

**Site Constraints to a
Wastewater Feasibility Study for Rezoning of
1442 Kurmond Road, Kurmond, NSW**

Report No. TFA3405/01

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Date: 20 December, 2013

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1. BACKGROUND

Toby Fiander & Associates Pty Ltd has been commissioned to provide a short report that examines the site constraints to onsite disposal of wastewater at 1442 Kurmond Road, Kurmond, NSW. The lot appears to be Lots 104 & 105 in DP.1051618.

1.1 Site Location

The site is located as shown in **Figure 1**. Soil was described on the Penrith Soil Conservation map sheet, reproduced in **Figure 2**. A preliminary assessment of soil was also made on site.

1.2 Site Description

The site is principally grazing land and appears to have been used for that purpose for some time.

2. SOIL ASSESSMENT

Based partly on the Soil Landscape assessment of McInnes (1997) and partly on site observation, the soil is principally Luddenham, which of the common local soils is among the best for wastewater disposal by both irrigation and soakage methods. **Figure 2** is derived from McInnes (1997). It also shows Gymea soil along the nearby creek lines, although not on this site. Gymea soil can be used for disposal provided minor filling and mixing is also undertaken. No Gymea soil was observed in locations where wastewater disposal is likely.

3. SEPARATION ASSUMPTIONS

The following separation assumptions were made based on the published standards and experience with Council's previous approvals.

- 6 metres if area up-gradient and 3 metres if area down-gradient of driveways and property boundaries,
- 15 to dwellings for surface irrigation and/or 6 metres to dwellings for sub-surface irrigation,
- 3 metres to paths and walkways,
- 6 metres to swimming pools,
- 100 metres to (named) watercourses,
- 40 metres to dams and drainage lines.

It was assumed that only where water could enter a dam or other body did the 40m separation apply.

An area of land with vegetation is proposed to be prevented from having building development by a Section 88B instrument. It was assumed this would also affect wastewater disposal on the two rear lots, but appears to be over-ridden by other constraints for the most part.

4. SIMPLIFIED TOPOGRAPHIC ANALYSIS

Land with a surface gradient of steeper than one in six (~16%) was initially marked as steep based on published standards and Council's previous approvals. AS1547-2012 suggests the table shown below for adjustment of application rate for various land slopes. All land is considered suitable based on this discussion.

The discussion developed in OSWMSSH (1998) provides for steeper grades with care and in specific circumstances, but this was not assumed.

5. POSSIBLE MODIFICATIONS

At this stage, only minor modifications to the site are proposed.

6. SIMPLIFIED ASSUMPTIONS ABOUT DISPOSAL AREAS

Based on previous analysis, published standards and Council's previous approvals, an area of 1000m² was assumed to be required for irrigation disposal, based on experience.

In addition the following table from AS/NZS 1547: 2012 outlines recommended reductions in design irrigation rate (DIR) according to slope.

Slope	Reduction in DIR
Flat up to 10%	No reduction
10% to 20%	20%
20% to 30%	50%
> 30%	Advice required from a suitably qualified and experienced person

The proposed irrigated area is 1000m² and is considered generous, and so may not need to be increased to accommodate a lower irrigation rate. Discussion below of lots indicates where a greater area might be useful. By and large, slope is not considered a critical constraint in this proposal.

If a mound was used, the Wisconsin Mound would take approximately 50m² of land, with a requirement for a further area of similar size for support or a base. A platform would need to be formed with earth batters a grade of three horizontal to one vertical. Based on experience on other sites, an area of about 200m² of land would be adequate and would be a second method of disposal applicable to all the proposed lots.

Other systems may also be suitable, such as a evapotranspiration beds. In any case, there is sufficient suitable land available on each block of the indicative subdivision to allow for adequate disposal with minor modification of land contours, if any.

The constraints are shown on **Figure 3A**. Each constraint is then shown on a separate sheet of Figure 3B, 3C, 3D, 3E and 3F. The mapping based used was prepared by Landscape Surveys.

7. CONCLUSIONS

It is concluded that there is sufficient suitable land on the blocks of the indicative subdivision to allow for adequate disposal. Each lot investigated is discussed below.

Lots 33, 34, 35, 36, 37, 38, 39, 40, 41, 42

The above lots are adequate for wastewater disposal providing sufficient area according to Council standards, and clear of wastewater constraints.

Lot 31

Lot 31 has wastewater disposal within the area nominated as sensitive in the report provided by UBM Ecological Consultants. From the advice of UBM Ecological Consultants the unnamed watercourse will be protected by the 40m buffer zone and wastewater disposal should not have an effect on the native vegetation. Hence, it is suitable for wastewater disposal as shown.

Lot 32

Lot 32 is suitable based on the orientation of the contours, where the flow path is longer than 40m from the proposed disposal area to the unnamed watercourse, and is not described adequately by the geometric separation. The wastewater disposal area can be larger than shown but is adequate in any case.

Lot 43

Lot 43 has terracing and is affected by slope constraints over small area. There is adequate area to compensate for this, if required.

8. REFERENCES

McInnes, S.K. (1997) Soil Landscapes of the Penrith 1:100 000 Sheet. Soil Conservation Service of NSW, Sydney.

OSWMSSH(1998) Environment and Health Protection Guidelines - On-Site Sewage Management for Single Households. Dept. of Health, Dept. of Land & Water Conservation, Dept. of Local Govt & NSW EPA

Standards Australia (2012) AS 1547:2012 On-site Domestic-Wastewater Management. Sydney.

UBM Consultants Pty Ltd (2013) Preliminary Flora and Fauna Survey & Ecological Assessment: Lot 104 & Lot 105 in DP1051618, 1442/1442A Kurmond Road, Kurmond. December.

