WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

Flood Advice Report

Wujal Wujal Solar Farm Development Application

Volt Advisory Group

22 October 2026



Document Status

Version	Doc Type	Reviewed By	Approved By	Date Issued
R01_V01	Draft Report	-	-	20/10/2026
R01_V02	Report	ITB	ITB	21/10/2026
R01_V03	Report	ITB	ITB	22/10/2026

Project Details

Project Name	Wujal Wujal Solar Farm Development Application
Client	Volt Advisory Group
Client Project Manager	Philip Keogan
Water Technology Project Manager	Isaac Boehme
Water Technology Project Director	Richard Sharp
Authors	Isaac Boehme
Document Number	27020073_R01_V03

COPYRIGHT

Water Technology Pty Ltd has produced this document in accordance with instructions from Volt Advisory Group for their use only. The concepts and information contained in this document are the copyright of Water Technology Pty Ltd. Use or copying of this document in whole or in part without written permission of Water Technology Pty Ltd constitutes an infringement of copyright.

Water Technology Pty Ltd does not warrant this document is definitive nor free from error and does not accept liability for any loss caused, or arising from, reliance upon the information provided herein.

Level 5, 43 Peel Street
South Brisbane QLD 4101
Telephone (07) 3105 1460
ACN 093 377 283
ABN 60 093 377 283

Certified System Quality ISO 9001 SAI GLOBAL
Certified System Environment ISO 14001 SAI GLOBAL
Certified System OHS ISO 45001 SAI GLOBAL

ACKNOWLEDGEMENT OF COUNTRY

The Board and employees of Water Technology acknowledge and respect the Aboriginal and Torres Strait Islander Peoples as the Traditional Custodians of Country throughout Australia. We specifically acknowledge the Traditional Custodians of the land on which our offices reside and where we undertake our work.

We respect the knowledge, skills and lived experiences of Aboriginal and Torres Strait Islander Peoples, who we continue to learn from and collaborate with. We also extend our respect to all First Nations Peoples, their cultures and to their Elders, past and present.



Artwork by Maurice Goolagong 2023. This piece was commissioned by Water Technology and visualises the important connections we have to water, and the cultural significance of journeys taken by traditional custodians of our land to meeting places, where communities connect with each other around waterways.

The symbolism in the artwork includes:

- Seven circles representing each of the States and Territories in Australia where we do our work
- Blue dots between each circle representing the waterways that connect us
- The animals that rely on healthy waterways for their home
- Black and white dots representing all the different communities that we visit in our work
- Hands that are for the people we help on our journey

CONTENTS

1 INTRODUCTION 4
1.1 Background 4
1.2 Flood Immunity Requirements 4
2 0.5% AEP DESIGN EVENT MODELLING AND RESULTS. 6
2.1 Adopted Model Overview 6
2.2 Revised Design Discharge Estimates 7
2.3 Hydraulic Model Results Discussion 7
2.3.1 Flood Behaviour Overview 8
2.4 0.5% AEP and 0.05% AEP Comparison 8
3 CONCLUSIONS AND RECOMMENDATIONS 12
3.1 Project Summary 12

APPENDICES

Appendix A Maximum Water Surface Level Maps

LIST OF FIGURES

Figure 1-1 Bloomfield River Flooding Design Event Extents 5
Figure 1-2 Proposed Solar Farm Proposed Site Layout and Local Topography 5
Figure 2-1 Hydraulic Model Overview 6
Figure 2-2 Design Event Peak Model Inflows (Upstream Boundary) 7
Figure 2-3 Reporting Locations (Label ID) 10
Figure 2-4 Bloomfield River – Existing – Peak Flood Level – 0.5% AEP 11

LIST OF TABLES

Table 2-1 Upstream Boundary Peak Model Inflow Summary 7
Table 2-2 Bloomfield River Flooding Water Surface Level Summary (mAHD) 9

1 INTRODUCTION

1.1 Background

We understand that an application seeking a development permit for a material change of use and reconfiguring of Lot 9 RP903516 adjoining Cape Tribulation Bloomfield Road, Degarra. The application is in relation to a solar renewable energy plant farm.

The proposed site layout, available flood extent mapping and site topography are presented in Figure 1-1 and Figure 1-2. Existing flood data indicates that parts of the site begin to be affected by overbank flooding from the Bloomfield River during events greater than and including the 1% AEP (climate change) design event.

The site is mapped within the Floodplain Assessment sub-category of the Douglas Shire Planning Scheme's Flood and Storm Tide Hazard Overlay. Development within this area requires a flood assessment by a suitably qualified professional.

1.2 Flood Immunity Requirements

Given the proposed infrastructure's importance to the community and its potential exposure to flooding from the Bloomfield River, the 0.5% Annual Exceedance Probability (AEP) flood event has been nominated as the design planning event for the facility.

Existing hydraulic modelling of the Bloomfield River provides flood information for a range of design events within Wujal Wujal. However, the 0.5% AEP event has not been explicitly assessed as part of the currently available modelling. Accordingly, additional hydraulic modelling has been requested to establish the flood conditions associated with this event.

This report documents the methodology and outcomes of the 0.5% AEP hydraulic modelling undertaken for existing (pre-development) conditions. The assessment establishes the baseline flood behaviour, including flood levels, depths, velocities and inundation extents, to inform the siting, layout and design levels of the proposed solar farm and its associated infrastructure.

