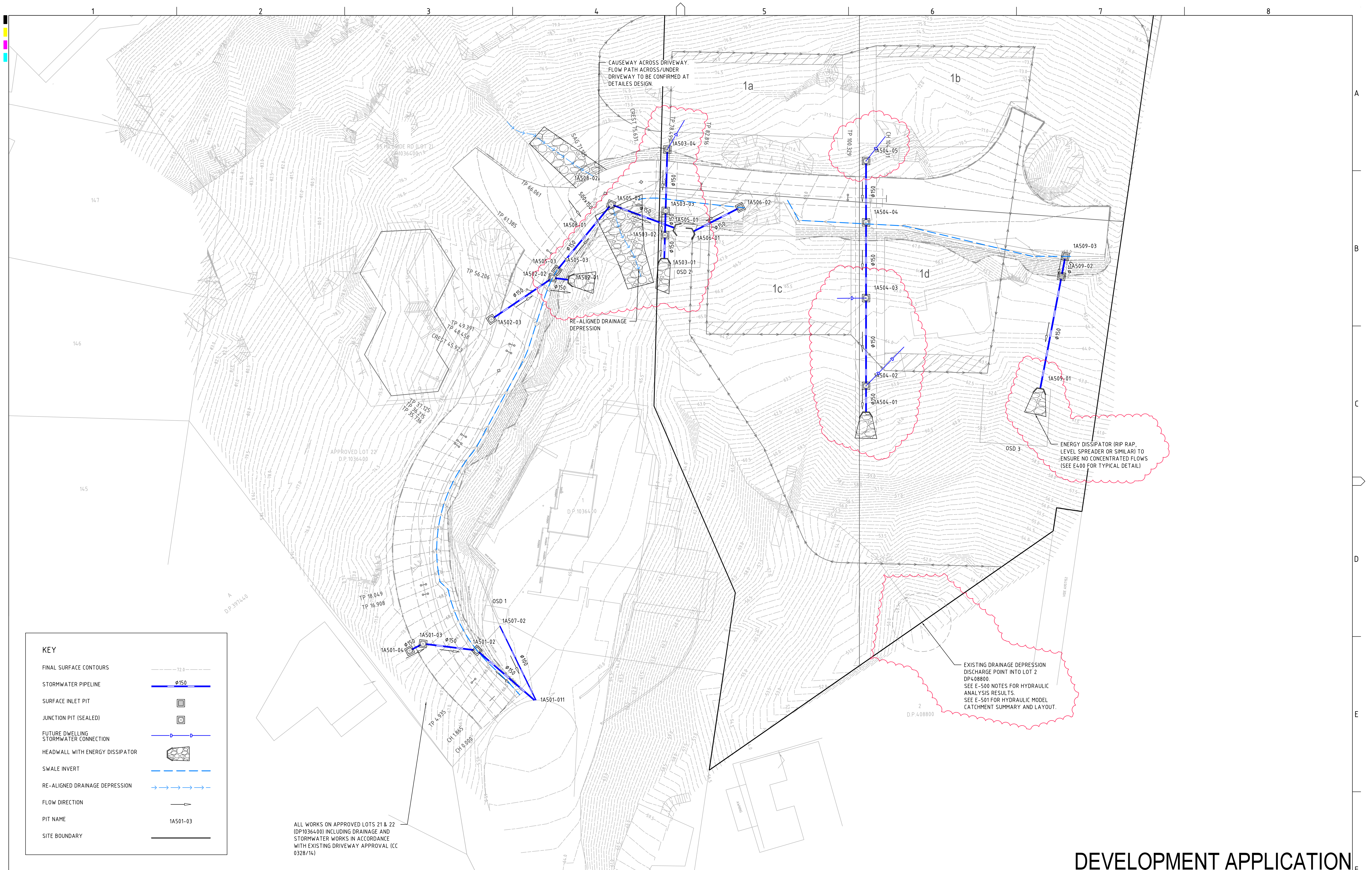


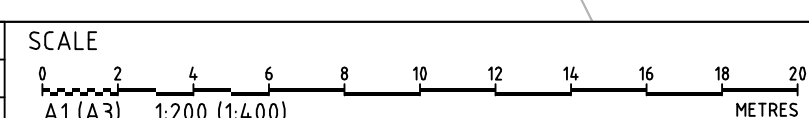
ATTACHMENT C – STORMWATER MANAGEMENT PLANS (MARTENS & ASSOCIATES, 2016)



DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	SIGNED	CHECKED	APPROVED
D	FOR DA - ADDRESS COUNCIL LETTER DATED 24/10/2016	23/11/2016	BL	BL	TH	GT
C	FOR DA SUBMISSION	07/07/2016	RK	TH	TH	GT
B	FOR CLIENT REVIEW	03/06/2016	RK	TH	TH	GT
A	FOR CLIENT REVIEW	04/03/2016	RK	TH	TH	GT

ALL WORKS ON APPROVED LOTS 21 & 22
(DP1036400) INCLUDING DRAINAGE AND
STORMWATER WORKS IN ACCORDANCE
WITH EXISTING DRIVEWAY APPROVAL (CC
0328/14)



GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GT

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CLIENT

CARISTE PTY LTD

PROJECT NAME/PLANSET TITLE

SUBDIVISION WORKS

SUBDIVISION, DRIVEWAY AND DRAINAGE WORKS

62 HILLSIDE ROAD, NEWPORT NSW
LOT 1 DP4 08800



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& Associates Pty Ltd

Consulting Engineers
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Email: mail@martens.com.au Internet: www.martens.com.au

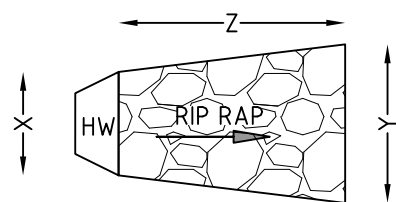
DRAWING TITLE				
DRAINAGE PLAN (LAYOUT 01)				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203617	PS02	R04	PS02-E200	D

DRAWING ID: P1203617-PS02-R04-E200

[illegible]