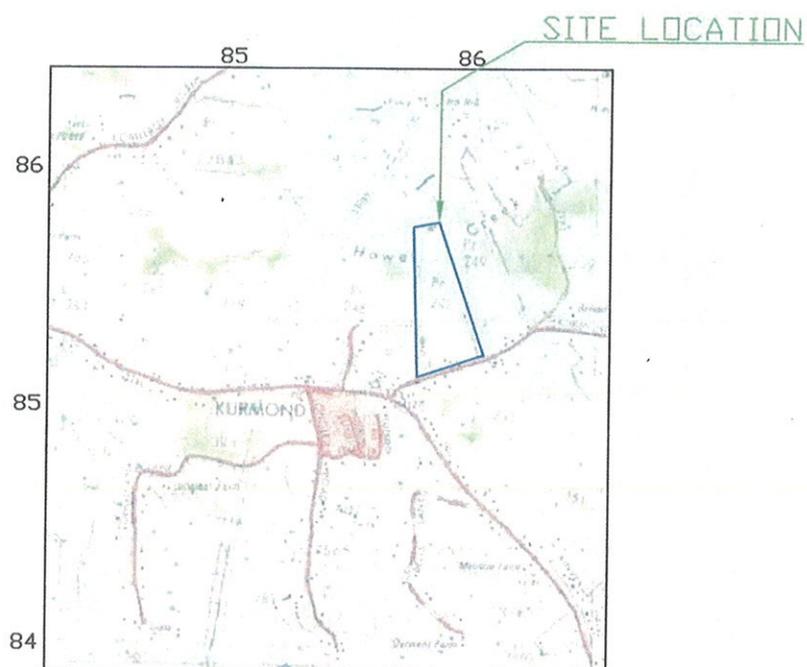


FIGURE 1

KURRAJONG TOPOGRAPHIC MAP

SCALE: 1: 25 000