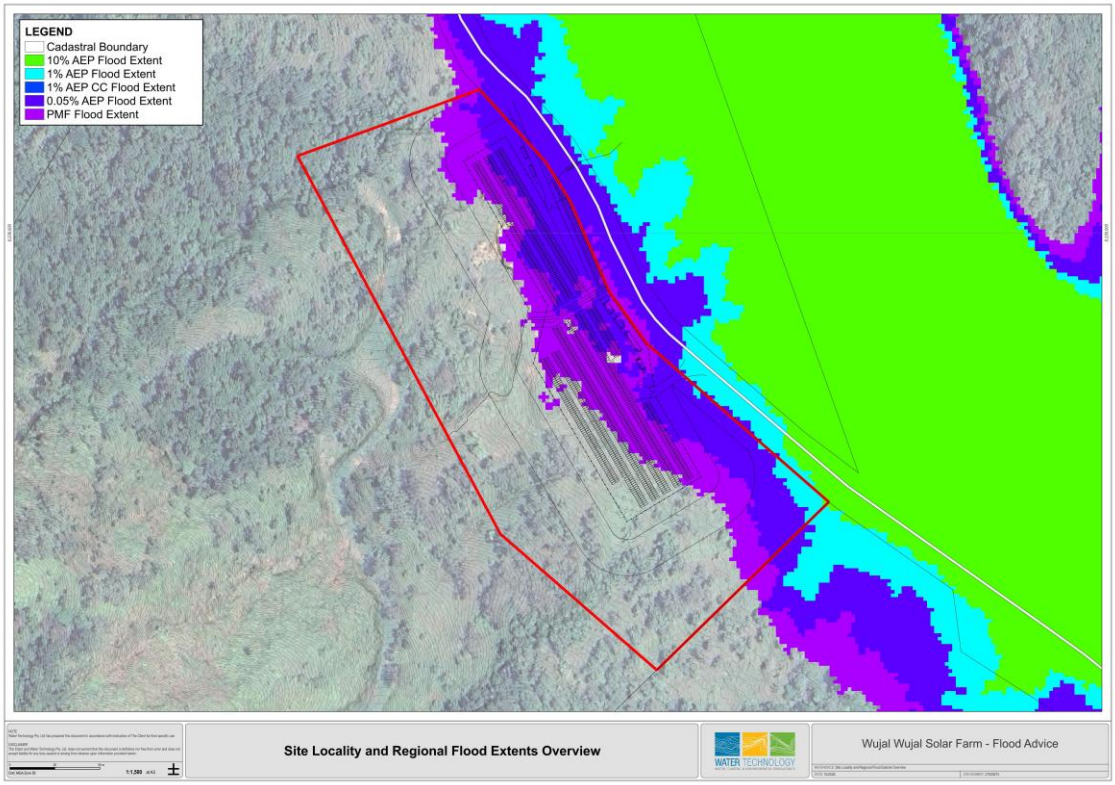


Figure 1-1 Bloomfield River Flooding Design Event Extents

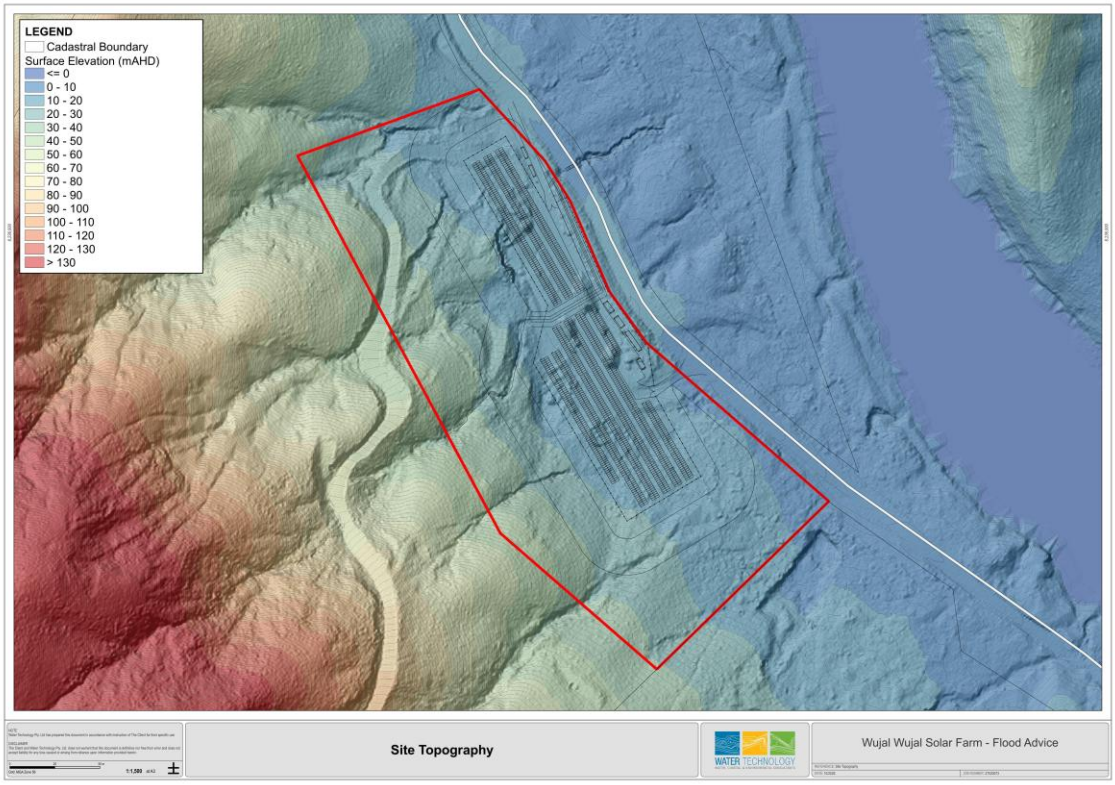


Figure 1-2 Proposed Solar Farm Proposed Site Layout and Local Topography

2 0.5% AEP DESIGN EVENT MODELLING AND RESULTS.

2.1 Adopted Model Overview

The flood assessment of the 0.5% AEP design event adopts the Bloomfield River flood model, which was recently adopted for the Wujal Wujal Master Plan and Flood Risk Assessment, prepared for the Department of Treaty, Aboriginal and Torres Strait Islander Partnerships, Communities, and the Arts (dated 28 July 2025).

This same flood model and results was used to inform previous planning submissions (prepared by others), particularly Figures 9 and 10 of the Town planning Report which shows the 1% AEP (climate change) and 0.05% AEP design flood levels for the Bloomfield River.

This flood model has previously been established to assess flood events up to the 1% AEP design event, the 0.05% AEP design event, and the PMF. The previous modelling excluded the 0.5% AEP design event which is needed to inform the design and planning requirements for the proposed solar farm facility.

An overview of the adopted hydraulic model, including model boundary and inflow/outflow locations for reference, is shown in Figure 2-1.

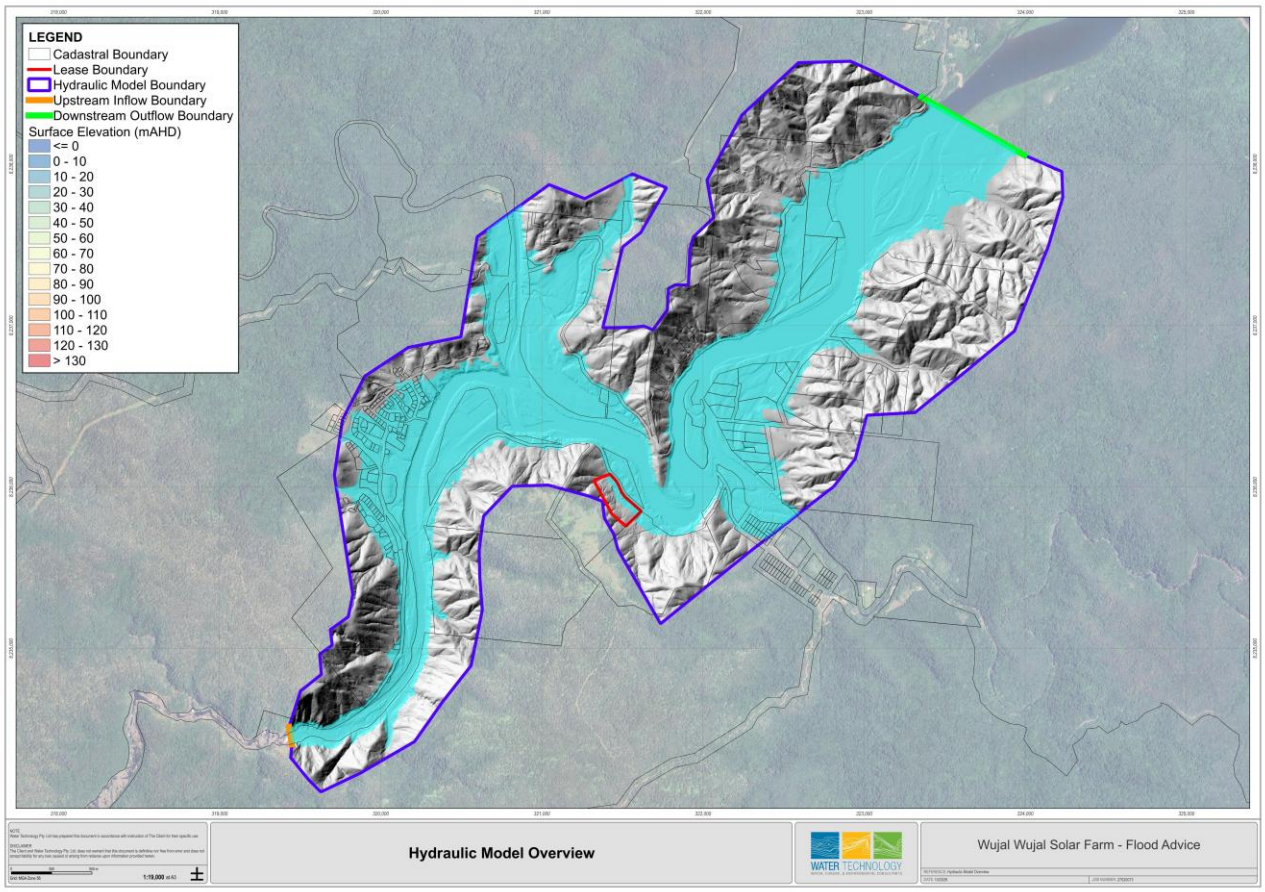


Figure 2-1 Hydraulic Model Overview

2.2 Revised Design Discharge Estimates

The existing hydrologic and hydraulic model has been adopted to assess the 0.5% AEP design flood event. It was found that the critical event for the 0.5% AEP is the 12-hour duration with temporal pattern eight (TP08), which is similarly the case for the other assessed events, including the 1% AEP and 1% AEP (Climate Change) design events, for example.

