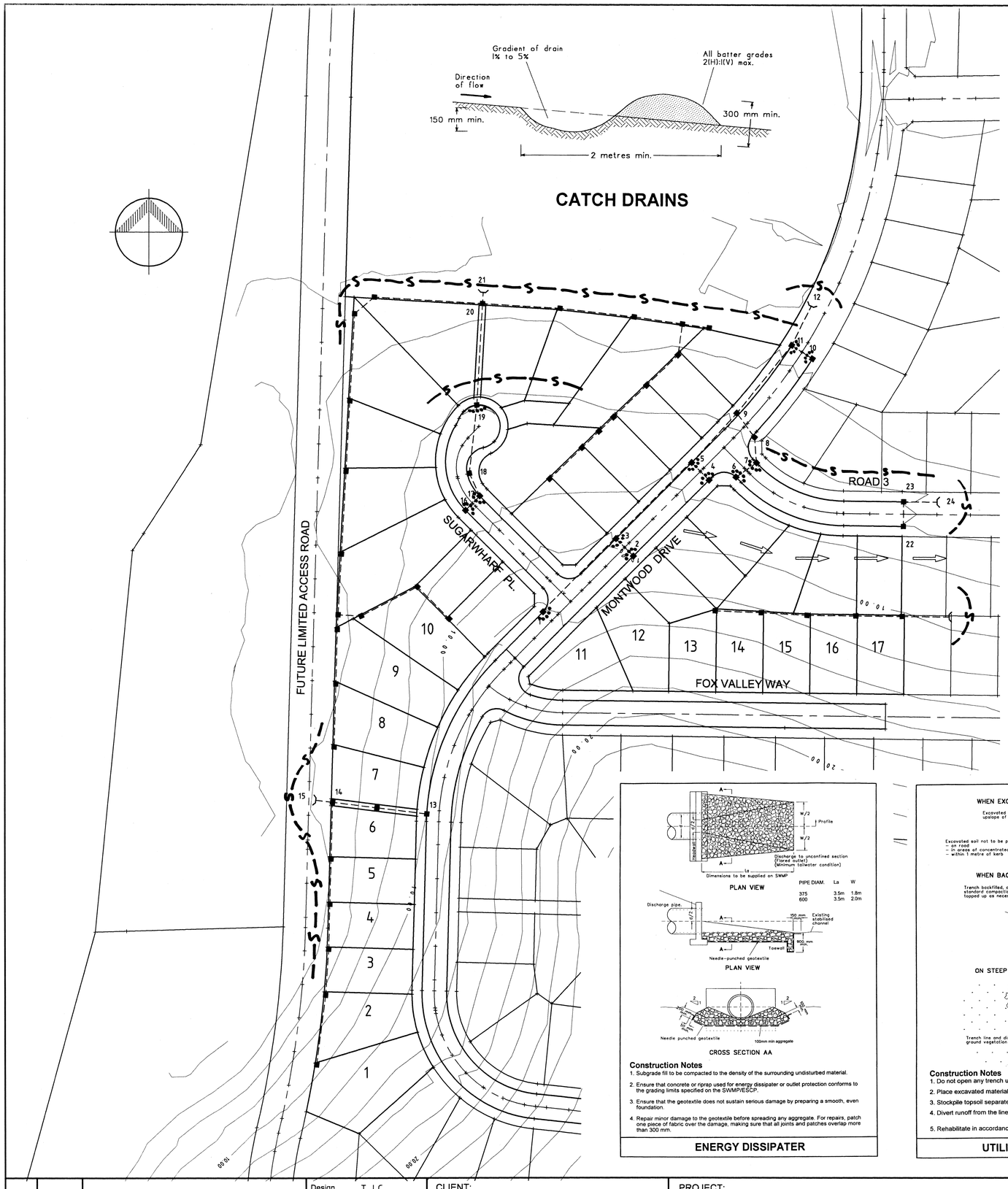
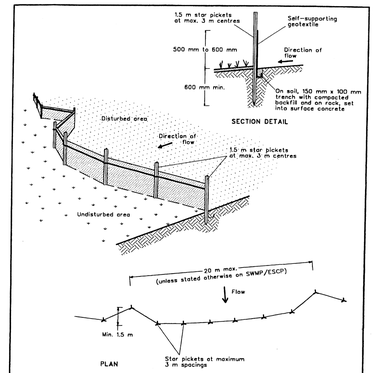


