

PT 6  
DP 1117326

Lepiderema  
Pulchella

Amorphospermum  
Whitei



NSW GOVERNMENT  
Planning

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No. **MP05-0198**

granted on the **2 August 2012**

Signed *[Signature]*

Sheet No. **1** of **32**

DP 1098348

[EMA]- PROPOSED RESTRICTION ON USE OF LAND 25 WIDE  
REQUIRING THE APZ/EMA TO BE MANAGED AND  
MAINTAINED IN ACCORDANCE WITH THE VMP  
PREPARED BY BIOLINK PTY LTD AND LIMITING  
FENCING TYPES TO CYCLONE MESH NO GREATER  
THAN 1.0 METRE IN HEIGHT



[EB]...EASEMENT FOR BATTER  
[SS]...EASEMENT TO DRAIN SEWAGE 3 WIDE  
[AA]...EASEMENT FOR ACCESS  
[ET]...EASEMENT FOR TREE PROTECTION  
[GA]...EASEMENT FOR GARBAGE 1 WIDE

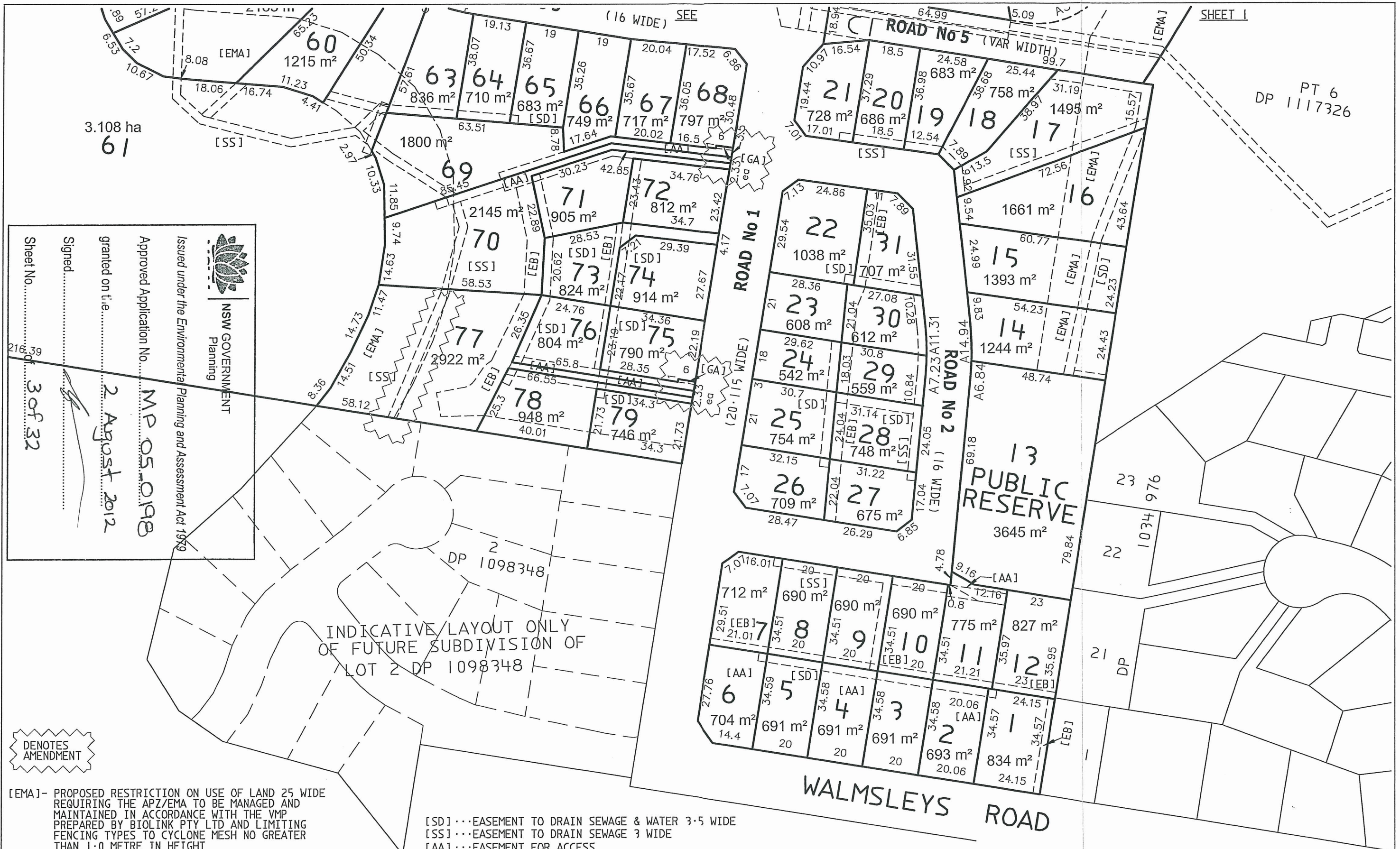
REV / DATE	REVISION DETAILS
F 04.05.11	LOT NUMBERS AMENDED
	LOT REDESIGN LOTS 35-40, ROAD 4 REMOVED
	REVISED APZ-EMA AREA LOTS 38-40
	GARBAGE AREAS ADDED TO TOP OF RIGHT OF CARRIAGEWAYS
	NEIGHBOURHOOD PROPERTY INCREASED IN SIZE
	BATTER EASEMENTS ADDED
	SEWER CONNECTION AND EASEMENT ADDED TO LOT 2 DP 1098348
	SEWER PUMP STATION SITE MOVED

**LANDSURV PTY LTD**  
REGISTERED SURVEYORS & DEVELOPMENT CONSULTANTS  
14 ENID STREET TWEED HEADS NSW 2485  
Ph. (07) 55366467 Fax (07)55367489 email: macsurv@landsurv.com.au

PLAN OF PROPOSED SUBDIVISION OF  
LOT 1 DP 167380, LOT 1 DP 134787, LOT 2 DP 961928 AND  
LOT 5 DP 1117326, WALMSLEYS ROAD AND  
STOTT STREET, BILAMBIL HEIGHTS  
CLIENT: WALMSLEY AND DICKINSON

LEVEL DATUM	SCALE 1: 1250
DATE OF SURVEY	REVISION F
DATE 04.05.11	SHEET 2 OF 3
DRAWN GMB	JOB No
CHECKED BG	35054
CAD FILE No. 35054-PROP	





PT 6  
DP 1117326

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Signed: \_\_\_\_\_

Sheet No. **3 of 32**

INDICATIVE LAYOUT ONLY  
OF FUTURE SUBDIVISION OF  
LOT 2 DP 1098348

DENOTES  
AMENDMENT

[EMA]- PROPOSED RESTRICTION ON USE OF LAND 25 WIDE  
REQUIRING THE APZ/EMA TO BE MANAGED AND  
MAINTAINED IN ACCORDANCE WITH THE VMP  
PREPARED BY BIOLINK PTY LTD AND LIMITING  
FENCING TYPES TO CYCLONE MESH NO GREATER  
THAN 1.0 METRE IN HEIGHT

[SD]...EASEMENT TO DRAIN SEWAGE & WATER 3.5 WIDE  
[SS]...EASEMENT TO DRAIN SEWAGE 3 WIDE  
[AA]...EASEMENT FOR ACCESS  
[GA]...EASEMENT FOR GARBAGE 1 WIDE  
[EB]...EASEMENT FOR BATTER

**LANDSURV PTY LTD**

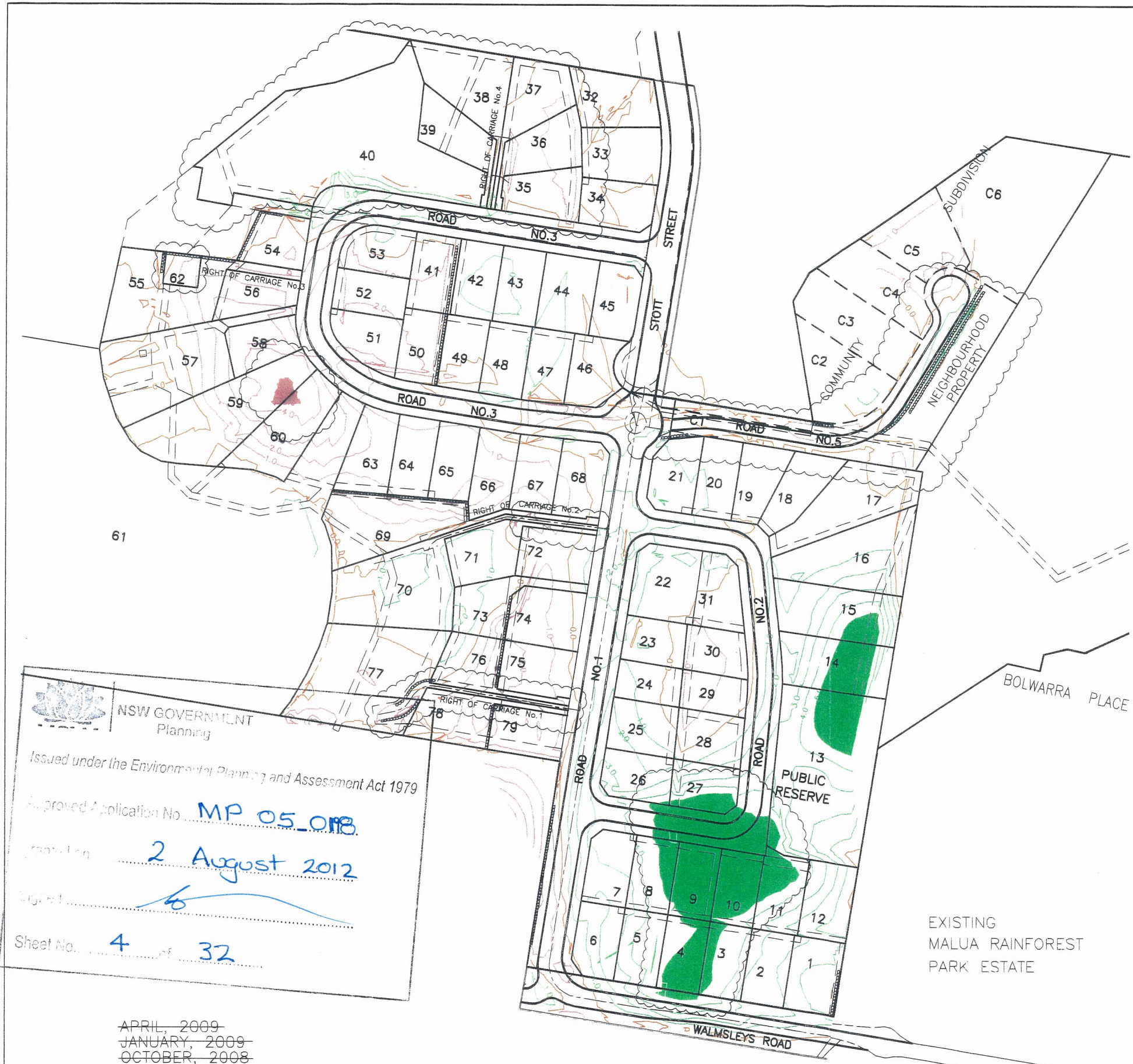
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LOT 1 DP 167380, LOT 1 DP 134787, LOT 2 DP 961928 AND  
LOT 5 DP 1117326, WALMSLEYS ROAD AND  
STOTT STREET, BILAMBIL HEIGHTS






CLIENT: WALMSLEY AND DICKINSON

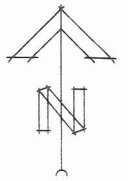
LEVEL DATUM	SCALE 1: 1250
DATE OF SURVEY	REVISION F
DATE 04.05.11	SHEET 3 OF 3
DRAWN GMB	JOB No
CHECKED BG	35054
CAD FILE No. 35054-PROP	



REV / DATE	REVISION DETAILS
F 04.05.11	LOT NUMBERS AMENDED
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	NEIGHBOURHOOD PROPERTY INCREASED IN SIZE
	BATTER EASEMENTS ADDED
	SEWER CONNECTION AND EASEMENT ADDED TO LOT 2 DP 1098348
	SEWER PUMP STATION SITE MOVED



**LEGEND**

-  AREA OF CUT OVER 5m  
150m<sup>2</sup> (0.3% OF SITE)
-  AREA OF FILL OVER 5m  
4434m<sup>2</sup> (2.6% OF SITE)
-  PROPOSED CUT DEPTH CONTOUR  
(1.0m INTERVAL)
-  PROPOSED FILL DEPTH CONTOUR  
(1.0m INTERVAL)
-  PROPOSED EARTHWORKS  
INTERFACE LINE



 NSW GOVERNMENT  
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 Approved Application No. **MP 05\_018**  
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 Sheet No. **4** of **32**

PETER WALMSLEY,  
LES & JIM DICKINSON

PROPOSED RESIDENTIAL  
SUBDIVISION

WALMSLEYS ROAD  
BILAMBIL HEIGHTS

FIGURE 4.0

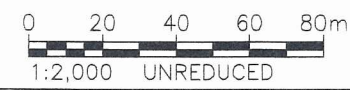
PROPOSED CUT AND FILL  
DEPTH CONTOURS

**OPUS QANTEC McWILLIAM**



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 E-Mail: tweedheads@opusqmcw.com.au

~~APRIL, 2009~~  
~~JANUARY, 2009~~  
~~OCTOBER, 2008~~  
~~DECEMBER, 2007~~  
~~OCTOBER, 2007~~  
~~OCTOBER, 2006~~  
~~AUGUST, 2005~~  
 APRIL, 2011  
 JUNE, 2011  
 APRIL, 2010





BASIN No.	CATCHMENT AREAS (Ha)				BASIN VOLUMES (m <sup>3</sup> )
	No.	DISTURBED	No.	UNDISTURBED	
1	A	3.15	-	-	1165
2	B	0.37	Bu	0.27	140
3	C	1.68	Cu	0.21	620
4	D	4.06	-	-	1500
5	E	0.39	Eu	0.48	145
6	F	0.11	Fu	0.28	40

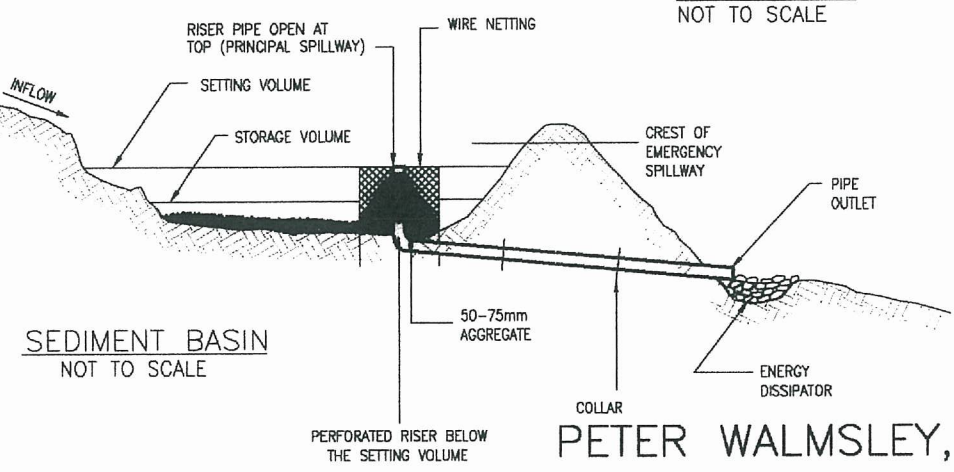
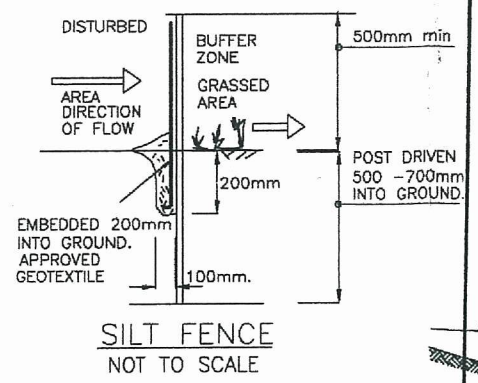
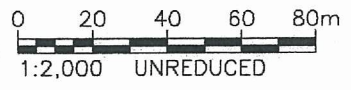
**SEDIMENT BASIN CALCULATIONS**

NOTE: EROSION CONTROL MEASURES SHOWN ON THE PLAN ARE PRELIMINARY ONLY. THE EXTENT OF LOCATION AND SCOPE OF THE WORKS SHALL BE DETERMINED DURING THE DETAILED DESIGN STAGE.

OCTOBER, 2007  
OCTOBER, 2006  
AUGUST, 2005  
FEBRUARY, 2005

APRIL, 2009  
MARCH, 2009  
JANUARY, 2009  
OCTOBER, 2008

OCTOBER, 2011  
APRIL, 2010



- LEGEND**
- S.F. PROPOSED SILT FENCE
  - D.C. DIVERSION CHANNEL
  - C.D. CATCH DRAIN
  - SB-1 SEDIMENT BASIN
  - CATCHMENT BOUNDARY
  - SHAKEDOWN DEVICE IN ACCORDANCE WITH TSC D7
  - ROCK CHECK DAM
  - FINISHED SURFACE CONTOURS (1.0m INTERVAL)
  - CONCENTRATED FLOW PATH

NOTE: SURVEY INFORMATION FROM MCLAUCHLAN SURVEYING DRAWING NUMBER 37401

PETER WALMSLEY,  
LES & JIM DICKINSON

PROPOSED RESIDENTIAL  
SUBDIVISION

WALMSLEYS ROAD  
BILAMBIL HEIGHTS

FIGURE 6.0

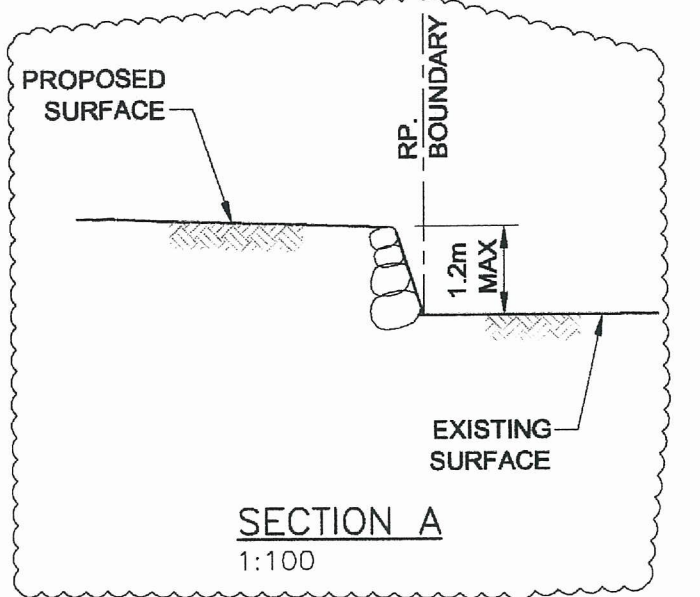
EROSION & SEDIMENT  
CONTROL PLAN

**OPUS QANTEC McWILLIAM**



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- LEGEND**
- 45 — FINISHED SURFACE CONTOURS (1.0m INTERVALS)
  - ..... PROPOSED RETAINING WALL
  - - - APZ - - - ASSET PROTECTION ZONE
  - - - PROPOSED BATTER
  - EMA ENVIRONMENTAL MANAGEMENT AREA

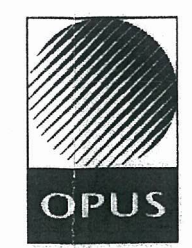
**NOTE:** REFER FIGURES 7.1 & 7.2 FOR SECTIONS.