For comparison purposes the 1% AEP, 1% AEP (Climate Change), 0.5% AEP, and 0.05% AEP design event peak inflows into the model are summarised in Table 2-1, with the associated hydrographs of the critical design event duration and temporal pattern charted in Figure 2-2. Of note, the peak inflows for the 0.5% AEP design event are comparable (although slightly lower) to the 1% AEP (Climate Change) design event.

Table 2-1 Upstream Boundary Peak Model Inflow Summary

Design Event	Peak Model Inflow
1% AEP	3094 m^3/s
1% AEP (Climate Change)	3822 m^3/s
0.5% AEP *(Key Planning Event)*	3754 m^3/s
0.05% AEP	6157 m^3/s

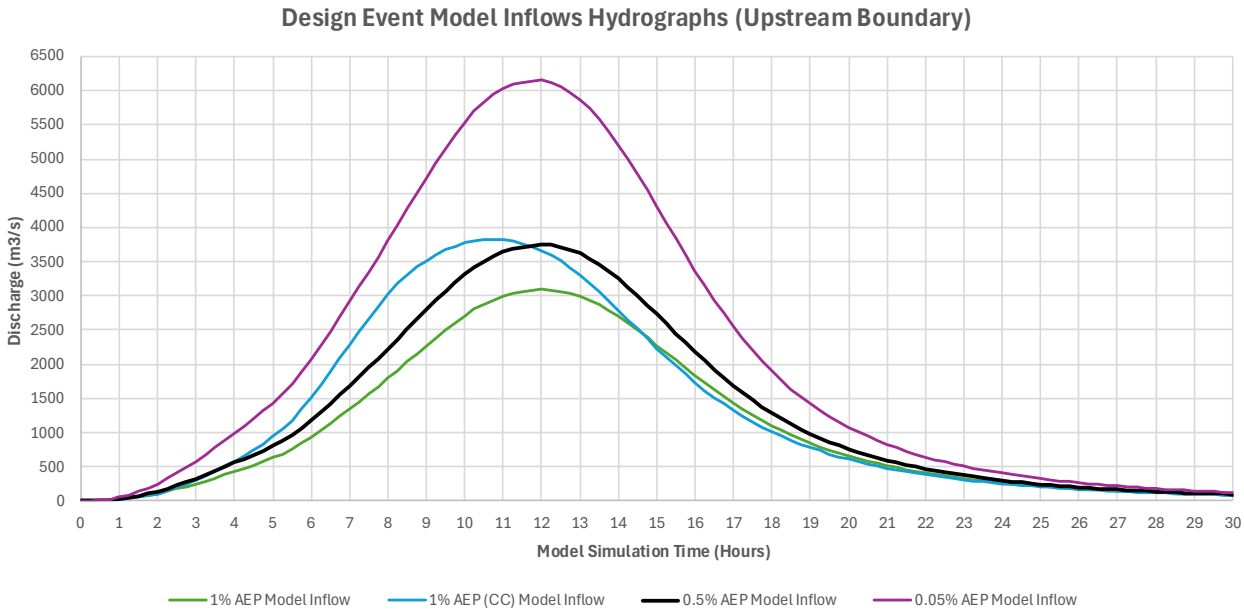


Figure 2-2 Design Event Peak Model Inflows (Upstream Boundary)

2.3 Hydraulic Model Results Discussion

The revised 0.5% AEP design event inflows from the hydrologic model have been adopted into the adopted hydraulic model to inform peak water surface level estimates across the proposed solar farm facility. In addition to this, the peak water surface levels for the various reporting locations for the 1% AEP, 1% AEP (Climate Change), 0.5% AEP, 0.05% AEP, and PMF design events are tabulated in Table 2-2. A map showing these reporting locations is also shown in Figure 2-3, with a separate map showing the 0.5% AEP design flood extent overlayed over the proposed site layout also shown in Figure 2-4.

2.3.1 Flood Behaviour Overview

Flooding from the Bloomfield River is generally limited across the proposed development site during the more frequent design flood events, with the majority of the ground areas associated with proposed infrastructure and operations located outside the modelled flood extent up to and including the 0.5% AEP design event. The south-eastern boundary is one of the earliest affected locations, with flood levels reaching approximately 9.14 mAHD during the 1% AEP design event and 10.03 mAHD during the 1% AEP (Climate Change) design event at this location. Flooding near the site entrance occurs during the 1% AEP (Climate Change) design event, with a flood level of approximately 9.91 mAHD.

During the 0.05% AEP design event, flooding extends further into the site, affecting ground areas beneath and surrounding several electrical infrastructure assets and operational areas, which are understood to be raised above the surrounding ground level. At the 1 MVA 22 kV transformers (A and B), for example, modelled flood levels reach approximately 13.00 mAHD in the surrounding area, while flood levels near the Ergon roadside kiosk units (A and B) reach approximately 12.98 mAHD. Flooding also occurs beneath and adjacent to the raised BESS LFP battery container, with flood levels reaching approximately 12.75 mAHD along its southern side, although the ground area associated with the BESS control room remains outside the modelled flood extent. In the same design event, flooding near the reversing sideload bay occurs at approximately 12.36 mAHD, while flood levels at the site entrance and south-eastern boundary increase to approximately 12.33 mAHD and 12.43 mAHD, respectively.

Flooding of the ground areas beneath and surrounding the solar array infrastructure is generally limited during the 0.05% AEP design event, with inundation confined to the area associated with Solar Row F, where modelled flood levels reach approximately 13.00 mAHD. The ground areas associated with the remaining solar rows (A to E), together with the northern, north-western and western portions of the site, remain outside the modelled flood extent.

Under PMF conditions, flooding is more widespread, extending across ground areas beneath and surrounding additional assessed infrastructure locations. Modelled flood levels in the vicinity of the electrical infrastructure and BESS facilities range from approximately 15.03 mAHD to 15.63 mAHD, while flood levels across the ground areas associated with the solar array rows range from approximately 15.43 mAHD to 15.55 mAHD.

It is specifically noted that the levels of all internal floor levels and equipment is understood to be 13.30 mAHD, providing at least 300 mm of vertical clearance above the maximum modelled 0.05% AEP design flood level of 13.00 mAHD at the assessed infrastructure locations. Accordingly, while flooding may occur beneath and around the raised infrastructure during this event, the nominated floor and equipment levels are understood to remain above the modelled flood levels. The maximum modelled flood level in the 0.5% AEP design event at the reporting location is notably lower, at 9.94 mAHD.

