

Q100 A.R.I FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.500	Light Green
2	0.500	1.000	Green
3	1.000	1.500	Light Blue
4	1.500	2.000	Blue
5	2.000	2.500	Dark Blue
6	2.500	3.000	Dark Blue
7	3.000	3.500	Dark Blue
8	3.500	4.000	Dark Blue
9	4.000	4.500	Dark Blue
10	4.500	5.000	Dark Blue
11	5.000	5.500	Dark Blue
12	5.500	6.000	Dark Blue

LEGEND:
 LEVELS DATUM IS AHD.
 EXISTING SITE LEVELS AND DETAILS BASED ON ALS SURVEY INFORMATION

--- 30.00 --- - FLOOD LEVEL CONTOUR (MAJOR)
 0.5m INTERVALS

--- 30.20 --- - FLOOD LEVEL CONTOUR (MINOR)
 0.1m INTERVALS

Q100 A.R.I FLOOD LEVELS & DEPTHS - PRE DEVELOPMENT
 1:1500 SCALE

FOR INFORMATION ONLY

15m 0 15 30 45 60 75 90 105 120 135 150m
 1:1500 SCALE AT A1 SHEET SIZE

AMENDMENTS	DATE	ISSUE	AMENDMENTS	DATE	ISSUE

CLIENT
CADENCE
 SUITE 2.02 785 TOORAK ROAD
 HAWTHORN EAST VIC 3123
 P: 03 9038 8686 F: 03 9888 1118

PROJECT
PROPOSED DEVELOPMENT
 128 ANDREWS ROAD
 PENRITH, NSW



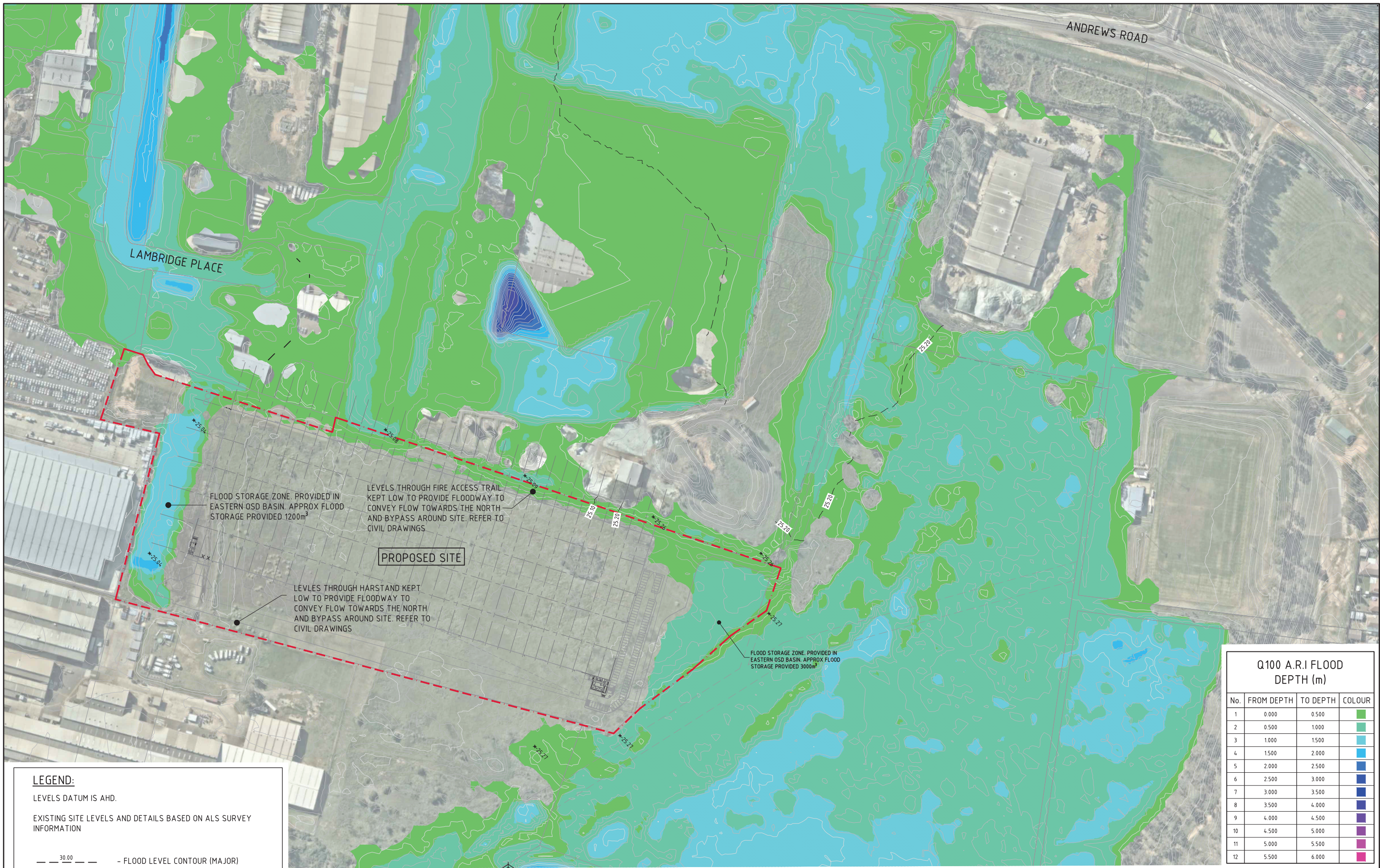
Costin Roe Consulting Pty Ltd.
Consulting Engineers A25 00 00 448
 Level 1, 8 Windmill Street
 Walsh Bay, Sydney NSW 2000
 Tel: (02) 9251-7899 Fax: (02) 9241-3731
 email: mail@costinroe.com.au ©