**PETER WALMSLEY,  
LES & JIM DICKINSON**  
PROPOSED RESIDENTIAL  
SUBDIVISION

WALMSLEYS ROAD & STOTT STREET  
BILAMBIL HEIGHTS N.S.W.

FIGURE 7.0  
ROAD LAYOUT PLAN

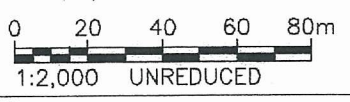
**OPUS QANTEC McWILLIAM**

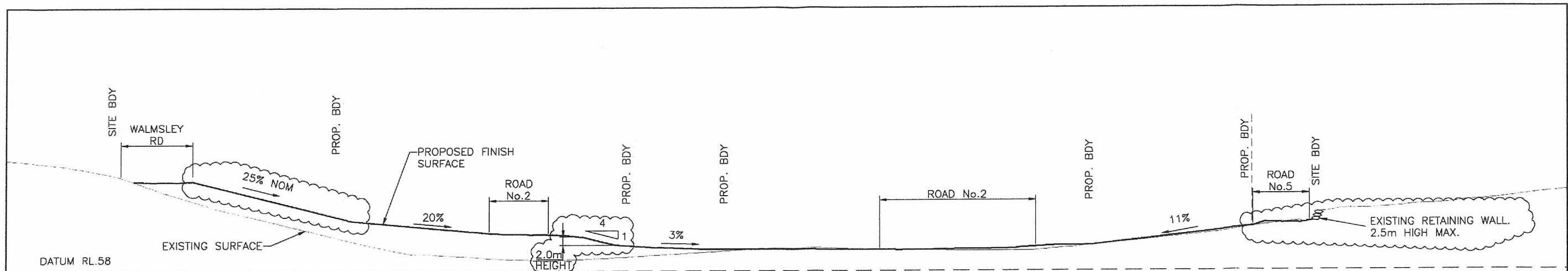


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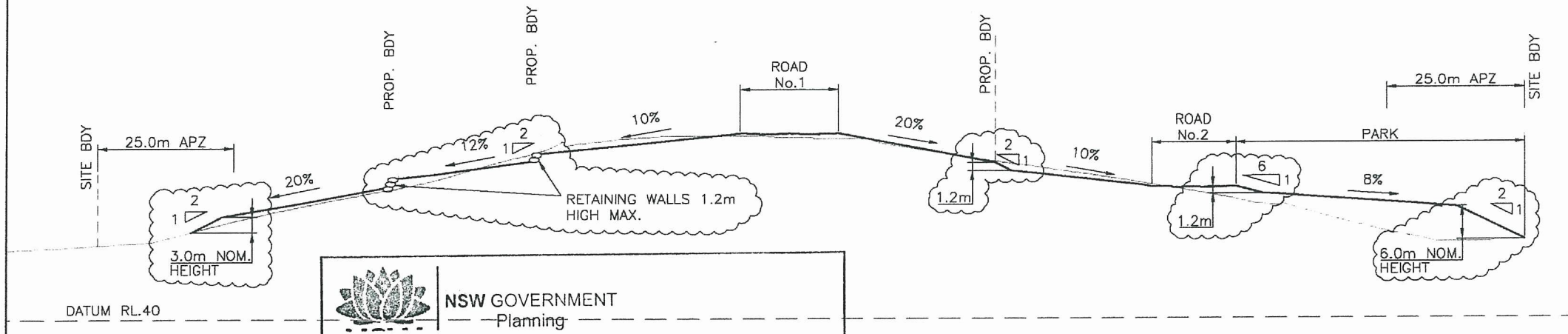
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MP 05 0198  
Approved Application No.  
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OCTOBER, 2008  
OCTOBER, 2007  
OCTOBER, 2006  
AUGUST, 2005

FUTURE DEVELOPMENT  
JUNE, 2011  
AUGUST, 2010  
APRIL, 2010  
APRIL, 2009  
MARCH, 2009  
OCTOBER, 2011


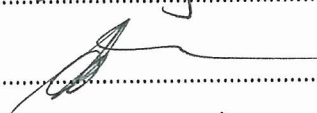






**SECTION 1**

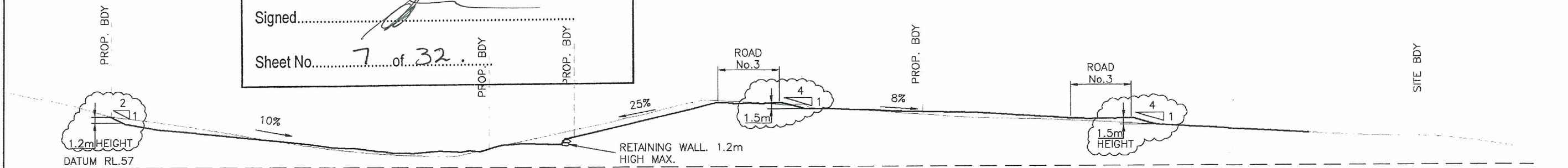


**SECTION 2**

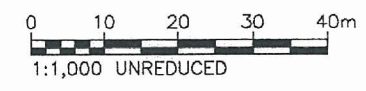

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**LEGEND**

-  8% NOMINAL SURFACE GRADE
-  2/1 SURFACE BATTER SLOPE
- APZ ASSET PROTECTION ZONE
- PROP. BDY PROPOSED PROPERTY BOUNDARY
- SITE BDY SITE BOUNDARY
- R.O.C. RIGHT OF CARRIAGEWAY



**SECTION 3**



~~APRIL, 2010~~  
~~APRIL, 2009~~  
~~MARCH, 2009~~  
~~OCTOBER, 2008~~  
 OCTOBER, 2011  
 SEPTEMBER, 2010

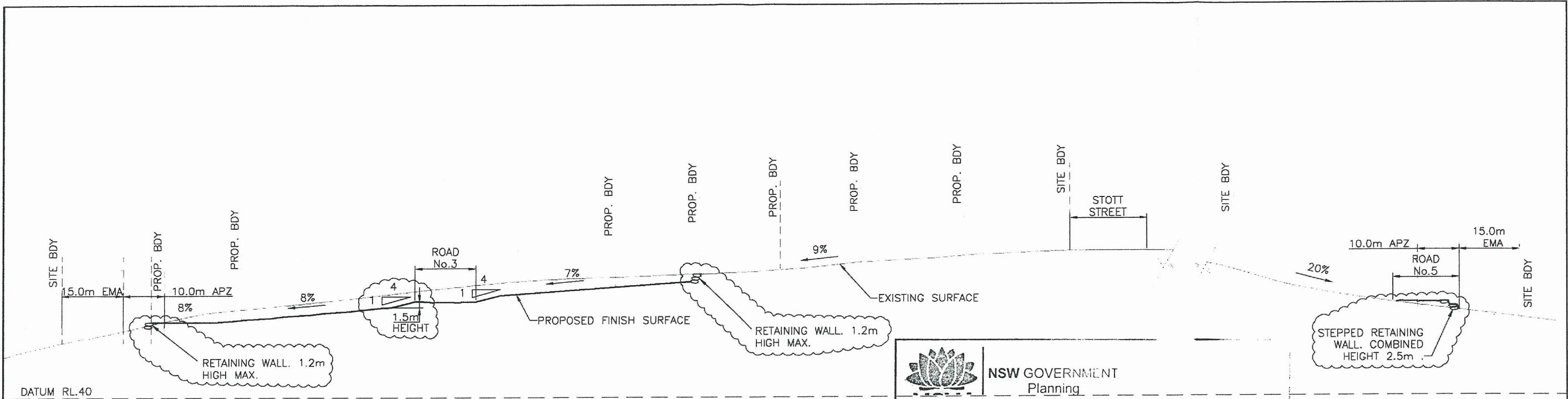
**PETER WALMSLEY,**  
**LES & JIM DICKINSON**  
 PROPOSED RESIDENTIAL  
 SUBDIVISION

WALMSLEYS ROAD & STOTT STREET  
 BILAMBIL HEIGHTS N.S.W.  
 FIGURE 7.1  
 SITE CROSS SECTIONS

**OPUS QANTEC McWILLIAM**





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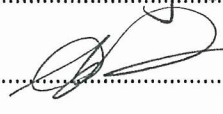


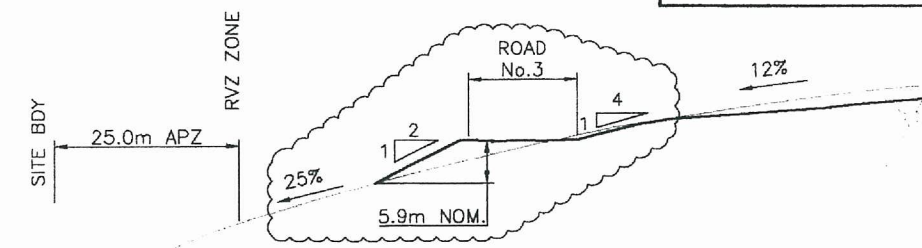
**SECTION 4**

**LEGEND**

-  8% NOMINAL SURFACE GRADE
-  SURFACE BATTER SLOPE
- APZ ASSET PROTECTION ZONE
- PROP. BDY PROPOSED PROPERTY BOUNDARY
- SITE BDY SITE BOUNDARY


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**PETER WALMSLEY,  
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 PROPOSED RESIDENTIAL  
 SUBDIVISION

WALMSLEYS ROAD & STOTT STREET  
 BILAMBIL HEIGHTS N.S.W.

FIGURE 7.2

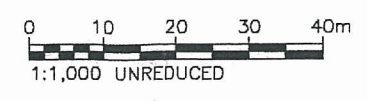
SITE CROSS SECTIONS

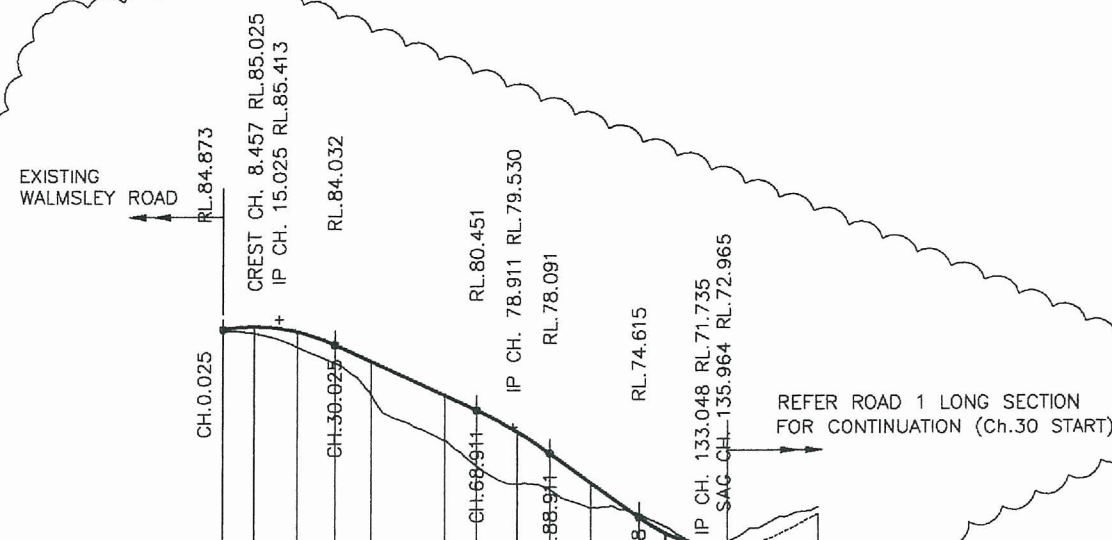
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~~APRIL, 2010~~  
~~APRIL, 2009~~  
~~MARCH, 2009~~  
~~OCTOBER, 2008~~  
 OCTOBER, 2011  
 AUGUST, 2010





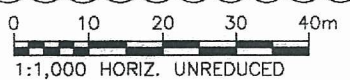
Horiz Curve Data

Vertical Geometry Grade (%)  
Vertical Grade Length (m)  
Vertical Curve Length (m)  
Vertical Curve Radius (m)

DATUM R.L.51.000

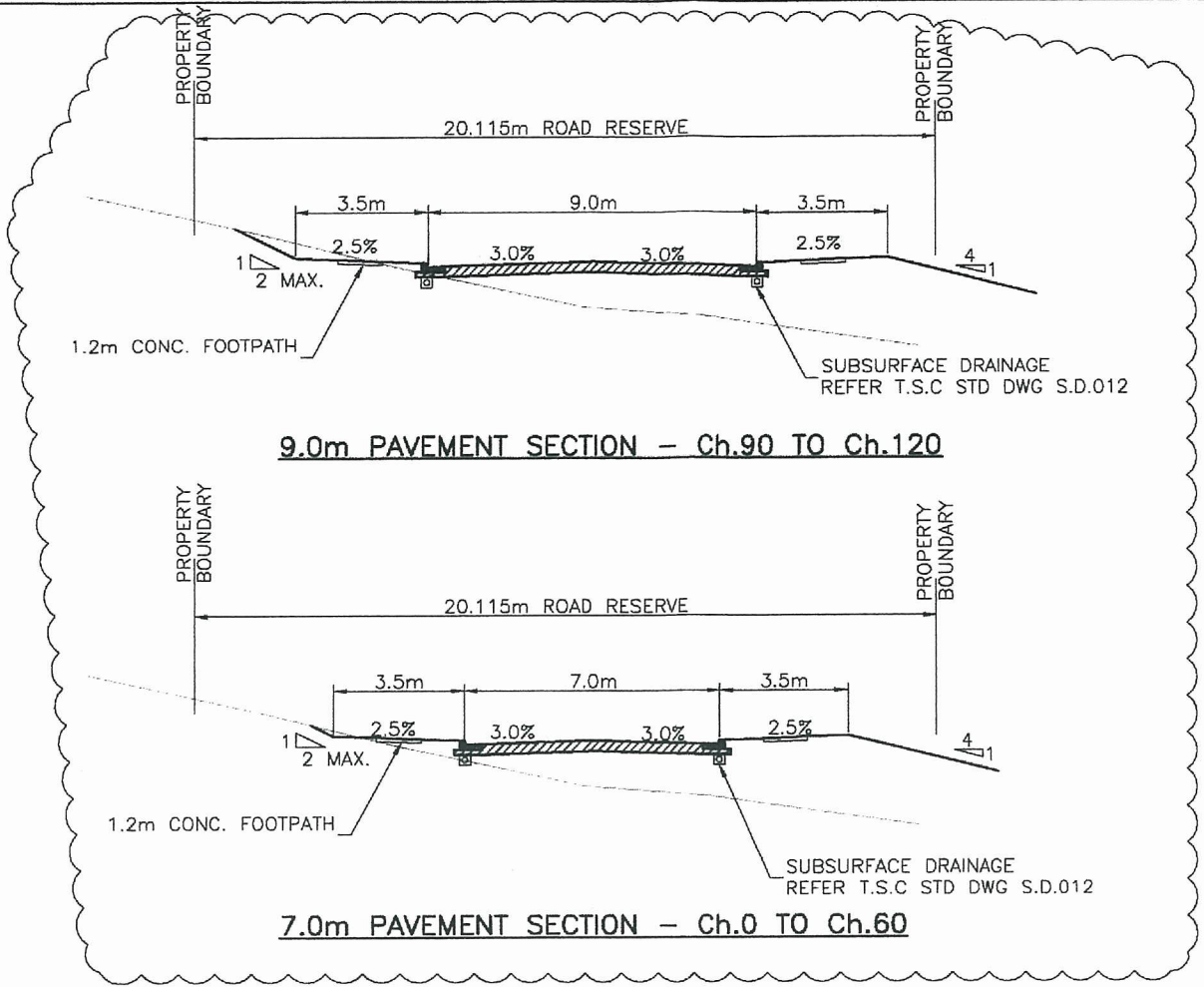
DESIGN LEVELS ON ROAD CENTRELINE	NAT. SURFACE ON ROAD CENTRELINE	CUT / FILL DEPTH	CHAINAGE
84.873	84.780	-0.093	0
84.873	84.780	-0.093	0.025
85.025	84.653	-0.372	8.457
84.741	83.908	-0.832	20
84.032	83.035	-0.997	30.025
83.114	81.291	-1.823	40
81.272	78.821	-2.451	60
80.451	77.421	-3.030	68.911
79.271	76.443	-2.827	80
78.091	76.120	-1.970	88.911
76.494	75.125	-1.368	100
74.615	74.767	0.152	113.048
73.766	74.132	0.366	120
73.734	74.103	0.369	120.323
72.965	73.281	0.316	135.964
73.016	73.559	0.543	140