2.4 0.5% AEP and 0.05% AEP Comparison

It is understood that a separate assessment of Tropical Cyclone Jasper in December 2023 has been undertaken by others, separate to this study, the outcome of which indicated that the peak flood levels in the Bloomfield River to be comparable to the 0.05% AEP design event. As way of comparison, it is therefore understood that the peak flood levels in the Bloomfield River during Tropical Cyclone Jasper in December 2023 is anticipated to be approximately 2.5m higher than the 0.5% AEP design event levels for the solar farm facility at this location (as per the 0.5% and 0.05% AEP design level comparisons at the Site Entrance (location 17) and South-Eastern Boundary (location 24).

Table 2-2 Bloomfield River Flooding Water Surface Level Summary (mAHD)

Label ID	Description	1% AEP	1% AEP (CC)	0.5% AEP	0.05% AEP	PMF
1	1MVA 22KV Transformer (A) (North)	-	-	-	13.00	15.34
2	1MVA 22KV Transformer (A) (South)	-	-	-	-	15.35
3	1MVA 22KV Transformer (B) (North)	-	-	-	13.00	15.34
4	1MVA 22KV Transformer (B) (South)	-	-	-	-	15.27
5	BESS Control Room (North)	-	-	-	-	15.15
6	BESS Control Room (South)	-	-	-	-	14.83
7	BESS LFP Battery Container (North)	-	-	-	-	14.88
8	BESS LFP Battery Container (South)	-	-	-	12.75	15.03
9	Ergon Roadside Kiosk Unit (A) (North) (Ergon Network Asset)	-	-	-	12.97	15.63
10	Ergon Roadside Kiosk Unit (A) (South) (Ergon Network Asset)	-	-	-	12.98	15.62
11	Ergon Roadside Kiosk Unit (B) (North) (Ergon Network Asset)	-	-	-	12.98	15.61
12	Ergon Roadside Kiosk Unit (B) (South) (Ergon Network Asset)	-	-	-	12.97	15.57
13	North-Western Corner	-	-	-	-	15.68
14	Northern Boundary	-	-	-	-	15.46
15	Northern Corner	-	-	-	12.98	15.67
16	Reversing Sideload Bay (BESS Off)	-	-	-	12.36	15.16
17	Site Entrance	-	9.91	9.83	12.33	15.21
18	Solar Row A	-	-	-	-	15.55
19	Solar Row B	-	-	-	-	15.54
20	Solar Row C	-	-	-	-	15.49
21	Solar Row D	-	-	-	-	15.43
22	Solar Row E	-	-	-	-	15.44
23	Solar Row F	-	-	-	13.00	15.43
24	South-Eastern Boundary (Lease Boundary)	9.14	10.03	9.94	12.43	15.12
25	South-Eastern Corner	-	-	-	-	15.09
26	Western Corner (A)	-	-	-	-	15.53

Note: RL of all internal floor levels and equipment at 13.30 mAHD is 300mm or greater than the maximum 0.05% AEP design flood level (13.00 mAHD) across the site.

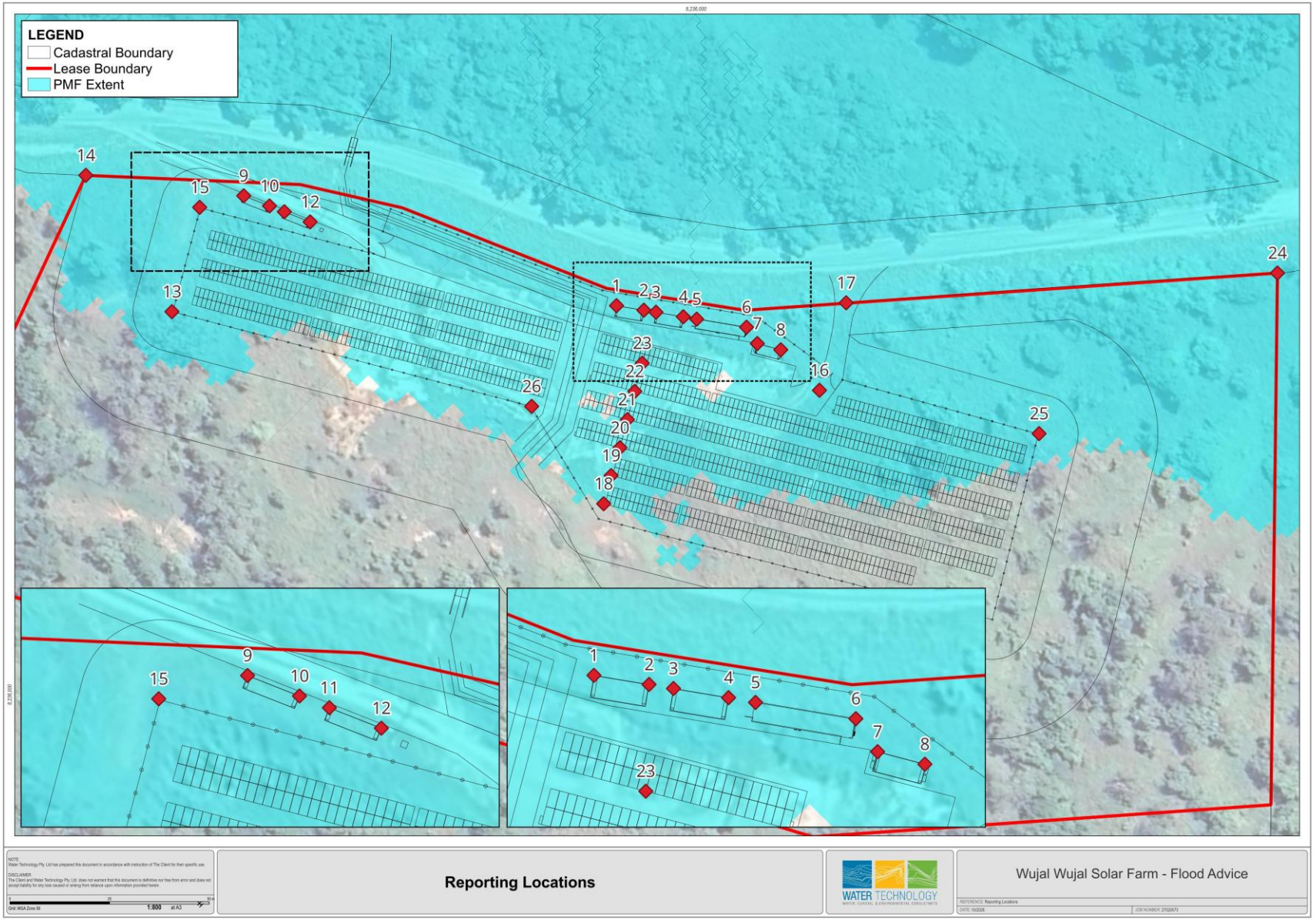


Figure 2-3 Reporting Locations (Label ID)

