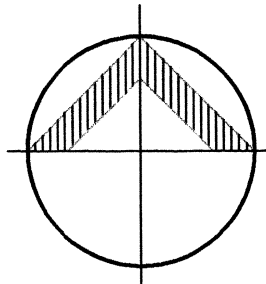


NATURAL SURFACE CONTOURS ARE COMPUTER INTERPOLATED FROM SURVEYORS ELECTRONIC FIELD DATA.

NOTWITHSTANDING THE LIMITS OF EARTHWORKS SHOWN ON THE DRAWINGS, THE ACTUAL LIMITS SHALL BE CONFIRMED ON SITE BY THE CONTRACTOR.

PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR IS TO ASCERTAIN THE LOCATION AND LEVEL OF EXISTING SERVICES TO HIS SATISFACTION. SERVICES SHOWN ON PLANS ARE TAKEN FROM SURVEYORS FIELD NOTES ONLY AND MAY NOT NECESSARILY INDICATE ALL SERVICES WITHIN THE WORKS AREA.



PROVIDE ROCK PITCHING TO OUTLET AS SCOUR PROTECTION AND ENERGY DISSIPATOR

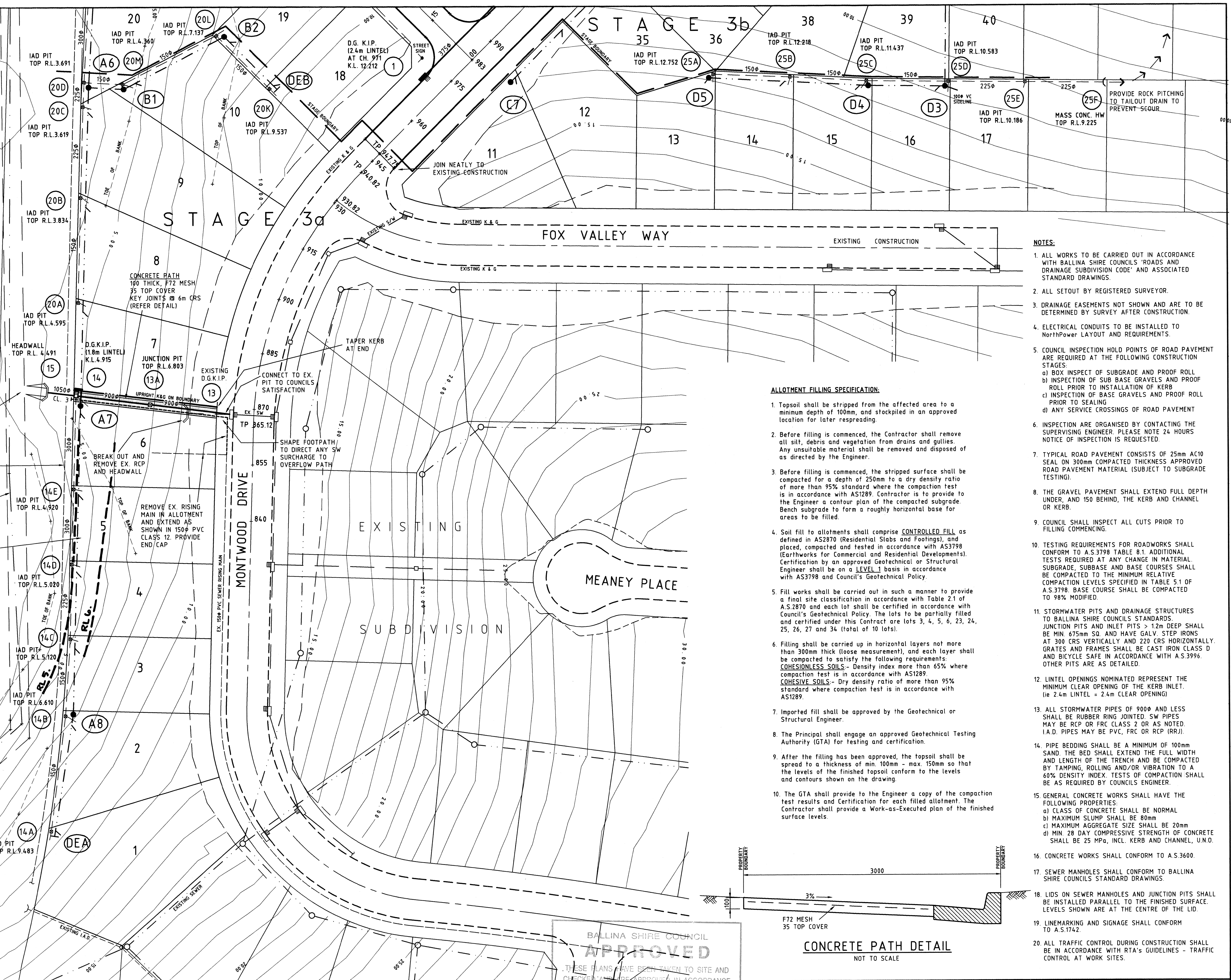
375Ø SEWER RISING MAIN

500Ø WATER MAIN

FILL REAR OF LOTS 3-6 TO FINISHED CONTOURS SHOWN AND AS SPECIFIED. BATTER TO NATURAL GROUND 1:4

LEGEND

- EXISTING KERB AND GUTTER
- PROPOSED KERB AND GUTTER
- EXISTING STORMWATER
- PROPOSED STORMWATER
- PROPOSED ROOFWATER
- EXISTING SEWER
- PROPOSED SEWER
- EXISTING SEWER RISING MAIN
- PROPOSED SEWER RISING MAIN
- STAGE BOUNDARY



NOTES:

- ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH BALLINA SHIRE COUNCILS 'ROADS AND DRAINAGE SUBDIVISION CODE' AND ASSOCIATED STANDARD DRAWINGS.
- ALL SETOUT BY REGISTERED SURVEYOR.
- DRAINAGE EASEMENTS NOT SHOWN AND ARE TO BE DETERMINED BY SURVEY AFTER CONSTRUCTION.
- ELECTRICAL CONDUITS TO BE INSTALLED TO NorthPower LAYOUT AND REQUIREMENTS.
- COUNCIL INSPECTION HOLD POINTS OF ROAD PAVEMENT ARE REQUIRED AT THE FOLLOWING CONSTRUCTION STAGES:
 - a) BOX INSPECT OF SUBGRADE AND PROOF ROLL
 - b) INSPECTION OF SUB BASE GRAVELS AND PROOF ROLL PRIOR TO INSTALLATION OF KERB
 - c) INSPECTION OF BASE GRAVELS AND PROOF ROLL PRIOR TO SEALING
 - d) ANY SERVICE CROSSINGS OF ROAD PAVEMENT
- INSPECTION ARE ORGANISED BY CONTACTING THE SUPERVISING ENGINEER. PLEASE NOTE 24 HOURS NOTICE OF INSPECTION IS REQUESTED.
- TYPICAL ROAD PAVEMENT CONSISTS OF 25mm AC10 SEAL ON 300mm COMPACTED THICKNESS APPROVED ROAD PAVEMENT MATERIAL (SUBJECT TO SUBGRADE TESTING).