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PRECISION | COMMUNICATION | ACCOUNTABILITY

DRAWING TITLE
Q100 A.R.I FLOOD LEVELS & DEPTHS PRE DEVELOPMENT

DRAWING No **C013620.00-F05** ISSUE **B**



Q100 A.R.I FLOOD DEPTH (m)

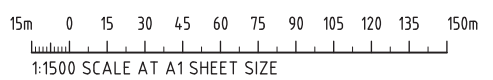
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.500	Light Green
2	0.500	1.000	Medium Green
3	1.000	1.500	Light Blue
4	1.500	2.000	Blue
5	2.000	2.500	Dark Blue
6	2.500	3.000	Very Dark Blue
7	3.000	3.500	Dark Purple
8	3.500	4.000	Medium Purple
9	4.000	4.500	Dark Purple
10	4.500	5.000	Very Dark Purple
11	5.000	5.500	Black
12	5.500	6.000	Red

LEGEND:
 LEVELS DATUM IS AHD.
 EXISTING SITE LEVELS AND DETAILS BASED ON ALS SURVEY INFORMATION

--- 30.00 --- - FLOOD LEVEL CONTOUR (MAJOR) 0.5m INTERVALS
 --- 30.20 --- - FLOOD LEVEL CONTOUR (MINOR) 0.1m INTERVALS

Q100 A.R.I FLOOD LEVELS & DEPTHS - POST DEVELOPMENT
 1:1500 SCALE

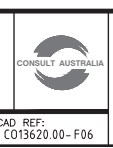
FOR INFORMATION ONLY



AMENDMENTS	DATE	ISSUE	AMENDMENTS	DATE	ISSUE
DRAWING SCALE ADJUSTED	31.01.19	B			
ISSUED FOR INFORMATION	30.10.18	A			

CLIENT
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PROJECT
PROPOSED DEVELOPMENT
 128 ANDREWS ROAD
 PENRITH, NSW



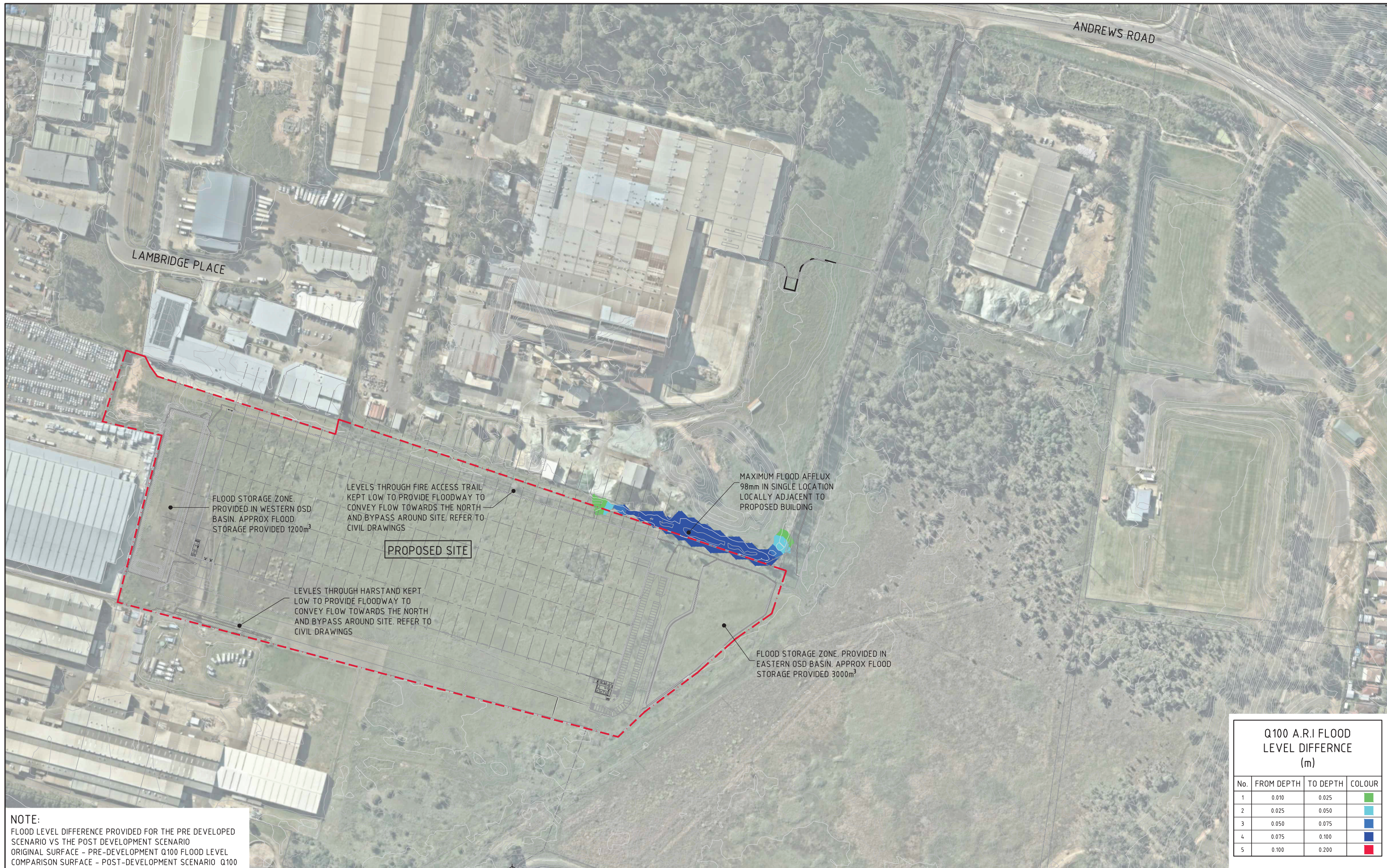
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DRAWING TITLE
Q100 A.R.I FLOOD LEVELS & DEPTHS POST DEVELOPMENT