LONGITUDINAL SECTION



SEPTEMBER, 2010  
APRIL, 2010  
APRIL, 2009  
MARCH, 2009

A3 203057



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SUBDIVISION

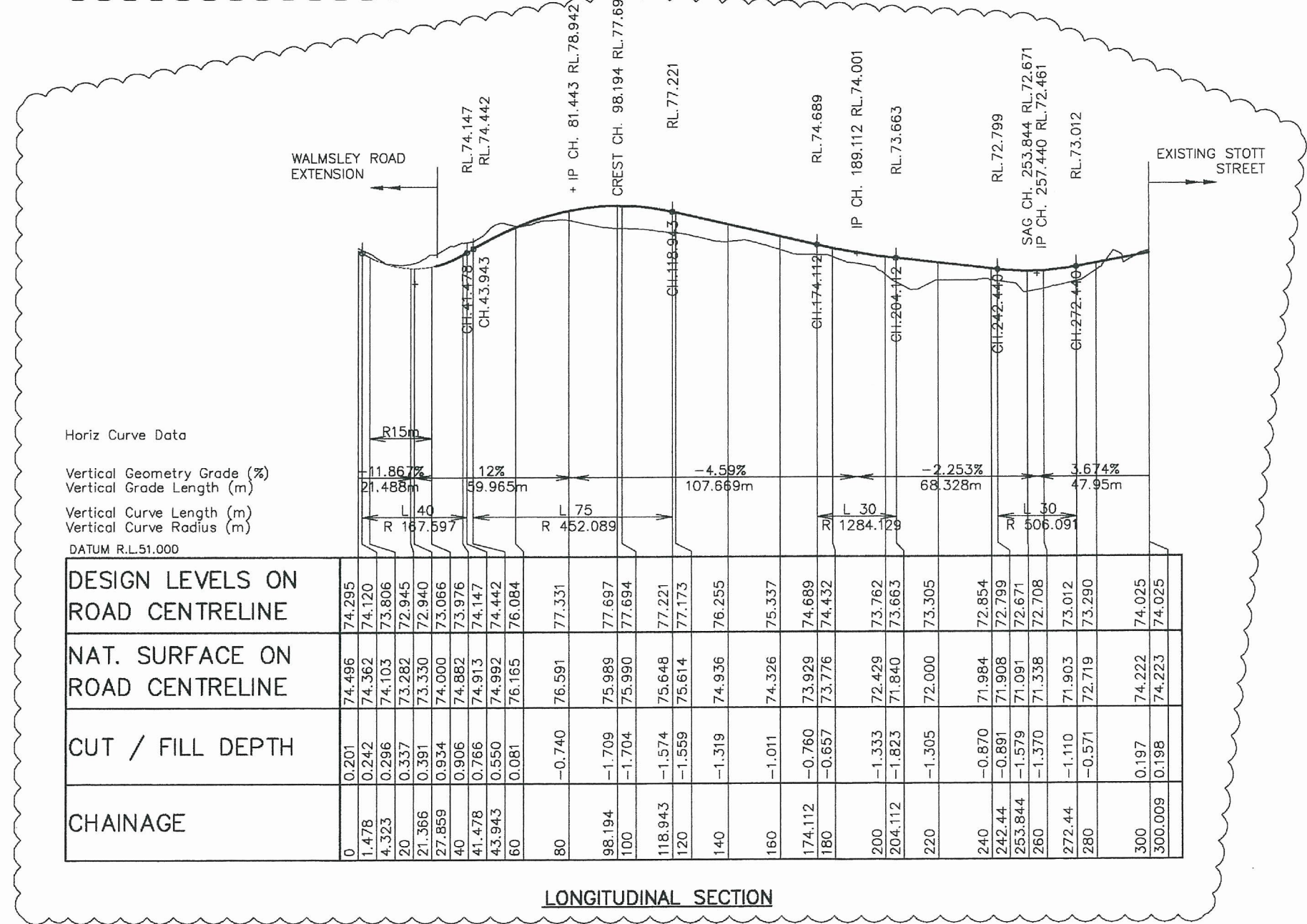
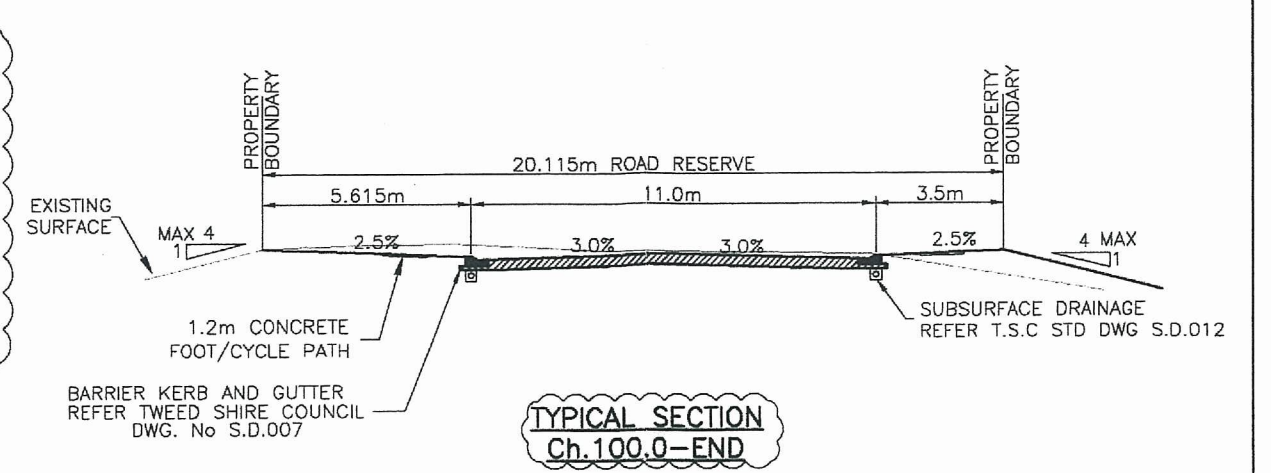
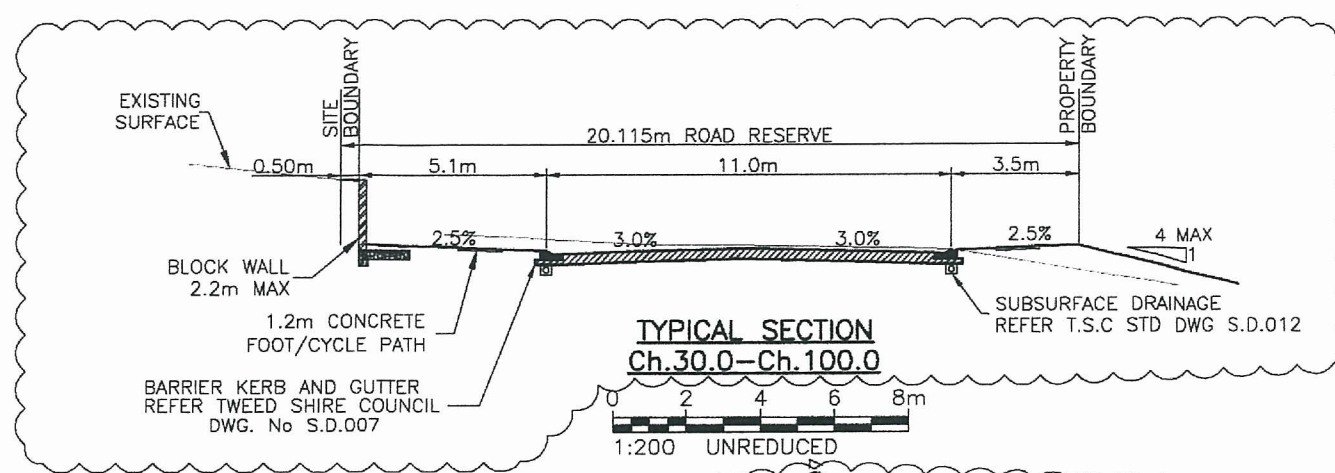
WALMSLEYS ROAD & STOTT STREET  
BILAMBIL HEIGHTS N.S.W.

FIGURE 8.0  
WALMSLEYS ROAD LONGITUDINAL  
SECTION AND TYPICAL CROSS  
SECTION

**OPUS QANTEC McWILLIAM**



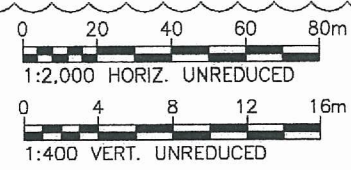
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Horiz Curve Data  
 Vertical Geometry Grade (%)  
 Vertical Grade Length (m)  
 Vertical Curve Length (m)  
 Vertical Curve Radius (m)  
 DATUM R.L.51.000

DESIGN LEVELS ON ROAD CENTRELINE	NAT. SURFACE ON ROAD CENTRELINE	CUT / FILL DEPTH	CHAINAGE
74.295	74.496	0.201	0
74.120	74.362	0.242	1.478
73.806	74.103	0.296	4.323
72.945	73.282	0.337	20
72.940	73.330	0.391	21.366
73.066	74.000	0.934	27.859
73.976	74.882	0.906	40
74.147	74.913	0.766	41.478
74.442	74.992	0.550	43.943
76.084	76.165	0.081	60
77.331	76.591	-0.740	80
77.697	75.989	-1.709	98.194
77.694	75.990	-1.704	100
77.221	75.648	-1.574	118.943
77.173	75.614	-1.559	120
76.255	74.936	-1.319	140
75.337	74.326	-1.011	160
74.689	73.929	-0.760	174.112
74.432	73.776	-0.657	180
73.762	72.429	-1.333	200
73.663	71.840	-1.823	204.112
73.305	72.000	-1.305	220
72.854	71.984	-0.870	240
72.799	71.908	-0.891	242.44
72.671	71.091	-1.579	253.844
72.708	71.338	-1.370	260
73.012	71.903	-1.110	272.44
73.290	72.719	-0.571	280
74.025	74.222	0.197	300
74.025	74.223	0.198	300.009

LONGITUDINAL SECTION



TYPICAL SECTION Ch.100.0-END  
 1:200 UNREDUCED

NSW GOVERNMENT Planning  
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 Signed [Signature]  
 Sheet No. 10 of 32

PETER WALMSLEY,  
 LES & JIM DICKINSON  
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 SUBDIVISION

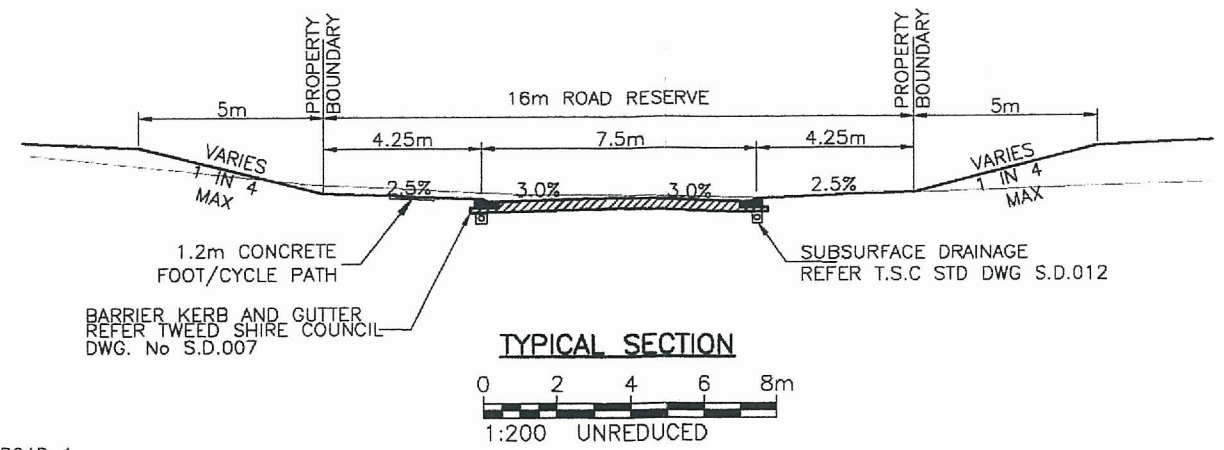
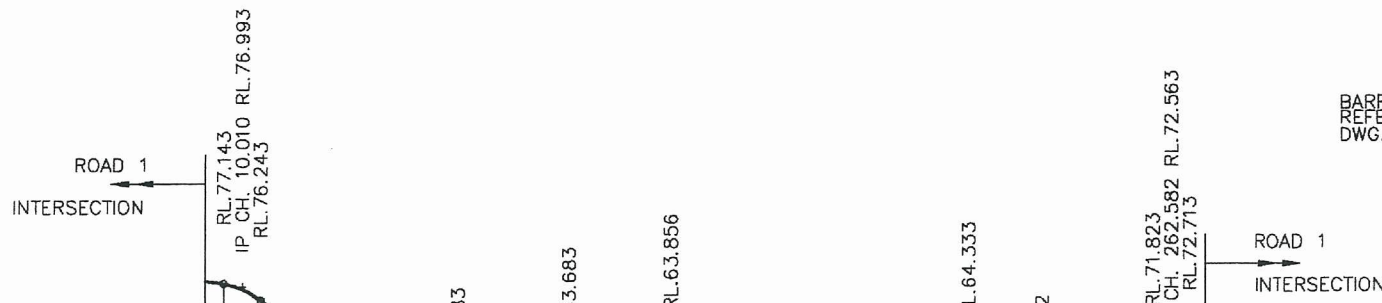
WALMSLEYS ROAD & STOTT STREET  
 BILAMBIL HEIGHTS N.S.W.

FIGURE 9.0  
 ROAD 1 LONGITUDINAL SECTION  
 AND TYPICAL CROSS SECTION

OPUS QANTEC McWILLIAM

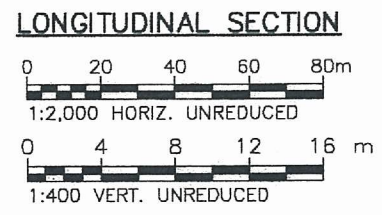
A.B.N. 79 086 342 065  
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 Telephone: (07) 5523 1755  
 Facsimile: (07) 5523 9664  
 E-Mail: [tweedheads@opusqmcw.com.au](mailto:tweedheads@opusqmcw.com.au)

APRIL, 2009  
 MARCH, 2009  
 OCTOBER, 2008  
 OCTOBER, 2006  
 JUNE, 2005  
 OCTOBER, 2011  
 AUGUST, 2010



Horiz Curve Data  
 Vertical Geometry Grade (%)  
 Vertical Grade Length (m)  
 Vertical Curve Length (m)  
 Vertical Curve Radius (m)  
 DATUM R.L. 40.000

CHAINAGE	CUT / FILL DEPTH	NAT. SURFACE ON ROAD CENTRELINE	DESIGN LEVELS ON ROAD CENTRELINE
0	-1.519	75.774	77.293
5.01	-2.418	74.725	77.143
15.01	-3.730	72.513	76.243
20	-3.899	71.595	75.494
40	-5.329	67.165	72.494
60	-6.415	63.079	69.494
67.635	-6.295	62.053	68.349
68.74	-6.277	61.906	68.183
80	-5.659	61.000	66.659
90.099	-4.572	61.000	65.572
100	-3.855	60.910	64.765
120	-2.394	61.516	63.910
126.432	-1.895	61.961	63.856
128.74	-1.720	62.144	63.863
140	-1.075	62.856	63.931
140.894	-1.058	62.878	63.936
160	-0.873	63.177	64.051
161.058	-0.842	63.216	64.057
180	-0.393	63.778	64.171
186.966	-0.256	63.956	64.213
200	-0.273	64.319	64.592
203.414	-0.344	64.448	64.791
220	-0.300	66.348	66.348
221.597	-0.363	66.186	66.549
226.966	-0.657	66.635	67.292
240	-0.927	68.294	69.221
257.582	-1.052	70.771	71.823
260	-1.117	71.029	72.146
267.582	-0.536	72.177	72.713
271.863	-0.647	72.194	72.841



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 PROPOSED RESIDENTIAL  
 SUBDIVISION

WALMSLEYS ROAD & STOTT STREET  
 BILAMBIL HEIGHTS N.S.W.

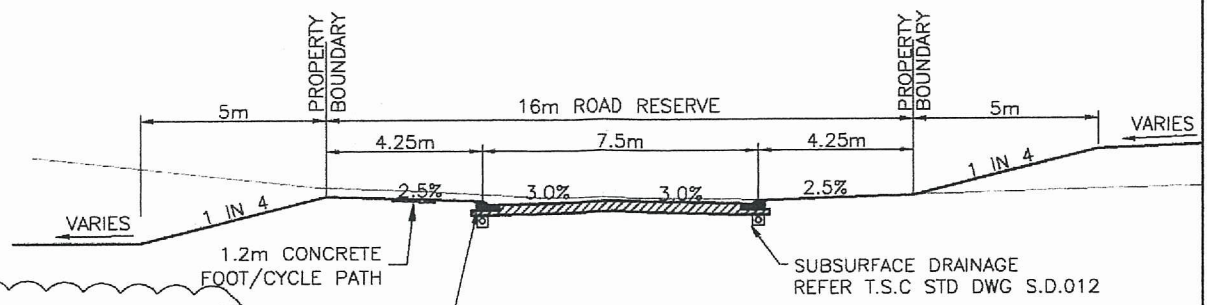
FIGURE 10.0  
 ROAD 2 LONGITUDINAL SECTION  
 AND TYPICAL CROSS SECTION

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APRIL, 2009  
 MARCH, 2009  
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 JUNE, 2005



**TYPICAL SECTION**  
 0 2 4 6 8m  
 1:200 UNREDUCED



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WALMSLEYS ROAD & STOTT STREET  
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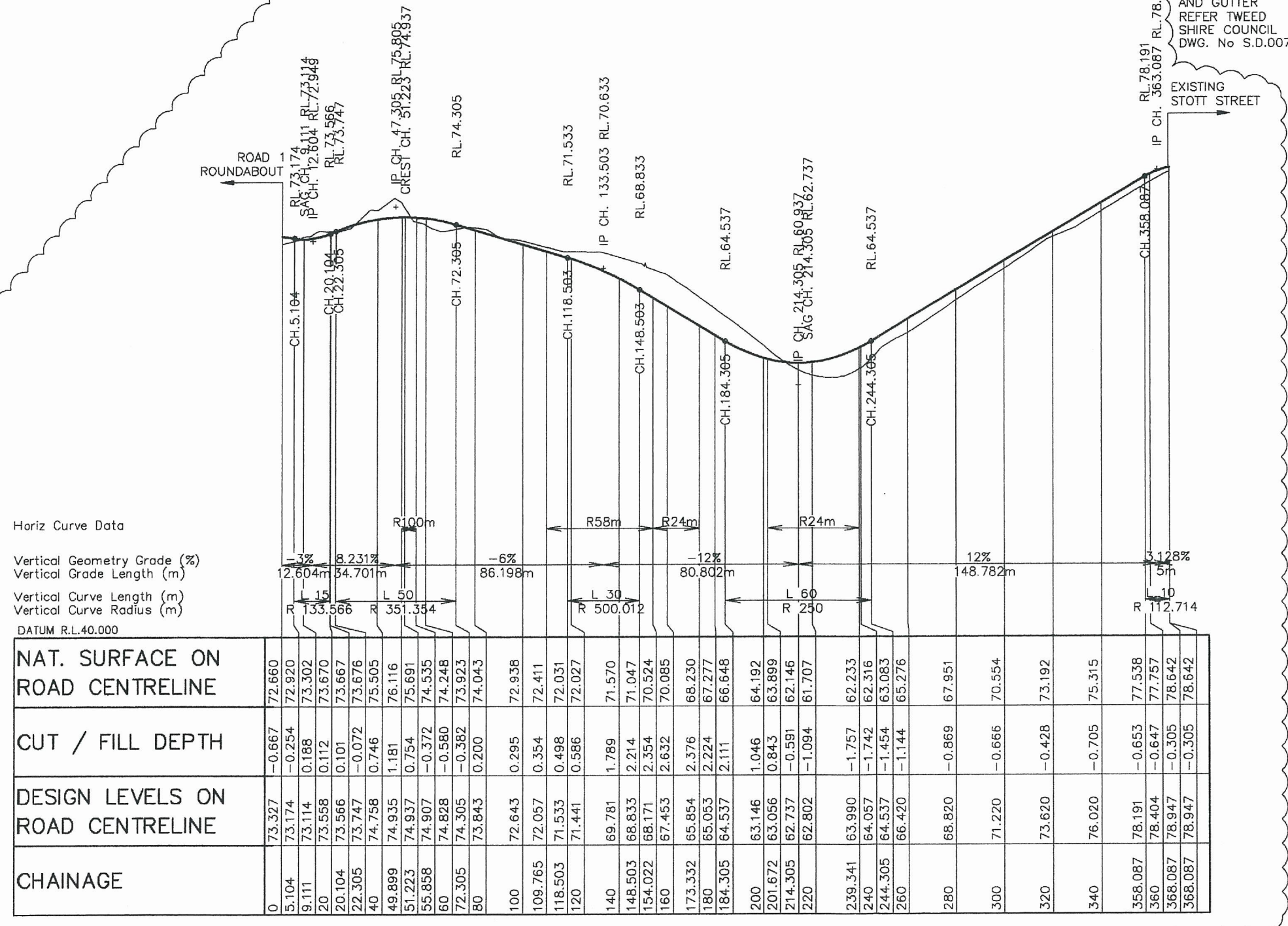
FIGURE 11.0