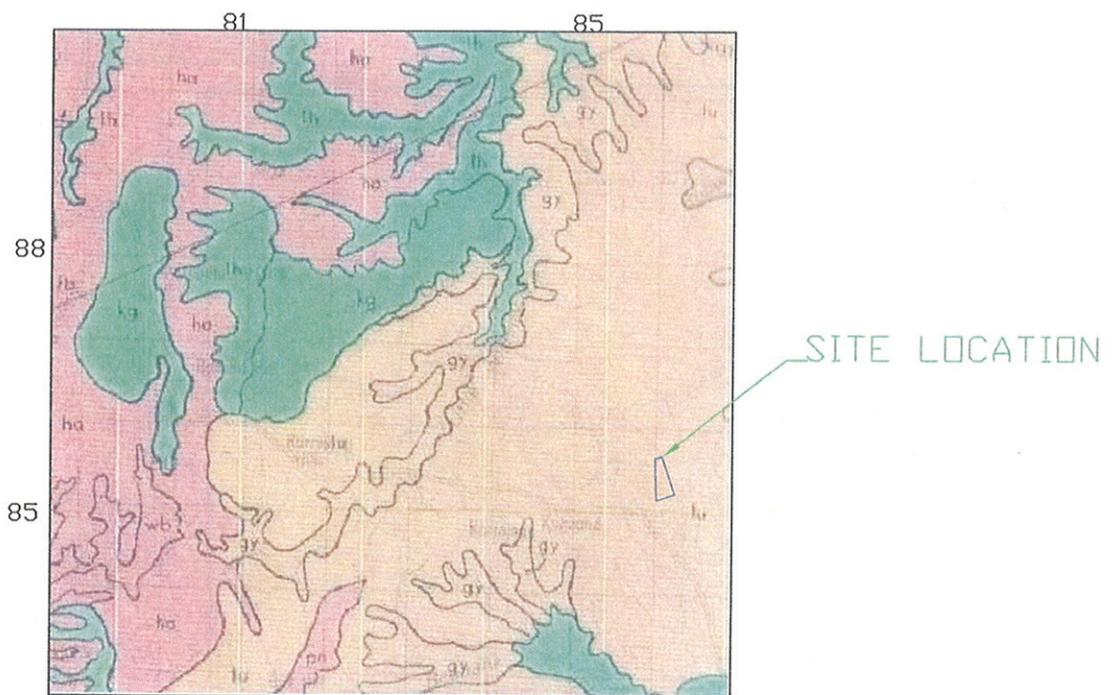
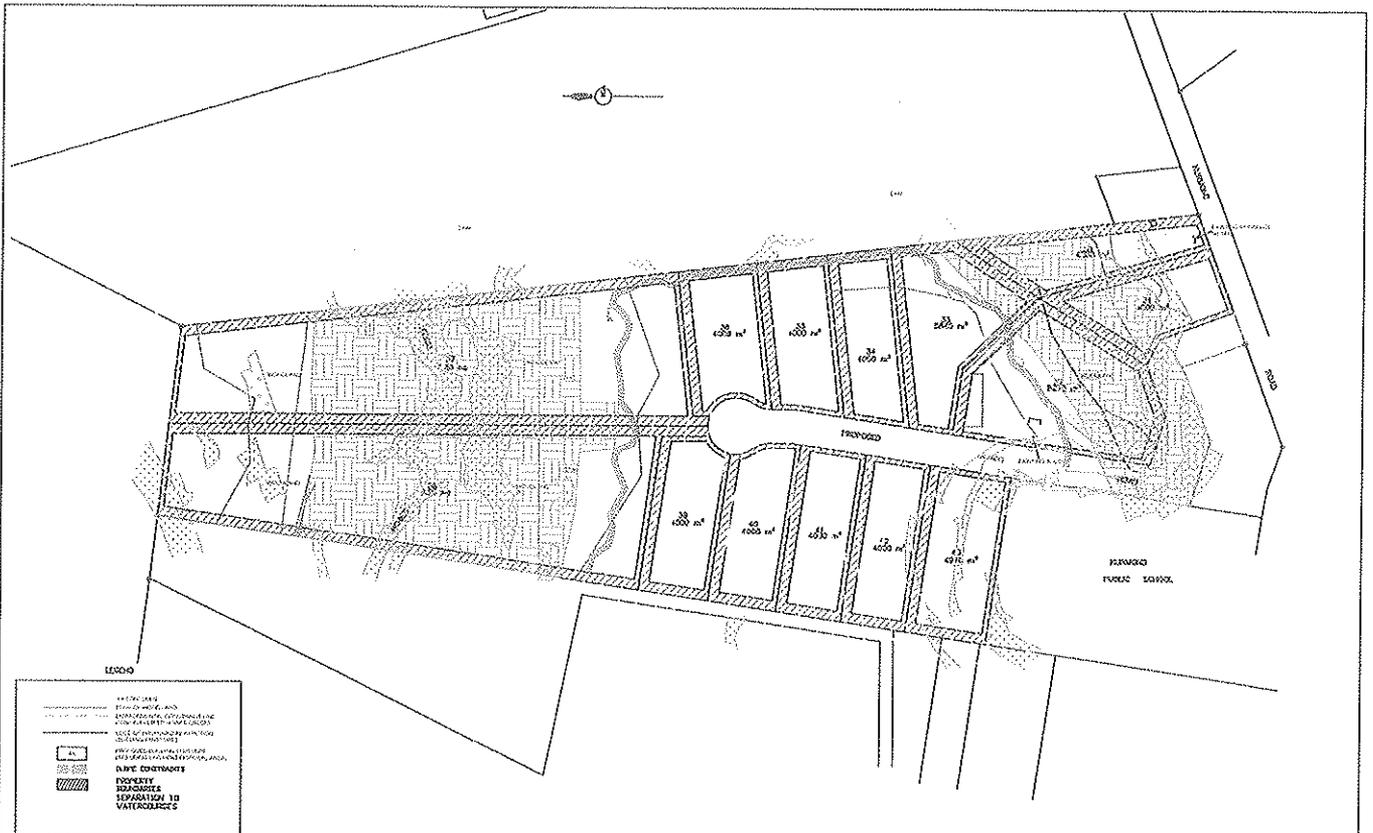
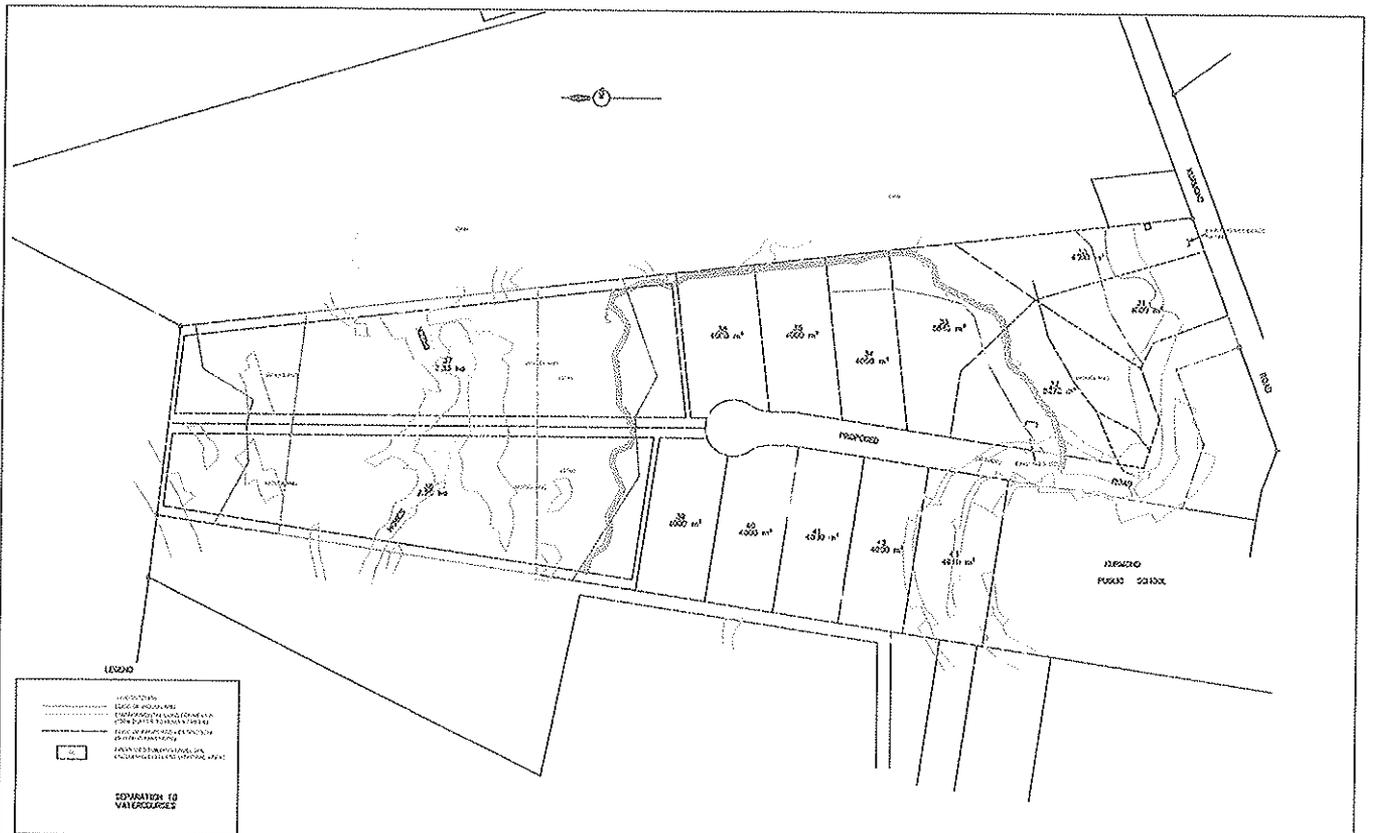


