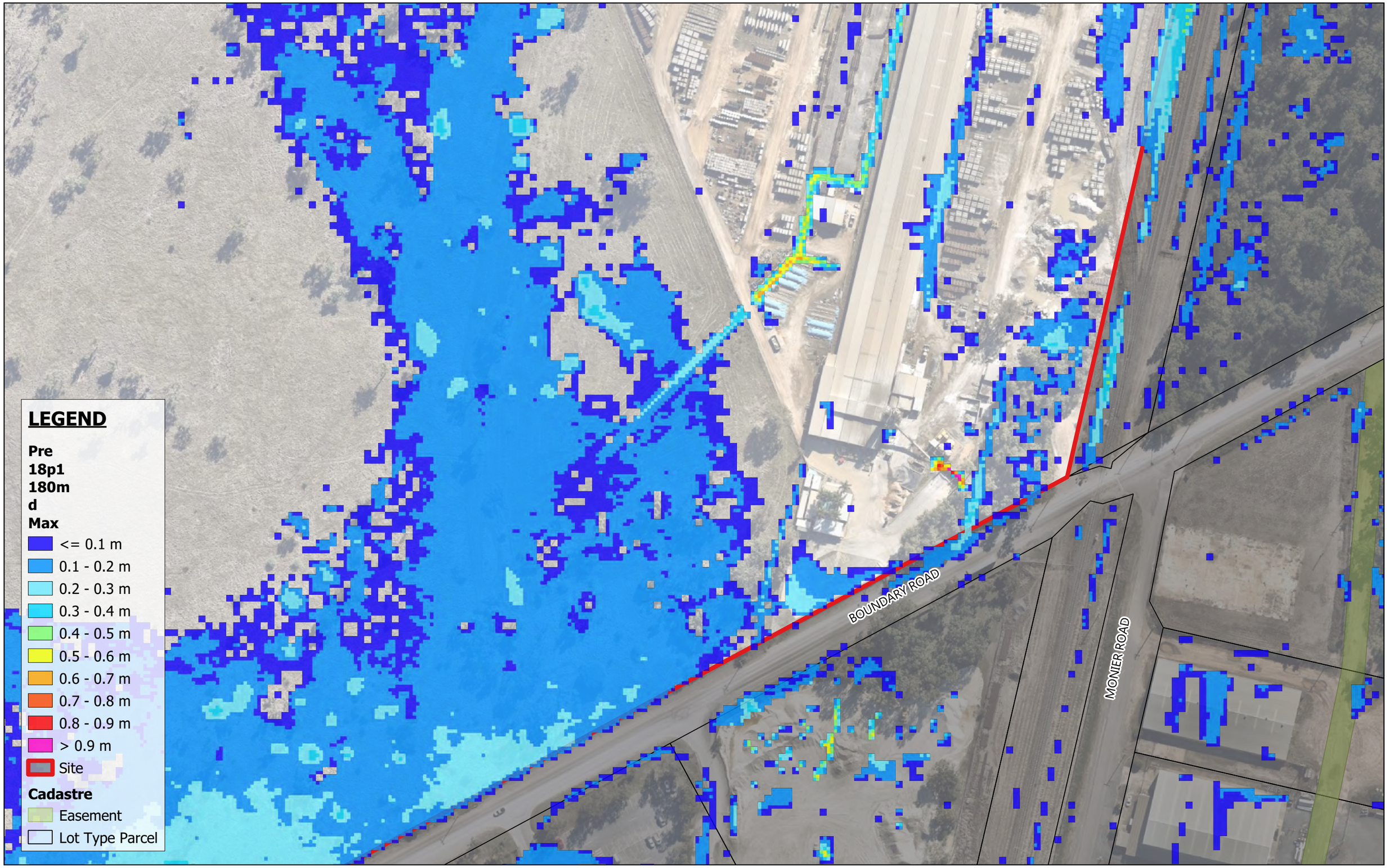
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
10% AEP Event Flood Depth - Pre-Development	E011



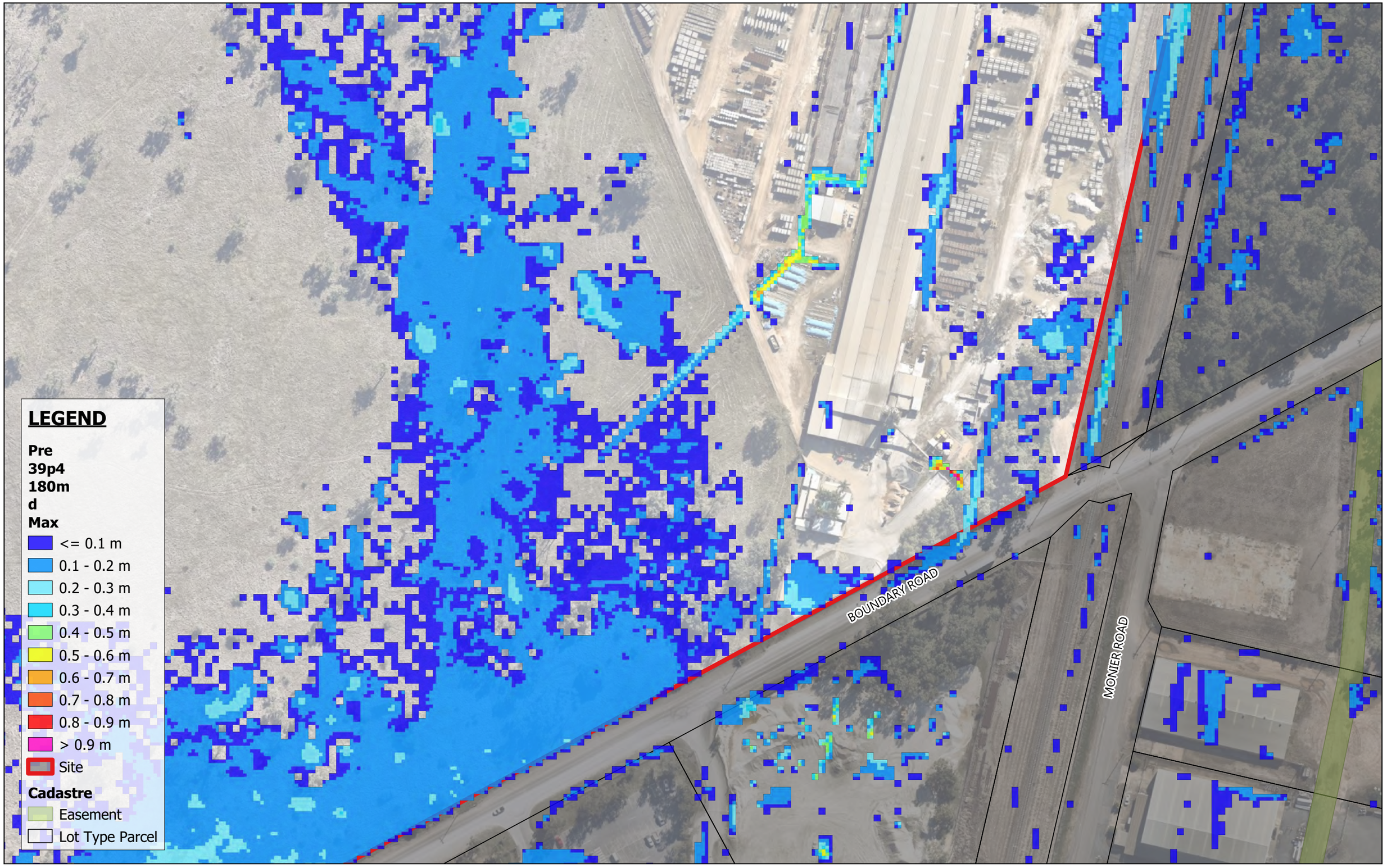
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
18% AEP Event Flood Depth - Pre-Development	E012



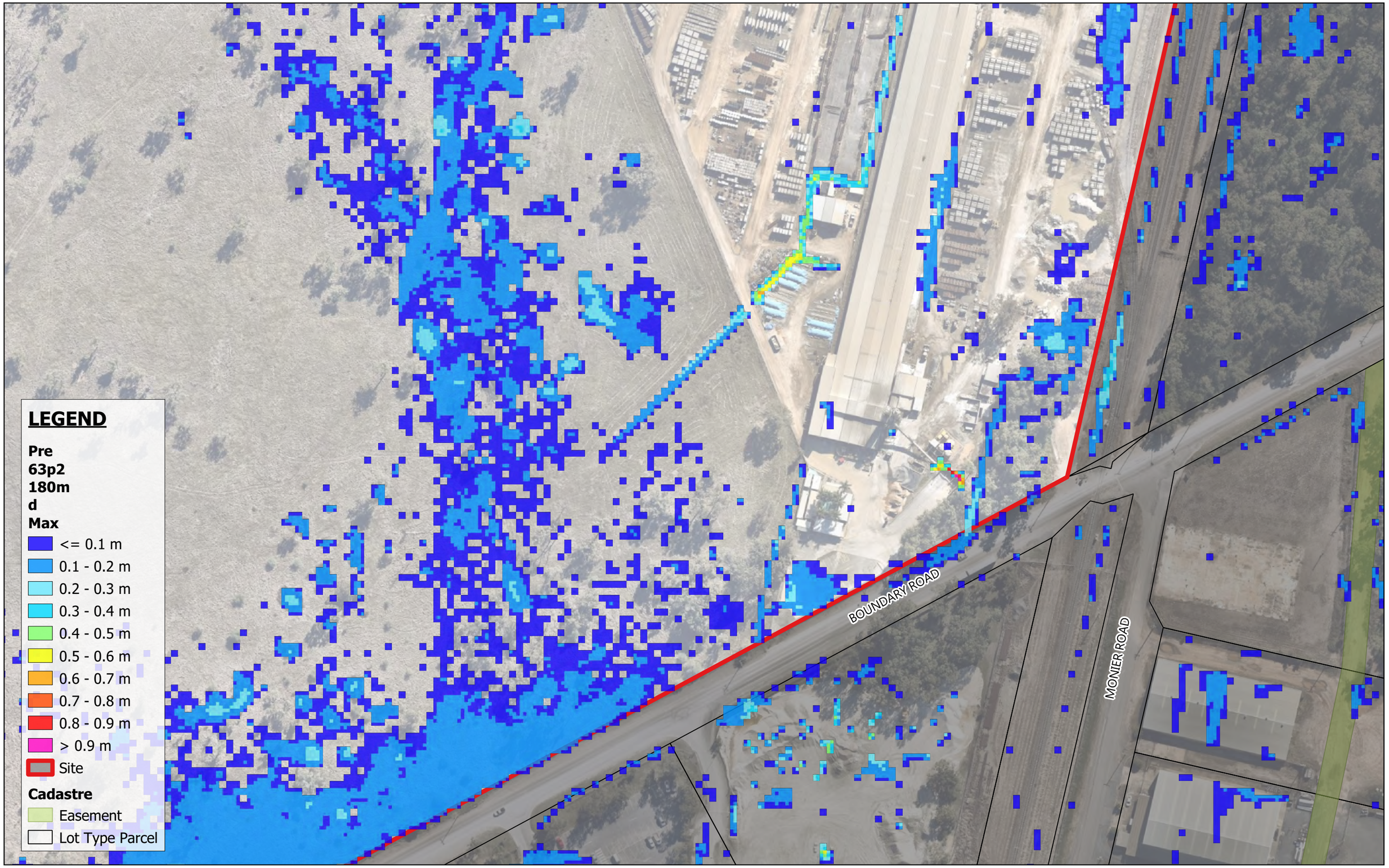
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
39% AEP Event Flood Depth - Pre-Development	E013



LEGEND

Pre
63p2
180m
d
Max

- <= 0.1 m
- 0.1 - 0.2 m
- 0.2 - 0.3 m
- 0.3 - 0.4 m
- 0.4 - 0.5 m
- 0.5 - 0.6 m
- 0.6 - 0.7 m
- 0.7 - 0.8 m
- 0.8 - 0.9 m
- > 0.9 m
- Site

Cadastre

- Easement
- Lot Type Parcel

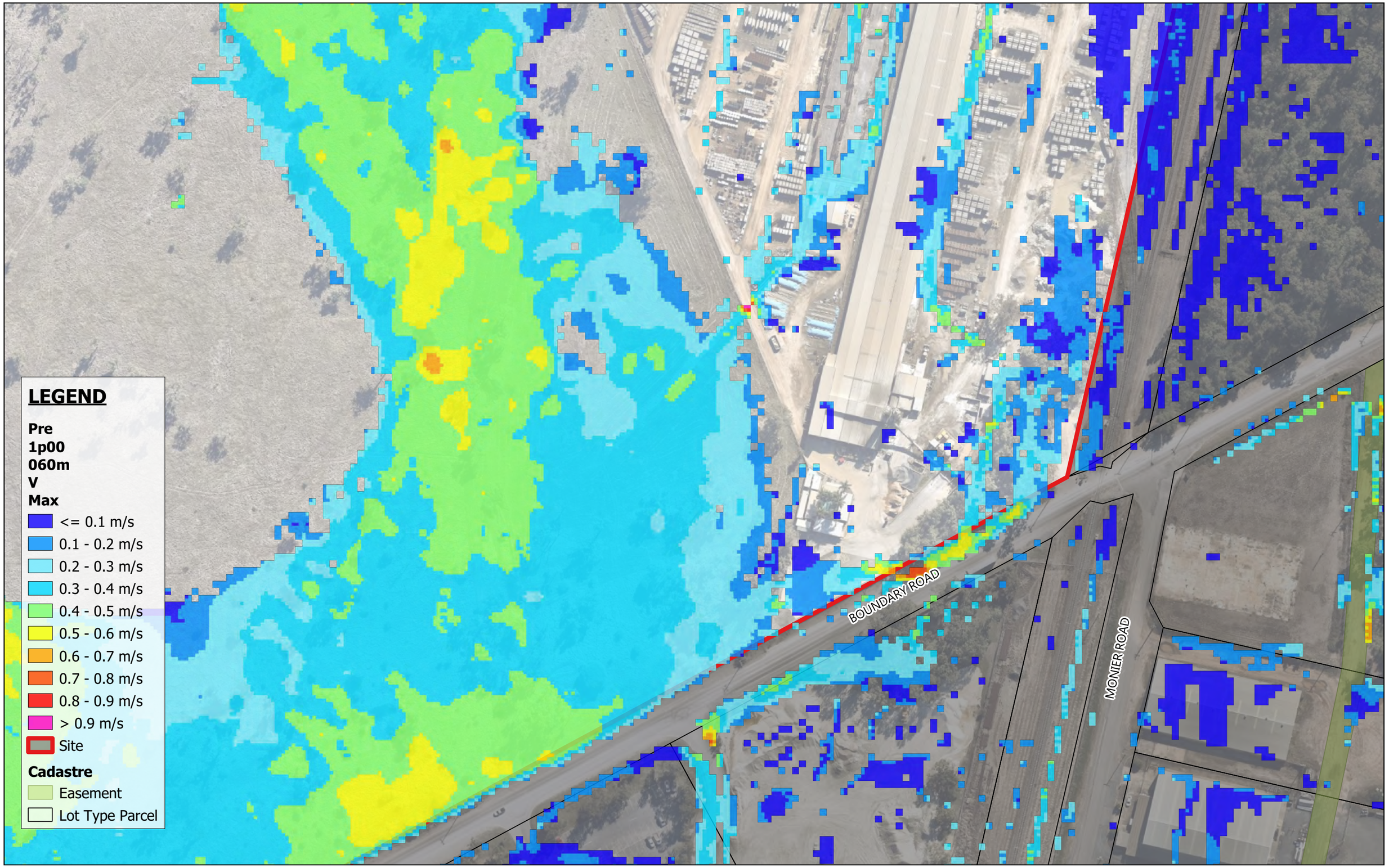
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
63% AEP Event Flood Depth - Pre-Development	**E014**



LEGEND

Pre
1p00
060m
V
Max

- <= 0.1 m/s
- 0.1 - 0.2 m/s
- 0.2 - 0.3 m/s
- 0.3 - 0.4 m/s
- 0.4 - 0.5 m/s
- 0.5 - 0.6 m/s
- 0.6 - 0.7 m/s
- 0.7 - 0.8 m/s
- 0.8 - 0.9 m/s
- > 0.9 m/s
- Site

Cadastre

- Easement
- Lot Type Parcel

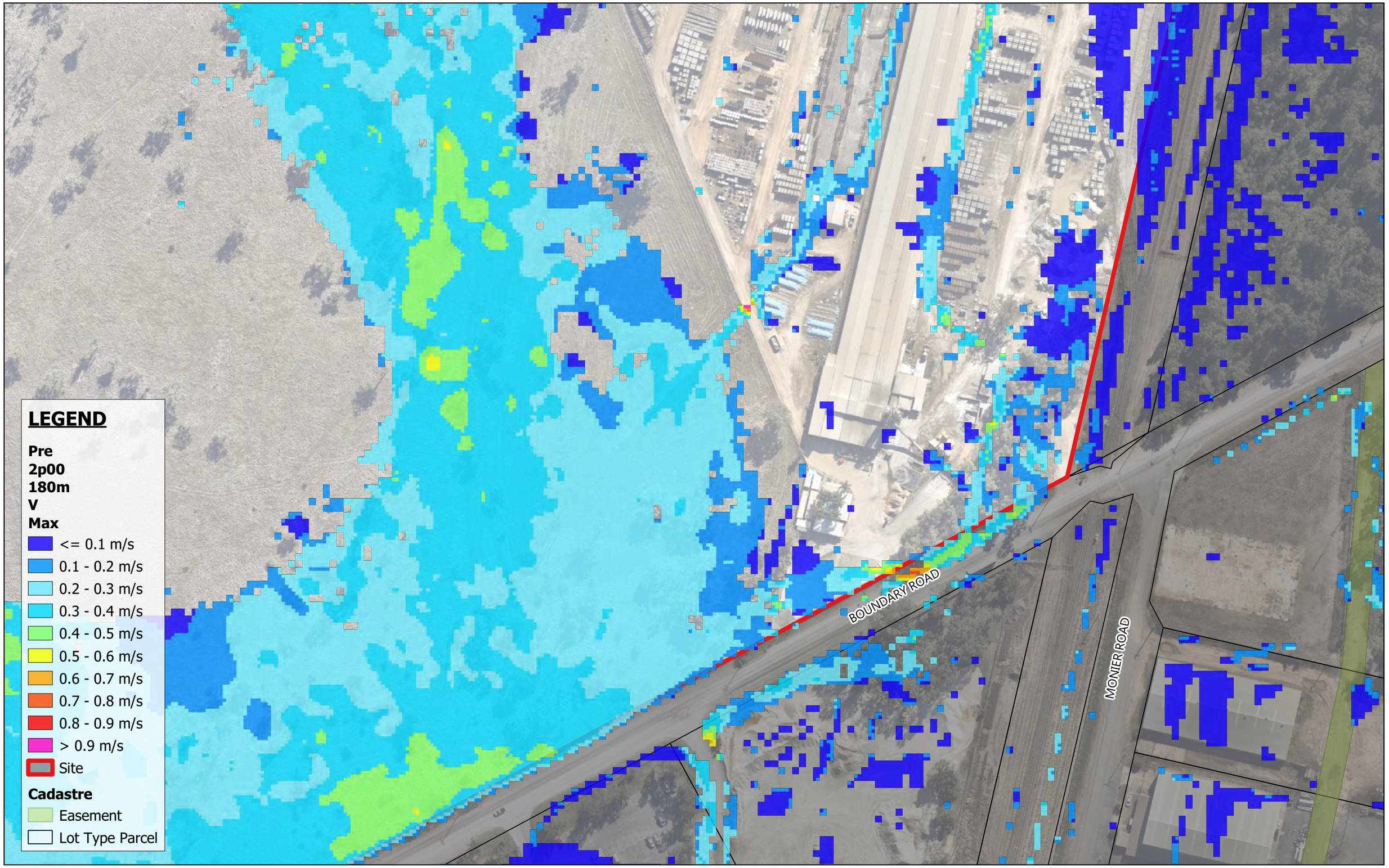
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
1% AEP Event Flood Velocity - Pre-Development	**E015**



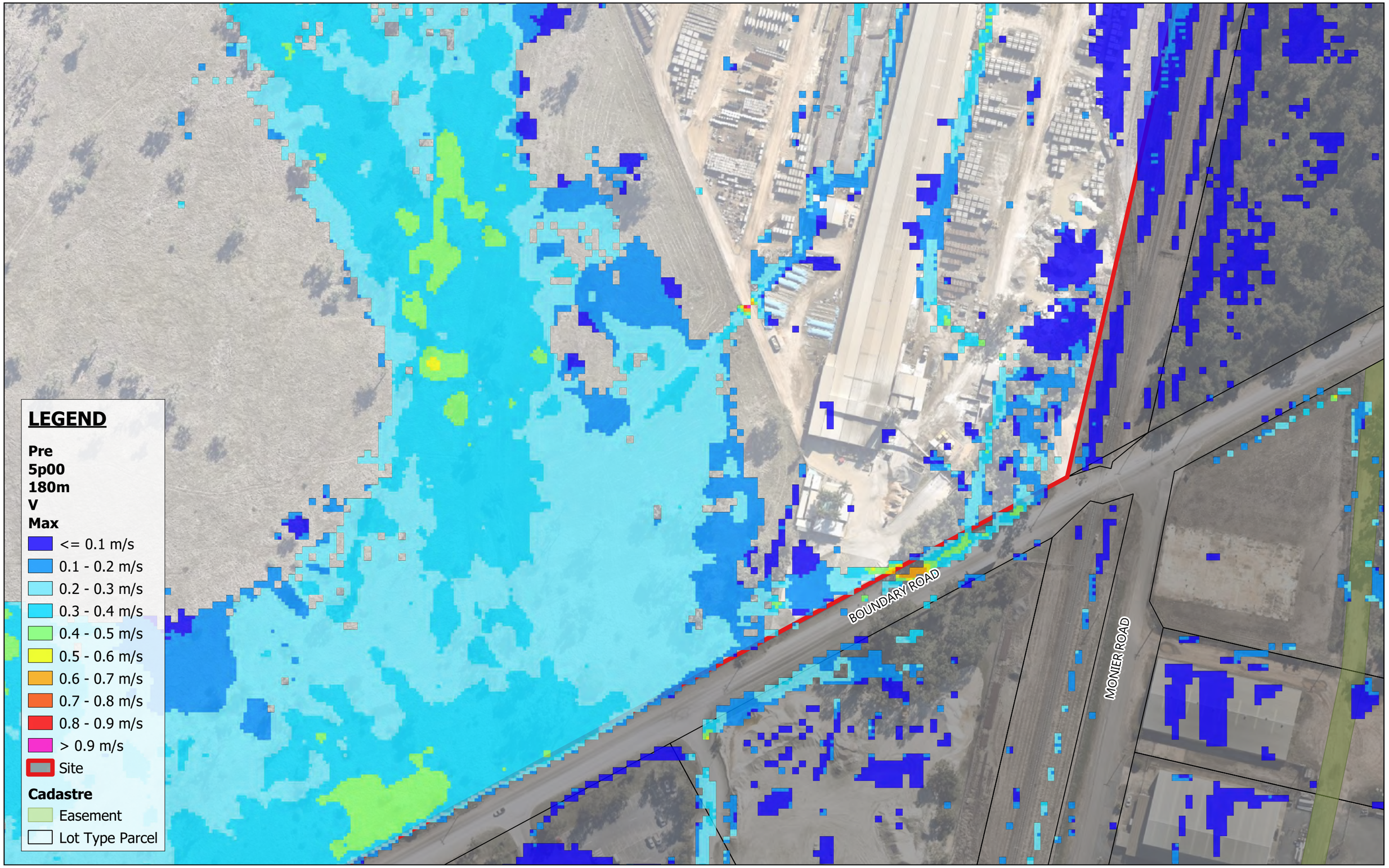
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
2% AEP Event Flood Velocity - Pre-Development	E016



