



KEY:

- INDICATIVE STOCKPILE
- SEDIMENT FENCE
- EARTH BANK (LOW FLOW) FOR SITE STORM WATER DIVERSION
- EARTH BANK (LOW FLOW) FOR UPSTREAM WATER DIVERSION
- GEOTEXTILE / MESH AND GRAVEL INLET FILTER
- STABILISED SITE ACCESS WITH SHAKER PAD & WHEEL WASH
- LEVEL SPREADER

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD	SCALE	GRID	DATUM	PROJECT MANAGER	CLIENT	DRAWING TITLE						
A	INITIAL RELEASE	06/10/2020	JS	CG/SS	SL	TH		MGA	mAHD	TH	WARRIEWOODVALE P/L	SEDIMENT & EROSION CONTROL PLAN						
											PROJECT NAME/PLANSET TITLE	 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	PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION	
											DISCLAIMER & COPYRIGHT		P1504988	PS05	R02	PS05-B300	A	
											This plan must not be used for construction unless signed as approved by principal certifying authority.							
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A1 / A3 LANDSCAPE (A1/LC_v02.0.0)								8 FOREST ROAD, WARRIEWOOD, NSW LOT 1 DP5055				DRAWING ID: P1504988-PS05-R02-B300						

SHAKER PAD (CATTLE GRID)

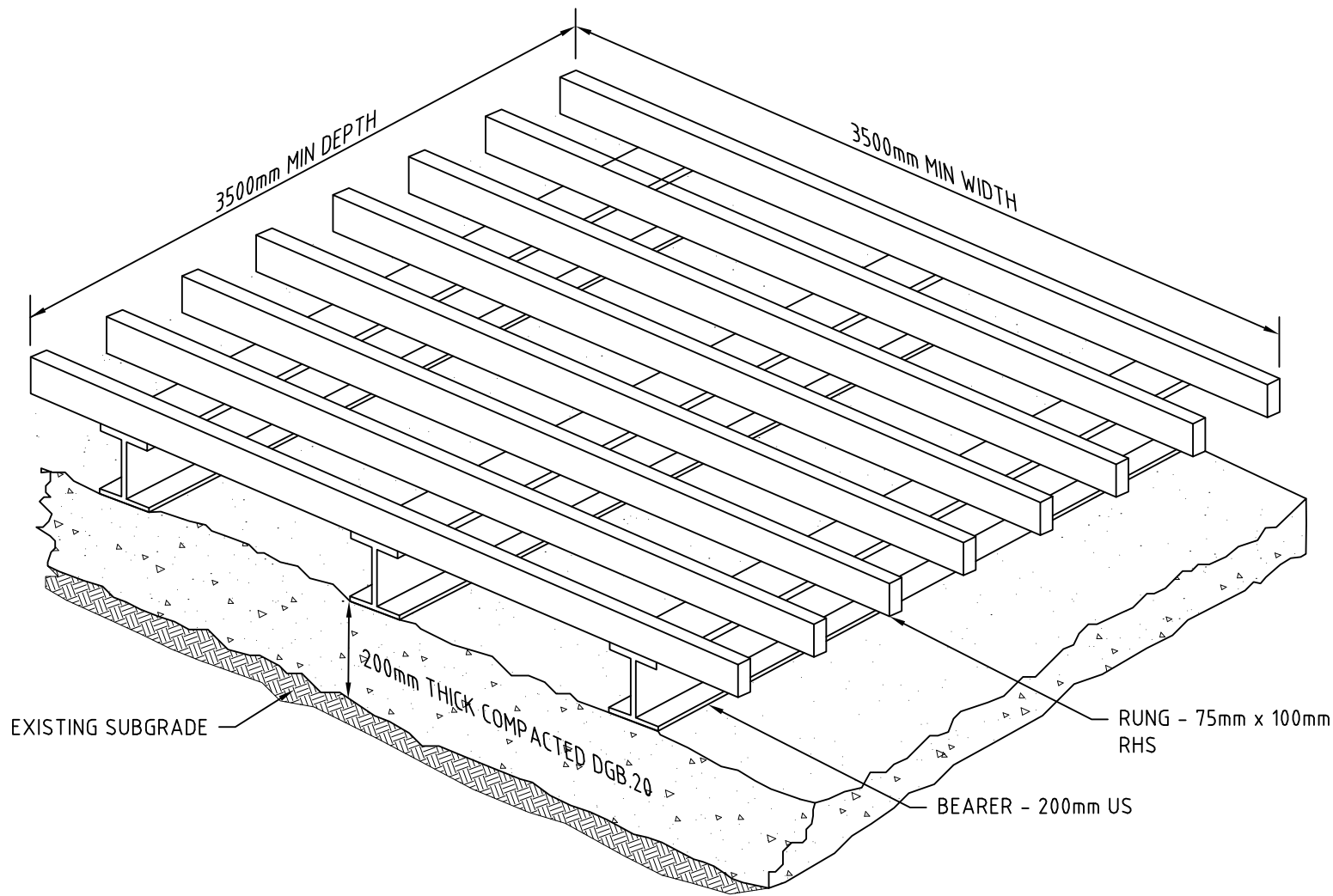
A CORRECTLY DESIGNED AND INSTALLED SHAKER PAD WILL ASSIST IN PREVENTING SEDIMENT TRANSFER FROM A SITE. ANY STABILISED ACCESS POINT (SAP) CAN BE DESIGNED WITH A SHAKER PAD (COMPULSOPRY IN TYPE II SAP'S)

SHAKER PADS CAN BE DESIGNED AND CONSTRUCTED TO ENABLE RE-USE ON FUTURE PROJECTS.

THE SHAKER PAD:

- MUST BE DESIGNED AND CERTIFIED BY A PRACTICING STRUCTURAL ENGINEER. THE CERTIFIED DESIGN SHOULD BE SUBMITTED WITH THE RELEVANT APPLICATION.
- CAN BE CONSTRUCTED FROM ANY SUITABLE MATERIAL.
- MUST BE LOCATED ON A SUITABLY PREPARED AND COMPACTED SUB-GRADE/BASE MATERIAL.
- MUST BE SITUATED SUCH THAT THE RUNGS OF THE SHAKER PAD ARE LEVEL WITH THE ADJOINING NATURAL SURFACE.
- MUST BE A MINIMUM OF 3.5m IN LENGTH.
- MUST BE A MINIMUM OF 3.5m IN WIDTH.
- MUST HAVE CLEAR SPACING BETWEEN RUNGS OF 200 - 250mm.
- RUNGS MUST HAVE A MAXIMUM WIDTH (BEARING AREA) OF 75mm.
- MUST HAVE A MINIMUM CLEAR DEPTH OF 300mm IE FORM THE TOP OF THE RUNG TO THE FINISHED SUB-GRADE/BASE LEVEL.

THE SHAKER PAD MUST BE PROVIDED WITH SUITABLE BARRIERS AT THE SIDES TO ENSURE THAT ALL TYERS OF VEHICLES LEAVING THE SITE TRAVERSE THE DEVICE.

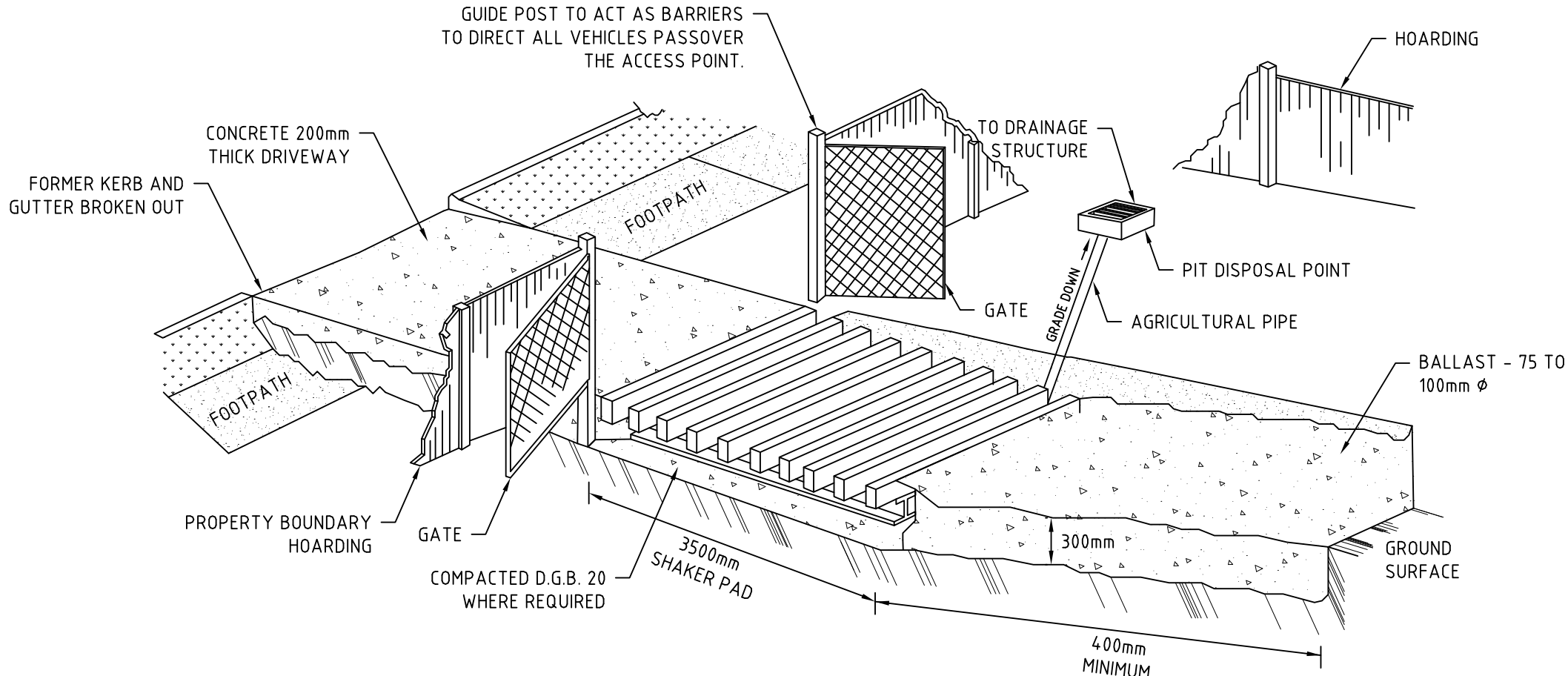


STABILISED ACCESS POINT

TYPE II SAP

THE TYPE II SAP DESIGN IS MORE DEFINED IN THAT IT REQUIRES AN AREA OF BALLAST WITHIN THE SITE COMBINED WITH A SHAKER PAD; ADJACENT TO THE SHAKER PAD AND IN THE PUBLIC WAY IS A TEMPORARY (CONCRETE) VEHICULAR CROSSING. (SEE DIAGRAM)

STABILISED ACCESS POINT - TYPE 2

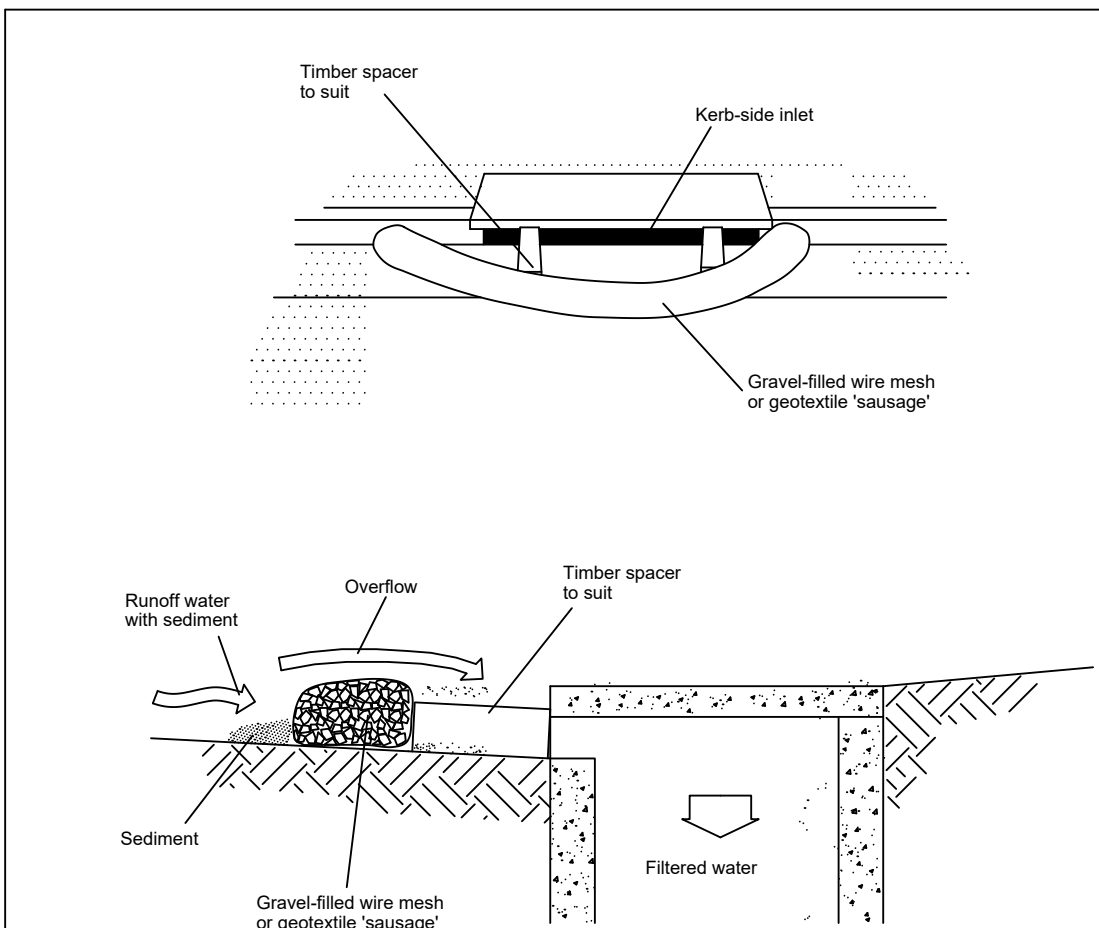


IN BOTH TYPE I AND TYPE II SAP'S, THE TEMPORARY VEHICULAR CROSSING MUST:

- CONNECT TO AN EXISTING GUTTER LAYBACK (WHERE THE KERB AND GUTTER EXIST). IF A GUTTER LAYBACK DOES NOT EXIST THEN THE CONNECTION MUST BE MADE TO THE GUTTER BY REMOVING THE ADJACENT KERB SECTION ONLY.
- CONNECT TO A DISH CROSSING (WHERE KERB AND GUTTER DOES NOT EXIST). IF A DISH CROSSING DOES NOT EXIST, THEN IT MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS CONTAINED IN COUNCIL'S ISSUED FOOTPATH CROSSING LEVELS.