PRINTED: 23.11.2016 - USER: BLING

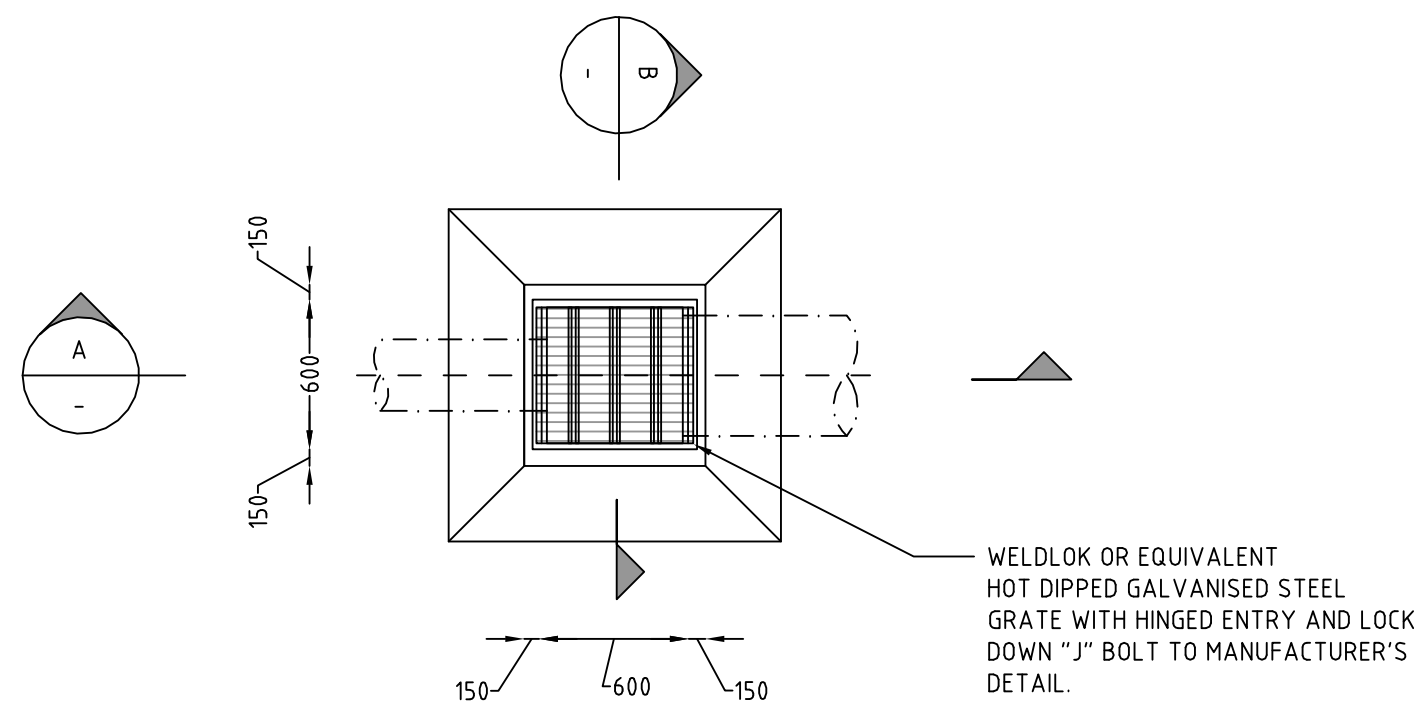
A1 / A3 | LANDSCAPE (A1 C x02 0 01)



RIP RAP SIZING	Q10 (L/s)	VELOCITY (m/s)	DIA (mm)	X (mm)	Y (mm)	Z (mm)	d50 (mm)	RANGE (mm)	MINIMUM RIP RAP ROCK THICKNESS (mm)
TYPICAL HW	34	1.93	150	CULVERT APRON WIDTH + TBC	TBC	TBC	TBC	TBC	TBC

TYPICAL RIP RAP SIZING

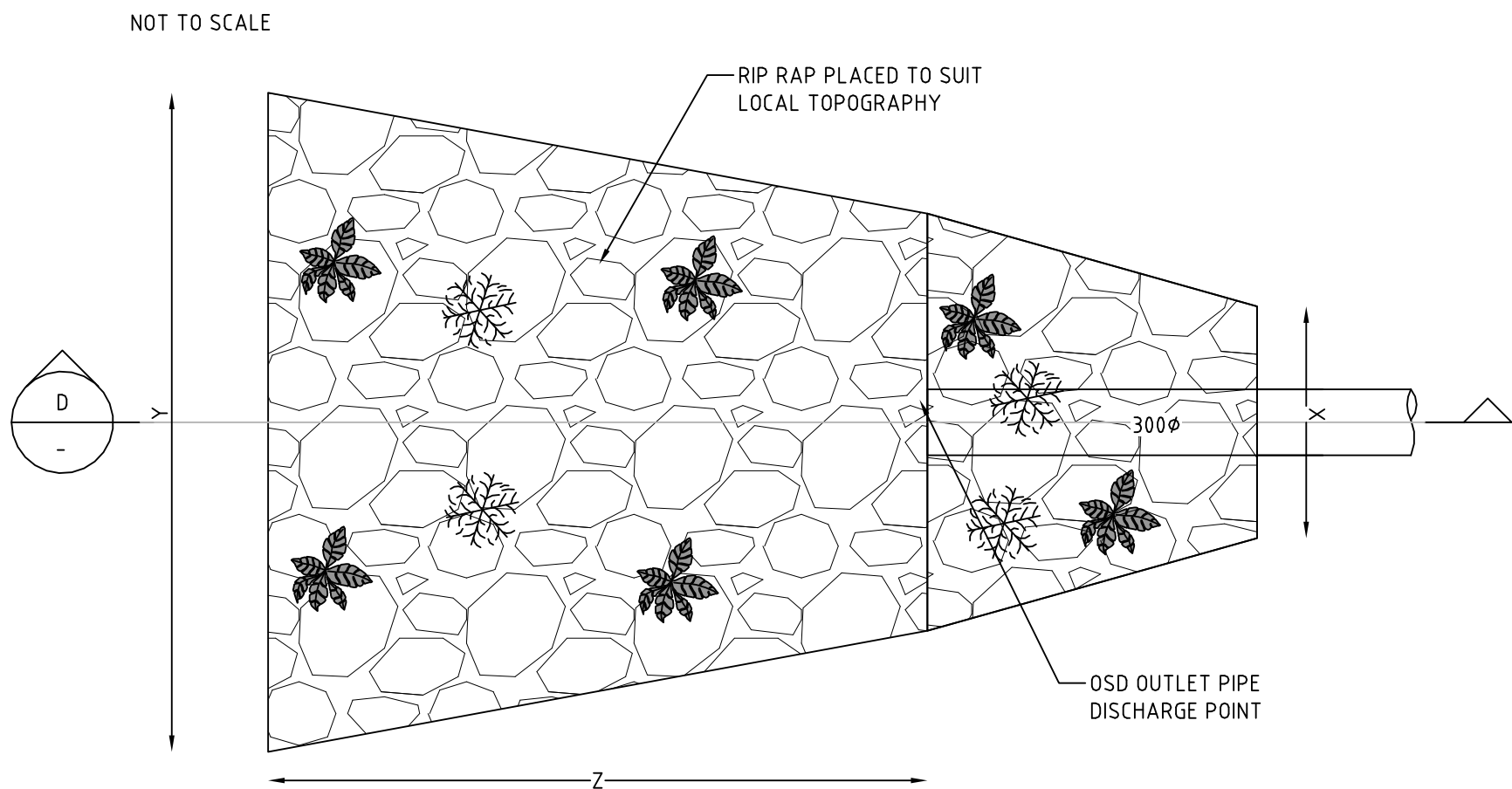
NOTES:
RIP RAP GEOMETRY TO BE CONFIRMED AT DETAIL DESIGN STAGE
PIPE FLOW RATE BASED ON INDICATIVE 150MM PIPE AT 5% GRADE.
FLOW RATE AND VELOCITY TBC AT DETAIL DESIGN STAGE.