NOTE:
SEDIMENTATION AND EROSION CONTROL MEASURES ARE TO BE INSTALLED AT ALL DRAINAGE STRUCTURES AS DETAILED. ALL DISTURBED AREAS ARE TO BE STABILISED AS SPECIFIED AND DIRECTED.



Construction Notes

1. Construct sediment fence as close as possible to parallel to the contours of the site.
2. Drive 1.5 metre long star pickets into ground, 3 metres apart.
3. Dig a 150 mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
4. Backfill trench over base of fabric.
5. Fix self-supporting geotextile to upslope side of posts with wire ties or as recommended by geotextile manufacturer.
6. Join sections of fabric at a support post with a 150 mm overlap.

SEDIMENT FENCE

EROSION AND SEDIMENTATION CONTROL

1. All erosion and sedimentation controls shall be in accordance with the guidelines and specifications as detailed in the Department of Housing's 'Managing Urban Stormwater: Soils and Construction' and the E.P.A.'s 'Managing Urban Stormwater' series.

2. Construction shall be phased so that land disturbance is confined to areas of workable size. This will limit the duration disturbed areas are exposed to erosion. Stabilisation shall be applied to the first disturbed area before the next section is opened up. Any disturbed areas that will not be stabilised within 30 days shall be revegetated and any that fail to establish shall be resown.

3. Topsoil stockpiles are to be located away from any natural drainage watercourse and are to have hay bales and/or silt stop sediment control fences placed around them to act as sedimentation controls.

4. Temporary earthen diversion drains are to be constructed to divert waters away from all disturbed areas and towards hay bale check dams located in natural drainage depressions. Temporary sediment detention barriers are to be placed around outlet headwalls and drainage discharge points as detailed and permanent energy dissapators are to be installed at all outlets as shown to limit velocities and thus the potential for scouring. With all drainage outlets, all waters are to be released in a non erodible manner. Temporary sediment traps are to be constructed at all drainage inlet points as detailed.

5. Sediment and debris are to be removed from detention barriers when they are 60% full. All the sediment removed shall be disposed of as directed by the supervising engineer.

6. Upon completion of shaping and drainage works, batters and drainage lines shall be topsoiled to a minimum depth of 100mm with stockpiled material and any areas with insufficient grass/topsoil mix are to be seeded and mulched with any failed areas resown or revegetated as directed by the supervising engineer.
A 400mm wide turf strip shall be installed next to all kerb and gutter, or kerb, to stabilise the interface between kerb and footpath.

7. Temporary erosion and sedimentation controls are to be installed during the construction phase and shall be retained and maintained while disturbed areas remain or are contributing sediment to the stormwater system. No device shall be removed until directed by the supervising engineer.

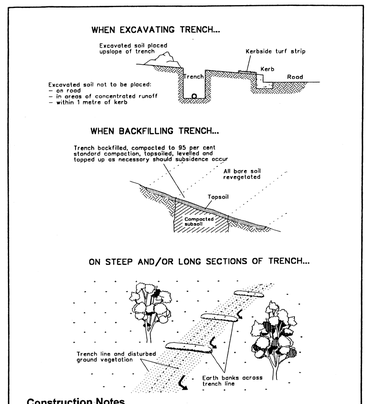
LEGEND

- DRAINAGE LINE & HEADWALL
- 22 STORMWATER PIT
- S SEDIMENT CONTROL FENCING
- B BARRIER FENCING
- TEMPORARY KERB INLET SEDIMENT TRAP
- TEMPORARY CATCH DRAINS

Construction Notes

1. Subgrade fill to be compacted to the density of the surrounding undisturbed material.
2. Ensure that concrete or riprap used for energy dissipater or outlet protection conforms to the grading limits specified on the SWMP/ESCP.
3. Ensure that the geotextile does not sustain serious damage by preparing a smooth, even foundation.
4. Repair minor damage to the geotextile before spreading any aggregate. For repairs, patch one piece of fabric over the damage, making sure that all joints and patches overlap more than 300 mm.