- THE GRAVEL PAVEMENT SHALL EXTEND FULL DEPTH UNDER, AND 150 BEHIND, THE KERB AND CHANNEL OR KERB.
- COUNCIL SHALL INSPECT ALL CUTS PRIOR TO FILLING COMMENCING.
- TESTING REQUIREMENTS FOR ROADWORKS SHALL CONFORM TO A.S.3798 TABLE 8.1. ADDITIONAL TESTS REQUIRED AT ANY CHANGE IN MATERIAL. SUBGRADE, SUBBASE AND BASE COURSES SHALL BE COMPACTED TO THE MINIMUM RELATIVE COMPACTION LEVELS SPECIFIED IN TABLE 5.1 OF A.S.3798. BASE COURSE SHALL BE COMPACTED TO 98% MODIFIED.
- STORMWATER PITS AND DRAINAGE STRUCTURES TO BALLINA SHIRE COUNCILS STANDARDS. JUNCTION PITS AND INLET PITS > 1.2m DEEP SHALL BE MIN. 675mm SQ. AND HAVE GALV. STEP IRONS AT 300 CRS VERTICALLY AND 220 CRS HORIZONTALLY. GRATES AND FRAMES SHALL BE CAST IRON CLASS D AND BICYCLE SAFE IN ACCORDANCE WITH A.S.3996. OTHER PITS ARE AS DETAILED.
- LINTEL OPENINGS NOMINATED REPRESENT THE MINIMUM CLEAR OPENING OF THE KERB INLET. (ie 2.4m LINTEL = 2.4m CLEAR OPENING)
- ALL STORMWATER PIPES OF 900Ø AND LESS SHALL BE RUBBER RING JOINTED. SW PIPES MAY BE RCP OR FRC CLASS 2 OR AS NOTED. I.A.D. PIPES MAY BE PVC, FRC OR RCP (RRJ).
- PIPE BEDDING SHALL BE A MINIMUM OF 100mm SAND. THE BED SHALL EXTEND THE FULL WIDTH AND LENGTH OF THE TRENCH AND BE COMPACTED BY TAMPING, ROLLING AND/OR VIBRATION TO A 60% DENSITY INDEX. TESTS OF COMPACTION SHALL BE AS REQUIRED BY COUNCILS ENGINEER.
- GENERAL CONCRETE WORKS SHALL HAVE THE FOLLOWING PROPERTIES:
 - a) CLASS OF CONCRETE SHALL BE NORMAL
 - b) MAXIMUM SLUMP SHALL BE 80mm
 - c) MAXIMUM AGGREGATE SIZE SHALL BE 20mm
 - d) MIN. 28 DAY COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 25 MPa, INCL. KERB AND CHANNEL, U.N.O.
- CONCRETE WORKS SHALL CONFORM TO A.S.3600.
- SEWER MANHOLES SHALL CONFORM TO BALLINA SHIRE COUNCILS STANDARD DRAWINGS.
- LIDS ON SEWER MANHOLES AND JUNCTION PITS SHALL BE INSTALLED PARALLEL TO THE FINISHED SURFACE. LEVELS SHOWN ARE AT THE CENTRE OF THE LID.
- LINEMARKING AND SIGNAGE SHALL CONFORM TO A.S.1742.
- ALL TRAFFIC CONTROL DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH RTA'S GUIDELINES - TRAFFIC CONTROL AT WORK SITES.