SURFACE INLET PIT

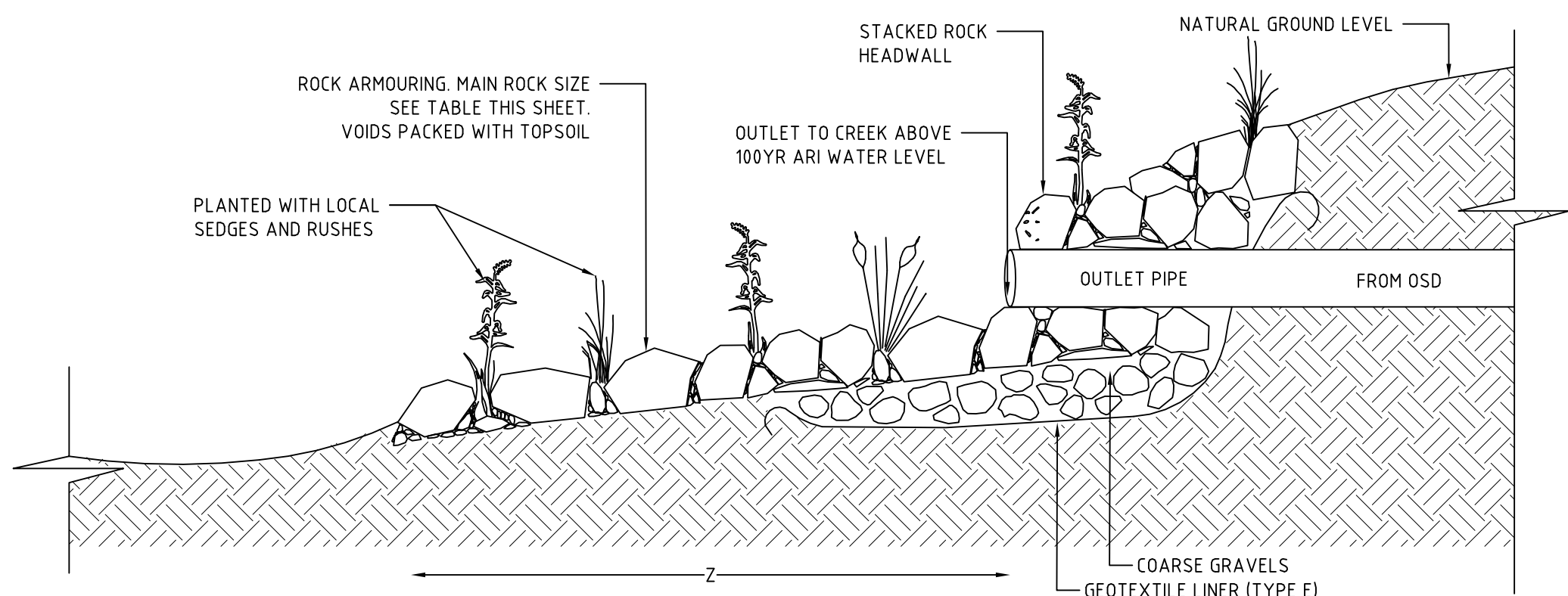
NOT TO SCALE

NOTES:
ALL PITS TO BE BENCHED AND STREAMLINED.
PROVIDE SL72 REINFORCEMENT AND GALVANISED
STEP IRONS IN ALL PITS OVER 1.2m DEEP AS MEASURED
FROM THE TOP OF GRATES TO THE INVERT OF THE PIT.



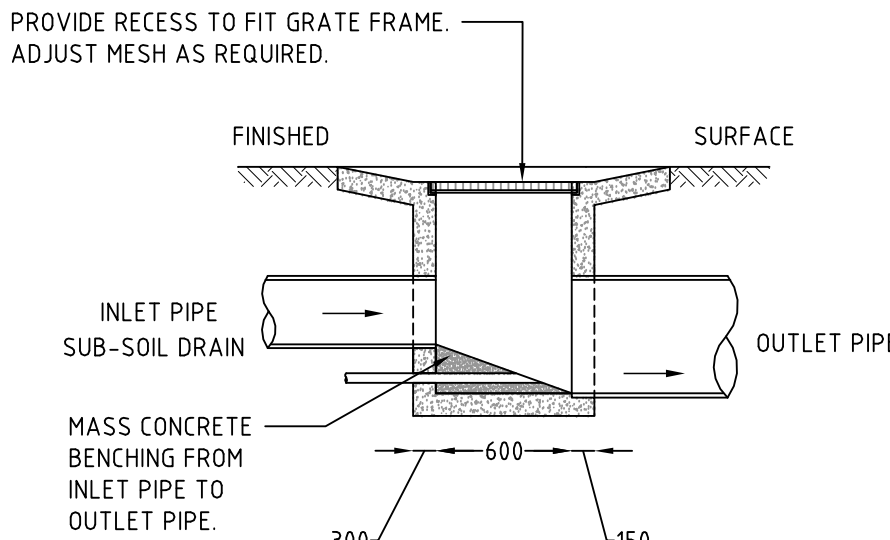
TYPICAL HEADWALL OUTLET AND RIP RAP PLAN