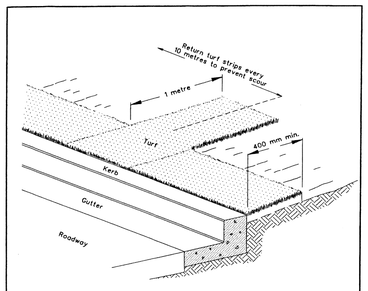
ENERGY DISSIPATER



Construction Notes

1. Do not open any trench unless it is likely to be closed in three days.
2. Place excavated material upslope of trench.
3. Stockpile topsoil separately from subsoil.
4. Divert runoff from the line of the cut with diversions
5. Rehabilitate in accordance with specification.

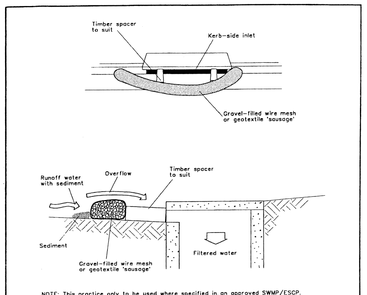
UTILITY CONSTRUCTION



Construction Notes

1. Install min. 400 mm wide roll of turf on the footpath adjacent to the kerb and at the same level as the top of the kerb.
2. Lay 1.5 metre long turf strips normal to the kerb every 10 metres.
3. Rehabilitate disturbed soil behind the turf strip in accordance with the SWMP/ESCP.

KERBSIDE TURF STRIP



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

Construction Notes

1. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit.
2. Fill the sleeve with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening of the kerb inlet leaving a 100 mm gap at the top to act as an emergency spillway.
5. Maintain the opening with spacer blocks.
6. Form a seal with the kerbing and prevent sediment bypassing the filter.
7. Fit to all kerb inlets at sag points.

MESH AND GRAVEL INLET FILTER

BALLINA SHIRE COUNCIL
APPROVED
THESE PLANS HAVE BEEN TAKEN TO SITE AND CHECKED, AND ARE APPROVED IN ACCORDANCE WITH COUNCIL D/A ...1999/248..... CONDITIONS AND STANDARD ENGINEERING REQUIREMENTS.
SIGNED .....
FOR CHIEF ENGINEER
DATED ...25 Nov 99...

No.	Date	Amendment

Design T.J.C.
Drawn T.J.C.
Checked
Approved
Scale 1: 1000

CLIENT: R. and J. PIDCOCK

Date SEPT. '99
Datum A.H.D.
Sheet of Sheets

Dwg Filename 1087-3-ERS
Disk Name

PROJECT:
PACIFIC PINES ESTATE
STAGES 3a & 3b
LENNOX HEAD

TITLE:
SOIL AND WATER MANAGEMENT PLAN

DAVID ARDILL & ASSOCIATES
PTY. LIMITED
CONSULTING CIVIL AND STRUCTURAL ENGINEERS
PROJECT MANAGERS AND TOWN PLANNERS
31 DE-HAVILLAND CRES. BALLINA NSW 2478
P.O. BOX 20
Ph. 02 6686 3280
Fax 02 6686 7920
e-mail:daa@turbowb.net.au
A.C.N. 002 400 526

DWG. No. C.18
JOB No. 88/1087/3

FUTURE LIMITED ACCESS ROAD

SUGARWHARF PL.

