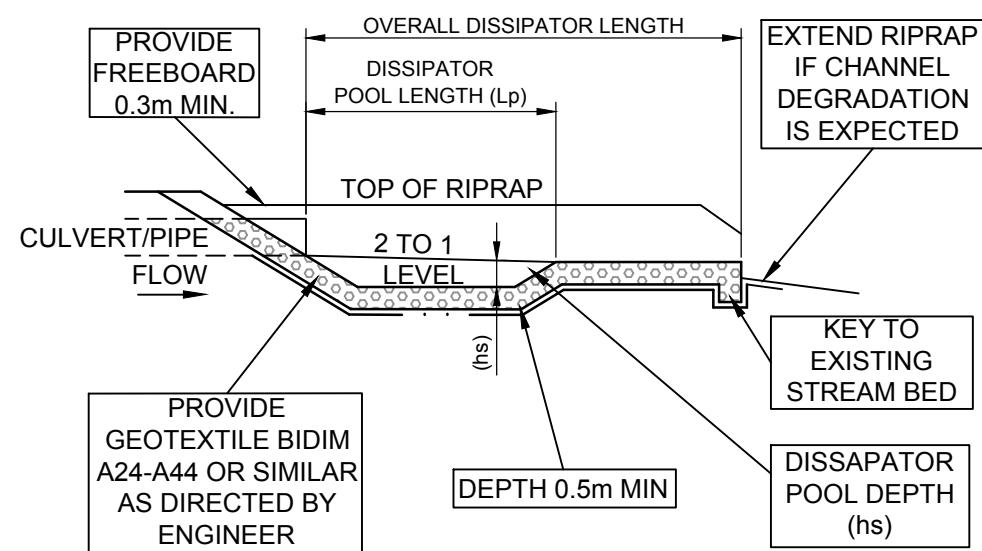
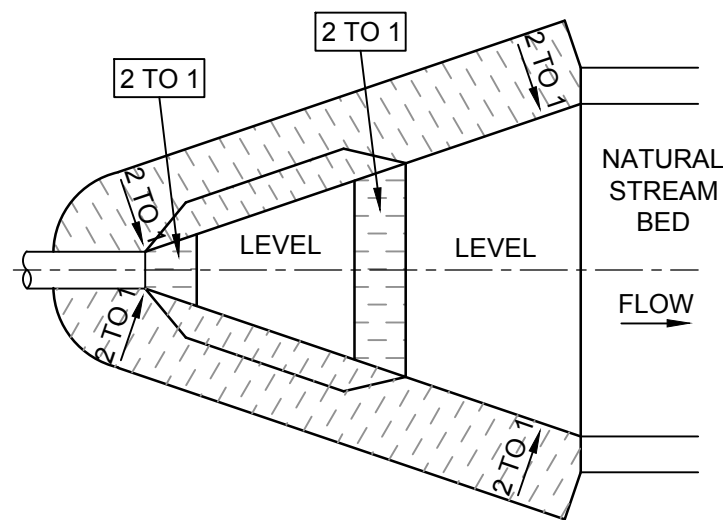