DRAWING No **C013620.00-F06** ISSUE **B**



FLOOD STORAGE ZONE PROVIDED IN WESTERN OSD BASIN. APPROX FLOOD STORAGE PROVIDED 1200m³

LEVELS THROUGH FIRE ACCESS TRAIL KEPT LOW TO PROVIDE FLOODWAY TO CONVEY FLOW TOWARDS THE NORTH AND BYPASS AROUND SITE. REFER TO CIVIL DRAWINGS

LEVELS THROUGH HARSTAND KEPT LOW TO PROVIDE FLOODWAY TO CONVEY FLOW TOWARDS THE NORTH AND BYPASS AROUND SITE. REFER TO CIVIL DRAWINGS

MAXIMUM FLOOD AFFLUX 98mm IN SINGLE LOCATION LOCALLY ADJACENT TO PROPOSED BUILDING

FLOOD STORAGE ZONE PROVIDED IN EASTERN OSD BASIN. APPROX FLOOD STORAGE PROVIDED 3000m³

NOTE:
FLOOD LEVEL DIFFERENCE PROVIDED FOR THE PRE DEVELOPED SCENARIO VS THE POST DEVELOPMENT SCENARIO
ORIGINAL SURFACE - PRE-DEVELOPMENT Q100 FLOOD LEVEL
COMPARISON SURFACE - POST-DEVELOPMENT SCENARIO Q100 FLOOD LEVEL

Q100 A.R.I FLOOD LEVEL DIFFERENCE (m)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.010	0.025	Green
2	0.025	0.050	Light Blue
3	0.050	0.075	Blue
4	0.075	0.100	Dark Blue
5	0.100	0.200	Red