FIGURE 2
PENRITH SOIL CONSERVATION MAP
SCALE: 1: 100 000

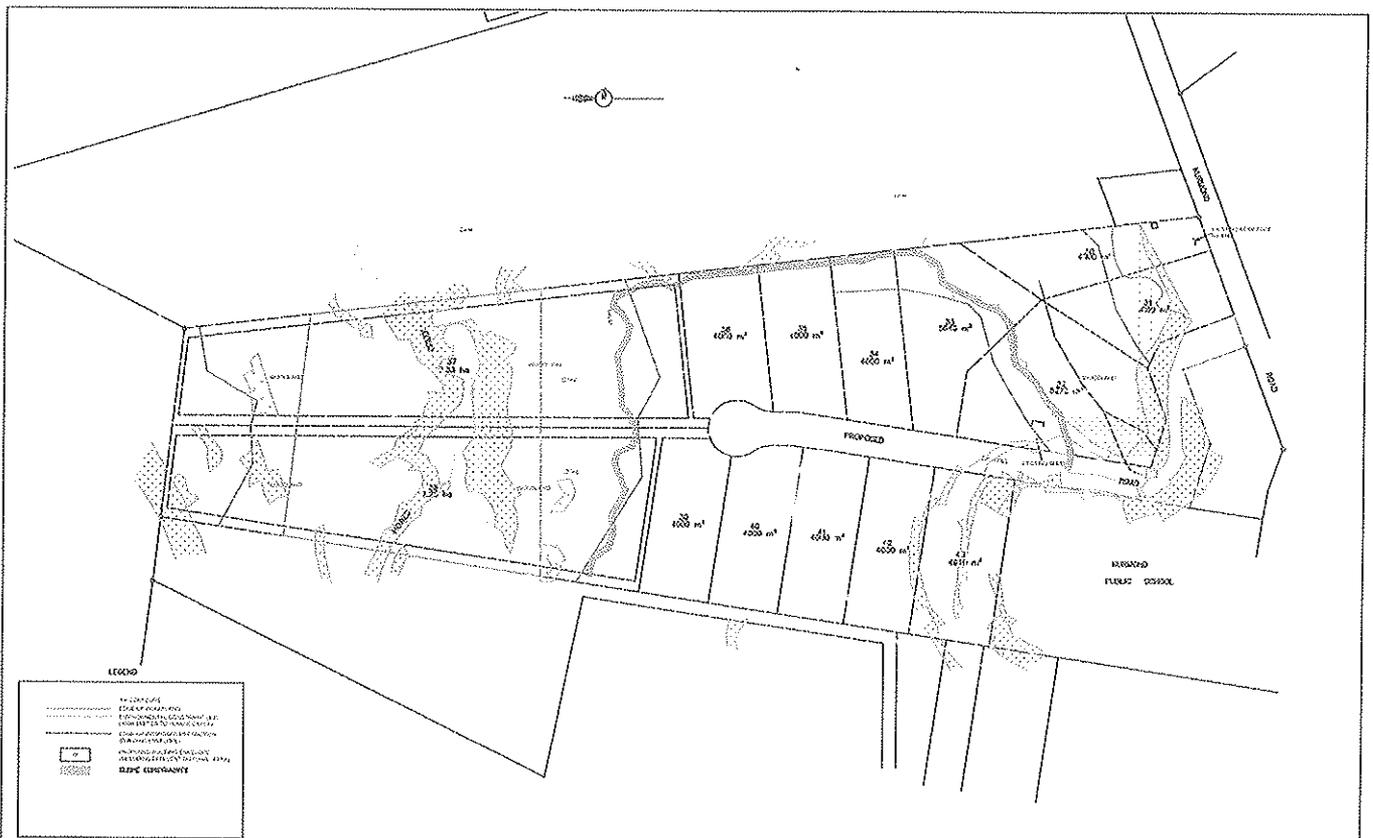


	EASEMENT
	PROPERTY BOUNDARY
	UTILITY EASEMENT
	RIGHT-OF-WAY
	SEWER EASEMENT
	STORMWATER EASEMENT
	OTHER EASEMENT
	PROPERTY SEPARATION
	WATERCOURSE

TOBY FINDER & ASSOCIATES CONSULTING ENGINEERS & ARCHITECTS 2/7 Victoria Drive, GAYDON VIC 3153 Ph: (03) 9500 2000 Fax: (03) 9524 1933 www.tobyfinder.com.au		DATE: 05/11/2013 DESIGN: T.F. & S.R. DRAWN: S.R. SCALE: A3/200 PLAN: 1020_A3	SUPPLY BY: P/A CONTRACT INTERVALS: 1m CULVERT: N/A	WASTEWATER CONSTRAINTS 1442 KURMAKIND ROAD, KURMAKIND FROM: 10/10/10 LOCALITY: KURMAKIND, NSW PLAN NO: 174 8455
WATERWAY DESIGN CONTRACTOR DESIGNER		ALL CONSTRAINTS PLAN		FIGURE 3a