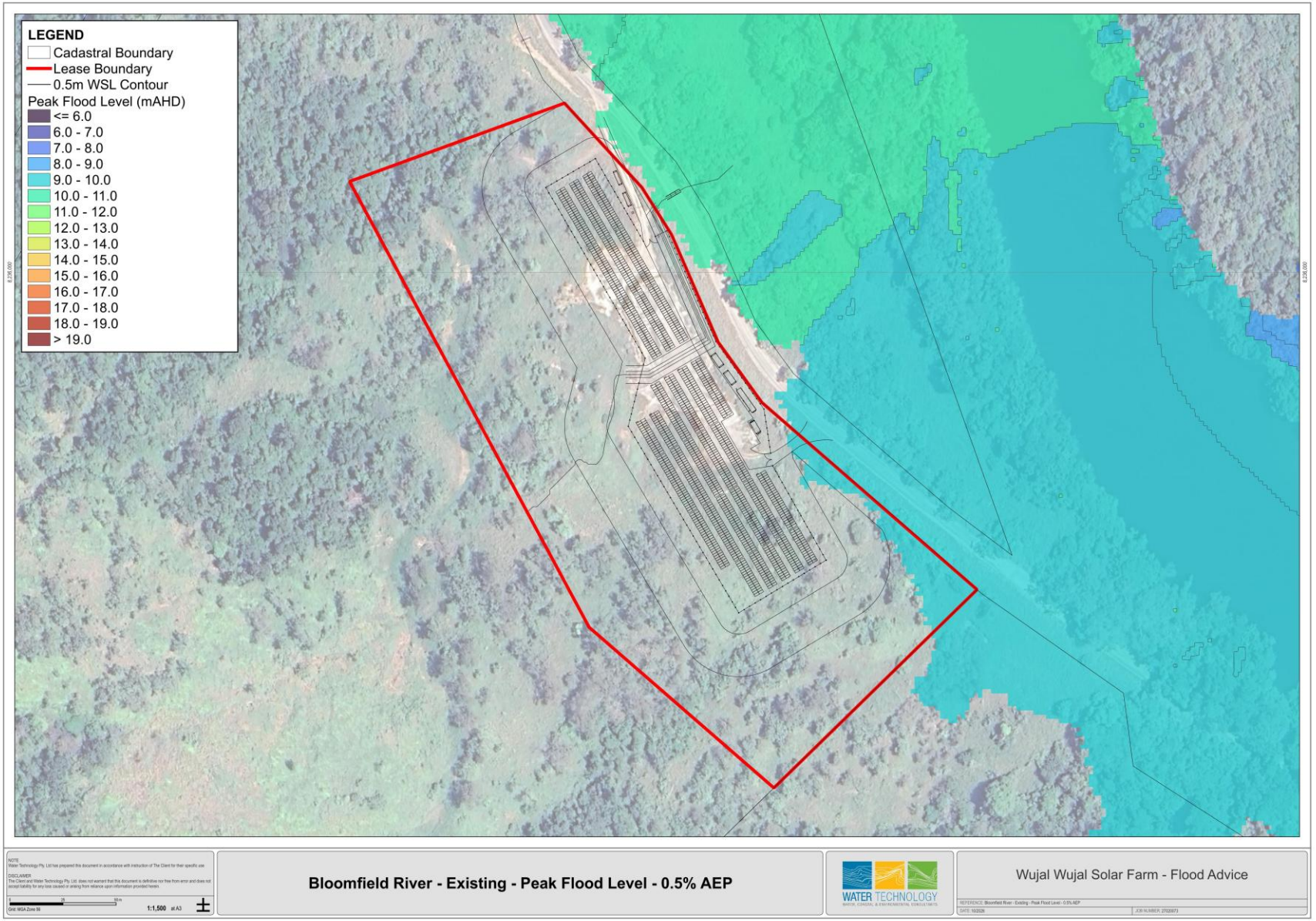


Figure 2-4 Bloomfield River – Existing – Peak Flood Level – 0.5% AEP

3 CONCLUSIONS AND RECOMMENDATIONS

3.1 Project Summary

We understand that a development application is being prepared seeking a development permit for a material change of use and reconfiguring of Lot 9 RP903516, adjoining Cape Tribulation Bloomfield Road, Degarra. The application relates to a proposed solar renewable energy facility. The site is mapped within the Floodplain Assessment sub-category of the Douglas Shire Planning Scheme's Flood and Storm Tide Hazard Overlay. Development within this area requires a flood assessment to demonstrate compliance with the relevant planning scheme provisions.

Given the proposed infrastructure's importance to the community and its potential exposure to flooding from the Bloomfield River, the 0.5% AEP design flood event has been nominated as the planning event for informing the layout, flood immunity and resilience of the proposed facility.

The existing hydrologic and hydraulic models have been adopted to assess the 0.5% AEP design flood event. The critical event for the 0.5% AEP was identified as the 12-hour duration storm with temporal pattern eight (TP08). Comparisons of peak flows and flood levels across the assessed design events established that the 0.5% AEP design flood is comparable to, although slightly lower than, the 1% AEP (Climate Change) design event.

Flooding from the Bloomfield River is generally limited across the proposed development site during the more frequent design flood events, with the majority of ground areas associated with proposed infrastructure and operations remaining outside the modelled flood extent up to and including the 0.5% AEP design event.

During the 0.05% AEP design event, flooding extends further into the site, inundating ground areas beneath and surrounding several raised electrical infrastructure assets and operational areas. Flooding around the solar array infrastructure is generally limited during this event, with inundation confined to the ground area associated with Solar Row F. Under PMF conditions, flooding becomes more widespread, extending across ground areas beneath and surrounding all assessed infrastructure locations.

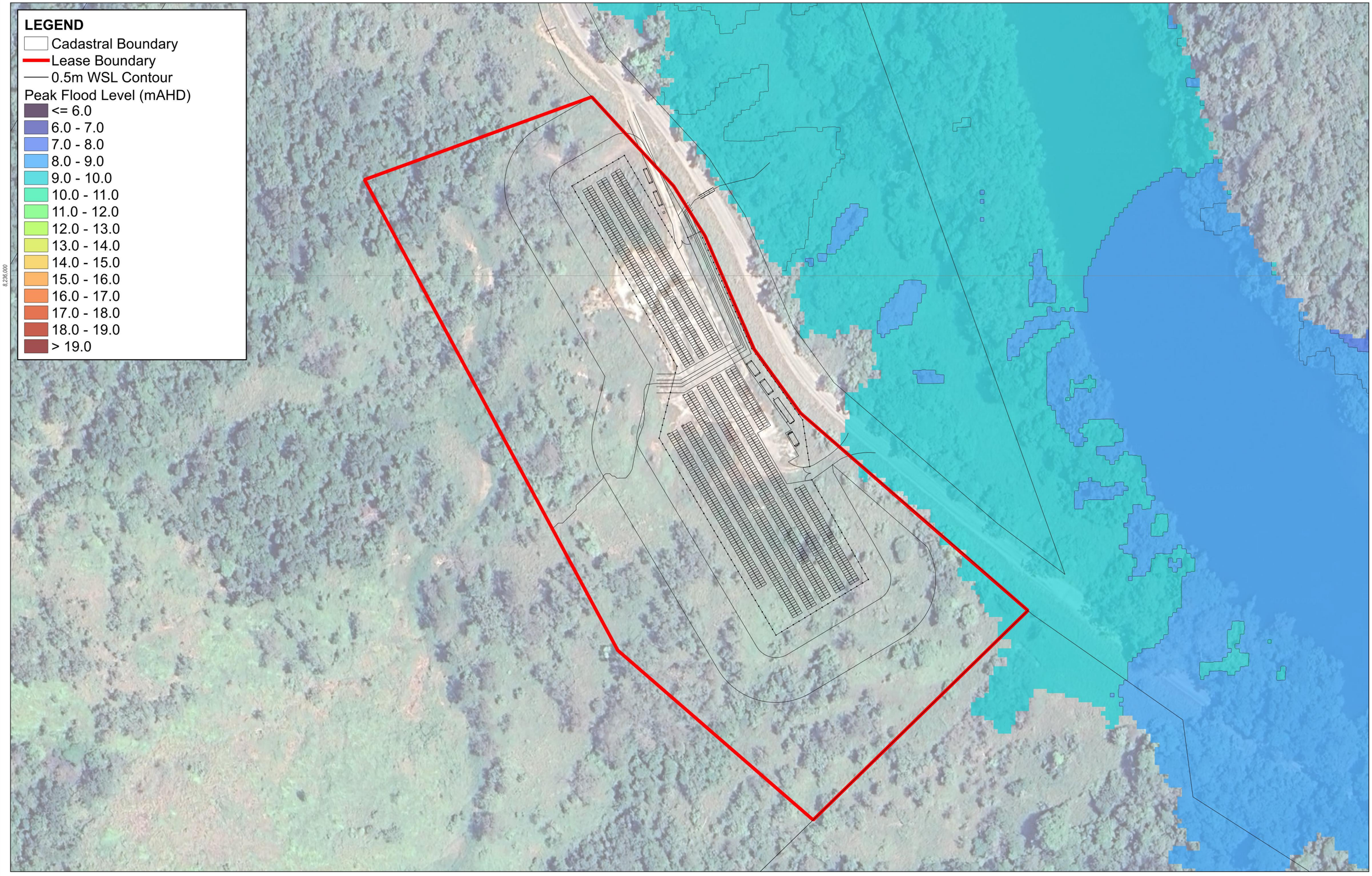
It is understood that a separate assessment of Tropical Cyclone Jasper in December 2023 has been undertaken by others, separate to this study. This assessment showed the peak flood levels in the Bloomfield River to be comparable to the 0.05% AEP design event. As way of comparison, it is therefore understood that the peak flood levels in the Bloomfield River during Tropical Cyclone Jasper in December 2023 is anticipated to be approximately 2.5m higher than the 0.5% AEP design event levels.

