



NorBE Assessment

Proposed Alterations and Additions | The Scots College, Glengarry Campus, Kangaroo Valley

Prepared for: Baxter Jacobson Architects

Report Number: 23P00240

Date: November 14, 2024



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Issue No.	Date	Prepared by	Checked by	Final Approval
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1.0 Executive Summary

MIEngineers have been engaged by Scots College Glengarry c/o Baxter & Jacobson Architects to undertake Neutral or Beneficial (NorBE) Assessment for a proposed alterations and additions to the scotts college glengarry campus 369 Jacks Corner Rd Kangaroo Valley NSW 2577. It is required under the Environmental Planning and Assessment Act, 1979 and the development proponent's responsibility to prove that a development would have a neutral or beneficial effect on water quality. This report addresses the requirement by WaterNSW 'Developments in the Sydney Drinking Water Catchment' for any development within the Sydney drinking water catchment as the site is located within the Shoalhaven River catchment, as seen in Figure 1 below. This report is submitted as a supporting document for the Development Application (DA) submission shown attached in Appendix A to demonstrate that Neutral or Beneficial Effect (NORBE) on water quality has been achieved for the proposed development.

This assessment includes:

- (i) An investigation into the existing water cycle;
- (ii) An assessment of how the proposed development might affect the management of the water cycle;
- (iii) A conceptual plan for managing the water cycle to achieve a neutral or beneficial effect (NorBE) on the quality of water leaving the site.

MI engineers staff inspected the site on 23rd September 2024, Weather on that day was mild and dry.

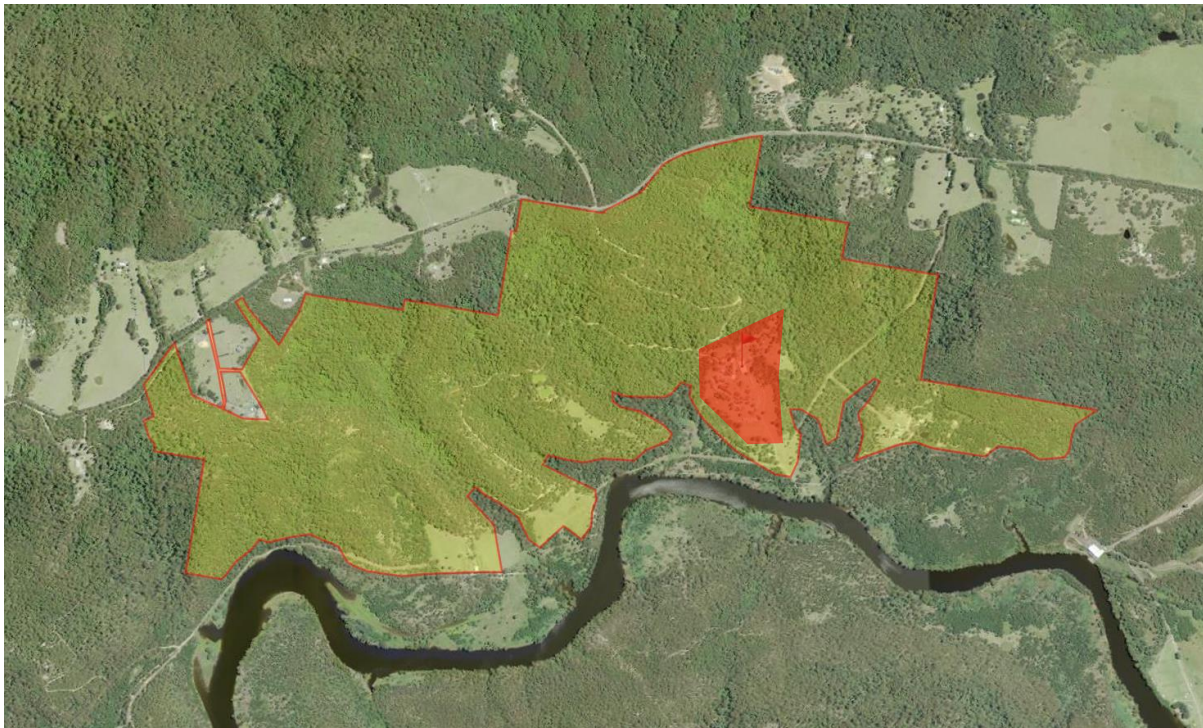


Figure 1: Site location (shaded yellow) Development location (shaded red) © Six Maps

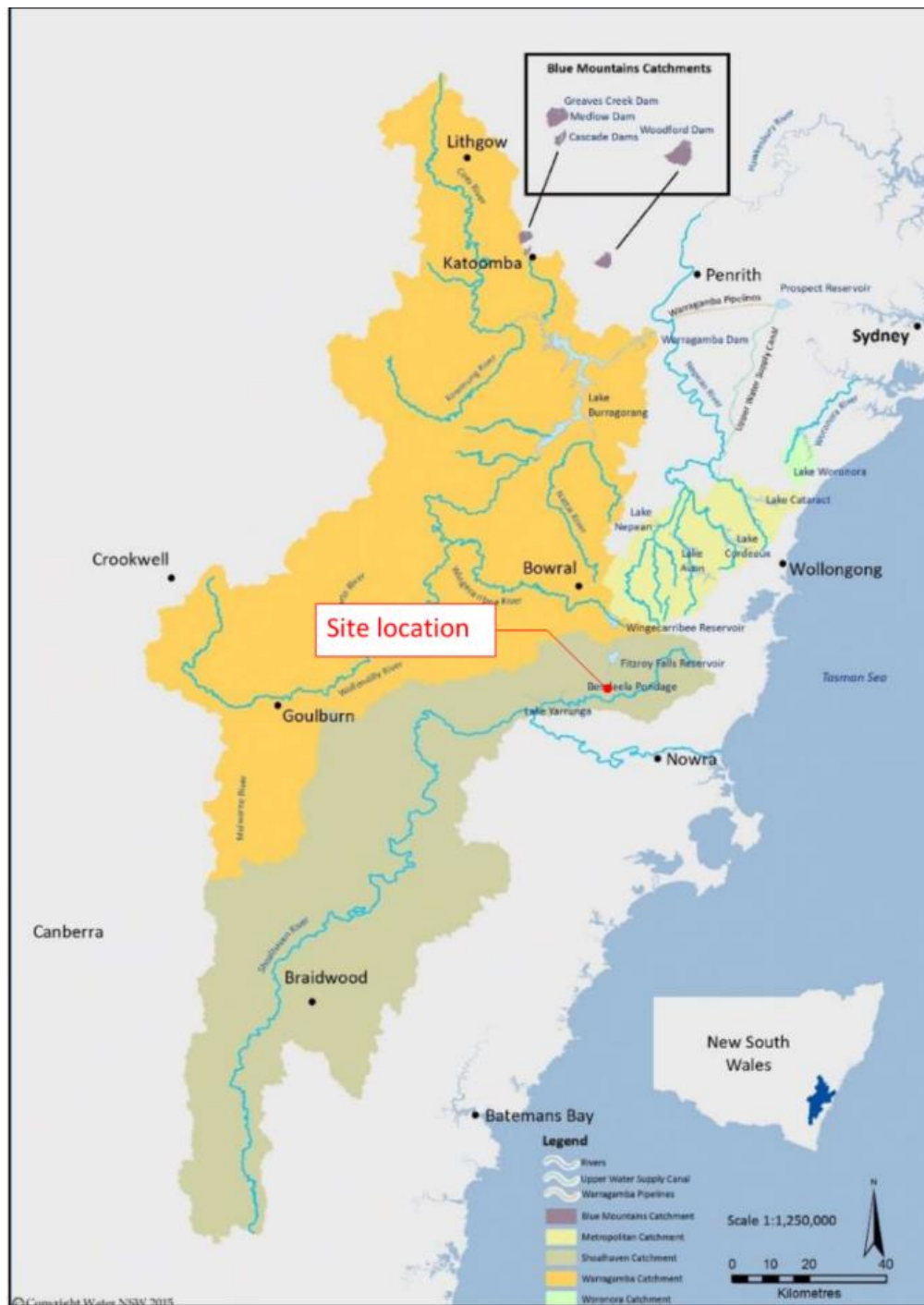


Figure 2: Sydney Drinking Water catchment

2.0 Project Description

Proposed alterations to an existing Outdoor Educational establishment as part of an overall Masterplan upgrade for the existing facility known as The Scots College. The proposed works are located within the existing area of development with and comprise of the construction of new general learning areas (GLAs), with dormitories. The proposal also includes an upgrade of existing internal and main access to the site, relocation of maintenance / storage sheds, a new canoe store building (Class 10a building), upgraded parking and relocation of staff accommodation, a chapel, multipurpose room, music class, linen store, administration building and kitchen & dining. The master plan of the proposed development has been prepared by Baxter & Jacobson Architects and is shown in Figure 3. It is proposed that the works are to be conducted over two (2) stages as below master plan (Figure 3).

A detailed survey has been provided by "SET Consultants Pty Ltd on 07/08/2024 as presented in Appendix B. The site generally falls towards the southwest and southeast directions and existing stormwater drainage system includes a dam, a stormwater detention basin, pits and pipe network and few swales.



3.0 The site

3.1 General Conditions

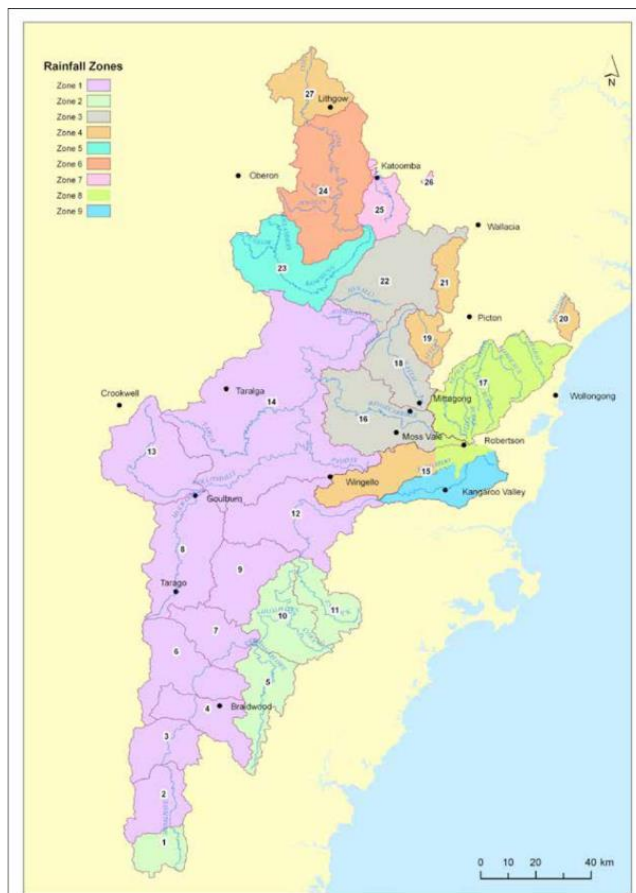
The development property area is 17.5ha mainly covered with denser vegetation identified as being a possible bushfire impact to the proposed building works is located to the north, west and east within the subject site.

3.2 Topography and Drainage

The site grades at about 10-15 percent towards the south-west and south-east directions to the existing stormwater basin & dam and then drains into the Kangaroo-river and ultimately into Shoalhaven River.

3.3 Climate

The area has a warm temperate climate with summer-dominated rainfall. Nearby Nowra has a mean annual rainfall of 1,133 mm and has a mean 127.7 wet days a year. Pan evaporation is relatively high; approximately 1,671 mm/year¹. Potential evapotranspiration (PET) is about 1,275mm (estimated from BOM mapping). For the Music model climate Zone 9 rainfall zone of Kangaroo River was used.



Catchment Properties	
Catchment Name	369 Jacks Cnr Rd, Kangaroo Vally
Rainfall Station	Zone_E_6min_BUDDEROO
ET Station	User-defined monthly PET
Start Date	1/01/1995 12:00 AM
End Date	31/12/1999 11:54 PM
Modelling Time Step	6 Minutes
Close	

Figure 4: Catchment properties

Figure 5: Sydney Drinking Water Catchment MUSIC climate zones

4.0 Stormwater Drainage

4.1 Catchment Context

From the survey provided, the crest area was identified around the existing main car parking area with contours falling to the south-west and south-east directions towards the Kangaroo Valley River. The total catchment area is divided into catchment areas as figure 4.

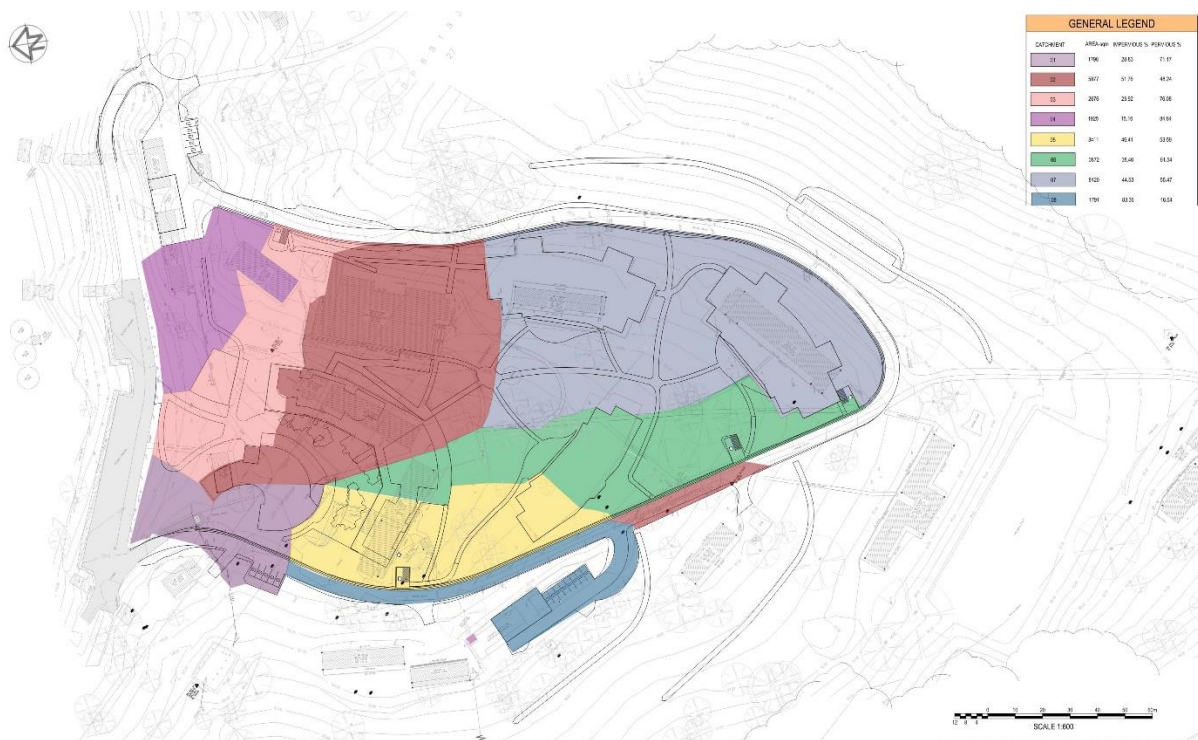


Figure 6: Post Development Catchment Plan

4.2 Stormwater Design

The design intent is to allow for stormwater to drain from the site by gravity. The proposed building roofs were designed to drain towards the proposed rainwater tanks and any overflow from rainwater tanks will be conveyed to the proposed pit and pipe network. All surface runoff from the internal landscaping area has been captured by the proposed pit and pipe network and conveyed to the proposed detention basin or existing detention basin or swales for treatment before getting discharged from the site. The runoff from the proposed gravel road has been captured by the proposed swales.

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5.0 Proposed Water Quality Treatment Measures

The following water quality devices have been proposed for stormwater treatment within the site:

5.1 Existing Stormwater Detention Basin

The catchment area 01 is drain to the existing detention basin which have following dimensions:

Surface area = 150m^2

Extended Detention Depth = 0.35m

Permanent Pool Volume = 52.0m^3

Initial Volume = 52.0m^3

5.2 Existing Dam

The catchment area 02, 03 & 04 is drain to the existing dam which have following dimensions:

Surface area = 950m^2

Extended Detention Depth = 1.0m

Permanent Pool Volume = 950.0m^3

Initial Volume = 950.0m^3

5.3 Proposed Stormwater Detention Basin

The catchment area 02, 03 & 04 is drain to the proposed detention basin which have following dimensions:

Surface area = 100m^2

Extended Detention Depth = 0.5m

Permanent Pool Volume = 100.0m^3

Initial Volume = 100.0m^3

5.4 Proposed Swale- 01

The catchment area 08 (uncontrolled) is drain to the proposed swale-01 which have following dimensions:

Length = 120.0m

Bed slope = 1%

Width = 2.0m

Vegetation height = 0.2m

Side slopes = 1V:3H

5.5 Proposed Swale- 02

The catchment area 10 (uncontrolled) is drain to the proposed swale-02 which have following dimensions:

Length = 90.0m

Bed slope = 1%

Width = 2.0m

Vegetation height = 0.2m

Side slopes = 1V:3H

5.6 Proposed Swale- 03

The catchment area 11 (uncontrolled) is drain to the proposed swale-02 which have following dimensions:

Length = 225.0m

Bed slope = 1%

Width = 2.0m

Vegetation height = 0.2m

Side slopes = 1V:3H

5.7 Rainwater Tanks for Proposed Buildings

The roof catchment area is drain to the proposed rainwater tank with a capacity of 10,000L per building with re use as per table 1 of WaterNSW drinking catchment modelling guidelines.

Table 1: Water demands for rural and urban dwellings

	Rural dwelling rainwater tank sole water supply				Urban dwelling reticulated water supply			
	Annual internal use in kilolitres (kL/yr/dwelling)							
No. of bedrooms ¹	1 to 2	3	4	5	1 to 2	3	4	5
Toilet (25%)	31	44	57	71	46	66	86	106
Toilet + laundry (50%)	60	88	115	142	91	131	172	212
Toilet + laundry + hot water (90%)	110	159	206	256	164	237	309	384
Toilet + laundry + hot water + other (100%)	122	175	230	283	183	263	343	424
	Daily internal use in kilolitres (kL/day/dwelling)							
No. of bedrooms ¹	1	2	3	4	1 to 2	3	4	5
Toilet (25%)	0.085	0.120	0.155	0.195	0.125	0.180	0.235	0.290
Toilet + laundry (50%)	0.165	0.240	0.315	0.390	0.250	0.360	0.470	0.580
Toilet + laundry + hot water (90%)	0.300	0.435	0.565	0.700	0.450	0.650	0.845	1.045
Toilet + laundry + hot water + other (100%)	0.335	0.480	0.630	0.775	0.500	0.720	0.940	1.160
	External and commercial / industrial use							
External residential use eg gardens	For a typical urban lot - 0.15 kL/day/dwelling or 55 kL/yr/dwelling							
Commercial / Industrial Use	Indicative 0.1 kL/day/1000 m ² of roof area (internal use) & 20 kL/yr/1000 m ² (external use) - Development-specific data may provide better reuse values							

¹ Note - Where the number of bedrooms is unknown as for subdivisions, assume 4 bedrooms per dwelling

5.8 Buffer Zone

These are landscaped areas where surface runoff from impervious surfaces flows over before reaching the next capture or conveyance point. They are the landscaped areas situated between uncontrolled surfaces and the swales they flow into.

6.0 Stormwater Quality Modelling

6.1 Introduction

The estimated pre and post development sediment and pollutant loads are modelled using MUSIC (Model for Urban Stormwater Improvement Conceptualisation), developed by eWater.

Statistics are produced in MUSIC for the following pollutants:

- TSS - Total Suspended Solids (kg/yr)
- TP - Total Phosphorus (kg/yr)
- TN - Total Nitrogen (kg/yr)
- Gross Pollutants (kg/yr)

6.2 Soil Profile

Two soil profile reports from the closest available locations to the site indicate that the soil at a depth of 500mm is classified as Medium to Heavy Clay. (Attached in Appendix C).

6.3 Stormwater pollutant input parameters

Table 2 and 3 show the stormwater pollutant input parameters to be used for each surface type and land use or zoning for base flow and storm flow. Strong justification must be provided where alternative pollutant input values are used. Base flow parameters are applied to groundwater flow, and stormwater flow parameters are applied to surface runoff.

Table 2. Base flow pollutant concentration parameters¹ (based on Fletcher et al., 2004)

Concentration (mg/L-log ₁₀)	Total suspended solids		Total phosphorus		Total nitrogen	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Surface type						
Roofs ²	-	-	-	-	-	-
Sealed roads ³	1.20	0.17	-0.85	0.19	0.11	0.12
Unsealed roads ⁴	1.20	0.17	-0.85	0.19	0.11	0.12
Eroding gullies ⁴	1.20	0.17	-0.85	0.19	0.11	0.12
Revegetated land ^{4, 5}	1.15	0.17	-1.22	0.19	-0.05	0.12
Quarries ⁴	1.20	0.17	-0.85	0.19	0.11	0.12
Land use/zoning						
Residential	1.20	0.17	-0.85	0.19	0.11	0.12
Commercial	1.20	0.17	-0.85	0.19	0.11	0.12
Industrial	1.20	0.17	-0.85	0.19	0.11	0.12
Rural residential	1.15	0.17	-1.22	0.19	-0.05	0.12
Agricultural	1.30	0.13	-1.05	0.13	0.04	0.13
Forest	0.78	0.13	-1.52	0.13	-0.52	0.13

¹ Derived for NSW.² Roofs have no base flow.³ Most urban sealed roads are fully sealed to a gutter or concrete edge and thus have no baseflow, whereas rural sealed roads invariably include unsealed shoulders, which do generate baseflow. Rural sealed roads should therefore be modelled with the shoulders and given a 50% impervious value – see footnote Table 4.2.⁴ Additional surface types not included in Fletcher et al. (2004).⁵ Revegetated land means cleared land that has been replanted with trees and shrubs and fenced-off from livestock.**Table 3. Storm flow pollutant concentration parameters¹ (based on Fletcher et al., 2004)**

Concentration (mg/L-log ₁₀)	Total suspended solids		Total phosphorus		Total nitrogen	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Surface type						
Roofs	1.30	0.32	-0.89	0.25	0.30	0.19
Sealed roads	2.43	0.32	-0.30	0.25	0.34	0.19
Unsealed roads ²	3.00	0.32	-0.30	0.25	0.34	0.19
Eroding gullies ²	3.00	0.32	-0.30	0.25	0.34	0.19
Revegetated land ^{2, 3}	1.95	0.32	-0.66	0.25	0.30	0.19
Quarries ²	3.00	0.32	-0.30	0.25	0.34	0.19

6.4 Post Development Modelling Assumptions

The post-development model is comprised of the following source nodes:

Node HW01

Gravel road (unsealed) catchment area of 452m² of impervious, Roof catchment area 268m² of impervious and turf landscaping catchment area of 368m² of pervious, drains to the existing detention basin of the capacity of 52m³.

Node HW02

Controlled-Concrete paths and Concrete drain catchment area of 586m² of impervious, Roof catchment area of 734m² of impervious and turf landscaping catchment area of 414m² of pervious, controlled drains via pit and pipe network and to the Swale HW02 length of 120m.

Node HW02

Uncontrolled-Gravel Road (unsealed) catchment area of 1390m² of impervious, Roof catchment area 206m² of impervious drains to Swale HW02 length of 120m through the buffer zone

Node HW03

Controlled-Concrete paths and Concrete drain catchment area of 421m² of impervious, Roof catchment area of 842m² of impervious, Gravel Road catchment area 90m² of impervious and turf landscaping catchment area of 322m² of pervious, controlled drains via pit and pipe network and to the Swale HW03 length of 90m.

Node HW03

Uncontrolled-Gravel Road (unsealed) catchment area of 358m² of impervious, turf landscaping catchment area 80m² of pervious drains to Swale HW03 length of 90m through the buffer zone

Node-New Detention Basin

Concrete paths and Concrete drain catchment area of 1500m² of impervious, Roof catchment area of 2789m² of impervious and turf landscaping catchment area of 101m² of pervious, drains via pit and pipe network and to the proposed detention basin of the capacity of 100m³.