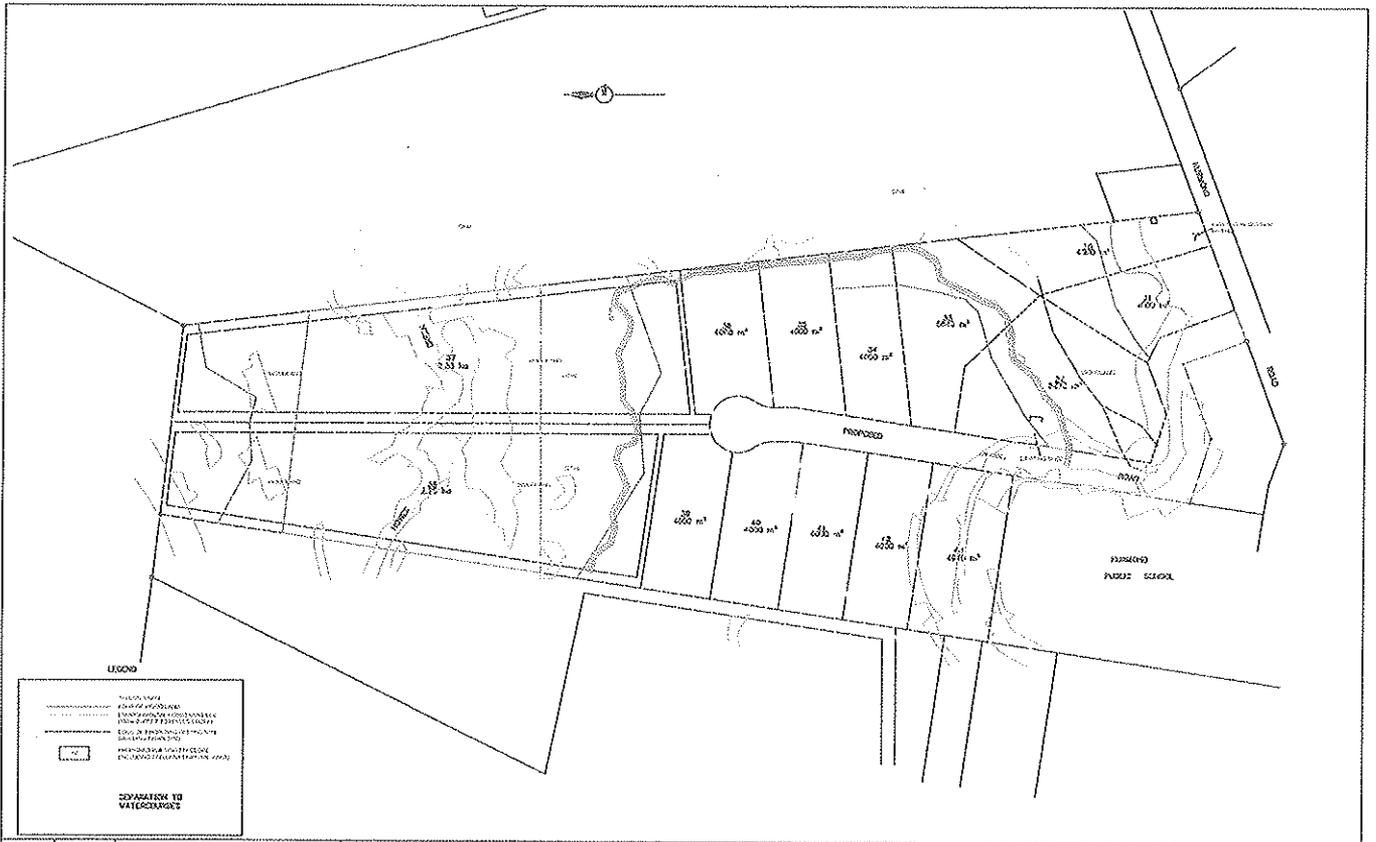
<p>LEGEND</p> <p>PROPOSED EXISTING RESERVE PUBLIC SCHOOL PROPOSED ROAD EXISTING ROAD PROPOSED DRIVEWAY EXISTING DRIVEWAY PROPOSED FENCE EXISTING FENCE PROPOSED WALL EXISTING WALL PROPOSED GATE EXISTING GATE PROPOSED SIGN EXISTING SIGN PROPOSED LIGHT EXISTING LIGHT PROPOSED UTILITY EXISTING UTILITY PROPOSED TREE EXISTING TREE PROPOSED SHRUB EXISTING SHRUB PROPOSED GRASS EXISTING GRASS PROPOSED PAVEMENT EXISTING PAVEMENT PROPOSED ASPHALT EXISTING ASPHALT PROPOSED CONCRETE EXISTING CONCRETE PROPOSED BRICK EXISTING BRICK PROPOSED STONE EXISTING STONE PROPOSED WOOD EXISTING WOOD PROPOSED METAL EXISTING METAL PROPOSED PLASTER EXISTING PLASTER PROPOSED GYPSUM EXISTING GYPSUM PROPOSED STUCCO EXISTING STUCCO PROPOSED TERRAZZO EXISTING TERRAZZO PROPOSED MARBLE EXISTING MARBLE PROPOSED GRANITE EXISTING GRANITE PROPOSED SLATE EXISTING SLATE PROPOSED SCHIST EXISTING SCHIST PROPOSED GNEISS EXISTING GNEISS PROPOSED QUARTZITE EXISTING QUARTZITE PROPOSED METAMORPHIC EXISTING METAMORPHIC PROPOSED IGNEOUS EXISTING IGNEOUS PROPOSED SEDIMENTARY EXISTING SEDIMENTARY</p>		<p>SEPARATION TO WATERCOURSES</p>	
<p>TOBY FLANDER & ASSOCIATES Civil, Planning & Surveying Private Pty Ltd ABN 63 643 447 210</p> <p>2/75 South Cross CANTONMENT ROAD P.O. BOX 5200 P.O. BOX 5200 GEOFFORD VILLAGE BUSINESS CENTRE NSW 2143 Mobile: 0827 874 114 Email: toby@tobyflander.com.au</p>		<p>DATE: 05/12/2013 DESIGN: T.F. & P.A. DRAWING: P.A. SCALE: 1:1000 PLAN SIZE: A3</p>	
<p>WASTERWATER CONSTRAINTS 1442 KURSHORN ROAD, KURSHORN FOR MOBILE SERVICES</p>		<p>LOCATION: KURSHORN, NSW PLAN NO. DA 1405</p>	
<p>SEPARATION TO WATERCOURSES</p>		<p>FIGURE 15</p>	



LEGEND

	1:1 SLOPE CONSTRAINT
	2:1 SLOPE CONSTRAINT
	CONTOUR LINE
	PROPOSED BOUNDARY
	EXISTING BOUNDARY

<table border="1"> <tr> <td>SYMBOL</td> <td>DESCRIPTION</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table>		SYMBOL	DESCRIPTION							<p>TOBY FIANDER & ASSOCIATES <i>Consulting Engineers & Surveyors</i> 3/77 Rouse Road Castle Hill NSW Ph: (02) 9000 2008 Fax: (02) 9024 1832 Web: 6427 674 214</p>	<p>DATE: 02/19/2013 DESIGN: J.F. & S.J. DRAWN: S.S. SCALE: 1:5000 PLAN: 2/23 A2</p>	<p>SURVEY: ENR R/A CONTOUR INTERVAL: 1m DATUM: N/A</p>	<p>WASTEWATER CONSTRAINTS 1442 KURDUMOH ROAD, MURUMBidgee 700 MORTON ROAD</p>	<p>LOCALITY: MURUMBIDGEE, NSW PLAN NO. 174 2420</p>
SYMBOL	DESCRIPTION													
SLOPE CONSTRAINTS				FIGURE 3a										