ROAD 3 LONGITUDINAL SECTION  
 AND TYPICAL CROSS SECTION

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Horiz Curve Data

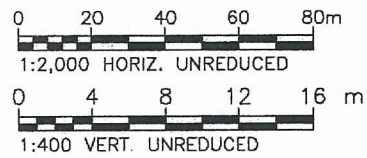
Vertical Geometry Grade (%)  
 Vertical Grade Length (m)  
 Vertical Curve Length (m)  
 Vertical Curve Radius (m)

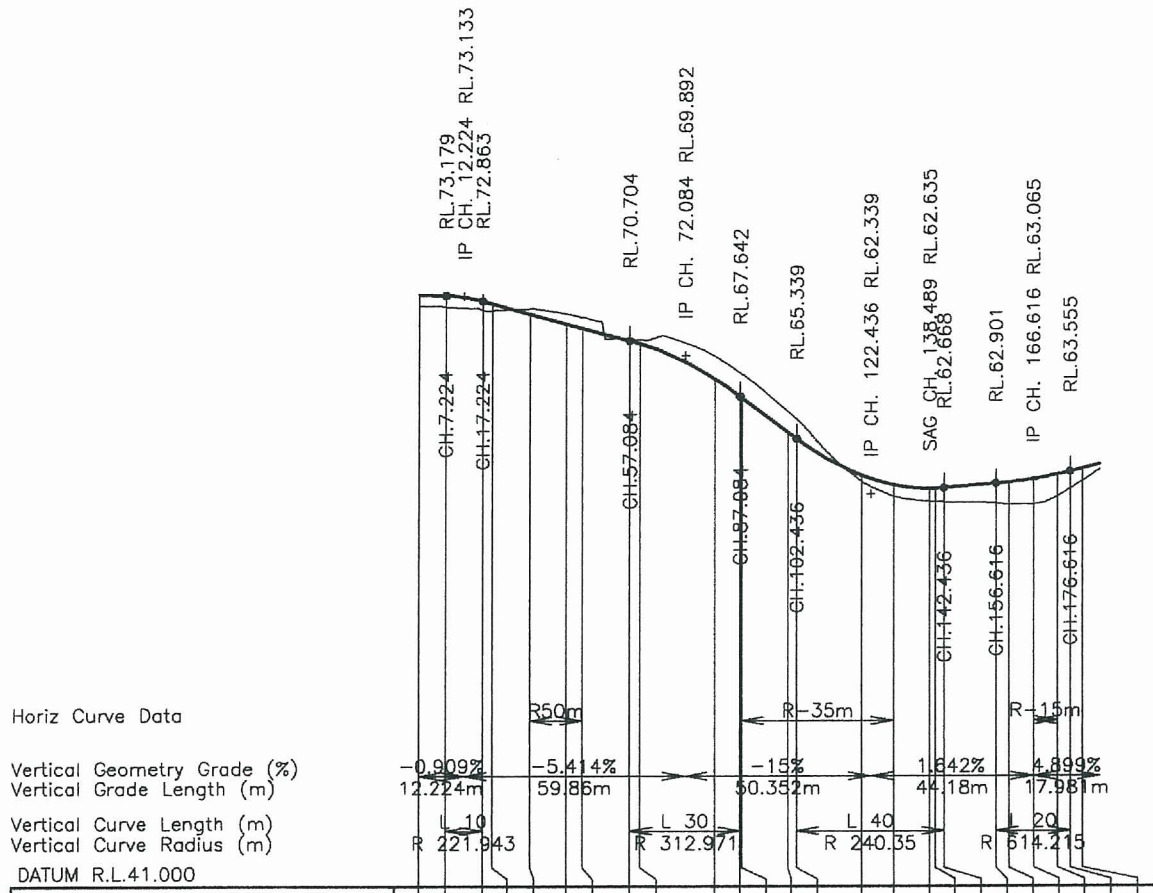
DATUM R.L.40.000

NAT. SURFACE ON ROAD CENTRELINE	72.660	72.920	73.302	73.670	73.676	75.505	76.116	75.691	74.535	74.248	73.923	74.043	72.938	72.411	72.031	72.027	71.570	71.047	70.524	70.085	68.230	67.277	66.648	64.192	63.899	62.146	61.707	62.233	62.316	63.083	65.276	67.951	70.554	73.192	75.315	77.538	77.757	78.642	78.642	
CUT / FILL DEPTH	-0.667	-0.254	0.188	0.112	0.101	-0.072	0.746	1.181	0.754	-0.372	-0.580	-0.382	0.200	0.295	0.354	0.498	0.586	1.789	2.214	2.354	2.632	2.376	2.224	2.111	1.046	0.843	-0.591	-1.094	-1.757	-1.742	-1.454	-1.144	-0.869	-0.666	-0.428	-0.705	-0.653	-0.647	-0.305	-0.305
DESIGN LEVELS ON ROAD CENTRELINE	73.327	73.174	73.114	73.558	73.566	73.747	74.758	74.935	74.937	74.907	74.828	74.305	73.843	72.643	72.057	71.533	71.441	69.781	68.833	68.171	67.453	65.854	65.053	64.537	63.146	63.056	62.737	62.802	63.990	64.057	64.537	66.420	68.820	71.220	73.620	76.020	78.191	78.404	78.947	78.947
CHAINAGE	0	5.104	9.111	20	22.305	40	49.899	51.223	55.858	60	72.305	80	100	109.765	118.503	120	140	148.503	154.022	160	173.332	180	184.305	200	201.672	214.305	220	239.341	240	244.305	260	280	300	320	340	358.087	360	368.087	368.087	

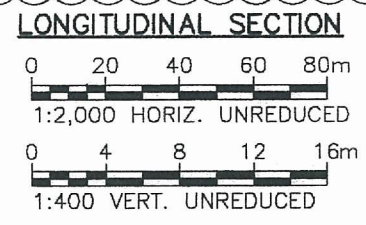
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~~JUNE, 2005~~

OCTOBER, 2011  
 APRIL, 2010



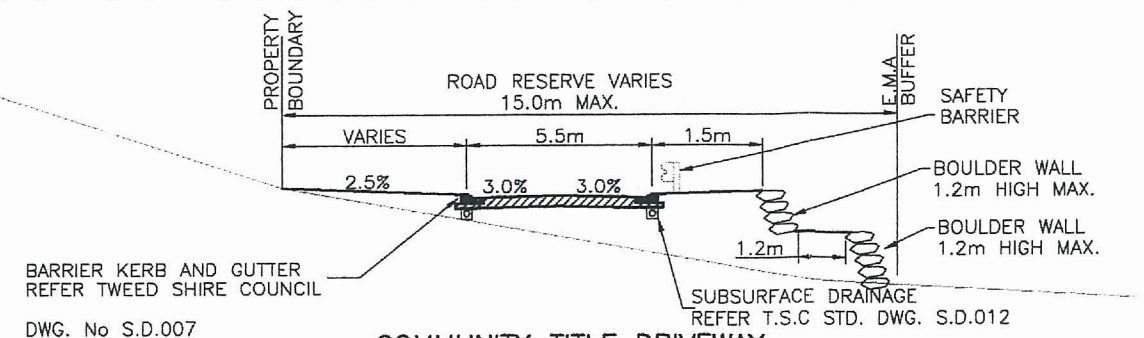


DESIGN LEVELS ON ROAD CENTRELINE	NAT. SURFACE ON ROAD CENTRELINE	CUT / FILL DEPTH	CHAINAGE
73.244	72.619	-0.625	0
73.179	72.558	-0.621	7.224
72.863	72.383	-0.480	17.224
72.712	72.355	-0.357	20
72.158	72.468	0.310	30.233
71.629	72.184	0.555	40
71.390	71.997	0.606	44.413
70.704	70.806	0.101	57.084
70.533	70.764	0.231	60
68.625	69.868	1.243	80
67.642	68.933	1.291	87.084
67.574	68.869	1.295	87.539
65.705	66.834	1.130	100
65.339	66.405	1.066	102.436
63.347	62.995	-0.351	120
62.837	62.199	-0.639	128.634
62.635	61.939	-0.696	138.489
62.640	61.923	-0.718	140
62.668	61.903	-0.765	142.436
62.901	61.815	-1.086	156.616
62.966	61.754	-1.212	160
63.150	61.766	-1.385	166.738
63.395	62.199	-1.196	173.162
63.555	62.616	-0.939	176.616
63.721	63.039	-0.682	180
63.669	63.669	0	184.677

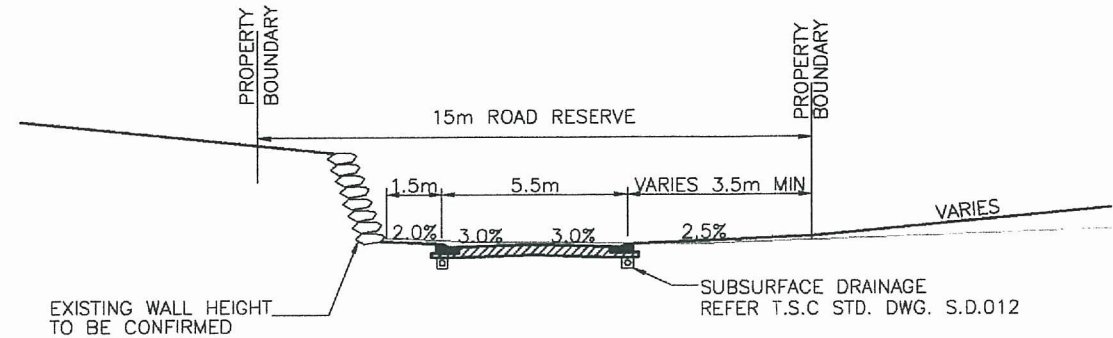


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 JANUARY, 2008  
 OCTOBER, 2006  
 AUGUST, 2005  
 JUNE, 2005

OCTOBER, 2011  
 SEPTEMBER 2010  
 AUGUST, 2010



**COMMUNITY TITLE DRIVEWAY  
 TYPICAL SECTION  
 CH120.0-END**  
 0 2 4 6 8m  
 1:200 UNREDUCED



**COMMUNITY TITLE DRIVEWAY  
 TYPICAL SECTION  
 CH0.0-CH120.0**  
 0 2 4 6 8m  
 1:200 UNREDUCED

**PETER WALMSLEY,  
 LES & JIM DICKINSON**  
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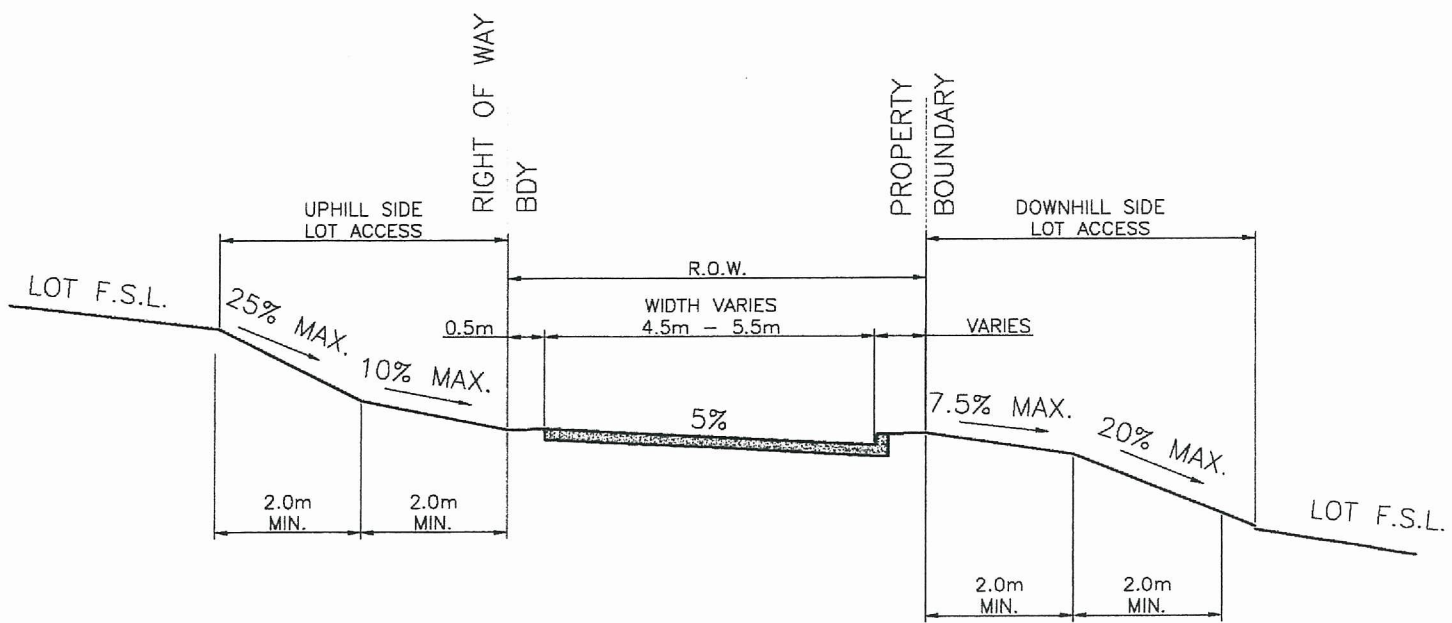
Sheet No. 13 of 32

**FIGURE 12.0**  
 ROAD 5 LONGITUDINAL SECTION  
 AND TYPICAL CROSS SECTION

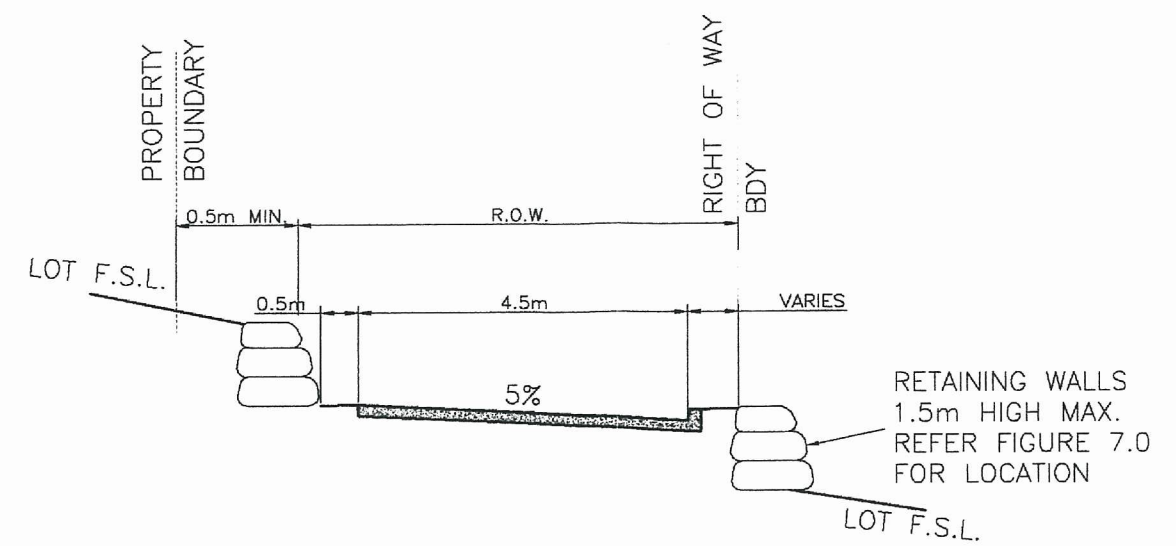
**OPUS QANTEC McWILLIAM**

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TYPICAL SECTION CH00 TO CH70 and CH85 TO END



TYPICAL SECTION CH 70 to 85



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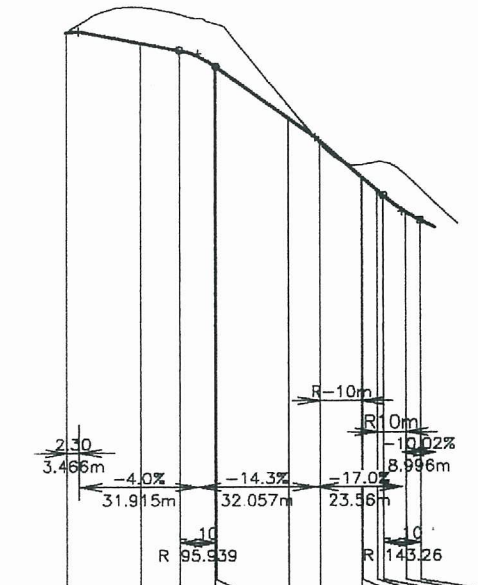
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Vertical Geometry Grade (%)  
Vertical Grade Length (m)

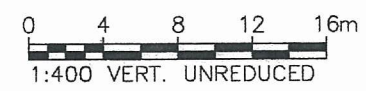
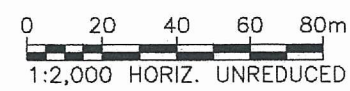
Vertical Curve Length (m)  
Vertical Curve Radius (m)

DATUM R.L.45.000

NAT. SURFACE ON ROAD CENTRELINE	75.721	77.114	76.746	76.227	76.210	71.778	69.722	68.516	68.517	68.670	68.675	67.206	66.428
CUT / FILL DEPTH	-0.011	1.945	1.975	2.322	2.346	0.729	-0.080	0.666	0.670	1.490	1.830	2.027	1.712
DESIGN LEVELS ON ROAD CENTRELINE	75.732	75.168	74.771	73.906	73.864	71.050	69.802	67.850	67.846	67.180	66.845	65.951	65.494
CHAINAGE	0	20	30.294	40	40.294	60	68.517	80	80.02	83.941	85.911	91.91	95.911



LONGITUDINAL SECTION



PETER WALMSLEY,  
LES & JIM DICKINSON

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SUBDIVISION

WALMSLEYS ROAD & STOTT STREET  
BILAMBIL HEIGHTS N.S.W.