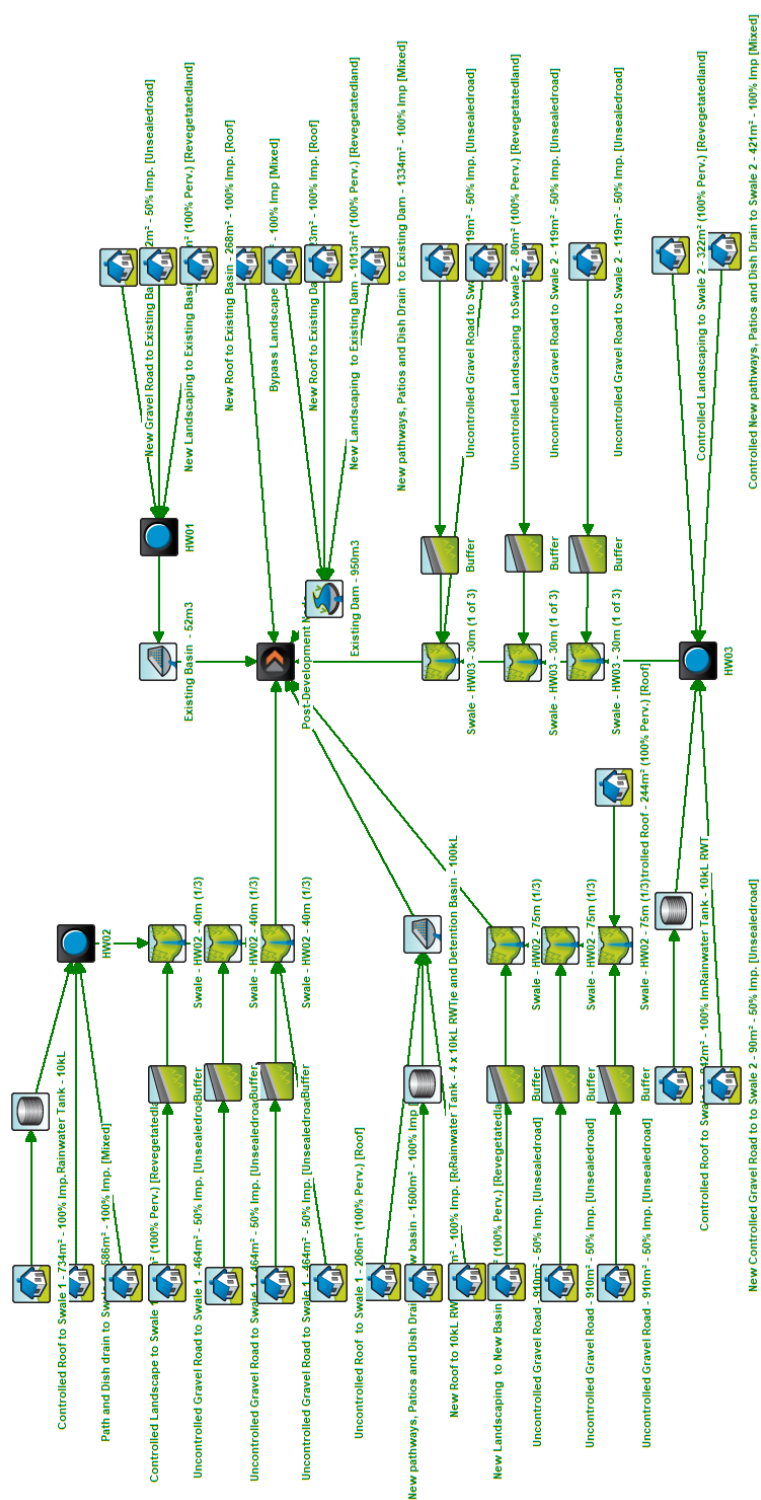
Node-Existing Dam

Concrete paths and Concrete drain catchment area of 1334m² of impervious, Roof catchment area of 1023m² of impervious and turf landscaping catchment area of 1013m² of pervious, drains to the Existing Dam.

Node-Swale HW02

Uncontrolled-Gravel Road (unsealed) catchment area of 2725m² of impervious, Roof catchment area 244m² of impervious drains to Swale HW02 length of 225m.

The Music model is shown diagrammatically in Figure 8 & Figure 9



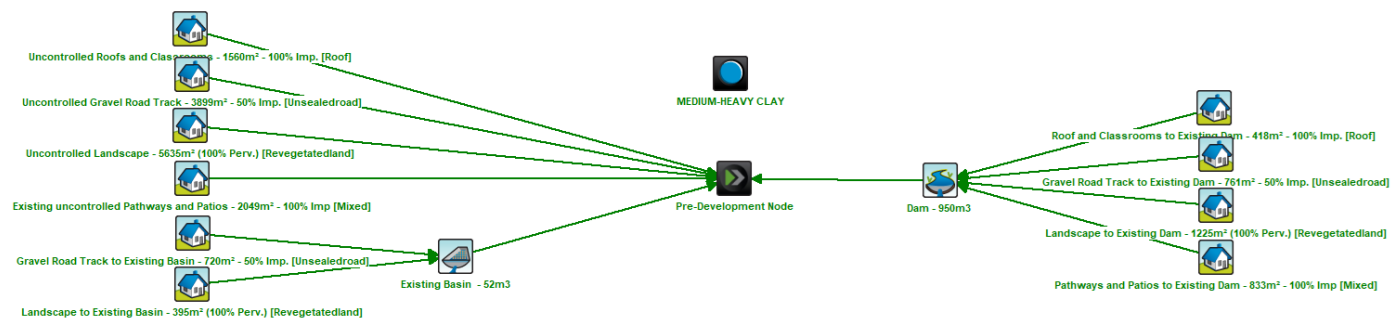


Figure 9: Music Model Pre-development

6.5 Modelling Results

6.5.1 Mean Annual Loads

Table 4 contains the results of the modelling. It shows the proposed development would improve the existing mean annual load export of sediment and nutrients.

Table 4: MUSIC Results: Mean Annual loads

	Sources		Residual Load		% Reduction	
	Pre	Post	Pre	Post	Pre	Post
Flow (ML/yr)	20	20.9	19.1	20.3	4.5	2.87
Total Suspended Solids (kg/yr)	10100	9480	7610	848	24.7	91.1
Total Phosphorus (kg/yr)	7.64	7.64	6.2	3.19	18.8	58.2
Total Nitrogen (kg/yr)	48.2	51.3	42	36.9	12.9	28.1
Gross Pollutants (kg/yr)	290	399	213	8.06	26.6	98

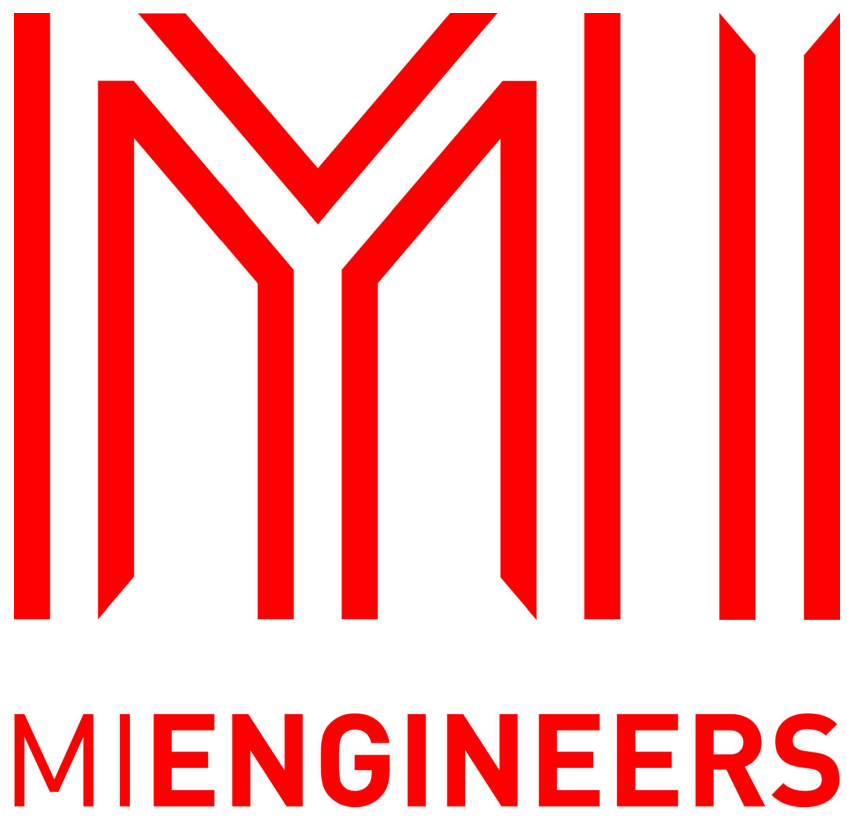
Table 5: Residual Load Comparison

NORBE - RESIDUAL LOAD COMPARISON			
NorBE	Pre	Post	Reduction
Flow (ML/yr)	19.100	20.3	-6.3%
Total Suspended Solids (kg/yr)	7610.0	848.0	88.9%
Total Phosphorus (kg/yr)	6.20E+00	3.19E+00	48.5%
Total Nitrogen (kg/yr)	4.20E+01	3.69E+01	12.1%
Gross Pollutants (kg/yr)	213.0	8.1	96.2%

7.0 Conclusion

In conclusion, the proposed stormwater quality measures, consisting of Existing sediment basin, proposed sediment basin, Existing dam, Onsite detention tanks, three swales and buffer zones will be sufficient for the proposed development to achieve both NORBE and water quality reduction targets by Shoalhaven City Council.

Appendix 1 | DA Drawings



SYDNEY OFFICE
Suite 2.06, 68 York Street, Sydney NSW 2000 Australia
Tel (02) 8396 6565

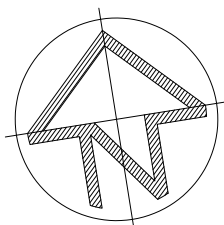
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WOLLONGONG OFFICE
Suite 3, 128/134 Crown Street, Wollongong NSW 2500
Tel (02) 4423 0566

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PROPOSED INTERNAL ACCESS ROAD

369 JACKS CORNER RD
KANGAROO VALLEY



APPROXIMATE AREA OF WORKS

DRAWING INDEX

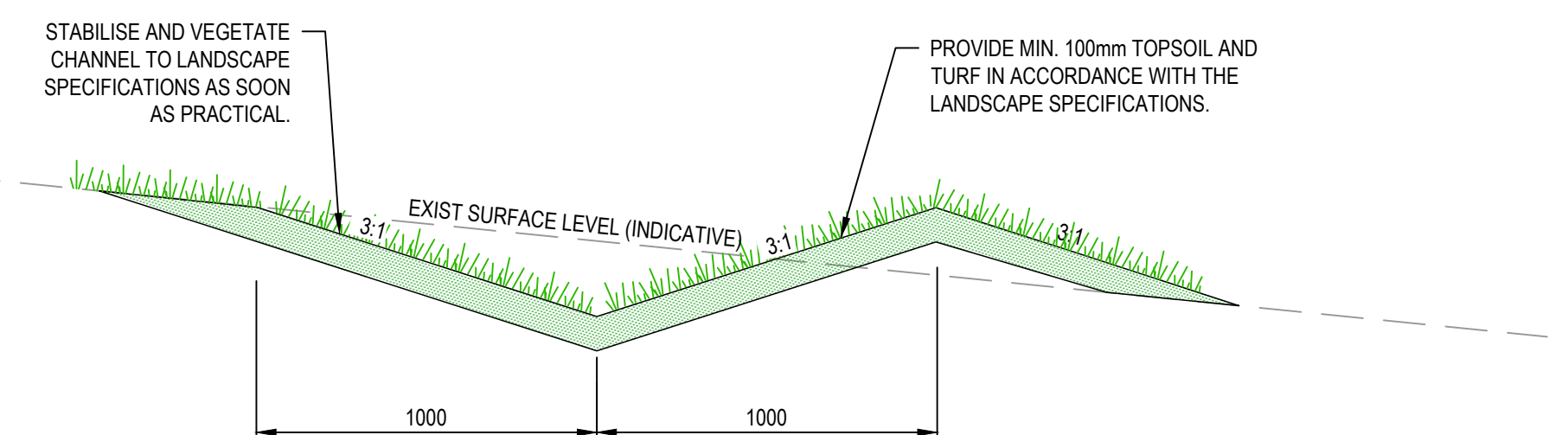
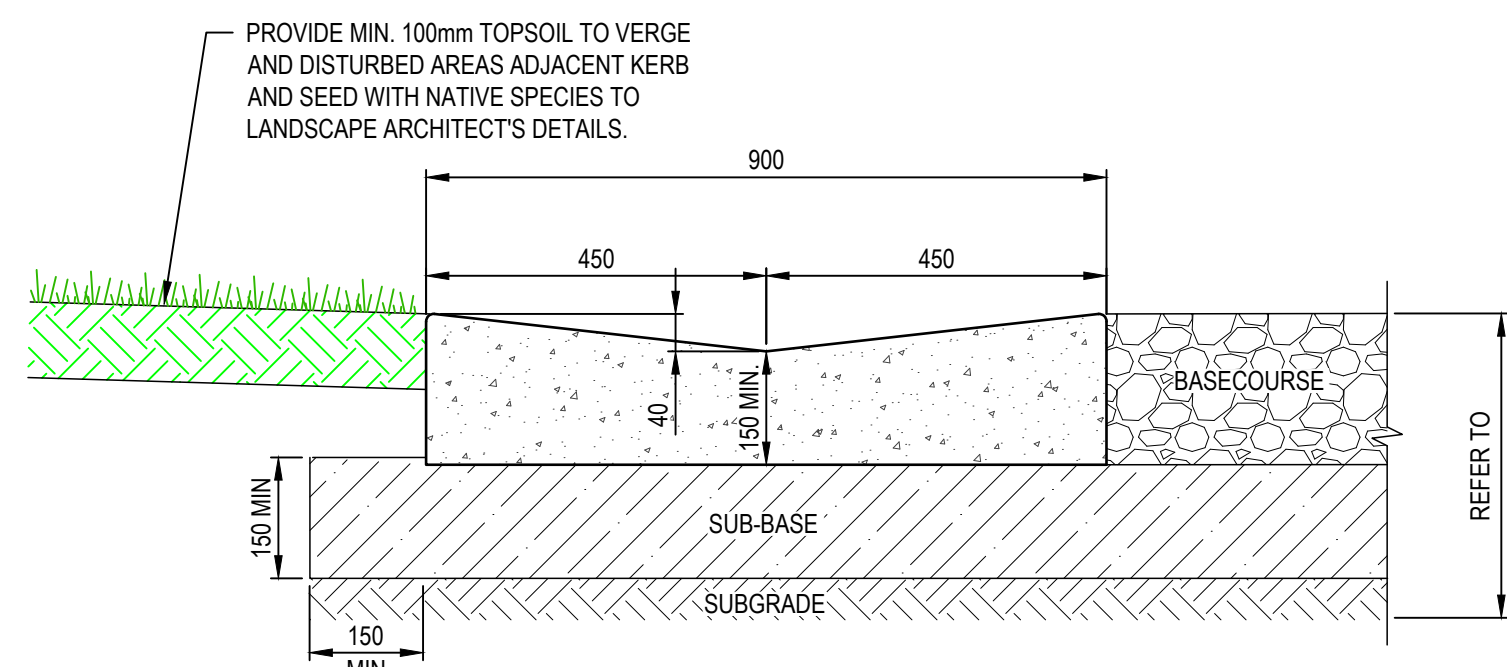
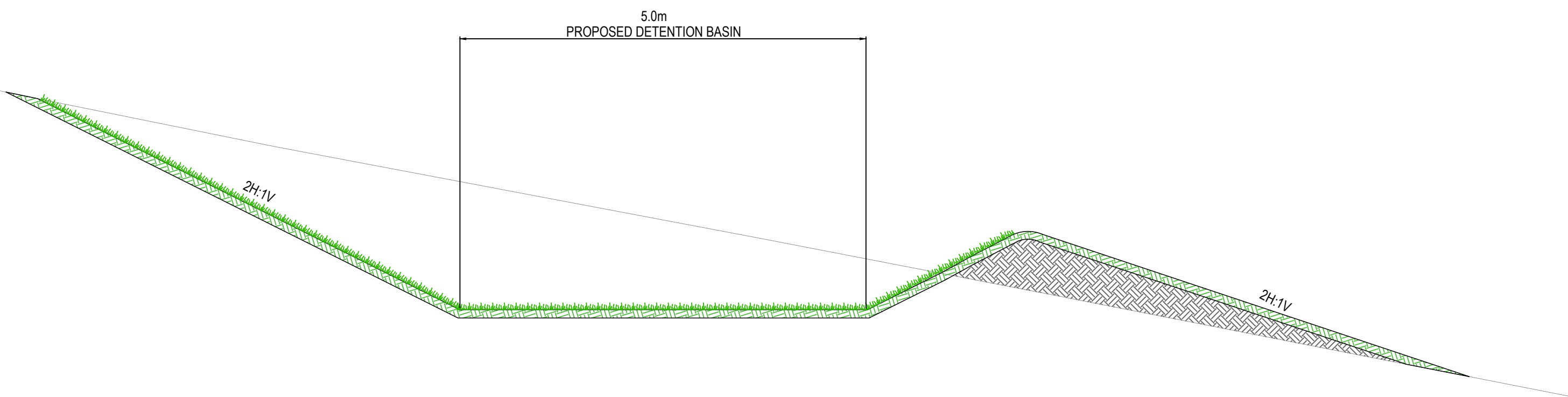
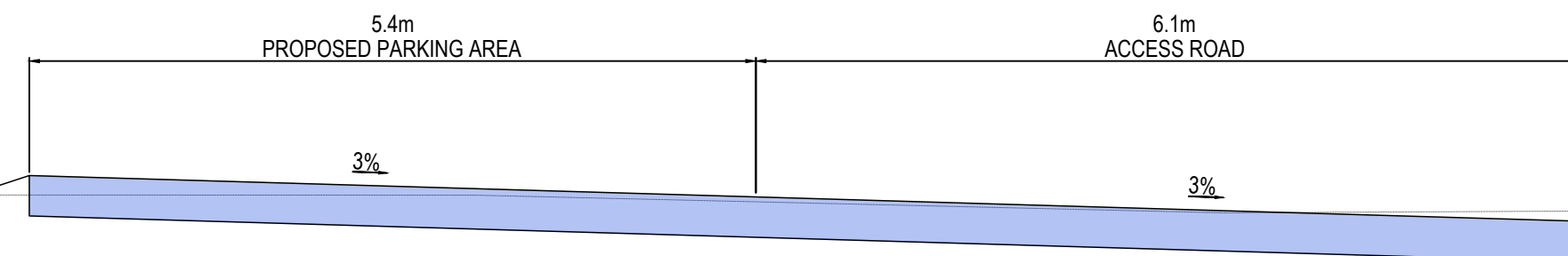
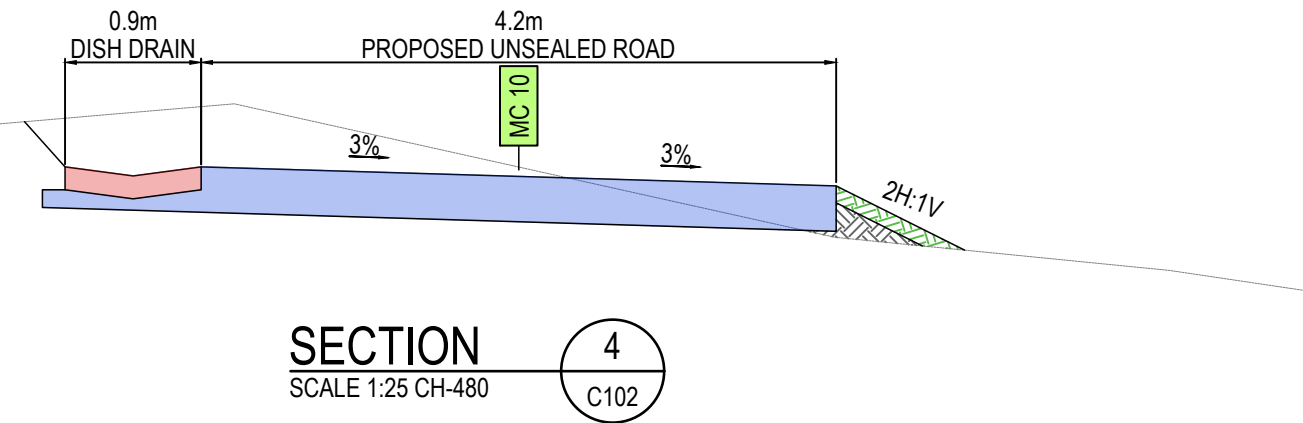
- 23P00240 C001 COVER SHEET
- 23P00240 C011 TYPICAL CROSS SECTIONS & DETAILS
- 23P00240 C051 BULK EARTHWORKS PLAN
- 23P00240 C100 SITE PLAN
- 23P00240 C102 GENERAL ARRANGEMENT PLAN SHEET 1
- 23P00240 C103 GENERAL ARRANGEMENT PLAN SHEET 2
- 23P00240 C105 STORMWATER CATCHMENT PLAN -PRE DEVELOPMENT
- 23P00240 C106 STORMWATER CATCHMENT PLAN-POST DEVELOPMENT
- 23P00240 C110 DEMOLITION PLAN STAGE 01
- 23P00240 C111 MC10 LONGITUDINAL SECTIONS
- 23P00240 C121 MC10 CROSS SECTIONS SHEET 1
- 23P00240 C122 MC10 CROSS SECTIONS SHEET 2
- 23P00240 C201 STORMWATER PLAN
- 23P00240 C501 EROSION & SEDIMENT CONTROL PLAN
- 23P00240 C502 EROSION & SEDIMENT CONTROL DETAILS SHEET

LOCALITY PLAN
N.T.S.

NOT FOR CONSTRUCTION



REVISION		AMENDMENTS		DATE	CKD	APP	SURVEYOR: SET CONSULTANTS	 MIENGINEERS SYDNEY OFFICE Suite 2.06, 68 York St, Sydney NSW 2000 Australia Tel (02) 8396 6565 SOUTH COAST OFFICE 49 Berry Street, Nowra NSW 2541 Tel (02) 4423 0566 WOLLONGONG OFFICE Suite 3a, 128-134 Crown Street, Wollongong NSW 2500 Tel (02) 4423 0566	CLIENT:	THIS DRAWING AND THE CONCEPTS CONTAINED THEREIN ARE THE PROPERTY OF MI ENGINEERS. NO UNAUTHORISED COPYING IS PERMITTED. NOTHING IS TO BE CONSTRUCTED BASED ON THIS DRAWING, OR PART OF THIS DRAWING, WITHOUT THE WRITTEN PERMISSION OF MI ENGINEERS. DRAWINGS TO BE READ IN CONJUNCTION WITH OTHER RELATED DESIGN DOCUMENTATION. FURTHERMORE, WHERE MIENGINEERS RELIES ON THE INFORMATION SUPPLIED BY OTHERS TO PRODUCE THE DESIGNS, WE ACCEPT NO LIABILITY FOR ERRORS, TO THE EXTENT THAT THE DESIGN HAS MADE RELIANCE ON THIS INFORMATION. MUST BE READ IN COLOUR MIENGINEERS.COM	PROJECT :	DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
A	ISSUED FOR REVIEW (PRE-DA SUBMISSION)		16.10.24	MW	MW	DATE OF SURVEY: 8/7/2024	PROPOSED INTERNAL ACCESS ROAD 369 JACKS CORNER RD KANGAROO VALLEY		NG		NG	-	A1		
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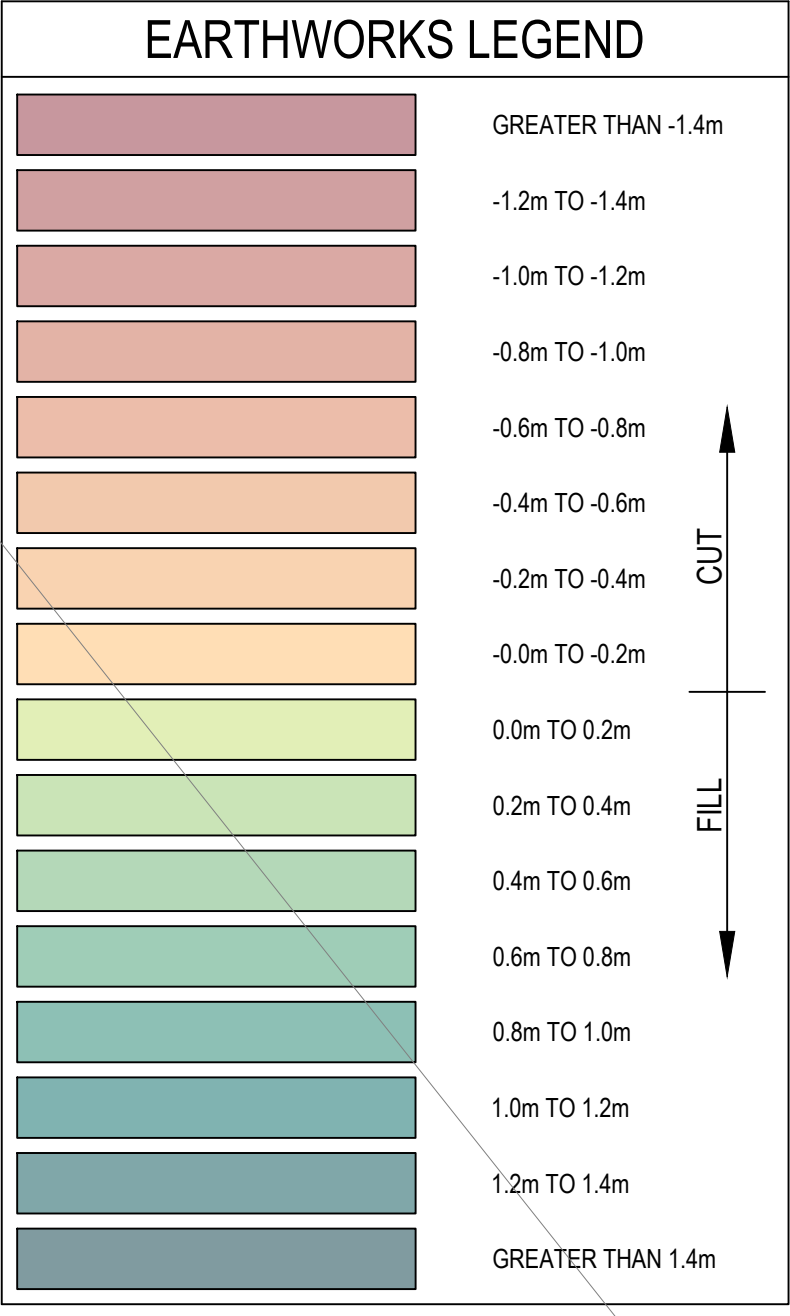
TYPICAL 900mm WIDE CONCRETE DISH DRAIN (DD) DETAIL