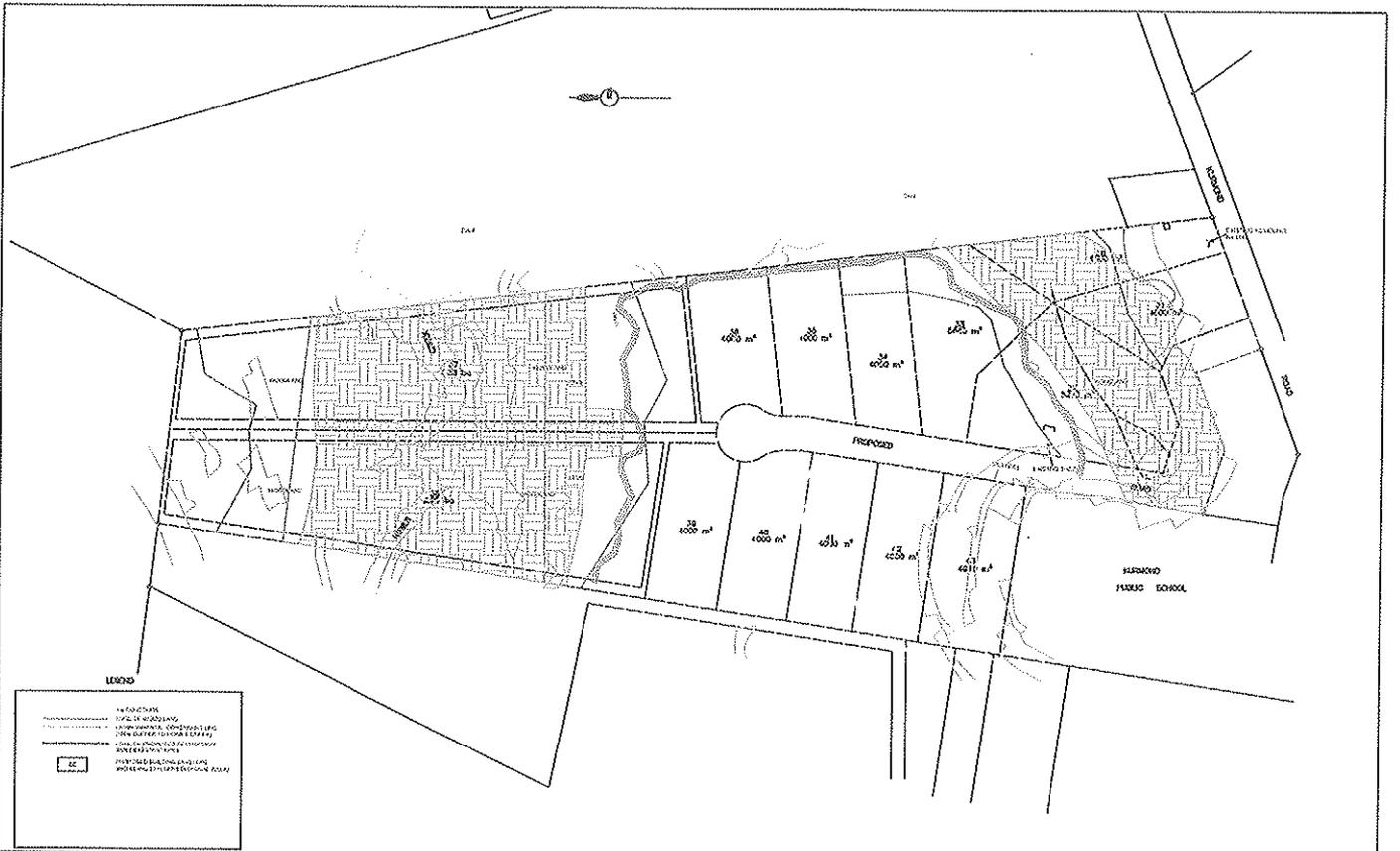


LEGEND

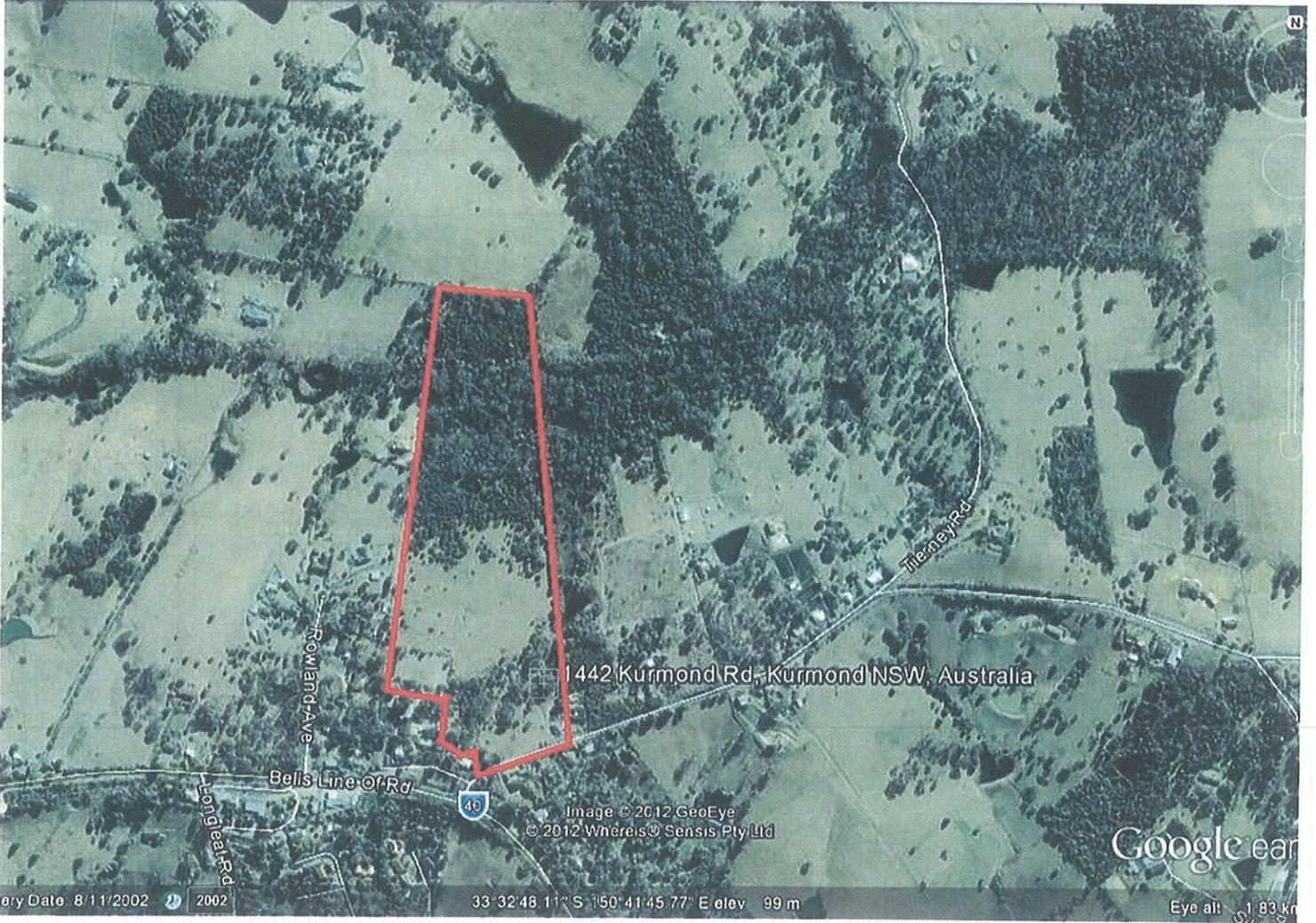
- PROPOSED
- EXISTING
- BOUNDARY
- ROAD
- WATERWAY
- FENCE
- POWERLINE
- TELEPHONE
- GAS
- WATER
- SEWER
- DRAINAGE
- EROSION CONTROL
- OTHER