IT SHOULD BE NOTED THAT THESE TYPES OF SAPS ARE CONSIDERED TO BE APPLICABLE FOR THE MAJORITY OF ACTIVITIES HOWEVER SOME SITES MAY REQUIRE SPECIAL CONSIDERATION.

WHEEL WASH FACILITY TO BE INSTALLED

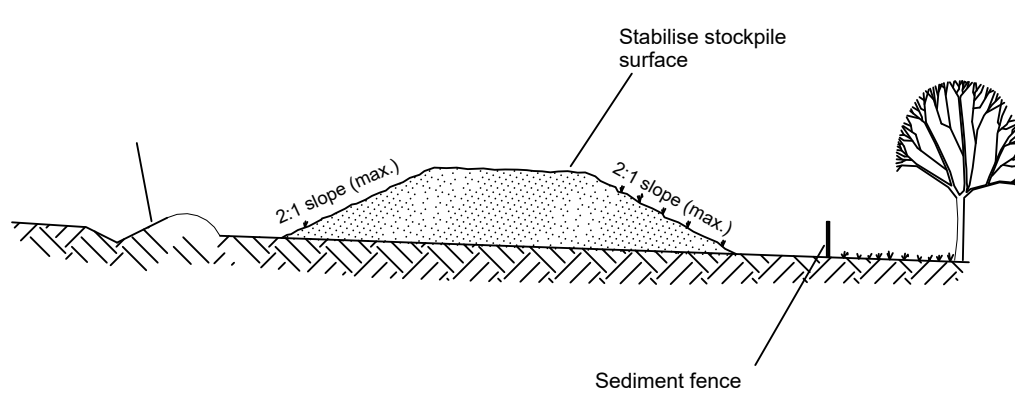


NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

Construction Notes

- Install filters to kerb inlets only at sag points.
- Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
- Form an elliptical cross-section about 150 mm high x 400 mm wide.
- Place the filter at the opening leaving at least a 100-mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
- Form a seal with the kerb to prevent sediment bypassing the filter.
- Sandbags filled with gravel can substitute for the mesh or geotextile providing they are placed so that they firmly abut each other and sediment-laden waters cannot pass between.

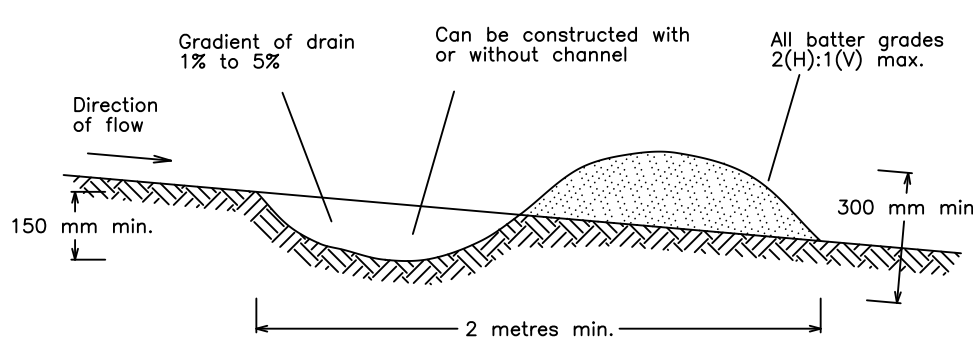
MESH AND GRAVEL INLET FILTER ☒ SD 6-11



Construction Notes

- Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
- Construct on the contour as low, flat, elongated mounds.
- Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
- Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
- Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

STOCKPILES ☒ SD 4-1

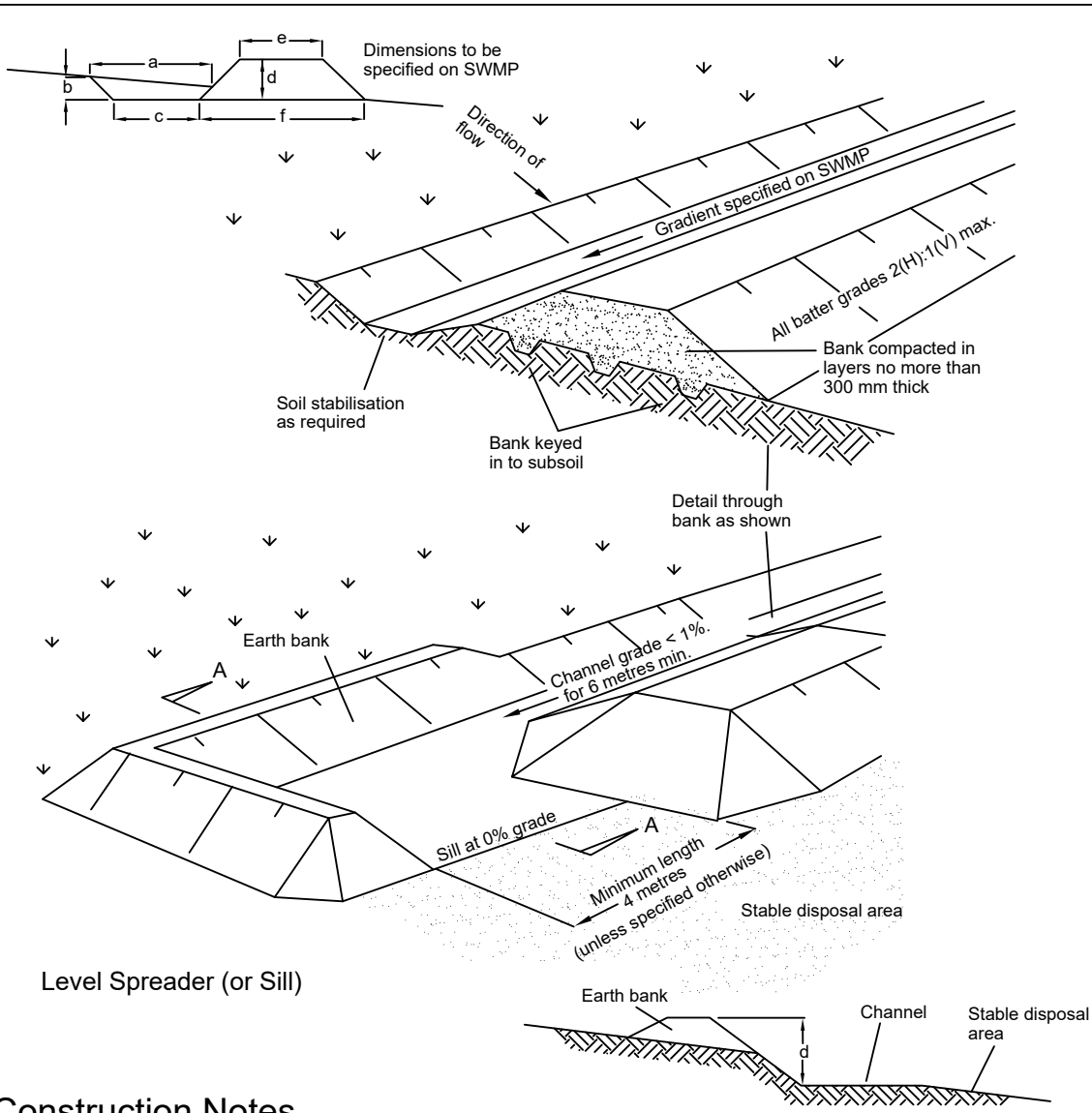


NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Construction Notes

- Build with gradients between 1 percent and 5 percent.
- Avoid removing trees and shrubs if possible - work around them.
- Ensure the structures are free of projections or other irregularities that could impede water flow.
- Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
- Ensure the banks are properly compacted to prevent failure.
- Complete permanent or temporary stabilisation within 10 days of construction.

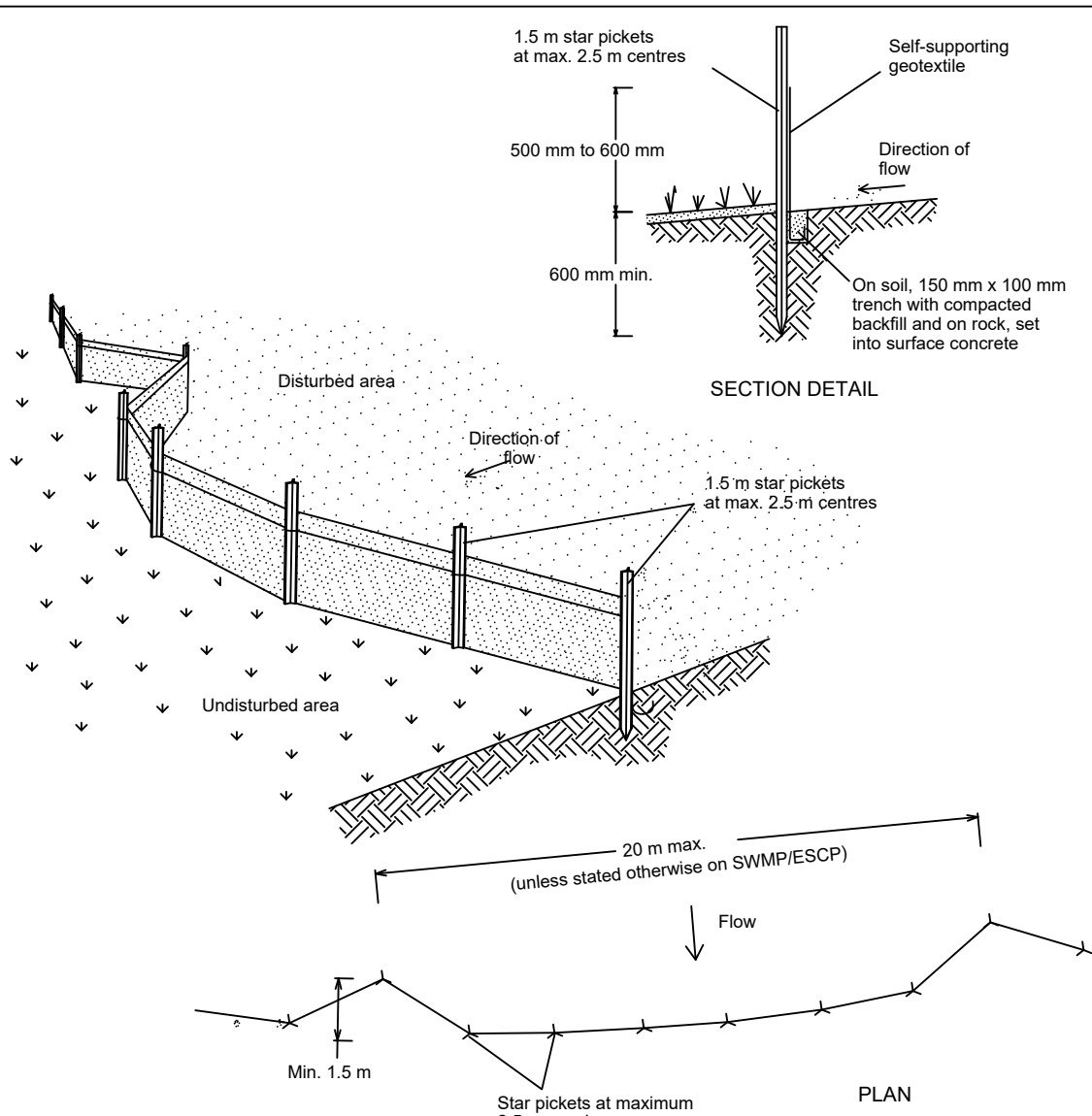
EARTH BANK (LOW FLOW) ☒ SD 5-5



Construction Notes

- Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent.
- Avoid removing trees and shrubs if possible - work around them.
- Ensure the structures are free of projections or other irregularities that could impede water flow.
- Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
- Ensure the banks are properly compacted to prevent failure.
- Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
- Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
- Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
- Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

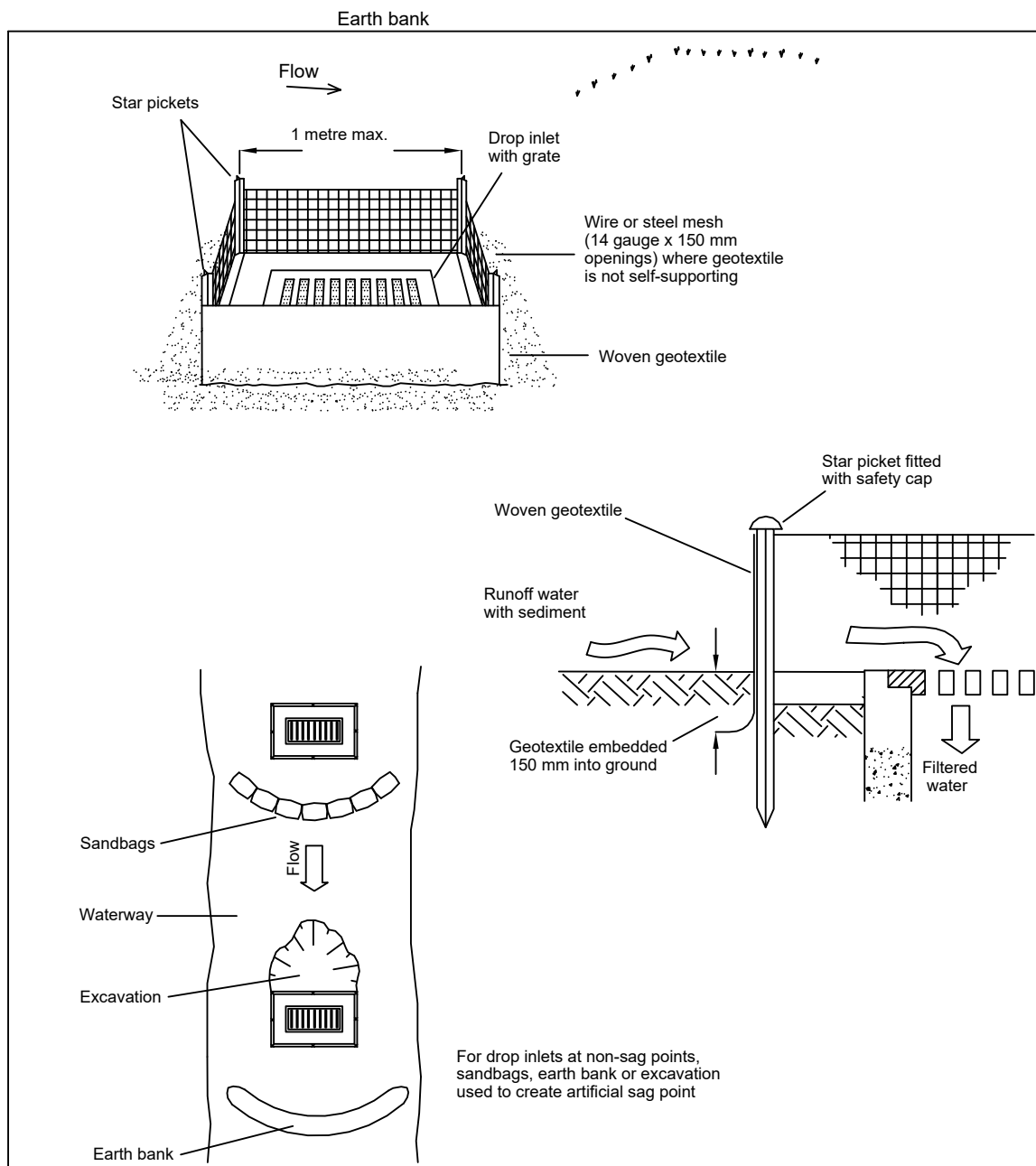
LEVEL SPREADER ☒ SD 5-6



Construction Notes

- Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
- Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
- Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
- Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
- Join sections of fabric at a support post with a 150-mm overlap.
- Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE ☒ SD 6-8