**FIGURE 12.1**  
RIGHT OF CARRIAGEWAY No.1  
LONGITUDINAL SECTION  
AND TYPICAL CROSS SECTIONS

**OPUS QANTEC McWILLIAM**



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Planning

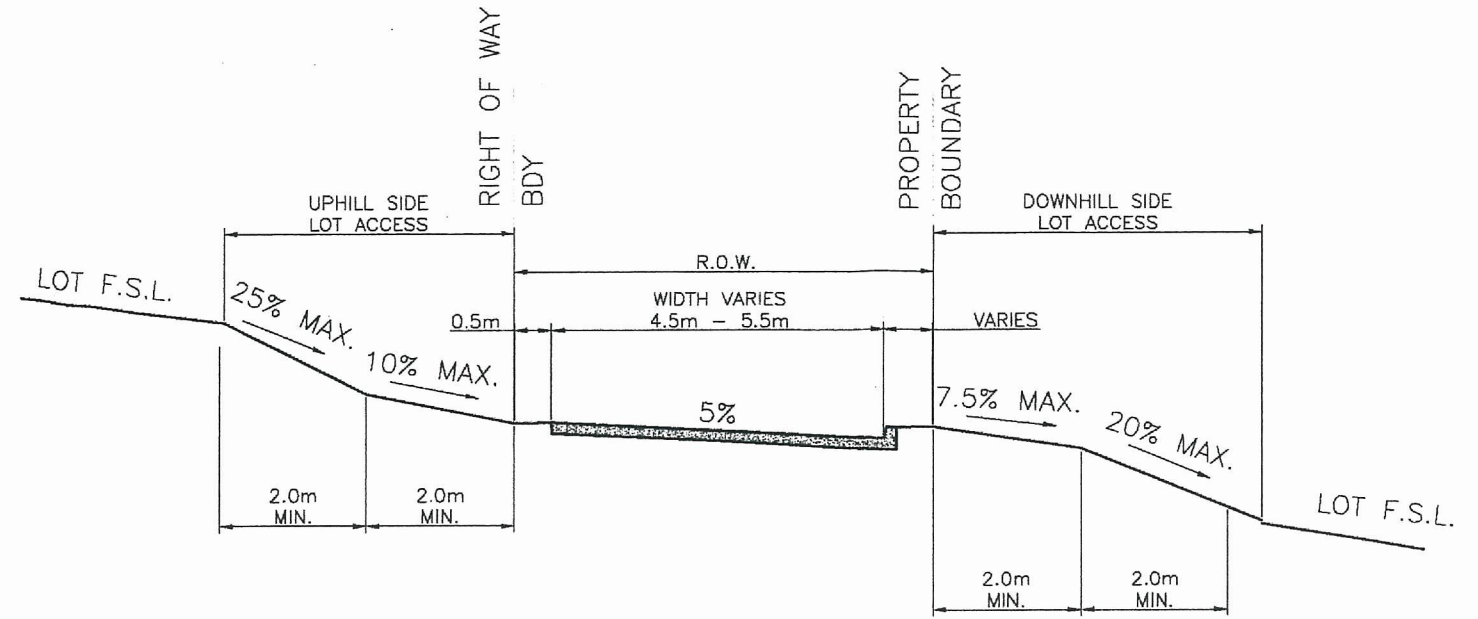
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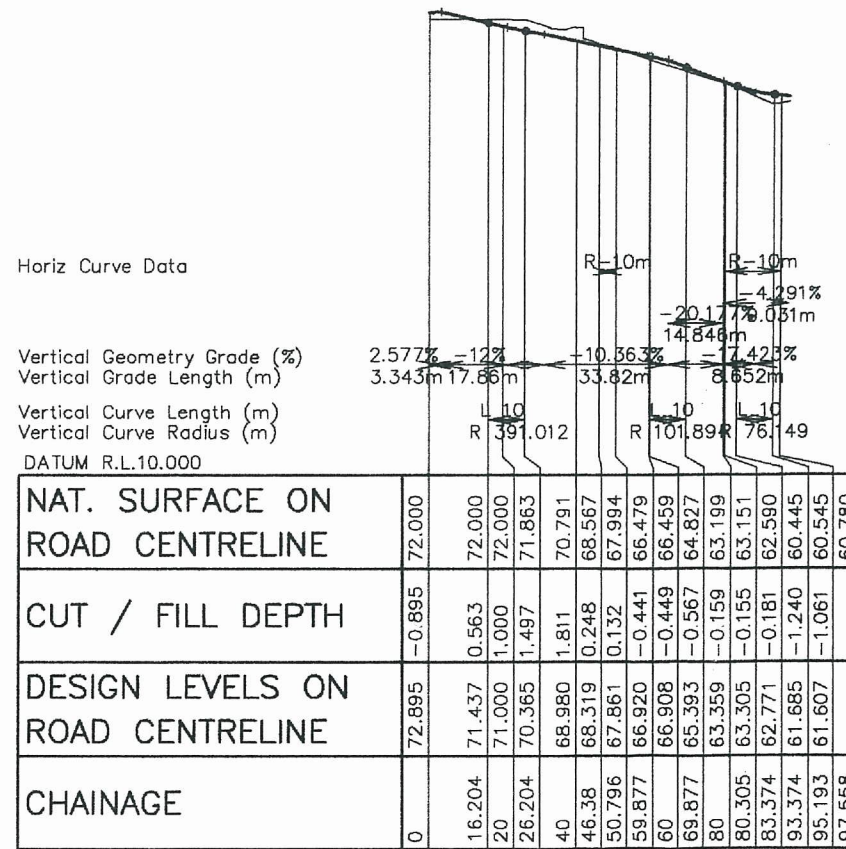
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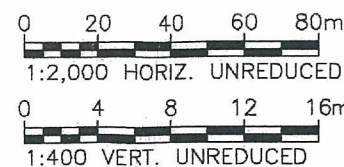
Sheet No. 15 of 32



TYPICAL SECTION CH00 TO CH70 and CH85 TO END



LONGITUDINAL SECTION



PETER WALMSLEY,  
LES & JIM DICKINSON

PROPOSED RESIDENTIAL  
SUBDIVISION

WALMSLEYS ROAD & STOTT STREET  
BILAMBIL HEIGHTS N.S.W.

FIGURE 12.2

RIGHT OF CARRIAGEWAY No.2  
LONGITUDINAL SECTION  
AND TYPICAL CROSS SECTIONS

OPUS QANTEC McWILLIAM



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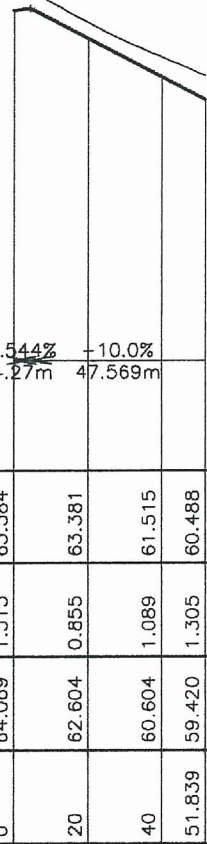
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Sheet No. 16 of 32

IP CH. 4.270 RL.64.177



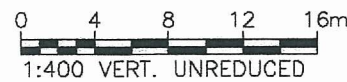
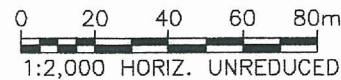
Horiz Curve Data

Vertical Geometry Grade (%)	2.544%	-10.0%
Vertical Grade Length (m)	4.27m	47.569m
Vertical Curve Length (m)		
Vertical Curve Radius (m)		

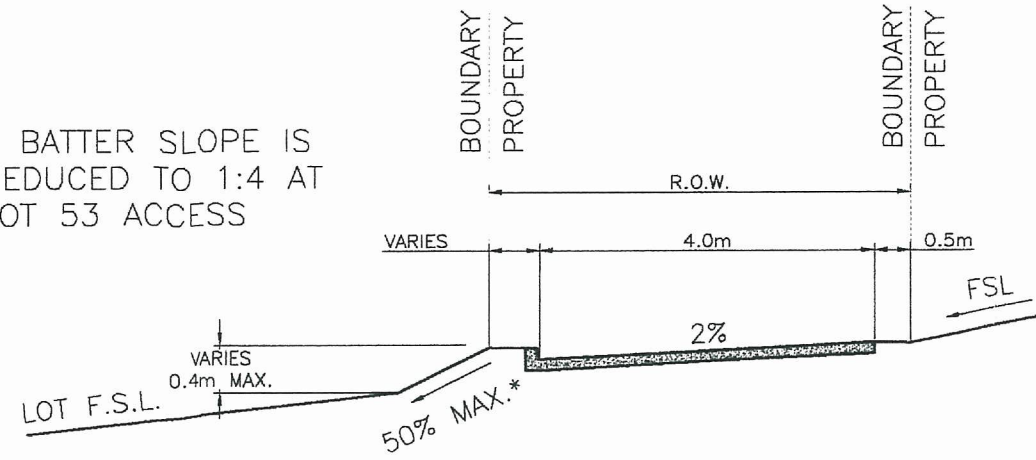
DATUM R.L.39.000

NAT. SURFACE ON ROAD CENTRELINE	65.584	63.381	61.515	60.488
CUT / FILL DEPTH	1.515	0.855	1.089	1.305
DESIGN LEVELS ON ROAD CENTRELINE	64.069	62.604	60.604	59.420
CHAINAGE	0	20	40	51.839

### RIGHT OF CARRIAGEWAY – LOTS 53 & 60



\* BATTER SLOPE IS REDUCED TO 1:4 AT LOT 53 ACCESS



### TYPICAL LOT ACCESS DRIVEWAY – LOTS 53 & 60



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FIGURE 12.3

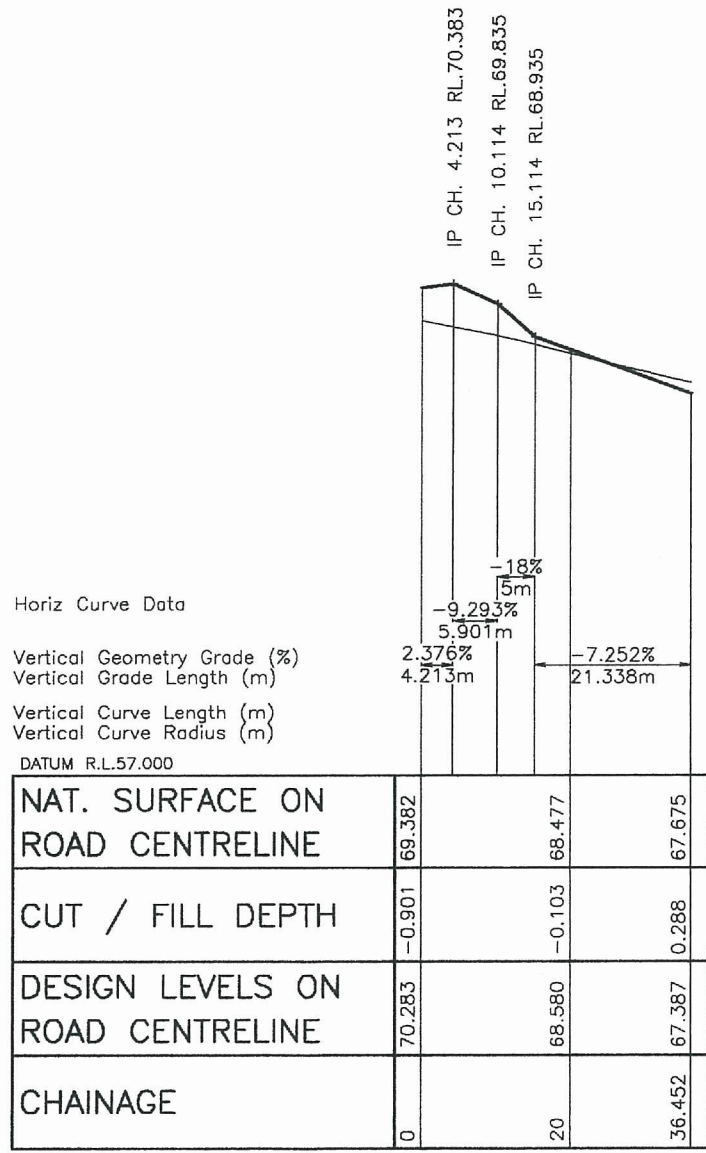
RIGHT OF CARRIAGEWAY No. 3  
LONGITUDINAL SECTION  
AND TYPICAL CROSS SECTION

**OPUS QANTEC McWILLIAM**

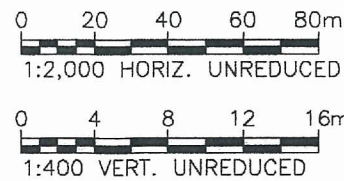


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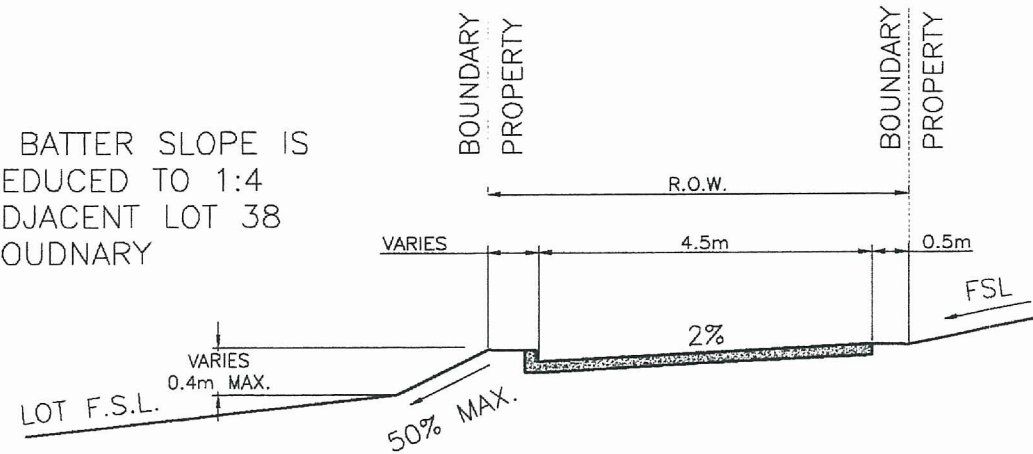
1/10 Rivendell  
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Facsimile: (07) 5523 9664  
E-Mail: tweedheads@opusqmcw.com.au



RIGHT OF CARRIAGEWAY - LOTS 35 TO 37




\* BATTER SLOPE IS REDUCED TO 1:4 ADJACENT LOT 38 BOUNDARY



TYPICAL LOT ACCESS DRIVEWAY- LOTS 35 TO 37

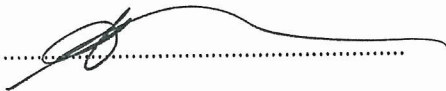


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WALMSLEYS ROAD & STOTT STREET  
BILAMBIL HEIGHTS N.S.W.

**FIGURE 12.4**

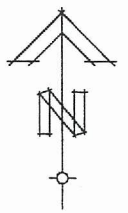
RIGHT OF CARRIAGEWAY No. 4  
LONGITUDINAL SECTION  
AND TYPICAL CROSS SECTION

**OPUS QANTEC McWILLIAM**



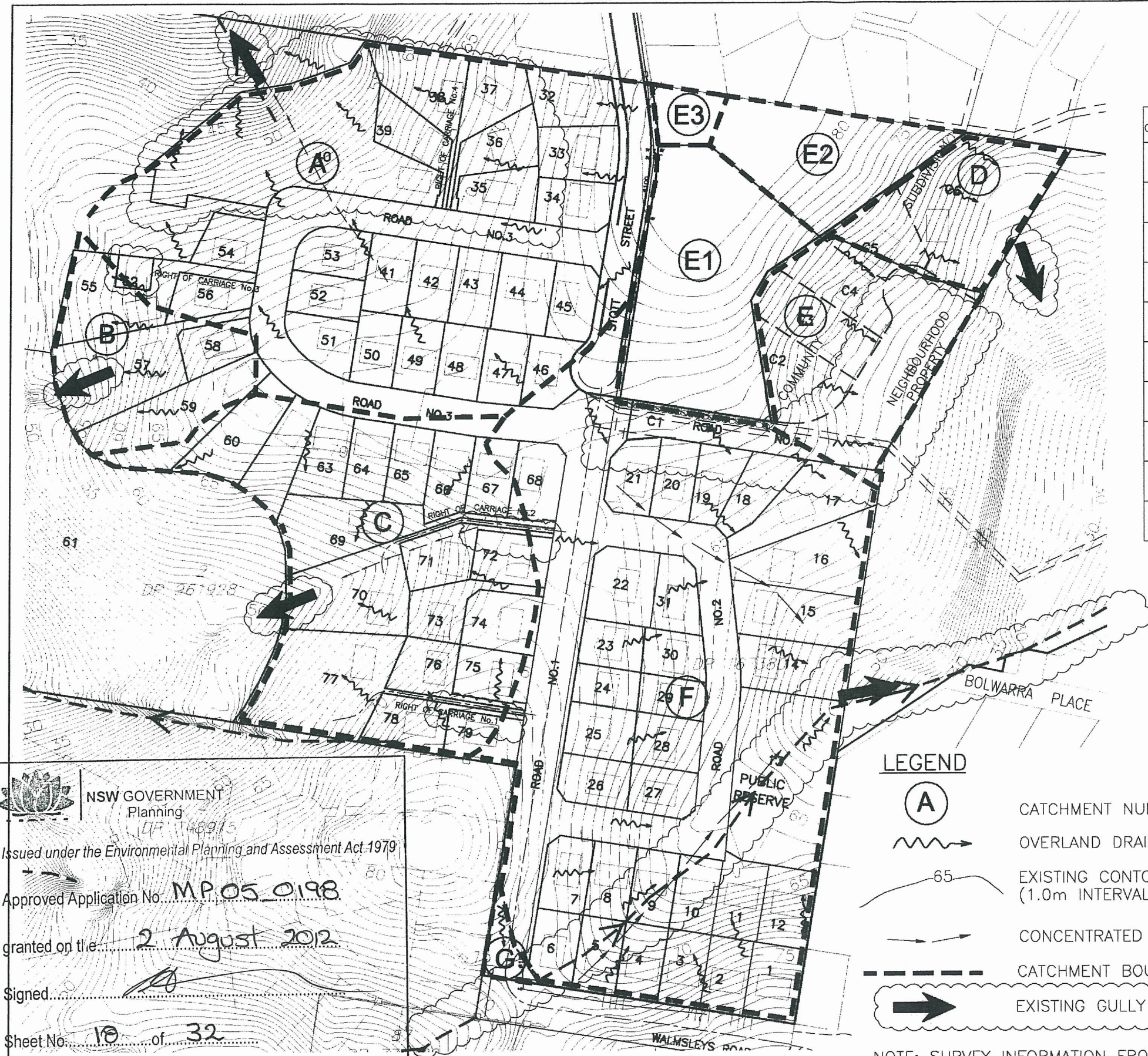
A.B.N. 79 086 342 065

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Facsimile: (07) 5523 9664  
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**DRAINAGE CALCULATIONS**