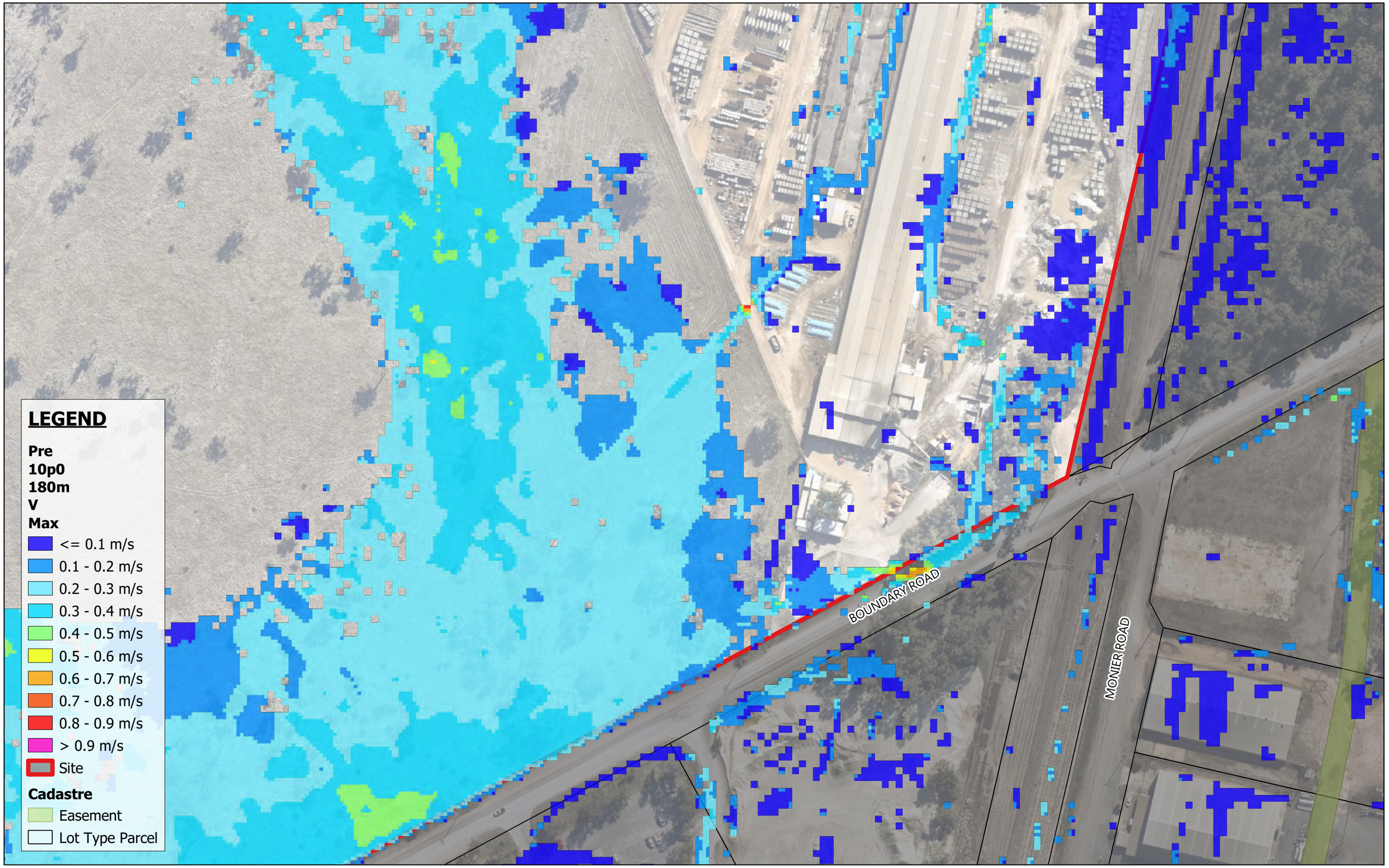
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
5% AEP Event Flood Velocity - Pre-Development	E017



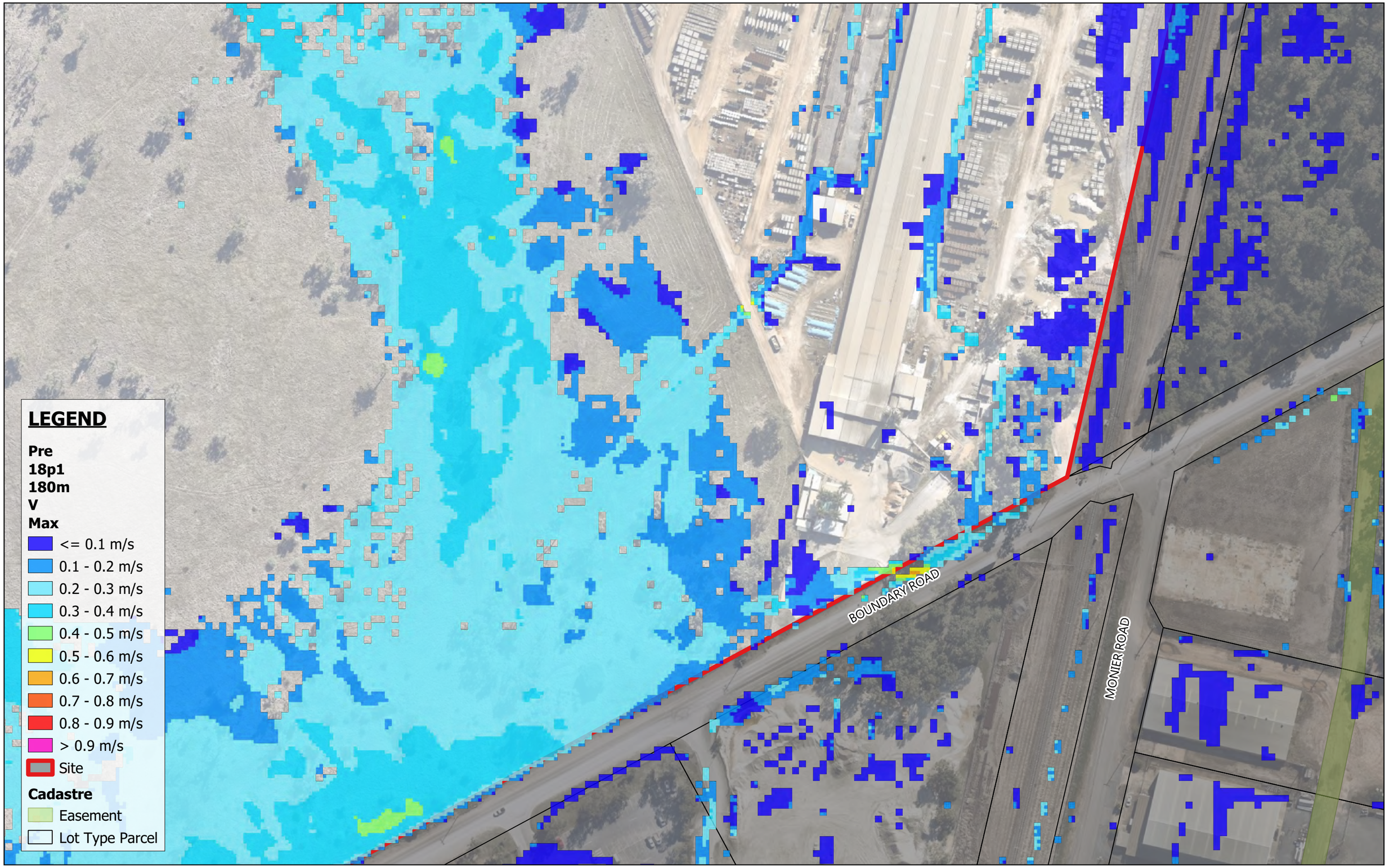
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
10% AEP Event Flood Velocity - Pre-Development	E018



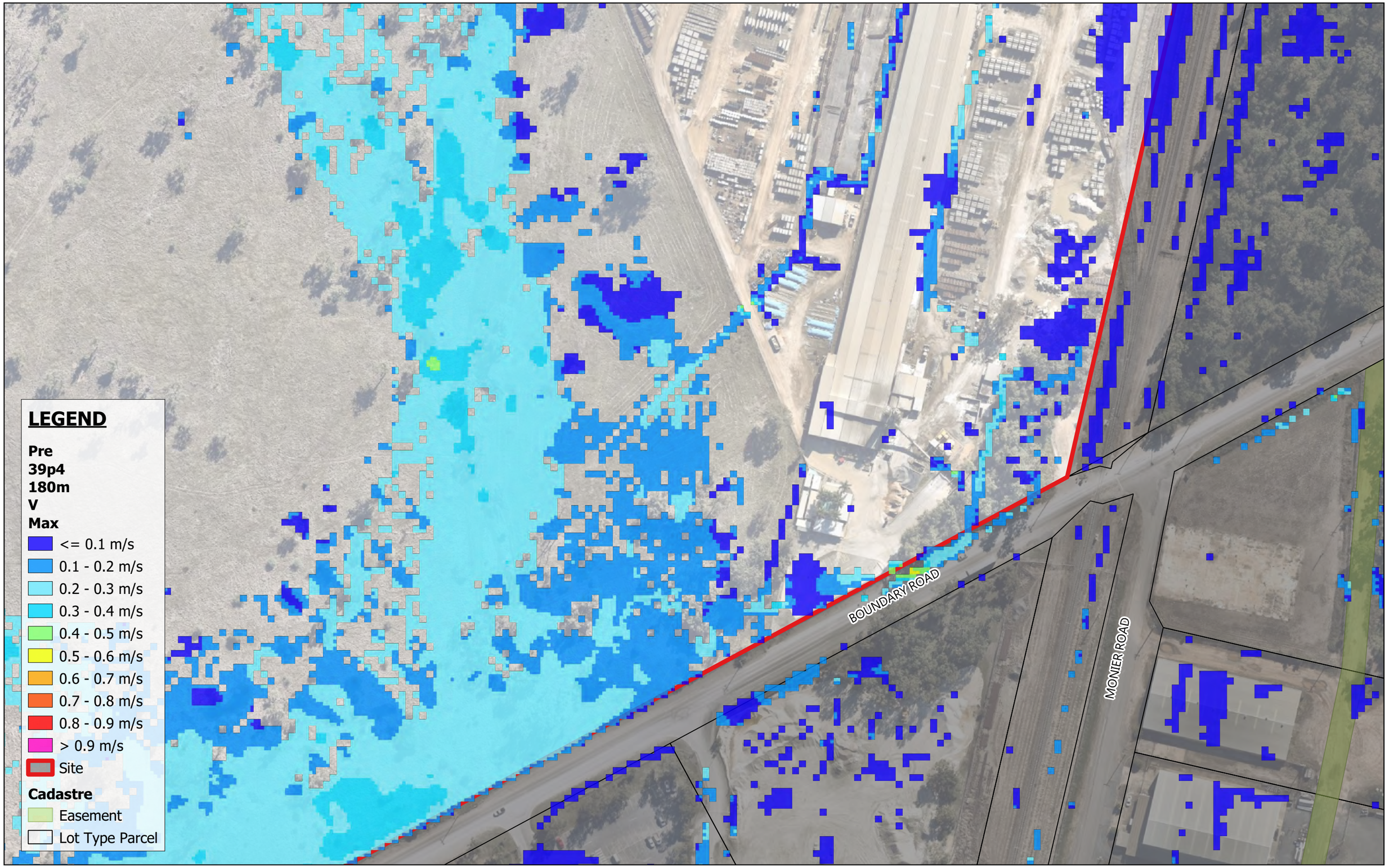
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
18% AEP Event Flood Velocity - Pre-Development	**E019**



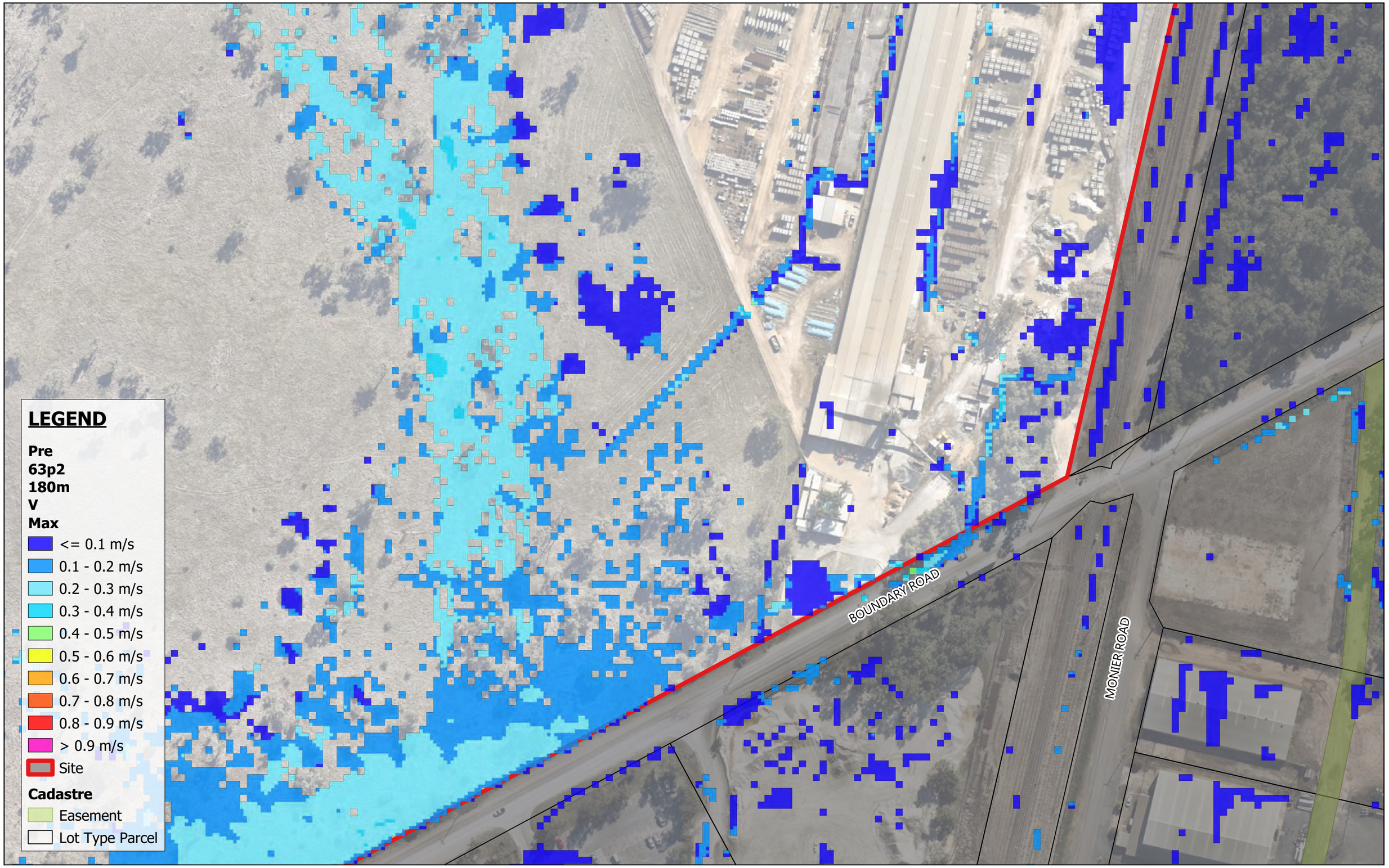
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
39% AEP Event Flood Velocity - Pre-Development	E020



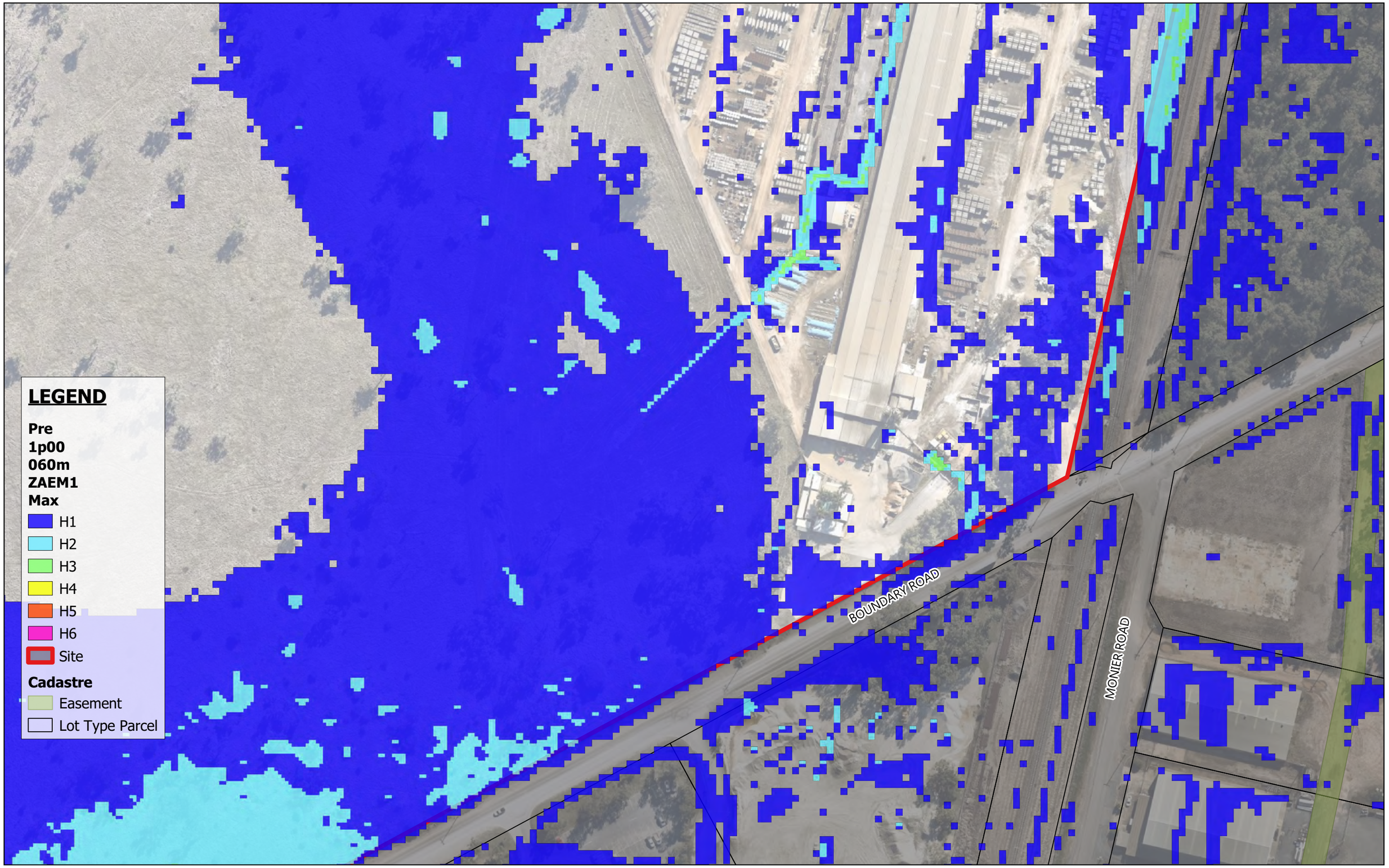
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
63% AEP Event Flood Velocity - Pre-Development	E021



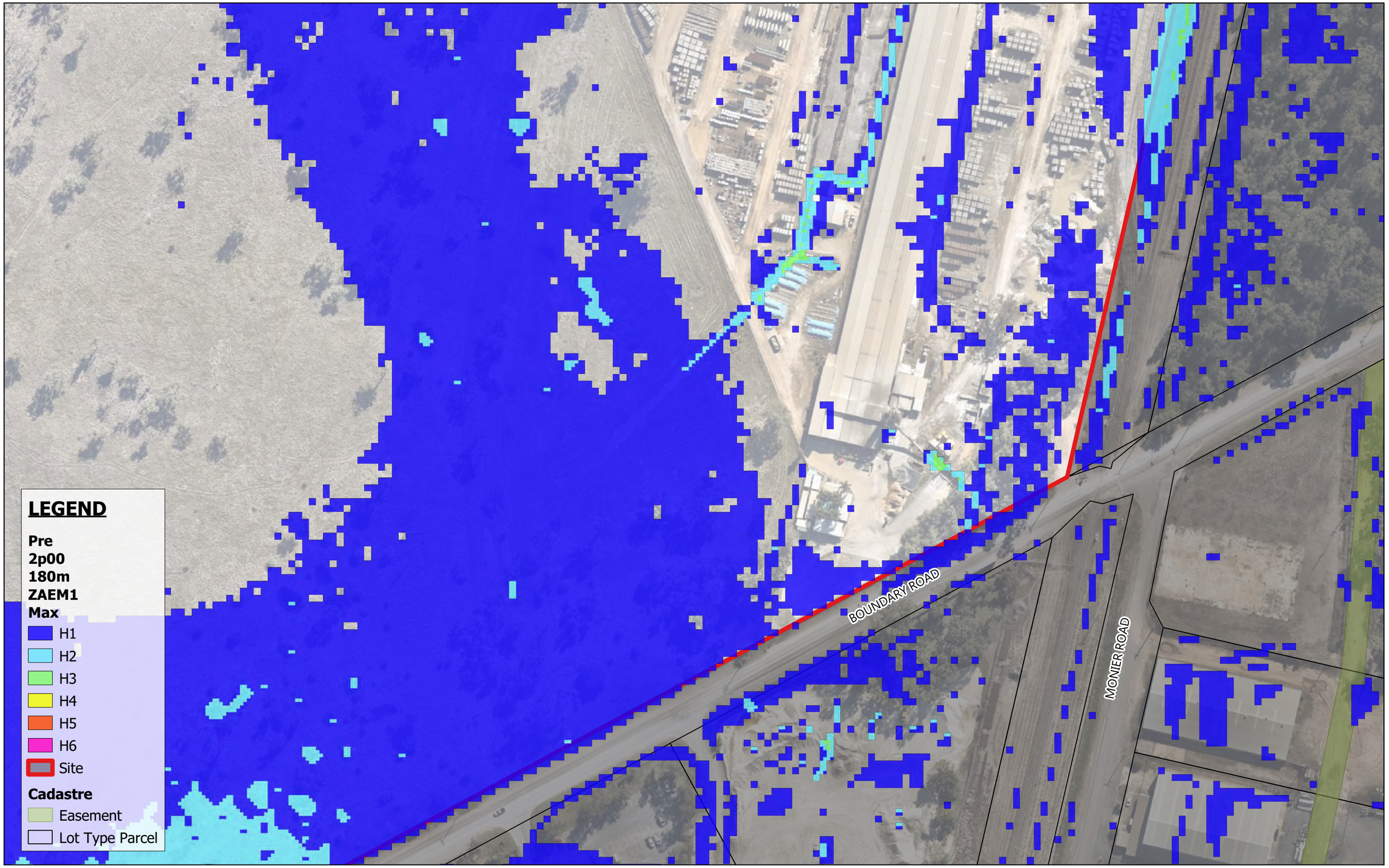
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
1% AEP Event Flood Hazard - Pre-Development	**E022**



