

30 July, 2015

NSW Office of Water
Attn: Mr Jeremy Morice
By Email

Dear Jeremy,

RE: WATERCOURSE CLASSIFICATION – 45 NOONGAH STREET & 25 GWYNN HUGHES ROAD, BARGO, NSW

The purpose of this letter is to request confirmation from NSW Office of Water (NOW) of a watercourse classification completed and adopted vegetated riparian zone setbacks for the above site (Attachment A). The classification is required as part of a rezoning application to NSW Department of Planning and Environment (DoPE) for residential development.

Classification:

Three watercourses are located on the site, forming part of the Hornes Creek catchment which is a tributary of the Bargo (and Nepean) River. Watercourses are located and identified (as Watercourse A, B and C) in Attachment A. A description and classification assessment of each watercourse, in accordance with the Strahler system, is provided in Table 1. Classification is also provided diagrammatically in Attachment A.

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Table 1: Watercourse description and classification assessment.

Watercourse ID ¹	Description	Classification ²
A	Enters site from the south west and flows in a north east direction for approximately 100m before the confluence with Watercourse B ('Watercourse A1') and for 300m before the confluence with Watercourse C (Watercourse A2). Catchment primarily native bushland with some rural landuse. Channel incised approximately 0.5 – 1.0m deep and 0.3 – 0.5m wide with vertical banks. Evidence of undercutting and bank failure noted during site inspection. Channel flowing at the time of inspection. Water depth approximately 0.3 – 0.5m. Riparian zone along Watercourse A1 consists of a mixture of dense native and exotic species with both canopy and understorey. Along Watercourse A2, riparian zone is sparse, primarily consisting of a grass understorey and scattered eucalyptus trees.	3 rd order stream (both upstream and downstream of Watercourse B).
B	Enters site from the south and flows in a north direction for approximately 50m before joining Watercourse A. Catchment a mixture of native bushland, rural and agricultural landuse. Riparian zone consists of a mixture of dense native and exotic species with both canopy and understorey.	1 st order stream.
C	Enters site from the south east and flows in a north west to north direction for approximately 400m before exiting the site in the north east corner of 25 Gwynn Hughes Road. Watercourse A joins Watercourse C in central east portion of site. Upstream of the junction with Watercourse A ('Watercourse C1'): • The creek is wide and shallow with no defined channel and no significant vegetation in the riparian zone. Some areas of water ponding noted during site inspection. • Upstream catchment is primarily urban and rural landuse including several large farm dams. Downstream of the junction with Watercourse A ('Watercourse C2'): • The creek forms a defined channel with a riparian zone consisting of a mixture of native and exotic species. • Channel has vertical banks in some areas with evidence of undercutting and bank failure. • Channel flowing at the time of inspection with evidence of deeper pool areas and shallow riffles. Inspection of watercourse reach on 25 Gwynn Hughes Road not possible due to dense vegetation.	Watercourse C1: 3 rd order. Watercourse C2: 4 th order.

Notes:

¹ See Attachment A for watercourse location and topographic map with stream classification.

² Classification based on the Strahler system of ordering in accordance with NSW Office of Water (2012) *Guidelines for riparian corridors on waterfront land* and review of 1:25 000 topographic map.

Vegetated Riparian Zone (VRZ) Provisions

VRZ setback provisions are outlined in Table 2 and are based on watercourse classification assessment (Table 1), requirements of NSW Office of Water (2012) *Guidelines for riparian corridors on waterfront land* and a merits assessment of existing watercourse and riparian condition and value.

Table 2: Proposed VRZ setbacks for onsite watercourses.

Watercourse ID ¹	Corridor width (m)	Comments
A1 and A2	60m total plus channel width.	- In accordance with Table 1 of NOW (2012) requirements. - To be provided both up and downstream of Watercourse B.
B	20m total plus channel width.	- In accordance with Table 1 of NOW (2012) requirements.
C1	40m total plus channel width.	- Although being a 3rd order stream, based on a merits assessment of existing watercourse and riparian conditions a 40m VRZ plus channel width (reduced from 60m plus channel width from Table 1 of NOW, 2012) is considered appropriate. - VRZ setback is consistent with requirements for 1A Kader Street, Bargo (J. Morice, 21/10/2013) which is located upstream of the site and on the same watercourse.
C2	60m total plus channel width.	- Although being a 4th order stream, based on a merits assessment of existing watercourse and riparian conditions, plus VRZ provisions upstream (i.e. along Watercourse A and C) a 60m VRZ plus channel width (reduced from 80m plus channel width from Table 1 of NOW, 2012) is considered appropriate.

Notes:

¹ See Attachment A for watercourse location.