ALLOTMENT FILLING SPECIFICATION:

- Topsoil shall be stripped from the affected area to a minimum depth of 100mm, and stockpiled in an approved location for later respraying.
- Before filling is commenced, the Contractor shall remove all silt, debris and vegetation from drains and gullies. Any unsuitable material shall be removed and disposed of as directed by the Engineer.
- Before filling is commenced, the stripped surface shall be compacted for a depth of 250mm to a dry density ratio of more than 95% standard where the compaction test is in accordance with AS1289. Contractor is to provide to the Engineer a contour plan of the compacted subgrade. Bench subgrade to form a roughly horizontal base for areas to be filled.
- Soil fill to allotments shall comprise CONTROLLED FILL as defined in AS2870 (Residential Slabs and Footings), and placed, compacted and tested in accordance with AS3798 (Earthworks for Commercial and Residential Developments). Certification by an approved Geotechnical or Structural Engineer shall be on a LEVEL 1 basis in accordance with AS3798 and Council's Geotechnical Policy.
- Fill works shall be carried out in such a manner to provide a final site classification in accordance with Table 2.1 of A.S.2870 and each lot shall be certified in accordance with Council's Geotechnical Policy. The lots to be partially filled and certified under this Contract are lots 3, 4, 5, 6, 23, 24, 25, 26, 27 and 34 (total of 10 lots).
- Filling shall be carried up in horizontal layers not more than 300mm thick (loose measurement), and each layer shall be compacted to satisfy the following requirements:
 - COHESIONLESS SOILS:- Density index more than 65% where compaction test is in accordance with AS1289.
 - COHESIVE SOILS:- Dry density ratio of more than 95% standard where compaction test is in accordance with AS1289.
- Imported fill shall be approved by the Geotechnical or Structural Engineer.
- The Principal shall engage an approved Geotechnical Testing Authority (GTA) for testing and certification.
- After the filling has been approved, the topsoil shall be spread to a thickness of min. 100mm - max. 150mm so that the levels of the finished topsoil conform to the levels and contours shown on the drawing.
- The GTA shall provide to the Engineer a copy of the compaction test results and Certification for each filled allotment. The Contractor shall provide a Work-as-Executed plan of the finished surface levels.