SCALE 1:20

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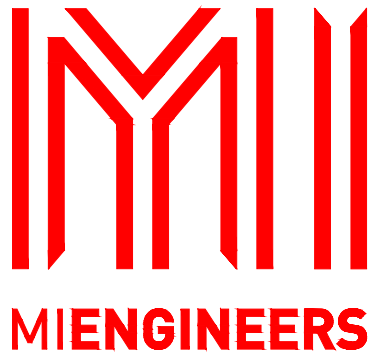
BULK EARTHWORKS PLAN
SCALE 1:500

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					ORIGIN: -
					HEIGHT OF DATUM: -
					HORIZONTAL DATUM: -

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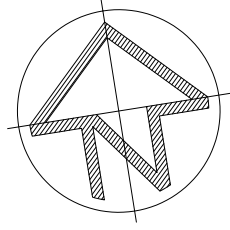
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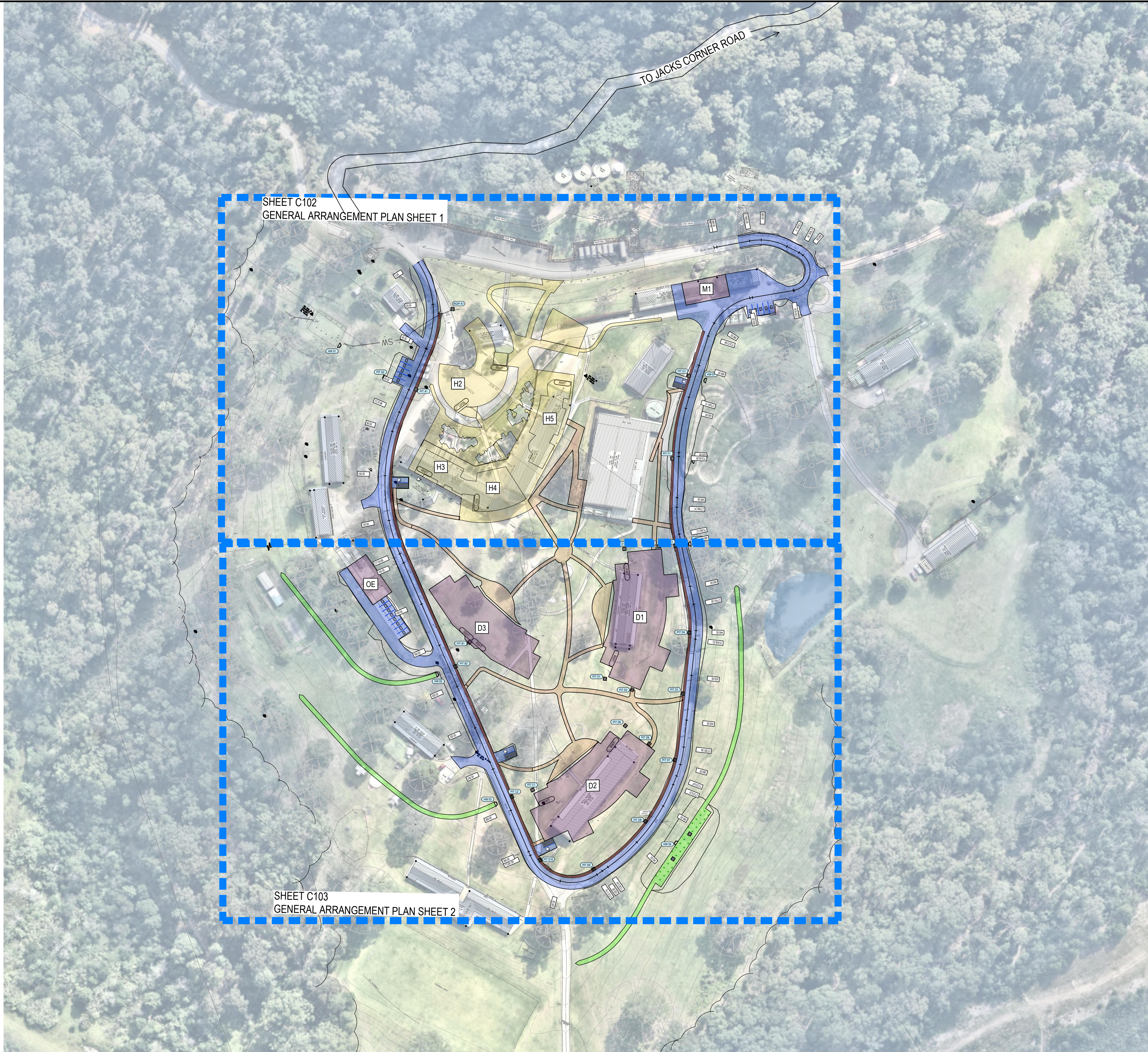
PROJECT :
PROPOSED INTERNAL ACCESS ROAD
369 JACKS CORNER RD
KANGAROO VALLEY

DRAWING NAME:
BULK EARTHWORKS PLAN

DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
NG	NG	1:500	A1
DRAWING STATUS		DRAWING No.	
PRELIMINARY		C051	
PROJECT No.		REVISION:	
23P00240		A	



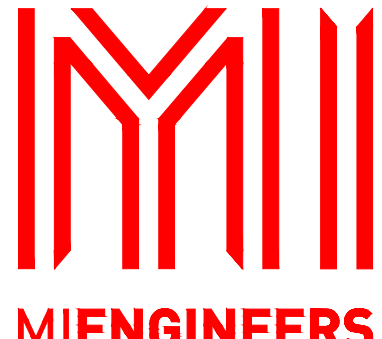
DO NOT SCALE



SITE PLAN
SCALE 1:1000

REVISION	AMENDMENTS	DATE	CKD	APP	SURVEYOR: SET CONSULTANTS
A	ISSUED FOR INFORMATION	16.10.24	MW	MW	DATE OF SURVEY: 8/7/2024
					ORIGIN: -
					HEIGHT OF DATUM: -
					HORIZONTAL DATUM: -

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PROJECT :	PROPOSED INTERNAL ACCESS ROAD
	369 JACKS CORNER RD
	KANGAROO VALLEY
DRAWING NAME:	SITE PLAN

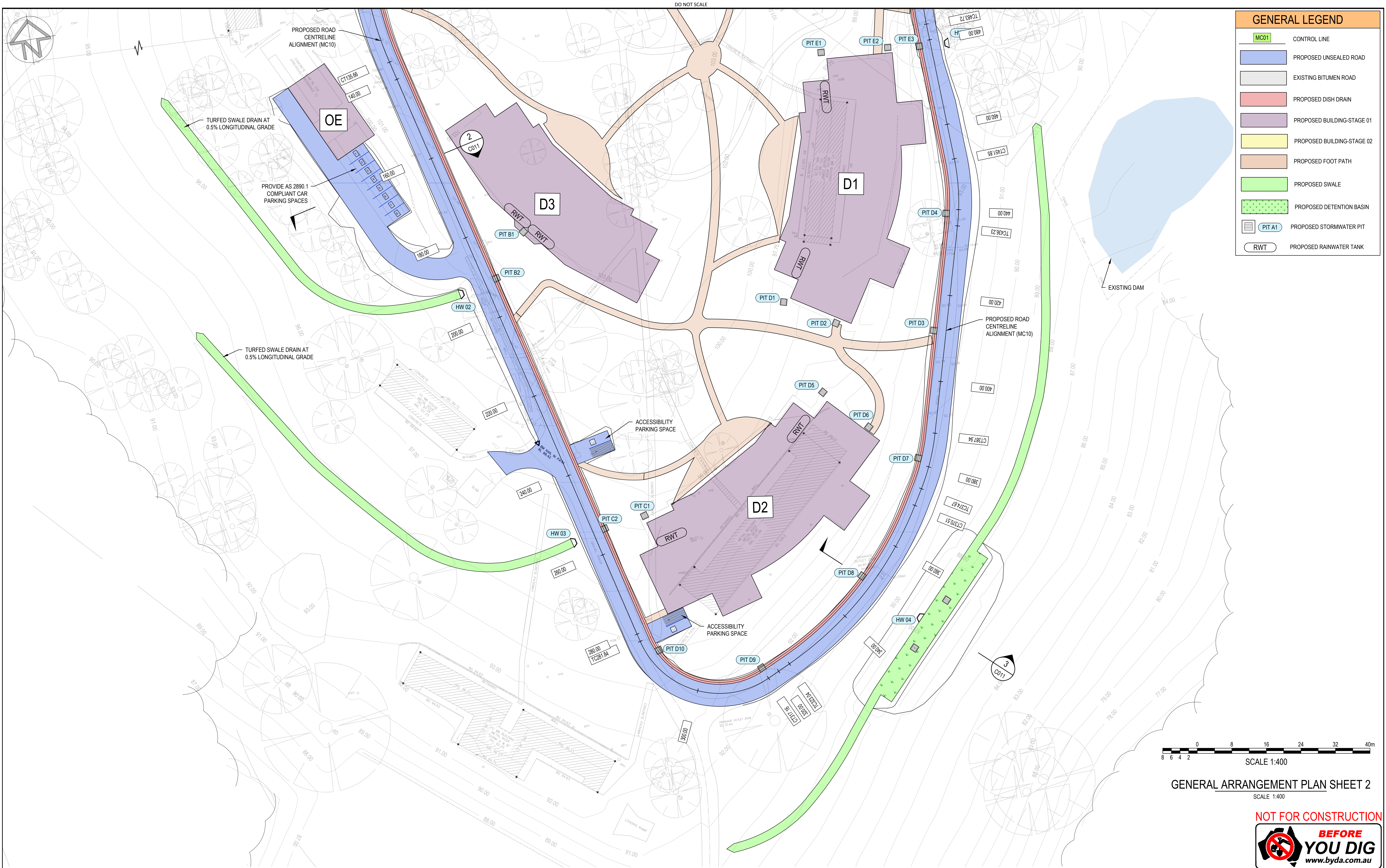
NOT FOR CONSTRUCTION



DESIGNED: NG
DRAWN: NG
SCALE: 1:1000
SHEET SIZE: A1

DRAWING STATUS: PRELIMINARY
DRAWING No.: C100

PROJECT No.: 23P00240
REVISION: A



REVISION	AMENDMENTS	DATE	CKD	APP	SURVEYOR: SET CONSULTANTS
A	ISSUED FOR INFORMATION	16.10.24	MW	MW	DATE OF SURVEY: 8/7/2024
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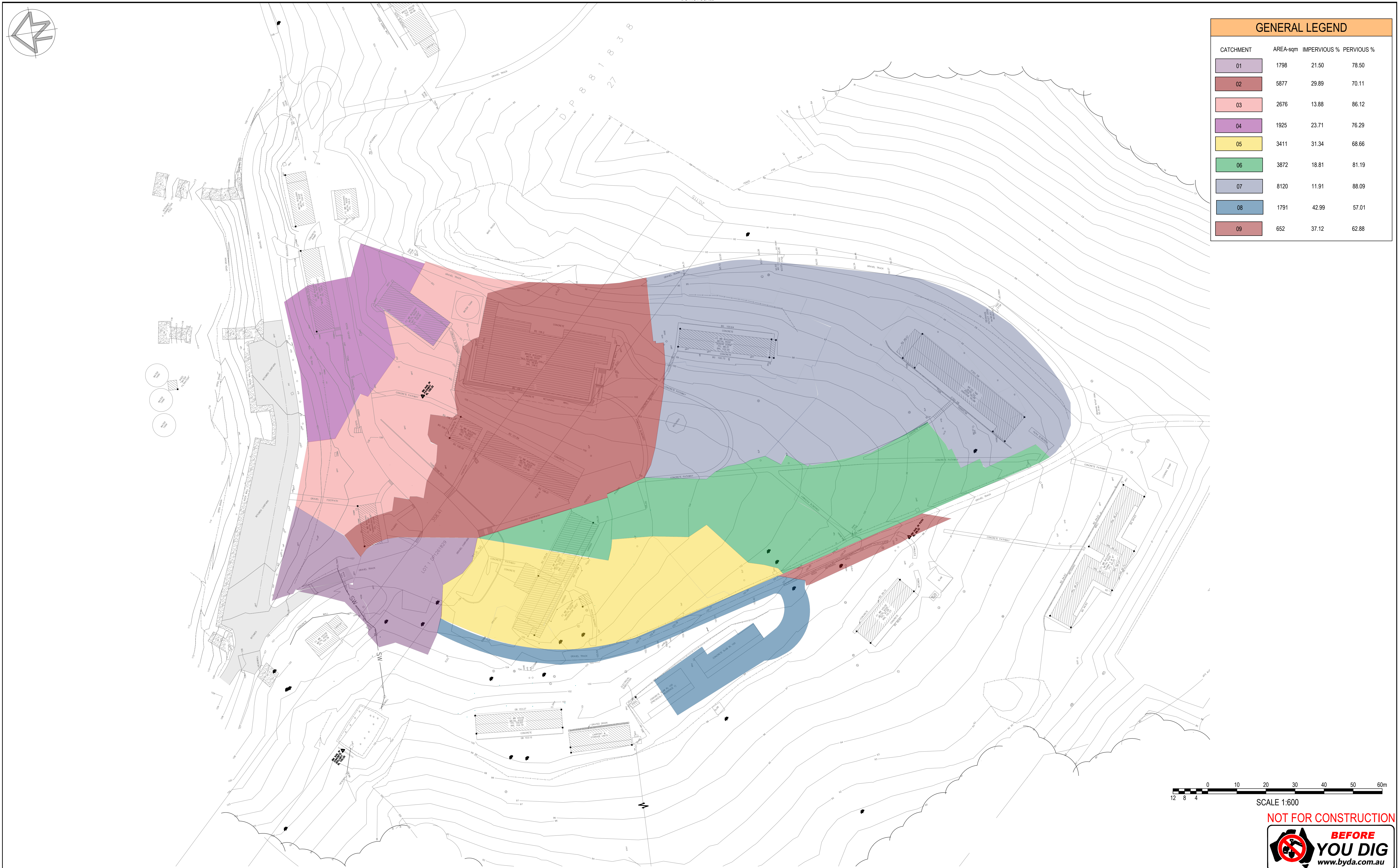
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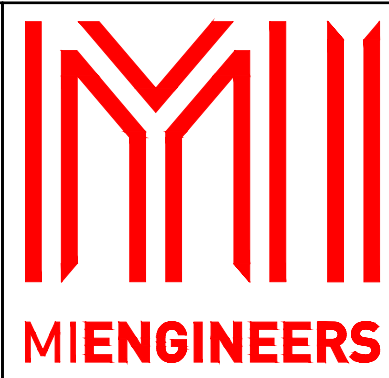
PROJECT:	PROPOSED INTERNAL ACCESS ROAD
	369 JACKS CORNER RD
	KANGAROO VALLEY
DRAWING NAME:	GENERAL ARRANGEMENT PLAN SHEET 2

DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
NG	NG	1:400	A1
DRAWING STATUS:	DRAWING No.		
PRELIMINARY	C103		
PROJECT No.	REVISION:		
23P00240	A		



REVISION	AMENDMENTS	DATE	CKD	APP	SURVEYOR: SET CONSULTANTS
A	ISSUED FOR INFORMATION	16.10.24	MW	MW	DATE OF SURVEY: 8/7/2024
					ORIGIN: -
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PROJECT :

PROPOSED INTERNAL ACCESS ROAD

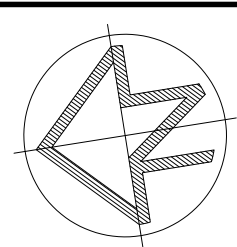
369 JACKS CORNER RD

KANGAROO VALLEY

DRAWING NAME:

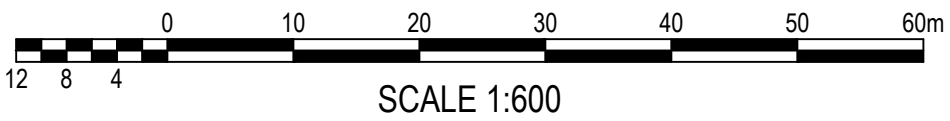
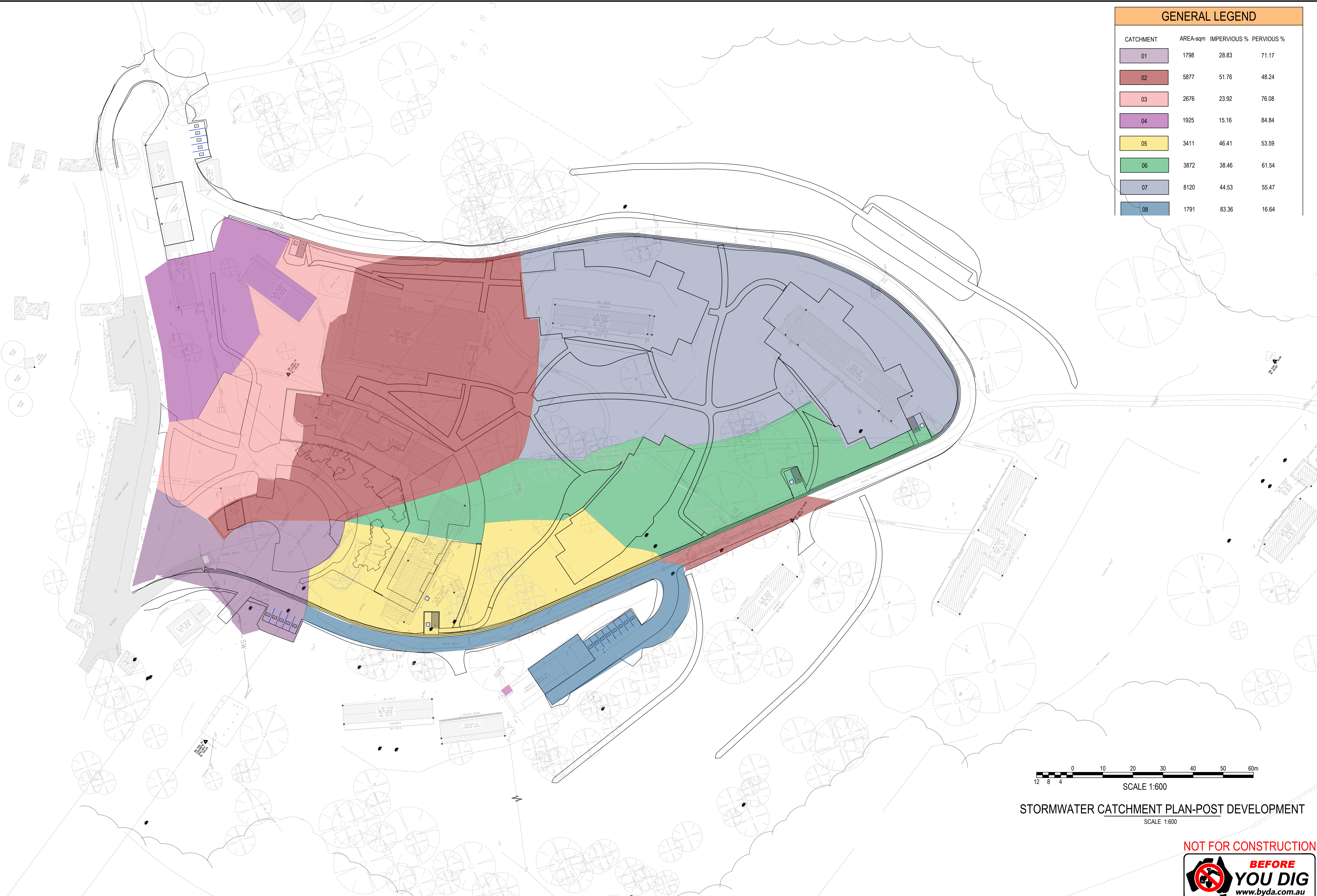
STORMWATER CATCHMENT PLAN -PRE DEVELOPMENT

DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
NG	NG	1:600	A1
DRAWING STATUS		DRAWING No.	
PRELIMINARY		C105	
PROJECT No.		REVISION:	
23P00240		A	



DO NOT SCALE

GENERAL LEGEND			
CATCHMENT	AREA-sqm	IMPERVIOUS %	PERVIOUS %
01	1798	28.83	71.17
02	5877	51.76	48.24
03	2676	23.92	76.08
04	1925	15.16	84.84
05	3411	46.41	53.59
06	3872	38.46	61.54
07	8120	44.53	55.47
08	1791	83.36	16.64



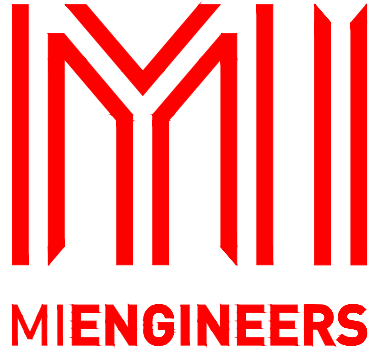
STORMWATER CATCHMENT PLAN-POST DEVELOPMENT
SCALE 1:600

NOT FOR CONSTRUCTION



REVISION	AMENDMENTS	DATE	CKD	APP	SURVEYOR: SET CONSULTANTS
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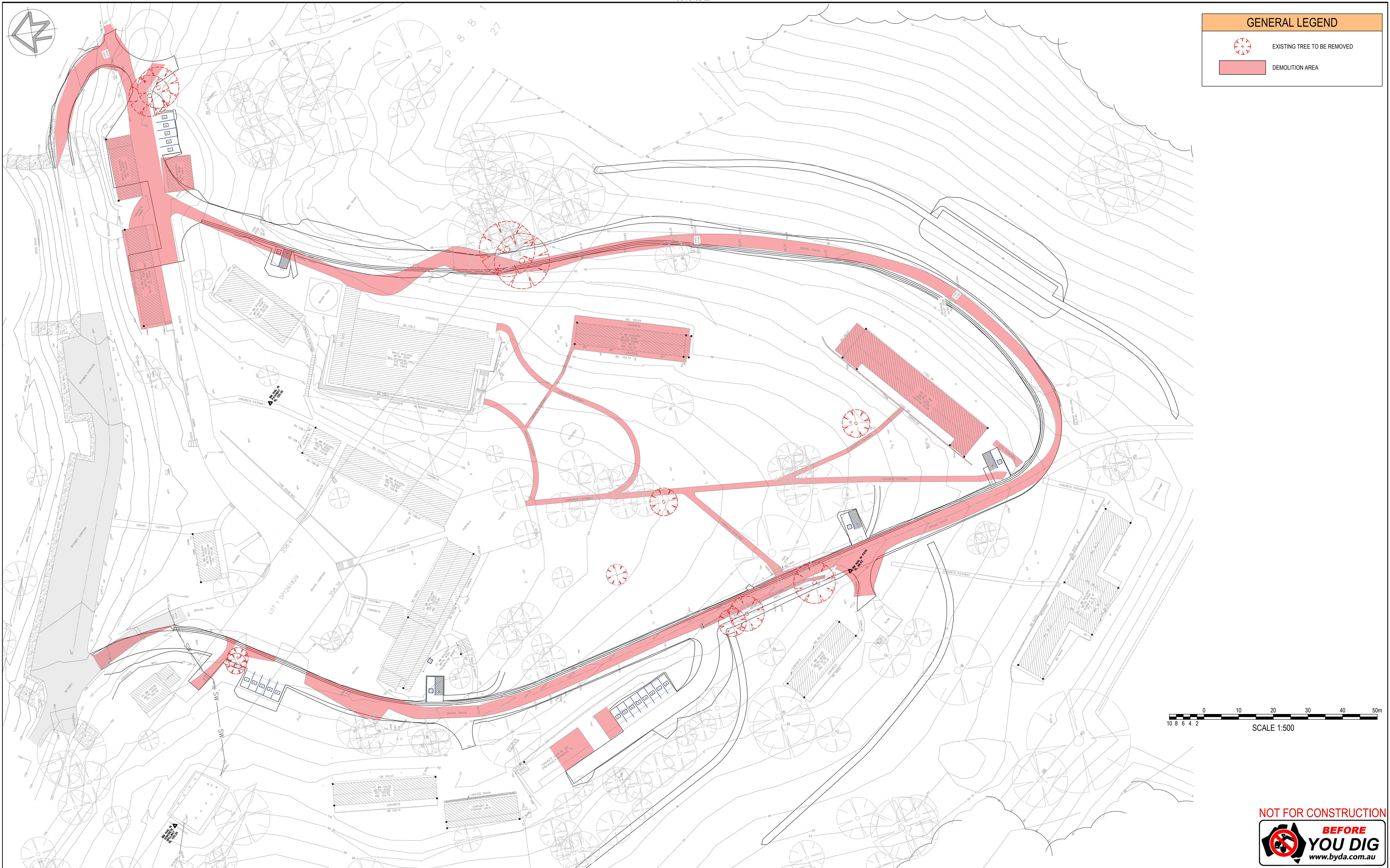
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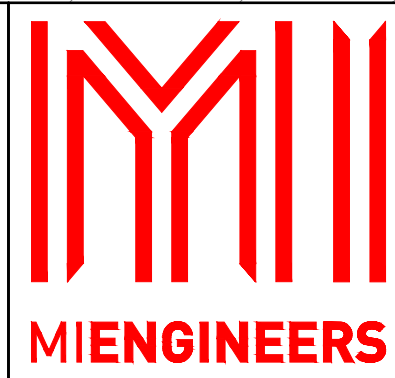
PROJECT :	PROPOSED INTERNAL ACCESS ROAD 369 JACKS CORNER RD KANGAROO VALLEY
DRAWING NAME:	STORMWATER CATCHMENT PLAN-POST DEVELOPMENT

DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
NG	NG	1:600	A1
DRAWING STATUS		DRAWING No.	
PRELIMINARY		C106	
PROJECT No.		REVISION:	
23P00240		A	



REVISION	AMENDMENTS	DATE	CKD	APP	SURVEYOR: SET CONSULTANTS
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PROJECT :	PROPOSED INTERNAL ACCESS ROAD
	369 JACKS CORNER RD
	KANGAROO VALLEY
DRAWING NAME:	DEMOLITION PLAN STAGE 01

DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
NG	NG	1:500	A1
DRAWING STATUS	DRAWING No.		
PRELIMINARY	C110		
PROJECT No.	REVISION:		
23P00240	A		

NOT FOR CONSTRUCTION





VERTICAL CURVE LENGTH (m)

VERTICAL CURVE RADIUS (m)

VERTICAL GEOMETRY GRADE (%)

VERTICAL GEOMETRY LENGTH (m)

DATUM RL = 78.40

[illegible]

A1 SCALE: H 1:500, V 1:250

LONGITUDINAL SECTION MC10



VERTICAL CURVE LENGTH (m)

VERTICAL CURVE RADIUS (m)

VERTICAL GEOMETRY GRADE (%)

VERTICAL GEOMETRY LENGTH (m)

DATUM RL = 77.60

CONTROL LINE CHAINAGE	CUT / FILL DEPTH	EXISTING SURFACE LEVEL		FINISHED SURFACE LEVEL	
		325	330	334.98	340
360.98	-0.10	91.49	91.69		
370.51	-0.09	91.31	91.48		
370.51	-0.09	91.25	91.31		
374.67	-0.15	91.40	91.18		
380	-0.22	91.83	91.61		
387.94	-0.20	92.04	91.84		
390	-0.18	92.08	91.91		
392.84	-0.15	92.15	91.99		
400	-0.12	92.29	92.17		
410	-0.08	92.50	92.42		
411.87	-0.07	92.54	92.47		
420	-0.06	92.72	92.65		
430	-0.19	93.03	92.83		
432.23	-0.21	93.13	92.92		
439.86	-0.12	93.08	92.96		
443.44	-0.12	93.08	92.96		
451.05	-0.24	93.45	93.15		
453.85	-0.27	93.55	93.27		
460	-0.13	93.65	93.52		
467.84	0.06	93.88	93.94		
469.84	0.07	93.99	94.06		
477.11	0.14	94.39	94.53		
483.72	-0.31	95.34	95.03		
484.38	-0.32	95.40	95.08		
491.66	-0.02	95.65	95.48		
495.74	0.02	95.75	95.78		
498.93	0.00	95.88	95.89		
500.93	-0.01	95.92	95.92		
510	-0.42	96.74	96.32		
515.10	-0.22	96.71	96.49		
519.28	-0.04	96.87	96.83		
520	-0.02	96.96	96.96		
550.76	-0.02	98.80	98.78		
555.76	-0.10	99.17	99.08		
560	-0.15	100.10	99.99		
560.76	0.06	99.63	99.59		
568.77	-0.01	101.00	100.99		
574.29	-0.01	101.20	101.19		
575.68	-0.02	101.82	101.81		
574.75	-0.01	101.92	101.95		
580	-0.15	103.10	102.95		
590.23	-0.17	103.16	102.99		
595.96	-0.34	104.14	103.80		
590	-0.10	104.15	104.05		
591.69	-0.00	104.07	104.07		
600	-0.03	104.10	104.07		
601.13	-0.03	104.10	104.07		
610	0.07	104.00	104.07		
611.16	0.07	104.00	104.07		
616.66	-0.04	104.42	104.39		
619.95	0.00	104.47	104.46		
620.03	0.03	104.48	104.51		
626.16	-0.17	105.50	105.33		
630	-0.00	105.98	105.98		
632.5	-0.00	106.91	106.91		
633.5	-0.00	106.91	106.91		
637.5	-0.00	107.26	107.26		
640	-0.00	107.59	107.59		
642.04	-0.00	107.69	107.69		
644.11	-0.00	108.27	108.27		
650	-0.00	108.30	108.30		
655.33	0.00	108.25	108.25		
656.67	0.00	108.25	108.25		
660	0.00	108.23	108.23		
663.23	0.00	108.17	108.17		
665.36	-0.00	108.19	108.19		
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680	-0.00	108.27	108.27		

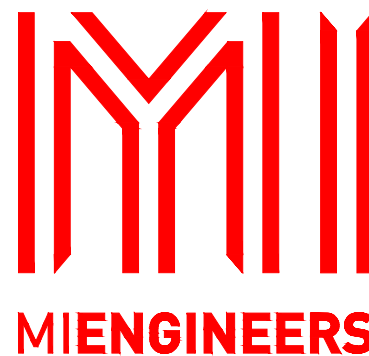
A1 SCALE: H 1:500,V 1:250

LONGITUDINAL SECTION MC10

MC10 LONGITUDINAL SECTIONS

SCALE NOTE

REVISION	AMENDMENTS	DATE	CKD	APP	SURVEYOR: SET CONSULTANTS
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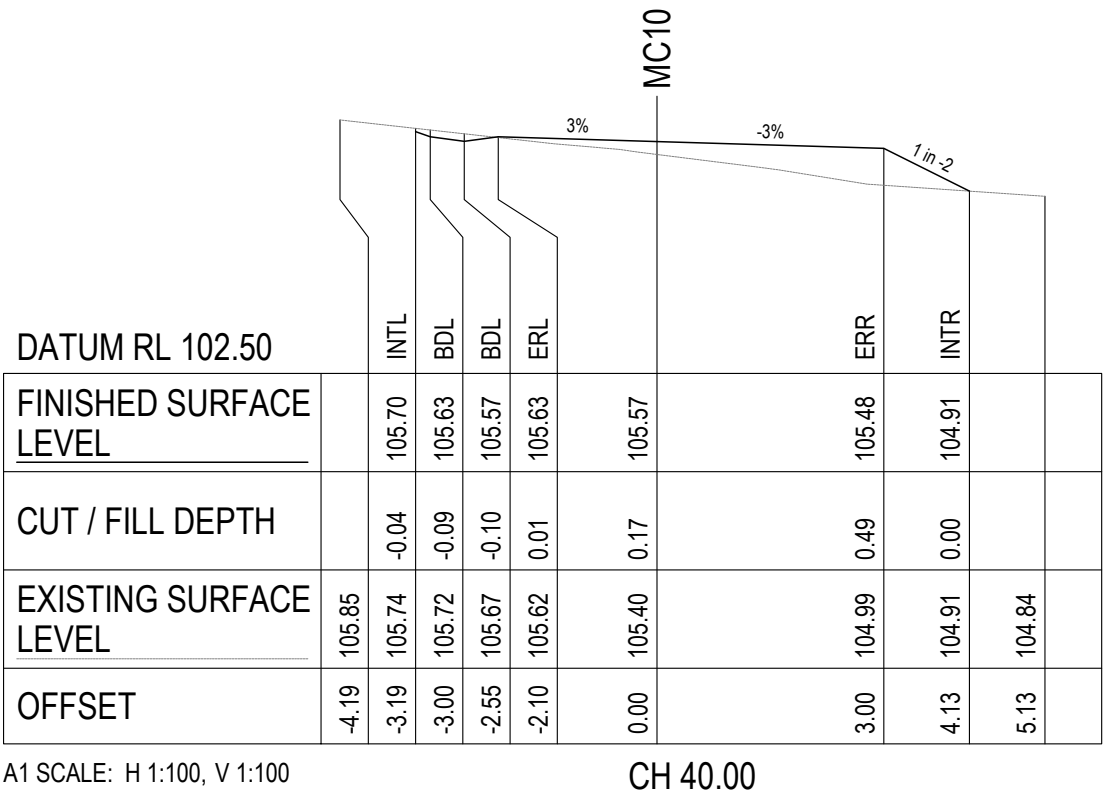
PROJECT :
PROPOSED INTERNAL ACCESS ROAD
369 JACKS CORNER RD
KANGAROO VALLEY

DRAWING NAME:
MC10 LONGITUDINAL SECTIONS

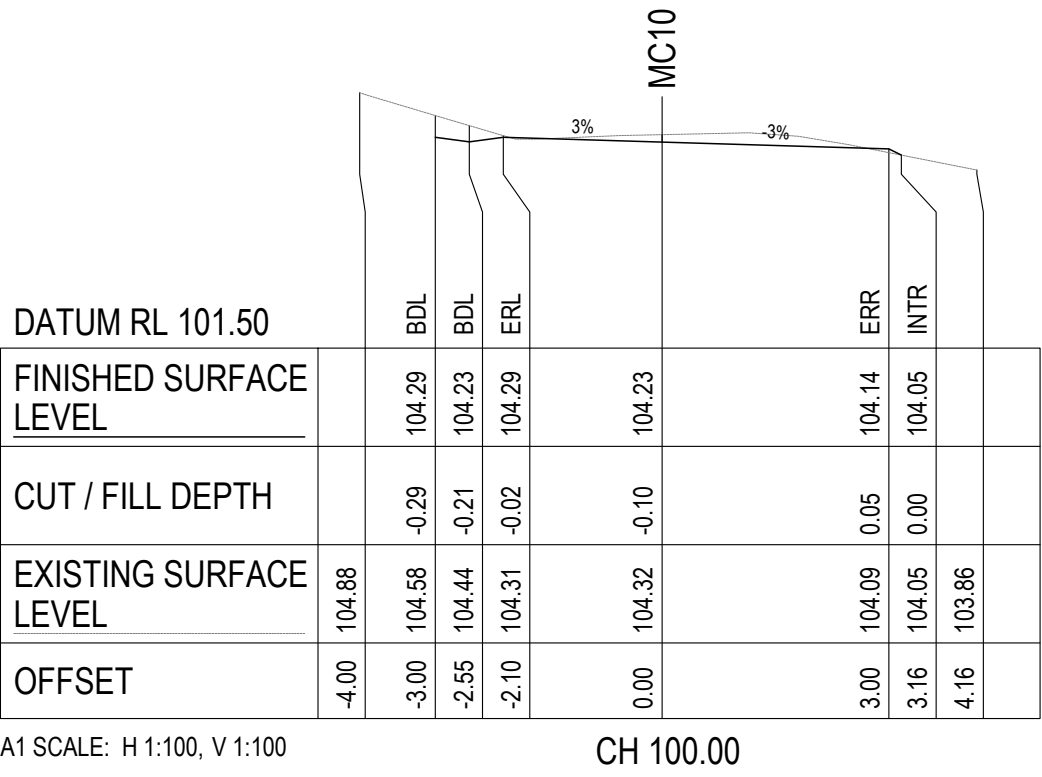
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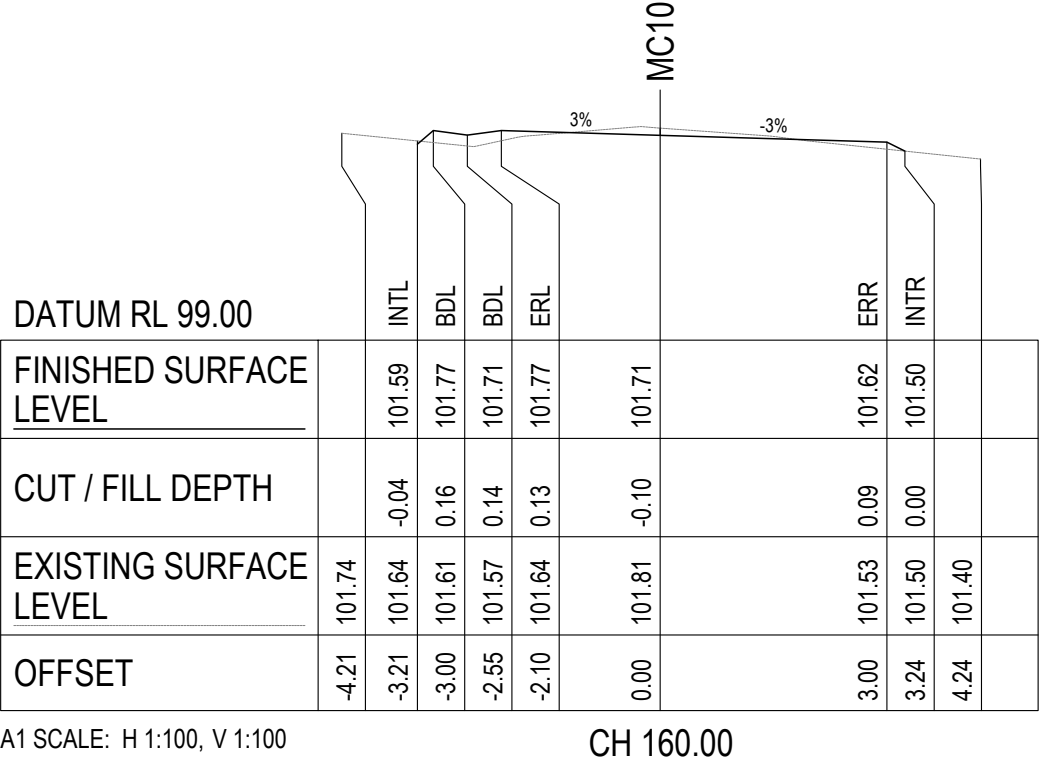
DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
NG	NG	NOTED	A1
DRAWING STATUS		DRAWING No.	
PRELIMINARY		C111	
PROJECT No.		REVISION:	
23P00240		A	