Construction Notes

- Fabricate a sediment barrier made from geotextile or straw bales.
- Follow Standard Drawing 6-7 and Standard Drawing 6-8 for installation procedures for the straw bales or geofabric. Reduce the picket spacing to 1 metre centres.
- In waterways, artificial sag points can be created with sandbags or earth banks as shown in the drawing.
- Do not cover the inlet with geotextile unless the design is adequate to allow for all waters to bypass it.

GEOTEXTILE INLET FILTER ☒ SD 6-12

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD	SCALE
A	INITIAL RELEASE	06/10/2020	JS	CG/SS	SL	TH	

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A1 / A3 LANDSCAPE (A1LC_v02.0.01)

GRID	DATUM	PROJECT MANAGER	CLIENT
---	---	TH	WARRIEWOODVALE P/L
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PROJECT NAME/PLANSET TITLE			8 FOREST ROAD, WARRIEWOOD, NSW LOT 1 DP5055
RESIDENTIAL DEVELOPMENT CIVIL WORKS			



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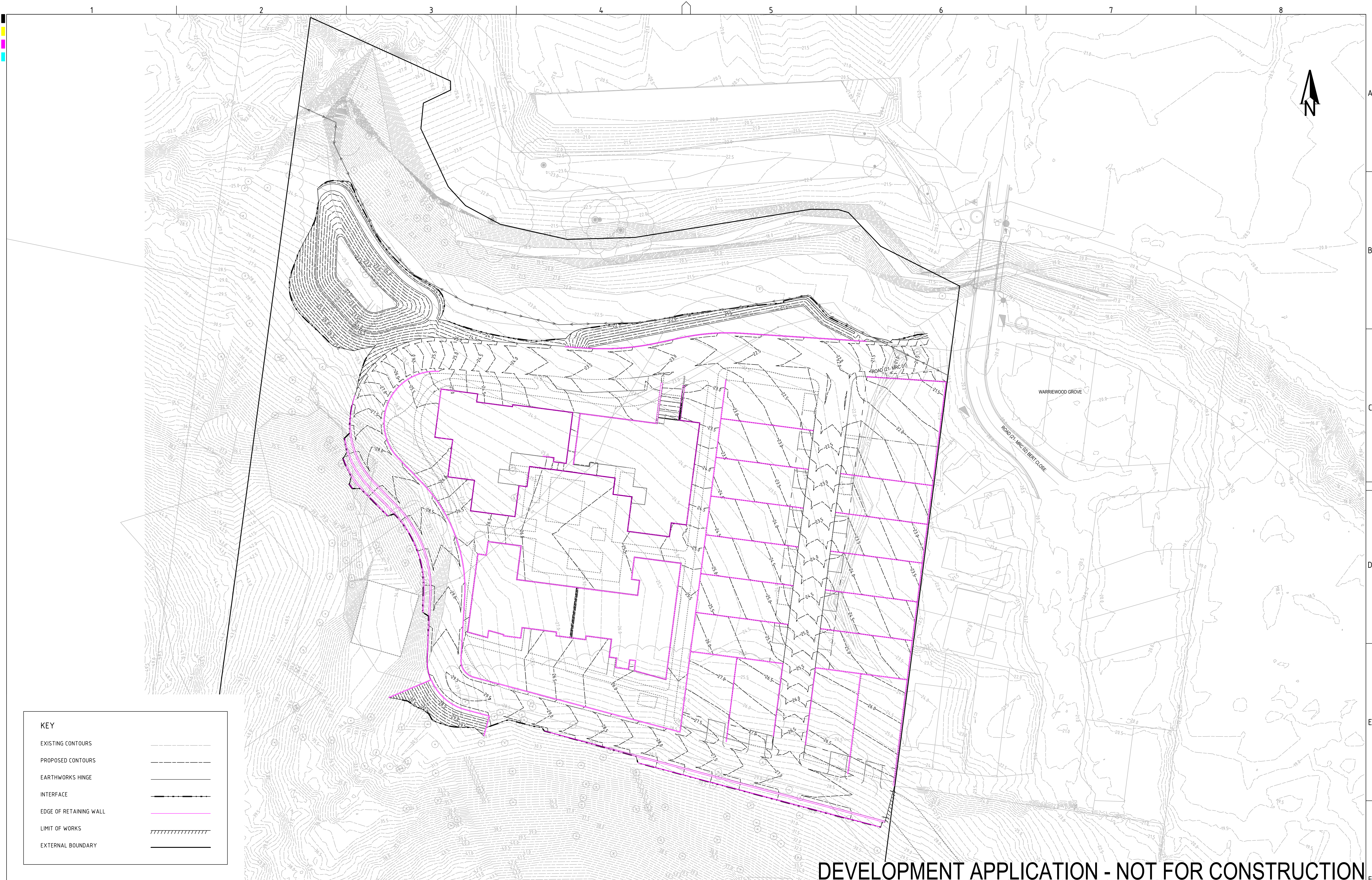
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Environment
Water
Geotechnical
Civil

DRAWING TITLE				
SEDIMENT & EROSION CONTROL DETAILS				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1504988	PS05	R02	PS05-B310	A

DRAWING ID: P1504988-PS05-R02-B310

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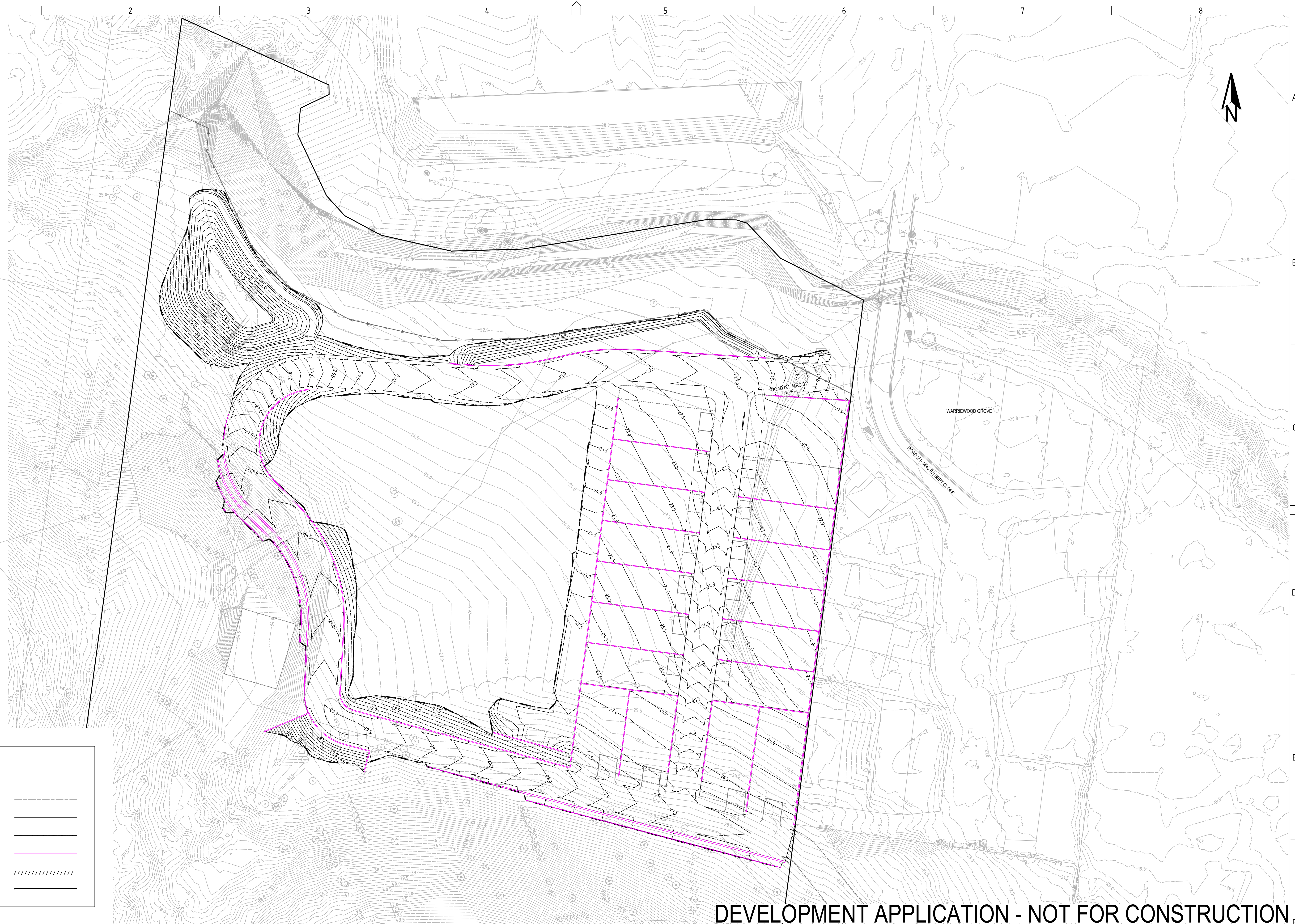


KEY

EXISTING CONTOURS	---
PROPOSED CONTOURS	---
EARTHWORKS HINGE	---
INTERFACE	---
EDGE OF RETAINING WALL	---
LIMIT OF WORKS	---
EXTERNAL BOUNDARY	---

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD	SCALE	GRID	DATUM	PROJECT MANAGER	CLIENT	DRAWING TITLE			
B	FINAL AND RELEASED	06/10/2020	GM	CG/SS	SL	TH		MGA	mAHD	TH	WARRIEWOODVALE P/L	 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	EARTHWORKS GRADING PLAN (ULTIMATE DEVELOPMENT)		
A	INITIAL RELEASE	24/09/2020	GM	CG/SS	SL	TH		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	PROJECT NAME/PLANSET TITLE RESIDENTIAL DEVELOPMENT CIVIL WORKS 8 FOREST ROAD, WARRIEWOOD, NSW LOT 1 DP5055	PROJECT NO. P1504988	PLANSET NO. PS05		RELEASE NO. R02	DRAWING NO. PS05-C100	REVISION B
A1 / A3 LANDSCAPE [A1L_C_v02.0.01]												DRAWING ID: P1504988-PS05-R02-C100			



KEY

EXISTING CONTOURS

PROPOSED CONTOURS

EARTHWORKS HINGE

INTERFACE

EDGE OF RETAINING WALL

LIMIT OF WORKS

EXTERNAL BOUNDARY

[illegible]

SCALE

0 5 10 15 20 25 30 35 40 45 50

A1 (A3) 1:500 (1:1,000) METRES

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

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CLIENT

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8 FOREST ROAD, WARRIEWOOD, NSW
LOT 1 DP5055



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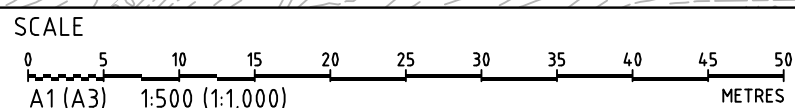
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EARTHWORKS GRADING PLAN (STAGE 1 DEVELOPMENT)				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
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A1 / A3 LANDSCAPE (A1LC_v02.0.01)

DRAWING ID: P1504988-PS05-R02-C110

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GRID MGA	DATUM mAHD	PROJECT MANAGER TH	CLIENT WARRIEWOODVALE P/L
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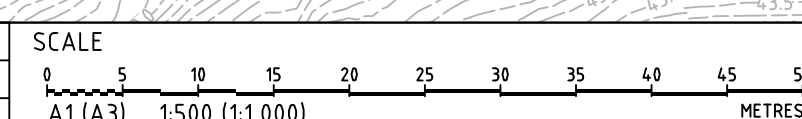
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ROADWORKS PLAN (ULTIMATE DEVELOPMENT)				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1504988	PS05	R02	PS05-D100	B



NOTE:
- FINAL SURFACE CONTOURS ARE BASED ON PROPOSED, EXISTING AND LIDAR SURFACES

KEY

FINAL SURFACE CONTOURS	—272.00—
FUTURE CONTOURS	—272.00—
ROAD ALIGNMENT	— —
KERB & GUTTER	==KG
MOUNTABLE KERB	—MK
APRON KERB	—AK
PRAM RAMP	—PR
FOOTPATH	—
ROAD RESERVE BOUNDARY	—
LIMIT OF WORKS	////
FUTURE LIMIT OF WORKS	////

[illegible]