NOT TO SCALE



TYPICAL HEADWALL OUTLET AND RIP RAP SECTION D

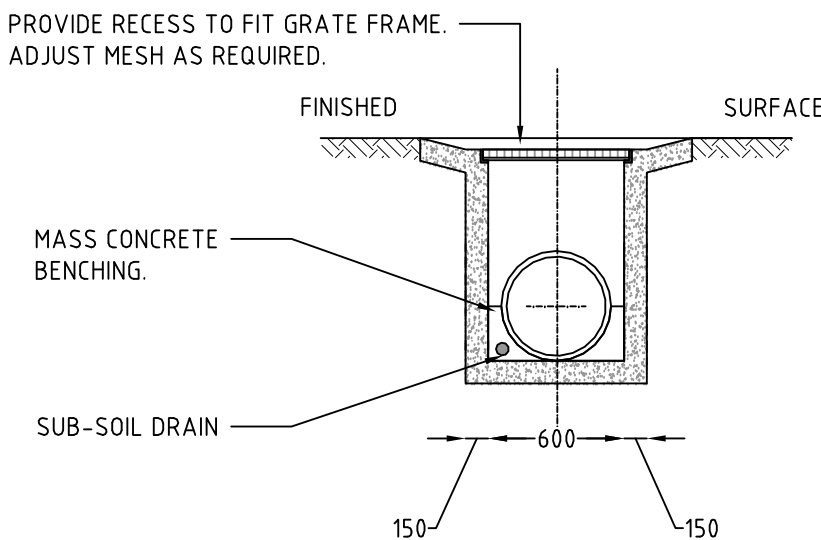
NOT TO SCALE



SECTION A

GRATED SURFACE INLET PIT (600 x 600 GSIP)

NOT TO SCALE



SECTION B

600 x 600 GSIP

NOT TO SCALE

GENERAL NOTES:
NOT FOR CONSTRUCTION - TYPICAL DETAILS ONLY.
FINAL ENERGY DISSIPATOR/RIP RAP SIZING AND CHARACTERISTICS TO BE PROVIDED AT DETAILED DESIGN STAGE.
1. COMPACT THE SUBGRADE FILL TO THE DENSITY OF THE SURROUNDING UNDISTURBED MATERIAL.
2. PREPARE A SMOOTH, EVEN FOUNDATION FOR THE STRUCTURE THAT WILL ENSURE THAT THE CLASS E GEOTEXTILE DOES NOT SUSTAIN SERIOUS DAMAGE WHEN COVERED WITH ROCK.
3. SHOULD ANY MINOR DAMAGE TO THE GEOTEXTILE OCCUR, REPAIR IT BEFORE SPREADING ANY AGGREGATE. FOR REPAIRS, PATCH ONE PIECE OF FABRIC OVER THE DAMAGE, WITH ALL JOINTS AND PATCHES OVERLAPPING MINIMUM 300 mm.
4. RIP-RAP MEAN SIZE (d50) FROM TABLE PROVIDE AS BLENDED RANGE OF DIAMETERS BEDDED ON 50mm LAYER OF 10-20mm AGGREGATE OVER CLASS E GEOTEXTILE.
5. RIP-RAP KEYED INTO BANKS & BED MINIMUM 300mm.

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD	SCALE
A	FOR DA - ADDRESS COUNCIL LETTER DATED 24/10/2016	23/11/2016	BL	BL	GT	GT	

GRID	DATUM	PROJECT MANAGER	CLIENT
		GT	CARISTE PTY LTD
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All measurements in millimetres unless otherwise specified.		SUBDIVISION, DRIVEWAY AND DRAINAGE WORKS	
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(C) Copyright Martens & Associates Pty Ltd		LOT 1 DP408800	

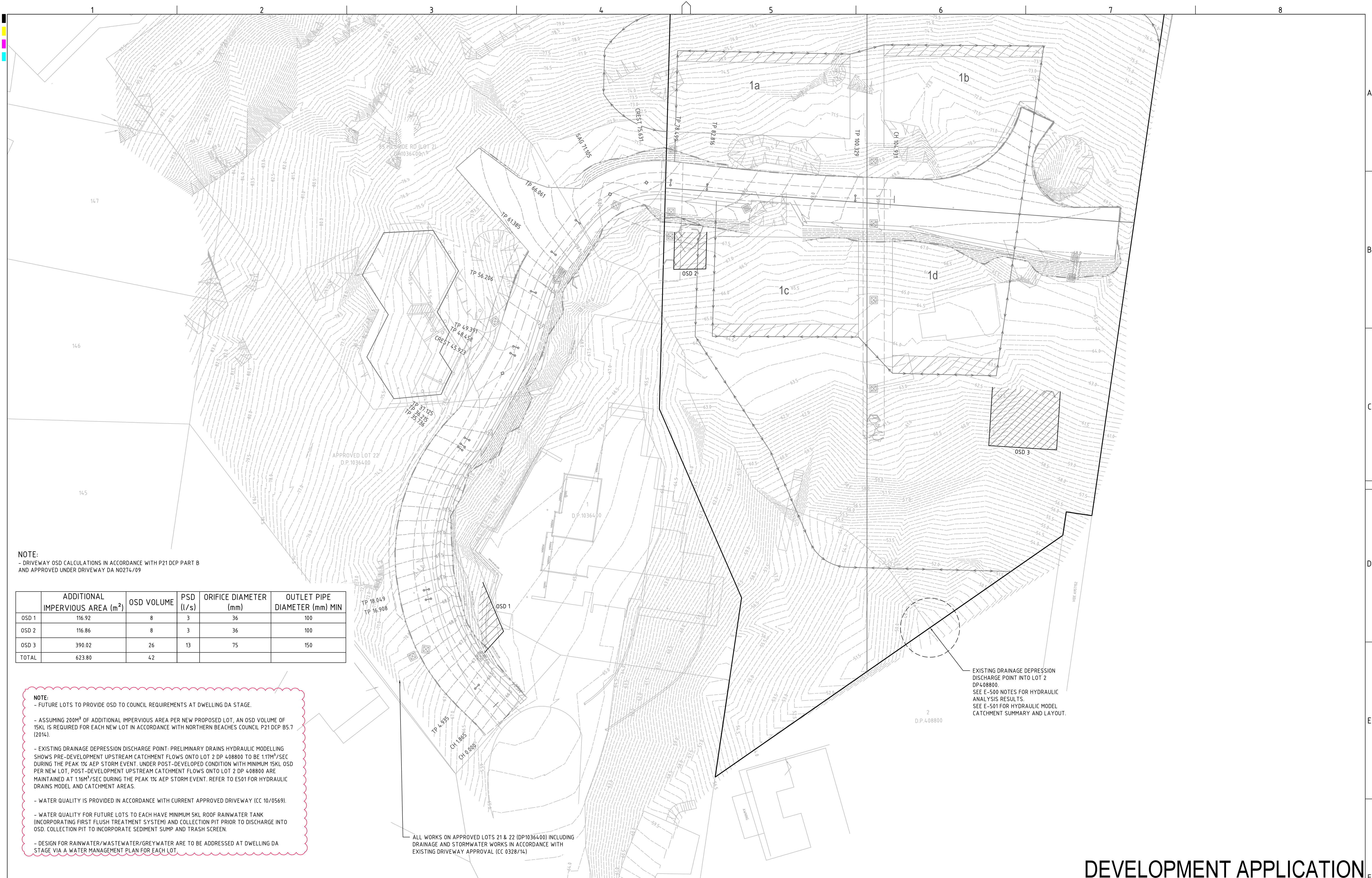


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Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE				
ENERGY DISSIPATOR/RIP RAP TYPICAL DETAILS				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203617	PS02	R04	PS02-E400	A