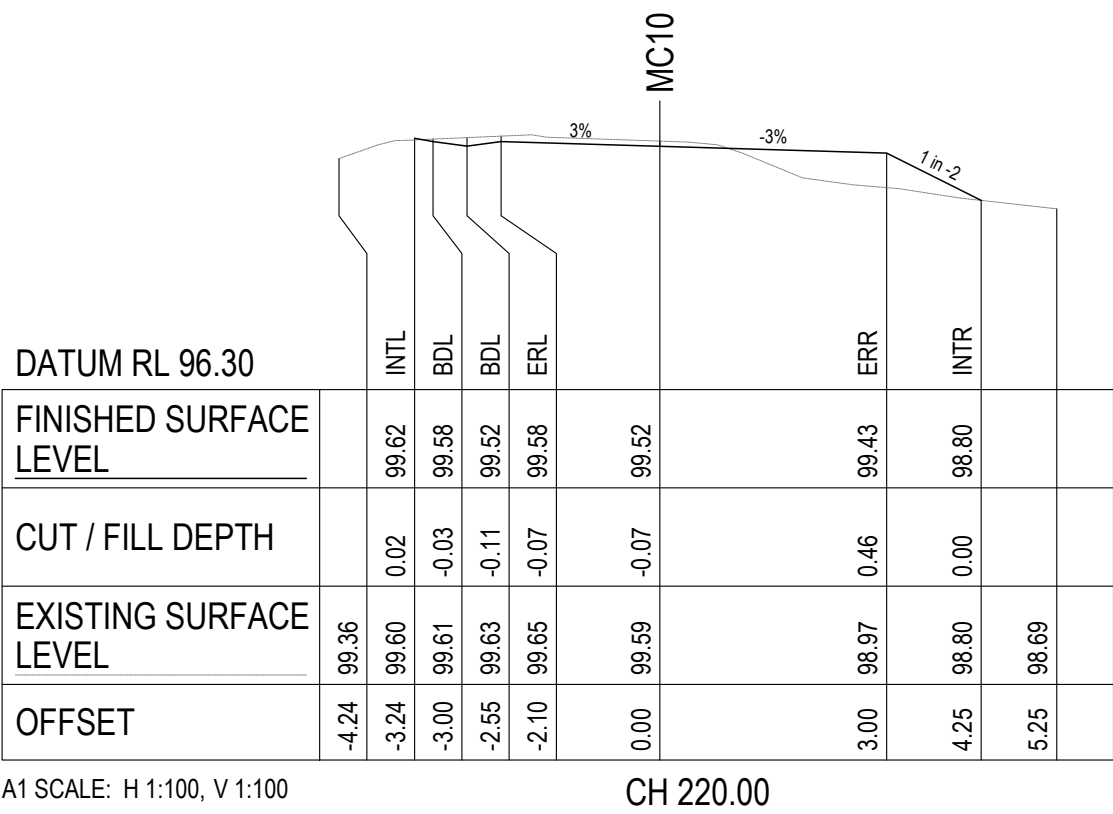
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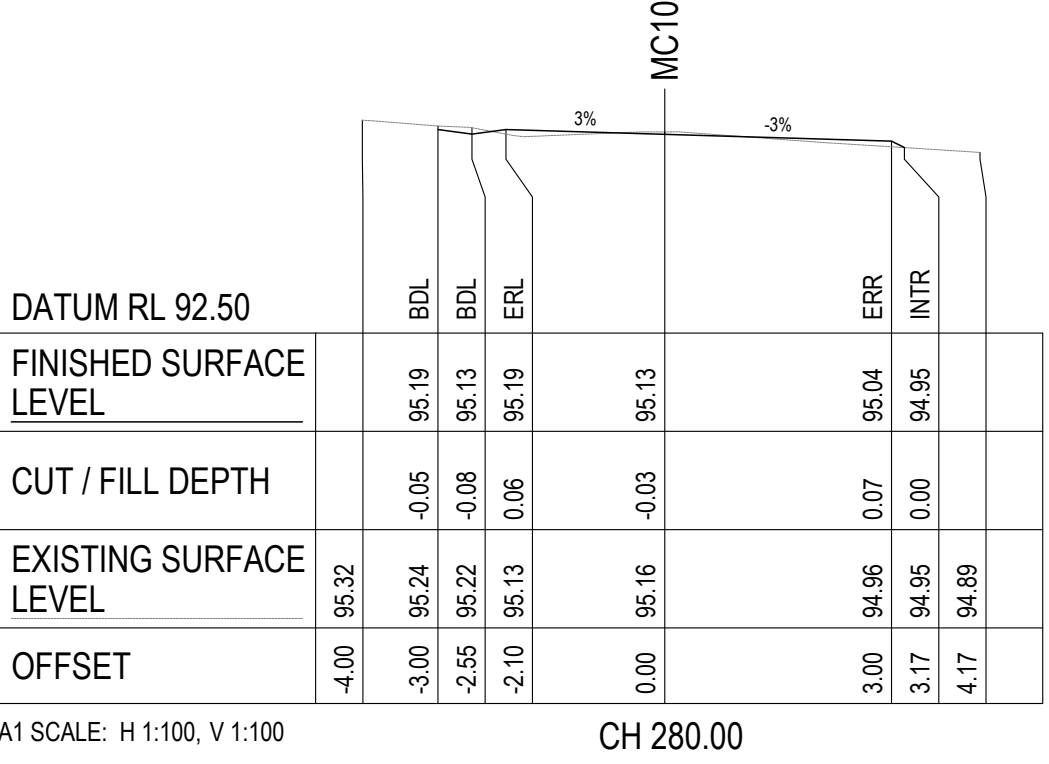
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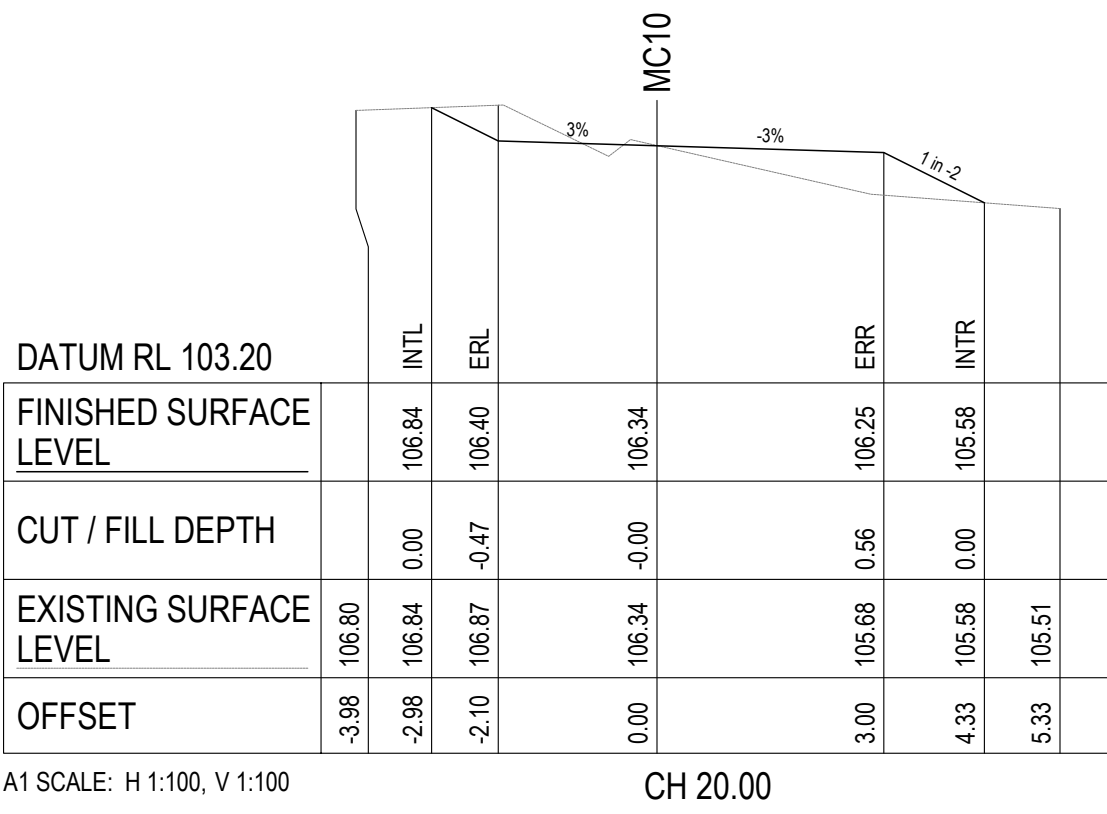
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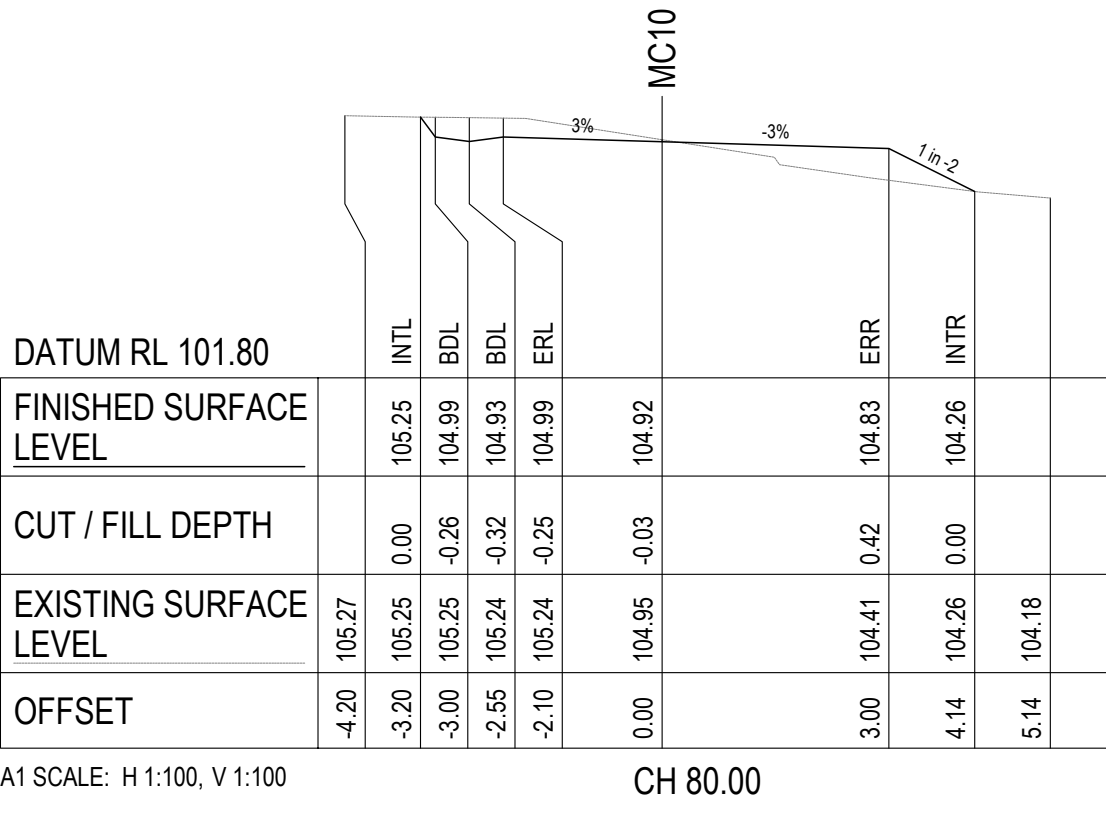
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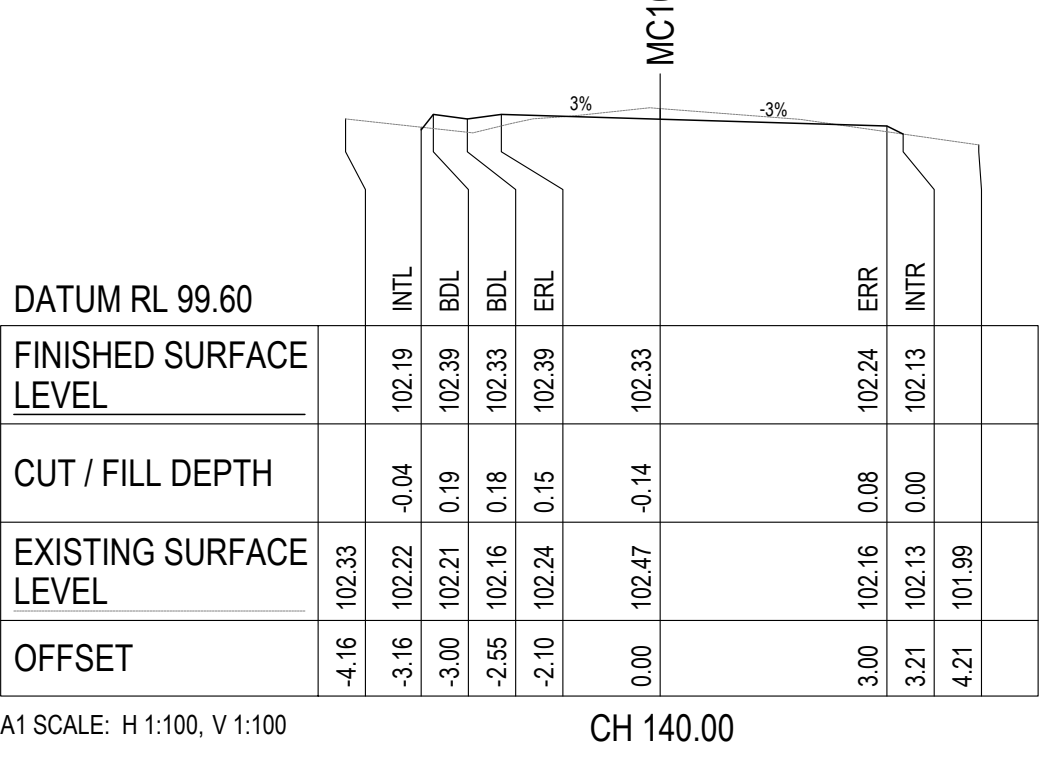
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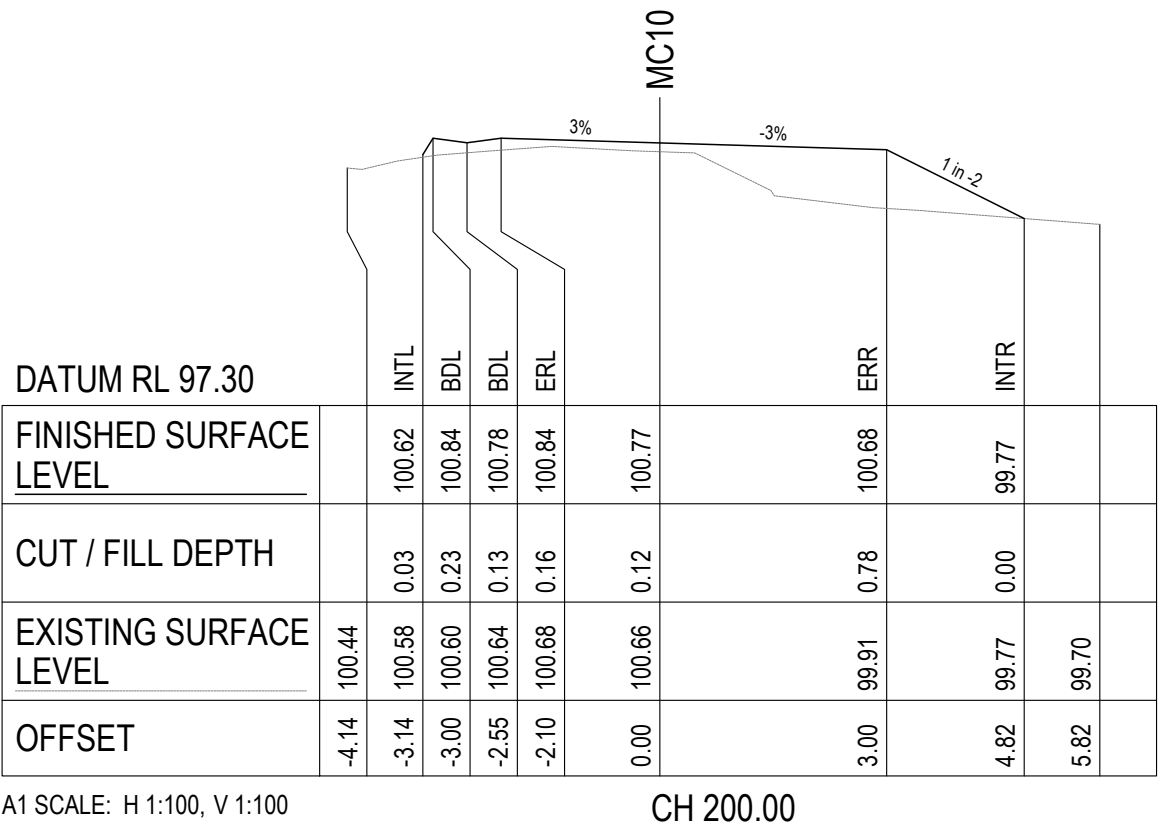
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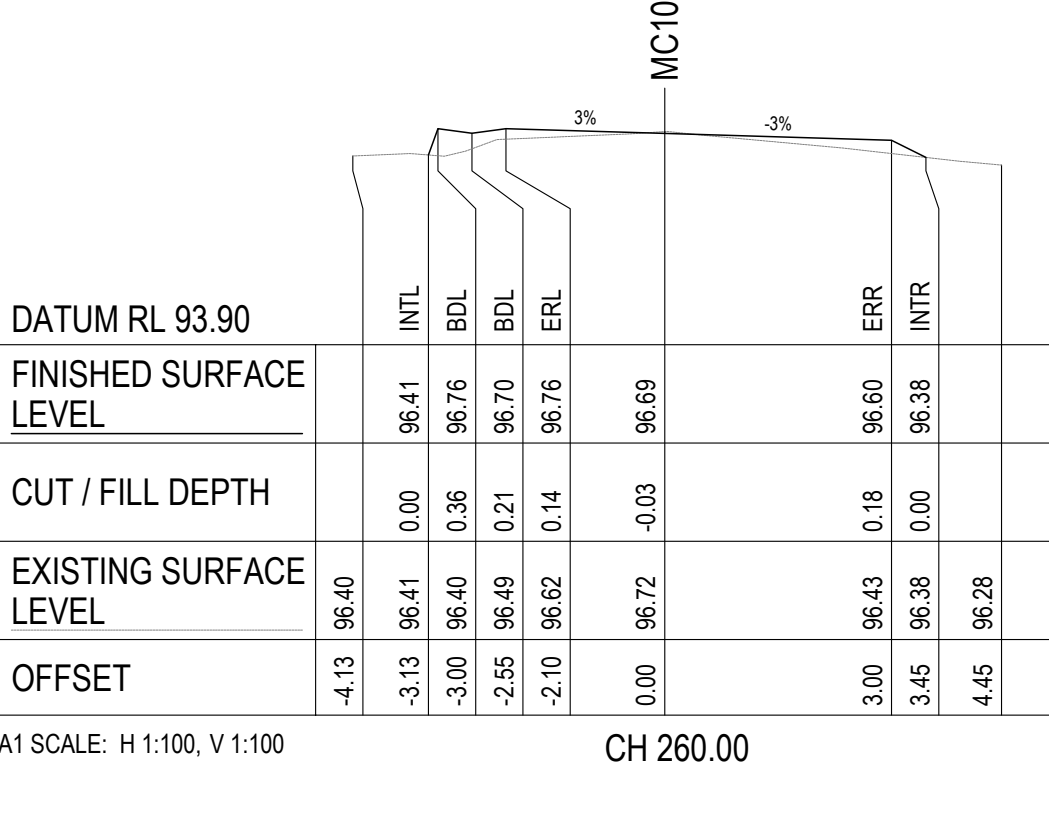
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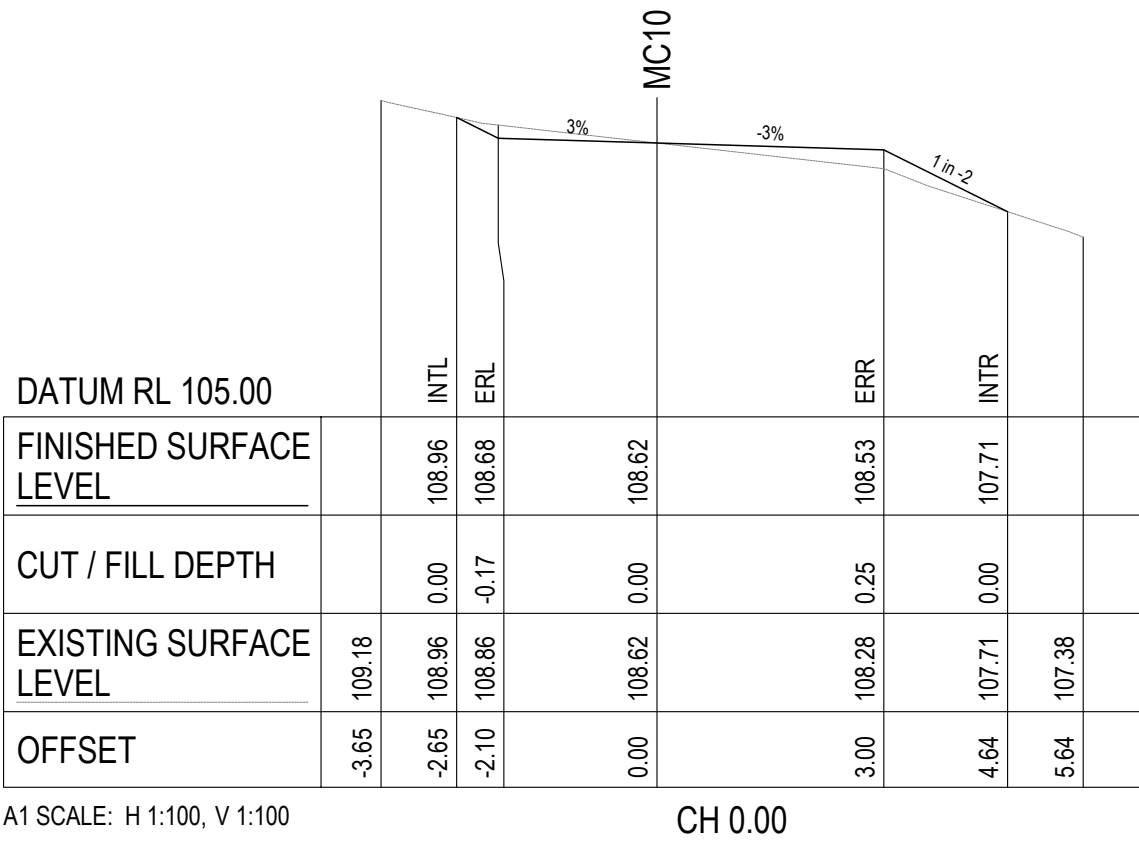
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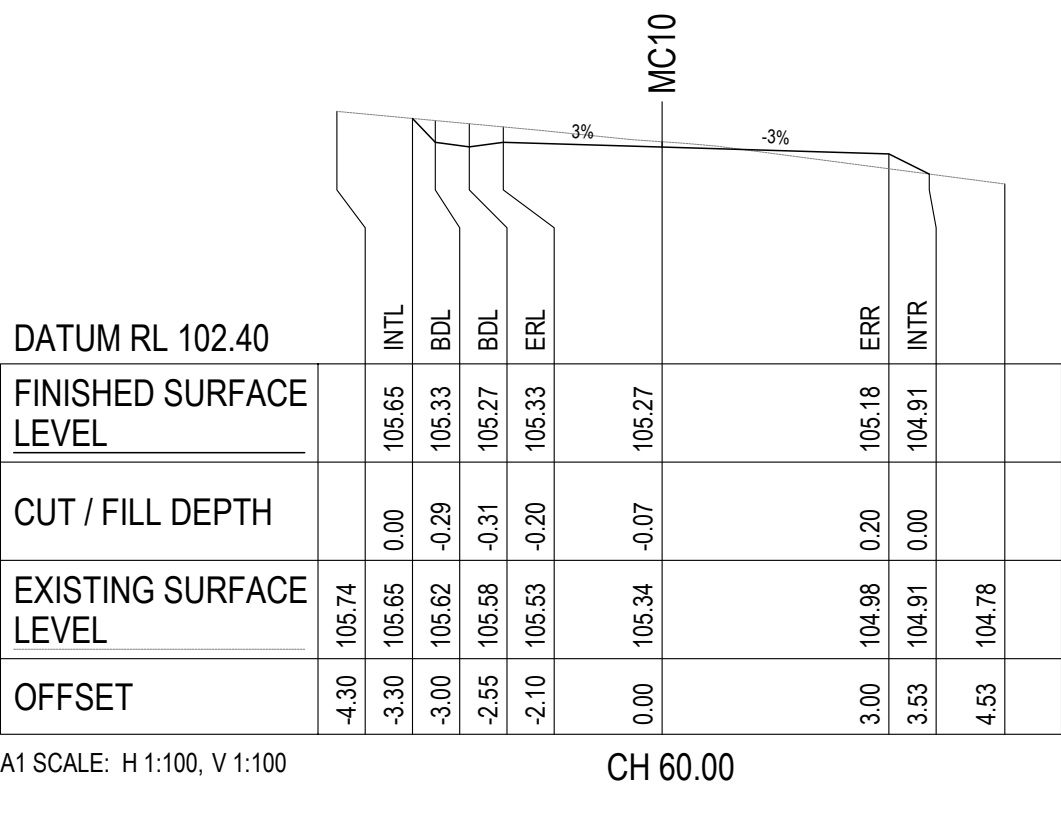
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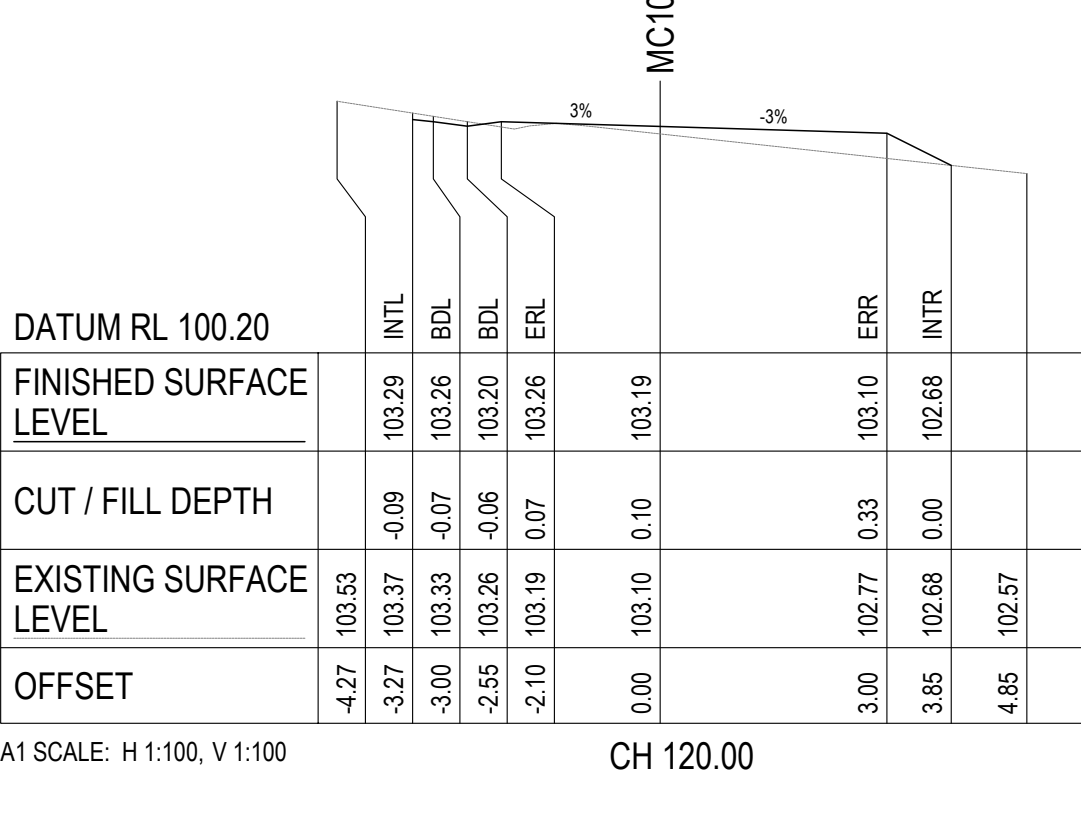
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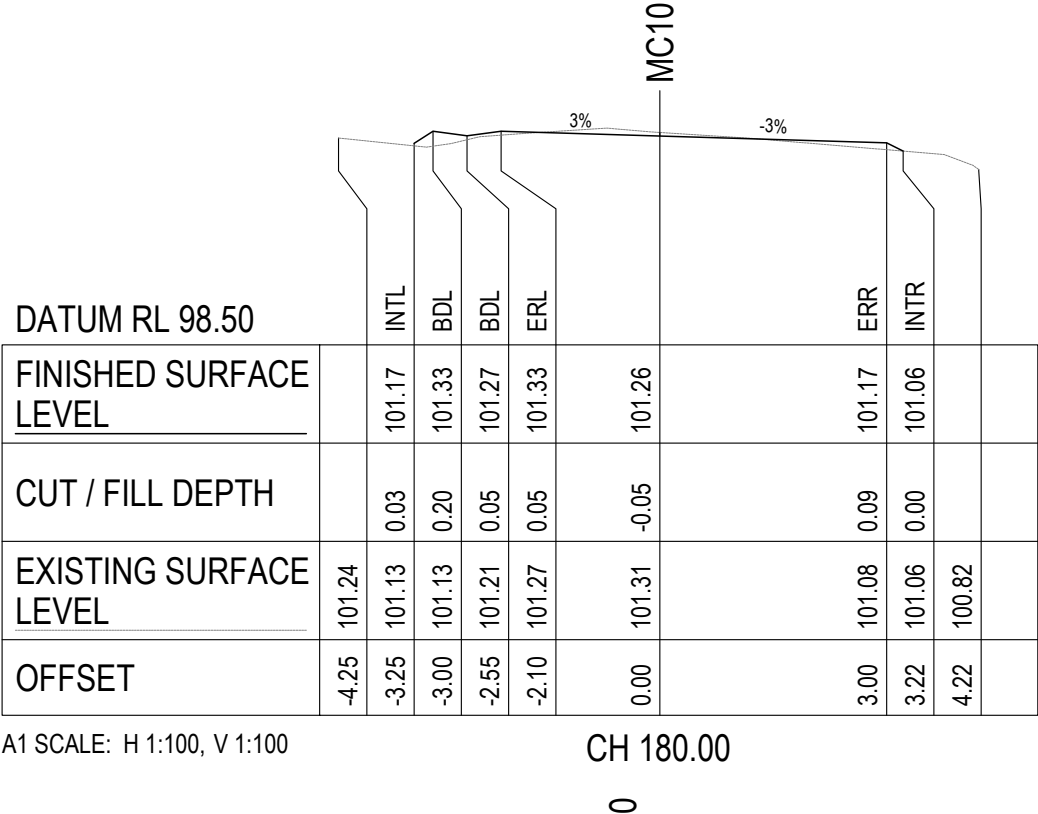
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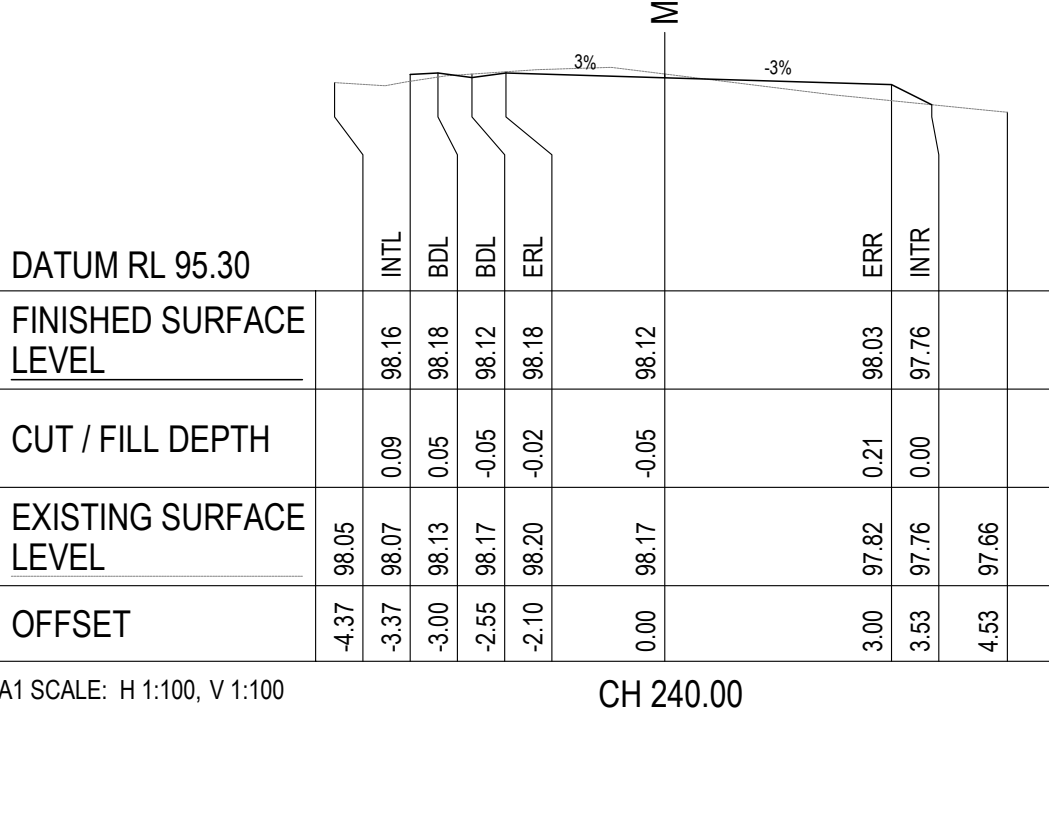
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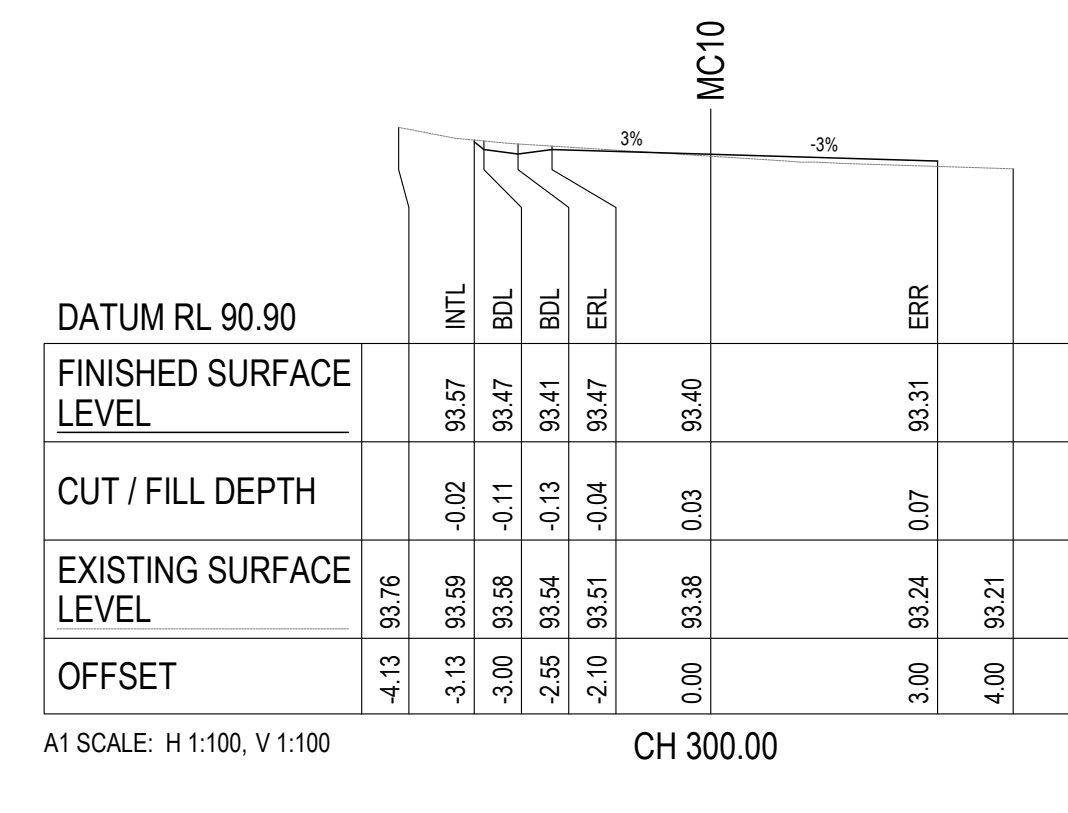
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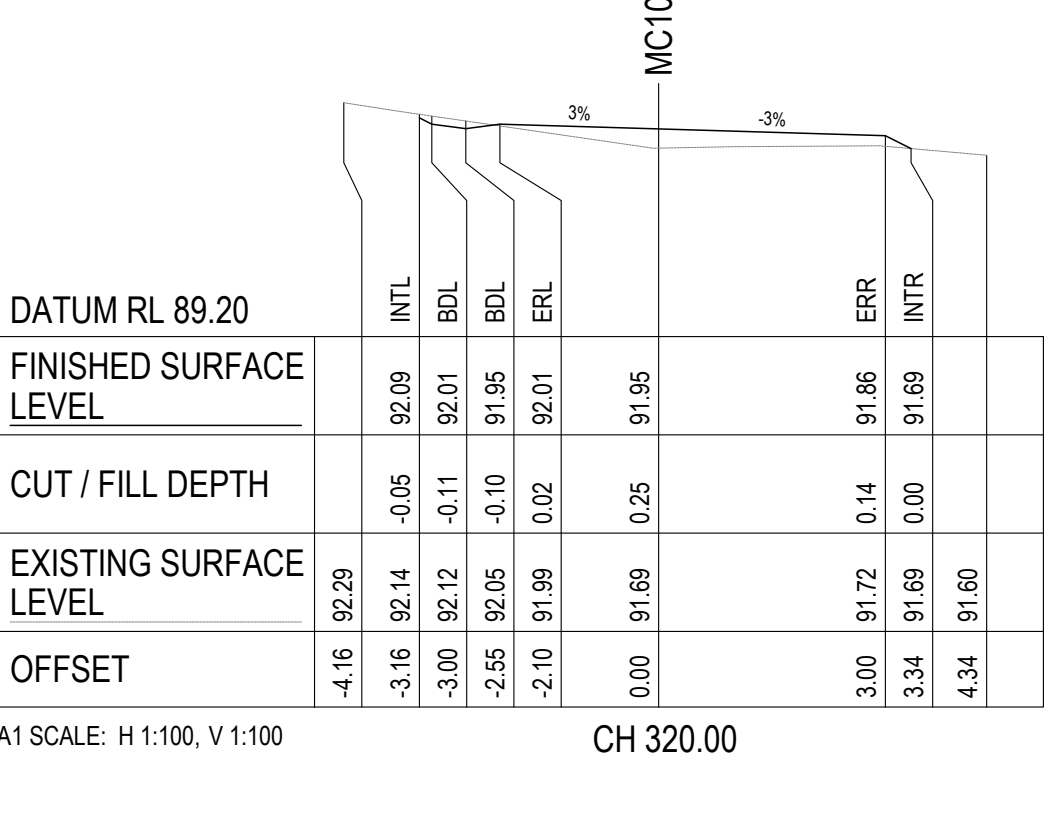
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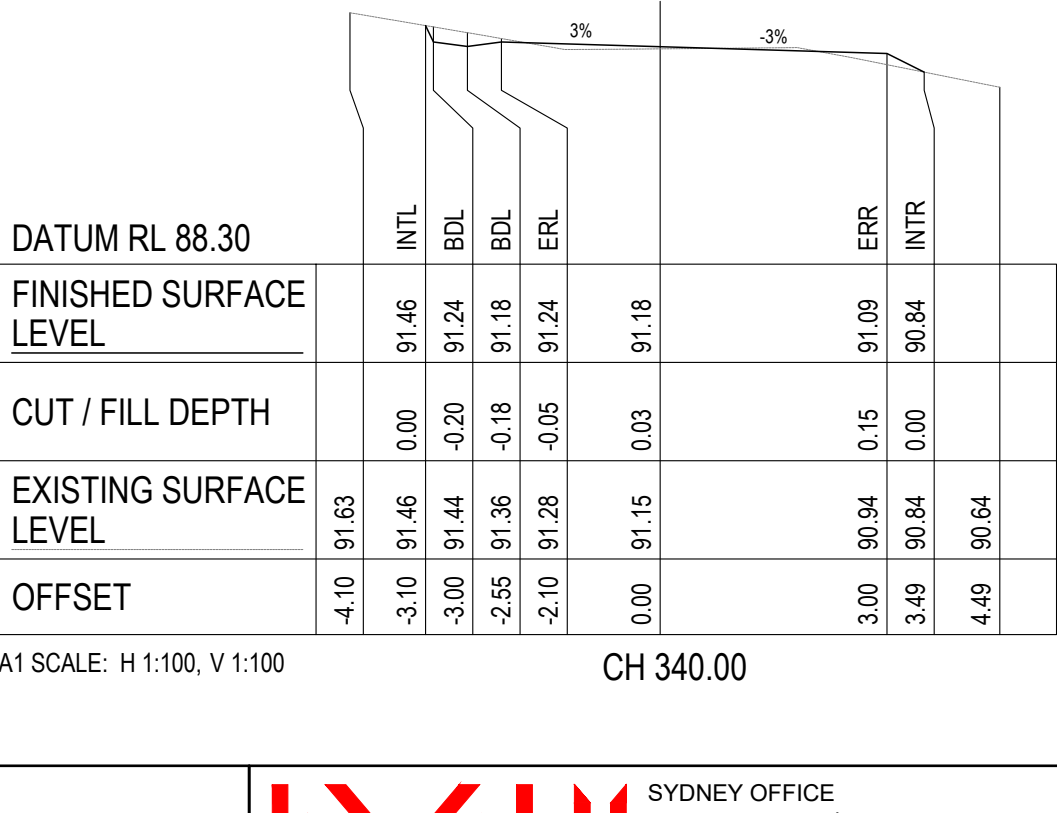
A1 SCALE: H 1:100, V 1:100