GRID	DATUM	PROJECT MANAGER	CLIENT
MGA	mAHD	TH	WARRIEWOODVALE P/L
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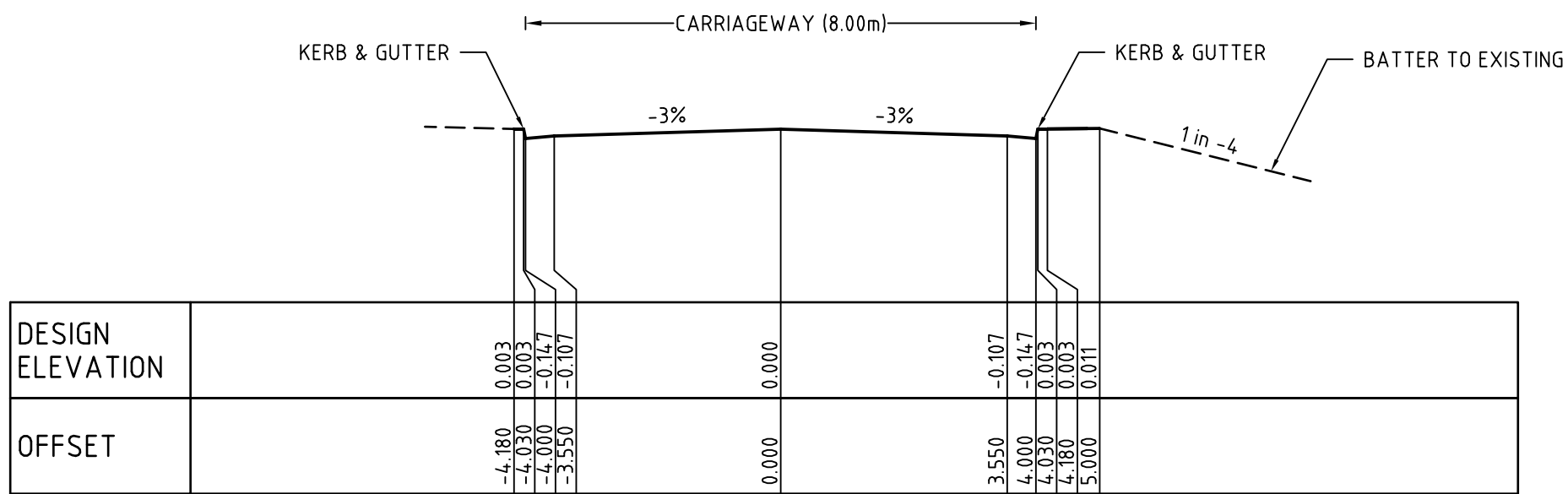
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DRAWING TITLE				
ROADWORKS PLAN (STAGE 1 DEVELOPMENT)				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1504988	PS05	R02	PS05-D110	B

DRAWING ID: P1504988-PS05-R02-D110

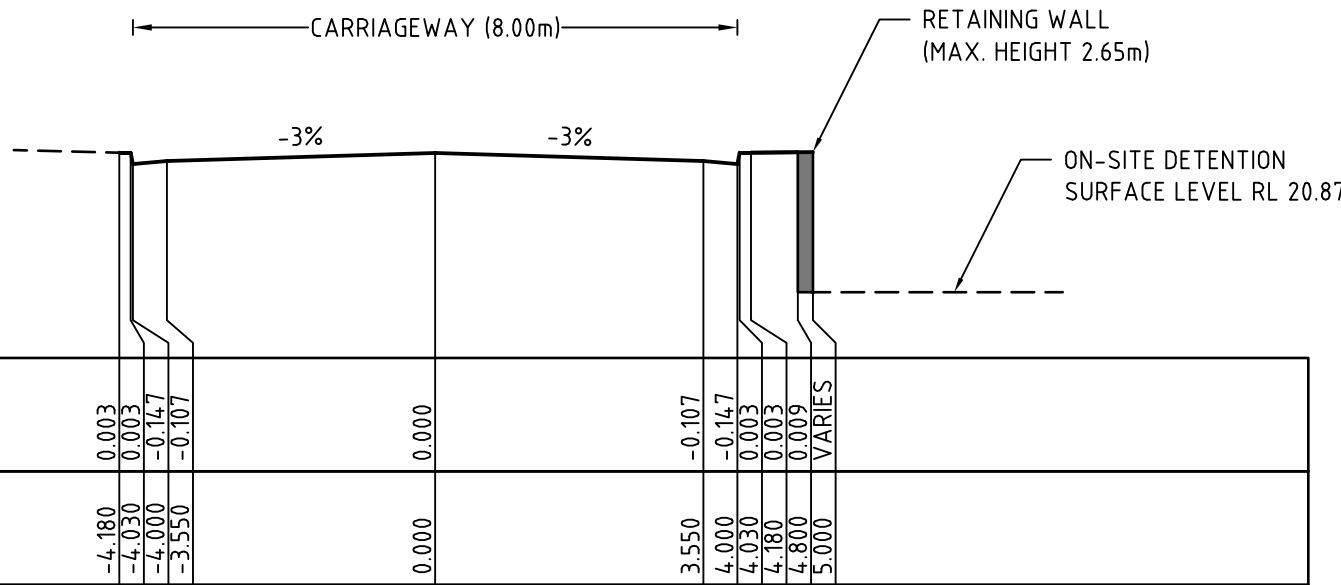
A1 / A3 LANDSCAPE (A1LC v02.0.01)

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION



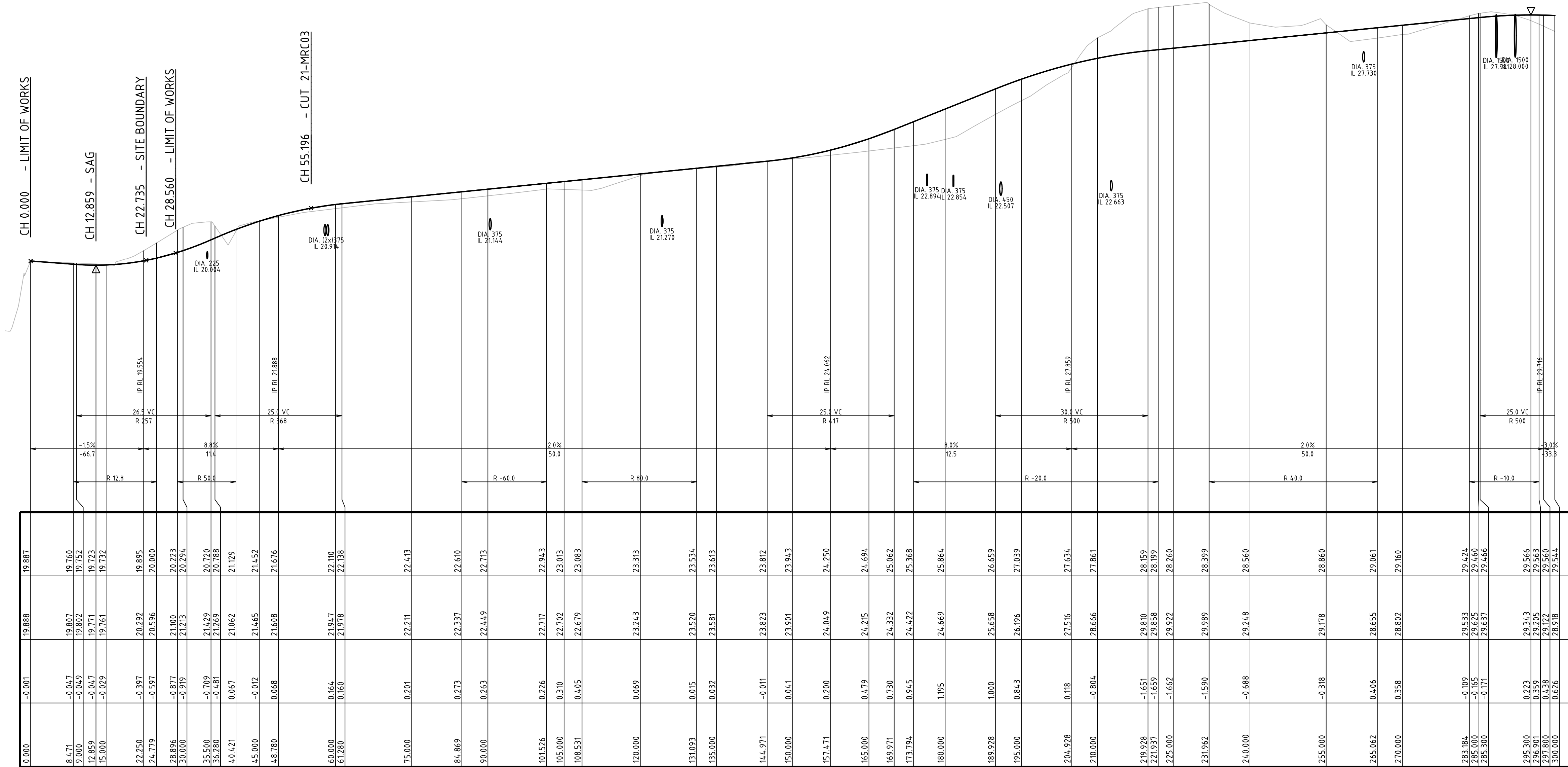
PERIMETER ROAD (21-MRC01) TYPICAL CROSS SECTION (CH 28.60 - 48.00, 173.32 - 200.00)

SCALE 1:100



PERIMETER ROAD (21-MRC01) TYPICAL CROSS SECTION (CH 48.00 - 137.32)

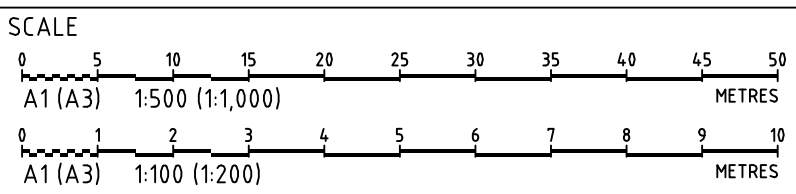
SCALE 1:100



PERIMETER ROAD (21-MRC01) LONG. SECTION

SCALE: HORIZONTAL - 1:500
VERTICAL - 1:100

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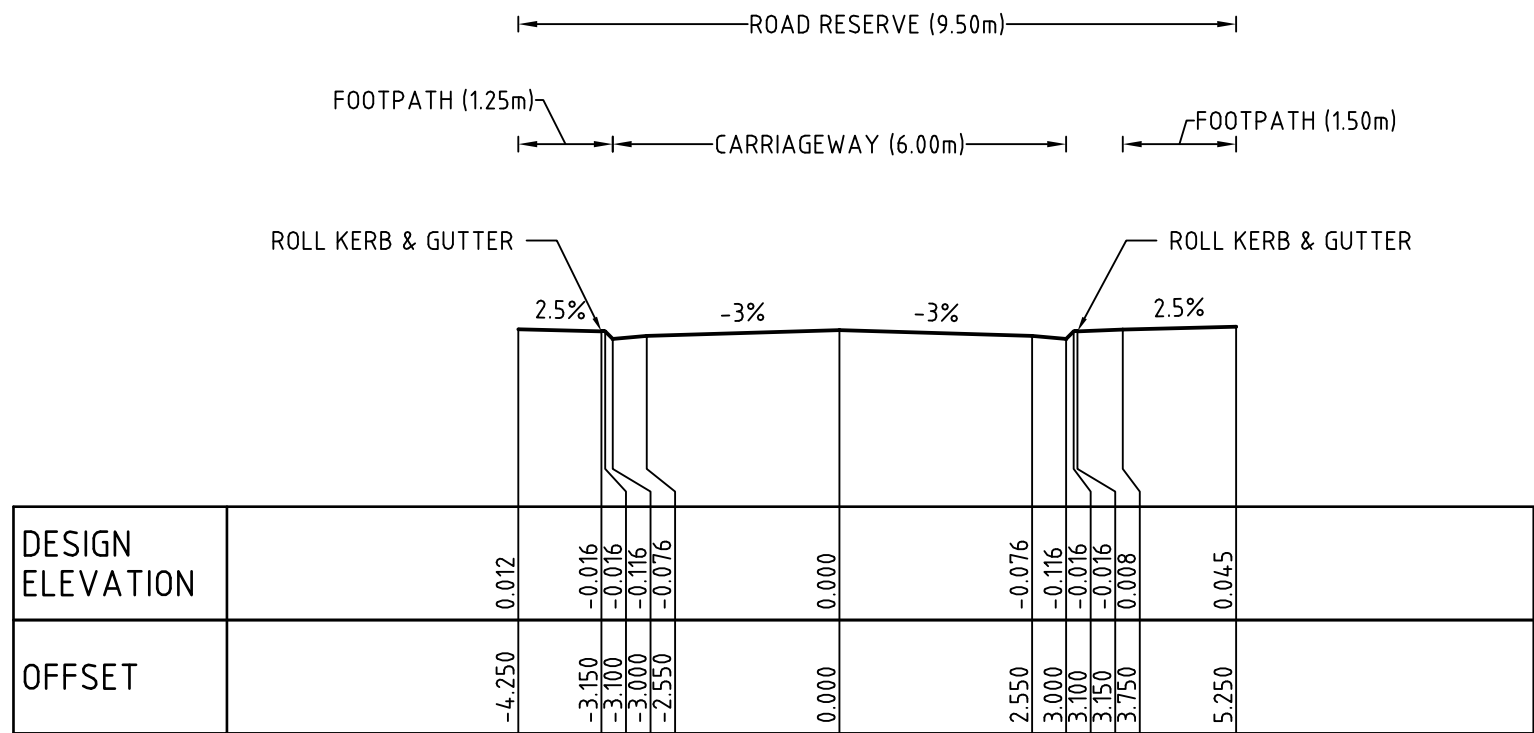
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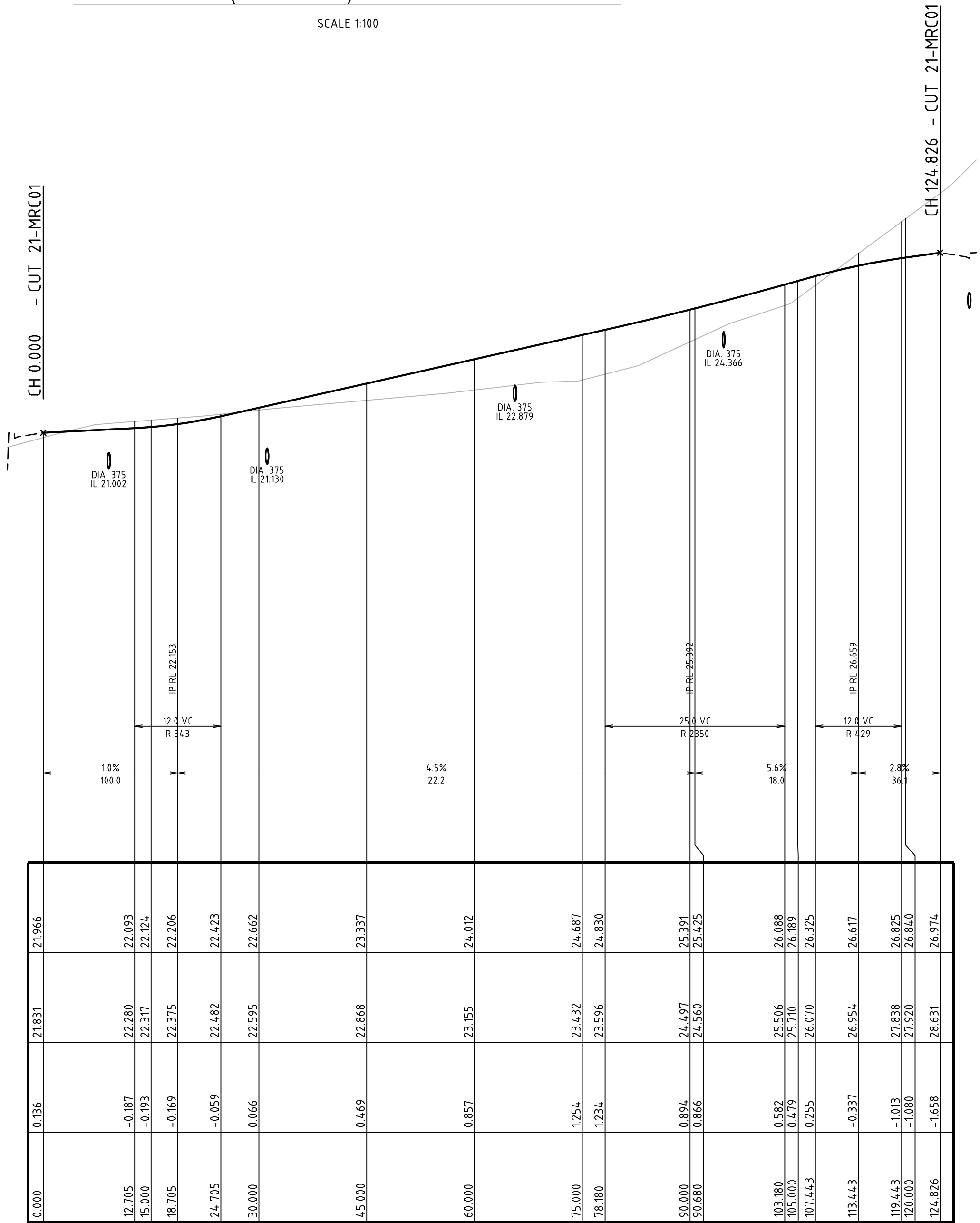
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ACCESS ROAD 1 (21-MRC01) LONGITUDINAL SECTION & TYPICAL SECTIONS (SHEET 1)				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1504988	PS05	R02	PS05-D200	B