CATCHMENT	AREA (ha)	t <sub>c</sub> (min)	I <sub>5</sub> (mm/hr)	c <sub>5</sub>	Q <sub>5</sub> (m <sup>3</sup> /s)	I <sub>100</sub> (mm/hr)	C <sub>100</sub>	Q <sub>100</sub> (m <sup>3</sup> /s)
(A)	3.3	16	126.46	0.665	0.771	199.40	0.840	1.535
(B)	0.57	13	138.51	0.665	0.146	217.40	0.840	0.289
(C)	1.95	12	143.29	0.665	0.516	224.53	0.840	1.022
(D)	0.39	11	148.57	0.665	0.107	232.37	0.840	0.211
(E)	0.76	12	143.29	0.665	0.201	224.53	0.840	0.398
(F)	4.19	18	119.87	0.665	0.928	189.52	0.840	1.853
(G)	0.05	10	154.43	0.665	0.014	241.07	0.840	0.028
(E1)	0.72	10	154.43	0.817	0.252	241.07	1.032	0.498
(E2)	0.40	8	168.44	0.817	0.153	261.83	1.032	0.300
(E3)	0.08	13	138.51	0.817	0.025	217.40	1.032	0.050



**LEGEND**

- (A) CATCHMENT NUMBER
- ~ OVERLAND DRAINAGE DIRECTION
- 65 EXISTING CONTOURS (1.0m INTERVAL)
- CONCENTRATED FLOW PATH
- - - CATCHMENT BOUNDARY
- ➔ EXISTING GULLY

NOTE: SURVEY INFORMATION FROM MCLAUCHLAN SURVEYING DRAWING NUMBER 37401

PETER WALMSLEY,  
LES & JIM DICKINSON  
PROPOSED RESIDENTIAL  
SUBDIVISION

WALMSLEYS ROAD  
BILAMBIL HEIGHTS

**FIGURE 13.0**  
WATER CYCLE MANAGEMENT PLAN  
PRE-DEVELOPMENT

**OPUS QANTEC McWILLIAM**



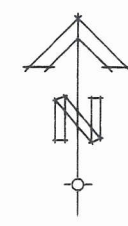
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LTP 148915  
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Sheet No. **10** of **32**

APRIL, 2009  
OCTOBER, 2008  
OCTOBER, 2007  
OCTOBER, 2006  
AUGUST, 2005  
FEBRUARY, 2005

OCTOBER, 2011  
JUNE, 2011  
APRIL, 2010

0 20 40 60 80m  
1:2,000 UNREDUCED



**DRAINAGE CALCULATIONS**

CATCHMENT	AREA (ha)	t <sub>c</sub> (min)	I <sub>5</sub> (mm/hr)	c <sub>s</sub>	Q <sub>5</sub> (m <sup>3</sup> /s)	I <sub>100</sub> (mm/hr)	C100	Q100 (m <sup>3</sup> /s)
(A)	3.15	12	143.29	0.741	0.929	224.53	0.936	1.838
(B)	0.63	10	154.43	0.741	0.200	241.07	0.936	0.390
(C)	2.02	10	154.43	0.741	0.640	241.07	0.936	1.270
(D)	0.45	7	176.99	0.741	0.164	274.44	0.936	0.321
(E)	0.86	10	154.43	0.741	0.273	241.07	0.936	0.539
(F)	4.06	10	154.43	0.741	1.291	241.07	0.936	2.545
(E1)	0.72	10	154.43	0.817	0.252	241.07	1.032	0.498
(E2)	0.40	8	168.44	0.817	0.153	261.83	1.032	0.300
(E3)	0.08	13	138.51	0.817	0.025	217.40	1.032	0.050

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LES & JIM DICKINSON  
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SUBDIVISION

WALMSLEYS ROAD  
BILAMBIL HEIGHTS

**FIGURE 14.0**  
WATER CYCLE MANAGEMENT PLAN  
POST DEVELOPMENT

**OPUS QANTEC McWILLIAM**



A.B.N. 79 086 342 065  
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PO Box 6389  
Tweed Heads South NSW 2486  
Telephone: (07) 5523 1755  
Facsimile: (07) 5523 9664  
E-Mail: tweedheads@opusqmcw.com.au

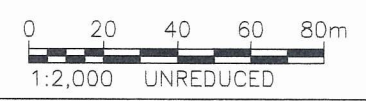
- LEGEND**
- (A) CATCHMENT NUMBER
  - DESIGN CONTOURS (1.0m INTERVAL)
  - PROPOSED STORMWATER/ INTERALLOTMENT DRAINAGE
  - CATCHMENT BOUNDARY
  - STAGE BOUNDARY
  - MAJOR OVERLAND FLOW PATH
  - EXISTING GULLY
  - PROPOSED ENERGY DISSIPATER/ LEVEL SPREADER

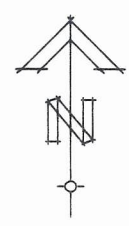
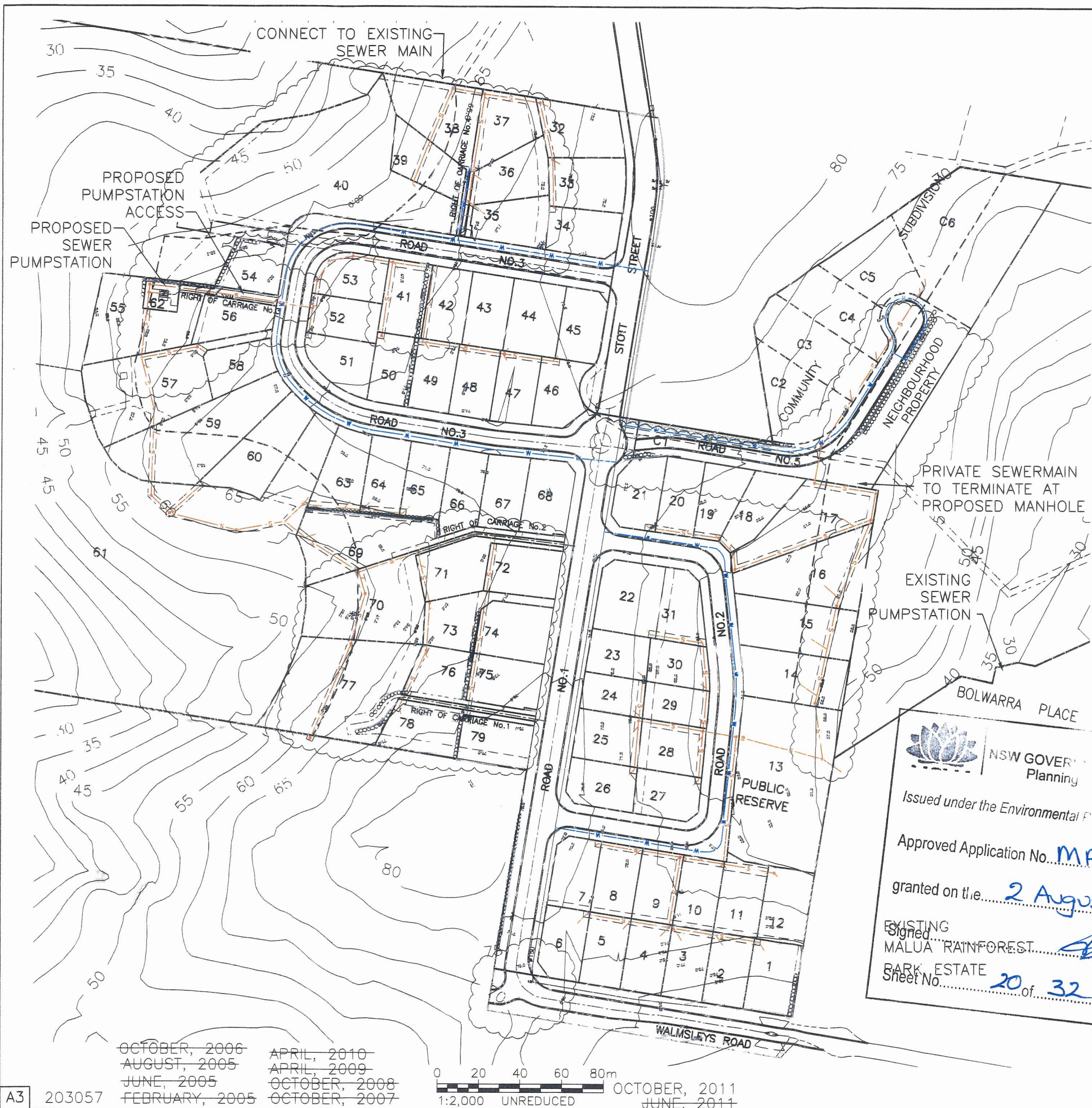
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Approved Application No. **MP05.0198**  
granted on the **2 August 2012**  
Signed **[Signature]**  
Sheet No. **19-32**

OCTOBER, 2007  
OCTOBER, 2006  
AUGUST, 2005  
JUNE, 2005  
FEBRUARY, 2005

OCTOBER, 2011  
JUNE, 2011  
APRIL, 2010  
APRIL, 2009  
OCTOBER, 2008

A3 203057





**LEGEND**

- DESIGN CONTOURS
- SRM PROPOSED RISING SEWER MAIN
- S PROPOSED SEWER MAIN
- W PROPOSED WATER MAIN
- EXISTING WATER MAIN FROM COUNCIL GIS PLANS
- EXISTING SEWER MAIN FROM COUNCIL GIS PLANS TO REMAIN
- APZ LINE

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Signed  
MALUA RAINFOREST  
BARK ESTATE  
Sheet No. **20** of **32**

**FIGURE 15.0**  
SERVICES PLAN

**OPUS QANTEC McWILLIAM**

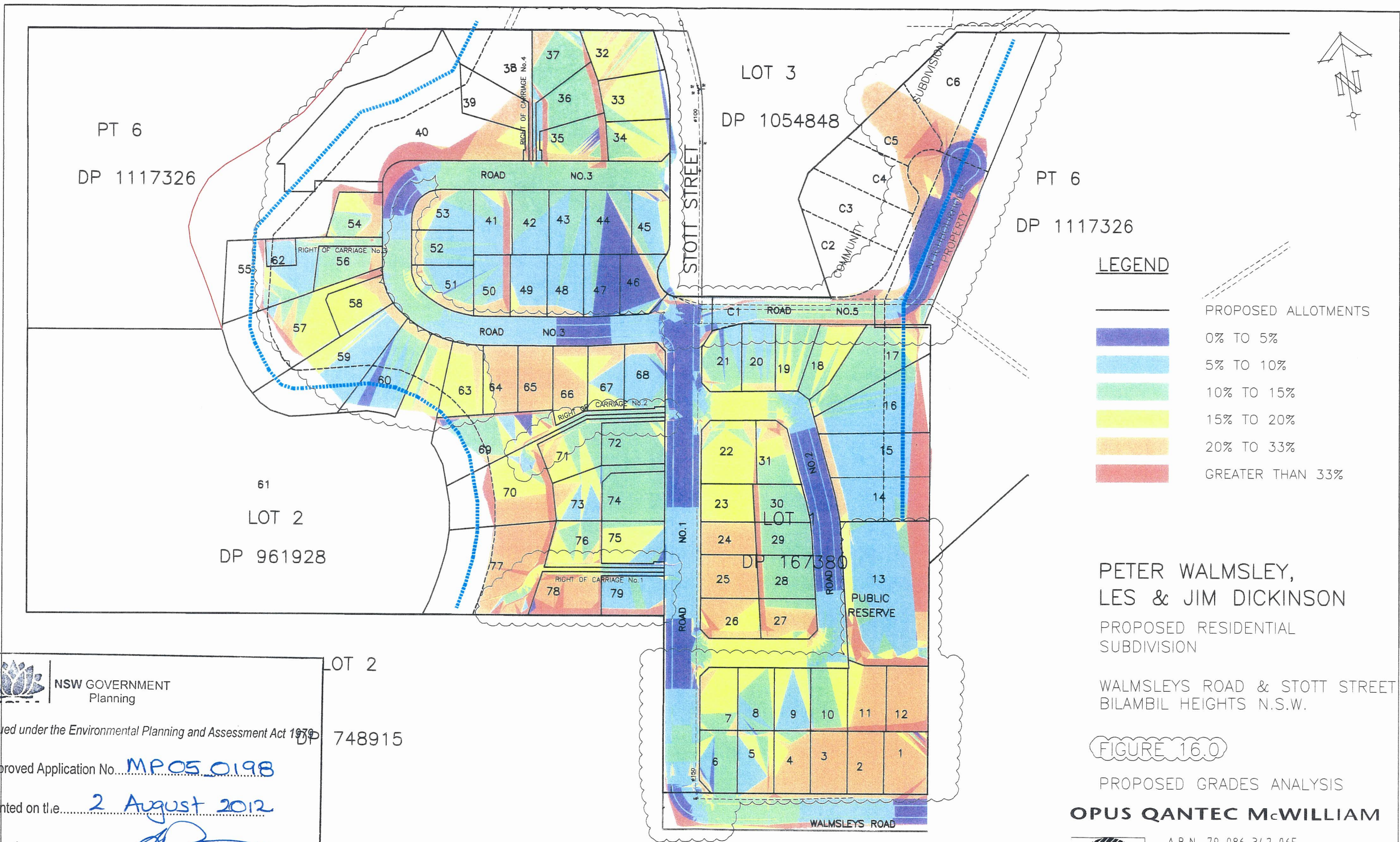
A.B.N. 79 086 342 065  
1/10 Rivendell  
PO Box 6389  
Tweed Heads South NSW 2486  
Telephone: (07) 5523 1755  
Facsimile: (07) 5523 9664  
E-Mail: tweedheads@opusqmcw.com.au



OCTOBER, 2006  
AUGUST, 2005  
JUNE, 2005  
FEBRUARY, 2005

APRIL, 2010  
APRIL, 2009  
OCTOBER, 2008  
OCTOBER, 2007

0 20 40 60 80m  
1:2,000 UNREDUCED  
OCTOBER, 2011  
JUNE, 2011



**LEGEND**

- PROPOSED ALLOTMENTS
- 0% TO 5%
- 5% TO 10%
- 10% TO 15%
- 15% TO 20%
- 20% TO 33%
- GREATER THAN 33%

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SUBDIVISION

WALMSLEYS ROAD & STOTT STREET  
BILAMBIL HEIGHTS N.S.W.

**FIGURE 16.0**

PROPOSED GRADES ANALYSIS

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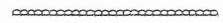




AUGUST, 2010  
~~APRIL, 2010~~  
~~MARCH, 2009~~



A3 203057

FOR DISCUSSION PURPOSES ONLY

**LEGEND**

-  PROPOSED RETAINING WALL
-  PROPOSED EASEMENTS (INDICATIVE ONLY)
-  PROPOSED BATTER
-  PROPOSED ENVIRONMENTAL MANAGEMENT AREA
-  PROPOSED BUILDING ENVELOPE

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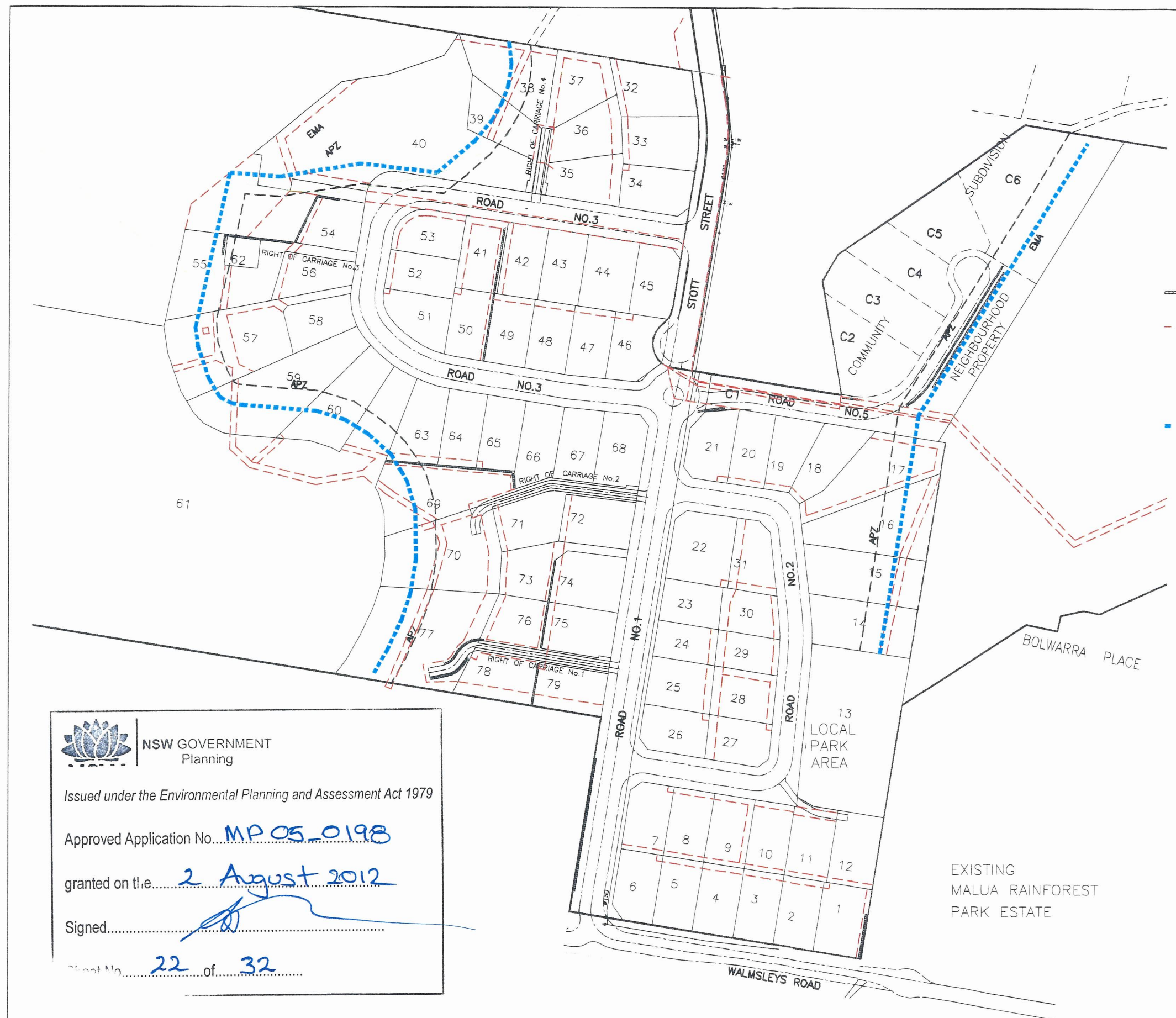
WALMSLEYS ROAD & STOTT STREET  
BILAMBIL HEIGHTS N.S.W.