MONTWOOD DRIVE

ROAD 3

FOX VALLEY WAY

BALLINA SHIRE COUNCIL
APPROVED
THESE PLANS HAVE BEEN TAKEN TO SITE AND CHECKED AND ARE APPROVED IN ACCORDANCE WITH COUNCIL DA 1999/248 CONDITIONS AND STANDARD ENGINEERING REQUIREMENTS.
SIGNED ..... FOR CHIEF ENGINEER
DATED 25 Nov 99

No.	Date	Amendment

Design T.J.C.
Drawn T.J.C.
Checked
Approved
Scale 1: 1000

CLIENT: R. and J. PIDCOCK
Date SEPT. '99
Datum A.H.D.
Sheet of Sheets

Dwg Filename 1087-3-CP
Disk Name

PROJECT:
PACIFIC PINES ESTATE
STAGES 3a & 3b
LENNOX HEAD

TITLE: CATCHMENT PLAN

DAVID ARDILL & ASSOCIATES
PTY. LIMITED
CONSULTING CIVIL AND STRUCTURAL ENGINEERS
PROJECT MANAGERS AND TOWN PLANNERS
31 DE-HAVILLAND CRES. BALLINA NSW 2478
P.O. BOX 20
Ph. 02 6686 3280
Fax 02 6686 7920
A.C.N. 002 400 526
e-mail:daa@turboweb.net.au