Q100 A.R.I FLOOD AFFLUX - POST DEVELOPMENT
1:1500 SCALE

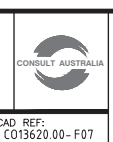
FOR INFORMATION ONLY



DRAWING SCALE	REVISITED	DATE	ISSUE	AMENDMENTS	DATE	ISSUE
31.01.19	B					
ISSUED FOR INFORMATION	A	30.10.18				

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PENRITH, NSW



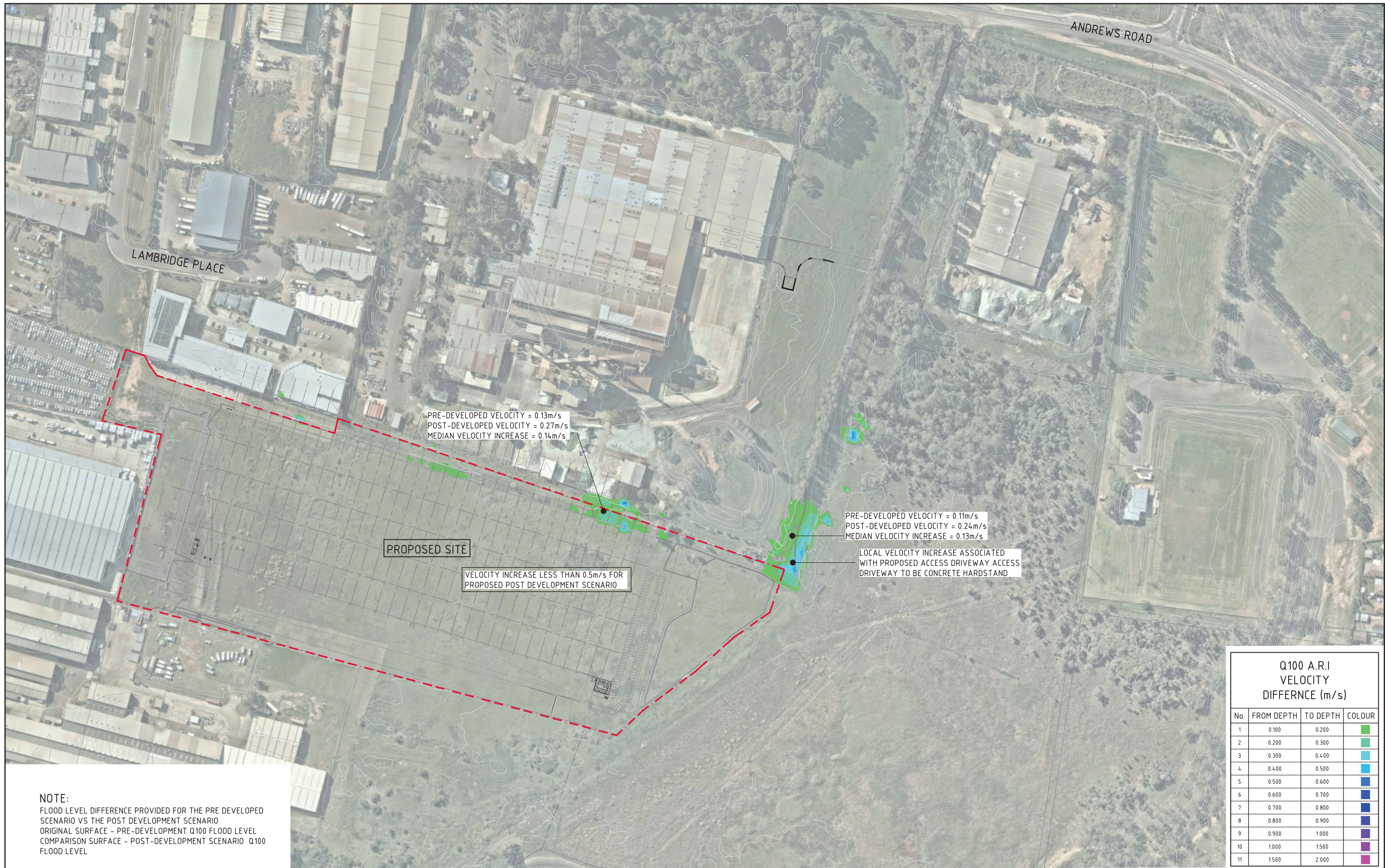
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DRAWING TITLE
Q100 A.R.I FLOOD AFFLUX POST DEVELOPMENT

DRAWING No **C013620.00-F07** ISSUE **B**



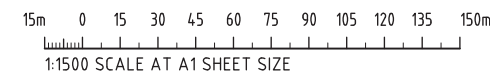
Q100 A.R.I VELOCITY DIFFERENCE (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.100	0.200	Green
2	0.200	0.300	Light Green
3	0.300	0.400	Yellow-Green
4	0.400	0.500	Yellow
5	0.500	0.600	Orange
6	0.600	0.700	Red-Orange
7	0.700	0.800	Red
8	0.800	0.900	Dark Red
9	0.900	1.000	Brown
10	1.000	1.500	Dark Purple
11	1.500	2.000	Purple

NOTE:
FLOOD LEVEL DIFFERENCE PROVIDED FOR THE PRE DEVELOPED SCENARIO VS THE POST DEVELOPMENT SCENARIO
ORIGINAL SURFACE - PRE-DEVELOPMENT Q100 FLOOD LEVEL
COMPARISON SURFACE - POST-DEVELOPMENT SCENARIO Q100 FLOOD LEVEL

Q100 A.R.I VELOCITY AFFLUX - POST DEVELOPMENT
1:1500 SCALE

FOR INFORMATION ONLY



AMENDMENTS	DATE	ISSUE
DRAWING SCALE ADJUSTED	31.01.19	B
ISSUED FOR INFORMATION	30.10.18	A

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DRAWING TITLE
Q100 A.R.I VELOCITY AFFLUX POST DEVELOPMENT

DRAWING No **C013620.00-F08**

ISSUE **B**

Appendix G

Council Correspondence

1 August 2018

Mark

I can confirm our discussions detailed in your email. In addition to flood levels/ velocities impact assessment, flood evacuation is also needed to be addressed. This is depending on the type/ extent of the proposed development and the location of the site. You may need to contact the SES (Contact: Peter Cinque, Email: peter.cinque@swd.ses.nsw.gov.au) regarding flood evacuation.