CONCRETE PATH DETAIL

NOT TO SCALE

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 *Revell*
FOR CHIEF ENGINEER
DATED 25 Nov 99

LAYOUT PLAN
SHEET 1

A	9-11-99	GENERAL REVISION FOR COUNCIL APPROVAL	Design	T.J.C.	CLIENT: R. and J. PIDCOCK			
			Drawn	T.J.C.				
			Checked	<i>[Signature]</i>	Date	SEPT. '99	Dwg Filename 1087-3-02	
			Approved	<i>[Signature]</i> R.C.E. MIE HUST.	Datum	A.H.D.		
No.	Date	Amendment	Scale	1: 500	Sheet	of	Sheets	Disk Name

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

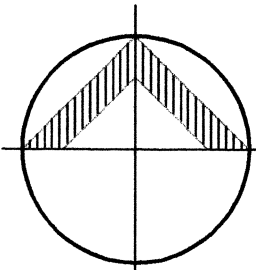
DAVID ARDILL & ASSOCIATES
PTY. LIMITED
CONSULTING CIVIL AND STRUCTURAL ENGINEERS
PROJECT MANAGERS AND TOWN PLANNERS



31 DE-HAVILLAND CRES. BALLINA NSW 2478 A.C.N. 002 400 526	P.O. BOX 20 Ph. 02 6686 3280 Fax 02 6686 7920 e-mail: daa@turboweb.net.au	DWG. No. C.02 A	JOB No. 88/1087/3
---	--	---------------------------	-----------------------------

LEGEND

- EXISTING KERB AND GUTTER
- PROPOSED KERB AND GUTTER
- EXISTING STORMWATER
- PROPOSED STORMWATER
- PROPOSED ROOFWATER
- EXISTING SEWER
- PROPOSED SEWER
- EXISTING 500mm WATER MAIN
- EXISTING 375mm SEWER RISING MAIN