DWG. No. C.19

JOB No. 88/1087/3

DRAINAGE CALCULATION SHEET

		Sub-catchment					Inlet design									Total catchment				Design												Head Loss & Partial Flow								Remarks	Hydraulic check								
PIT	ARI	Time of conc.	Area	Intensity	C.xArea	Overland Flow	Total gutter	Eff gutter	Width	depth	Velocity	Total inflow	Flow into Pit	Bypass	Bypass Pit	Time of conc	Intensity	Sum C.xA	Cumulative Flow	Design Flow	Num. Pipes	Pipe Class	Nom Diam	Pipe Length	Pipe Grade	HGL Grade	Manning's n	Roughness	Surcharge	HGL grade (Backwater)	D/A	K factor	Pipe vel (Colebrook & White)	Part depth (Colebrook & White)	Capacity (Colebrook & White)	Pipe vel (Manning's)	Part depth (Manning's)		D/S Obvert level	D/S HGL BW	Pipe loss	U/S Obvert level	Adopted U/S HGL BW.	Pit loss	U/S HGL BW	Total loss	Gutter level (N/S)
	yrs	mins	Ha	mm/hr	Ha	L/s	L/s	L/s	m	mm	m/s	L/s	L/s	L/s		mins	mm/Hr	Ha	L/s	L/s			mm	m	%	%		mm		%	m/s		m	L/s	m/s	m		m	m	m	m	m	m	m	m	m
PIT1	5	6.00	0.022	178	0.017	8	8	8	0.492	36	0.980	8	8	0		6.00	178	0.017	8	8	1	2	375	44.1	4.27	0.0	0.013	0.150	0.0	0.0	0.073	4.00	1.658	0.034	506	1.352	0.039		9.097	8.972	0.001	11.066	8.973	0.001	11.067	0.002	12.212
PIT2	5	10.25	0.225	146	0.148	60	60	55	1.534	71	1.386	60	55	5	PIT4	10.25	146	0.148	60	55	1	2	375	11.0	0.50	0.7	0.013	0.150	0.1	0.1	0.612	2.00	3.278	0.092	543	2.660	0.107		8.934	8.972	0.006	8.989	8.979	0.047	9.036	0.054	9.900
PIT3	5	6.00	0.025	178	0.019	10	10	10	0.551	38	1.008	10	10	0	PIT5	10.38	146	0.185	75	70	1	2	375	47.9	4.92	0.3	0.013	0.150	0.1	0.1	0.612	2.00	3.278	0.092	543	2.660	0.107		6.576	6.504	0.044	8.934	6.547	0.038	8.972	0.082	9.900
PIT4	5	11.29	0.238	138	0.154	59	64	58	1.578	72	1.405	64	58	6	PIT6	11.29	138	0.154	59	58	1	2	375	11.0	0.50	0.9	0.013	0.150	0.1	0.1	0.509	4.00	1.345	0.154	169	1.103	0.179		6.393	6.504	0.007	6.448	6.511	0.053	6.563	0.060	7.359
PIT5	5	6.00	0.045	178	0.034	17	17	17	0.811	47	1.107	17	17	0	PIT11	11.41	138	0.373	143	137	1	2	375	29.8	4.70	1.4	0.013	0.150	0.3	0.3	1.201	1.50	3.906	0.132	531	3.159	0.154		4.993	4.866	0.099	6.393	4.964	0.110	6.504	0.209	7.359
PIT6	5	13.75	0.346	127	0.221	78	84	84	2.206	93	0.744	84	84	0	PIT7	13.75	127	0.221	78	84	1	2	375	11.2	3.18	0.1	0.013	0.150	0.1	0.1	0.738	4.00	2.953	0.113	436	2.400	0.132		5.020	5.036	0.015	5.376	5.051	0.111	5.487	0.126	6.285
PIT7	5	6.00	0.026	178	0.020	10	10	10	0.678	42	0.820	10	10	0	PIT10	13.86	127	0.241	85	91	1	2	375	11.3	1.75	0.2	0.013	0.150	0.2	0.2	0.800	0.50	2.428	0.139	322	1.975	0.162		4.822	4.892	0.017	5.020	4.909	0.016	5.036	0.034	6.316
PIT8	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0	PIT10	13.92	126	0.241	85	91	1	2	375	13.2	0.91	0.2	0.013	0.150	0.2	0.2	0.800	0.20	1.990	0.167	230	1.544	0.196		4.702	4.866	0.020	4.822	4.886	0.007	4.892	0.027	5.906
PIT9	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0	PIT11	14.02	126	0.614	215	215	1	2	450	38.9	4.98	0.3	0.013	0.150	0.3	0.3	1.311	1.00	4.426	0.154	879	3.606	0.179		2.841	2.730	0.123	4.778	2.852	0.088	4.866	0.210	5.777
PIT10	5	6.00	0.058	178	0.044	22	22	22	0.934	51	1.152	22	22	0		6.00	178	0.044	22	22	1	2	375	11.0	0.50	0.0	0.013	0.150	0.0	0.0	0.191	4.00	1.022	0.092	169	0.844	0.106		2.672	2.730	0.001	2.727	2.731	0.007	2.738	0.009	3.617
PIT11	5	6.00	0.054	178	0.042	21	21	21	0.908	50	1.142	21	21	0	HW12	14.15	126	0.700	244	245	1	2	450	19.5	2.82	0.4	0.013	0.150	0.4	0.4	1.492	0.50	3.723	0.193	660	3.027	0.226		2.123	2.123	0.079	2.673	2.202	0.057	2.730	0.136	3.617
HW12	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		14.22	125	0.700	244	244	1	2	450	0.0	1.00	0.0	0.013	0.150	0.0	0.0	0.000	0.00	0.000	0.000	0	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.863
PIT16	5	6.00	0.068	178	0.051	25	25	25	0.889	49	1.436	25	25	0	PIT19	6.00	178	0.051	25	25	1	2	375	9.0	0.50	0.0	0.013	0.150	0.0	0.0	0.221	4.00	1.065	0.099	169	0.879	0.114		6.256	6.270	0.001	6.301	6.271	0.010	6.311	0.011	7.211