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ACCESS ROAD (21-MRC03) TYPICAL CROSS SECTION

SCALE 1:100



ACCESS ROAD (21-MRC03) LONG. SECTION

SCALE: HORIZONTAL - 1:500
VERTICAL - 1:100

VERTICAL CURVE LENGTH (m)
VERTICAL CURVE RADIUS (m)
VERTICAL GRADE (%)
VERTICAL GRADE (1 IN ...)
HORIZONTAL CURVE RADIUS (m)
DATUM RL 10.000

DESIGN SURFACE
LEVELS

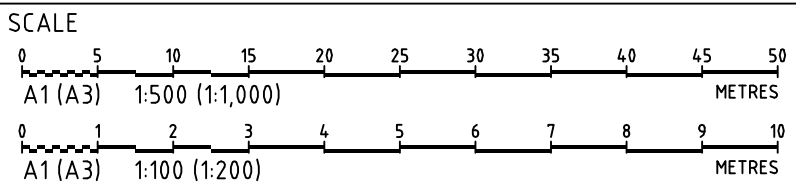
EXISTING SURFACE
LEVELS

CUT / FILL DEPTH

CHAINAGE

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	FINAL AND RELEASED	06/10/2020	GM	CG/SS	SL	TH
A	INITIAL RELEASE	24/09/2020	GM	CG/SS	SL	



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WARRIEWOODVALE P/L
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8 FOREST ROAD, WARRIEWOOD, NSW
LOT 1 DP5055

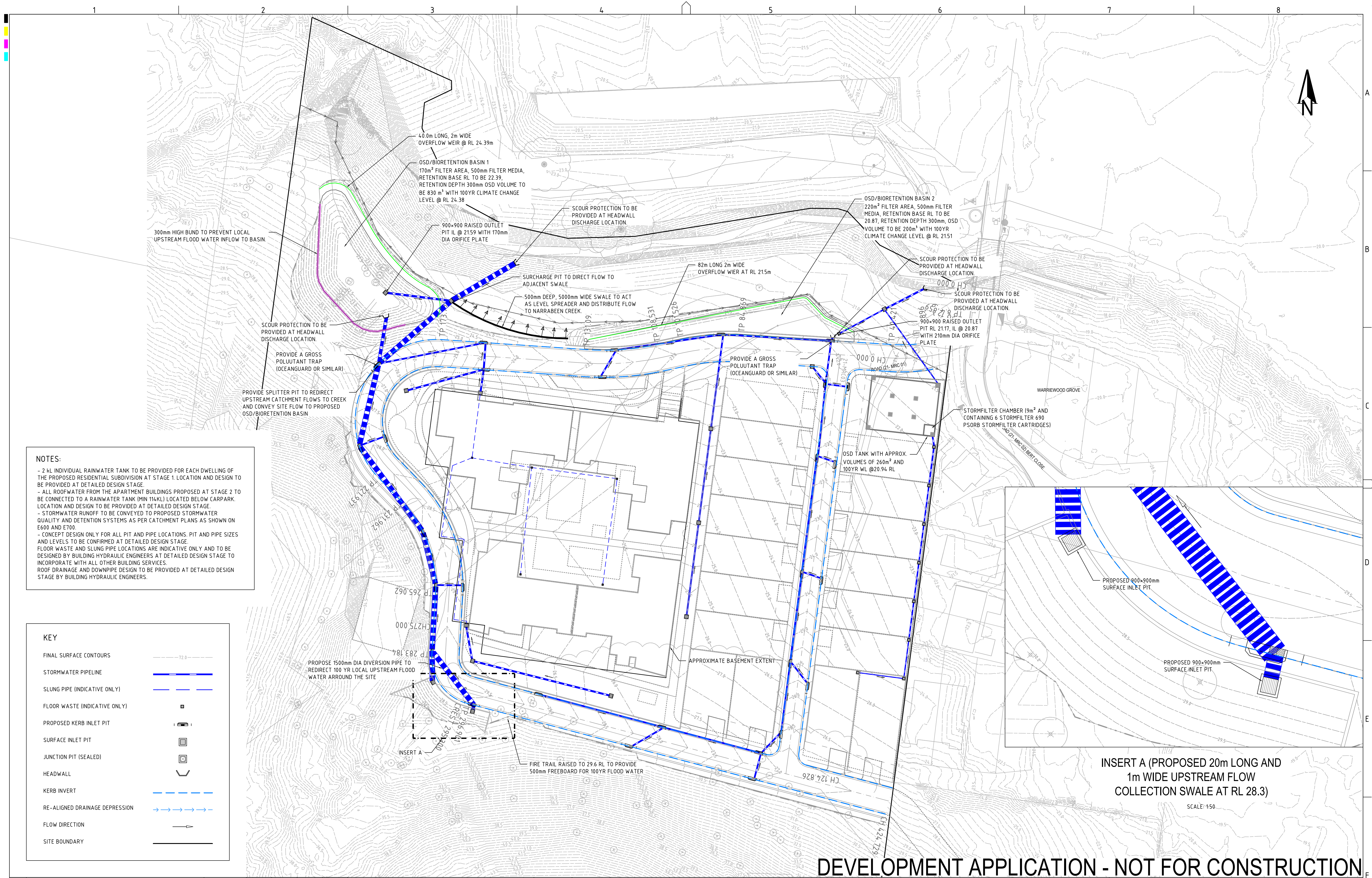


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ACCESS ROAD (21-MRC03) LONGITUDINAL SECTION & TYPICAL SECTION				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1504988	PS05	R02	PS05-D205	B

DRAWING ID: P1504988-PS05-R02-D205

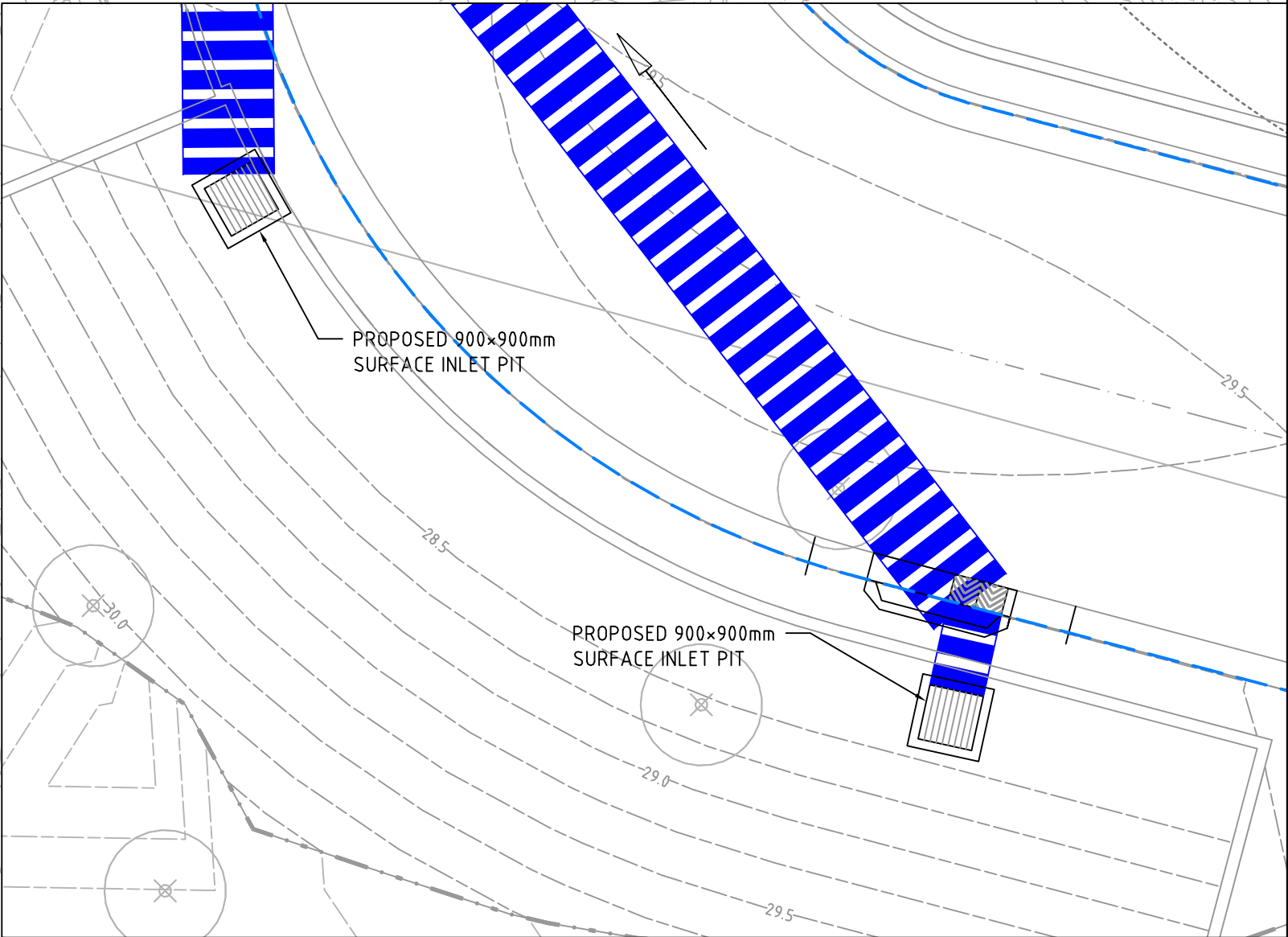


NOTES:

- 2 KL INDIVIDUAL RAINWATER TANK TO BE PROVIDED FOR EACH DWELLING OF THE PROPOSED RESIDENTIAL SUBDIVISION AT STAGE 1. LOCATION AND DESIGN TO BE PROVIDED AT DETAILED DESIGN STAGE.
- ALL ROOFWATER FROM THE APARTMENT BUILDINGS PROPOSED AT STAGE 2 TO BE CONNECTED TO A RAINWATER TANK (MIN 14KL) LOCATED BELOW CARPARK. LOCATION AND DESIGN TO BE PROVIDED AT DETAILED DESIGN STAGE.
- STORMWATER RUNOFF TO BE CONVEYED TO PROPOSED STORMWATER QUALITY AND DETENTION SYSTEMS AS PER CATCHMENT PLANS AS SHOWN ON E600 AND E700.
- CONCEPT DESIGN ONLY FOR ALL PIT AND PIPE LOCATIONS. PIT AND PIPE SIZES AND LEVELS TO BE CONFIRMED AT DETAILED DESIGN STAGE.
- FLOOR WASTE AND SLUNG PIPE LOCATIONS ARE INDICATIVE ONLY AND TO BE DESIGNED BY BUILDING HYDRAULIC ENGINEERS AT DETAILED DESIGN STAGE TO INCORPORATE WITH ALL OTHER BUILDING SERVICES.
- ROOF DRAINAGE AND DOWNPIPE DESIGN TO BE PROVIDED AT DETAILED DESIGN STAGE BY BUILDING HYDRAULIC ENGINEERS.