DEVELOPMENT APPLICATION



NOTE:
- DRIVEWAY OSD CALCULATIONS IN ACCORDANCE WITH P21DCP PART B
AND APPROVED UNDER DRIVEWAY DA N0274/09

	ADDITIONAL IMPERVIOUS AREA (m ²)	OSD VOLUME	PSD (l/s)	ORIFICE DIAMETER (mm)	OUTLET PIPE DIAMETER (mm) MIN
OSD 1	116.92	8	3	36	100
OSD 2	116.86	8	3	36	100
OSD 3	390.02	26	13	75	150
TOTAL	623.80	42			

NOTE:
- FUTURE LOTS TO PROVIDE OSD TO COUNCIL REQUIREMENTS AT DWELLING DA STAGE.

- ASSUMING 200M² OF ADDITIONAL IMPERVIOUS AREA PER NEW PROPOSED LOT, AN OSD VOLUME OF 15KL IS REQUIRED FOR EACH NEW LOT IN ACCORDANCE WITH NORTHERN BEACHES COUNCIL P21DCP B5.7 (2014).

- EXISTING DRAINAGE DEPRESSION DISCHARGE POINT: PRELIMINARY DRAINS HYDRAULIC MODELLING SHOWS PRE-DEVELOPMENT UPSTREAM CATCHMENT FLOWS ONTO LOT 2 DP 408800 TO BE 1.17M³/SEC DURING THE PEAK 1% AEP STORM EVENT. UNDER POST-DEVELOPED CONDITION WITH MINIMUM 15KL OSD PER NEW LOT, POST-DEVELOPMENT UPSTREAM CATCHMENT FLOWS ONTO LOT 2 DP 408800 ARE MAINTAINED AT 1.16M³/SEC DURING THE PEAK 1% AEP STORM EVENT. REFER TO E501 FOR HYDRAULIC DRAINS MODEL AND CATCHMENT AREAS.

- WATER QUALITY IS PROVIDED IN ACCORDANCE WITH CURRENT APPROVED DRIVEWAY (CC 10/0569).

- WATER QUALITY FOR FUTURE LOTS TO EACH HAVE MINIMUM 5KL ROOF RAINWATER TANK (INCORPORATING FIRST FLUSH TREATMENT SYSTEM) AND COLLECTION PIT PRIOR TO DISCHARGE INTO OSD. COLLECTION PIT TO INCORPORATE SEDIMENT SUMP AND TRASH SCREEN.

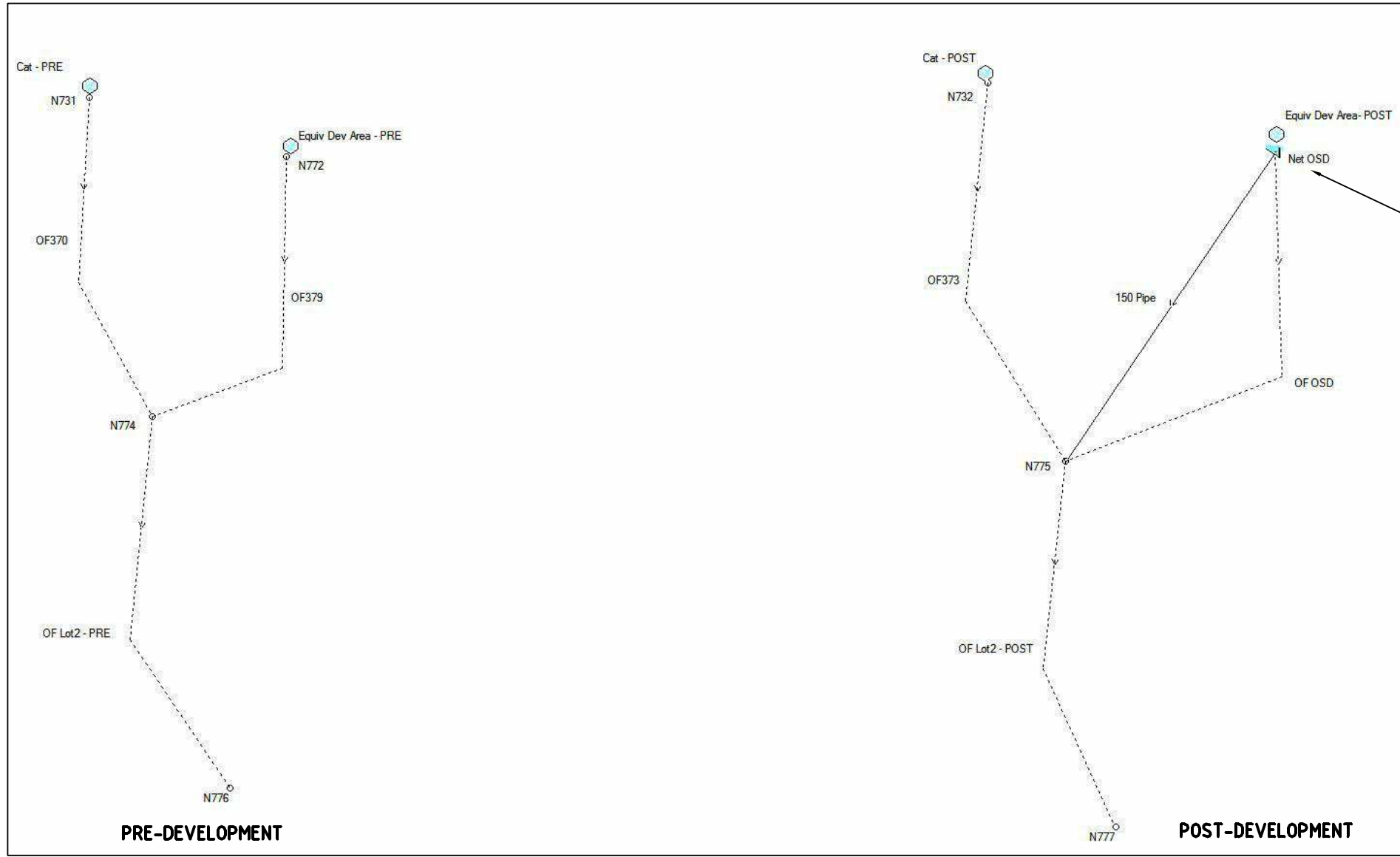
- DESIGN FOR RAINWATER/WASTEWATER/GREYWATER ARE TO BE ADDRESSED AT DWELLING DA STAGE VIA A WATER MANAGEMENT PLAN FOR EACH LOT.