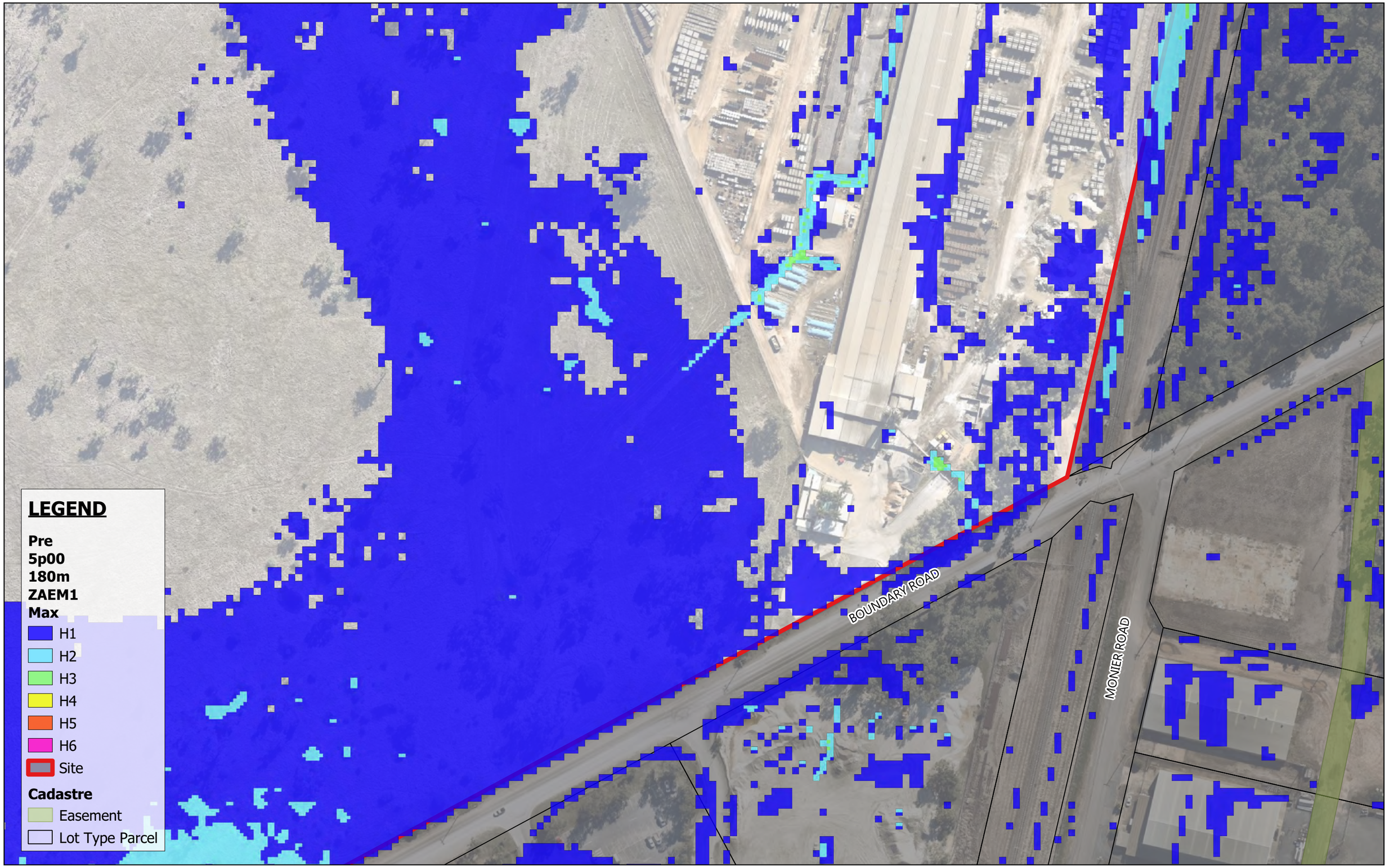
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
2% AEP Event Flood Hazard - Pre-Development	E023



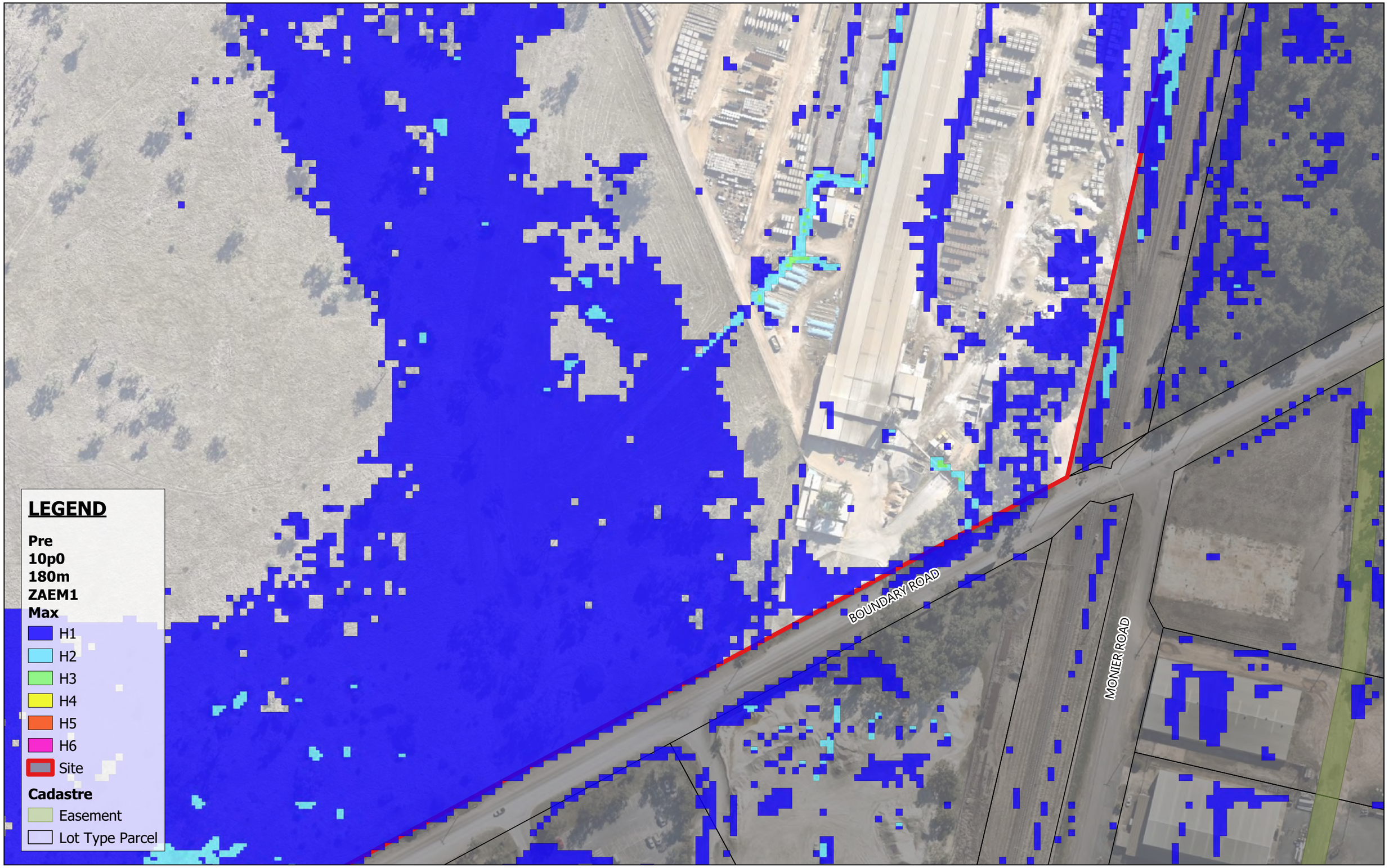
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
5% AEP Event Flood Hazard - Pre-Development	E024



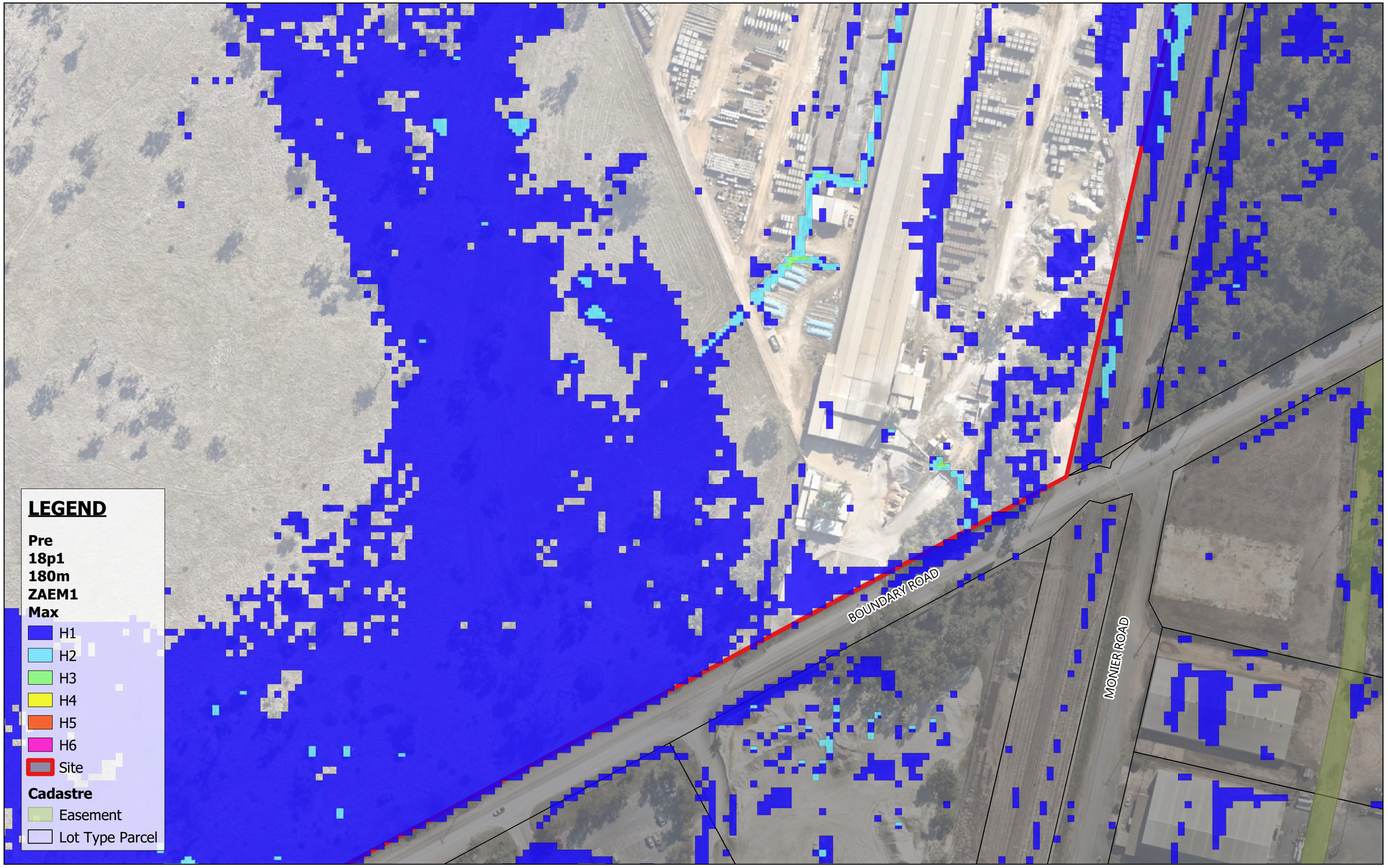
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
10% AEP Event Flood Hazard - Pre-Development	E025



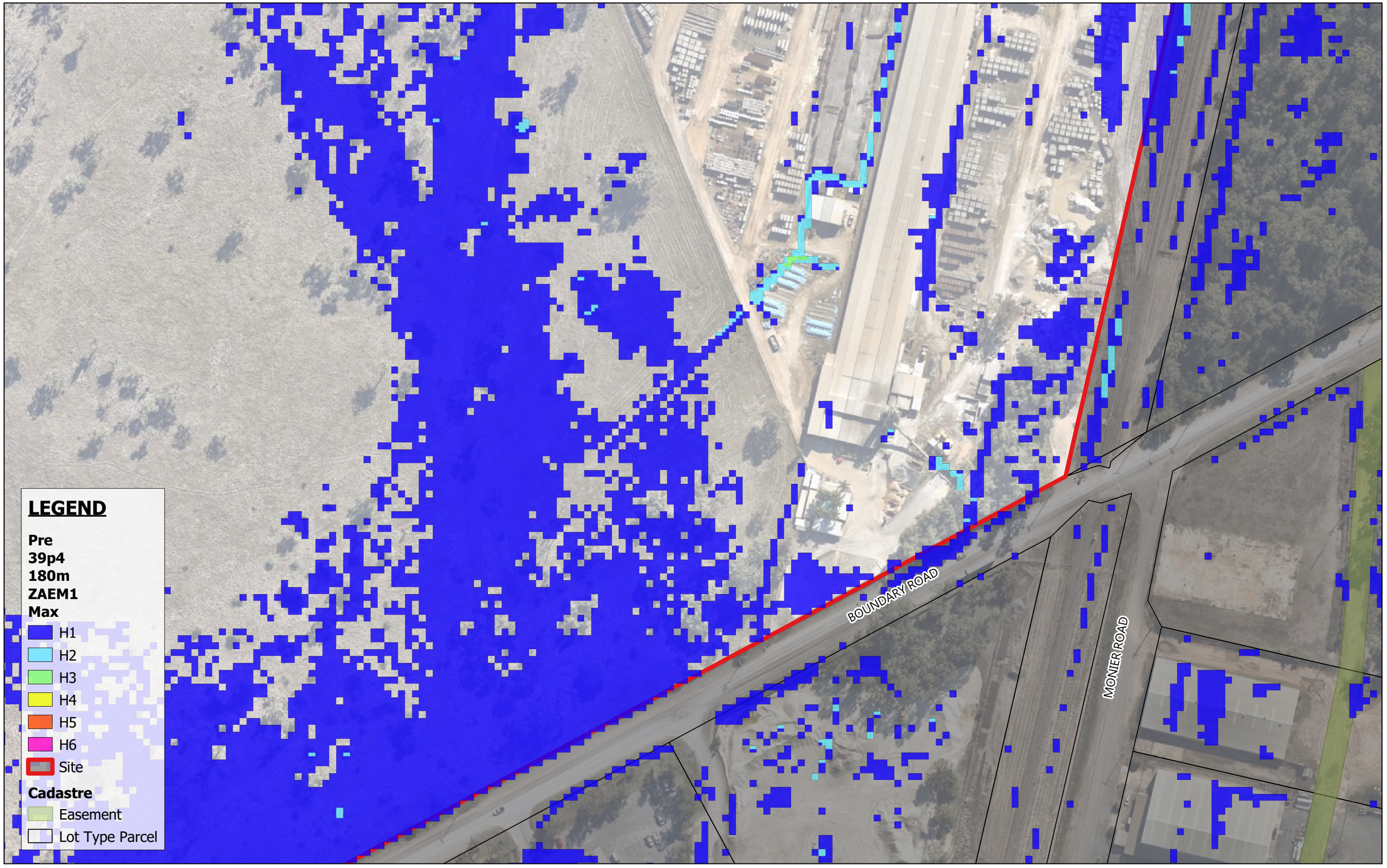
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
18% AEP Event Flood Hazard - Pre-Development	E026



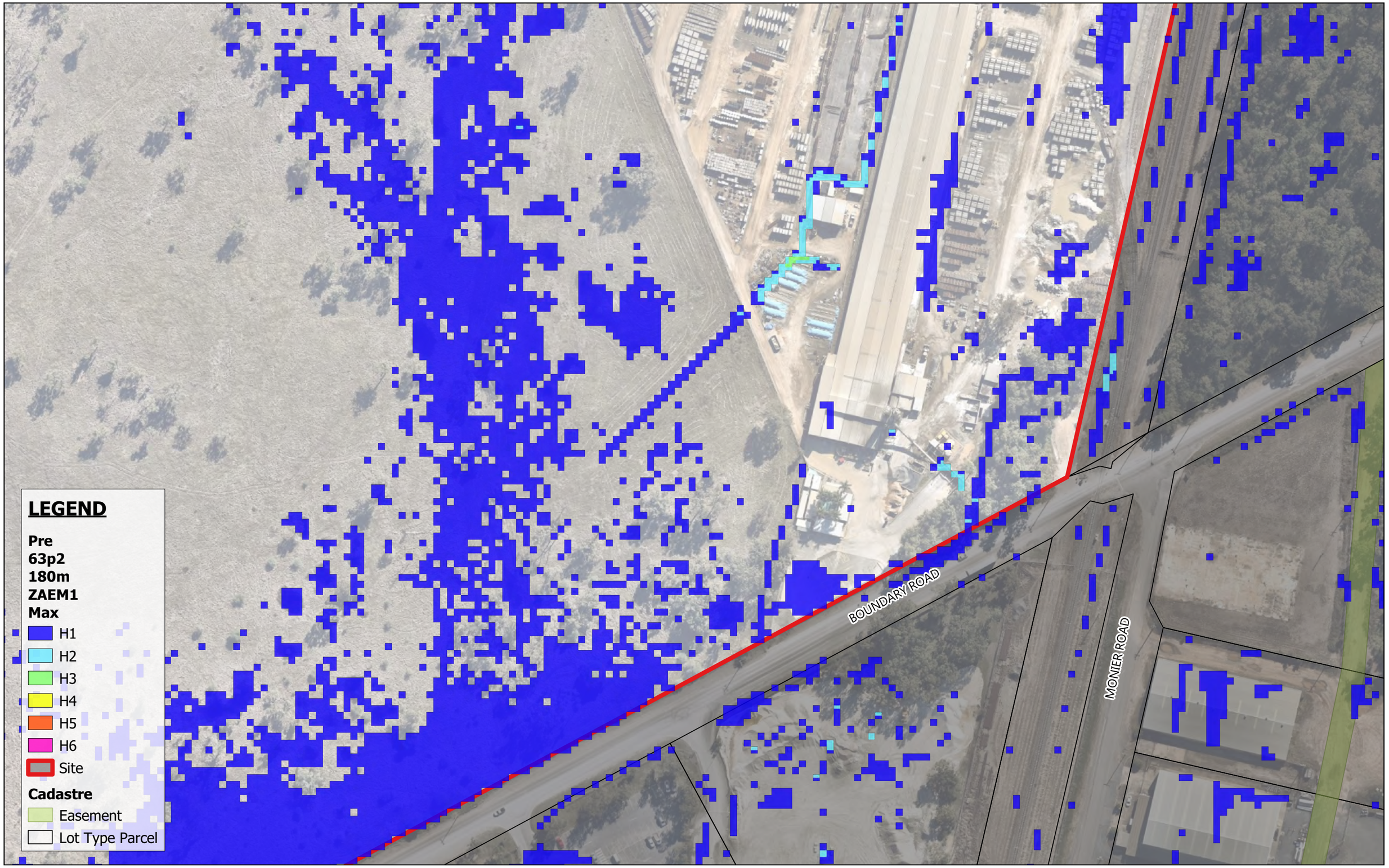
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
39% AEP Event Flood Hazard - Pre-Development	E027



Premise

0 75 150 m

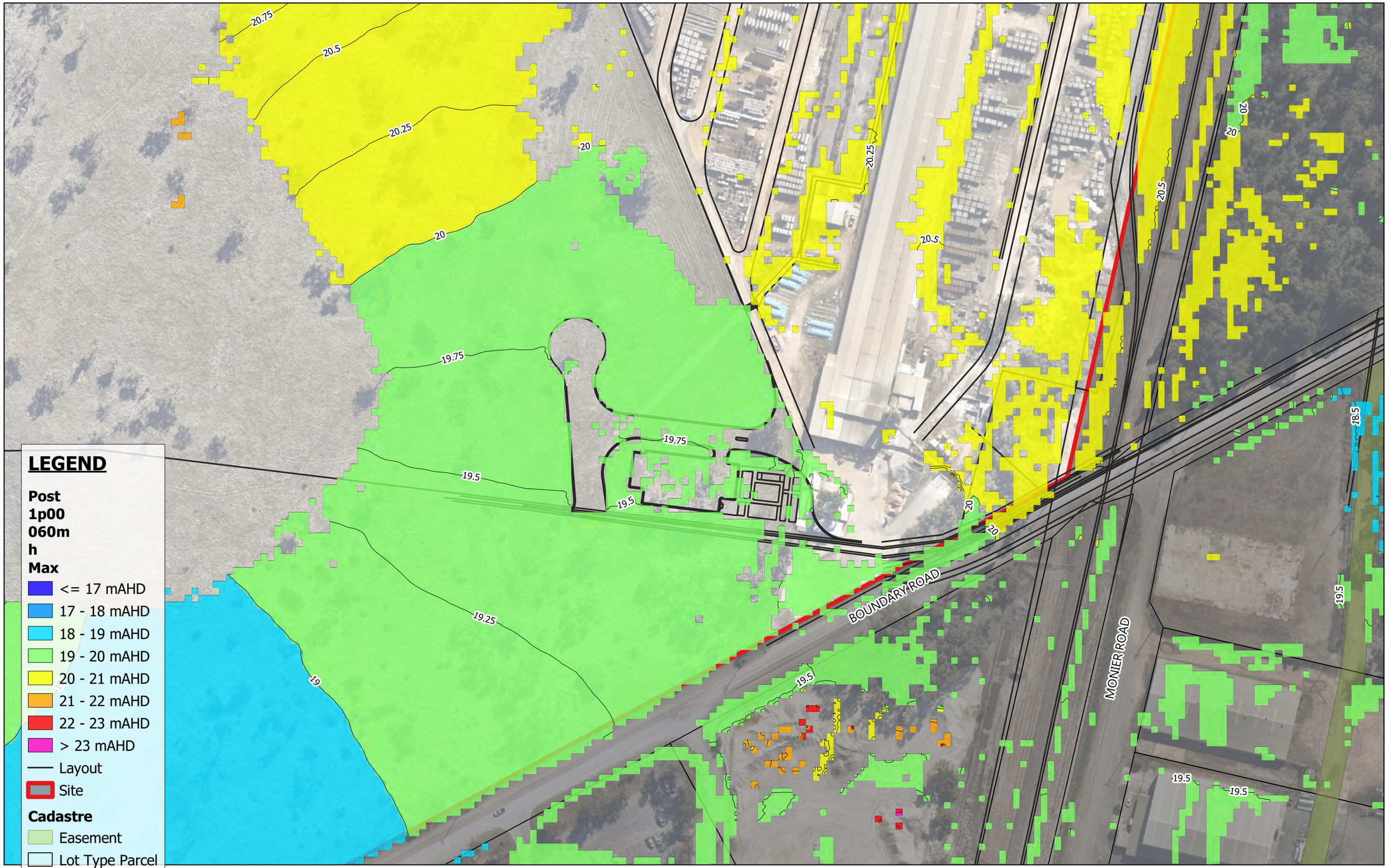
Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
63% AEP Event Flood Hazard - Pre-Development	**E028**

APPENDIX F

POST-DEVELOPMENT HYDRAULIC MODEL RESULTS



LEGEND

Post 1p00 060m h Max

- <= 17 mAHD
- 17 - 18 mAHD
- 18 - 19 mAHD
- 19 - 20 mAHD
- 20 - 21 mAHD
- 21 - 22 mAHD
- 22 - 23 mAHD
- > 23 mAHD
- Layout
- Site