PIT17	5	6.00	0.046	178	0.035	17	17	17	0.705	43	1.352	17	17	0	PIT19	6.00	178	0.086	42	42	1	2	375	11.0	3.08	0.0	0.013	0.150	0.0	0.0	0.372	2.00	2.394	0.081	428	1.951	0.094		5.916	5.667	0.004	6.256	5.671	0.014	6.270	0.018	7.211
PIT18	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0	PIT19	6.00	178	0.086	42	42	1	2	375	30.4	2.47	0.0	0.013	0.150	0.0	0.0	0.371	0.20	2.214	0.085	383	1.805	0.099		4.915	4.963	0.011	5.666	4.973	0.001	5.667	0.012	6.700
PIT19	5	11.67	0.171	137	0.120	46	46	46	1.704	76	0.651	46	46	0		11.67	137	0.206	78	78	1	2	375	45.1	4.93	0.1	0.013	0.150	0.1	0.1	0.683	2.00	3.385	0.097	544	2.747	0.113		2.691	2.213	0.051	4.915	2.264	0.048	4.963	0.098	6.081
PIT20A	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	12	1	P	150	28.0	2.95	0.3	0.009	0.015	0.3	0.3	0.678	0.20	2.047	0.055	42	1.897	0.058		3.124	3.132	0.083	3.950	3.216	0.005	3.955	0.088	4.595
PIT20B	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	24	1	P	225	24.0	0.50	0.1	0.009	0.015	0.1	0.1	0.578	0.20	1.187	0.113	50	1.165	0.114		3.009	3.051	0.032	3.129	3.083	0.003	3.132	0.035	3.834
PIT20C	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	36	1	P	225	6.5	0.50	0.3	0.009	0.015	0.3	0.3	0.866	0.20	1.305	0.165	50	1.281	0.147		2.976	3.025	0.018	3.009	3.043	0.008	3.051	0.026	3.619
PIT20K	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	12	1	P	150	20.2	11.87	0.3	0.009	0.015	0.3	0.3	0.678	0.20	3.488	0.037	88	3.129	0.040		6.532	6.439	0.060	8.928	6.499	0.005	8.932	0.065	9.537
PIT20L	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	24	1	P	150	28.3	10.28	1.1	0.009	0.015	1.1	1.1	1.356	0.20	4.016	0.056	82	3.607	0.060		3.515	3.558	0.297	6.420	3.855	0.019	6.439	0.316	7.137
PIT20M	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	36	1	P	150	10.3	4.15	2.2	0.009	0.015	2.2	2.2	2.037	0.20	3.097	0.094	50	2.818	0.102		3.086	3.025	0.230	3.515	3.255	0.042	3.558	0.272	4.360
PIT20D	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	72	1	2	300	26.9	0.50	0.3	0.013	0.150	0.3	0.3	0.992	1.00	1.420	0.200	93	0.992	0.304		2.840	2.848	0.082	2.975	2.929	0.050	3.025	0.132	3.691
PIT20E	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	84	1	2	375	36.9	0.50	0.1	0.013	0.150	0.1	0.1	0.737	0.20	1.481	0.190	169	1.207	0.224		2.657	2.665	0.048	2.842	2.713	0.006	2.848	0.054	4.439
PIT20F	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	96	1	2	375	31.2	0.50	0.2	0.013	0.150	0.2	0.2	0.842	0.20	1.531	0.205	169	1.242	0.244		2.501	2.511	0.052	2.657	2.563	0.007	2.665	0.066	4.748
PIT20G	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	108	1	2	375	38.8	0.50	0.2	0.013	0.150	0.2	0.2	0.947	0.20	1.573	0.221	169	1.270	0.266		2.308	2.390	0.081	2.501	2.471	0.009	2.511	0.091	4.400
PIT20H	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	120	1	2	375	11.6	0.50	0.3	0.013	0.150	0.3	0.3	1.052	0.20	1.610	0.237	169	1.288	0.290		2.250	2.349	0.030	2.308	2.378	0.011	2.390	0.041	3.329
PIT20J	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	120	1	2	375	48.5	0.50	0.3	0.013	0.150	0.3	0.3	1.052	0.20	1.610	0.237	169	1.288	0.290		2.007	2.213	0.125	2.250	2.337	0.011	2.349	0.136	3.310
PIT20K	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	12	1	P	150	12.1	0.50	0.3	0.009	0.015	0.3	0.3	0.678	0.20	0.991	0.097	16	0.968	0.099		2.484	2.442	0.036	2.544	2.478	0.005	2.549	0.041	3.149
PIT20N	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	12	1	P	150	20.0	3.10	0.3	0.009	0.015	0.3	0.3	0.679	0.20	2.087	0.054	43	1.931	0.057		6.463	6.482	0.060	7.082	6.542	0.005	7.087	0.064	7.697
PIT20P	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	24	1	P	150	10.5	4.16	1.1	0.009	0.015	1.1	1.1	1.357	0.20	2.820	0.073	50	2.581	0.078		6.026	6.068	0.110	6.463	6.179	0.019	6.482	0.129	7.068
PIT20Q	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	36	1	P	150	9.0	4.73	2.2	0.009	0.015	2.2	2.2	2.035	0.20	3.273	0.089	54	2.972	0.097		5.602	5.610	0.199	6.926	5.809	0.042	6.068	0.241	6.631
PIT20R	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	48	1	P	225	20.5	4.72	0.5	0.009	0.015	0.5	0.5	1.153	0.20	3.446	0.084	167	3.200	0.090		4.631	4.652	0.096	5.597	4.748	0.014	5.610	0.109	6.206