ALL WORKS ON APPROVED LOTS 21 & 22 (DP1036400) INCLUDING DRAINAGE AND STORMWATER WORKS IN ACCORDANCE WITH EXISTING DRIVEWAY APPROVAL (CC 0328/14)

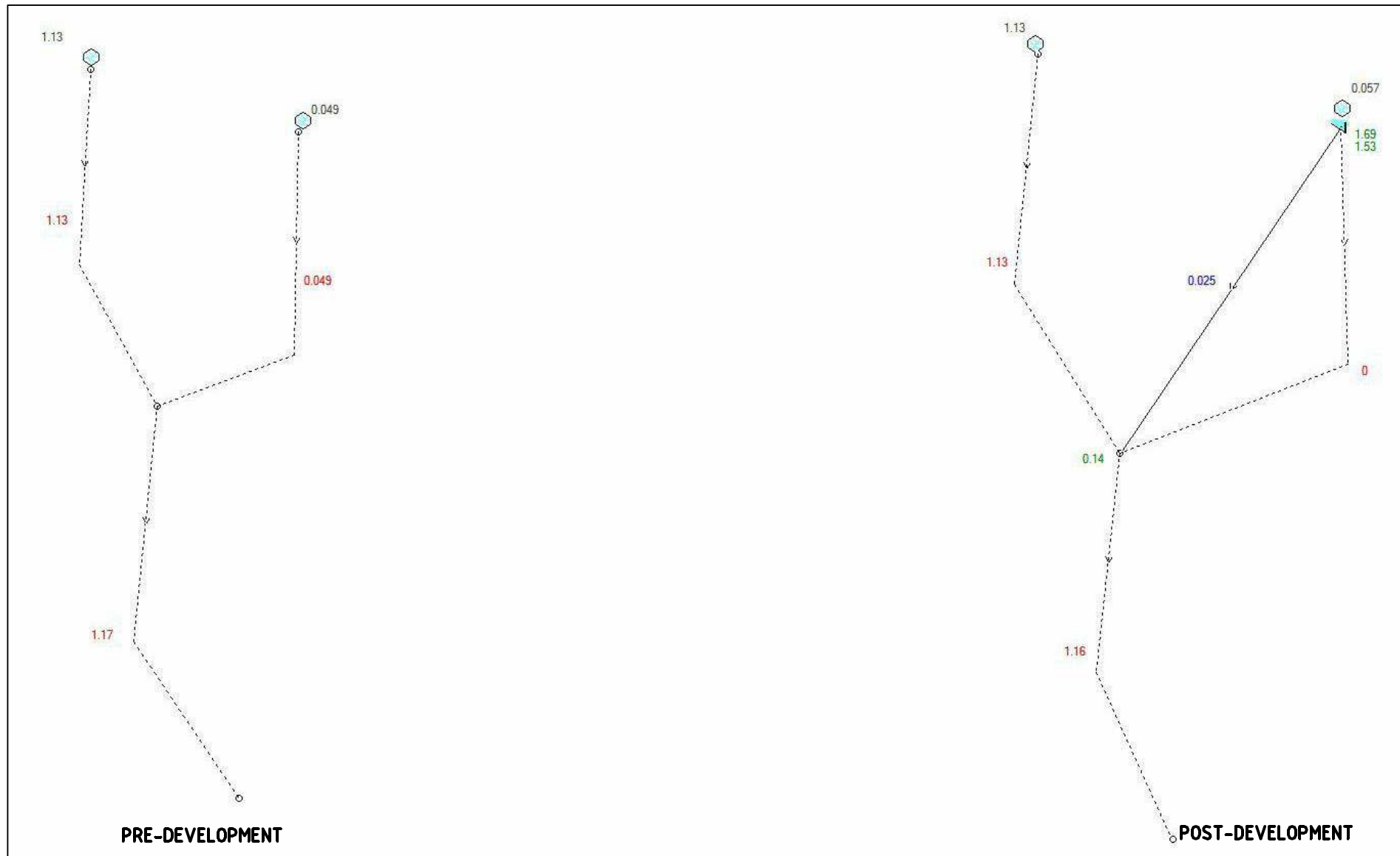
EXISTING DRAINAGE DEPRESSION
DISCHARGE POINT INTO LOT 2
DP408800.
SEE E-500 NOTES FOR HYDRAULIC
ANALYSIS RESULTS.
SEE E-501 FOR HYDRAULIC MODEL
CATCHMENT SUMMARY AND LAYOUT.

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD	SCALE	GRID	DATUM	PROJECT MANAGER	CLIENT	 Consulting Engineers Environment Water Geotechnical Civil Suite 201, 20 George St. Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: www.martens.com.au	DRAWING TITLE					
D	FOR DA - ADDRESS COUNCIL LETTER DATED 24/10/2016	23/11/2016	BL	BL	GT	GT		MGA	mAHD	GT	CARISTE PTY LTD		ON-SITE DETENTION PLAN (LAYOUT 01)					
C	FOR DA SUBMISSION	07/07/2016	RK	TH	TH	GT					PROJECT NAME/PLANSET TITLE		 Suite 201, 20 George St. Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: www.martens.com.au	PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
B	FOR CLIENT REVIEW	03/06/2016	RK	TH	TH	GT				SUBDIVISION WORKS	P1203617			PS02	R04	PS02-E500	D	
A	FOR CLIENT REVIEW	04/03/2016	RK	TH	TH	GT				SUBDIVISION, DRIVEWAY AND DRAINAGE WORKS								
										62 HILLSIDE ROAD, NEWPORT NSW LOT 1 DP408800								
							DISCLAIMER & COPYRIGHT This plan must not be used for construction unless signed as approved by principal certifying authority. All measurements in millimetres unless otherwise specified. This drawing must not be reproduced in whole or part without prior written consent of Martens & Associates Pty Ltd. (C) Copyright Martens & Associates Pty Ltd											