Cadastre

- Easement
- Lot Type Parcel

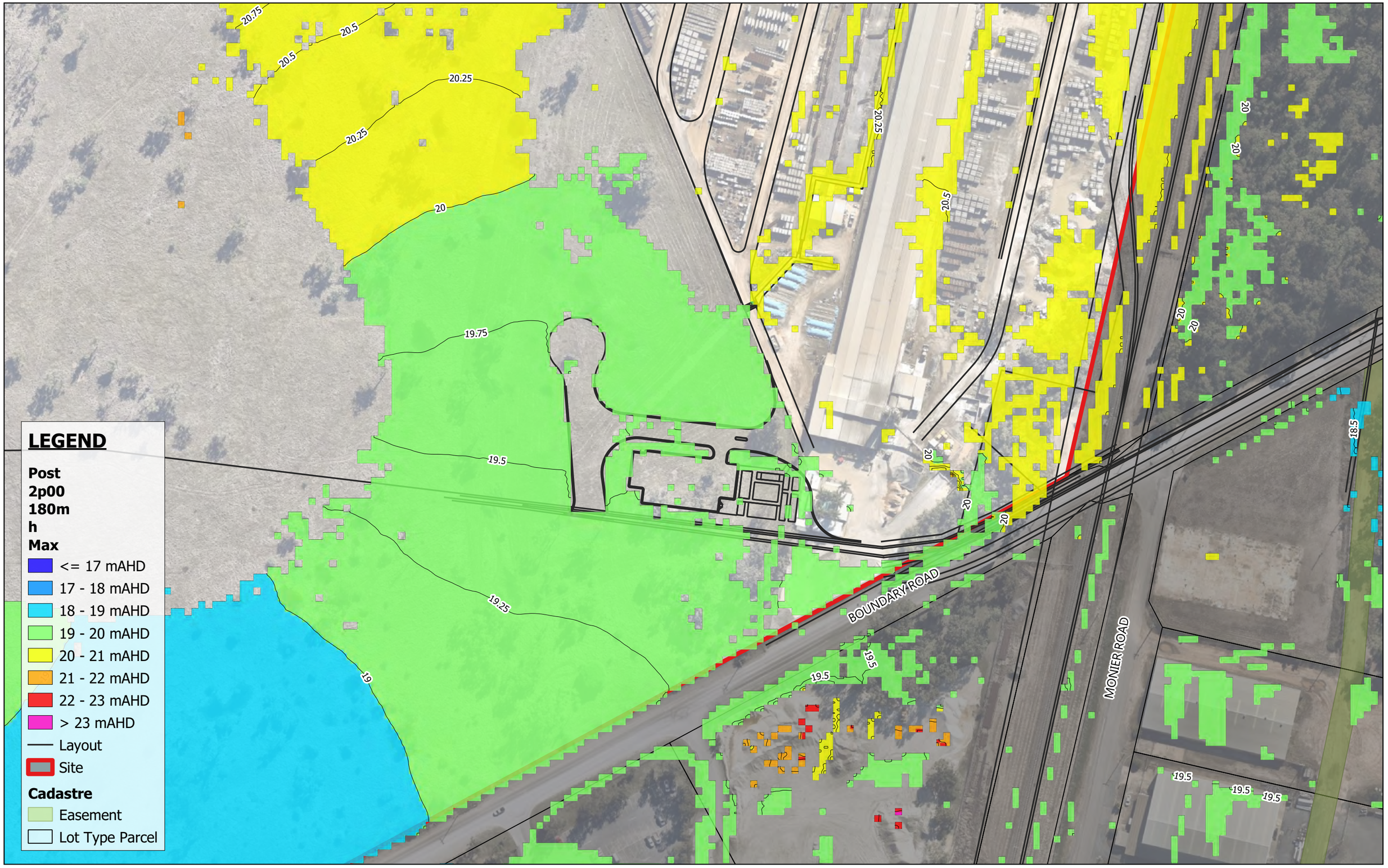
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
1% AEP Event Flood Elevation - Post-Development	**F001**



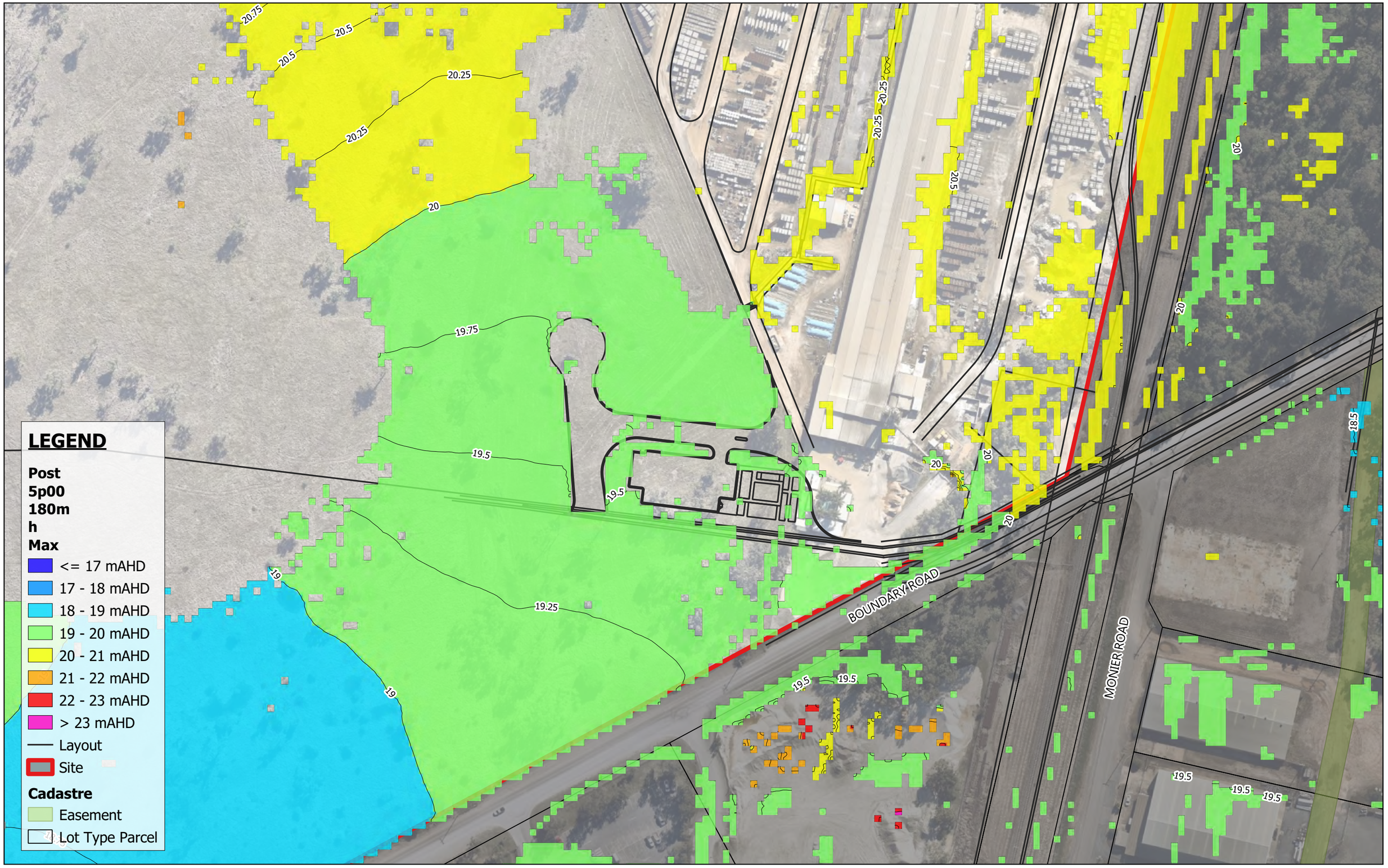
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
2% AEP Event Flood Elevation - Post-Development	F002



Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
5% AEP Event Flood Elevation - Post-Development	F003

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
10% AEP Event Flood Elevation - Post-Development	**F004**

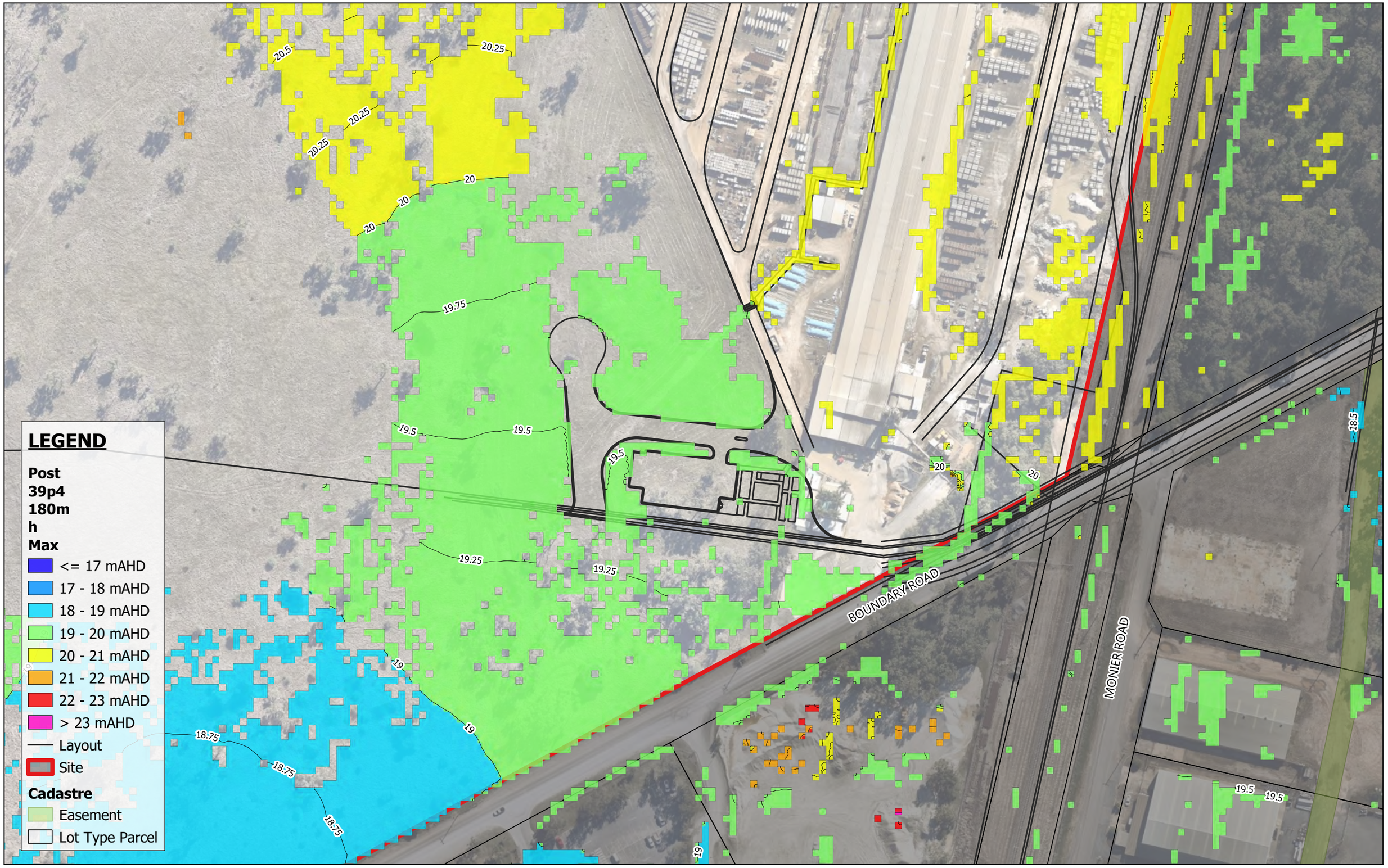
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
18% AEP Event Flood Elevation - Post-Development	F005



Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
39% AEP Event Flood Elevation - Post-Development	F006

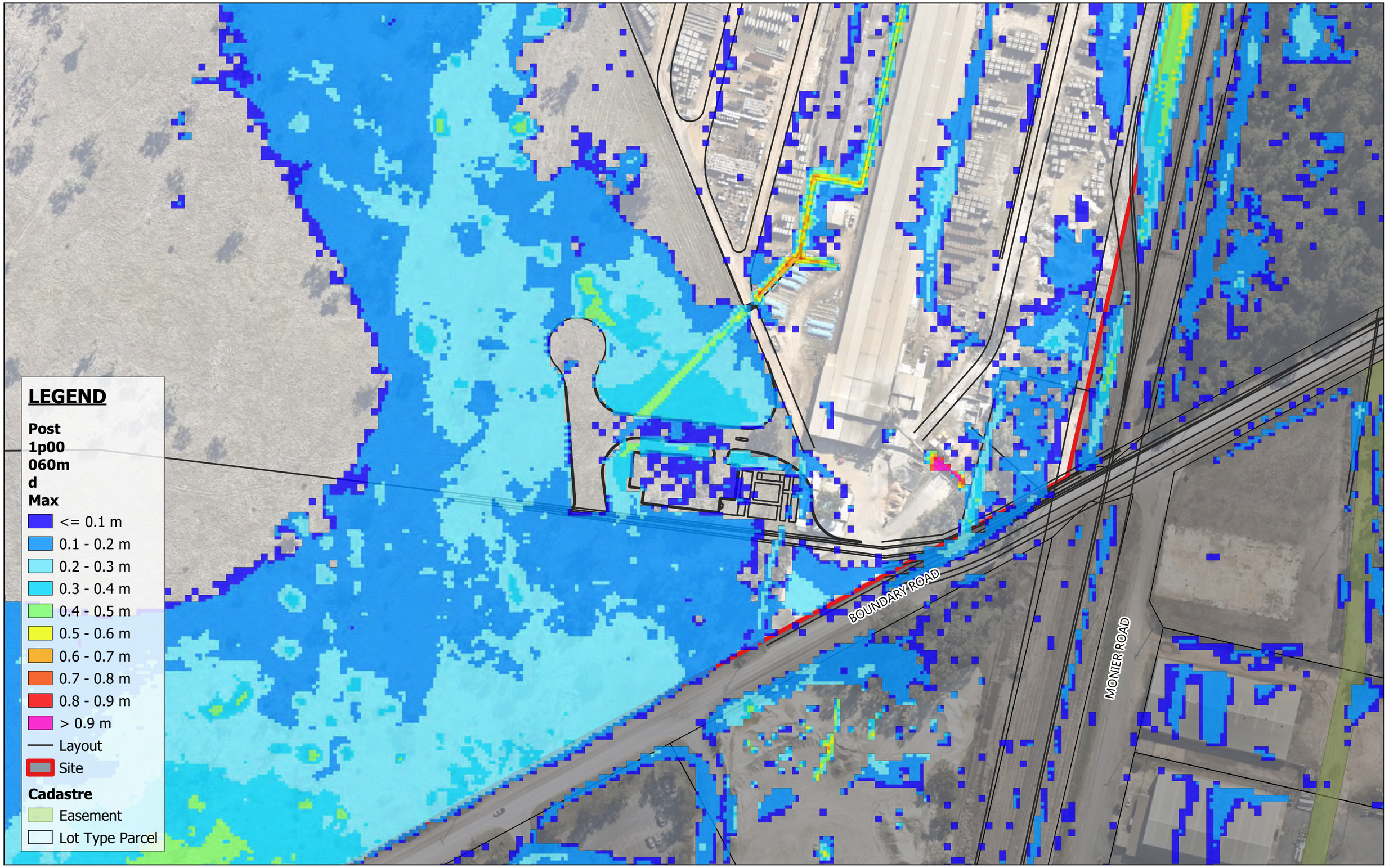
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
63% AEP Event Flood Elevation - Post-Development	F007



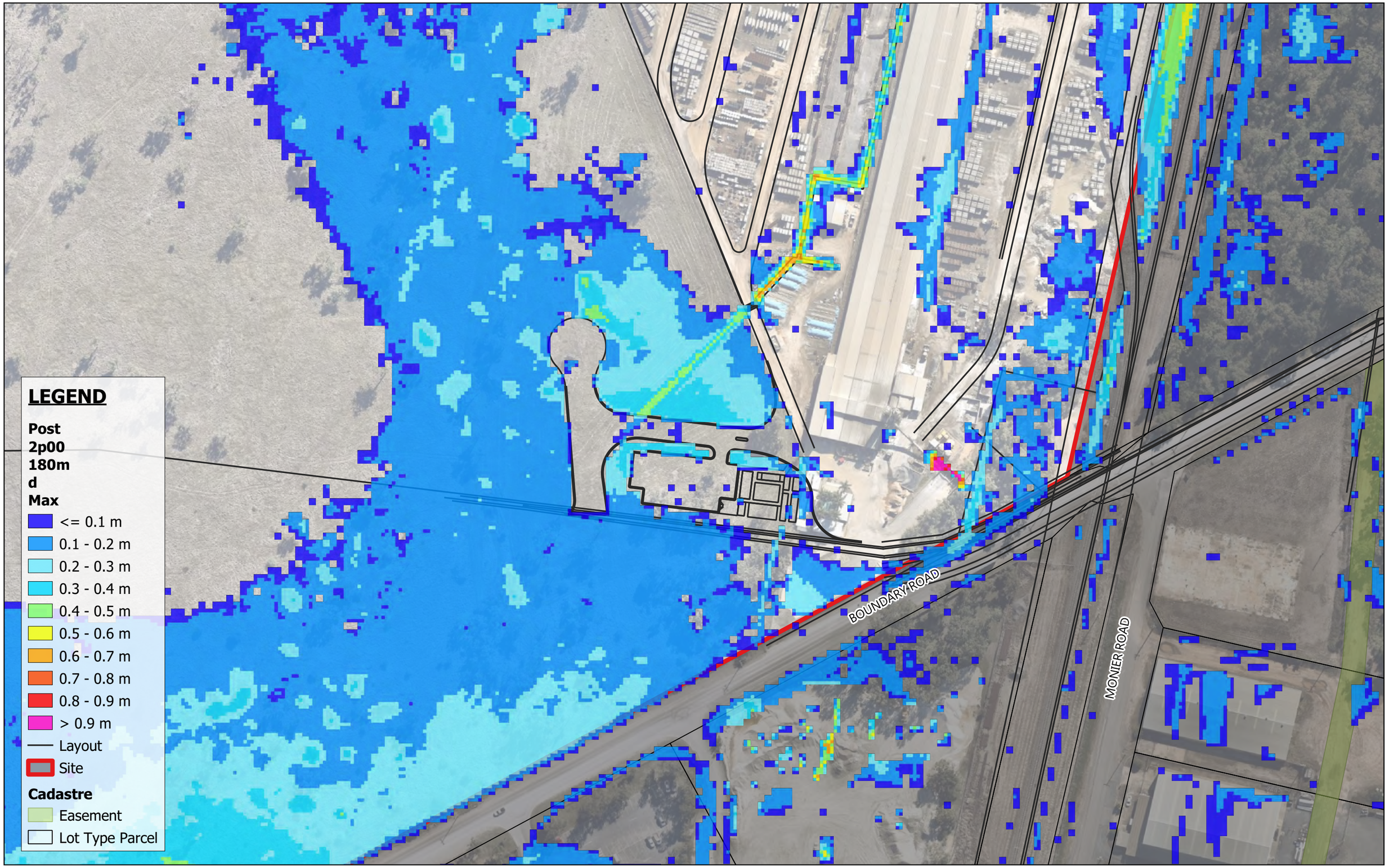
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
1% AEP Event Flood Depth - Post-Development	F008



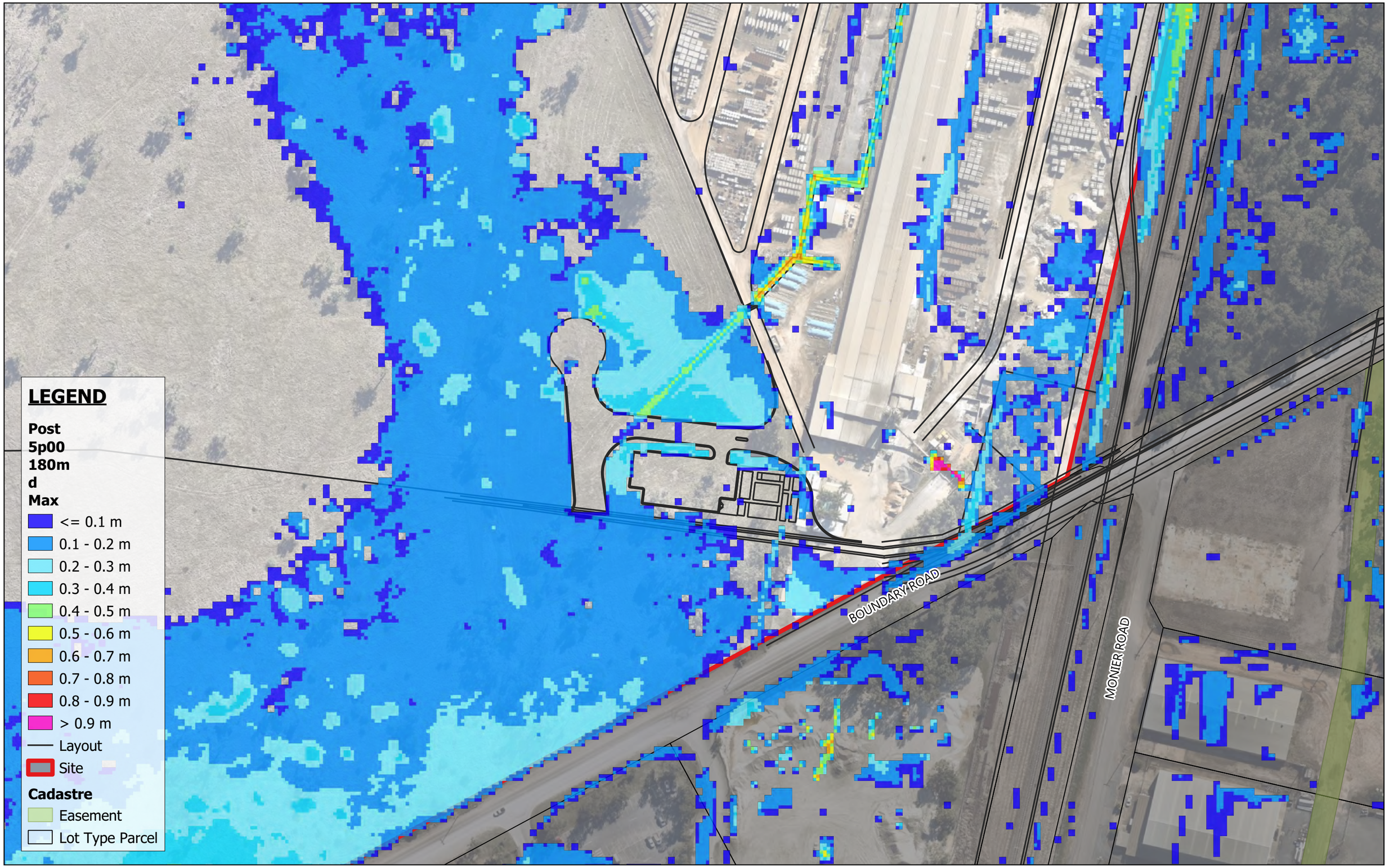
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
2% AEP Event Flood Depth - Post-Development	F009