KEY

FINAL SURFACE CONTOURS	--- 72.0 ---
STORMWATER PIPELINE	—
SLUNG PIPE (INDICATIVE ONLY)	- - -
FLOOR WASTE (INDICATIVE ONLY)	■
PROPOSED KERB INLET PIT	⌈
SURFACE INLET PIT	⌈
JUNCTION PIT (SEALED)	⌈
HEADWALL	⌈
KERB INVERT	- - -
RE-ALIGNED DRAINAGE DEPRESSION	→ → → →
FLOW DIRECTION	→
SITE BOUNDARY	—

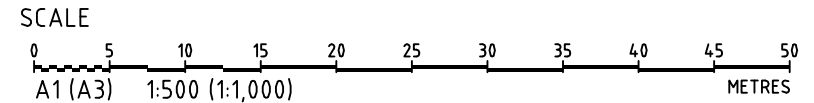


INSERT A (PROPOSED 20m LONG AND 1m WIDE UPSTREAM FLOW COLLECTION SWALE AT RL 28.3)

SCALE: 1:50

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPROV
B	FINAL AND RELEASED	06/10/2020	GM	CG/SS	SL	TH
A	INITIAL RELEASE	24/09/2020	GM	CG/SS	SL	TH



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PROJECT MANAGER
TH

CLIENT
WARRIEWOODVALE P/L

PROJECT NAME/PLANSET TITLE
RESIDENTIAL DEVELOPMENT
CIVIL WORKS

8 FOREST ROAD, WARRIEWOOD, NSW
LOT 1 DP5055

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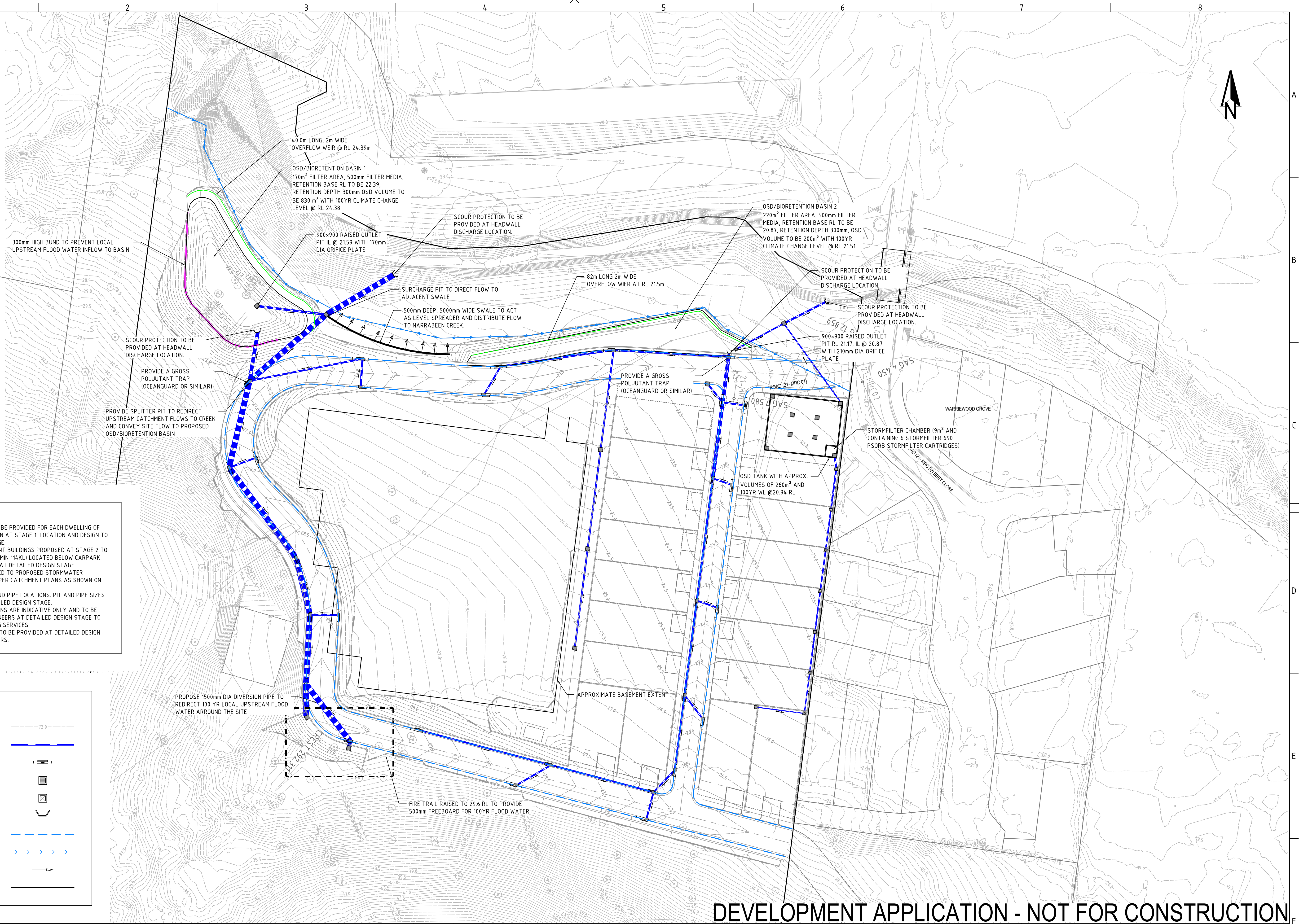
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DRAWING TITLE				
DRAINAGE PLAN (ULTIMATE DEVELOPMENT)				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1504988	PS05	R02	PS05-E100	B



NOTES:

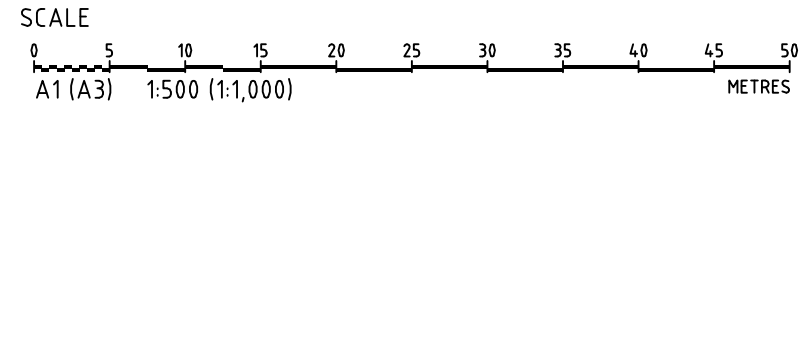
- 2 kL individual rainwater tank to be provided for each dwelling of the proposed residential subdivision at stage 1. Location and design to be provided at detailed design stage.
- All roofwater from the apartment buildings proposed at stage 2 to be connected to a rainwater tank (min 114kL) located below carpark. Location and design to be provided at detailed design stage.
- Stormwater runoff to be conveyed to proposed stormwater quality and detention systems as per catchment plans as shown on E600 and E700.
- Concept design only for all pit and pipe locations, pit and pipe sizes and levels to be confirmed at detailed design stage.
- Floor waste and slung pipe locations are indicative only and to be designed by building hydraulic engineers at detailed design stage to incorporate with all other building services.
- Roof drainage and downpipe design to be provided at detailed design stage by building hydraulic engineers.

KEY

- FINAL SURFACE CONTOURS
- STORMWATER PIPELINE
- PROPOSED KERB INLET PIT
- SURFACE INLET PIT
- JUNCTION PIT (SEALED)
- HEADWALL
- KERB INVERT
- RE-ALIGNED DRAINAGE DEPRESSION
- FLOW DIRECTION
- SITE BOUNDARY

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

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B	FINAL AND RELEASED	06/10/2020	GM	CG/SS	SL	TH
A	INITIAL RELEASE	24/09/2020	GM	CG/SS	SL	

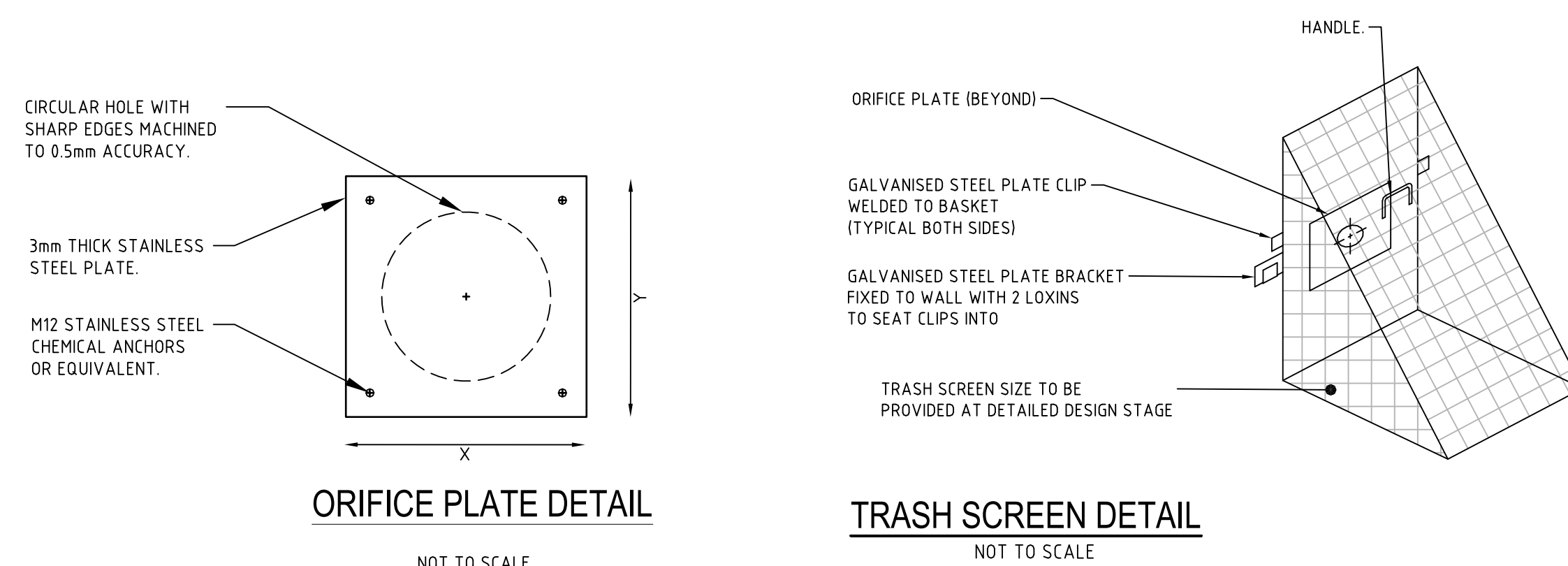
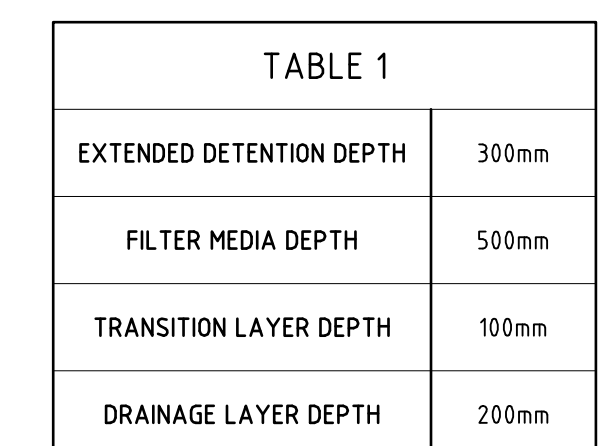


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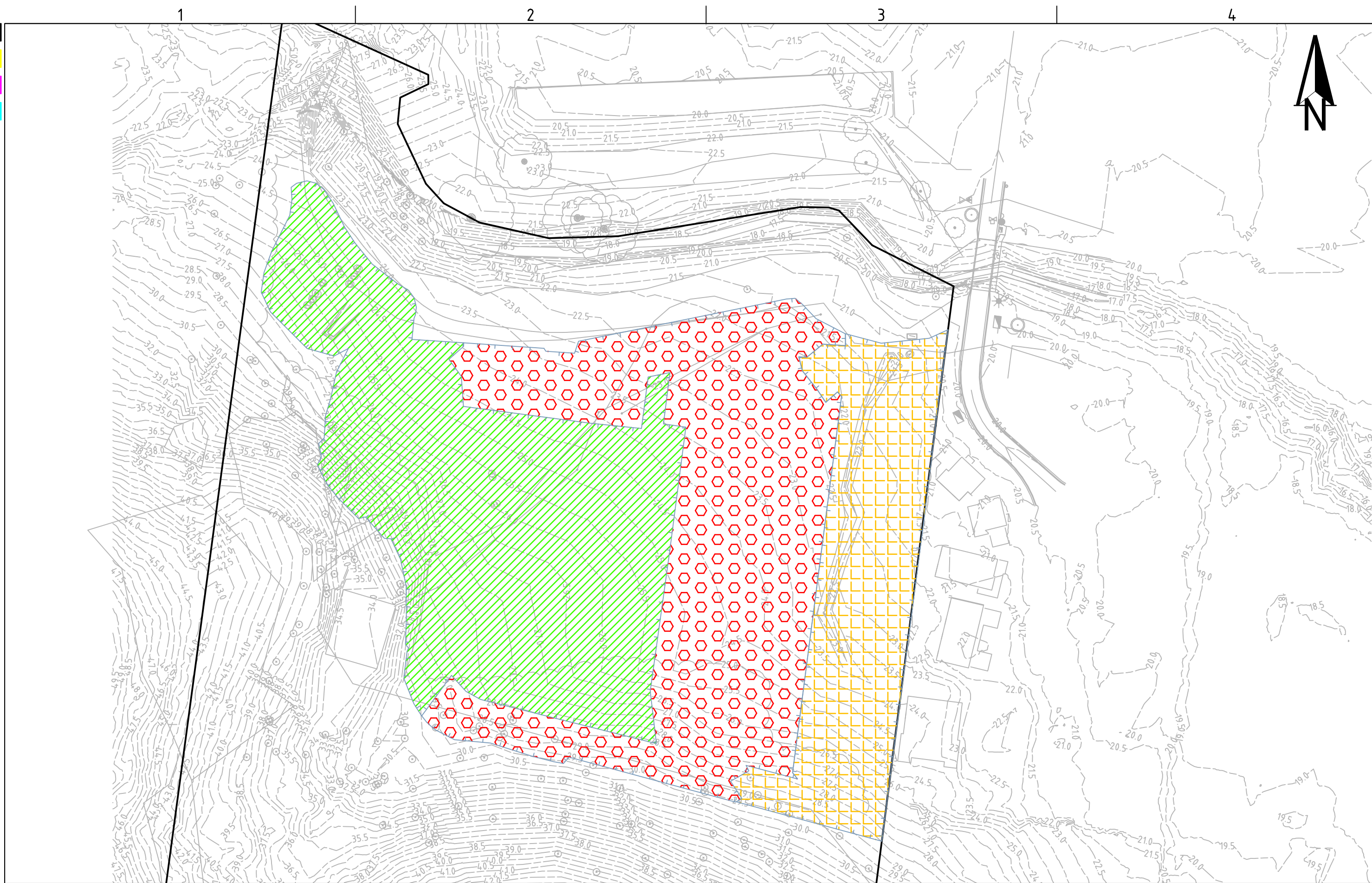
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DRAWING TITLE				
DRAINAGE PLAN (STAGE 1 DEVELOPMENT)				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1504988	PS05	R02	PS05-E110	B