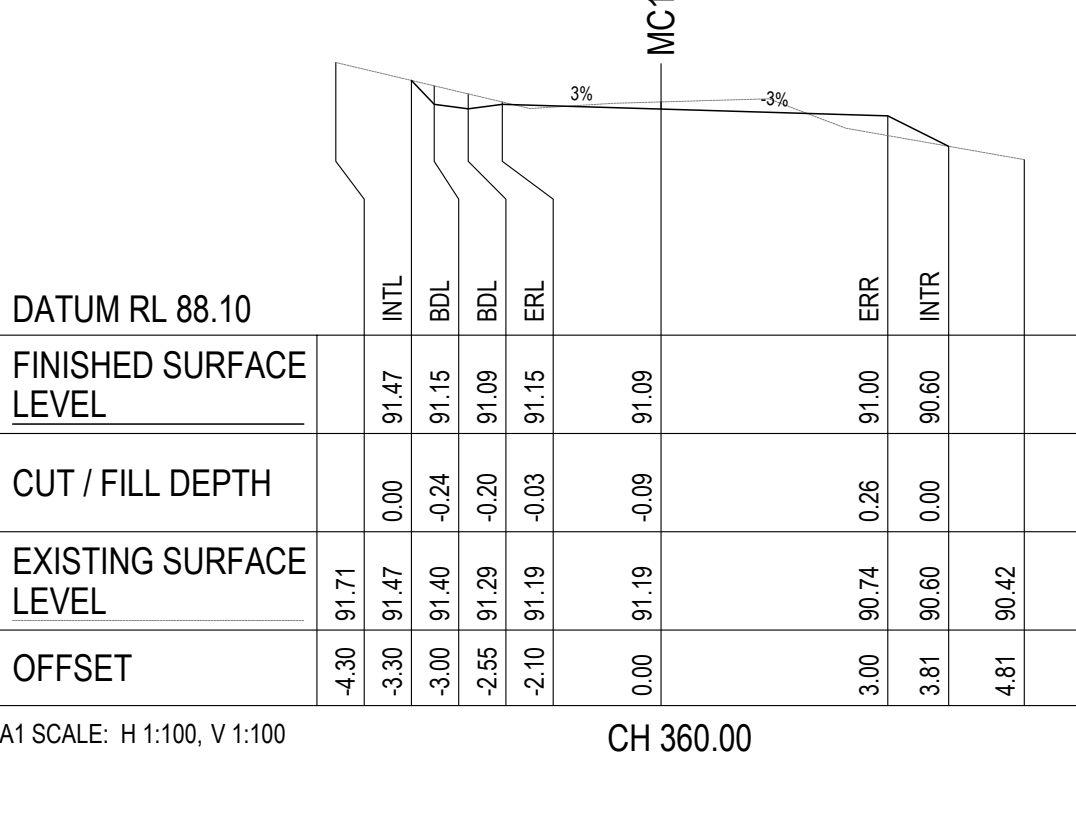
A1 SCALE: H 1:100, V 1:100



A1 SCALE: H 1:100, V 1:100

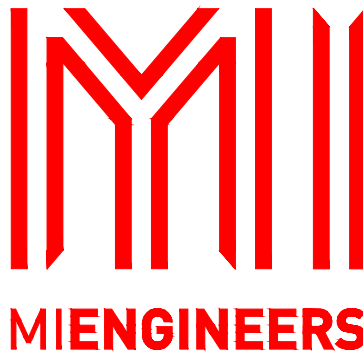


A1 SCALE: H 1:100, V 1:100



A1 SCALE: H 1:100, V 1:100

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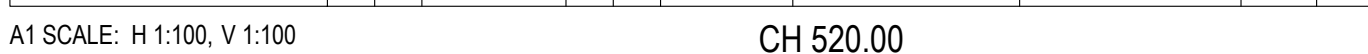
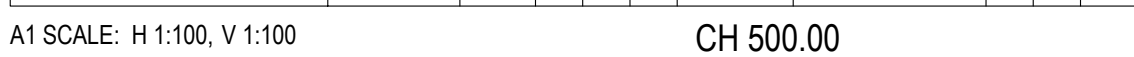
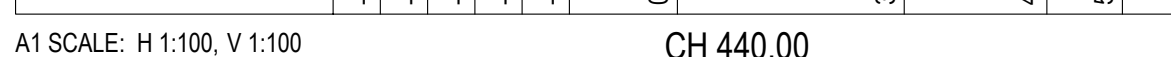
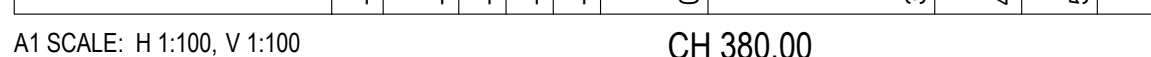
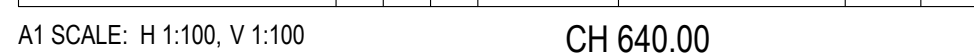
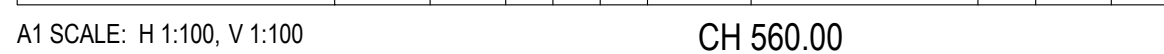
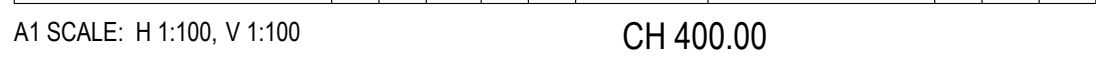
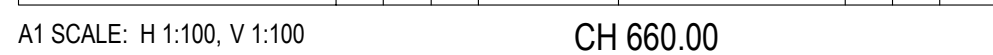
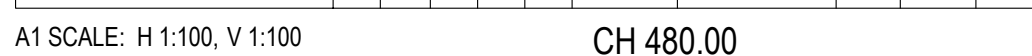
PROJECT :
PROPOSED INTERNAL ACCESS ROAD
369 JACKS CORNER RD
KANGAROO VALLEY

DRAWING NAME:
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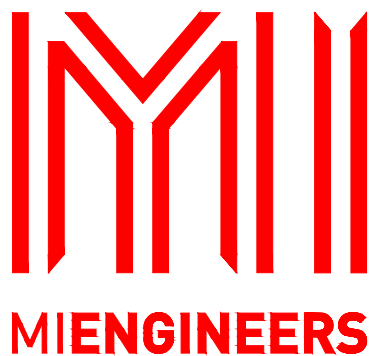
NOT FOR CONSTRUCTION



DESIGNED: NG	DRAWN: NG	SCALE: NOTED	SHEET SIZE: A1
DRAWING STATUS PRELIMINARY		DRAWING No. C121	
PROJECT No. 23P00240		REVISION: A	



REVISION	AMENDMENTS	DATE	CKD	APP	SURVEYOR: SET CONSULTANTS
A	ISSUED FOR INFORMATION	16.10.24	MW	MW	DATE OF SURVEY: 8/7/2024
					ORIGIN:
					"
					HEIGHT OF DATUM:
					"
					HORIZONTAL DATUM:
					"



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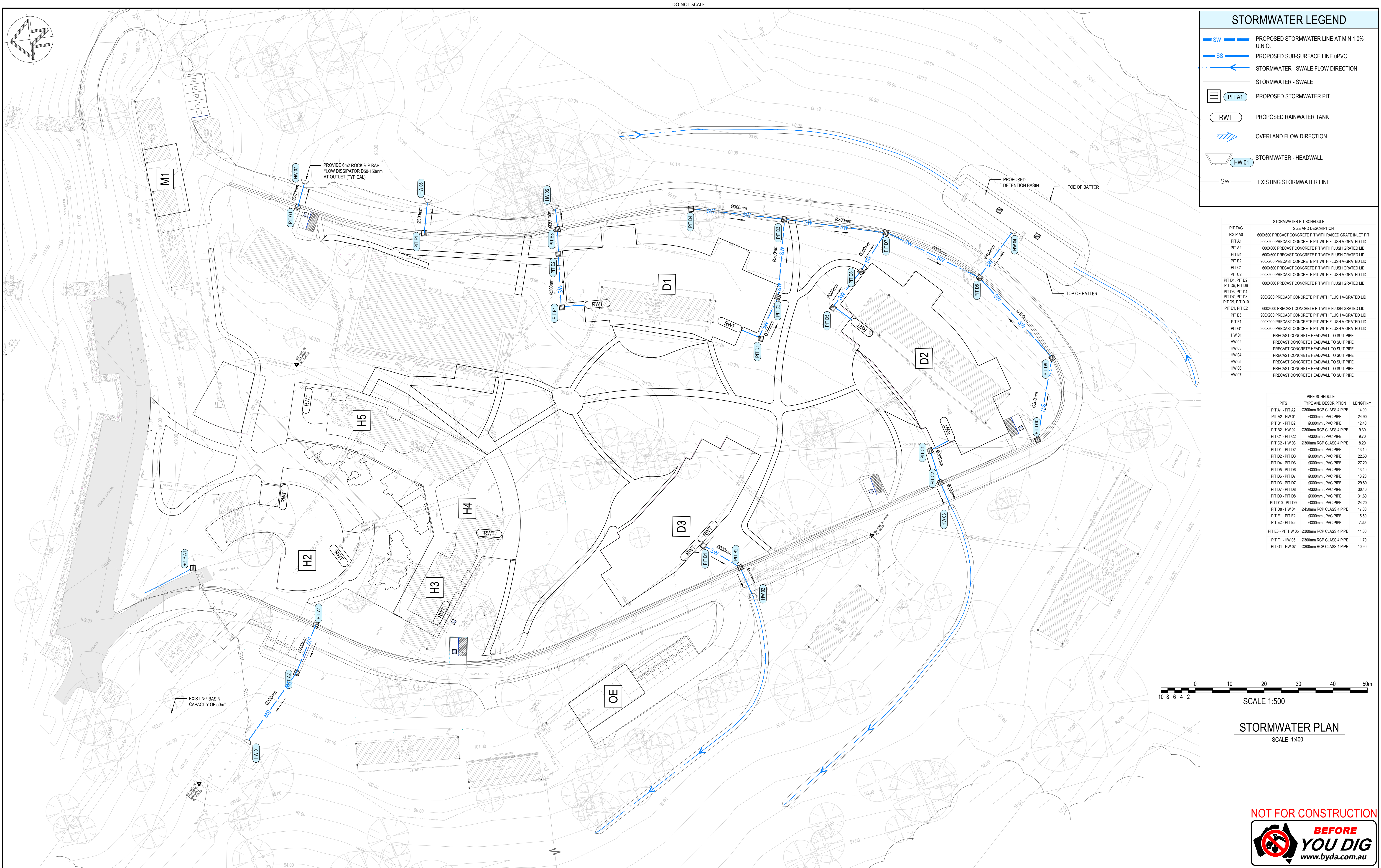
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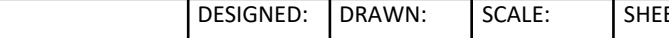
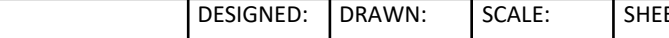
PROJECT :
PROPOSED INTERNAL ACCESS ROAD
369 JACKS CORNER RD
KANGAROO VALLEY

DRAWING NAME:
MC10 CROSS SECTIONS SHEET 2

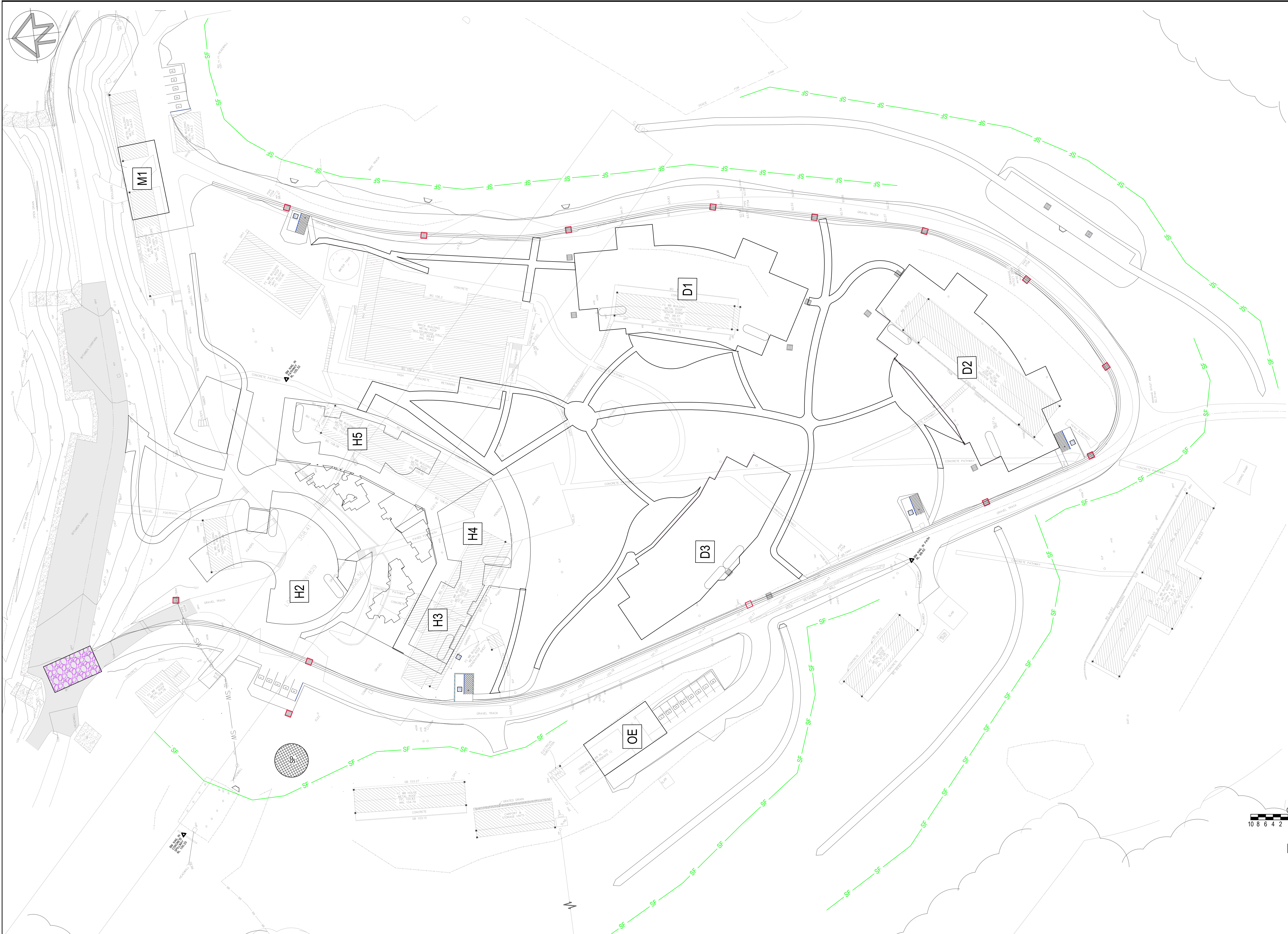


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DRAWING STATUS		DRAWING No.	
PRELIMINARY		C122	
PROJECT No.		REVISION:	
23P00240		A	



REVISION		AMENDMENTS			DATE	CKD	APP	SURVEYOR: SET CONSULTANTS	 	CLIENT:	 	SYDNEY OFFICE Suite 2.06, 68 York St, Sydney NSW 2000 Australia Tel (02) 8396 6565	SOUTH COAST OFFICE 49 Berry Street, Nowra NSW 2541 Tel (02) 4423 0566	WOLLONGONG OFFICE Suite 3a, 128-134 Crown Street, Wollongong NSW 2500 Tel (02) 4423 0566	THIS DRAWING AND THE CONCEPTS CONTAINED THEREIN ARE THE PROPERTY OF MI ENGINEERS. NO UNAUTHORISED COPYING IS PERMITTED. NOTHING IS TO BE CONSTRUCTED BASED ON THIS DRAWING, OR PART OF THIS DRAWING, WITHOUT THE WRITTEN PERMISSION OF MI ENGINEERS. DRAWINGS TO BE READ IN CONJUNCTION WITH OTHER RELATED DESIGN DOCUMENTATION. FURTHERMORE, WHERE MIENGINEERS RELIES ON THE INFORMATION SUPPLIED BY OTHERS TO PRODUCE THE DESIGNS, WE ACCEPT NO LIABILITY FOR ERRORS, TO THE EXTENT THAT THE DESIGN HAS MADE RELIANCE ON THIS INFORMATION. MUST BE READ IN COLOUR	PROJECT :	DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:		
A	ISSUED FOR INFORMATION	16.10.24	MW	MW	DATE OF SURVEY: 8/7/2024														NG	NG	1:400	A1
					ORIGIN: -																	
					HEIGHT OF DATUM: -																	
					HORIZONTAL DATUM: -																	

DO NOT SCALE



EROSION & SEDIMENT
CONTROL LEGEND

SF

PROPRIETARY SEDIMENT FENCE - SD6-8

TEMPORARY STABILISED
SITE ACCESS - SD6-14

SURFACE INLET DRAINAGE PIT WITH
SURROUNDING FILTER FABRIC INLET
SEDIMENT TRAP OR FILTER TUBES
(SANDBAGS)

STOCKPILE - SD4-1



EROSION & SEDIMENT CONTROL PLAN

SCALE 1:500

NOT FOR CONSTRUCTION



REVISION	AMENDMENTS	DATE	CKD	APP	SURVEYOR: SET CONSULTANTS
A	ISSUED FOR INFORMATION	16.10.24	MW	MW	DATE OF SURVEY: 8/7/2024
					ORIGIN: -
					HEIGHT OF DATUM: -
					HORIZONTAL DATUM: -