PIT20S	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	60	1	P	225	19.5	4.68	0.7	0.009	0.015	0.7	0.7	1.444	0.20	3.671	0.096	166	3.389	0.102		3.719	3.542	0.137	4.631	3.680	0.021	4.652	0.159	5.283
PIT20T	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	72	1	P	225	13.9	8.45	1.0	0.009	0.015	1.0	1.0	1.732	0.20	4.844	0.089	227	4.418	0.095		2.335	2.442	0.137	3.512	2.579	0.031	3.542	0.168	4.329
PIT20U	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	84	1	2	375	21.8	0.50	0.1	0.013	0.150	0.1	0.1	0.737	2.00	1.481	0.190	169	1.207	0.224		2.227	2.358	0.028	2.336	2.386	0.055	2.442	0.084	3.234
PIT20V	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	96	1	2	375	33.3	0.50	0.2	0.013	0.150	0.2	0.2	0.842	0.20	1.531	0.205	169	1.242	0.244		2.060	2.295	0.056	2.227	2.351	0.007	2.358	0.063	3.452
PIT20W	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	108	1	2	375	34.7	0.50	0.2	0.013	0.150	0.2	0.2	0.947	0.20	1.573	0.221	169	1.270	0.266		1.887	2.213	0.073	2.060	2.286	0.009	2.295	0.082	3.183
PIT20	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0	HW21	11.86	136	0.206	78	330	1	2	525	5.0	0.50	0.3	0.013	0.150	0.3	0.3	1.473	3.00	2.038	0.362	410	1.475	0.530		1.856	1.322	0.016	1.881	1.338	0.332	2.213	0.348	3.709
HW21	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		11.90	135	0.206	77	329	1	2	450	0.0	1.00	0.0	0.013	0.150	0.0	0.0	0.000	0.00	0.000	0.000	0	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.663
PIT13	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	1269	1	2	900	22.5	13.33	0.3	0.013	0.150	0.3	0.3	1.929	0.50	9.539	0.234	8830	8.001	0.265		6.041	6.079	0.045	9.035	6.144	0.095	9.130	0.160	10.870
PIT13A	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	1269	1	2	900	20.0	9.25	0.3	0.013	0.150	0.3	0.3	1.929	0.20	8.367	0.257	7347	7.018	0.292		4.192	4.262	0.058	6.041	4.319	0.038	6.079	0.096	6.848
PIT14A	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	12	1	P	150	31.1	9.18	0.3	0.009	0.015	0.3	0.3	0.678	0.20	3.167	0.040	77	2.857	0.043		6.005	5.774	0.093	8.860	5.866	0.005	8.865	0.097	9.482
PIT14B	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	24	1	P	150	20.5	6.93	1.1	0.009	0.015	1.1	1.1	1.358	0.20	3.267	0.065	62	2.966	0.070		4.517	4.530	0.216	5.755	4.746	0.019	5.774	0.235	6.610
PIT14C	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	36	1	P	225	26.0	0.50	0.0	0.009	0.015	0.0	0.0	0.866	0.20	1.305	0.165	50	1.281	0.147		4.422	4.425	0.055	4.522	4.481	0.008	4.530	0.063	5.120
PIT14D	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	48	1	2	300	20.0	0.50	0.1	0.013	0.150	0.1	0.1	0.661	0.20	1.295	0.154	93	1.048	0.183		4.321	4.328	0.028	4.421	4.356	0.004	4.425	0.032	5.020
PIT14E	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	60	1	2	300	25.1	0.50	0.2	0.013	0.150	0.2	0.2	0.826	0.20	1.366	0.177	93	1.093	0.215		4.196	4.262	0.053	4.321	4.315	0.007	4.328	0.060	4.920
PIT14	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	1341	1	2	1050	7.6	1.00	0.1	0.013	0.150	0.1	0.1	1.502	0.50	3.708	0.453	3560	3.138	0.515		4.128	4.128	0.011	4.204	4.139	0.058	4.262	0.069	4.857
HW15	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		6.00	178	0.000	0	1341	1	2	750	0.0	1.00	0.0	0.013	0.150	0.0	0.0	0.000	0.00	0.000	0.000	0	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.165
PIT22	5	12.65	0.350	132	0.222	81	81	71	2.443	101	0.788	81	71	11		12.65	132	0.222	81	71	1	2	375	11.0	1.00	0.1	0.013	0.150	0.1	0.1	0.619	4.00	1.839	0.141	242	1.500	0.164		5.092	5.105	0.010	5.202	5.115	0.078	5.280	0.088	6.112
PIT23	5	6.00	0.037	178	0.028	14	14	14	1.129	57	0.548	14	14	0		12.74	131	0.250	91	81	1	2	375	15.0	1.00	0.1	0.013	0.150	0.1	0.1	0.709	0.50	1.908	0.152	242	1.555	0.177		4.942	4.561	0.018	5.092	4.579	0.013	5.105	0.031	6.112
HW24	5	6.00	0.000	178	0.000	0	0	0	0.000	0	0.000	0	0	0		12.85	131	0.250	91	80	1	2	375	0.0	0.00	0.0	0.013	0.150	0.0	0.0	0.000	0.00	0.000	0.000	0	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.779