Regards

Myl Senthilvasan
Engineering Coordinator - Policy and Projects

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From: Mark Wilson [<mailto:Mark@costinroe.com.au>]
Sent: Wednesday, 1 August 2018 11:48 AM
To: Mylvaganam Senthilvasan <myl.senthilvasan@penrith.city>
Cc: Mitchell Cross <Mitchell.Cross@costinroe.com.au>; Mitchell Kent <MKent@cadenceproperty.com.au>; Chris Wilson (cwilson@willowtp.com.au) <cwilson@willowtp.com.au>
Subject: RE: 13620.00 Flood Model - Andrews Road Penrith

Myl,
Thanks for your time this morning.

Confirming our discussion as follows:

- Councils flood modellers (Advisian) are currently re-running the numerical models to address some hydraulic requirements in and around Penrith Lakes area.
- This final model would be ready in approximately two months. This would then need to be reviewed and confirmed by council prior to a final report being produced and then being able to be used by external parties.
- The flood level and conveyance in and around the Andrews road development site are unlikely to be impacted by the adjustments currently being made to the model by Advisian.
- We understand councils preference for a site specific flood study to include boundary conditions taken from the revised model discussed above.

- Further to above, Council however understands that timing of the updated study is unlikely to fit with proposed development application timeframe and that an alternate set of boundary conditions would need to be agreed with council to use in the site specific model suitable for a development application. These would need to include such items as:
 - Extent of study area including confirmation of distance upstream and downstream of the study area.
 - Upstream/ in-flow conditions.
 - Downstream boundary level for 5% AEP, 1% AEP, 0.5% AEP and PMF.

Post our discussion I have confirmed with our client that current timeframes for the application will be for a circa September submission, hence the site specific flood assessment will need to be undertaken prior to the updated Advisian modelling. This being the case we will need to get the ball rolling on confirmation of the above parameters and will correspond with you further on this.

Again thanks for your time and if you have anything further to include to the above please advise, thanks Mark.

Best Regards,

Mark Wilson
Director



PRECISION | COMMUNICATION | ACCOUNTABILITY

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Offices in Sydney, Adelaide, Brisbane, Melbourne, Newcastle and Wollongong.

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From: Mylvaganam Senthilvasan <myl.senthilvasan@penrith.city>
Sent: Wednesday, 18 July 2018 1:45 PM
To: Mark Wilson <Mark@costinroe.com.au>
Cc: Mitchell Cross <Mitchell.Cross@costinroe.com.au>
Subject: RE: 13620.00 Flood Model - Andrews Road Penrith

Hi Mark

I am afraid to say that the Nepean flood model is not yet available, we are currently fixing an error in the modelling, would take a minimum of two months to complete and produce the final study documents.

Then we need to report to Council, so probably the model will be made available to public later this year.

Regards

Myl Senthilvasan

Engineering Coordinator - Policy and Projects

E myl.senthilvasan@penrith.city

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From: Mark Wilson [<mailto:Mark@costinroe.com.au>]
Sent: Monday, 16 July 2018 3:45 PM
To: Mylvaganam Senthilvasan <myl.senthilvasan@penrith.city>
Cc: Mitchell Cross <Mitchell.Cross@costinroe.com.au>
Subject: 13620.00 Flood Model - Andrews Road Penrith
Importance: High

Myl,

We spoke briefly a month or so back about flood modelling around Andrews Road, Penrith and the Nepean River Flood study.

I was wondering if an electronic model is available for the Nepean River study (similar to what was provided to us for South Creek) to assist in our local model for the Andrews Road project, and if so how we would go about obtaining it.

Thanking you in advance for your help, Mark.

Best Regards,

Mark Wilson
Director

Costin Roe Consulting Pty Ltd
ABN 50 003 696 446