It is finally noted that the levels of all internal floor levels and equipment is understood to be 13.30 mAHD, providing at least 300 mm of vertical clearance above the maximum modelled 0.05% AEP design flood level of 13.00 mAHD at the assessed infrastructure locations. Accordingly, while flooding may occur beneath and around the raised infrastructure during this event, the nominated floor and equipment levels are understood to remain above the modelled flood levels. The maximum modelled flood level in the 0.5% AEP design event at the reporting location is notably lower, at 9.94 mAHD.

WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

APPENDIX A
MAXIMUM WATER SURFACE LEVEL MAPS





NOTE
Water Technology Pty. Ltd has prepared this document in accordance with instruction of The Client for their specific use

DISCLAIMER
The Client and Water Technology Pty. Ltd. does not warrant that this document is definitive nor free from error and does not accept liability for any loss caused or arising from reliance upon information provided herein.

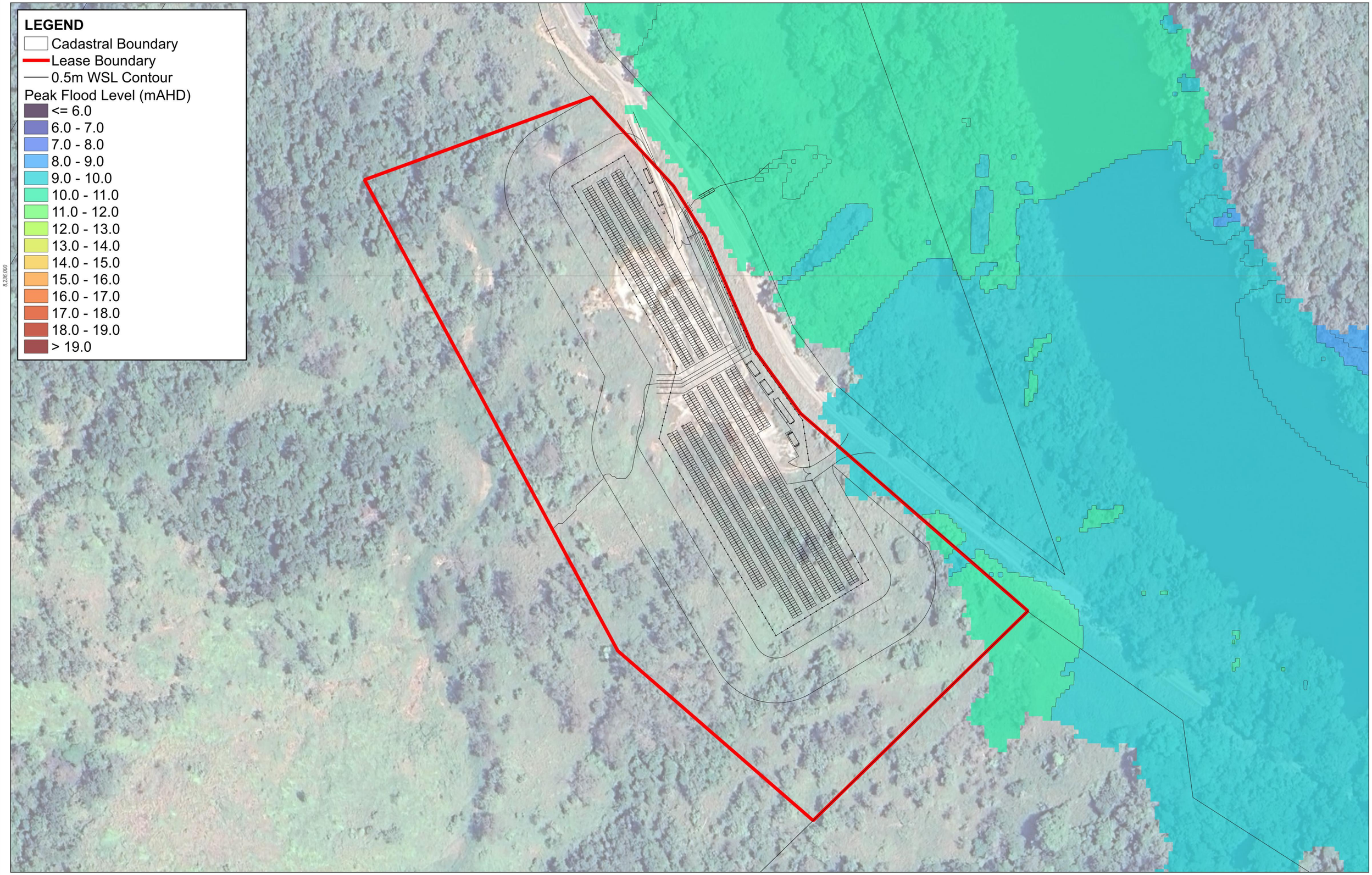
0 25 50 m
Grid: MGA Zone 56
1:1,500 at A3

Bloomfield River - Existing - Peak Flood Level - 1% AEP

WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

Wujal Wujal Solar Farm - Flood Advice

REFERENCE: Bloomfield River - Existing - Peak Flood Level - 1% AEP
DATE: 10/2026
JOB NUMBER: 27020073



NOTE
Water Technology Pty. Ltd has prepared this document in accordance with instruction of The Client for their specific use

DISCLAIMER
The Client and Water Technology Pty. Ltd. does not warrant that this document is definitive nor free from error and does not accept liability for any loss caused or arising from reliance upon information provided herein.