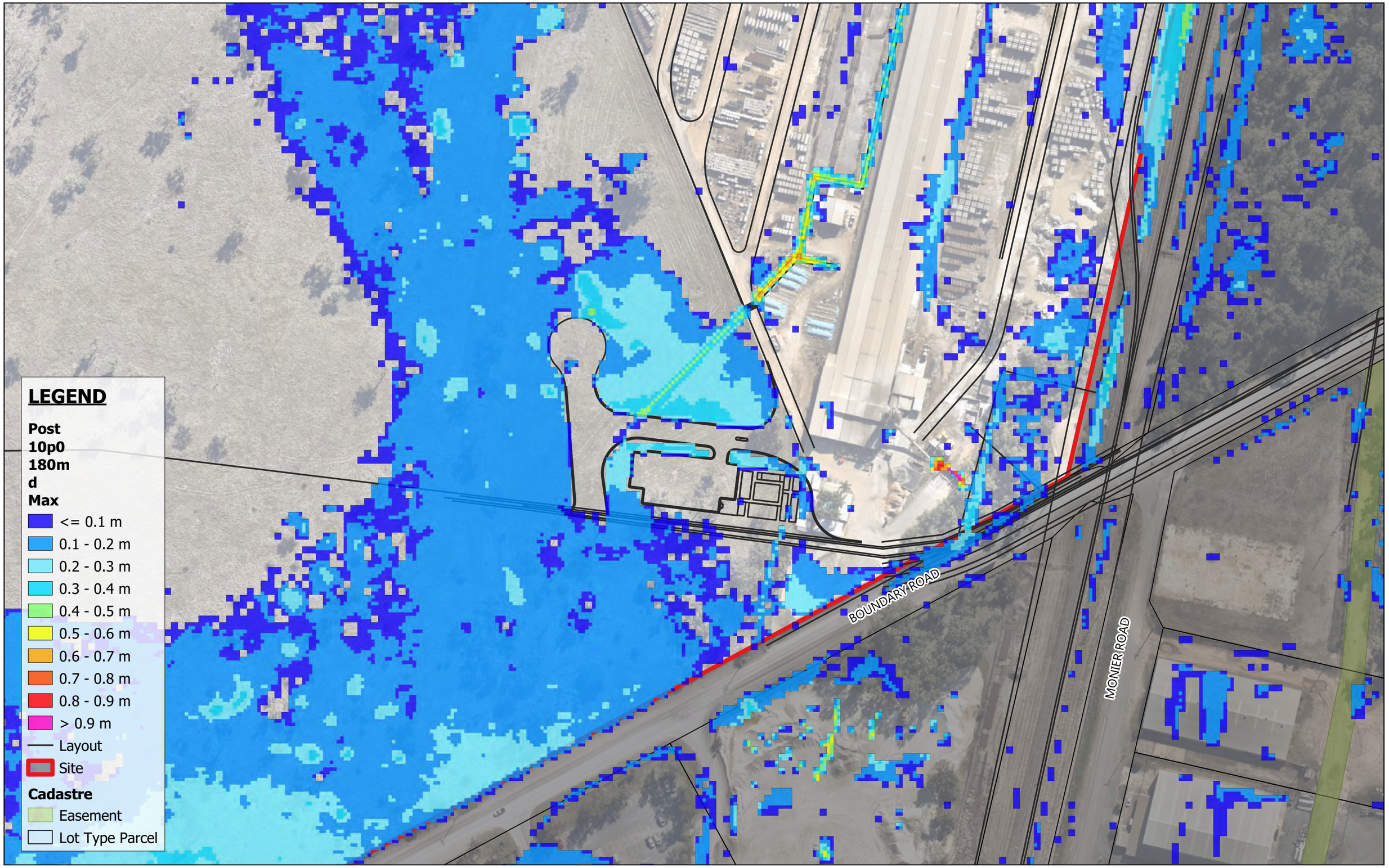
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
5% AEP Event Flood Depth - Post-Development	F010



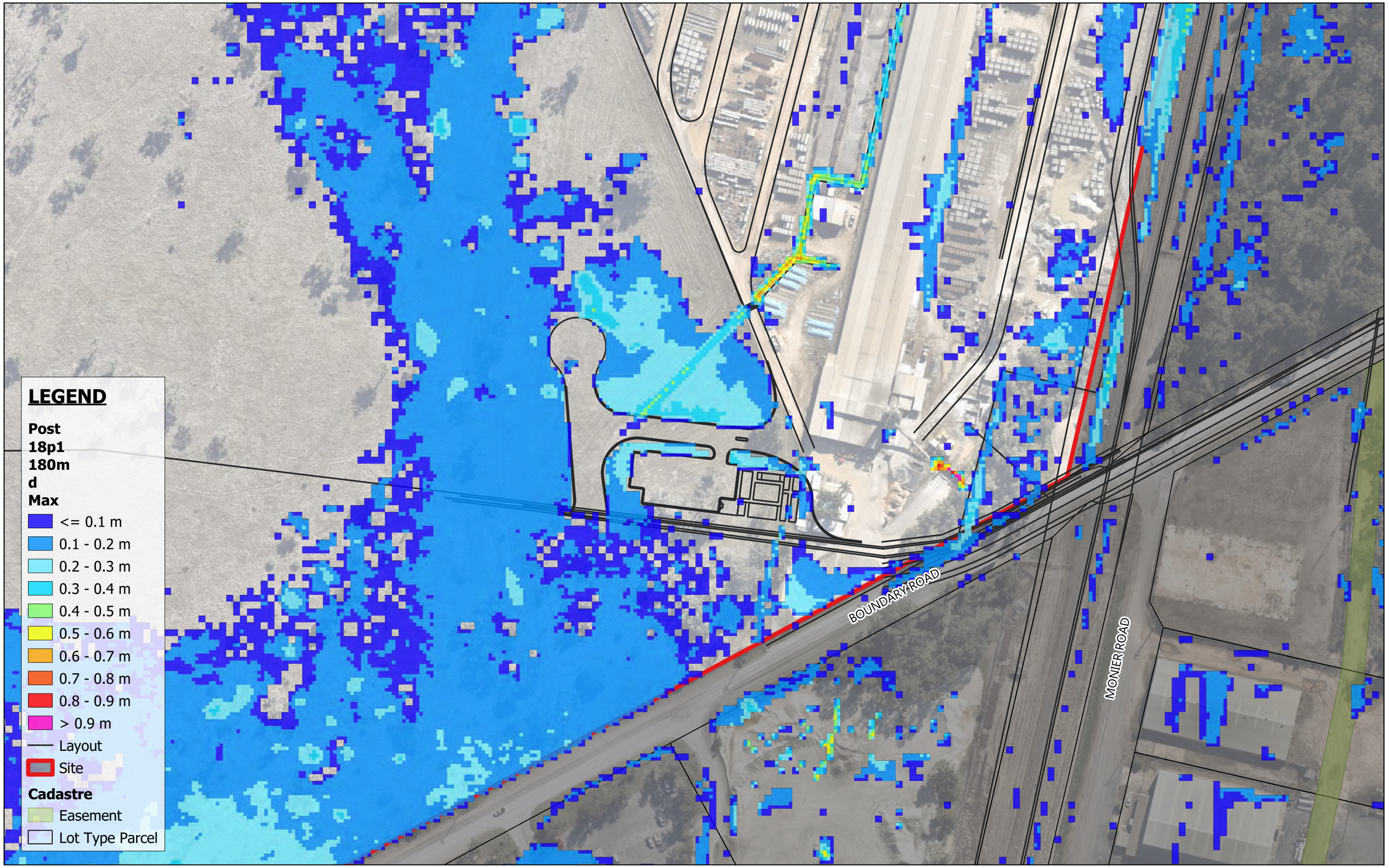
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
10% AEP Event Flood Depth - Post-Development	F011



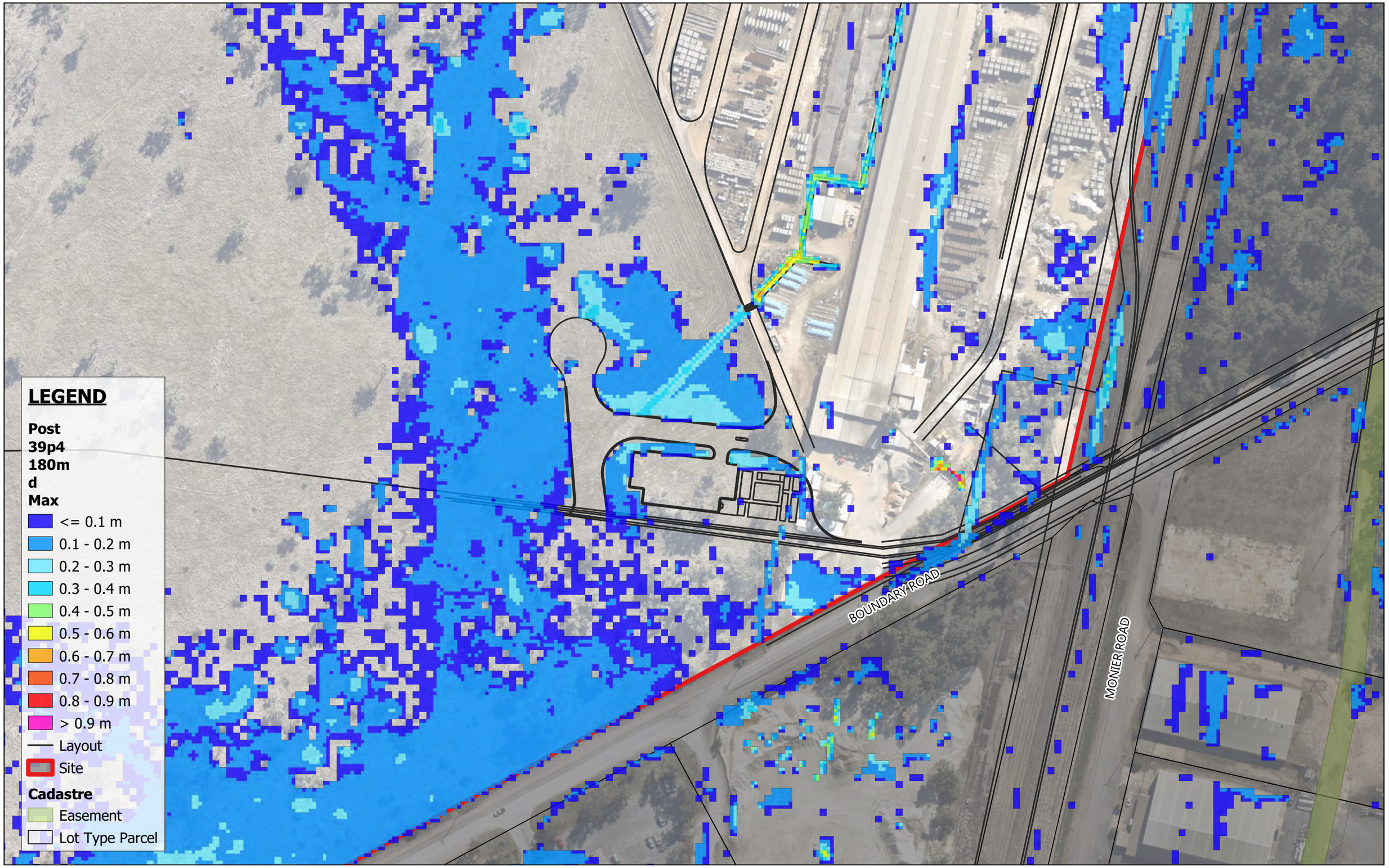
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
18% AEP Event Flood Depth - Post-Development	**F012**



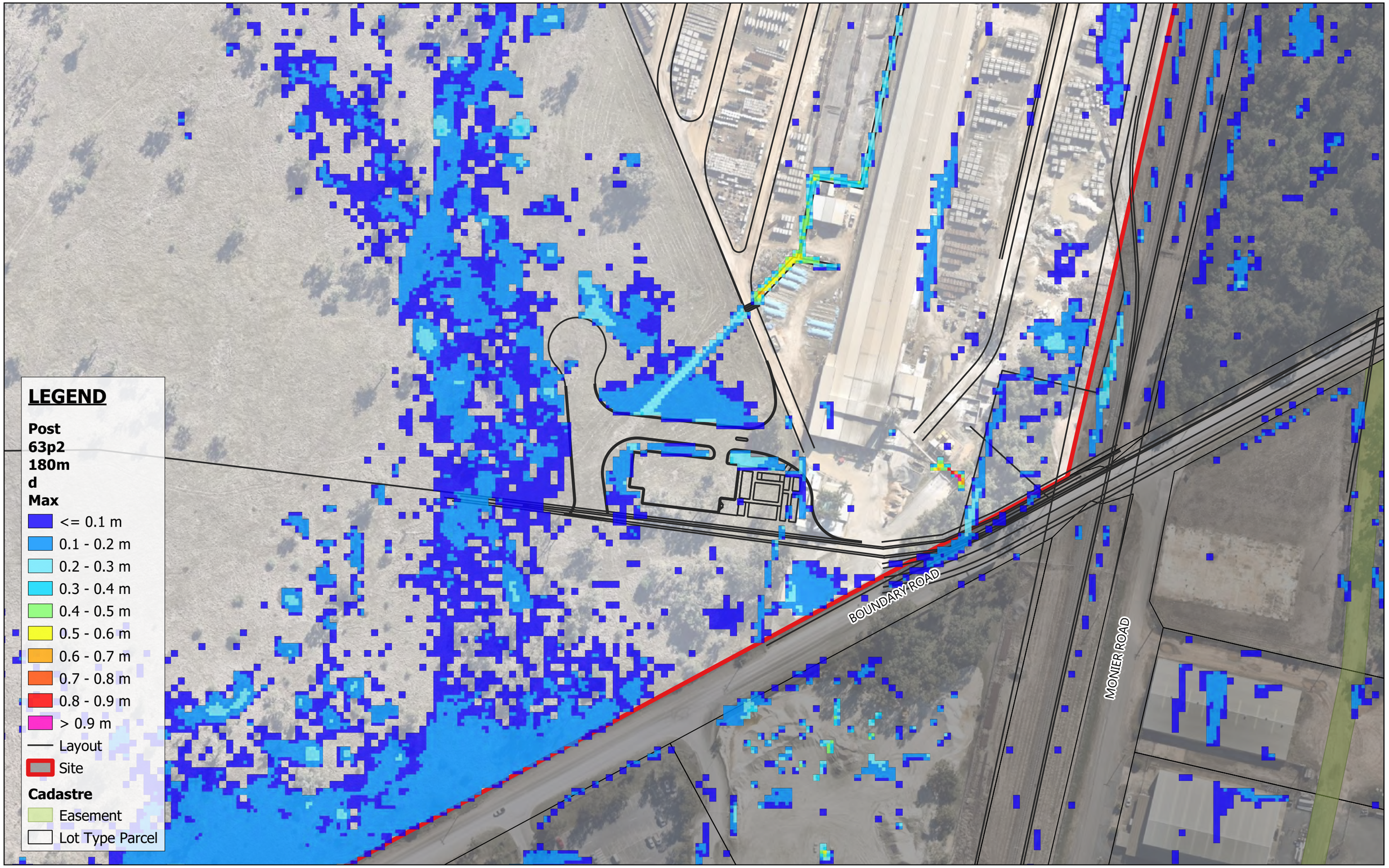
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
39% AEP Event Flood Depth - Post-Development	**F013**



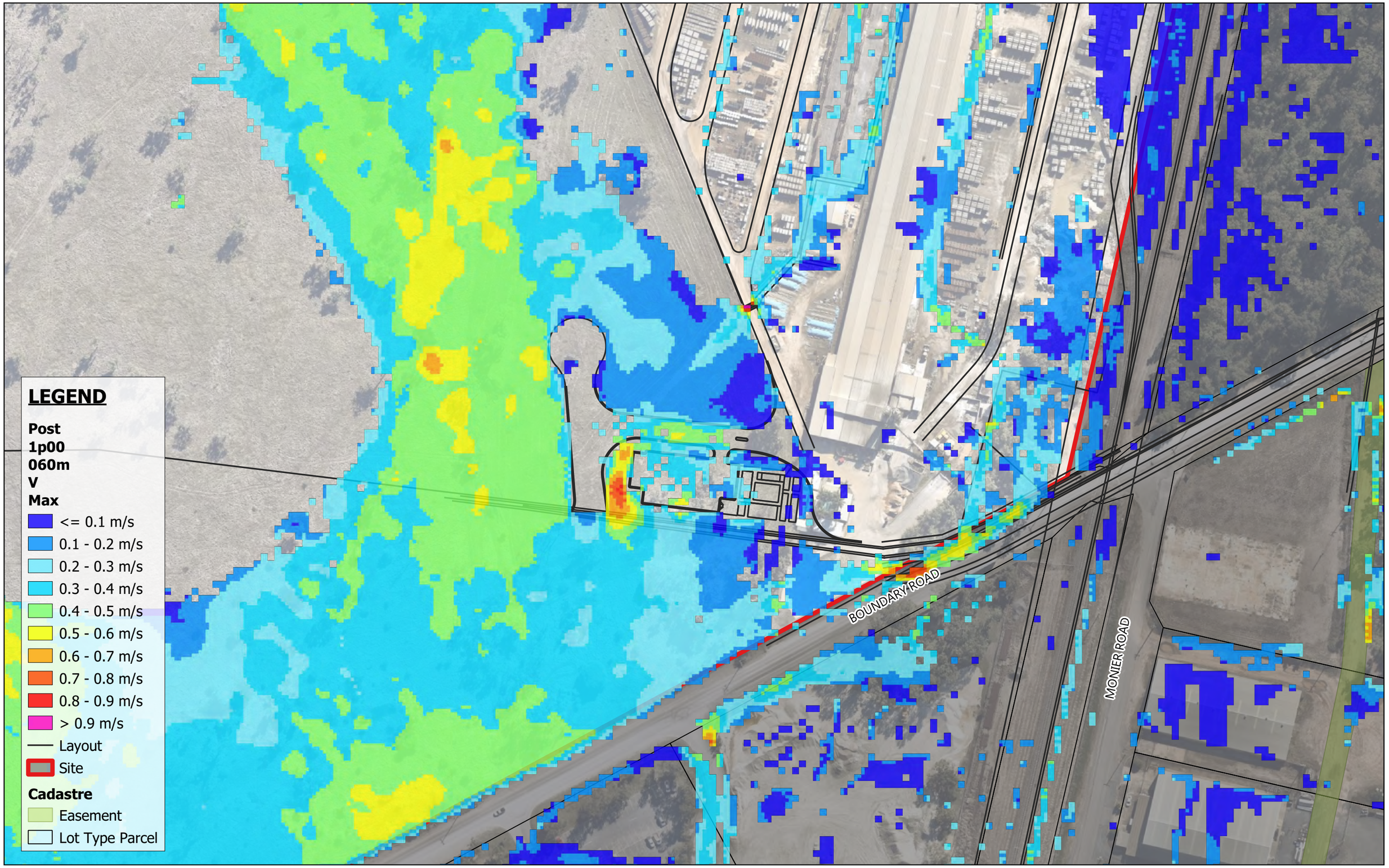
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
63% AEP Event Flood Depth - Post-Development	F014



LEGEND

Post 1p00 060m V Max

- <= 0.1 m/s
- 0.1 - 0.2 m/s
- 0.2 - 0.3 m/s
- 0.3 - 0.4 m/s
- 0.4 - 0.5 m/s
- 0.5 - 0.6 m/s
- 0.6 - 0.7 m/s
- 0.7 - 0.8 m/s
- 0.8 - 0.9 m/s
- > 0.9 m/s
- Layout
- Site

Cadastre

- Easement
- Lot Type Parcel

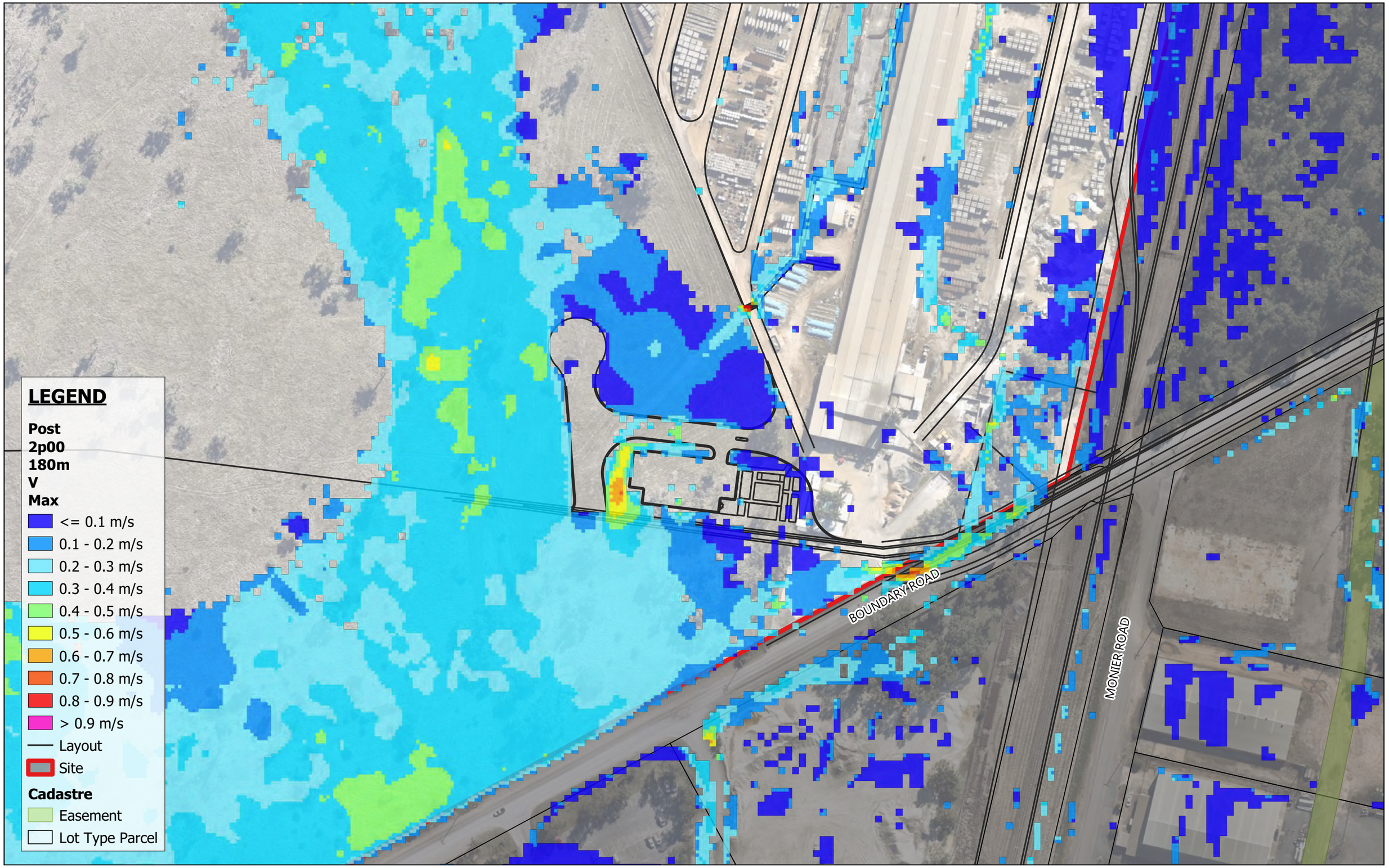
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
1% AEP Event Flood Velocity - Post-Development	**F015**