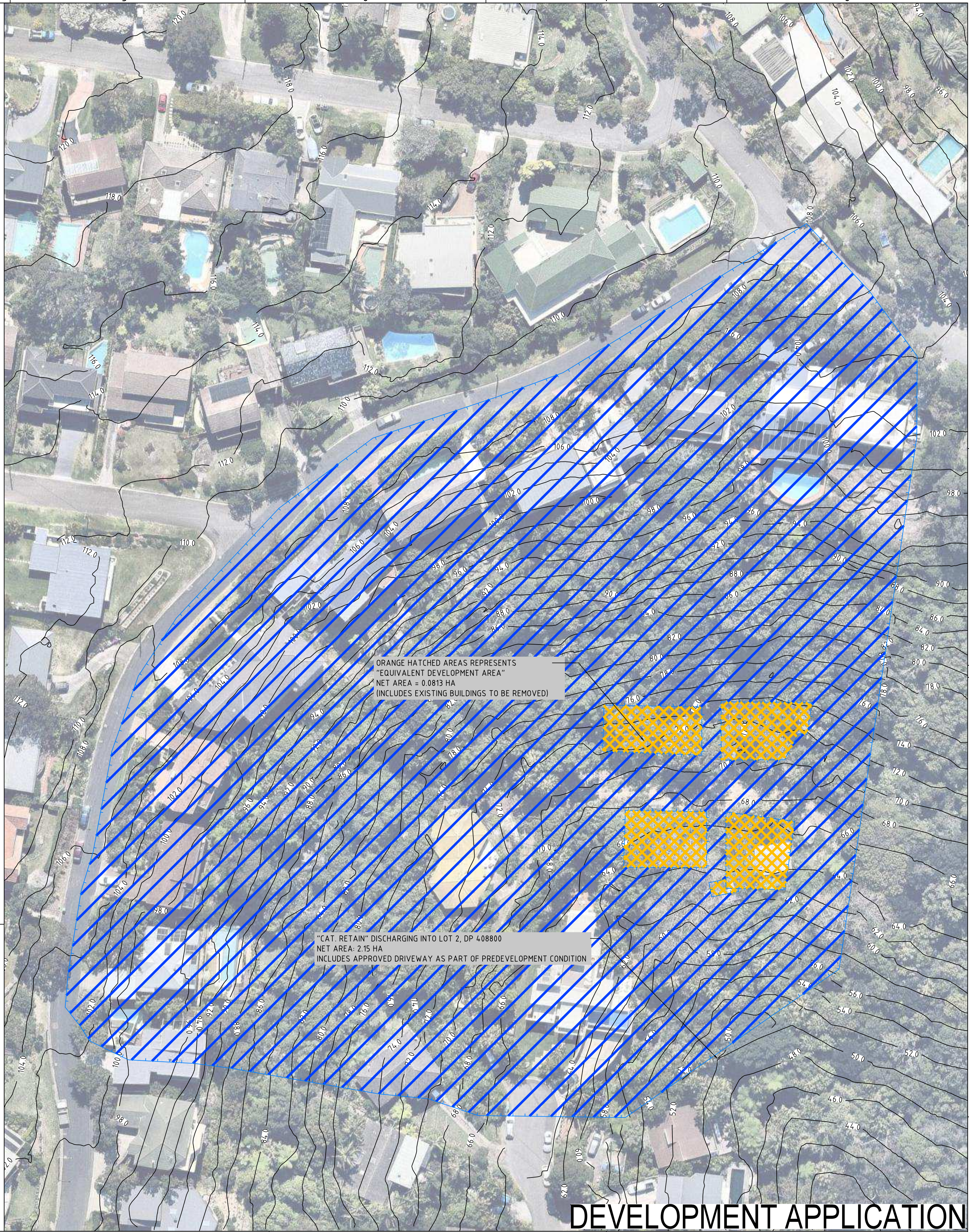
DRAINS MODEL LAYOUT



1% AEP DRAINS MODEL RESULT

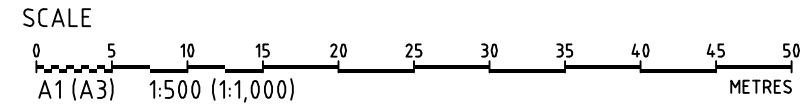
PROPOSED CATCHMENTS						
KEY	DRAINS CAT.	DESCRIPTION	AREA (ha)	% PAVED	Tc PAVED (min)	Tc GRASS (min)
	CAT-RETAIN	RETAINED UPSLOPE CATCHMENT	2.15	30%	11.25	8.75
	EQUIV DEV AREA-POST	DEVELOPMENT FOOTPRINT - POST	0.08	98%	1.25	5.5
		TOTAL AREA	2.23	= 100% OF TOTAL AREA		
		TOTAL IMPERVIOUS AREA	0.73	= 33% OF TOTAL AREA		
		TOTAL PERVIOUS AREA	1.51	= 67% OF TOTAL AREA		

EXISTING CATCHMENTS						
KEY	DRAINS CAT.	DESCRIPTION	AREA (ha)	% PAVED	Tc PAVED (min)	Tc GRASS (min)
	CAT-RETAIN	RETAINED UPSLOPE CATCHMENT	2.15	30%	11.25	8.75
	EQUIV DEV AREA-PRE	DEVELOPMENT FOOTPRINT - EXISTING	0.08	8%	1.25	5.5
		TOTAL AREA	2.23	= 100% OF TOTAL AREA		
		TOTAL IMPERVIOUS AREA	0.66	= 29% OF TOTAL AREA		
		TOTAL PERVIOUS AREA	1.58	= 71% OF TOTAL AREA		



DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	FOR DA - ADDRESS COUNCIL LETTER DATED 24/10/2016	23/11/2016	BL	BL	GT	GT