PLAN

RIPRAP OUTLET PROTECTION / ENERGY DISSIPATOR PIPE OUTLET ONLY

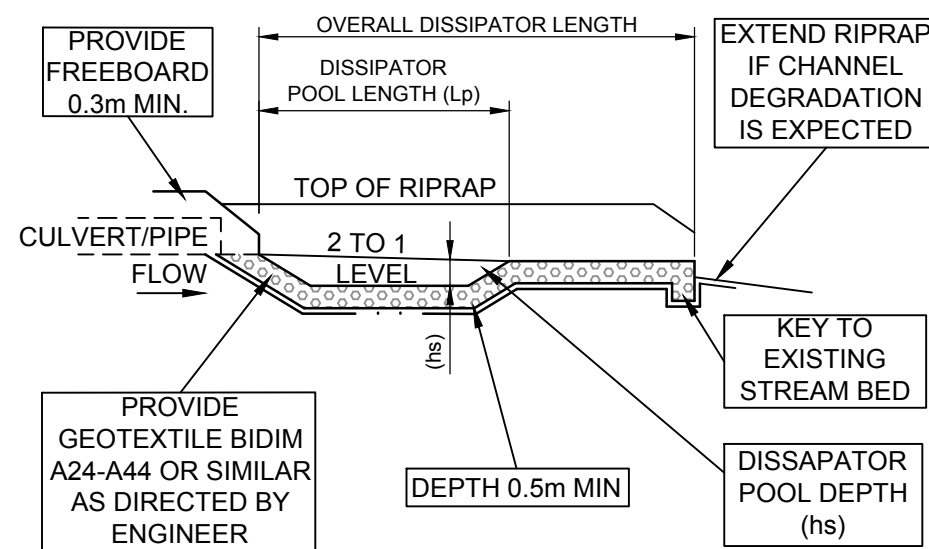


ELEVATION (SECTIONED ALONG CENTRELINE)



PLAN

RIPRAP OUTLET PROTECTION / ENERGY DISSIPATOR PIPE WITH HEADWALL



ELEVATION (SECTIONED ALONG CENTRELINE)

PIPE CULVERT RIP RAP OUTLET TREATMENT

PIPE SIZE (mm)	PIPE GRADE %	OUTLET ROCK DIA. (m)	OVERALL LENGTH (m)	EXIT WIDTH (m)	DISSIPATOR POOL LENGTH Lp (m)	DISSIPATOR POOL DEPTH hs (m)
Ø 300	<0.5	0.1	1.5	1.2	n/a	n/a
	0.5 - 2.0	0.1	1.0	1.0	1.0	0.10
	2.0 - 2.5	0.2	2.0	1.5	1.0	0.10
	2.5 - 3.0	0.2	2.5	2.0	1.5	2.0
	3.0 - 4.0	0.2	3.0	2.0	2.0	2.0
	4.0 - 5.0	0.2	4.0	3.0	3.0	2.5
> 5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY					
Ø 375	<0.5	0.1	1.5	1.5	n/a	n/a
	0.5 - 2.0	0.1	1.5	1.0	1.0	0.10
	2.0 - 3.0	0.2	1.5	1.5	1.0	0.10
	3.0 - 4.0	0.2	2.0	1.5	1.5	0.15
	4.0 - 5.0	0.2	2.5	2.0	2.0	0.20
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 450	<0.5	0.2	2.5	2.0	n/a	n/a
	0.5 - 1.0	0.2	2.5	2.0	n/a	n/a
	1.0 - 2.0	0.2	1.0	1.0	1.0	0.10
	2.0 - 3.0	0.2	1.5	1.0	1.0	0.10
	3.0 - 4.0	0.2	2.0	2.0	1.5	0.15
	4.0 - 5.0	0.2	3.5	3.0	2.5	0.25
>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY					
Ø 525	<0.5	0.2	1.5	1.5	n/a	n/a
	0.5 - 1.0	0.2	0.5	0.5	0.5	0.10
	1.0 - 2.0	0.2	1.0	1.0	1.0	0.10
	2.0 - 3.0	0.2	2.0	2.0	1.5	0.15
	3.0 - 4.0	0.2	3.5	3.0	2.0	0.20
	4.0 - 5.0	0.2	4.0	3.5	2.5	0.25
>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY					
Ø 600	<0.5	0.2	2.5	2.0	n/a	n/a
	0.5 - 2.0	0.2	2.0	1.5	1.0	0.10
	2.0 - 3.0	0.3	2.5	2.0	1.5	0.15
	3.0 - 4.0	0.3	3.0	2.5	2.0	0.20
	4.0 - 5.0	0.3	4.0	3.5	2.5	0.25
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				

NOTES

1. WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT THE SAME LEVEL OR LOWER THAN NATURAL CHANNEL AT THE END OF THE BASIN.
2. CULVERT AND TREATMENT MAY BE VARIED TO SUIT SITE CONDITIONS.
3. A SMALL DIAMETER PIPE SHOULD BE PROVIDED TO DRAIN POOL DURING PERIODS OF LOW FLOW.

Armidale Dept of Public Regional Council Infrastructure	SCALES NTS	APPROVED D. MAUNDER 31/08/2016 <small>MANAGER ENGINEERING AND STANDARDS SUPPORT</small>	SHEET 1 OF 1
		SURV DRWN ST DES MW CHKD MW	AS SHEET SIZE A3
TYPICAL RIPRAP OUTLET PROTECTION DN300 TO DN600 PIPE		CADFILE 080-043.dwg DATE 31/08/2016	