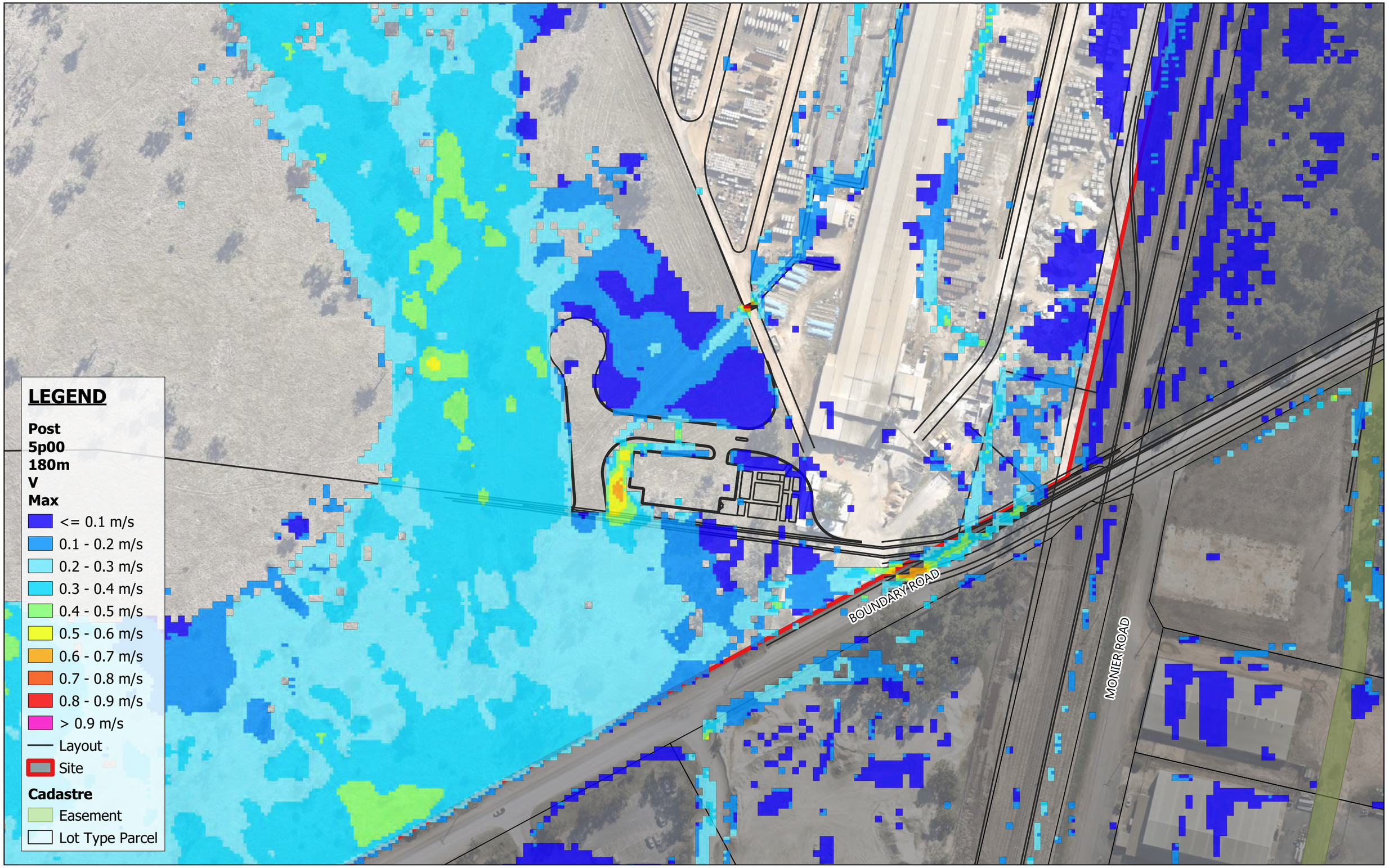
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
2% AEP Event Flood Velocity - Post-Development	F016



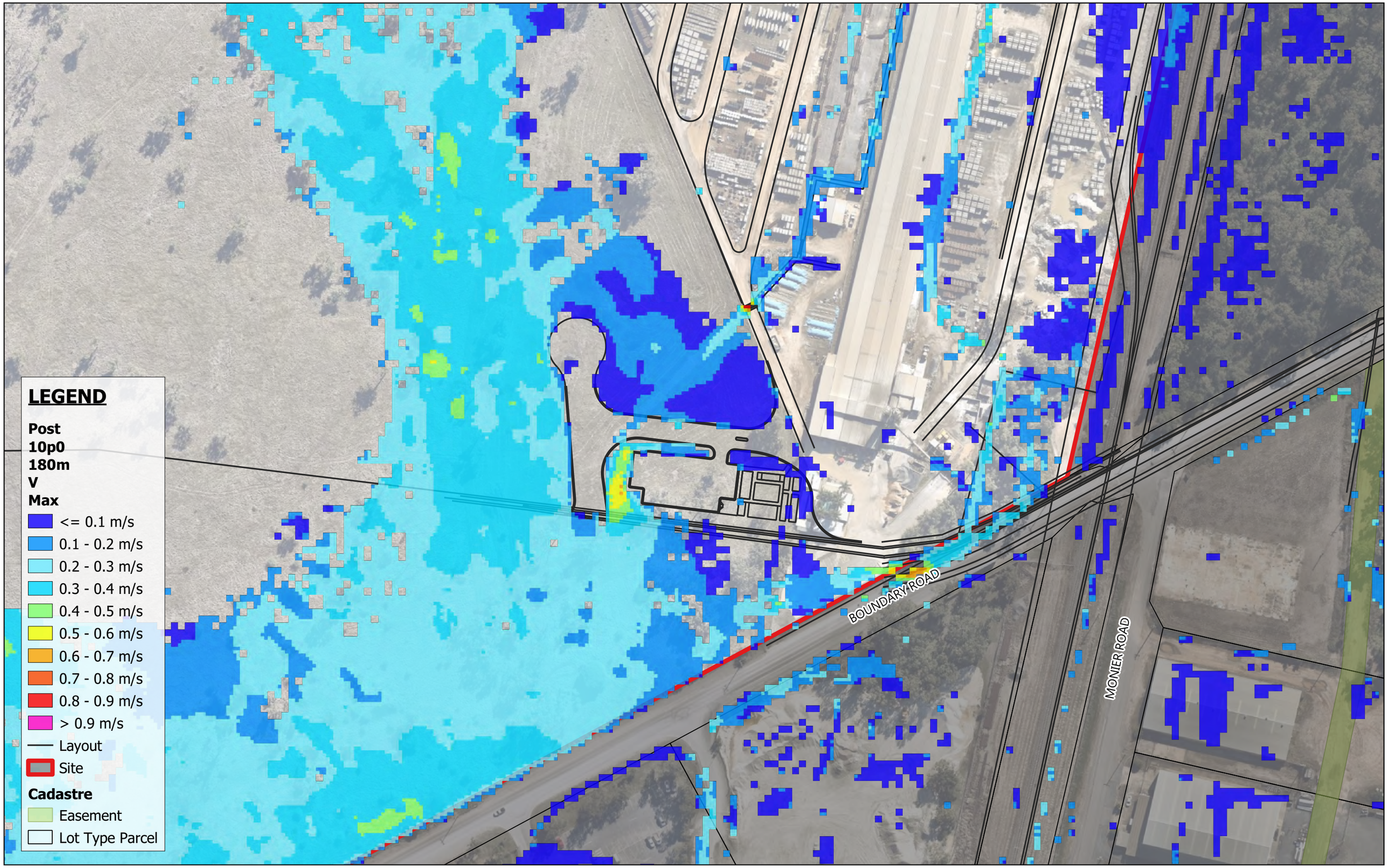
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
5% AEP Event Flood Velocity - Post-Development	F017



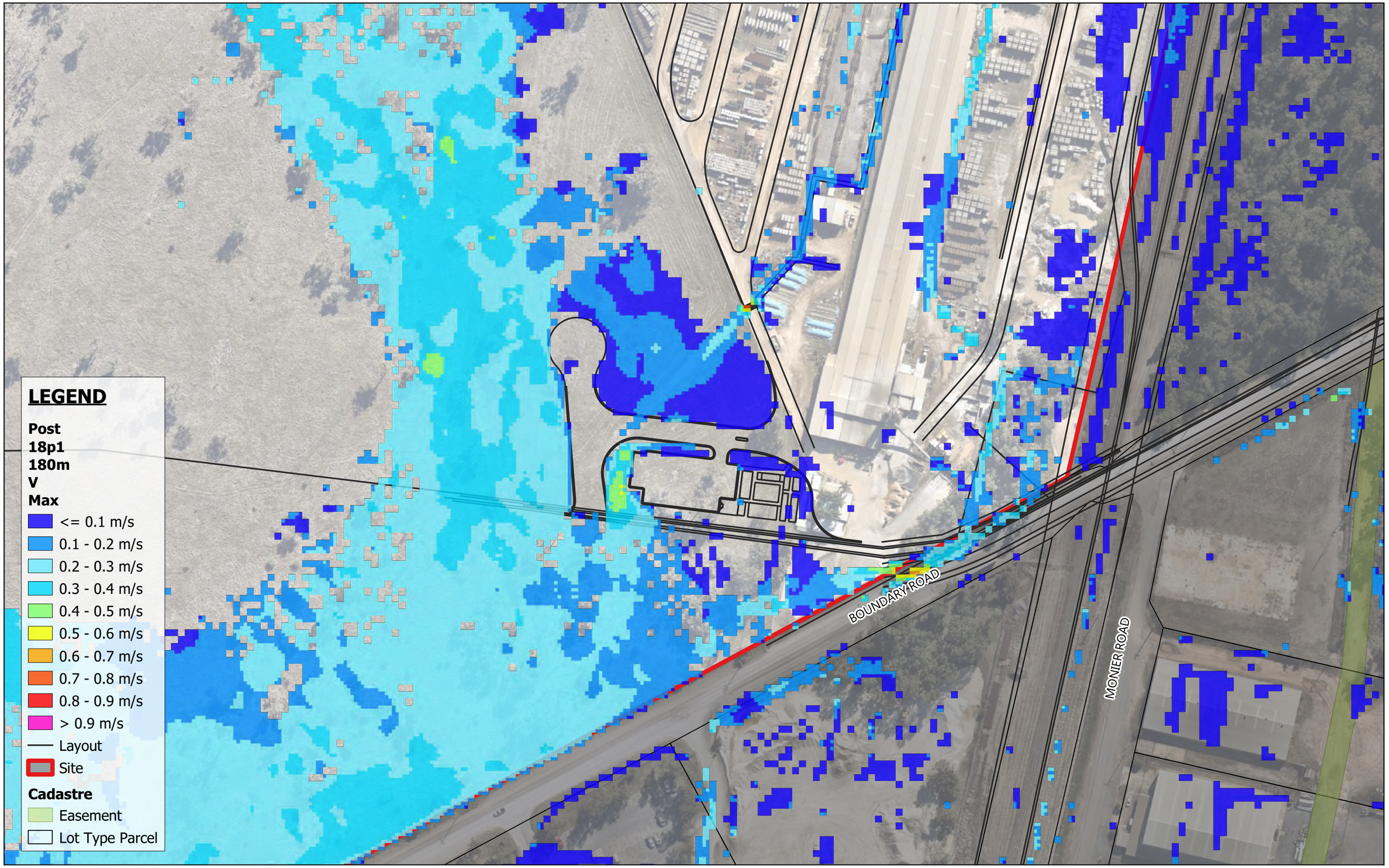
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
10% AEP Event Flood Velocity - Post-Development	F018



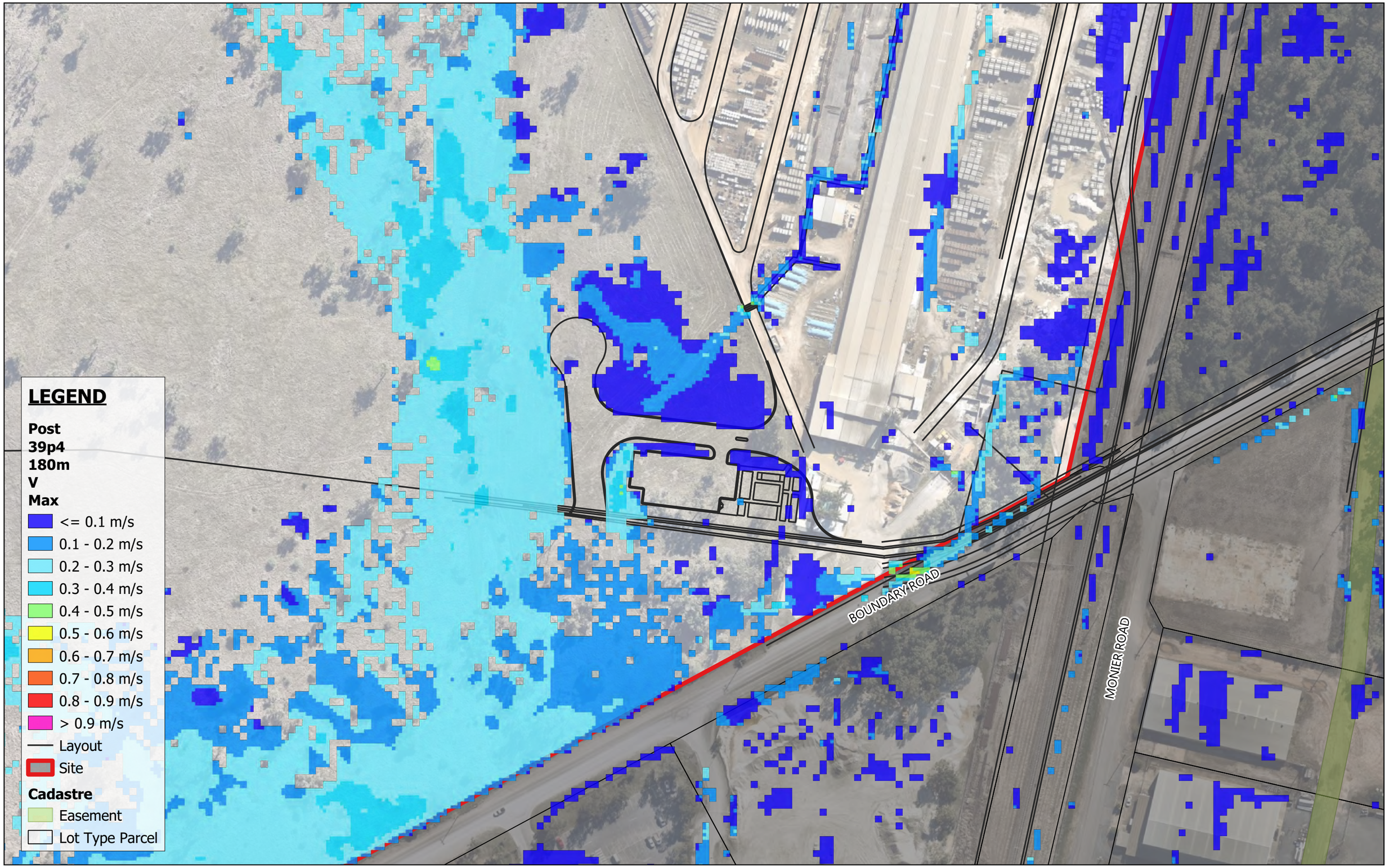
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
18% AEP Event Flood Velocity - Post-Development	**F019**



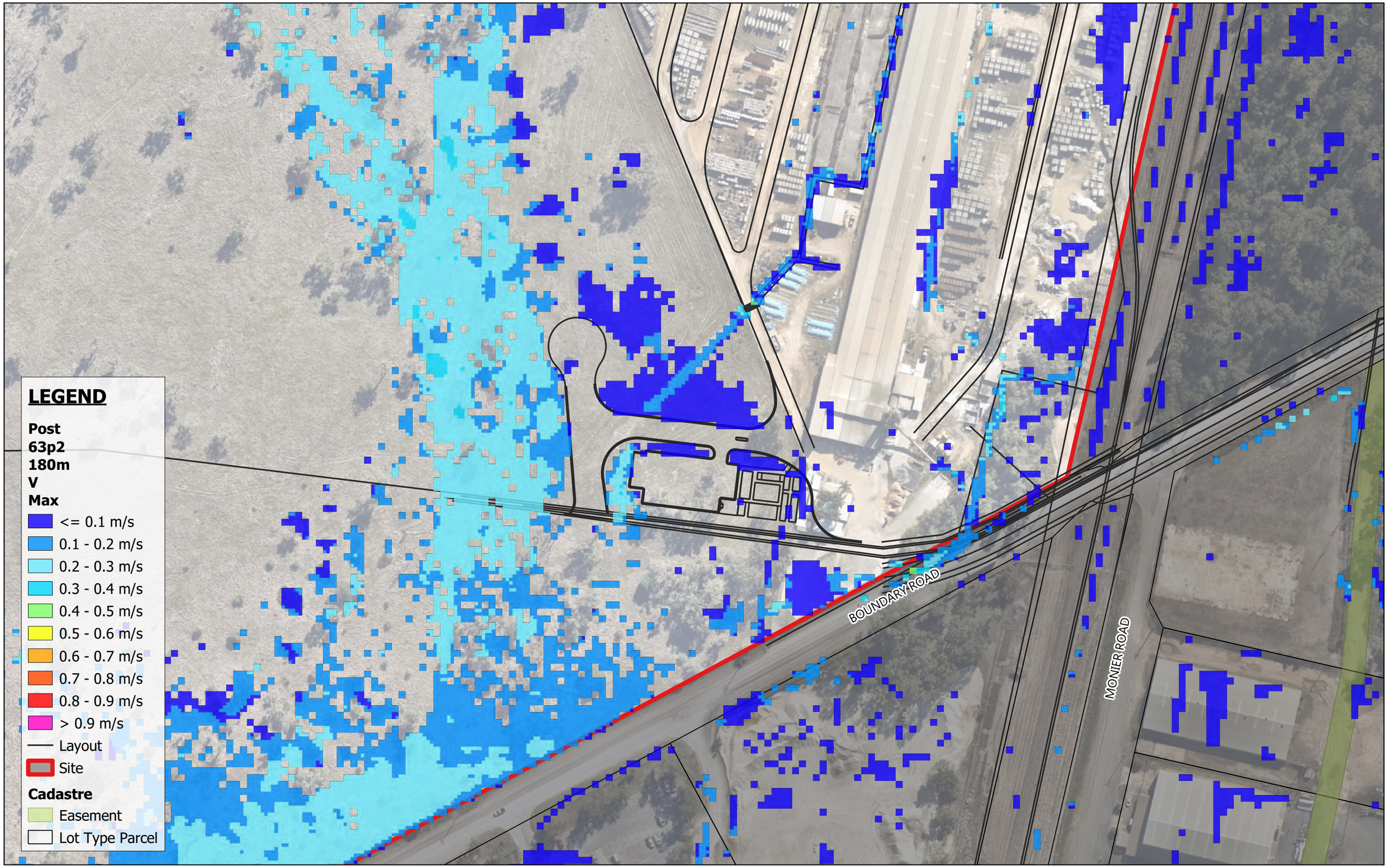
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
39% AEP Event Flood Velocity - Post-Development	**F020**



LEGEND

Post
63p2
180m
V
Max

- <= 0.1 m/s
- 0.1 - 0.2 m/s
- 0.2 - 0.3 m/s
- 0.3 - 0.4 m/s
- 0.4 - 0.5 m/s
- 0.5 - 0.6 m/s
- 0.6 - 0.7 m/s
- 0.7 - 0.8 m/s
- 0.8 - 0.9 m/s
- > 0.9 m/s
- Layout
- Site

Cadastre

- Easement
- Lot Type Parcel

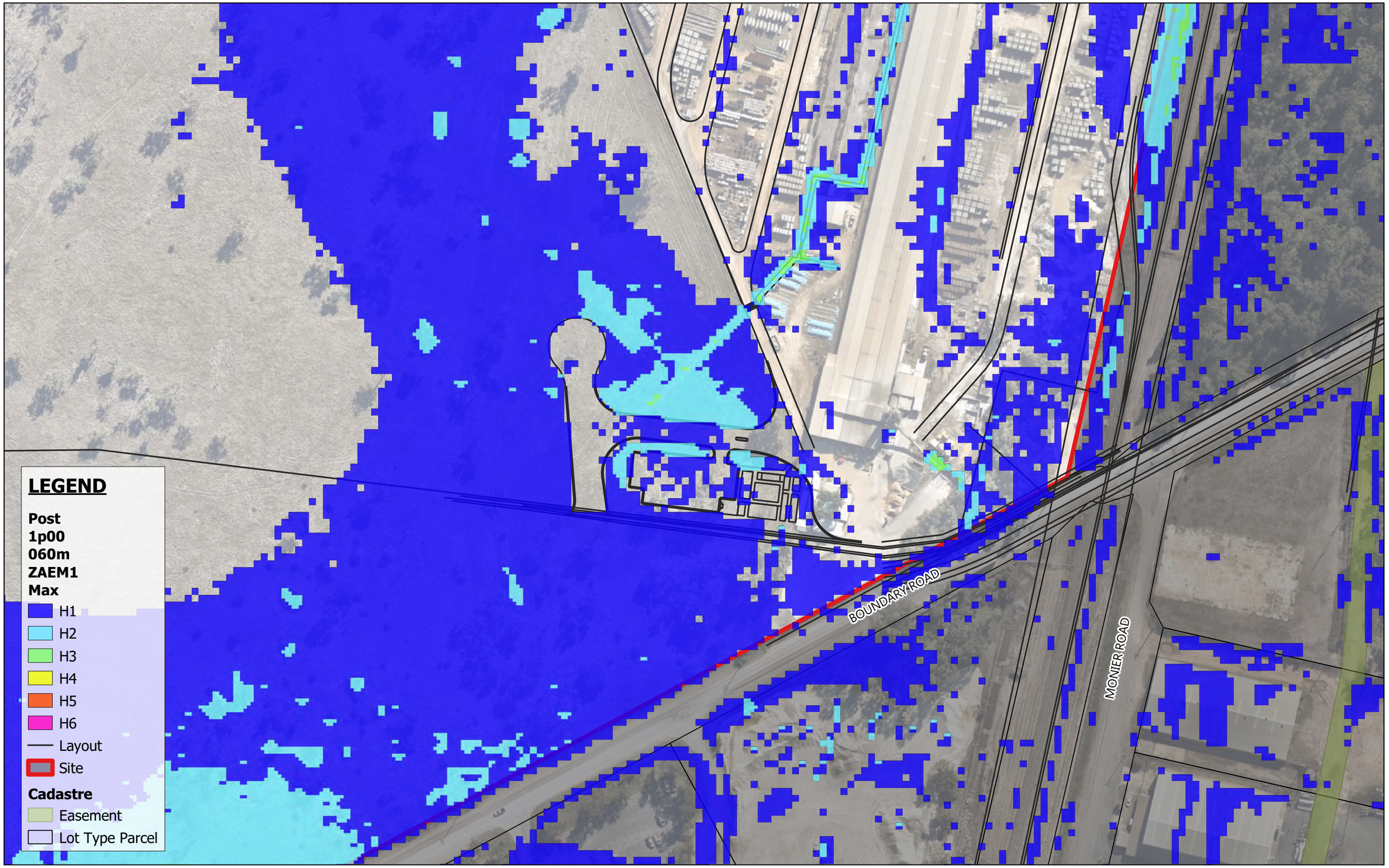
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
63% AEP Event Flood Velocity - Post-Development	**F021**