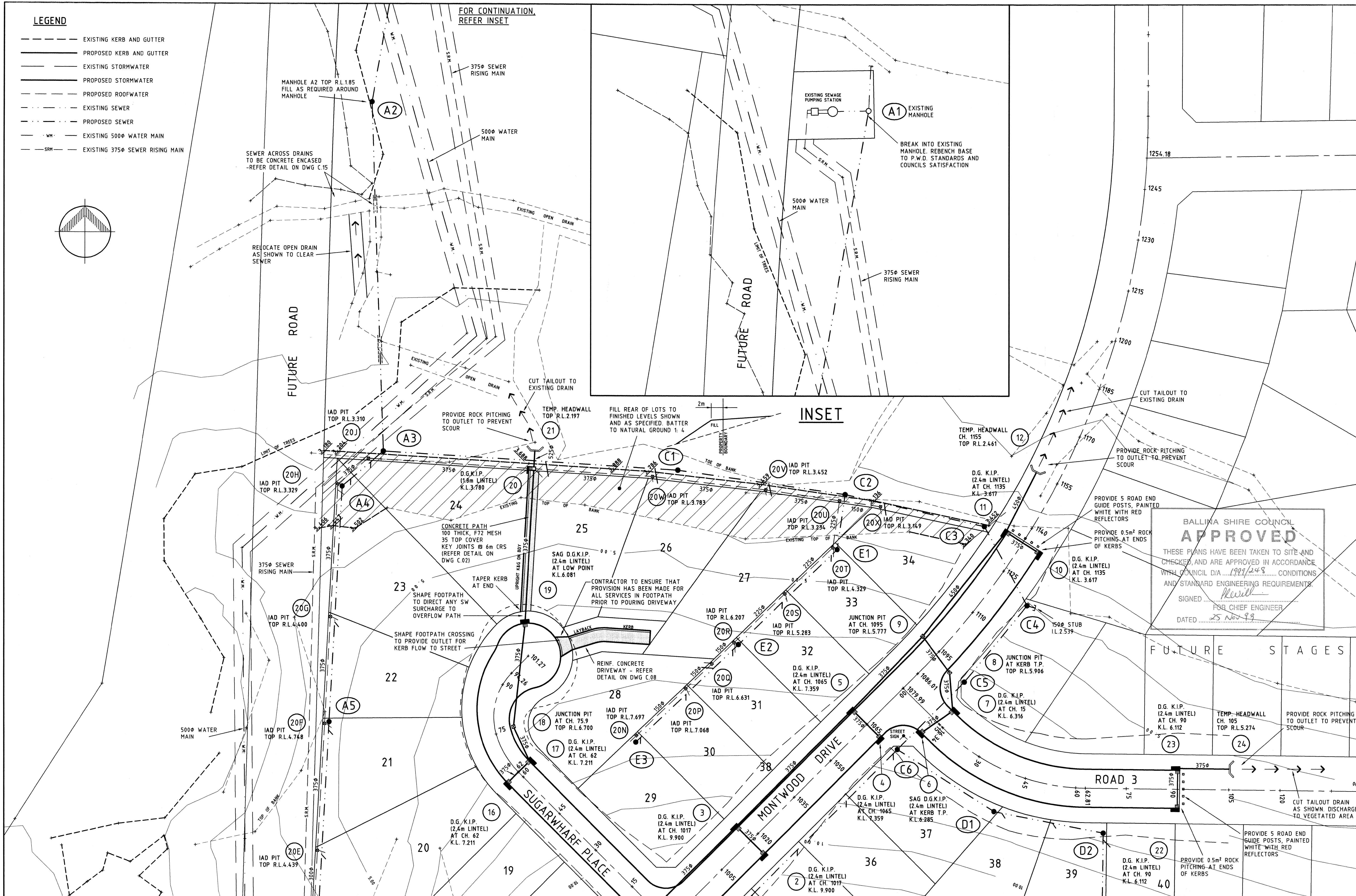
FOR CONTINUATION
REFER INSET


INSET

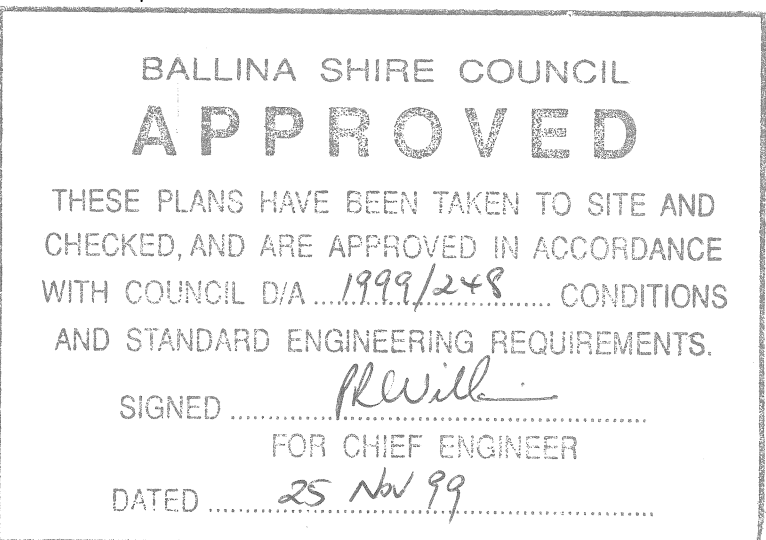
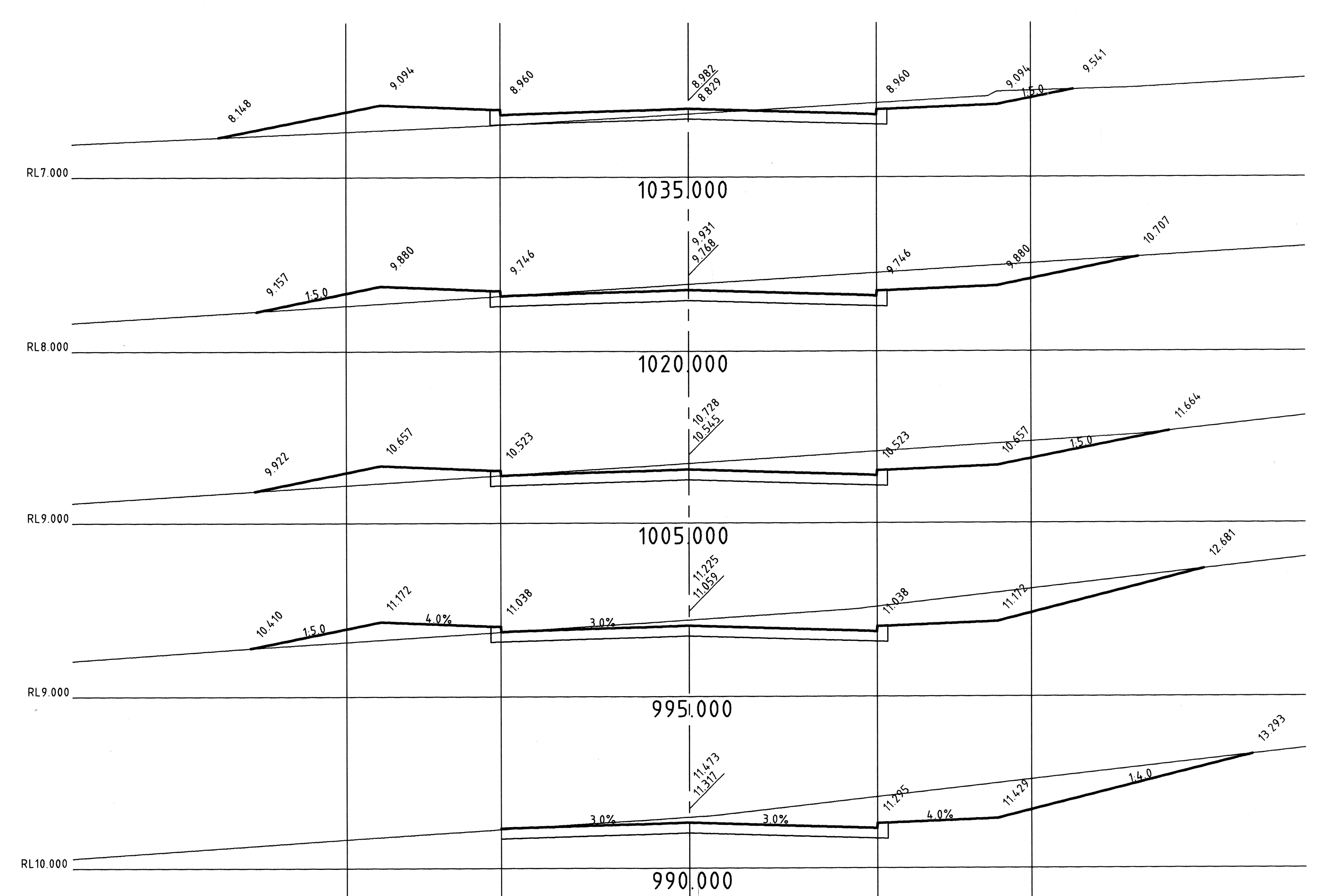
**BALLINA SHIRE COUNCIL
APPROVED**