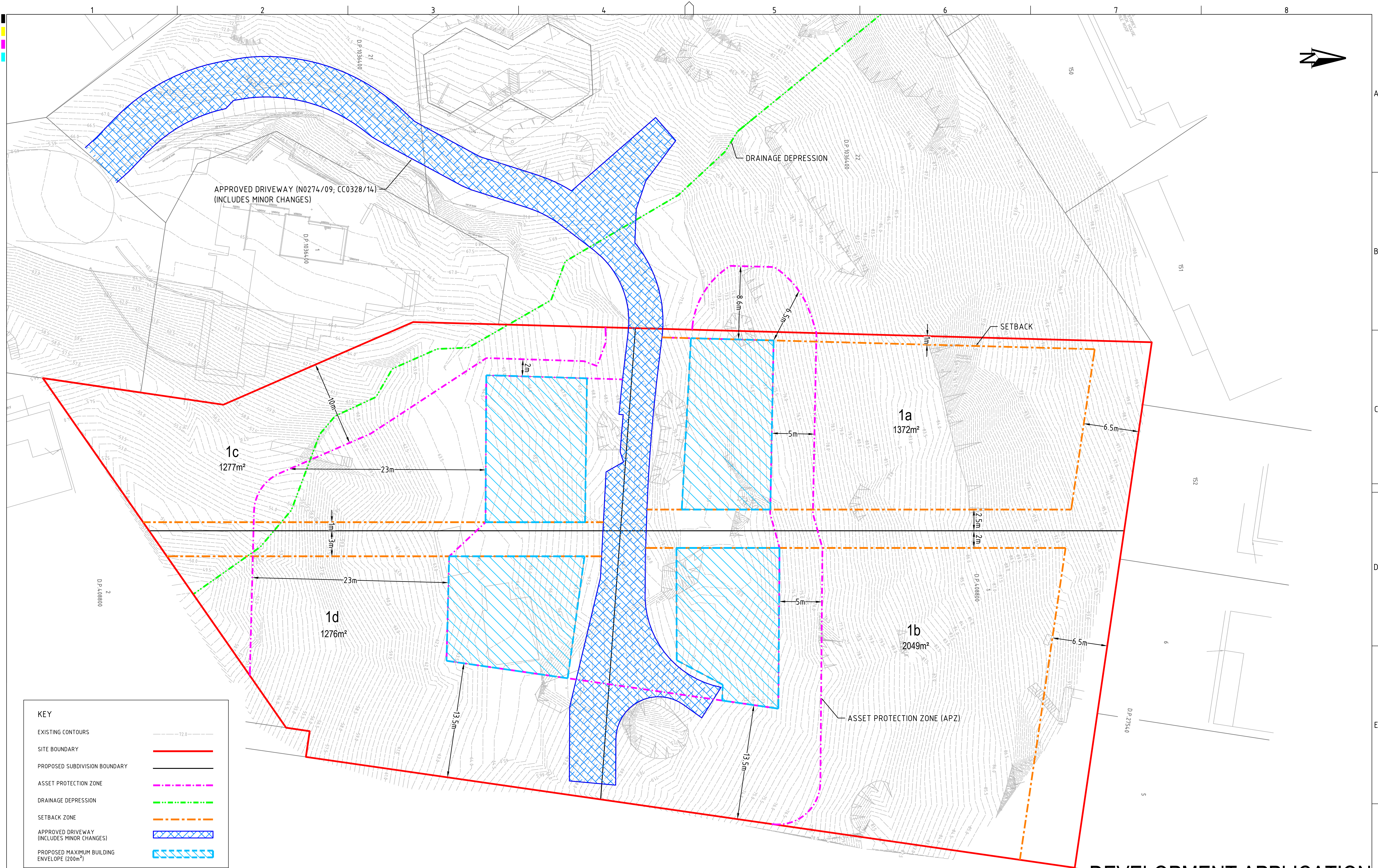
GRID	DATUM	PROJECT MANAGER	CLIENT
		GT	
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LOT 1 DP408800	

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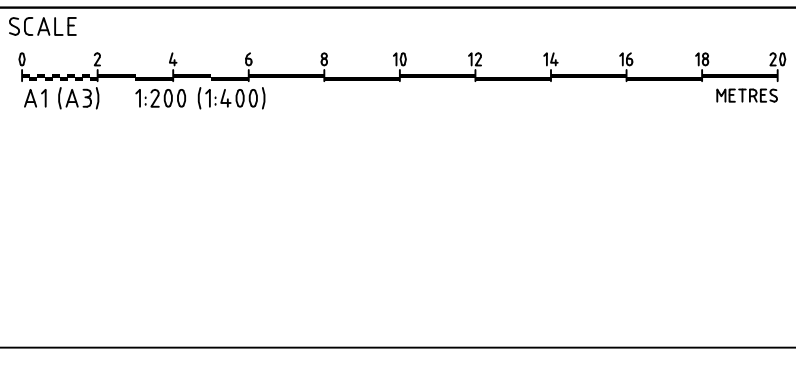
DRAWING TITLE				
OSD DETENTION CATCHMENT PLAN				
DRAINS MODEL & RESULT				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203617	PS02	R04	PS02-E501	A

ATTACHMENT D – REVISED SUBDIVISION PLAN (MARTENS & ASSOCIATES, P1203617PS03-A400)



DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	RESPONSE TO COUNCIL	23.11.2016	AW	AW	CS	GT
A	FOR STATEMENT OF ENVIRONMENTAL EFFECTS	02.06.2016	AW	AW	CS	GT



GRID
MGA
DATUM
MAHD
PROJECT MANAGER
GT
CLIENT
CARISTE PTY LTD
PROJECT NAME/PLANSET TITLE
STATEMENT OF ENVIRONMENTAL EFFECTS
SUBDIVISION PLAN
62 HILL SIDE ROAD
NEWPORT, NSW
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DRAWING TITLE				
SUBDIVISION PLAN				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203617	PS03	R02	PS03-A400	B

Carolyn Stanley

From: Jodi Harvey <Jodi.Harvey@northernbeaches.nsw.gov.au>
Sent: Thursday, 24 November 2016 4:15 PM
To: Carolyn Stanley
Cc: Gray Taylor; Matthew Hansen
Subject: RE: P1203617 - DA N0317/16 - Proposed subdivision at 62 Hillside Road, Newport

Hi Carolyn,

Yes that plan is satisfactory with the building envelopes.

Yours sincerely

JODI HARVEY

NATURAL ENVIRONMENT OFFICER

Northern Beaches Council

T 02 9970 1111 D 02 9970 1366 M 0478 406 664

jodi.harvey@northernbeaches.nsw.gov.au

From: Carolyn Stanley [mailto:cstanley@martens.com.au]
Sent: Wednesday, 23 November 2016 4:18 PM
To: Jodi Harvey
Cc: Gray Taylor
Subject: P1203617 - DA N0317/16 - Proposed subdivision at 62 Hillside Road, Newport

Good afternoon Jodi,

Thank you for speaking with me this afternoon. We have amended the Subdivision Plan (Martens & Associates, P1203617PS03-A400), removing the reference to 'indicative building envelope'. We have revised the legend key to read 'Proposed Maximum Building Envelope 200 m²', as since the application and supporting documentation provided to Council is still not yet determined/approved, we are not able to specify that the building envelopes are 'set' (i.e. the application is still in a 'proposal' stage). That will be assumed when plans are stamped by Council, after which time an application to change Council consent would be required to alter the building footprint.

As also discussed with you, given the large amounts of documentation already provided for this application, we feel that the few references to the 'indicative building envelope' within the supporting documentation do not necessitate a re-submission of large volumes of documentation. Any reference to the plans, particularly when stamped by Council, will be overridden by the information on the final stamped subdivision plan.

I would appreciate your comments regarding the attached plan.

Thank you and kind regards,

Carolyn Stanley
Environmental Scientist
M.Sc., B.Sc., B.A.

Please note that I am in the office Monday to Thursday.



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www.martens.com.au

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