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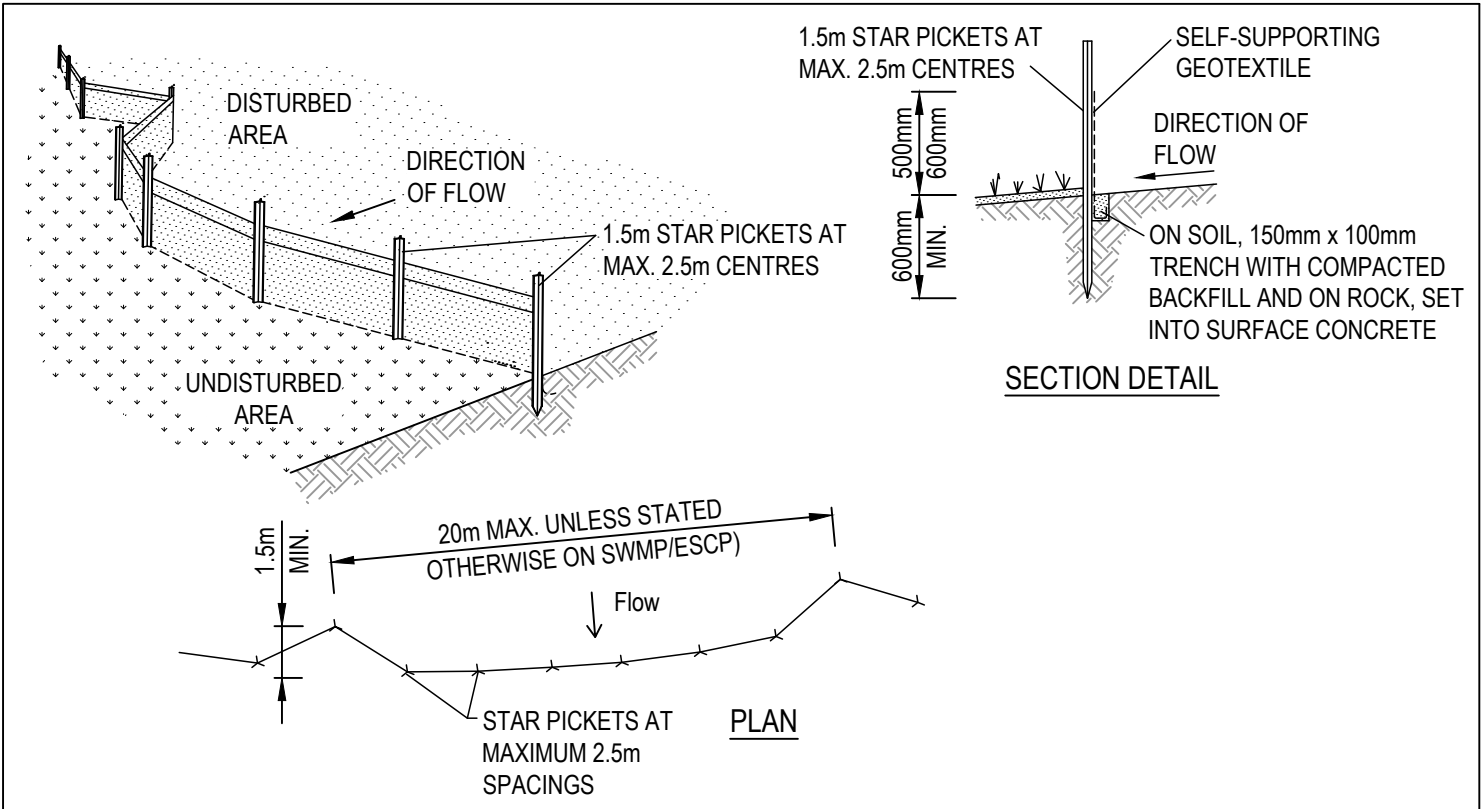
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PROJECT :	PROPOSED INTERNAL ACCESS ROAD 369 JACKS CORNER RD KANGAROO VALLEY
DRAWING NAME:	EROSION & SEDIMENT CONTROL PLAN

DESIGNED:	DRAWN:	SCALE:	SHEET SIZE:
NG	NG	1:500	A1
DRAWING STATUS		DRAWING No.	
PRELIMINARY		C501	
PROJECT No.		REVISION:	
23P00240		A	

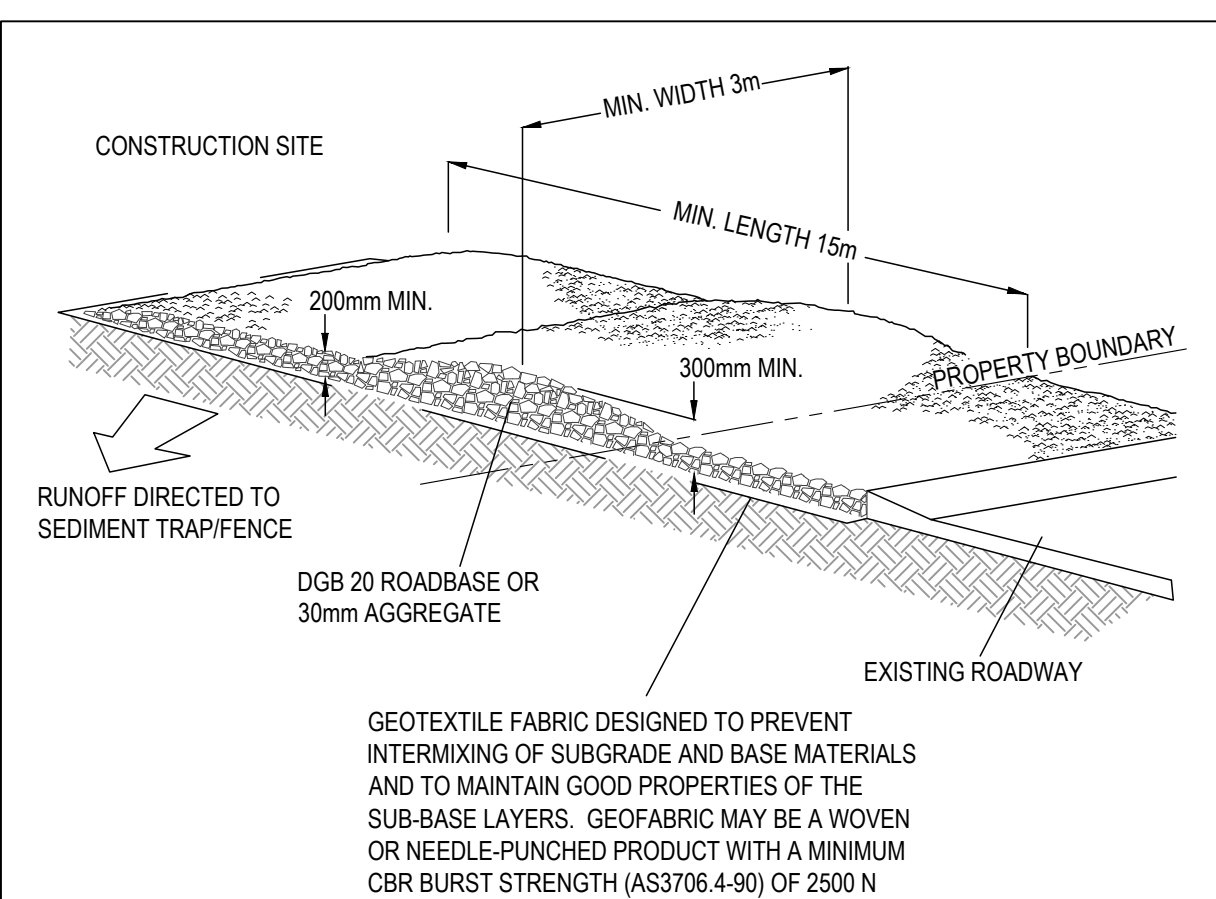


CONSTRUCTION NOTES

1. 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.
2. CUT A 150-MM DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. 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.
4. 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.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150-MM OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE

SD 6-8

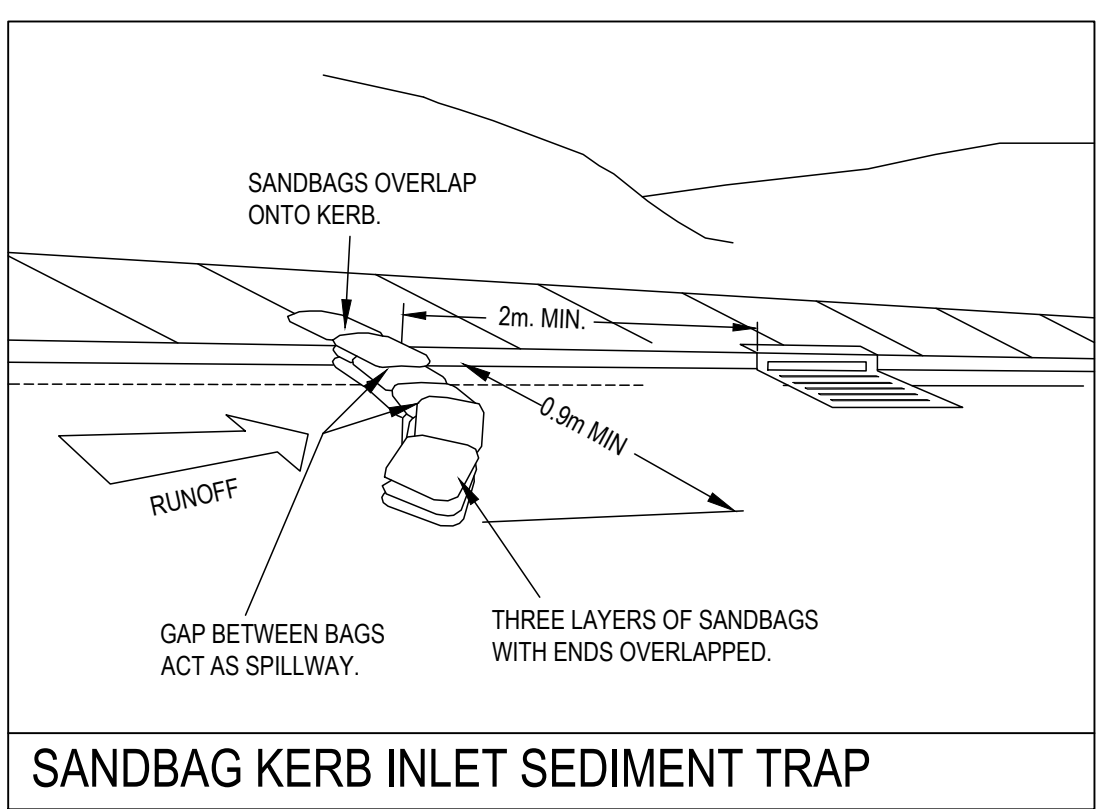


CONSTRUCTION NOTES

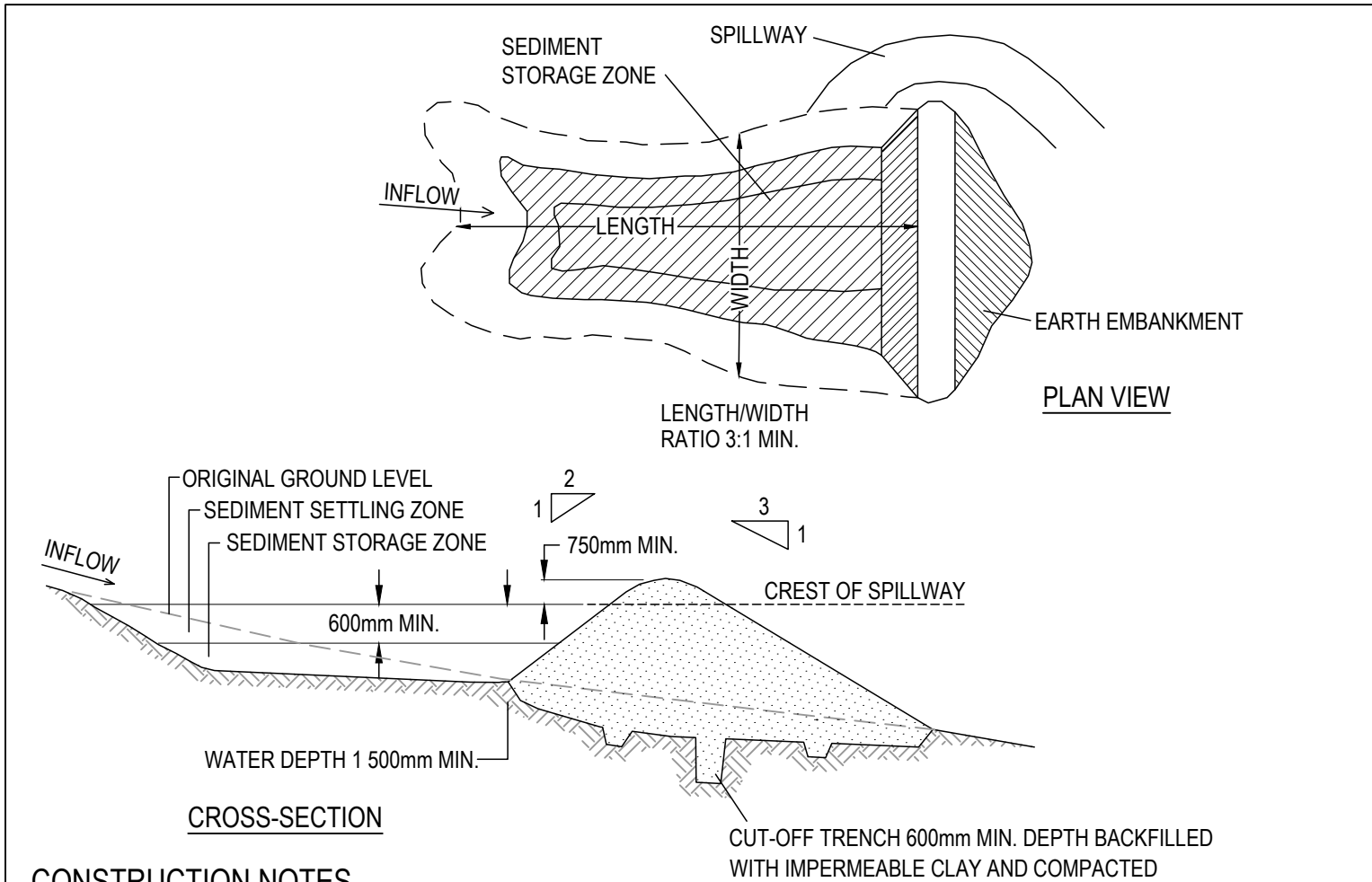
1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE

STABILISED SITE ACCESS

SD 6-14



SANDBAG KERB INLET SEDIMENT TRAP



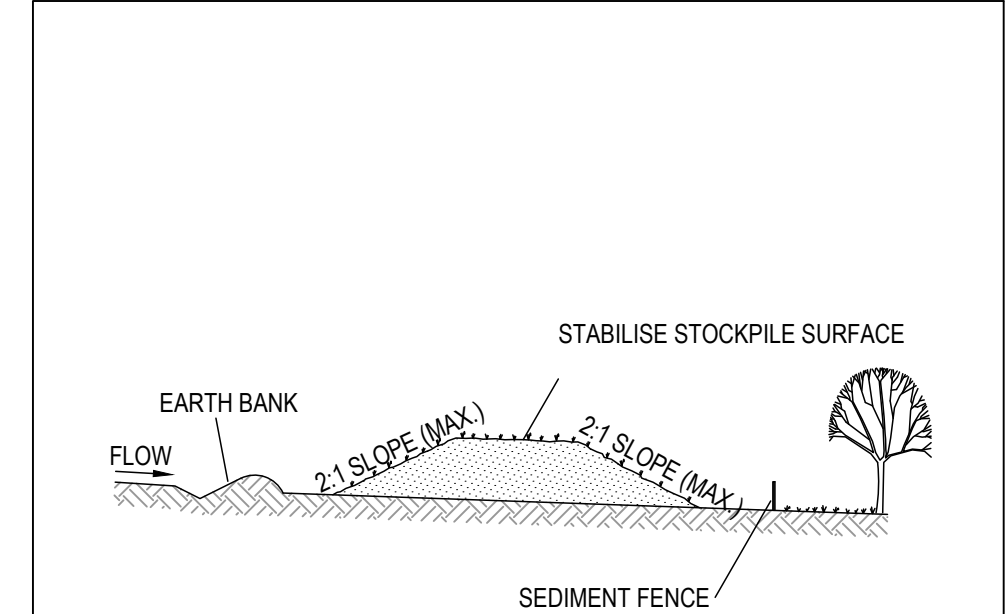
CONSTRUCTION NOTES

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AND 1,200mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95% STANDARD PROCTOR DENSITY.
4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100 MM TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
6. SPREAD THE FILL IN 100mm-150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
7. CONSTRUCT THE EMERGENCY SPILLWAY.
8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP.

EARTH BASIN - WET

(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)

SD 6-4



CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. 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.
5. 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

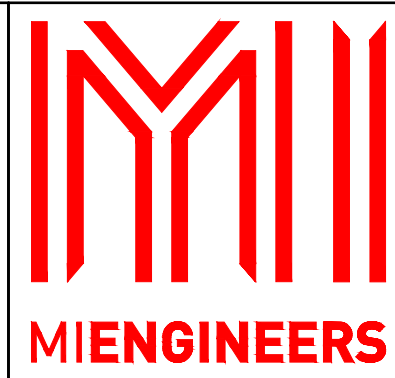
SD 4-1

EROSION & SEDIMENT CONTROL DETAILS SHEET

SCALE -

REVISION	AMENDMENTS	DATE	CKD	APP	SURVEYOR: SET CONSULTANTS
A	ISSUED FOR INFORMATION	16.10.24	MW	MW	DATE OF SURVEY: 8/7/2024
					ORIGIN: -
					HEIGHT OF DATUM: -
					HORIZONTAL DATUM: -

CLIENT:



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PROJECT :	PROPOSED INTERNAL ACCESS ROAD 369 JACKS CORNER RD KANGAROO VALLEY
DRAWING NAME:	EROSION & SEDIMENT CONTROL DETAILS SHEET

NOT FOR CONSTRUCTION

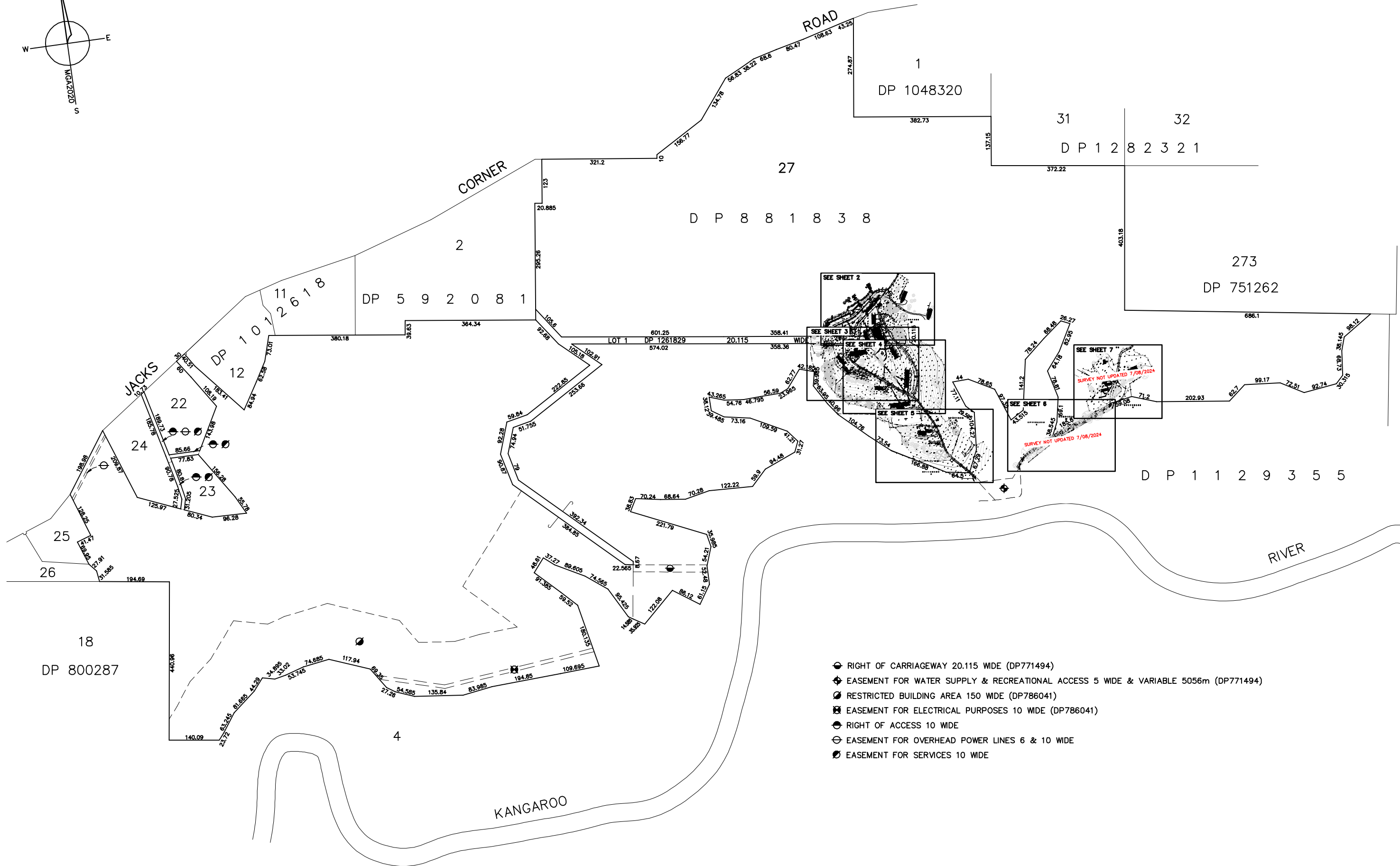
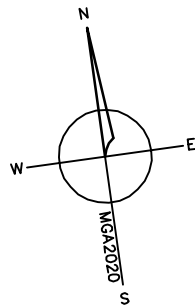


DESIGNED: NG
DRAWN: NG
SCALE: -
SHEET SIZE: A1

DRAWING STATUS: PRELIMINARY
DRAWING No.: C502

PROJECT No.: 23P00240
REVISION: A

Appendix 2 | Survey Drawing



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SCALE 1:5000 ● A1 SIZE 1:10000 ● A3 SIZE		WARNING NOTE: THE INFORMATION SHOWN ON THIS PLAN (OR THE DATA TRANSMITTED HERewith) IS CORRECT AS AT 16/11/2021 AND HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF BAXTER & JACOBSON ARCHITECTS PTY LTD. THESE WARNING NOTES MUST NOT BE REMOVED FROM THIS ELECTRONIC FILE. IF THESE NOTES ARE REMOVED SET CONSULTANTS PTY LTD IS RELIEVED OF ALL RESPONSIBILITY AND LIABILITY RELATING TO ANY SUBSEQUENT USE OF THE INFORMATION CONTAINED WITHIN THIS FILE. THIS ELECTRONIC FILE SHALL NOT BE TRANSMITTED TO ANY THIRD PARTY WITHOUT THE EXPRESS PERMISSION OF SET CONSULTANTS PTY LTD.		SURVEY DH DESIGN DRAWN DH CHECKED SA APPROVED		AMENDMENTS A - ORIGINAL ISSUE B - UPDATE DETAIL INCLUDE 3D DIGITAL TERRAIN MODEL		BY DATE DH 23/11/2021 DH 07/08/2024		 Zero Damage - Zero Harm		 SURVEYING ENGINEERING TOWN PLANNING		SET CONSULTANTS PTY LTD 51 Graham Street Nowra PO Box 495 Nowra NSW 2541 p 02 4421 4500 Kiriwa 02 4233 2006 mail@setconsultants.com.au www.setconsultants.com.au ABN 54 682 364 037		SKETCH PLAN SHOWING DETAIL AT THE SCOTS COLLEGE, GLENGARRY CAMPUS LOT 27 DP 881838 & LOT 1 DP1261829 JACKS CORNER ROAD, KANGAROO VALLEY FOR BAXTER & JACOBSON ARCHITECTS PTY LTD		A1 SHEET 1 OF 7 SHEETS REF. No. 101811/20	
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2: Sydney Properties Pty Ltd 101811 186: Skemmerly Survey MGA 2020 DETAIL PLAN 101811 UPDATE DETAIL-070824