BALLINA SHIRE COUNCIL
APPROVED
THESE PLANS HAVE BEEN TAKEN TO SITE AND CHECKED, AND ARE APPROVED IN ACCORDANCE WITH COUNCIL D/A ....1998/248..... CONDITIONS AND STANDARD ENGINEERING REQUIREMENTS.
SIGNED .....
FOR CHIEF ENGINEER
DATED ....25 NOV 98....

No.	Date	Amendment

Design T.J.C.
Drawn T.J.C.
Checked
Approved LEE McHUST
Scale NTS

CLIENT: R. and J. PIDCOCK
Date SEPT. '99
Datum A.H.D.
Sheet of Sheets
Dwg Filename 1087-3-DC1
Disk Name

PROJECT: PACIFIC PINES ESTATE STAGES 3a & 3b LENNOX HEAD

TITLE: DRAINAGE CALCULATIONS ARI 5 YEAR

DAVID ARDILL & ASSOCIATES PTY. LIMITED
CONSULTING CIVIL AND STRUCTURAL ENGINEERS
PROJECT MANAGERS AND TOWN PLANNERS
31 DE-HAVILLAND CRES. BALLINA NSW 2478
P.O. BOX 20
Ph. 02 6686 3280
Fax 02 6686 7920
A.C.N. 002 400 526
e-mail:daa@turboweb.net.au

DWG. No. C.20
JOB No. 88/1087/3