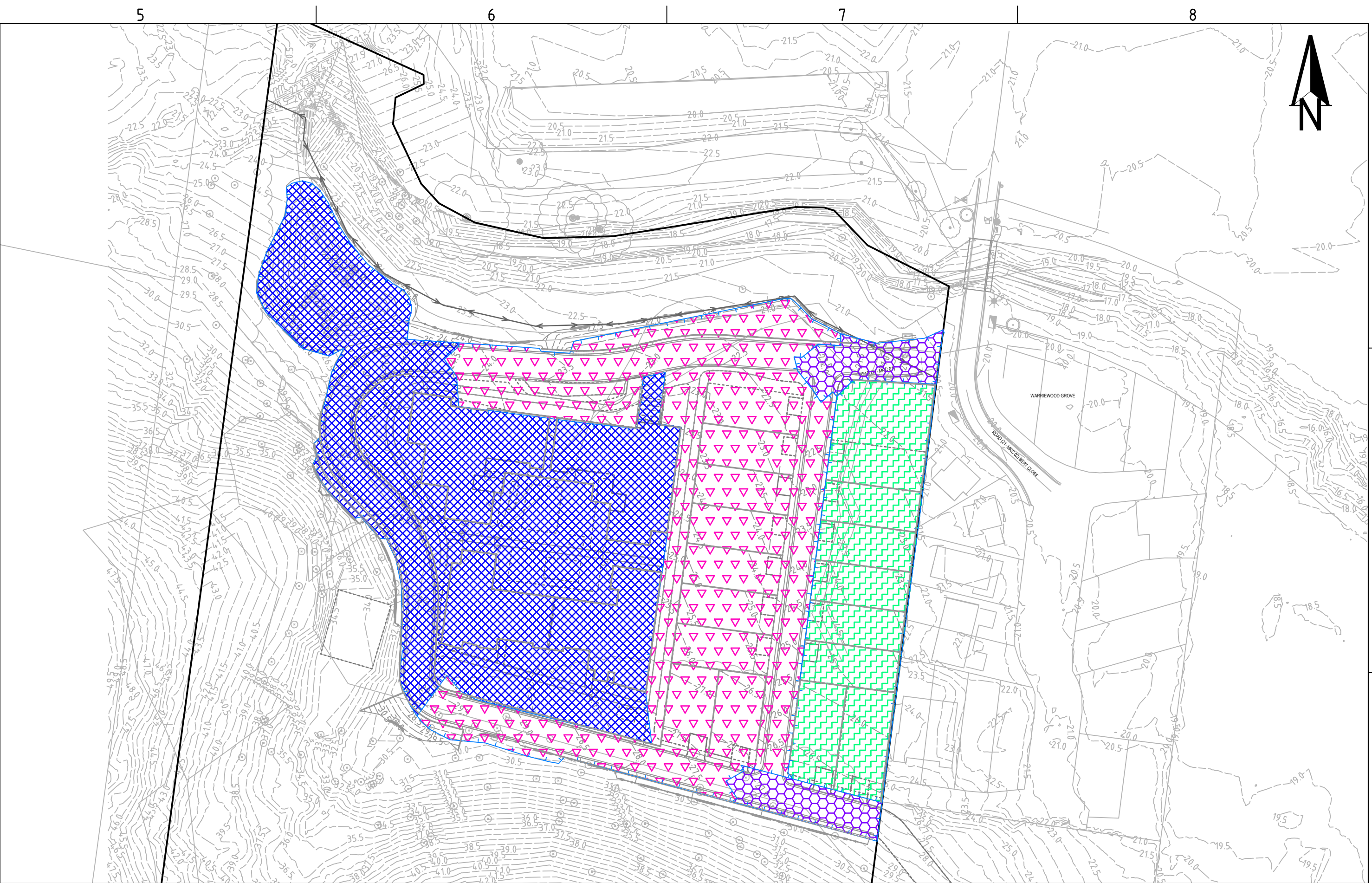
DRAWING TITLE				
DRAINAGE DETAILS (SHEET 1)				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1504988	PS05	R02	PS05-E200	B

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION



PRE-DEVELOPMENT OSD CATCHMENT PLAN

SCALE 1:1000



POST-DEVELOPMENT OSD CATCHMENT PLAN

SCALE 1:1000

OSD CATCHMENT DETAILS (P1604988DRN03V02)

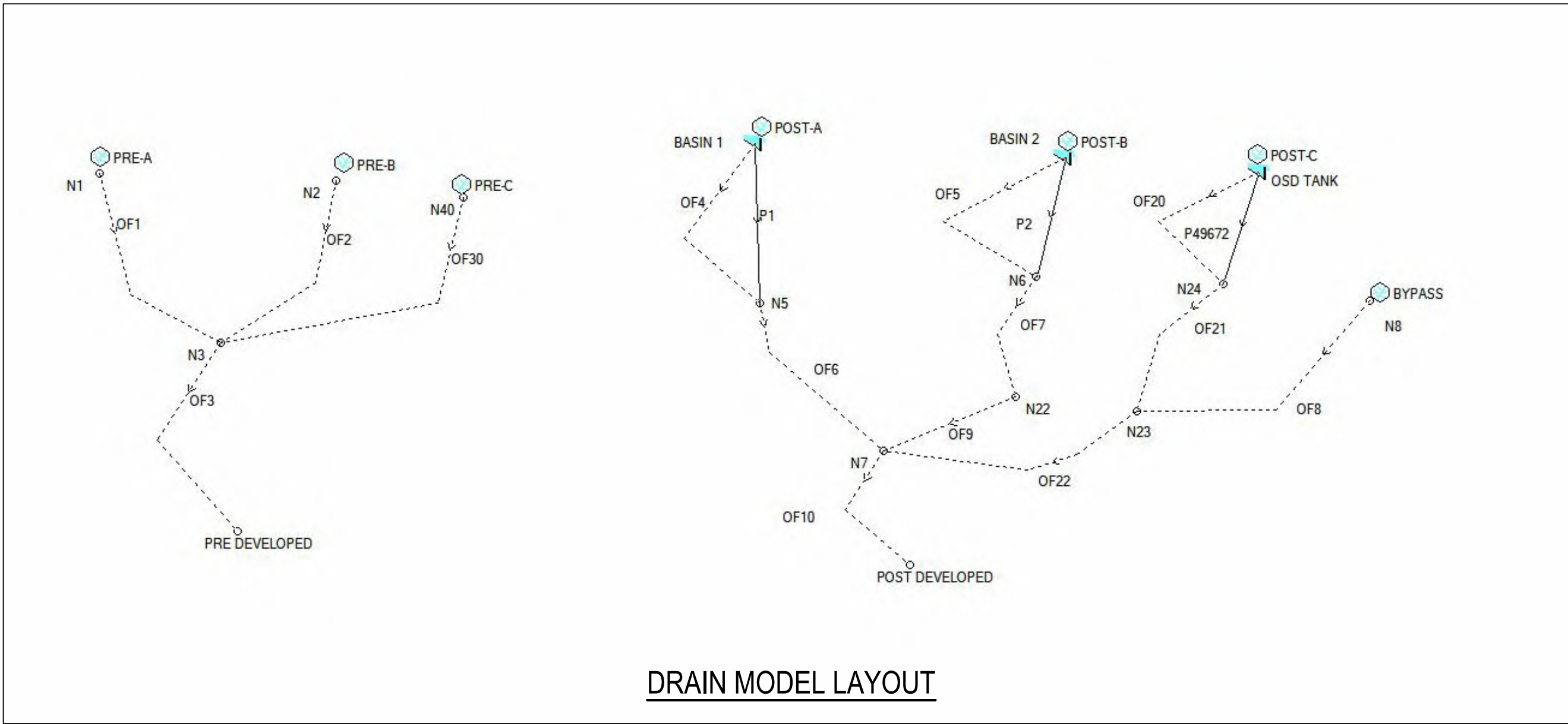
PRE DEVELOPMENT

KEY	DRAINS NODE	DESCRIPTION	AREA (ha)	% PAVED
	PRE-A	EXISTING SITE (POST A)	0.909	0.05
	PRE-B	EXISTING SITE (POST B)	0.782	0.05
	PRE-C	EXISTING SITE (POST C + BYPASS)	0.4215	0.05
		TOTAL AREA	2.1125	= 100% OF TOTAL AREA
		TOTAL IMPERVIOUS AREA	0.105625	= %5 OF TOTAL AREA
		TOTAL PERVIOUS AREA	2.006875	= %95 OF TOTAL AREA

OSD CATCHMENT DETAILS (P1604988DRN03V02)

POST DEVELOPMENT

KEY	DRAINS NODE	DESCRIPTION	AREA (ha)	% PAVED
	POST-A	TO BASIN 1	0.909	0.6
	POST-B	TO BASIN 2	0.782	0.6
	POST-C	TO OSD TANK	0.325	0.6
	BYPASS	BYPASS OSD	0.0965	0.7
		TOTAL AREA	2.1125	= 100% OF TOTAL AREA
		TOTAL IMPERVIOUS AREA	1.27715	= %60 OF TOTAL AREA
		TOTAL PERVIOUS AREA	0.83535	= %40 OF TOTAL AREA



DRAIN MODEL LAYOUT

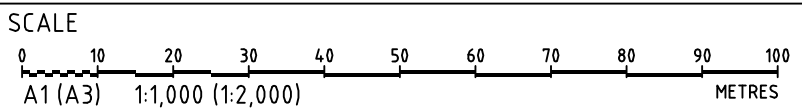
PEAK 1% AEP & 1% AEP + 30% RAINFALL INTENSITY EVENT SITE

DISCHARGE VALUES

Storm Duration (hr)	Council PSD requirement1 (l/s/ha)	Site PSD (l/s)	Pre-Developm ent (l/s)	Post-Developmen t with OSD (l/s)	Climate Change Post-Development with OSD (l/s)
0.5	229	483	903	401	482
1	331	698	935	428	608
2	390	823	933	426	614
3	279	589	685	368	449
6	235	496	463	306	377

DEVELOPMENT APPLICATION - NOT FOR CONSTRUCTION

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GRID	DATUM	PROJECT MANAGER	CLIENT
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CIVIL WORKS
8 FOREST ROAD, WARRIWOODVALE, NSW
LOT 1 DP5055

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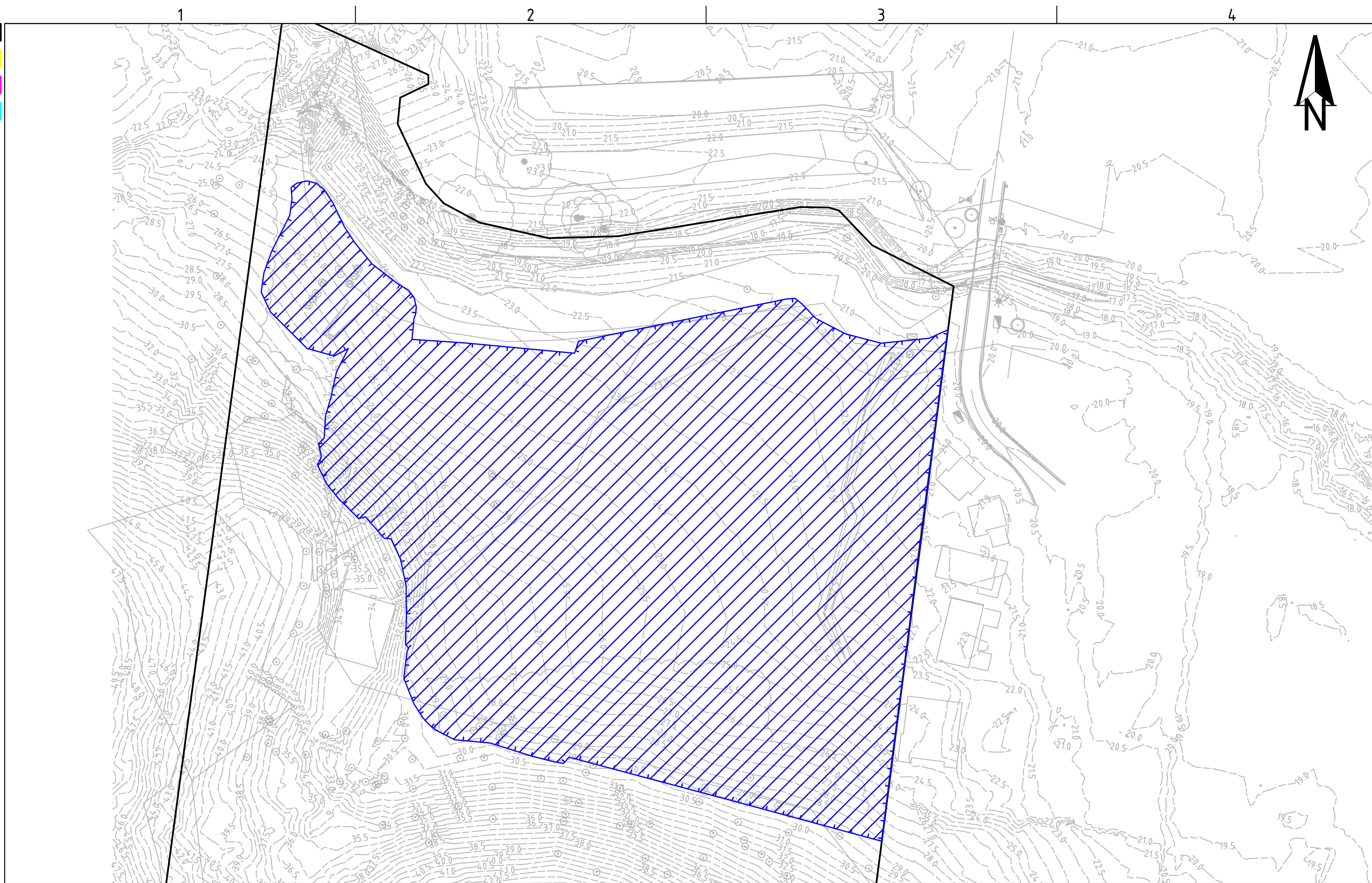
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Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE				
OSD CATCHMENT PLAN, MODEL AND RESULTS				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1504988	PS05	R02	PS05-E600	B