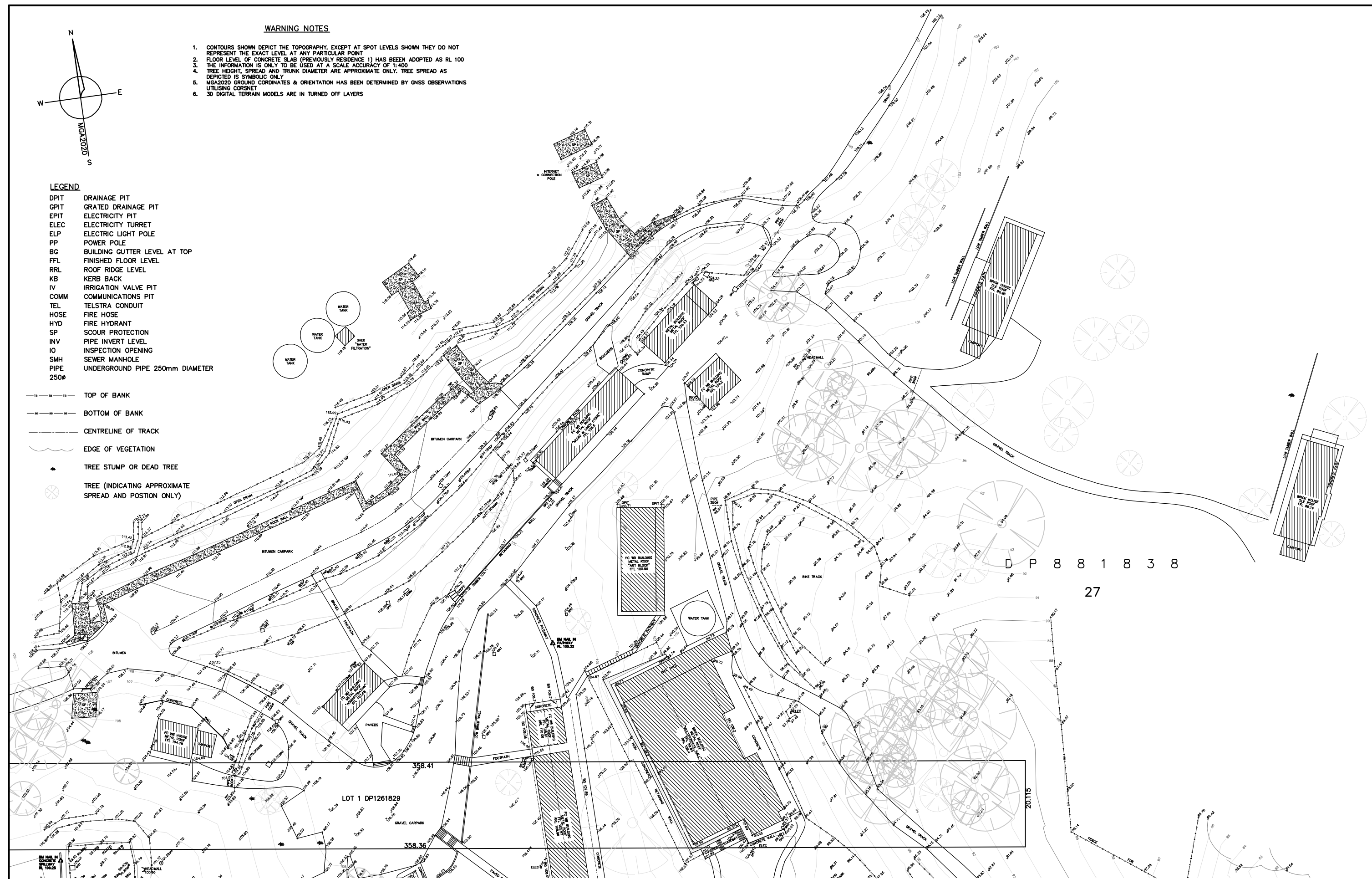
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2. FLOOR LEVEL OF CONCRETE SLAB (PREVIOUSLY RESIDENCE 1) HAS BEEN ADOPTED AS RL 100
3. THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:400
4. TREE HEIGHT, SPREAD AND TRUNK DIAMETER ARE APPROXIMATE ONLY. TREE SPREAD AS DEPICTED IS SYMBOLIC ONLY
5. MAGNITUDE GRID COORDINATES & ORIENTATION HAS BEEN DETERMINED BY GNSS OBSERVATIONS UTILISING CORNEST
6. 3D DIGITAL TERRAIN MODELS ARE IN TURNED OFF LAYERS

LEGEND

DPIIT	DRAINAGE PIT
GPIT	GRADED DRAINAGE PIT
EPIT	ELECTRICITY PIT
ELEC	ELECTRICITY TURRET
ELP	ELECTRIC LIGHT POLE
PP	POWER POLE
BG	BUILDING GUTTER LEVEL AT TOP
FFL	FINISHED FLOOR LEVEL
RRL	ROOF RIDGE LEVEL
KB	KERB BACK
IV	IRRIGATION VALVE PIT
COMM	COMMUNICATIONS PIT
TEL	TELSTRA CONDUIT
HOSE	FIRE HOSE
HYD	FIRE HYDRANT
SP	SCOUR PROTECTION
INV	PIPE INVERT LEVEL
IO	INSPECTION OPENING
SMH	SEWER MANHOLE
PIPE	UNDERGROUND PIPE 250mm DIAMETER
250ø	

	TOP OF BANK
	BOTTOM OF BANK
	CENTRELINE OF TRACK
	EDGE OF VEGETATION
	TREE STUMP OR DEAD TREE
	TREE (INDICATING APPROXIMATE SPREAD AND POSITION ONLY)



Liability limited by a scheme approved under Professional Standards Legislation

SCALE
1:400 ● A1 SIZE
1:800 ● A3 SIZE

DATUM
ASSUMED
CONTOUR INTERVAL 1m

WARNING NOTE:
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SURVEY	DH
DESIGN	
DRAWN	DH
CHECKED	SA
APPROVED	

AMENDMENTS

A - ORIGINAL ISSUE
B - UPDATE DETAIL INCLUDE 3D DIGITAL TERRAIN MODEL

BY	DATE
DH DH	23/11/2021 07/08/2024



SURVEYING | ENGINEERING | TOWN PLANNING

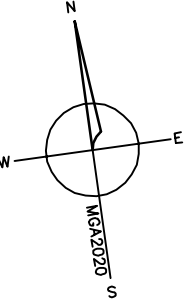
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PO Box 495 Nowra NSW
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SKETCH PLAN SHOWING DETAIL AT
THE SCOTS COLLEGE, GLENGARRY CAMPUS
LOT 27 DP 881838 & LOT 1 DP1261829
JACKS CORNER ROAD, KANGAROO VALLEY
FOR BAXTER & JACOBSON ARCHITECTS PTY LTD

A1	
SHEET	
REF.	

2 OF 7 SHEETS

101811/20

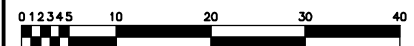


TREE CHART

ID	HEIGHT	SPREAD	GIRTH	RLAT BASE
A	15	12	0.6	103.9
B	20	12	0.6	103.6
C	15	8	0.3	103.2
D	15	12	0.6	103.3
F	15	6	0.3	105
G	10	6	0.3	105.3
H	30	12	1	97.3
J	20	18	0.8	102
K	15	12	1	101
L	15	10	0.5	94.2
M	15	10	0.5	94

WARNING NOTES

1. CONTOURS SHOWN DEPICT THE TOPOGRAPHY, EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT
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4. TREE HEIGHT, SPREAD AND TRUNK DIAMETER ARE APPROXIMATE ONLY. TREE SPREAD AS DEPICTED IS SYMBOLIC ONLY
5. MGA2020 GROUND COORDINATES & ORIENTATION HAS BEEN DETERMINED BY GNSS OBSERVATIONS UTILISING CORNET
6. 3D DIGITAL TERRAIN MODELS ARE IN TURNED OFF LAYERS



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SCALE
1:400 ● A1 SIZE
1:800 ● A3 SIZE

DATUM
ASSUMED
CONTOUR INTERVAL 1m

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SURVEY	DH
DESIGN	DH
DRAWN	DH
CHECKED	SA
APPROVED	

AMENDMENTS	BY	DATE
A - ORIGINAL ISSUE	DH	23/11/2021
B - UPDATE DETAIL INCLUDE 3D DIGITAL TERRAIN MODEL	DH	07/08/2024



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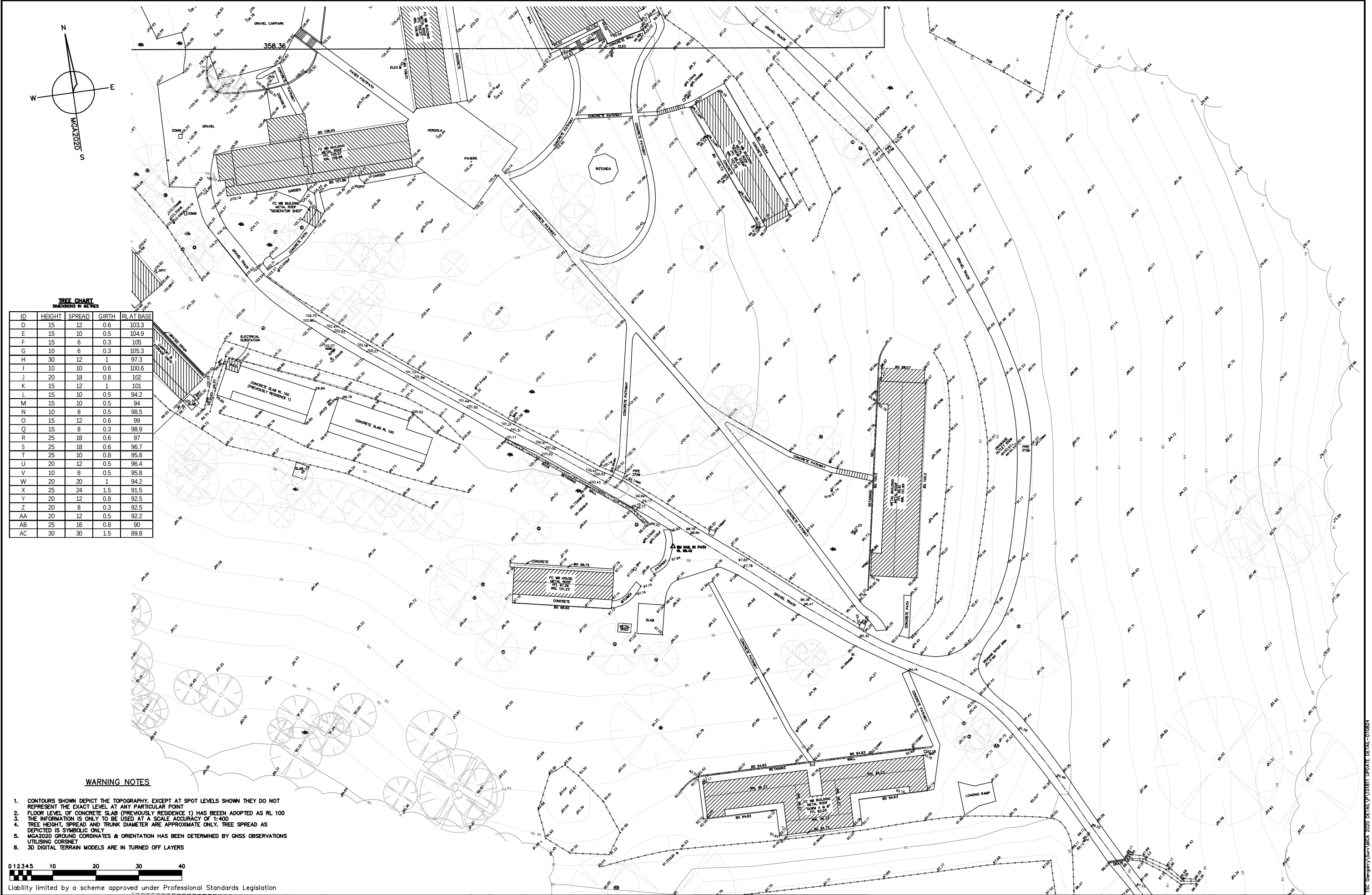
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SKETCH PLAN SHOWING DETAIL AT
THE SCOTS COLLEGE, GLENGARRY CAMPUS
LOT 27 DP 881838 & LOT 1 DP1261829
JACKS CORNER ROAD, KANGAROO VALLEY
FOR BAXTER & JACOBSON ARCHITECTS PTY LTD

A1
SHEET
REF. No.
101811/20

3 OF 7 SHEETS

Set Consultants Pty Ltd 180 Gungahyup Street, Gungahyup NSW 2020 2020 DETAIL UPDATE DETAIL-070824

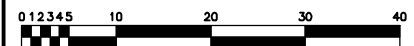


TREE CHART
DIMENSIONS IN METRES

ID	HEIGHT	SPREAD	GIRTH	RL AT BASE
D	15	12	0.6	103.3
E	15	10	0.5	104.9
F	15	6	0.3	105
G	10	6	0.3	105.3
H	30	12	1	97.3
I	10	10	0.6	100.6
J	20	18	0.8	102
K	15	12	1	101
L	15	10	0.5	94.2
M	15	10	0.5	94
N	10	8	0.5	98.5
O	15	12	0.6	99
Q	15	8	0.3	98.9
R	25	18	0.6	97
S	25	18	0.6	96.7
T	25	10	0.8	95.8
U	20	12	0.5	96.4
V	10	8	0.5	95.8
W	20	20	1	94.2
X	25	24	1.5	91.5
Y	20	12	0.8	92.5
Z	20	8	0.3	92.5
AA	20	12	0.5	92.2
AB	25	16	0.8	90
AC	30	30	1.5	89.8

WARNING NOTES

1. CONTOURS SHOWN DEPICT THE TOPOGRAPHY, EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT
2. FLOOR LEVEL OF CONCRETE SLAB (PREVIOUSLY RESIDENCE 1) HAS BEEN ADOPTED AS RL 100
3. THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:400
4. TREE HEIGHT, SPREAD AND TRUNK DIAMETER ARE APPROXIMATE ONLY, TREE SPREAD AS DEPICTED IS SYMBOLIC ONLY
5. MGA2020 GROUND COORDINATES & ORIENTATION HAS BEEN DETERMINED BY GNSS OBSERVATIONS UTILISING CORNET
6. 3D DIGITAL TERRAIN MODELS ARE IN TURNED OFF LAYERS



Liability limited by a scheme approved under Professional Standards Legislation

SCALE
1:400 ● A1 SIZE
1:800 ● A3 SIZE

DATUM
ASSUMED
CONTOUR INTERVAL 1m

WARNING NOTE:
THE INFORMATION SHOWN ON THIS PLAN (OR THE DATA TRANSMITTED HEREWITH) IS CORRECT AS AT 16/11/2021 AND HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF BAXTER & JACOBSON ARCHITECTS PTY LTD.

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SURVEY DH
DESIGN
DRAWN DH
CHECKED SA
APPROVED

AMENDMENTS
A - ORIGINAL ISSUE
B - UPDATE DETAIL INCLUDE 3D DIGITAL TERRAIN MODEL

BY
DH
DH

DATE
23/11/2021
07/08/2024

Zero Damage - Zero Harm

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A1
SHEET
REF. No.
101811/20

4 OF 7 SHEETS



TREE CHART				
DIMENSIONS IN METRES				
ID	HEIGHT	SPREAD	GIRTH	RL AT BASE
AD	25	24	1.5	84
AK	15	8	0.3	78.2
AL	15	8	0.6	79.9
AM	15	10	0.6	80.8

DP 1129355
4

WARNING NOTES

1. CONTOURS SHOWN DEPICT THE TOPOGRAPHY, EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT
2. FLOOR LEVEL OF CONCRETE SLAB (PREVIOUSLY RESIDENCE 1) HAS BEEN ADOPTED AS RL 100
3. THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:400
4. TREE HEIGHT, SPREAD AND TRUNK DIAMETER ARE APPROXIMATE ONLY, TREE SPREAD AS DEPICTED IS SYMBOLIC ONLY
5. MGA2020 GROUND COORDINATES & ORIENTATION HAS BEEN DETERMINED BY GNSS OBSERVATIONS UTILISING CORSNET
6. 3D DIGITAL TERRAIN MODELS ARE IN TURNED OFF LAYERS

Liability limited by a scheme approved under Professional Standards Legislation



SCALE
1:400 ● A1 SIZE
1:800 ● A3 SIZE

DATUM
ASSUMED
CONTOUR INTERVAL 1m

WARNING NOTE:
THE INFORMATION SHOWN ON THIS PLAN (OR THE DATA TRANSMITTED HERewith) IS CORRECT AS AT 16/11/2021 AND HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF BAXTER & JACOBSON ARCHITECTS PTY LTD.
THESE WARNING NOTES MUST NOT BE REMOVED FROM THIS ELECTRONIC FILE, IF THESE NOTES ARE REMOVED SET CONSULTANTS PTY LTD IS RELIEVED OF ALL RESPONSIBILITY AND LIABILITY RELATING TO ANY SUBSEQUENT USE OF THE INFORMATION CONTAINED WITHIN THIS FILE.
THIS ELECTRONIC FILE SHALL NOT BE TRANSMITTED TO ANY THIRD PARTY WITHOUT THE EXPRESS PERMISSION OF SET CONSULTANTS PTY LTD.

SURVEY		AMENDMENTS		BY	DATE
DESIGN	DH	A - ORIGINAL ISSUE B - UPDATE DETAIL INCLUDE 3D DIGITAL TERRAIN MODEL		DH	23/11/2021 07/08/2024
DRAWN	DH				
CHECKED	SA				
APPROVED					



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A1
SHEET 5 OF 7 SHEETS
REF. No.
101811/20

Appendix 3 | Soil Profiles



Soil Profile Report

SITE DETAILS

Site Location:	Vacant land on Jacks Corner Road.
Profile Details:	Sydney Catchment Authority reconnaissance soil survey - Moss Vale Survey (1004229), Profile 84, collected from a auger by Mr Fletcher Townsend on 26 March, 2001
Map Reference:	MGA Grid Reference: Zone 56, 267651E, 6155376N. 8928 MOSS VALE (1:100000) map sheet.
Physiography:	hillslope under wet sclerophyll forest on sedimentary lithology and used for improved pasture. Slope 10.0% (measured), local relief high (90-300 m), elevation 230.0 m, aspect south. Surface condition is self mulched, profile is imperfectly drained, erosion hazard is moderate, and no salting evident
Vegetation/Land Use:	limited clearing at the site, used for improved pasture, with timber/scrub/unused in the general area
Surface Condition:	self mulched when described, expected to be self mulched when dry, ground cover is 100%
Erosion/Land Degradation:	moderate, erosion at site is none
Soil Hydrology:	profile is slowly permeable and imperfectly drained, no free water, run on is high and runoff is moderate
Soil Type:	Mottled-Sodic Class Undetermined Brown Kurosol; , medium, non gravelly, clay loamy, clayey, deep (Sufficient data available) (ASC 2nd Edition), Brown Podzolic Soil (GSG)
Base of observation:	layer continues
Profile Field Notes:	Compare to profile 81 - same soil type but more intensive clearing. Very good example of a Kurosol which has had minimal disturbance.

SOIL DESCRIPTION

Layer 0

0.00 - 0.00 m

Coarse Fragments: not evident,

Layer 1

Horizon: A1

0.00 - 0.20 m

Texture: light medium silty clay loam

Colour: black (7.5YR 2.5/1) [moist] with no recorded mottles

Structure: moderate pedality (polyhedral, < 2 mm,)

Coarse Fragments: not evident,

Roots: few (1-10/10x10cm) (Root size <1 mm), few (1-10/10x10cm) (Root size 1-2 mm),

Soil fauna:	Activity is nil
Cracks/Macropores:	Cracks are none(width <5 mm), macropores are nil
Moisture/Consistence:	moderately moist, moderately sticky, texture modifier test result was no change, disruptive test result was moderately firm force, shearing test result was crumbly,
Erodibility Tests:	Crumb (EAT) test showed no change,
Field chemical tests:	Field pH is 4.5 (Raupach), AgNO3 test showed no precipitate, HCl test showed no effervescence,
Sample taken:	disturbed
Lower Boundary:	smooth abrupt (5-20 mm) boundary to ...

Layer 2

Horizon: A

0.20 - 0.50 m	Texture:	medium heavy silty clay loam
	Colour:	yellowish brown (dull yellowish brown) (10YR 5/4) [moist] with no recorded mottles
	Structure:	massive (fabric is earthy)
	Coarse Fragments:	not evident,
	Roots:	few (1-10/10x10cm) (Root size <1 mm), few (1-10/10x10cm) (Root size 1-2 mm),
	Soil fauna:	Activity is nil
	Cracks/Macropores:	Cracks are none(width <5 mm), macropores are nil
	Moisture/Consistence:	moderately moist, moderately sticky, texture modifier test result was no change, disruptive test result was moderately firm force, shearing test result was crumbly,
	Erodibility Tests:	Crumb (EAT) test showed aggregates slake,
	Field chemical tests:	Field pH is 5.0 (Raupach), AgNO3 test showed no precipitate, HCl test showed no effervescence,
	Sample taken:	disturbed
	Lower Boundary:	smooth abrupt (5-20 mm) boundary to ...

Layer 3

Horizon: B2

0.50 - 0.75 m	Texture:	medium heavy clay
	Colour:	yellowish brown (10YR 5/6) [moist] with no recorded mottles
	Structure:	moderate pedality (sub-angular blocky, 10 - 20 mm,)
	Coarse Fragments:	not evident,
	Segregations:	few (2-10%), ferruginous,
	Roots:	few (1-10/10x10cm) (Root size <1 mm), few (1-10/10x10cm) (Root size 1-2 mm),
	Soil fauna:	Activity is nil
	Cracks/Macropores:	Cracks are evident(width <5 mm), macropores are nil
	Moisture/Consistence:	moist, moderately sticky, texture modifier test result was no change, disruptive test result was very firm force, shearing test result was labile,
	Erodibility Tests:	Crumb (EAT) test showed aggregates slake,
	Field chemical tests:	Field pH is 4.5 (Raupach), AgNO3 test showed no precipitate, HCl test showed no effervescence,
	Sample taken:	disturbed
	Layer Notes:	Mottles increase with depth.
	Lower Boundary:	smooth abrupt (5-20 mm) boundary to ...

LABORATORY TESTS

None available

For information on laboratory test data and units of measure, please see: [Soil survey standard test methods](#)

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Soil Profile Report

SITE DETAILS

Site Location:	Minimal footslope on Jacks Corner Road.
Profile Details:	Sydney Catchment Authority reconnaissance soil survey - Moss Vale Survey (1004229), Profile 102, collected from a auger by Mr Fletcher Townsend on 29 March, 2001
Map Reference:	MGA Grid Reference: Zone 56, 265100E, 6154618N. 8928 MOSS VALE (1:100000) map sheet.
Physiography:	footslope under dry sclerophyll forest on sedimentary lithology and used for timber/scrub/unused. Slope 14.0% (measured), local relief high (90-300 m), elevation 278.0 m, aspect south east. Surface condition is firm, profile is imperfectly drained, and no salting evident
Vegetation/Land Use:	extensive clearing at the site, used for timber/scrub/unused, with improved pasture in the general area
Surface Condition:	firm when described, expected to be hard set when dry, ground cover is 0%
Erosion/Land Degradation:	erosion at site is none
Soil Hydrology:	profile is moderately permeable and imperfectly drained, no free water, run on is very high and runoff is high
Soil Type:	Mottled-Sodic Class Undetermined Brown Kurosol; , medium, non gravelly, clay loamy, clayey, deep (Sufficient data available) (ASC 2nd Edition), Brown Podzolic Soil (GSG)
Base of observation:	layer continues
Profile Field Notes:	Not to be used as a type profile.

SOIL DESCRIPTION

Layer 0

0.00 - 0.00 m

Coarse Fragments: not evident,

Layer 1

Horizon: A1

0.00 - 0.15 m

Texture: fine sandy clay loam

Colour: very dark greyish brown (brownish black) (10YR 3/2) [moist] with no recorded mottles

Structure: massive (fabric is sandy)

Coarse Fragments: not evident,

Roots: common (10-25/10x10cm) (Root size <1 mm), few (1-10/10x10cm) (Root size 1-2 mm),

Soil fauna: Activity is nil

	Cracks/Macropores:	Cracks are nil, macropores are nil
	Moisture/Consistence:	moderately moist, slightly sticky, disruptive test result was moderately weak force, shearing test result was crumbly,
	Erodibility Tests:	Crumb (EAT) test showed no change,
	Field chemical tests:	Field pH is 5.0 (Raupach), AgNO3 test showed no precipitate, HCl test showed no effervescence,
	Sample taken:	disturbed
	Lower Boundary:	smooth clear (20-50 mm) boundary to ...
Layer 2	Horizon: A2	
0.15 - 0.30 m	Texture:	fine sandy clay loam
	Colour:	dark greyish brown (greyish yellow brown) (10YR 4/2) [moist] with no recorded mottles
	Structure:	massive (fabric is sandy)
	Coarse Fragments:	not evident,
	Roots:	common (10-25/10x10cm) (Root size <1 mm), few (1-10/10x10cm) (Root size 1-2 mm),
	Soil fauna:	Activity is nil
	Cracks/Macropores:	Cracks are nil, macropores are nil
	Moisture/Consistence:	moderately moist, slightly sticky, disruptive test result was moderately weak force, shearing test result was crumbly,
	Erodibility Tests:	Crumb (EAT) test showed no change,
	Field chemical tests:	Field pH is 5.0 (Raupach), AgNO3 test showed no precipitate, HCl test showed no effervescence,
	Sample taken:	disturbed
	Lower Boundary:	smooth clear (20-50 mm) boundary to ...
Layer 3	Horizon: B2	
0.30 - 0.65 m	Texture:	medium heavy clay
	Colour:	yellowish brown (10YR 5/6) [moist] with no recorded mottles
	Structure:	moderate pedality (sub-angular blocky, 10 - 20 mm,)
	Coarse Fragments:	not evident,
	Roots:	few (1-10/10x10cm) (Root size <1 mm), none (Root size 1-2 mm),
	Soil fauna:	Activity is nil
	Cracks/Macropores:	Cracks are nil, macropores are nil
	Moisture/Consistence:	moist, moderately sticky, disruptive test result was moderately firm force, shearing test result was labile,
	Erodibility Tests:	Crumb (EAT) test showed aggregates slake,
	Field chemical tests:	Field pH is 4.5 (Raupach), AgNO3 test showed no precipitate, HCl test showed no effervescence,
	Sample taken:	disturbed

LABORATORY TESTS

None available

For information on laboratory test data and units of measure, please see: [Soil survey standard test methods](#)

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