SKETCH SK20100303  
INDICATIVE RESTRICTION OF USE  
LAYOUT PLAN

**OPUS QANTEC McWILLIAM**



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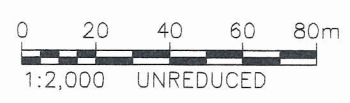
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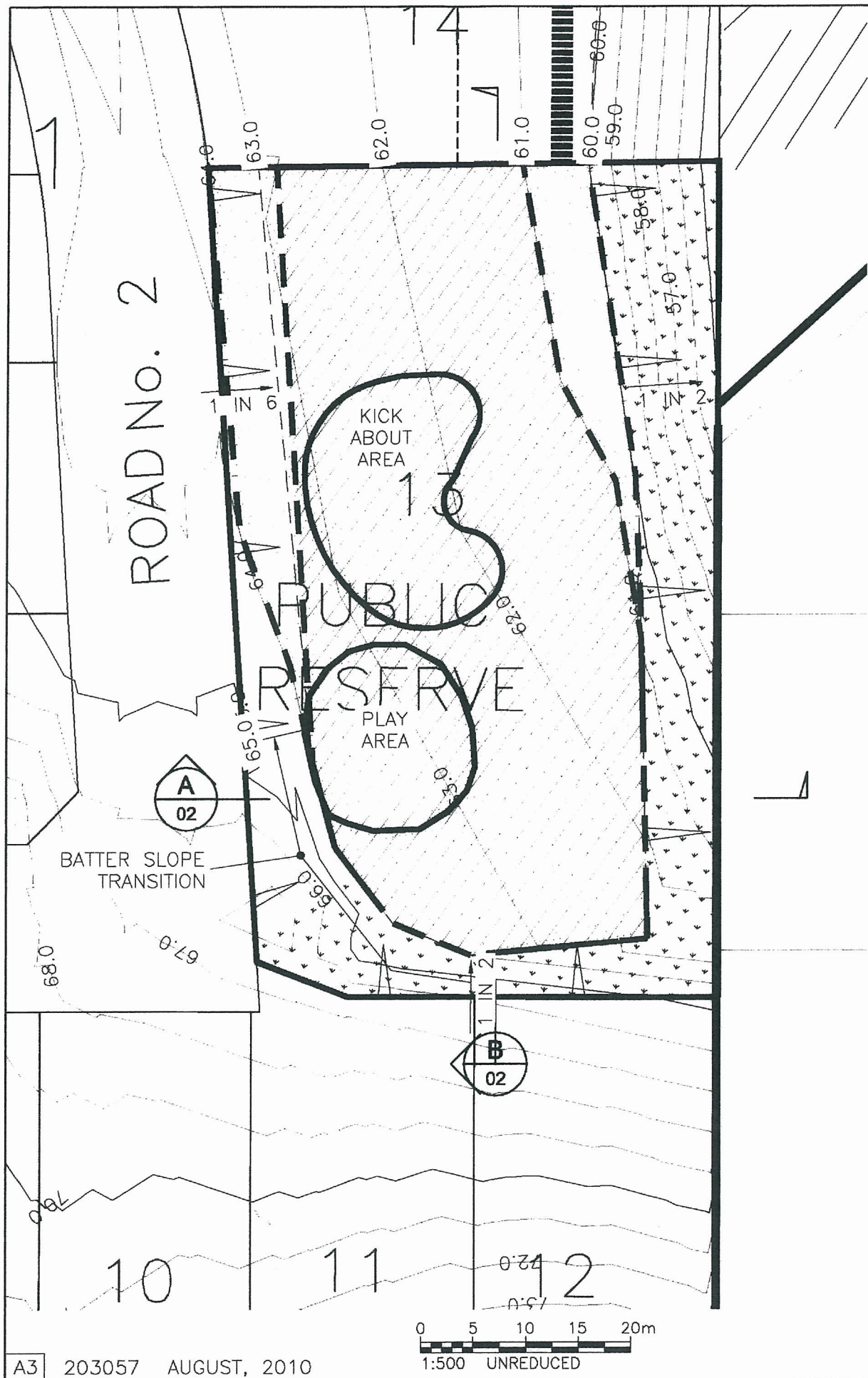
WALMSLEYS ROAD & STOTT STREET  
BILAMBIL HEIGHTS N.S.W.

SKETCH SK20100713  
WALMSLEY ROAD EXTENSION  
PROPOSED 1 in 4 BATTER





OPUS



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**LEGEND**

-  TOTAL SITE AREA OF LOCAL PARK  
3,652m<sup>2</sup>
-  ACTUAL AREA OF LOCAL PARK (1:6 SLOPES OR LESS) = 2562m<sup>2</sup>
-  AREA OF LOCAL PARK NO GREATER THAN 8% = 2120m<sup>2</sup>
-  STEEP BATTERS (1:2 MAX) TO BE DENSELY VEGETATED

**COMPLIANCE CALCULATIONS**

MIN. TSC AREA FOR LOCAL PARK = 2500m<sup>2</sup>  
 ACTUAL AREA FOR LOCAL PARK = 2562m<sup>2</sup>  
**COMPLIES WITH TSC DCP REQUIREMENT**  
 % OF AREA NO GREATER THAN 8% SLOPE  
 = 2120m<sup>2</sup> / 2562m<sup>2</sup>  
 = 82.7%  
**COMPLIES WITH TSC DCP REQUIREMENT**


**PETER WALMSLEY,  
 LES & JIM DICKINSON**

PROPOSED RESIDENTIAL  
 SUBDIVISION

WALMSLEYS ROAD & STOTT STREET  
 BILAMBIL HEIGHTS N.S.W.

SK20100809 - 01 REV A

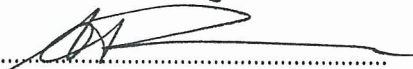
PROPOSED LOCAL PARK  
 GRADE COMPLIANCE SCHEMATIC

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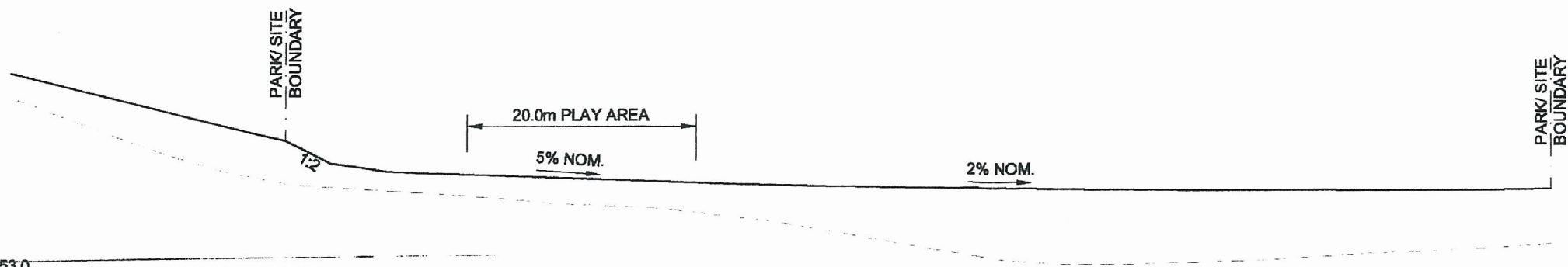
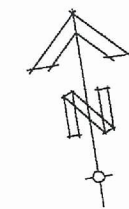
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**OPUS**



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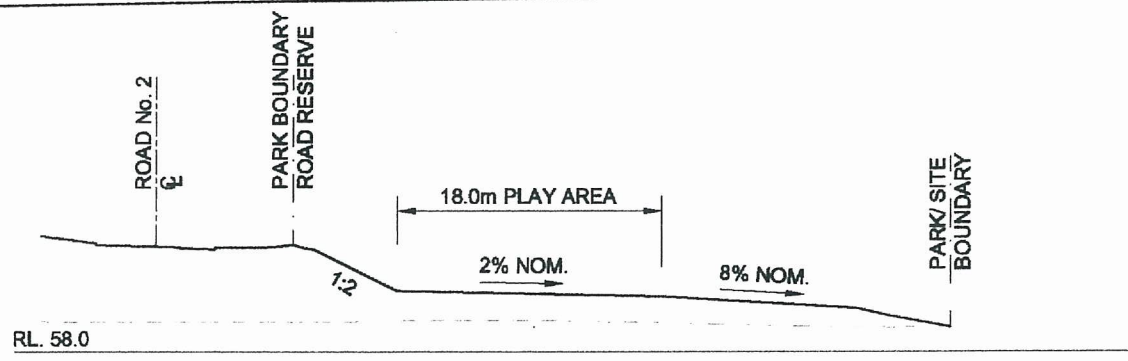
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*[Signature]*

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**SECTION B**  
1:500 01



**SECTION A**  
1:500 01

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BILAMBIL HEIGHTS N.S.W.

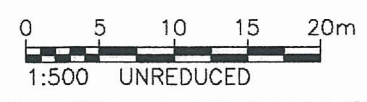
SK20100809 - 02 REV A

PROPOSED LOCAL PARK  
GRADE COMPLIANCE SCHEMATIC

**OPUS**



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Facsimile: (07) 5523 9664  
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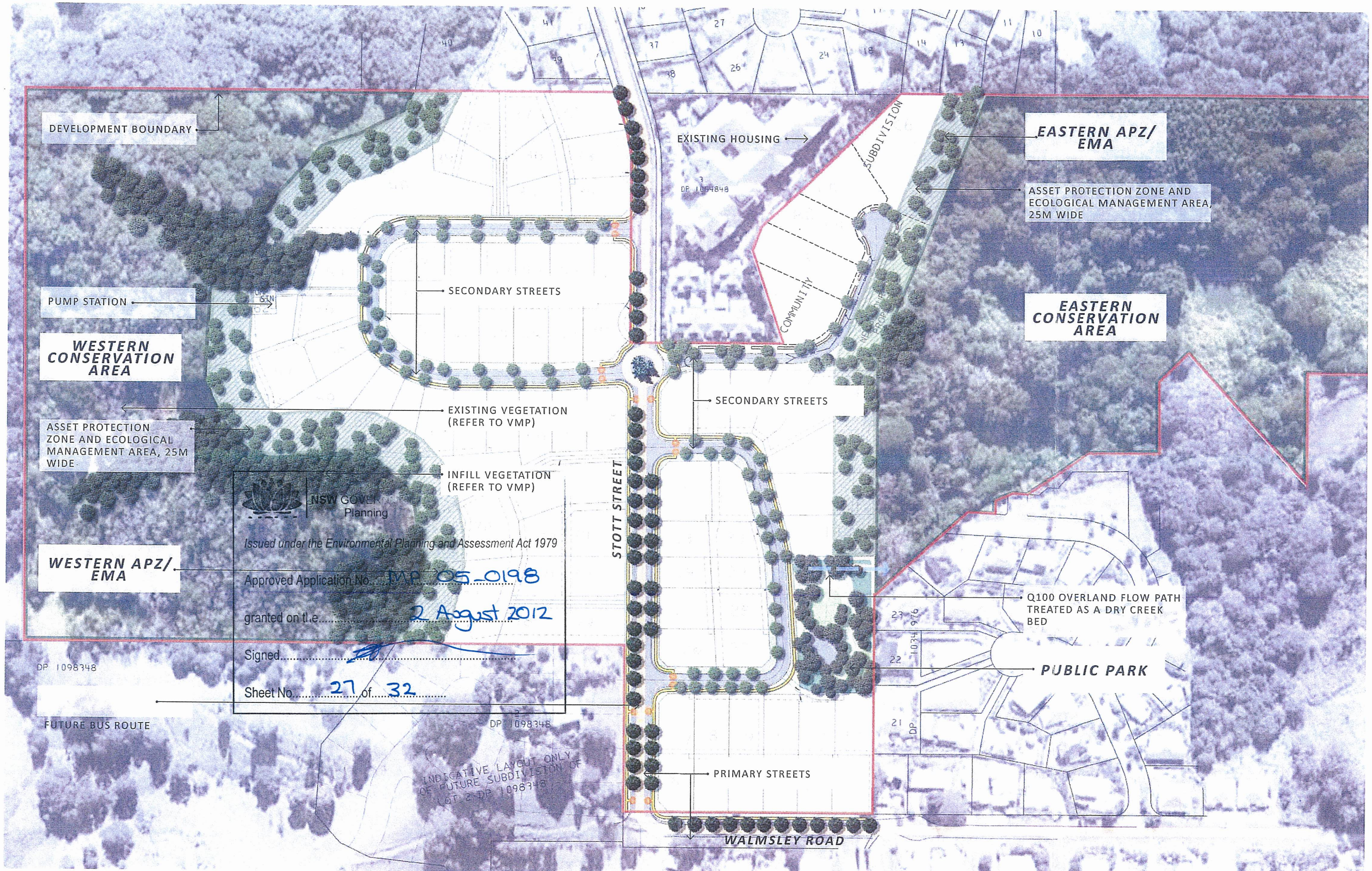


FIG. 01

LANDSCAPE MASTERPLAN

91105 | 08 DEC 10 | DA03 | NORTH Ⓟ | SCALE 1:2000 @ A3  
 PROJECT BILAMBIL HEIGHTS | CLIENT DICKINSON AND WALMSLEY

**01 LANDSCAPE BACKGROUND**

The existing landscape of Walmsley Road is that of old farming land on the crest of the ridge, largely cleared of original vegetation and

- Flanked on the east and west by steeper slopes covered with camphor laurel infested stands of vegetation, and
- Flanked on the north and south by standard suburban sub-divisions
- Within the camphor laurel forest are
- A number of identifiable vegetation communities of lesser extent as well as
- A number of small sites of rare or threatened endemic flora

The flora situation is described in the Ecological and Bushfire Planning Assessment of Lot 1 DP 167380, Lot 2 DP 961928 & Lot 4 DP 1054848 prepared by Biolink Ecological Consultants in June 2008.

**02 LANDSCAPE OBJECTIVES IN THE VMP**

In the current VMP (Proposed Vegetation Management Plan prepared by Biolink Ecological Consultants) one of the proposed objectives is

- Enhancing a measure of east-west connectivity across the proposed development precinct
- This objective states that tree species utilised for streetscape purposes should be
- Native rainforest species endemic to the local area and
- Selected from early-later secondary and mature phase rainforest species.

**03 LANDSCAPE MASTERPLAN**

A meshing of the subdivisional development objectives and the ecological objectives results in a landscape consisting broadly of

A functional and visual street hierarchy consisting of

- Primary residential streets - a central road corridor (future bus route) connecting the existing residential subdivisions to the north and south of the site
- Secondary residential streets and private roads
- Residential allotments flanking the central road corridor
- A small local park within the residential area
- Large areas on the east and west sides of the site set aside as conservation areas to protect and maintain the EEC's (Endangered Ecological Communities)
- APZ's (Asset Protection Zones) lying across the rear of the residential properties on the boundary of the conservation areas.
- An east/west tree/fauna corridor lining the east/west roads connecting the major conservation areas including the EEC's

**04 LANDSCAPE PLANNING AND DESIGN RESPONSIBILITIES**

The planning and design responsibilities for the overall landscape fall into two categories

- Landscape conservation works directed by Biolink Ecological Consultants – all works required in the conservation areas, the EEC's and the APZ's
- Urban landscape works directed by Form Landscape Architects – all public works within the sub-division area (other than APZ work) including streetscapes and the park. Within this document this is described as the Landscape Masterplan

**05 URBAN LANDSCAPE STRATEGY**

The design intent of the Landscape Strategy Plan is to enhance the public spaces of the proposed subdivision by creating a landscape that responds to various ecological, cultural and visual objectives. Specific intentions are

- To meet Objective 4 as stated in the VMP by providing an east/west tree/fauna corridor connecting the major conservation areas
- To utilise trees and other plant species that meet one or more of the criteria stated below. The more criteria that are met the better the selection.
- Species that are endemic to the area
- Species that are native and suitable to the regional bioclimate
- Species that are of low water requirement
- Species that are drought tolerant
- Species that are generally available through commercial plant nurseries
- To create a visual street hierarchy through appropriate tree selection and ground finishes
- To merge seamlessly with the local and regional landscape character of Bilambil Heights which includes both remnant rainforest and suburbia.

**06 PLANT SUITABILITY LISTS**

The lists displayed below are categorised according to the landscape situations on site and are drawn as much as possible from the Biolink reports and VMP for the site.

**07 LANDSCAPE SITUATIONS**

The principal landscape categories requiring different plant selections include

- The roundabout
- Primary streets - Street 1 and Walmsley Rd
- Secondary streets - other streets and private road
- The public park
- Park generally
- Better planting

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**08 TREES TO THE ROUNDABOUT**

The roundabout is to form a major visual focal point within the road network and will contain one or more iconic native rainforest trees such as native figs. Minimum planting container size should be 200L if planted as a single specimen or 100 L each for trees planted as a small cluster.

**09 TREES TO MAJOR STREETS**

To create a sense of street hierarchy the major streets will be lined with native rainforest trees having an iconic form and /or iconic colour such as Hoop Pine, Blue Quandong or Illawarra Flame Tree. Minimum planting container size should be 45L.

**10 TREES TO SECONDARY STREETS**

These streets should be less formal than the major streets and planted with a range of native rainforest trees to create the east/west fauna connections recommended by Biolink. Commonly available suitable street trees include Brush Box, Tuckeroo and Macaranga. Minimum planting container size should be 45L.

**11 TREE PLANTING GENERALLY**

Tree locations shown on plans are indicative of the proposed location and density. They are subject to detail study of roads and road conditions. Minimum planting container size should be 45L.