PRINTED: 24/09/2020 11:55:00 AM

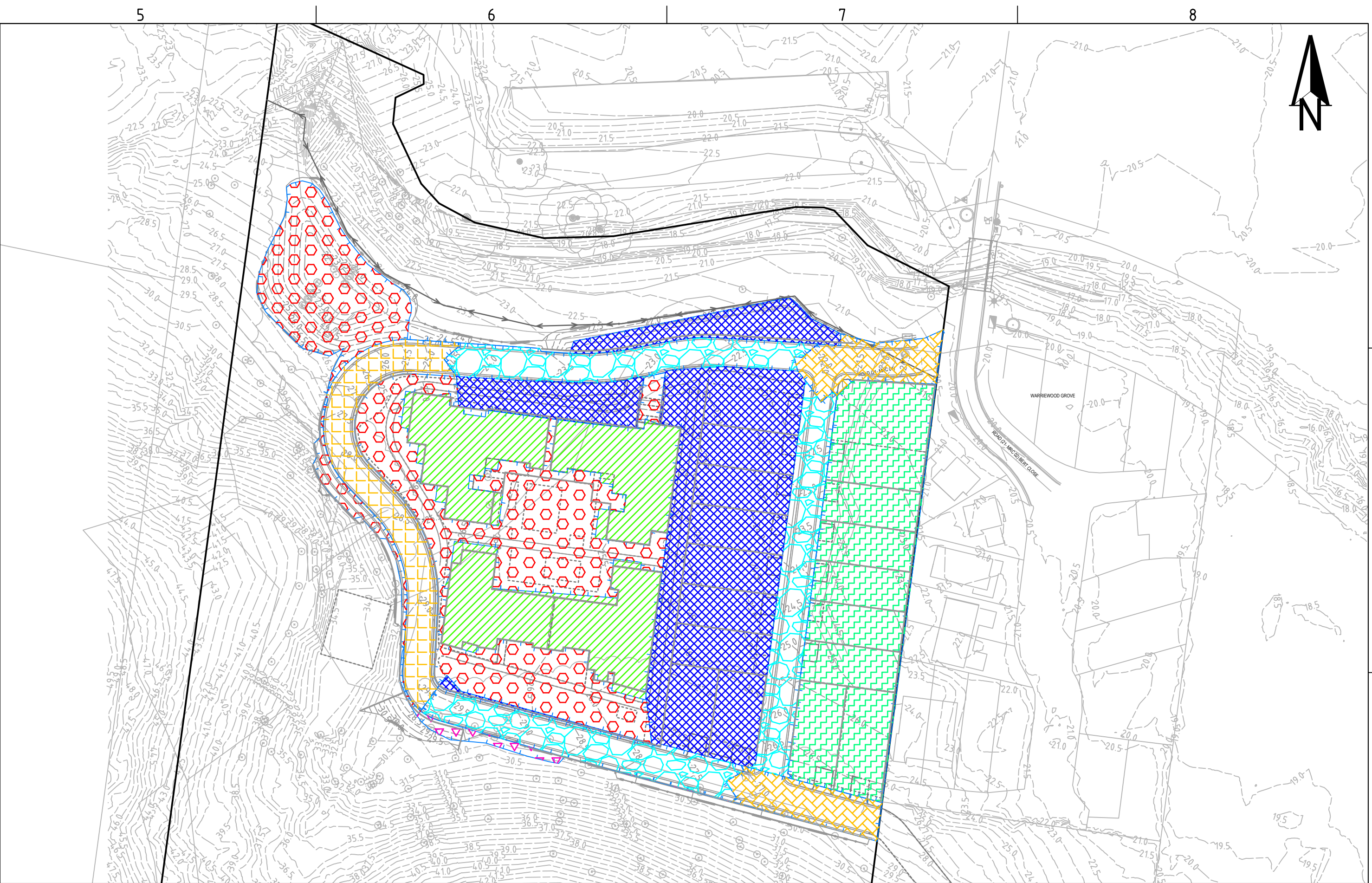
A1 / A3 LANDSCAPE (A1L5_02.0.01)

DRAWING ID: P1504988-PS05-R02-E600



PRE-DEVELOPMENT WATER QUALITY CATCHMENT PLAN

SCALE 1:1000



POST-DEVELOPMENT WATER QUALITY CATCHMENT PLAN

SCALE 1:1000

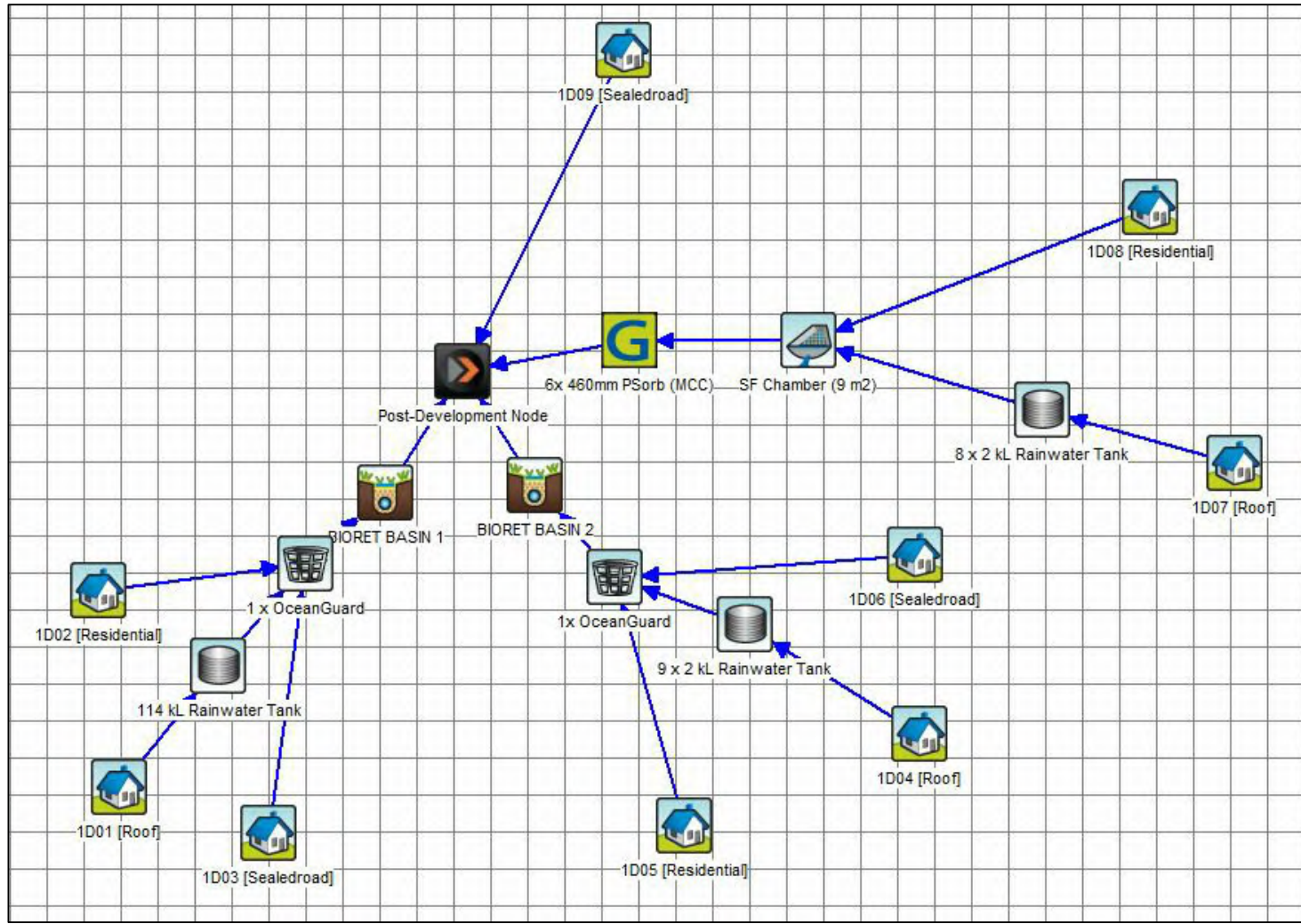
PRE DEVELOPMENT MUSIC CATCHMENT DETAILS

KEY	DESCRIPTION	MUSIC NODE ID	AREA (ha)	IMPERVIOUS %	MUSIC NODE REFERENCE
	RURAL	1E01	2.110	32	WARRIWOOD WMS 2001 & NSW MUSIC MODELLING GUIDELINES 2015
	TOTAL SITE				
		TOTAL - OVERALL	2.110	= 100 % OF OVERALL AREA	
		TOTAL - IMPERVIOUS	0.675	= 32 % OF OVERALL AREA	
		TOTAL - PERVIOUS	1.435	= 68 % OF OVERALL AREA	

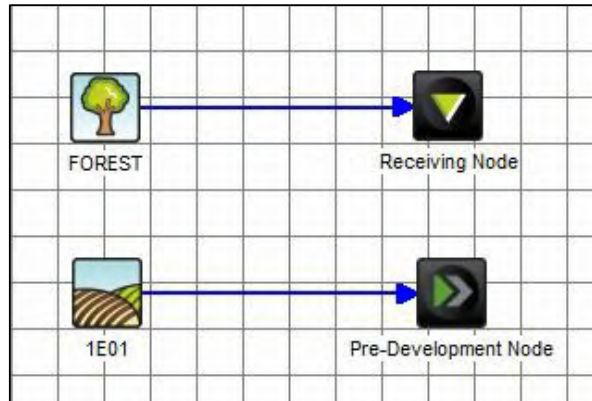
NOTE: THE IMPERVIOUS PERCENTAGE OF THE EXISTING SITE IS BASED ON THE NEAR MAP IMAGE BEFORE THE DEMOLITION WORK TOOK PLACE AS PART OF PREVIOUS DEVELOPMENT APPLICATION.

POST DEVELOPMENT MUSIC CATCHMENT DETAILS

KEY	ID	DESCRIPTION	MUSIC NODE	AREA (ha)	IMPERVIOUS %	MUSIC NODE REFERENCE
CATCHMENTS TO BASIN 1						
	ID01	ROOF		0.314	100	WARRIWOOD WMS 2001 & NSW MUSIC MODELLING GUIDELINES 2015
	ID02	RESIDENTIAL		0.472	60	WARRIWOOD WMS 2001 & NSW MUSIC MODELLING GUIDELINES 2015
	ID03	ROAD		0.118	70	WARRIWOOD WMS 2001 & NSW MUSIC MODELLING GUIDELINES 2015
CATCHMENTS TO BASIN 2						
	ID04	ROOF		0.144	100	WARRIWOOD WMS 2001 & NSW MUSIC MODELLING GUIDELINES 2015
	ID05	RESIDENTIAL		0.361	60	WARRIWOOD WMS 2001 & NSW MUSIC MODELLING GUIDELINES 2015
	ID06	ROAD		0.279	70	WARRIWOOD WMS 2001 & NSW MUSIC MODELLING GUIDELINES 2015
CATCHMENTS TO TANK 3						
	ID07	ROOF		0.128	100	WARRIWOOD WMS 2001 & NSW MUSIC MODELLING GUIDELINES 2015
	ID08	RESIDENTIAL		0.197	60	WARRIWOOD WMS 2001 & NSW MUSIC MODELLING GUIDELINES 2015
BYPASSED AREA						
	ID09	ROAD		0.097	70	WARRIWOOD WMS 2001 & NSW MUSIC MODELLING GUIDELINES 2015
		TOTAL SITE				
			TOTAL - OVERALL	2.110	= 100 % OF OVERALL AREA	
			TOTAL - IMPERVIOUS	1.278	= 61 % OF OVERALL AREA	
			TOTAL - PERVIOUS	0.832	= 39 % OF OVERALL AREA	



POST-DEVELOPMENT MUSIC MODEL LAYOUT



PRE-DEVELOPMENT MUSIC MODEL LAYOUT

Treatment Train Effectiveness - Post-Development Node						
	Sources		Residual Load		% Reduction	
	Pre	Post	Pre	Post	Pre	Post
Flow (ML/yr)	9.04	16	9.04	11.5	0	28.1
Total Suspended Solids (kg/yr)	354	1780	354	106	0	94
Total Phosphorus (kg/yr)	1.3	5.51	1.3	0.85	0	84.6
Total Nitrogen (kg/yr)	10.2	26.9	10.2	8.12	0	69.8
Gross Pollutants (kg/yr)	285	475	285	21.6	0	95.5

MUSIC MODEL RESULT (DRY)

Treatment Train Effectiveness - Post-Development Node						
	Sources		Residual Load		% Reduction	
	Pre	Post	Pre	Post	Pre	Post
Flow (ML/yr)	16.5	23.5	16.5	18.9	0	19.6
Total Suspended Solids (kg/yr)	558	2580	558	164	0	93.6
Total Phosphorus (kg/yr)	1.69	8.15	1.69	1.26	0	84.5
Total Nitrogen (kg/yr)	16.9	38.7	16.9	12.8	0	66.9
Gross Pollutants (kg/yr)	352	569	352	26	0	95.4

MUSIC MODEL RESULT (AVERAGE)

Treatment Train Effectiveness - Post-Development Node						
	Sources		Residual Load		% Reduction	
	Pre	Post	Pre	Post	Pre	Post
Flow (ML/yr)	31.2	37.1	31.2	32.2	0	13.2
Total Suspended Solids (kg/yr)	1360	4230	1360	630	0	85.1
Total Phosphorus (kg/yr)	3.61	12.8	3.61	3	0	76.6
Total Nitrogen (kg/yr)	29.5	58.6	29.5	23.6	0	59.7
Gross Pollutants (kg/yr)	371	605	371	27.5	0	95.5

MUSIC MODEL RESULT (WET)

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SCALE
0 10 20 30 40 50 60 70 80 90 100
A1 (A3) 1:1,000 (1:2,000) METRES

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PROJECT NAME/PLANSET TITLE
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DRAWING TITLE				
WATER QUALITY CATCHMENT PLAN, MODEL AND RESULTS				
PROJECT NO. P1504988	PLANSET NO. PS05	RELEASE NO. R02	DRAWING NO. PS05-E700	REVISION B

DRAWING ID: P1504988-PS05-R02-E700