SEPARATION TO WATERCOURSE

			 TOBY FIANDER & ASSOCIATES <i>Consulting Engineers & Architects</i> PO Box 2000, Castle Hill NSW 2158 Ph: (02) 8500 2000 Fax: (02) 8500 1122 Email: toby@tobyfiander.com.au	DATE: 04/12/2013 DESIGN: T.F. & S.R. DRAWN: S.R. SCALE: 1:2000 PLAN: 5021 A3	SURVEY: EN: N/A CONTROL: INTERNAL 1% DATUM: N/A	WASTEWATER CONSTRAINTS 1442 MURRUMBO ROAD, MURRUMBO NSW 2800, AUSTRALIA		ESQ/LETH: 828/800, 828/8 PLAN: 801, 874, 8200
WASTEWATER DISPOSAL CONSTRAINTS						DAM CONSTRAINTS PLAN		
ZONE	DATE	DESCRIPTION						

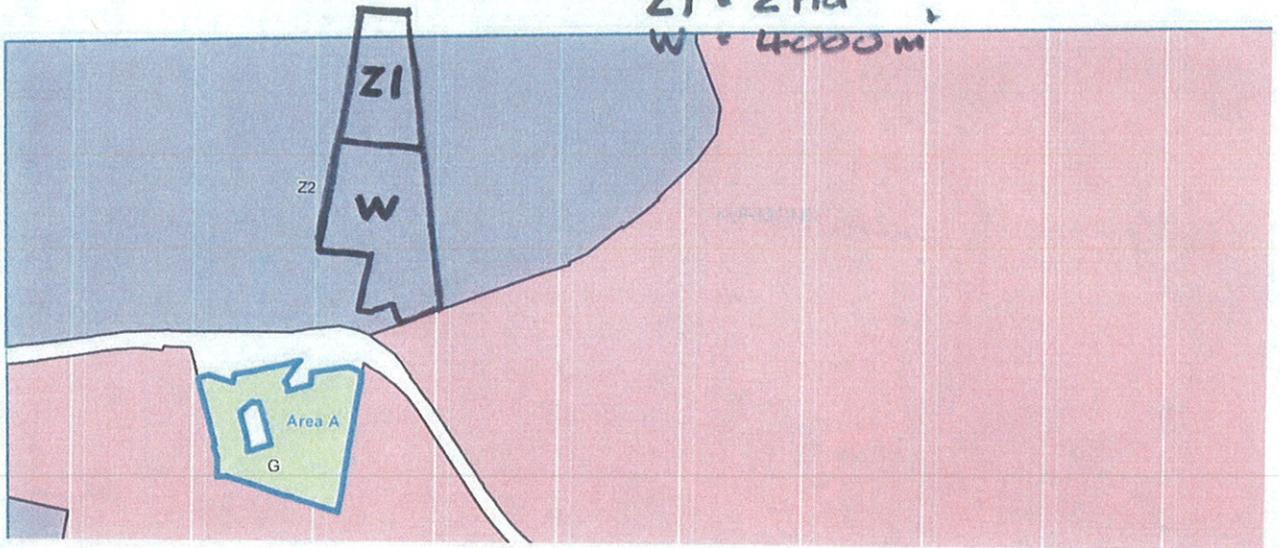


				TOBY FIANDER & ASSOCIATES Consulting Engineers & Surveyors 2/7 Nizam Road, CAULFIELD HILLS, VIC 3105 Ph: (03) 9450 3300 Fax: (03) 9454 1032 Mob: 0477 674 335	DATE: 03/12/2015 DESIGN: T.F. & S.R. DRAWN: S.R. SCALE: 1:2500 PLAN SIZE: A2	SURVEY BY: N/A CONTROL POINTS: 114 SOURCE: N/A	WASTEWATER CONSTRAINTS 1442 KUSUMOND ROAD, KUSUMOND FOR MODEL NUMBER		LOCALITY: PARISHADES, VIC PLAN NO: WTA 3605
ISSUE DATE DESCRIPTION							ENVIRONMENTAL LAND CONSTRAINTS PLAN		FIGURE 31