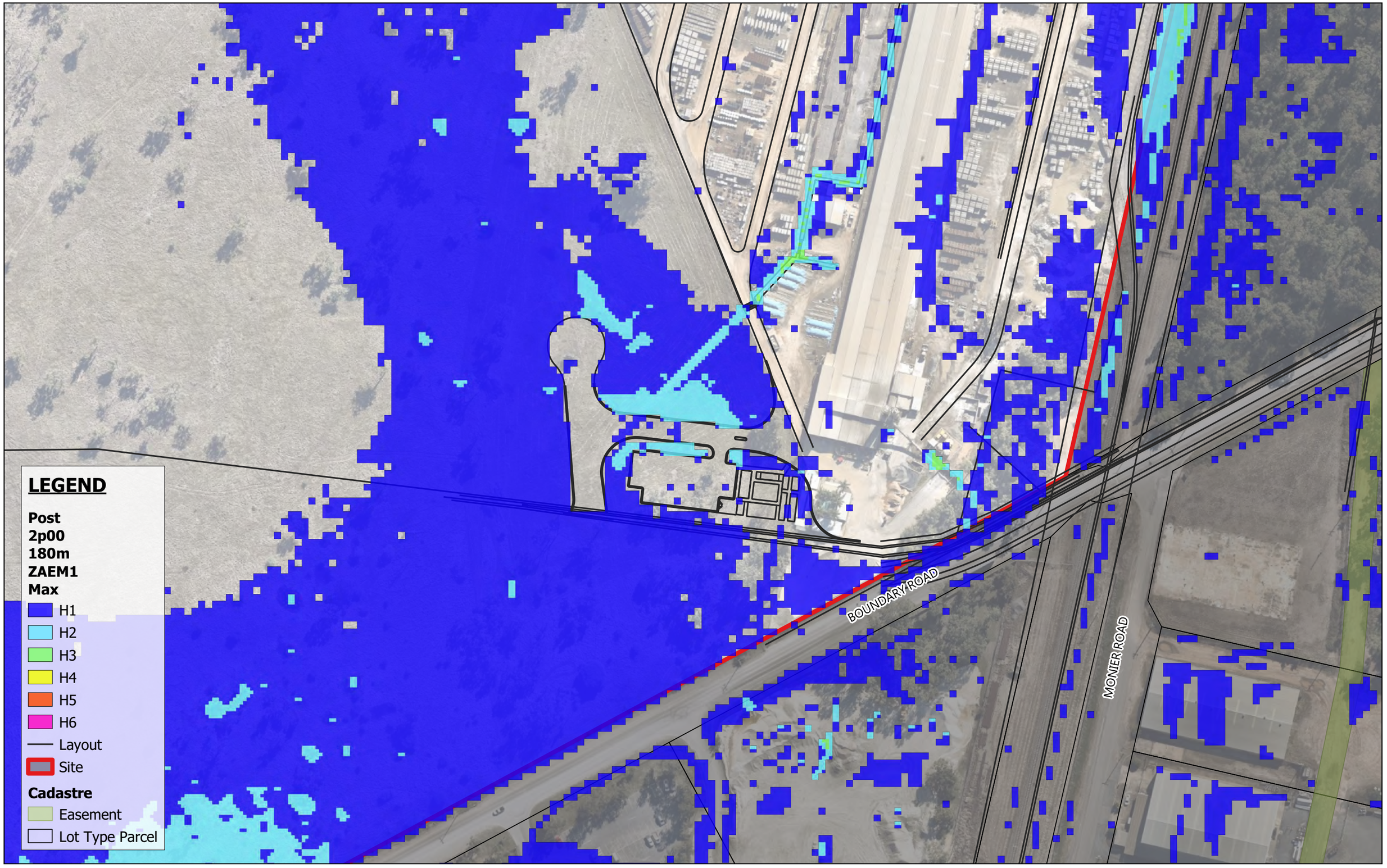
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
1% AEP Event Flood Hazard - Post-Development	F022



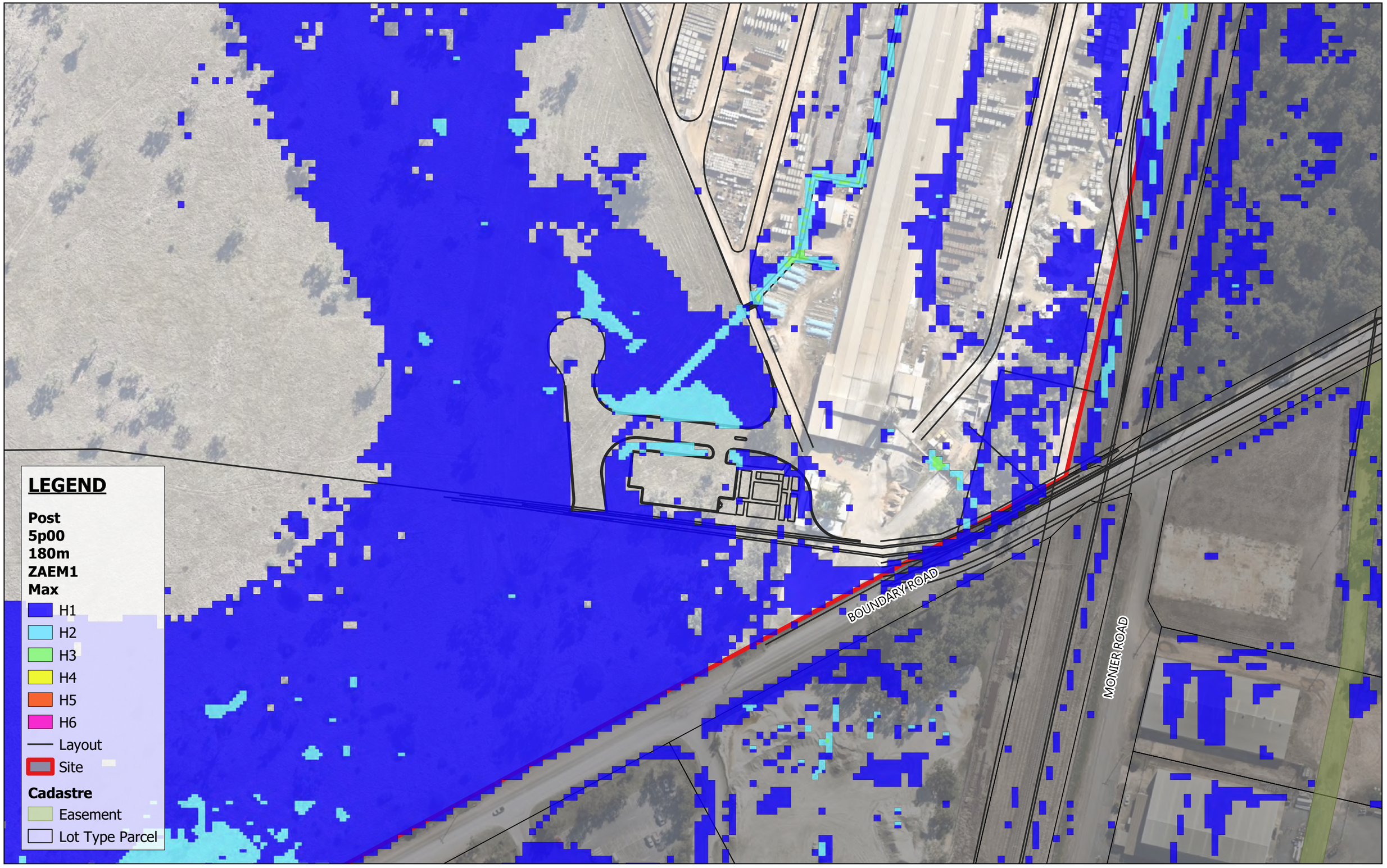
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
2% AEP Event Flood Hazard - Post-Development	F023



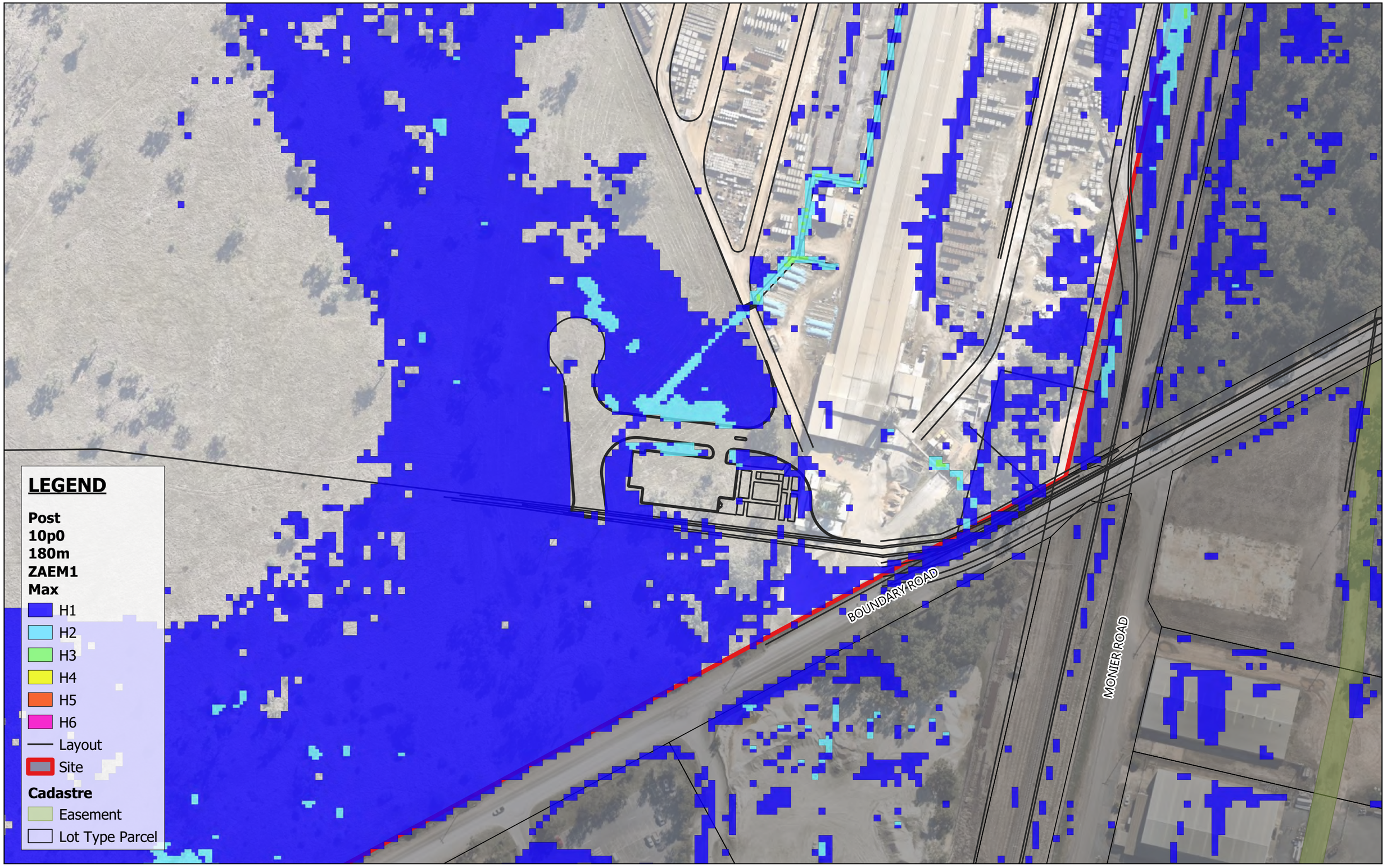
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
5% AEP Event Flood Hazard - Post-Development	F024



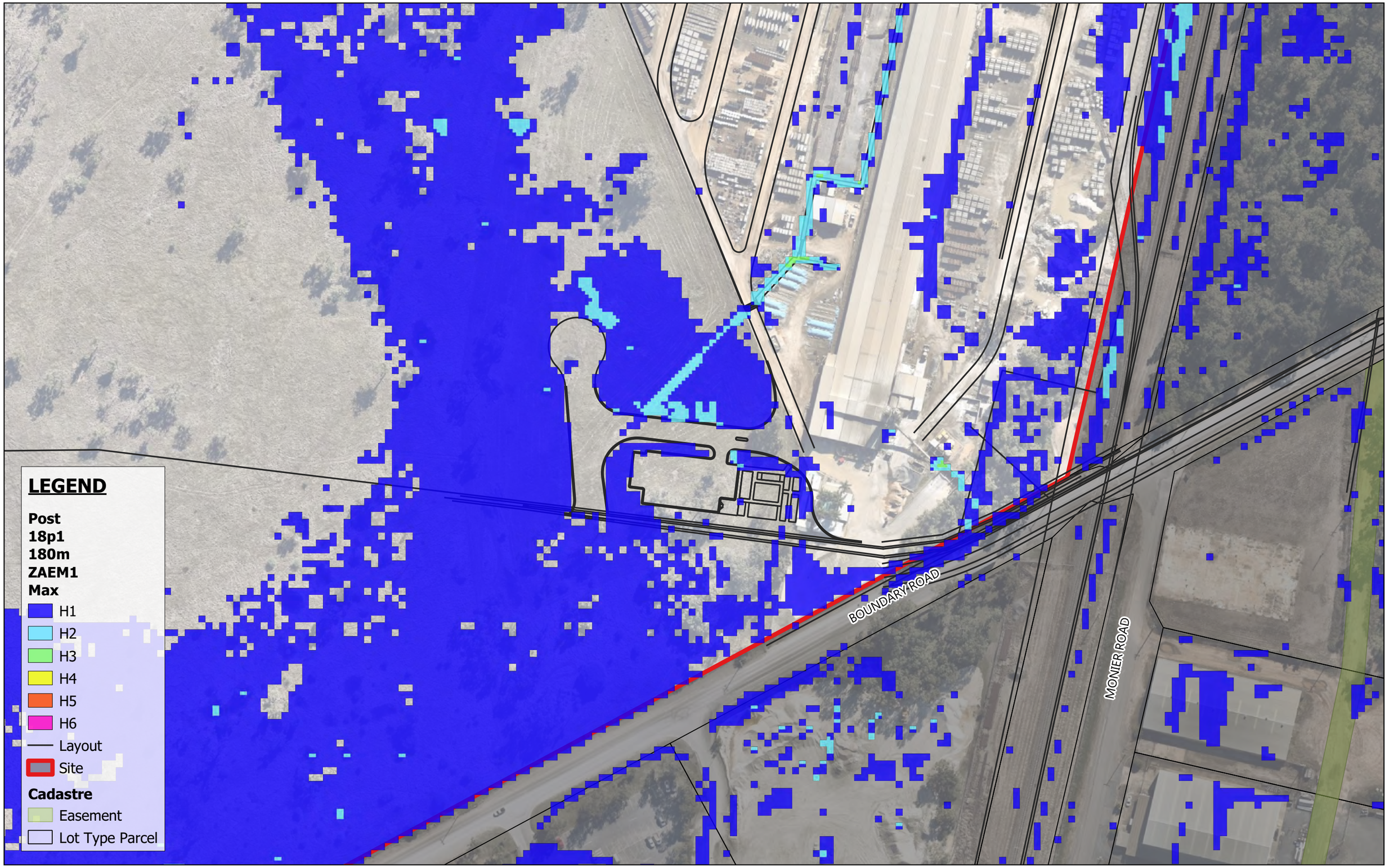
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
10% AEP Event Flood Hazard - Post-Development	**F025**



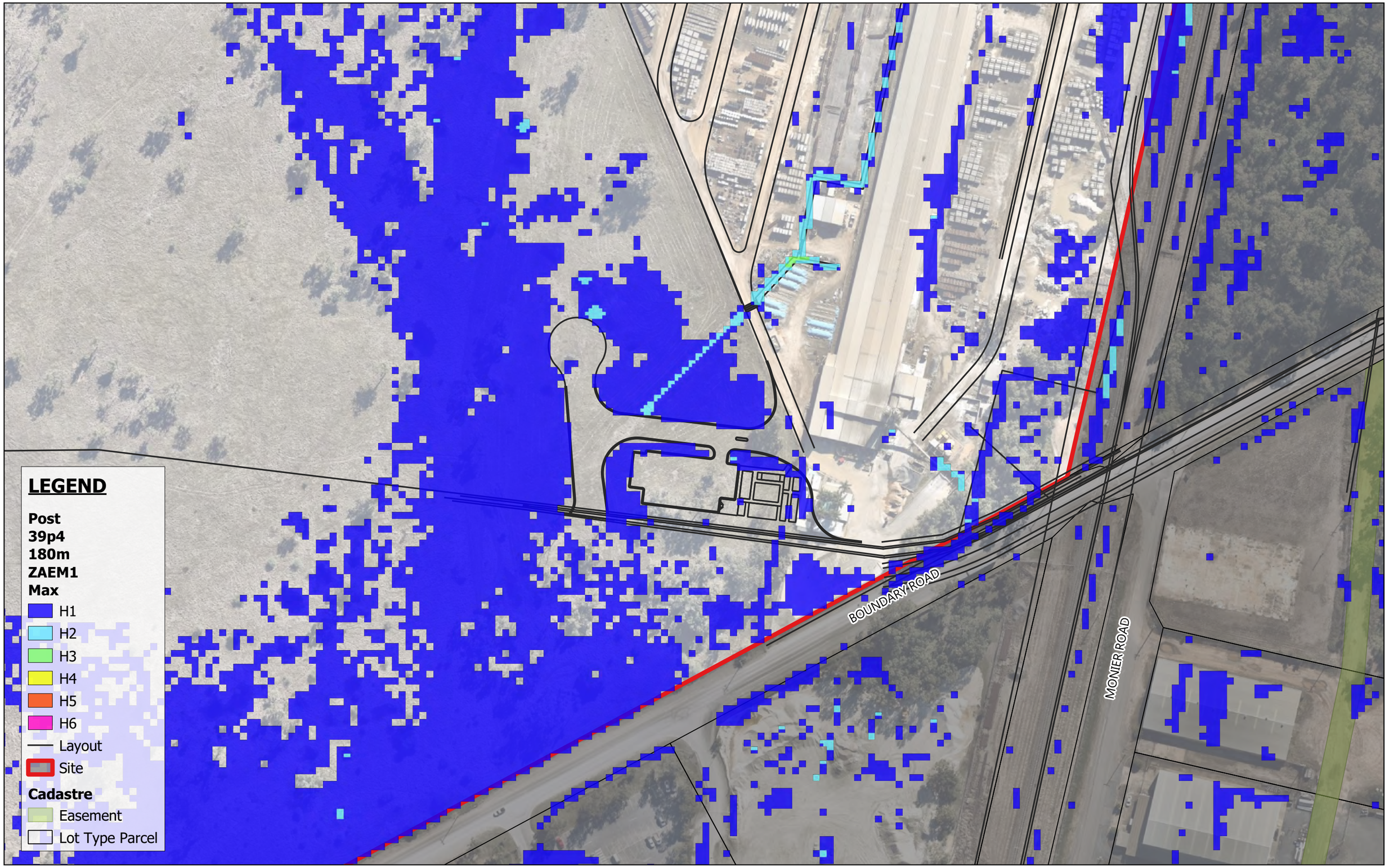
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
18% AEP Event Flood Hazard - Post-Development	F026



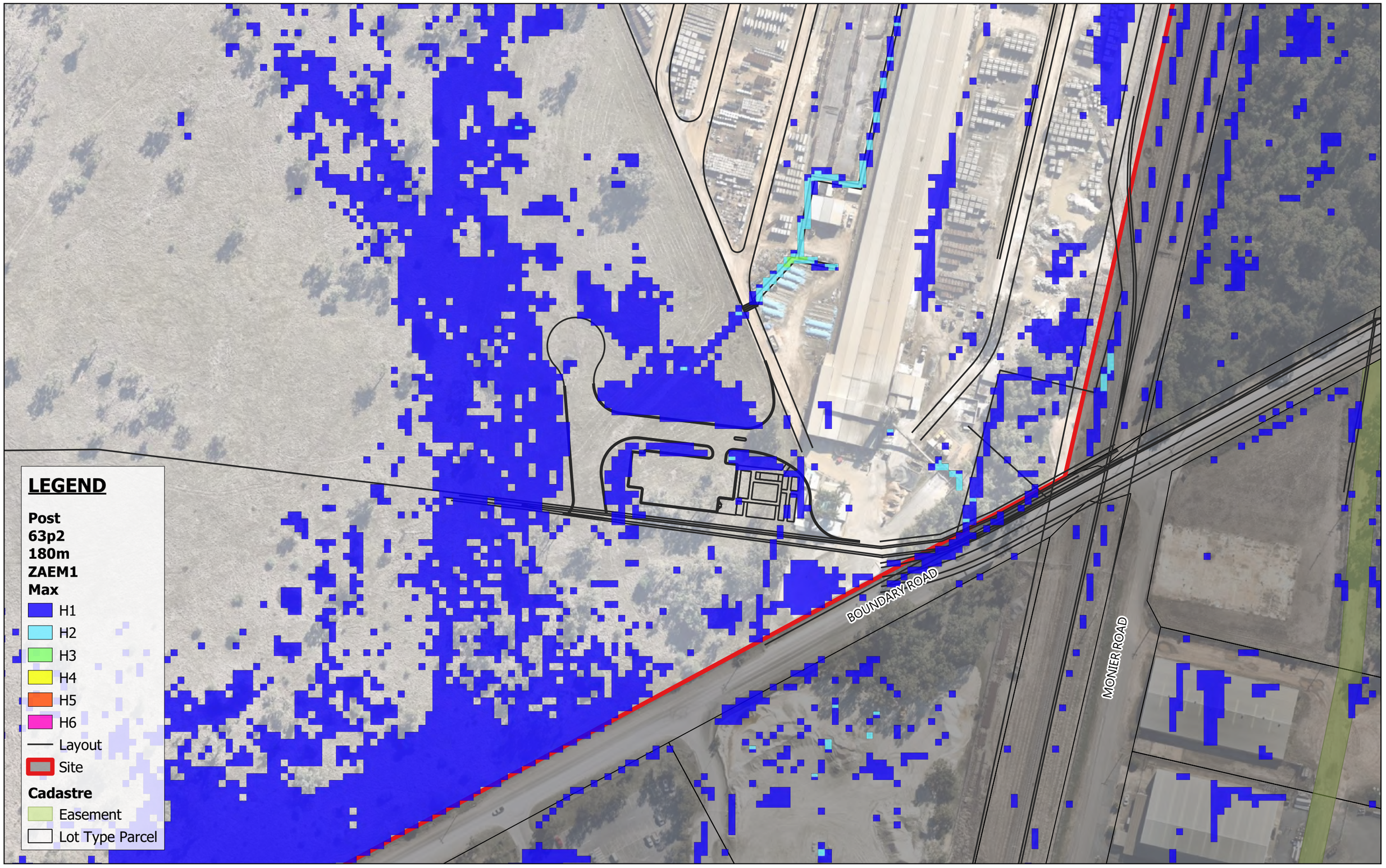
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
39% AEP Event Flood Hazard - Post-Development	F027



Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
63% AEP Event Flood Hazard - Post-Development	**F028**

APPENDIX G

HYDRAULIC MODEL IMPACT ASSESSMENT

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
1% AEP Event Flood Afflux - WSE	**G001**

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
2% AEP Event Flood Afflux - WSE	G002

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
5% AEP Event Flood Afflux - WSE	G003

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
10% AEP Event Flood Afflux - WSE	**G004**

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
18% AEP Event Flood Afflux - WSE	**G005**

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
39% AEP Event Flood Afflux - WSE	**G006**

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
63% AEP Event Flood Afflux - WSE	**G007**

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
1% AEP Event Flood Afflux - Velocity	G008

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
2% AEP Event Flood Afflux - Velocity	**G009**

LEGEND

5p00
180m
V

- <= -1 m/s
- -1 - -0.9 m/s
- -0.9 - -0.8 m/s
- -0.8 - -0.7 m/s
- -0.7 - -0.6 m/s
- -0.6 - -0.1 m/s
- -0.1 - 0.1 m/s
- 0.1 - 0.5 m/s
- 0.5 - 0.6 m/s
- 0.6 - 0.7 m/s
- 0.7 - 0.8 m/s
- 0.8 - 0.9 m/s
- 0.9 - 1 m/s
- Layout
- Site

Cadastre

- Easement
- Lot Type Parcel

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
5% AEP Event Flood Afflux - Velocity	**G010**

Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
10% AEP Event Flood Afflux - Velocity	**G011**