**12 UNDERSTOREY PLANTING**

Understorey planting generally will be plants native to the area where possible or native to the Tweed Valley Region. Planting categories consist of

- Shrubs for use in streets and parks eg Acacia bakeri, Alpinia caerulea, Cordyline petiolaris, Cordyline stricta, Cyathea cooperi, Doodia aspera, Pittosporum undulatum, Syzigium australe, Westringia fruticosa
- Strap leaf clump forming plants to 1.0m high for use in streets and park eg Dianella, Isolepsis nodosa, Liriope, Lomandra hystrix, Lomandra longifolia

Ornamental grasses and sedges eg Pennisetum, Poa, Isolepsis nodosa

- Ground covers of various types eg Hardenbergia violacea, Myoporum parviflorum
- Spreading ground covers for bank planting in park eg Cissus antarctica

Minimum planting container size should be tube stock.

Minimum plant density should be an average of 4 plants per square metre.

**13 TURF**

The choice of turf should be one of the commonly available drought tolerant turf grasses such as

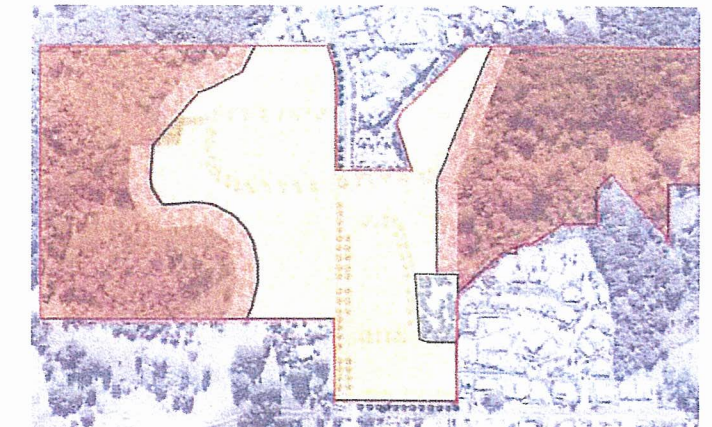
- Cynodon dactylon Green couch

**14 GROUND FINISHES**

The choice of ground finishes should reflect concerns for local character, the use of recycled materials and site specific functions including maintenance. Proposed finishes include

- Decorative gravel
- Hoop pine bark
- Recycled concrete or brick

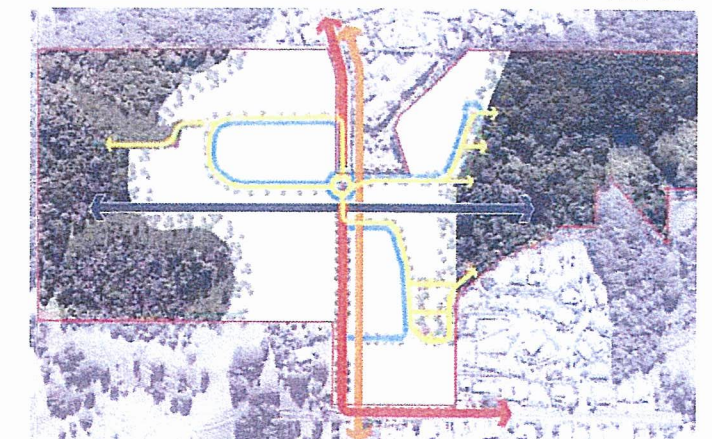
FIG. 02



**LANDSCAPE PLANNING AND DESIGN RESPONSIBILITIES**

- LANDSCAPE CONSERVATION WORKS DIRECTED BY CONSULTING ECOLOGIST
- LANDSCAPE URBAN WORKS DIRECTED BY CONSULTING LANDSCAPE ARCHITECT

FIG. 03



**URBAN LANDSCAPE STRATEGY**

- EAST/WEST TREE/FAUNA CORRIDORS
- PRIMARY STREETS
- MERGE VEGETATION CHARACTER WITH CONSERVATION AREAS
- SECONDARY STREETS
- MERGE VEGETATION AND BUILT FORM CHARACTER WITH SURROUNDING SUBDIVISIONS
- TERTIARY STREETS



**LANDSCAPE DESIGN INTENT**



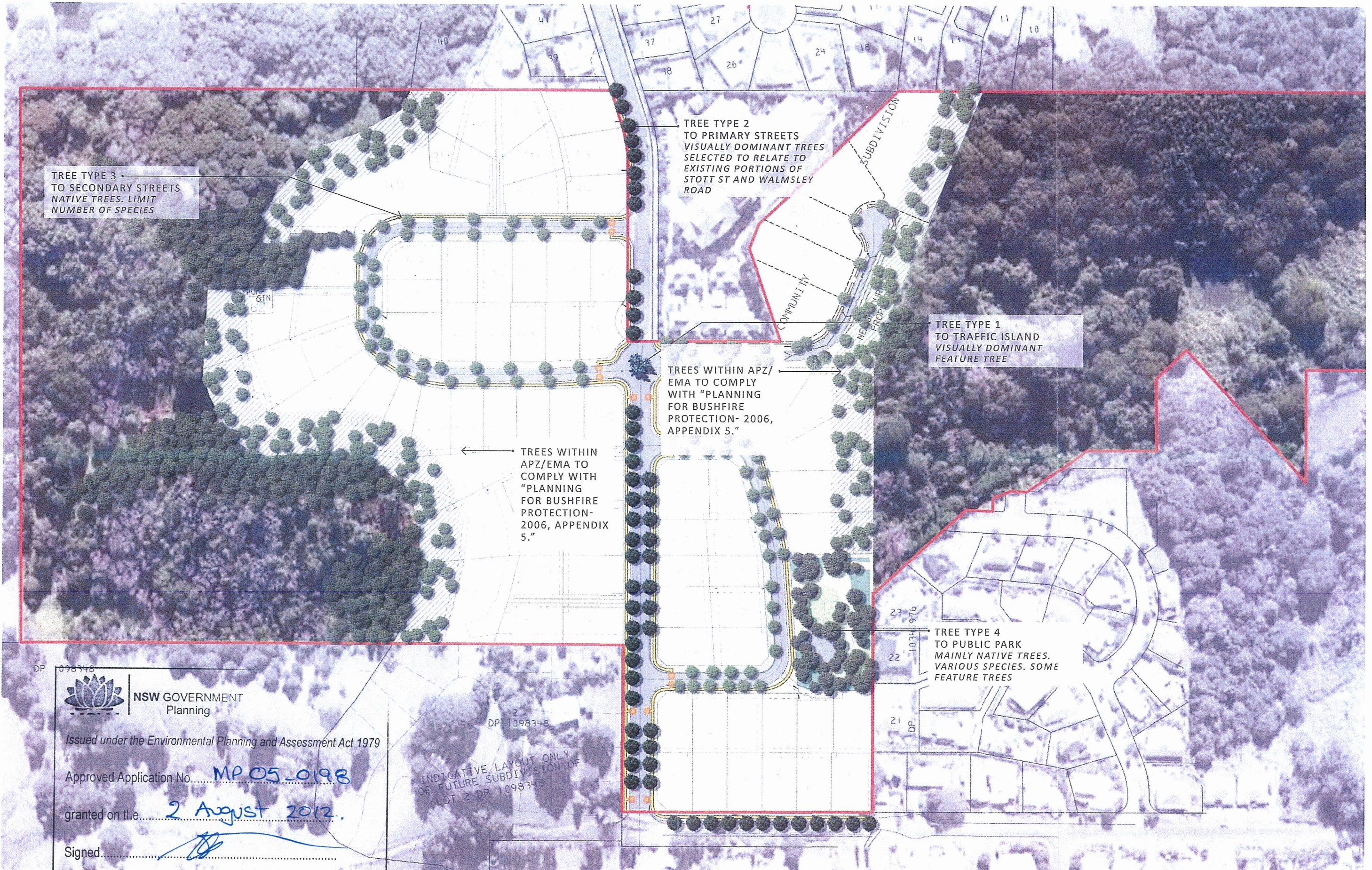
FIG. 04

**LANDSCAPE MASTERPLAN – PEDESTRIAN PATHWAYS**

91105 | 08 DEC 10 | DA03 | NORTH Ⓞ | SCALE 1:2000 @ A3  
 PROJECT BILAMBIL HEIGHTS | CLIENT DICKINSON AND WALMSLEY


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2  
 DP 1098348  
 INDICATIVE LAYOUT ONLY  
 OF FUTURE SUBDIVISION OF  
 LOT 2- DP 1098348



DP 1098348



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**LANDSCAPE MASTERPLAN – TREES IN PUBLIC PLACES**

NOTE: TREE NUMBERS AND SPACINGS ARE INDICATIVE ONLY.  
FIG. 05



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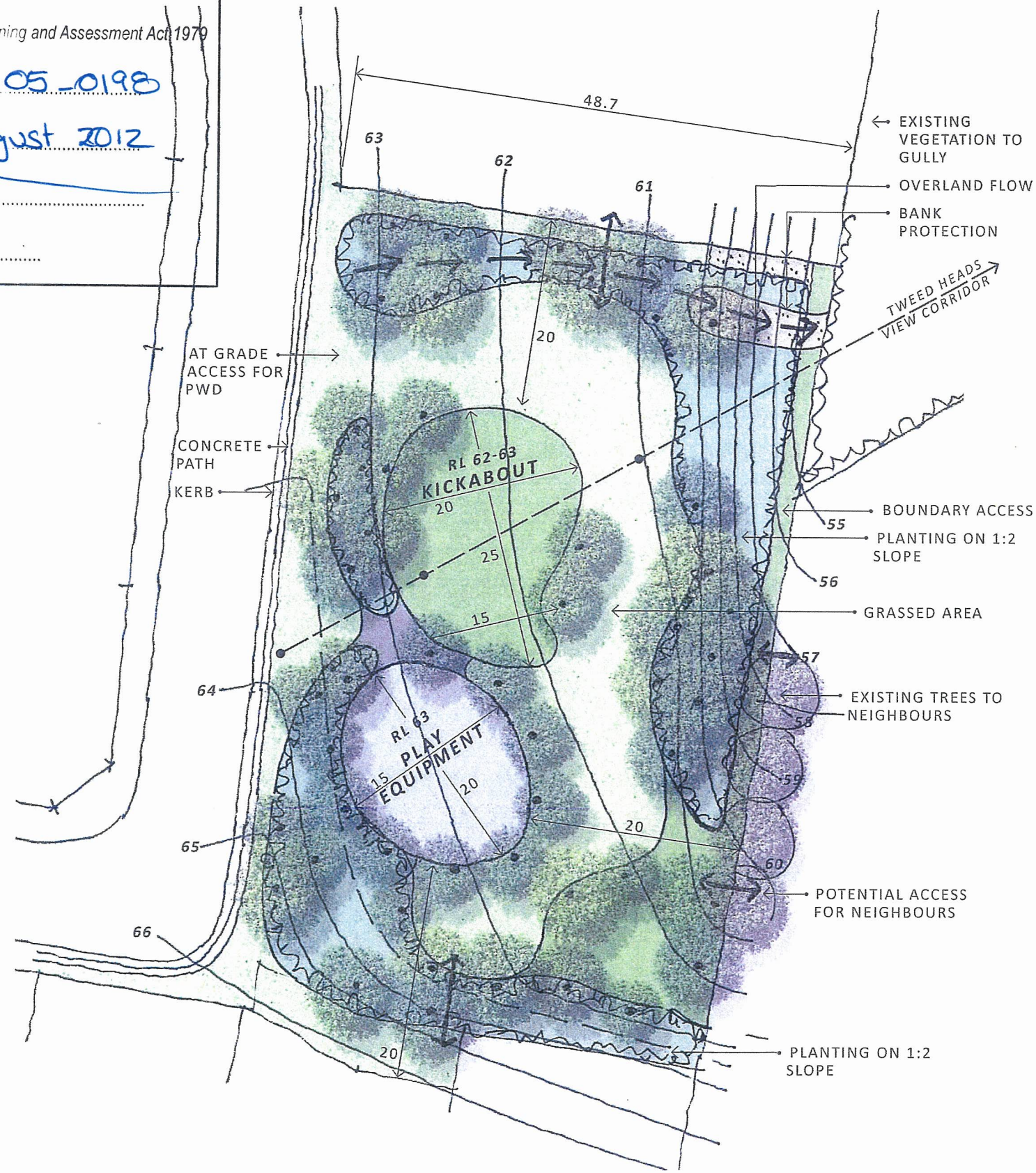


FIG. 06



### LANDSCAPE MASTERPLAN – PUBLIC PARK CONCEPT

91105 | 08 DEC 10 | DA03 | NORTH Ⓞ | SCALE 1:500 @ A3  
PROJECT BILAMBIL HEIGHTS | CLIENT DICKINSON AND WALMSLEY

TREES - ROUNDABOUT		REF
Ficus obliqua	Small Leafed Fig	1
Ficus rubignosa	Port Jackson Fig	1
Ficus virens	White Fig	1
Ficus watkinsiana	Strangler Fig	1

TREES - PRIMARY STREETS		REF
Araucaria cunninghamii	Hoop Pine	1
Brachychiton acerifolius	Illawarra Flame Tree	1
Elaeocarpus grandis	Blue Quandong	

TREES - SECONDARY STREETS		REF
Alphitonia excelsa	Red Ash	1
Brachychiton acerifolius	Illawarra Flame Tree	1
Cupaniopsis anacardioides	Tuckeroo	1
Diploglottis australis	Native Tamarind	1
Elaeocarpus reticulatus	Blueberry Ash	1
Flindersia bennettiana	Bennetts Ash / Crows Ash	1
Lepiderema pulchella	Fine Leafed Tuckeroo	1, 2
Lophostemon confertus	Brush Box	1
Macaranga tanarius	Macaranga	1
Melaleuca quinquinervia	Broad Leaved Paperbark	1
Stenocarpus salignus	Fire Wheel Tree	1

TREES - PARK		REF
Alphitonia excelsa	Red Ash	1
Araucaria cunninghamii	Hoop pine	1
Archontophoenix cunninghamiana	Bangalow Palm	1
Brachychiton acerifolius	Illawarra Flame Tree	1
Corymbia intermedia	Pink Bloodwood	1
Cupaniopsis anacardioides	Tuckeroo	1
Diploglottis australis	Native Tamarind	1
Elaeocarpus reticulatus	Blueberry Ash	1
Eucalyptus microcorys	Tallowwood	1
Eucalyptus propinqua	Grey gum	1
Flindersia bennettiana	Bennetts Ash / Crows Ash	1
Lepiderema pulchella	Fine Leafed Tuckeroo	1, 2
Lophostemon confertus	Brush Box	1
Macaranga tanarius	Macaranga	1
Melaleuca quinquinervia	Broad Leaved Paperbark	1
Stenocarpus salignus	Fire Wheel Tree	1

**UNDERPLANTING**  
**SHRUBS**

Acacia bakeri	Marblewood
Alpinia caerulea	Native Ginger
Cordyline petiolaris	Broad Leaved Palm Lily
Cordyline stricta	Narrow Palm Lily
Cyathea cooperi	Cooper's Tree Fern
Dianella caerulea	Flax/Paroo Lilly
Doodia aspera	Prickly Rasp Fern
Melaleuca thymifolia	Thyme-leaf Honey-myrtle
Pittosporum undulatum	Sweet Pittosporum
Syzigium australe	Lilly Pilly / Bush Christmas
Westringia fruticosa	Coastal Rosemary
Austromyrtus dulcis	Midgen Berry
Hovea acutifolia	Hovea

**CLUMP FORMING PLANTS**

Dianella	Flax Lily
Isolepis nodosa	Knobby Club Rush
Liriope	Liriope
Lomandra hystrix	Slender Mat Rush
Lomandra Little Joey	Dwarf Lomandra
Lomandra longifolia	Mat Rush

**ORNAMENTAL GRASSES**

Pennisetum	
Poa	
Isolepis nodosa	Knobby Club Rush

**GROUND COVERS**

Hardenbergia violacea	Happy Wanderer
Myoporum parviflorum	Creeping Boobialla

**SPREADING GROUND COVERS**

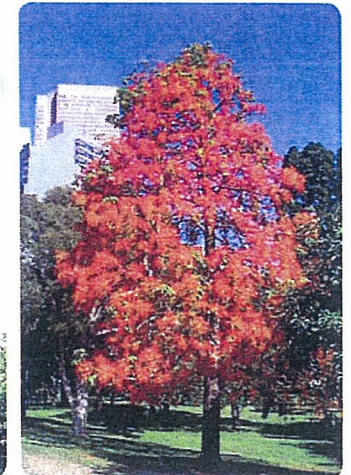
Cissus antarctica	Kangaroo Vine
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**References**

- Species present on site in existing simple notophyll rainforest. Identified in Ecological & Bushfire Assessment report by Biolink Ecological Consultants dated June 2008.
- Species present on site and classed as threatened flora. Identified in Ecological & Bushfire Assessment report by Biolink Ecological Consultants dated June 2008.



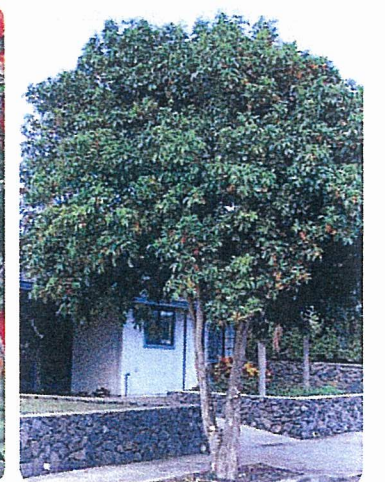
ARAUCARIA CUNNINGHAMIA  
HOOP PINE



BRACHYCHITON ACERIFOLIUS  
FLAME TREE



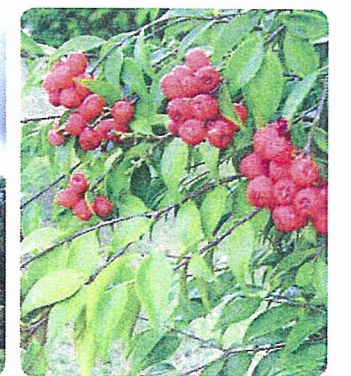
CALLISTEMON VIMINALIS  
BOTTLEBRUSH



CUPANIOPSIS ANACARDIOIDES  
TUCKEROO



WATERHOUSIA FLORIBUNDA  
WEeping LILLY PILLY



SYZYGIIUM LEUHAMII  
SMALL LEAVED LILLY PILLY

NSW GOVERNMENT  
Planning

Issued under the Environmental Planning and Assessment Act 1979

MP 05-0198

Approved Application No.....

granted on the..... 2 August 2012.....

Signed.....

Sheet No..... 32 of 32.....

**PLANT SUITABILITY LIST**

91105 | 08 DEC 10 | DA03

PROJECT BILAMBIL HEIGHTS | CLIENT DICKINSON AND WALMSLEY

FORM LANDSCAPE ARCHITECTS | 7