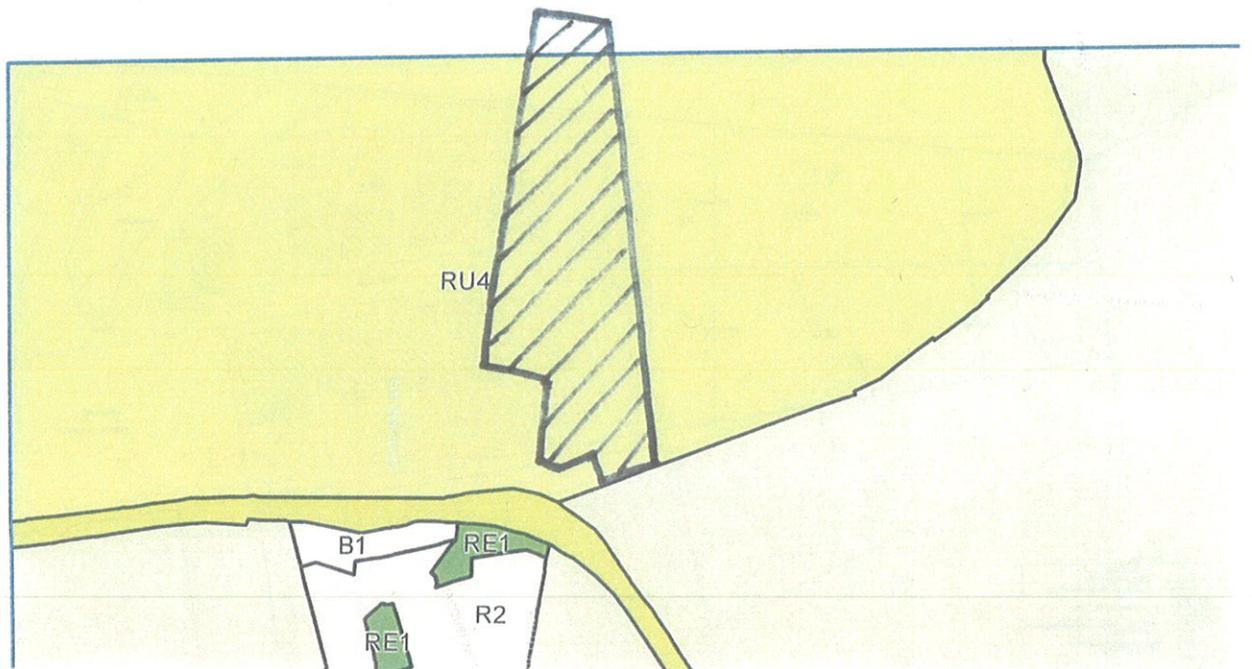


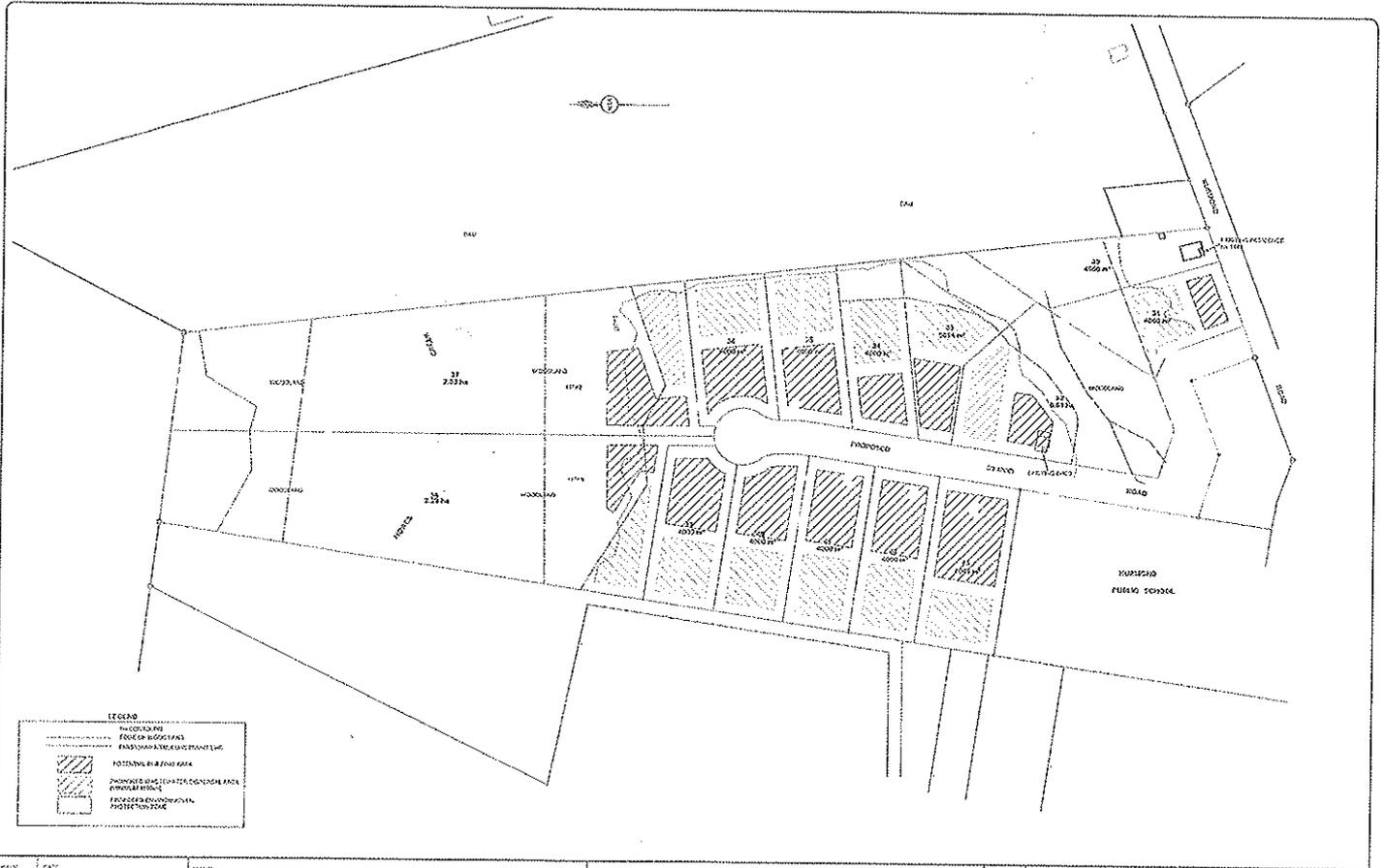
KURRAJONG

SUGGESTED LOT SIZE
MAP
Z1 = 2 ha
W = 4000 m



LEP ZONE MAP





LEGEND

	PROPOSED FENCE
	EXISTING BOUNDARY
	EXISTING ROAD
	PROPOSED LOT
	EXISTING LOT
	PROPOSED STRUCTURE

DATE	SCALE	PROJECT	CLIENT	DESIGNED BY	DATE	APPROVED BY	DATE
		1078 SQ FT OF LAND	MR. MICHAEL MANNING	PROPOSED SUBDIVISION OF 1078 SQ FT OF LAND			
				1442 BURNING ROAD			
				MURPHY ROAD			

LANDSCAPE SURVEYS

1040 BRIDGE VALLEY ROAD
MURFREESBORO, TN 37132
615-895-7115