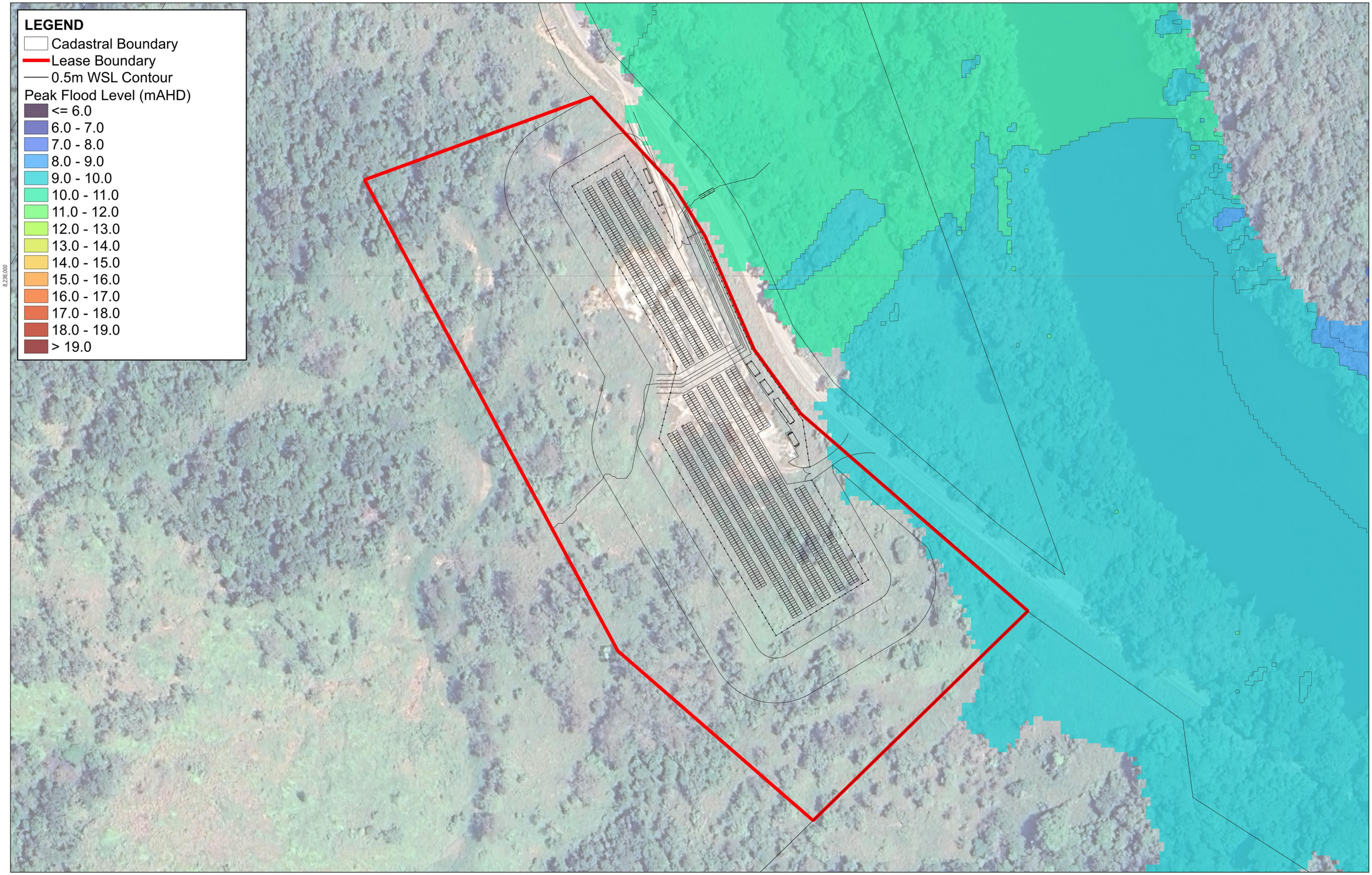
0 25 50 m
Grid: MGA Zone 56
1:1,500 at A3

Bloomfield River - Existing - Peak Flood Level - 1% AEP (Climate Change)

WATER TECHNOLOGY
WATER, COASTAL, & ENVIRONMENTAL CONSULTANTS

Wujal Wujal Solar Farm - Flood Advice

REFERENCE: Bloomfield River - Existing - Peak Flood Level - 1% AEP (Climate Change)
DATE: 10/2026
JOB NUMBER: 27020073



NOTE
Water Technology Pty. Ltd has prepared this document in accordance with instruction of The Client for their specific use

DISCLAIMER
The Client and Water Technology Pty. Ltd. does not warrant that this document is definitive nor free from error and does not accept liability for any loss caused or arising from reliance upon information provided herein.

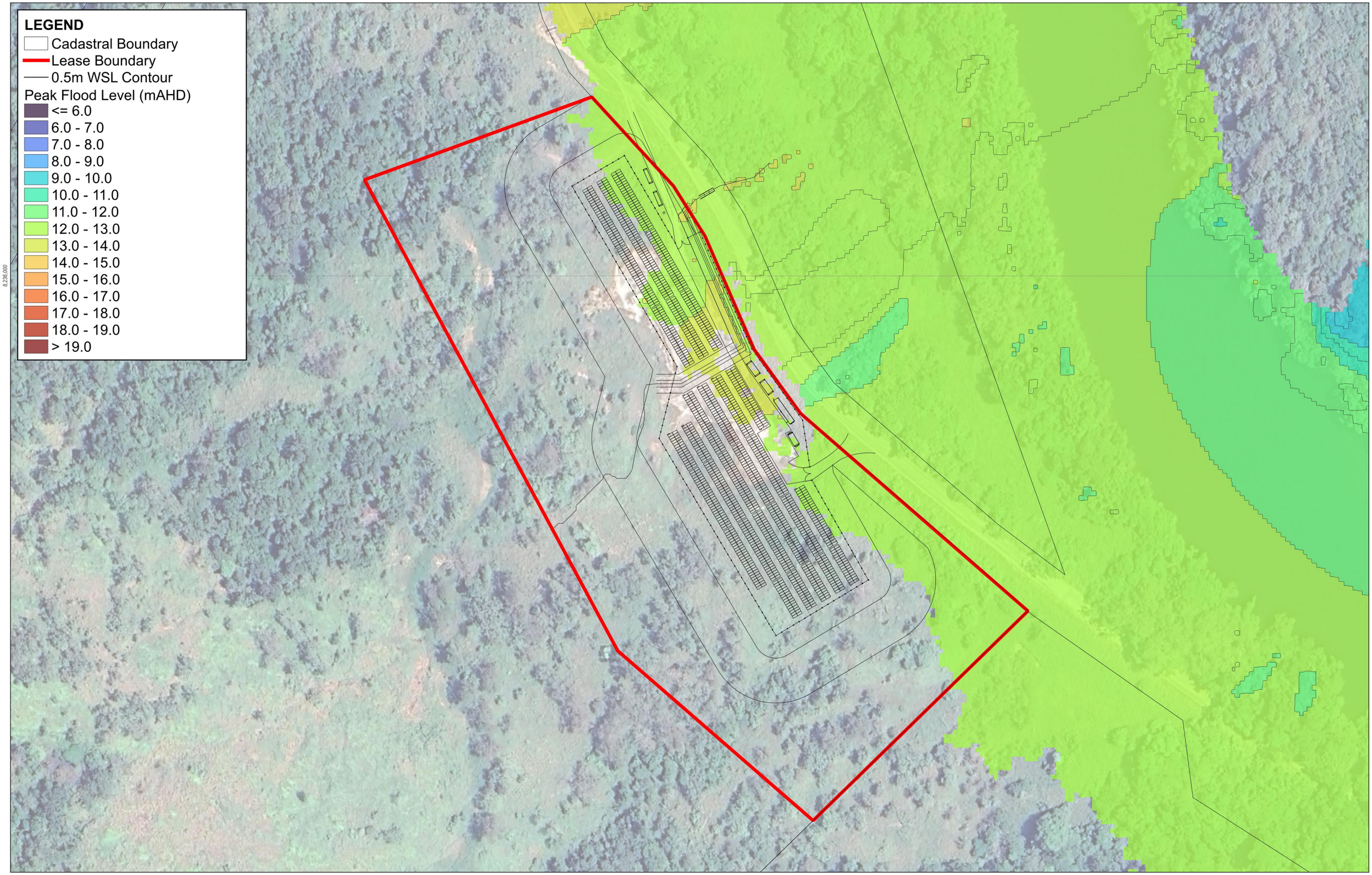
0 25 50 m
Grid: MGA Zone 56
1:1,500 at A3