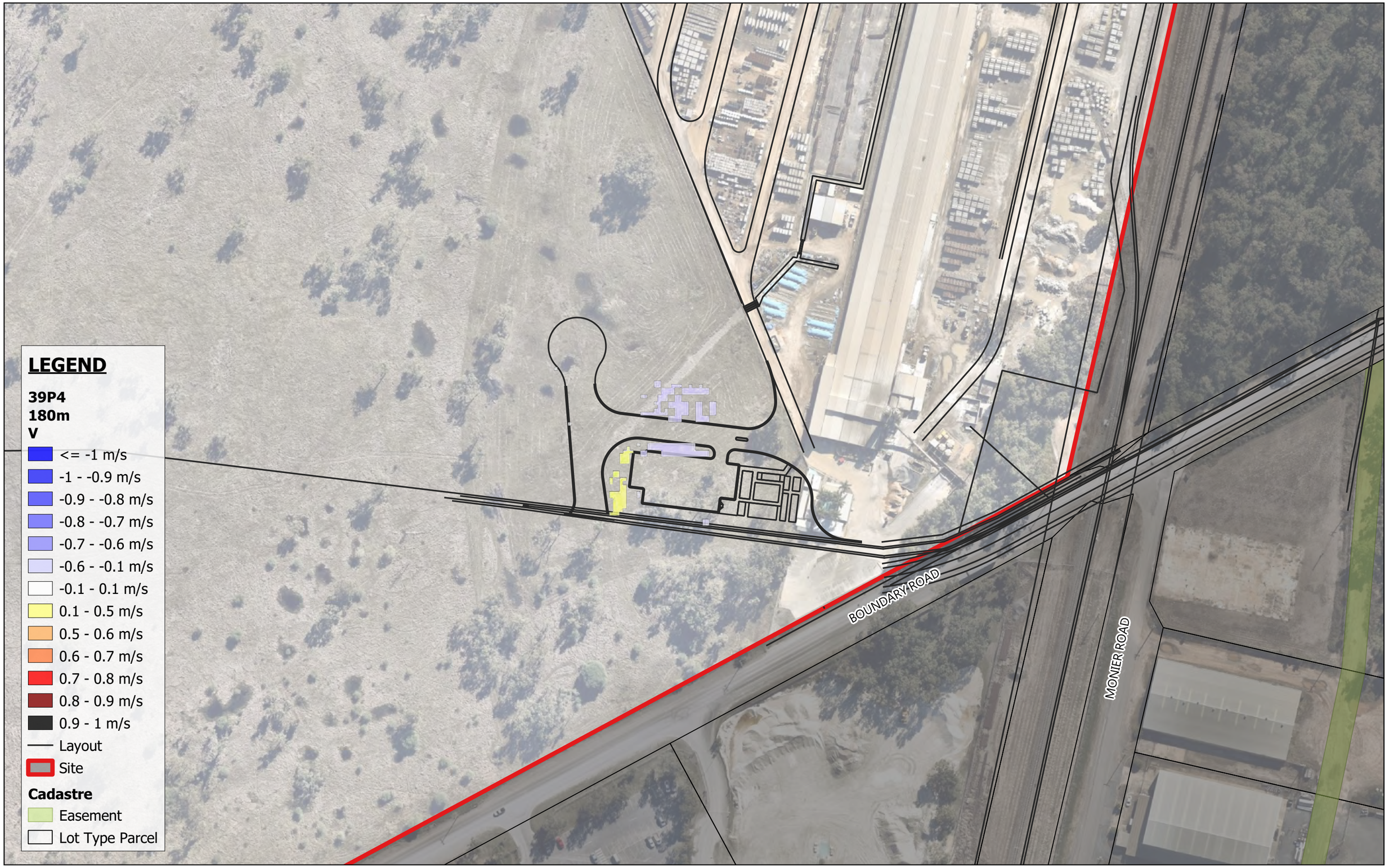
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	**Feb 2023**
23 BOUNDARY ROAD, PARKHURST	**MIS-1030**
18% AEP Event Flood Afflux - Velocity	**G012**



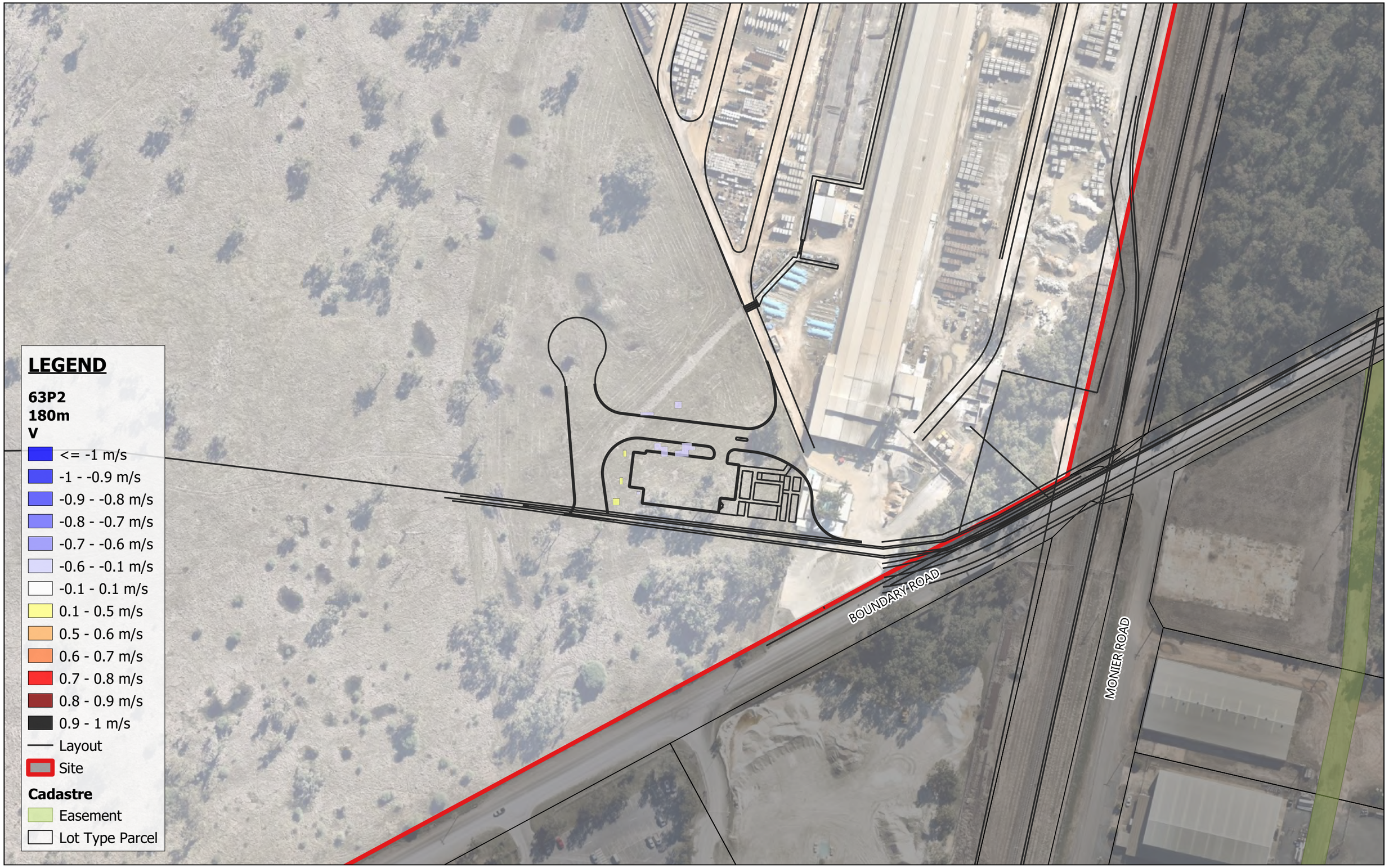
Premise

0 75 150 m

Scale 1:1,500

23.02.2023

AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
39% AEP Event Flood Afflux - Velocity	G013



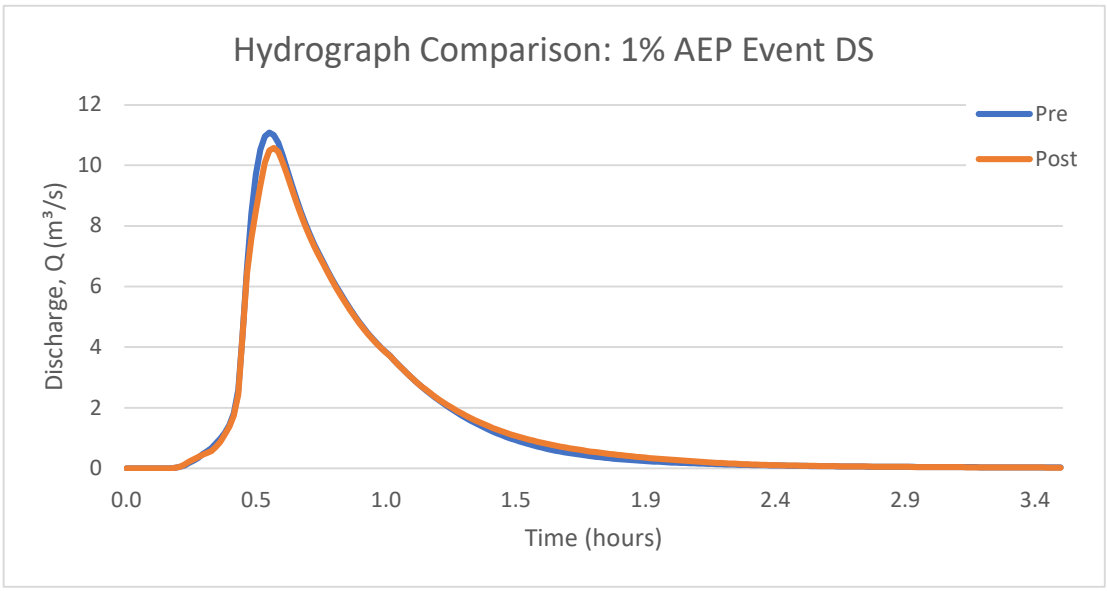
Premise

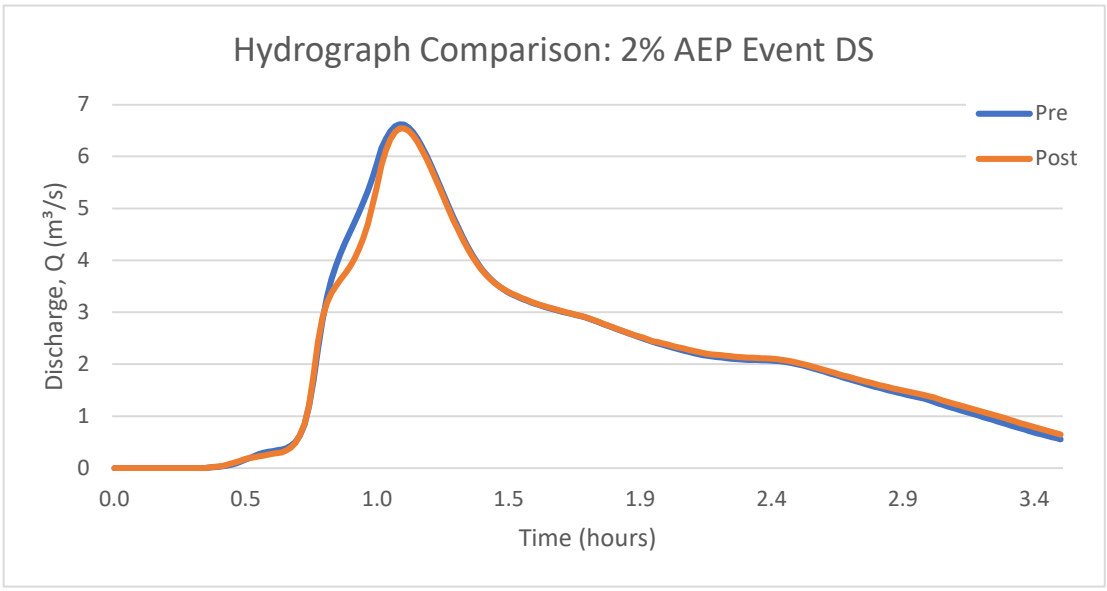
0 75 150 m

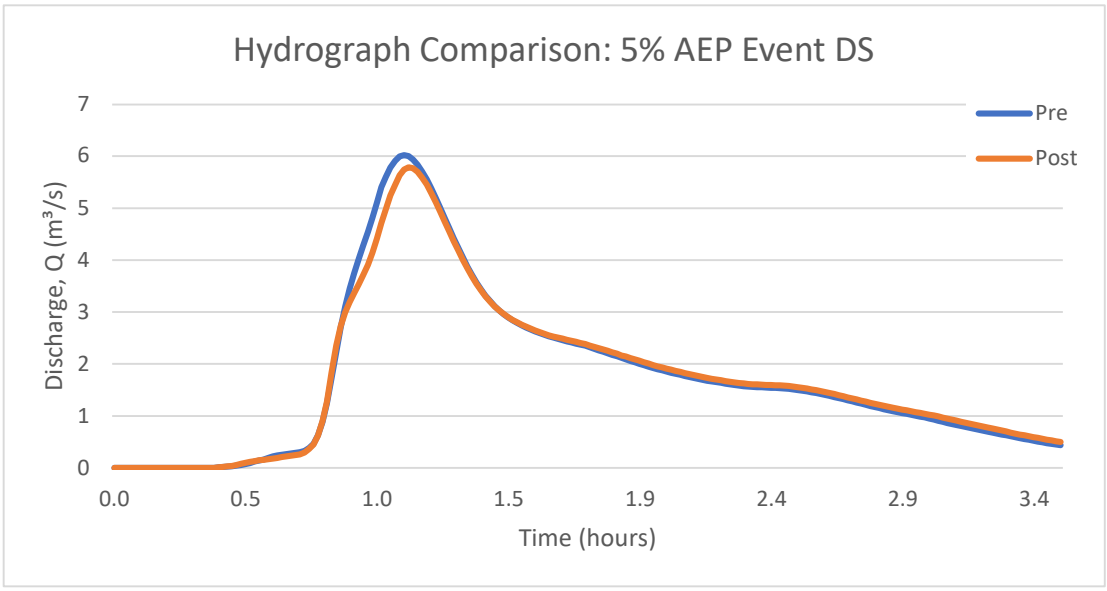
Scale 1:1,500

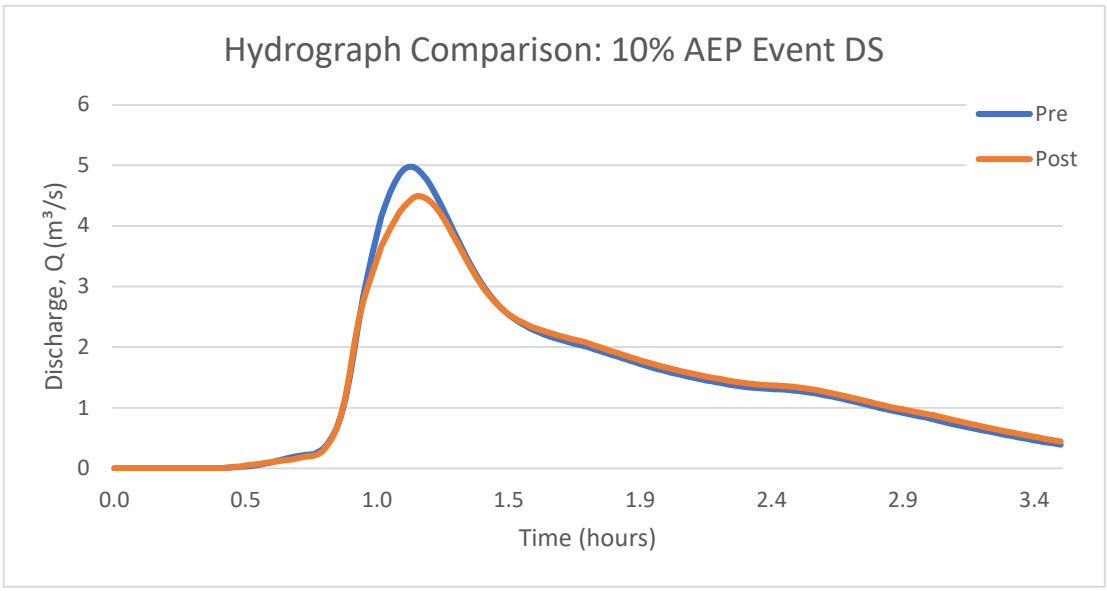
23.02.2023

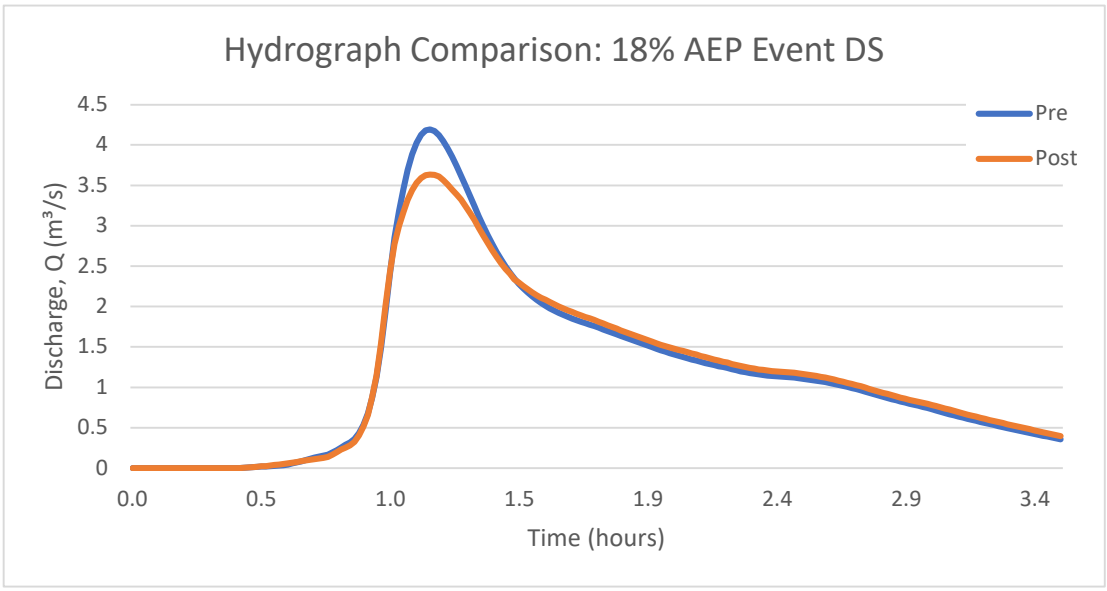
AUSTRAK PTY LTD	Feb 2023
23 BOUNDARY ROAD, PARKHURST	MIS-1030
63% AEP Event Flood Afflux - Velocity	G014

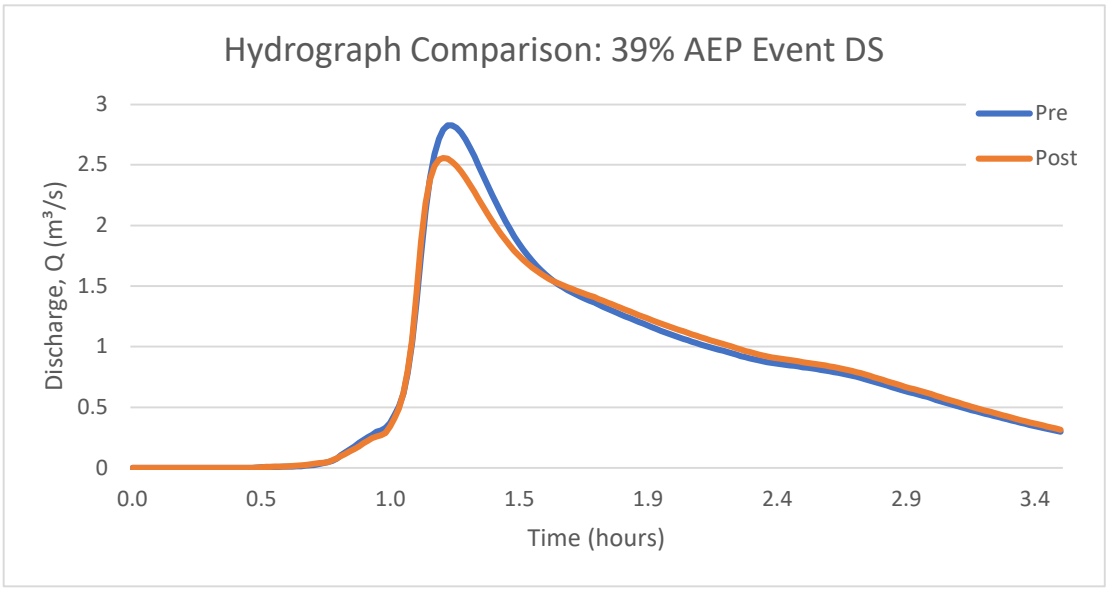

Hydrograph Comparison: 1% AEP Event DS
Discharge, Q (m³/s)
Time (hours)
Pre
Post
0
2
4
6
8
10
12
0.0
0.5
1.0
1.5
1.9
2.4
2.9
3.4

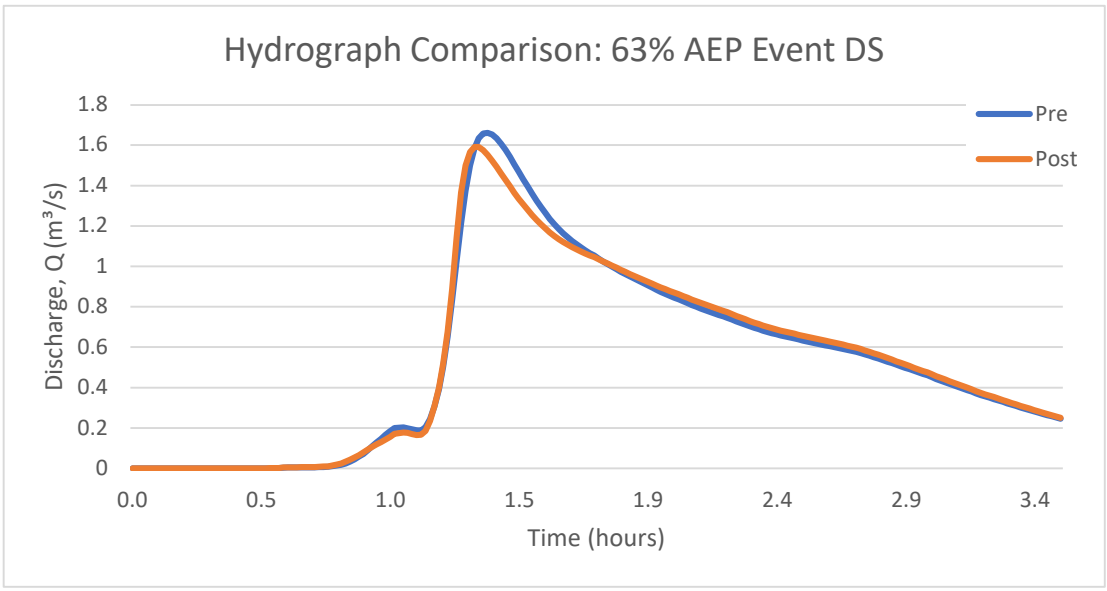

Hydrograph Comparison: 2% AEP Event DS
Discharge, Q (m³/s)
Time (hours)
Pre
Post
0
1
2
3
4
5
6
7
0.0
0.5
1.0
1.5
1.9
2.4
2.9
3.4


Hydrograph Comparison: 5% AEP Event DS
Discharge, Q (m³/s)
Time (hours)
Pre
Post
0
1
2
3
4
5
6
7
0.0
0.5
1.0
1.5
1.9
2.4
2.9
3.4


Hydrograph Comparison: 10% AEP Event DS
Discharge, Q (m³/s)
Time (hours)
Pre
Post
0
1
2
3
4
5
6
0.0
0.5
1.0
1.5
1.9
2.4
2.9
3.4


Hydrograph Comparison: 18% AEP Event DS
Discharge, Q (m³/s)
Time (hours)
Pre
Post
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
0.0
0.5
1.0
1.5
1.9
2.4
2.9
3.4


Hydrograph Comparison: 39% AEP Event DS
Discharge, Q (m³/s)
Time (hours)
Pre
Post
0
0.5
1
1.5
2
2.5
3
0.0
0.5
1.0
1.5
1.9
2.4
2.9
3.4


Hydrograph Comparison: 63% AEP Event DS
Discharge, Q (m³/s)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.0
0.5
1.0
1.5
1.9
2.4
2.9
3.4
Time (hours)
Pre
Post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