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 *[Signature]*
FOR CHIEF ENGINEER
DATED 25 Nov 99

FUTURE STAGES



			Design T.J.C.	CLIENT: R. and J. PIDCOCK		PROJECT: PACIFIC PINES ESTATE STAGES 3a & 3b LENNOX HEAD	TITLE: LAYOUT PLAN SHEET 2	DAVID ARDILL & ASSOCIATES PTY. LIMITED CONSULTING CIVIL AND STRUCTURAL ENGINEERS PROJECT MANAGERS AND TOWN PLANNERS			
			Drawn T.J.C.								
			Checked <i>[Signature]</i>	Date SEPT. '99	Dwg Filename 1087-3-03						
			Approved <i>[Signature]</i>	Datum A.H.D.							
A	9-11-99	GENERAL REVISION FOR COUNCIL APPROVAL									
No.	Date	Amendment	Scale 1: 500	Sheet of Sheets	Disk Name			31 DE-HAVILLAND CRES. BALLINA NSW 2478 A.C.N. 002 400 526	P.O. BOX 20 Ph. 02 6686 3280 Fax 02 6686 7920 e-mail: daa@turboweb.net.au	DWG. No. C.03 A	JOB No. 88/1087/3



			Design T.J.C.	CLIENT:		PROJECT: PACIFIC PINES ESTATE STAGES 3a & 3b LENNOX HEAD				TITLE: MONTWOOD DRIVE LONG. & CROSS SECTIONS		DAVID ARDILL & ASSOCIATES PTY. LIMITED CONSULTING CIVIL AND STRUCTURAL ENGINEERS PROJECT MANAGERS AND TOWN PLANNERS 			
			Drawn T.J.C.	R. and J. PIDCOCK											
			Checked 	Date SEPT. '99	Dwg Filename										
			Approved  P.G.C. 4/9/99	Datum A.H.D.	1087-3-04										
No.	Date	Amendment	Scale AS SHOWN	Sheet of Sheets	Disk Name										