Bloomfield River - Existing - Peak Flood Level - 0.5% AEP

WATER TECHNOLOGY
WATER, COASTAL, & ENVIRONMENTAL CONSULTANTS

Wujal Wujal Solar Farm - Flood Advice

REFERENCE: Bloomfield River - Existing - Peak Flood Level - 0.5% AEP
DATE: 10/2026
JOB NUMBER: 27020073



NOTE
Water Technology Pty. Ltd has prepared this document in accordance with instruction of The Client for their specific use

DISCLAIMER
The Client and Water Technology Pty. Ltd. does not warrant that this document is definitive nor free from error and does not accept liability for any loss caused or arising from reliance upon information provided herein.

0 25 50 m

Grid: MGA Zone 56

1:1,500 at A3

Bloomfield River - Existing - Peak Flood Level - 0.05% AEP

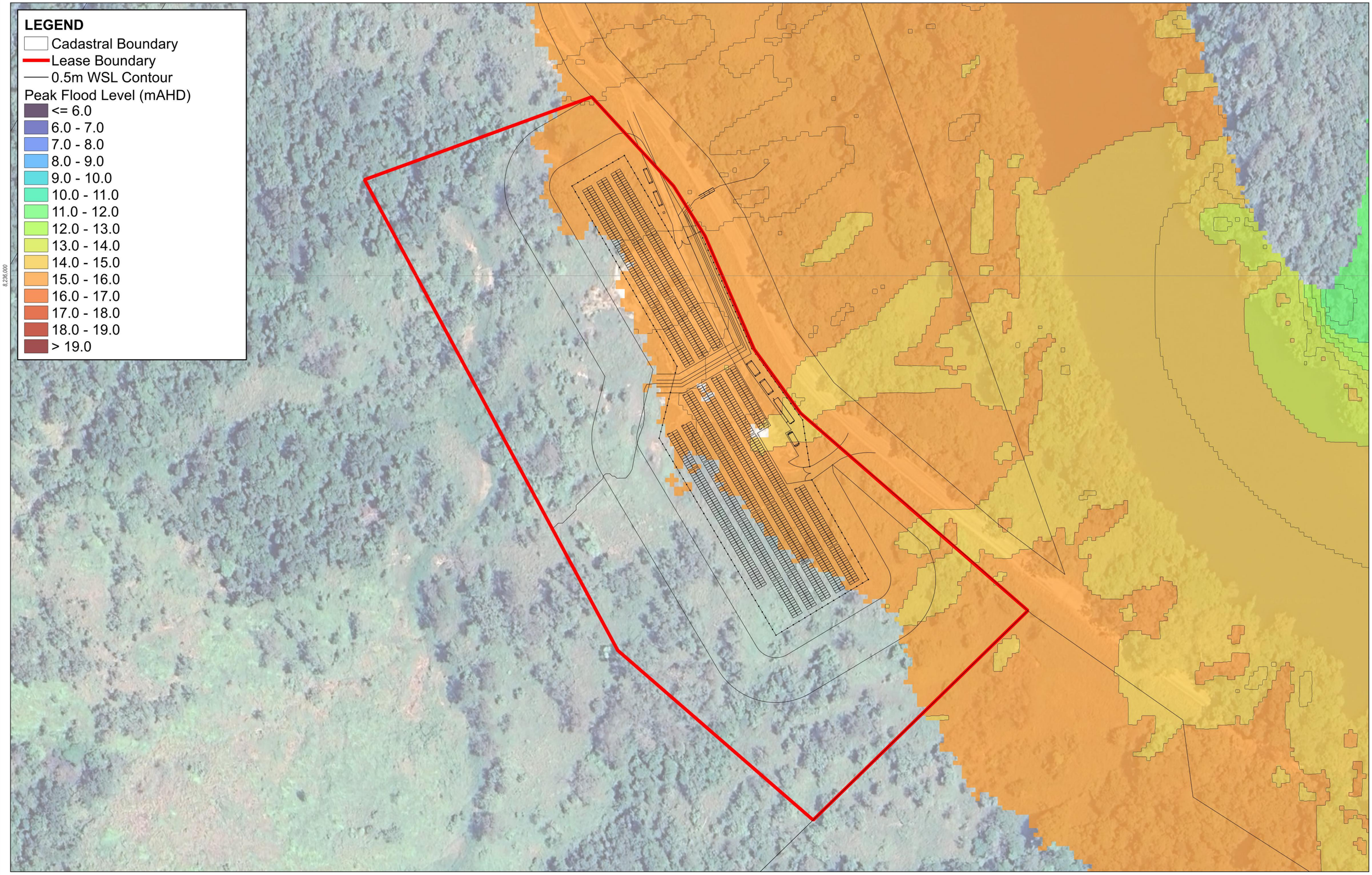
WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

Wujal Wujal Solar Farm - Flood Advice

REFERENCE: Bloomfield River - Existing - Peak Flood Level - 0.05% AEP

DATE: 10/2026

JOB NUMBER: 27020073



NOTE
Water Technology Pty. Ltd has prepared this document in accordance with instruction of The Client for their specific use

DISCLAIMER
The Client and Water Technology Pty. Ltd. does not warrant that this document is definitive nor free from error and does not accept liability for any loss caused or arising from reliance upon information provided herein.

0 25 50 m
Grid: MGA Zone 56
1:1,500 at A3

Bloomfield River - Existing - Peak Flood Level - PMF

WATER TECHNOLOGY
WATER, COASTAL, & ENVIRONMENTAL CONSULTANTS

Wujal Wujal Solar Farm - Flood Advice

REFERENCE: Bloomfield River - Existing - Peak Flood Level - PMF
DATE: 10/2026
JOB NUMBER: 27020073

WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

Melbourne
15 Business Park Drive
Notting Hill VIC 3168

Melbourne – CBD
Suite 904, Carlow House, 289 Flinders Lane
Melbourne VIC 3000

Brisbane
Level 5, 43 Peel Street
South Brisbane QLD 4101

Brisbane – Camp Hill
2a/4 Newman Avenue
Camp Hill QLD 4152

Sydney
Suite 3, Level 1, 20 Wentworth Street
Parramatta NSW 2150

Ballina
Unit 1b/1 Hogan Street
Ballina NSW 2478

Adelaide
2/39-40 Greenhill Road
Wayville SA 5034

Perth
Level 1, 21 Adelaide Street
Fremantle WA 6160

New Zealand
4 Williamson Avenue
Ponsonby New Zealand 1021

Wangaratta
First Floor, 40 Rowan Street
Wangaratta VIC 3677

Geelong
1/5 Bridge Street
Newtown VIC 3220

Wimmera
597 Joel South Road
Stawell VIC 3380

Gold Coast
Suite 37, Level 4, 194 Varsity Parade
Varsity Lakes QLD 4227

Darwin
Unit 40/29 Woods Street
Darwin City NT 0800

Sunshine Coast
4C ‘Regatta Corporate’, 2 Innovation Parkway
Birtinya QLD 4575

1300 198 413

watertech.com.au