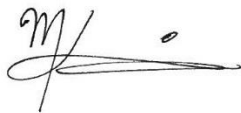
Controlled Activity Confirmation:

We request NOW confirmation of the following with respect to future site development:

- o Watercourse classification is as presented in Table 1.
- o Proposed corridor widths, as outlined in Table 2, are acceptable for the site.
- o Encroachment of 50% of the vegetated riparian zone (VRZ) is allowed provided the same area of encroachment is provided elsewhere along the watercourse.
- o All other activities to be conducted in accordance with NOW guidelines for riparian corridors on waterfront land.

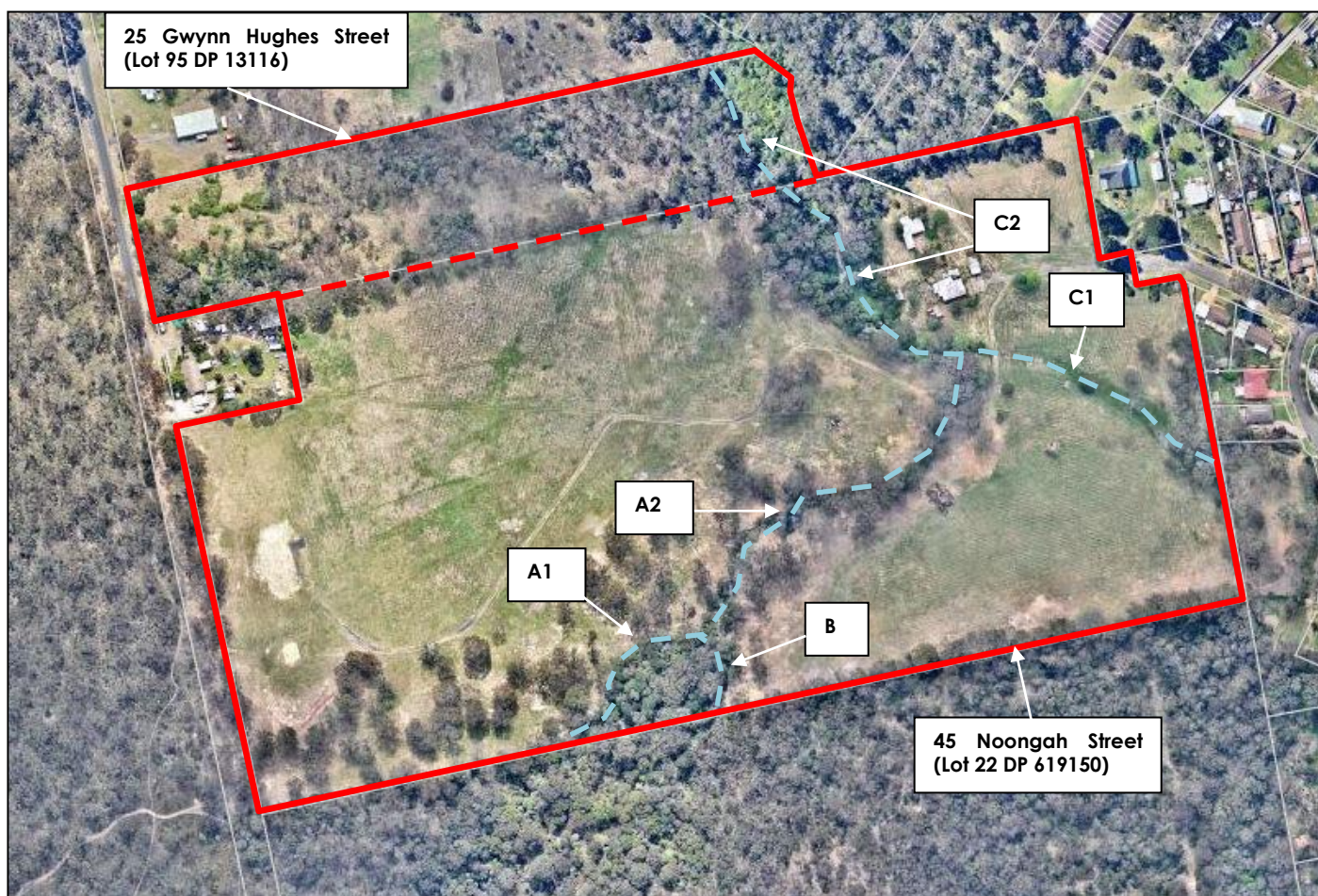
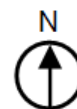
If you could confirm the above in writing at your earliest convenience, it would be much appreciated. If you require any further information please do not hesitate to contact the undersigned.

For and on behalf of
MARTENS & ASSOCIATES PTY LTD

A handwritten signature in black ink, appearing to be 'M Kovelis', with a stylized flourish at the end.

MEGAN KOVELIS
Environmental Scientist

ATTACHMENT A – SITE AERIAL AND WATERCOURSE CLASSIFICATION PLAN

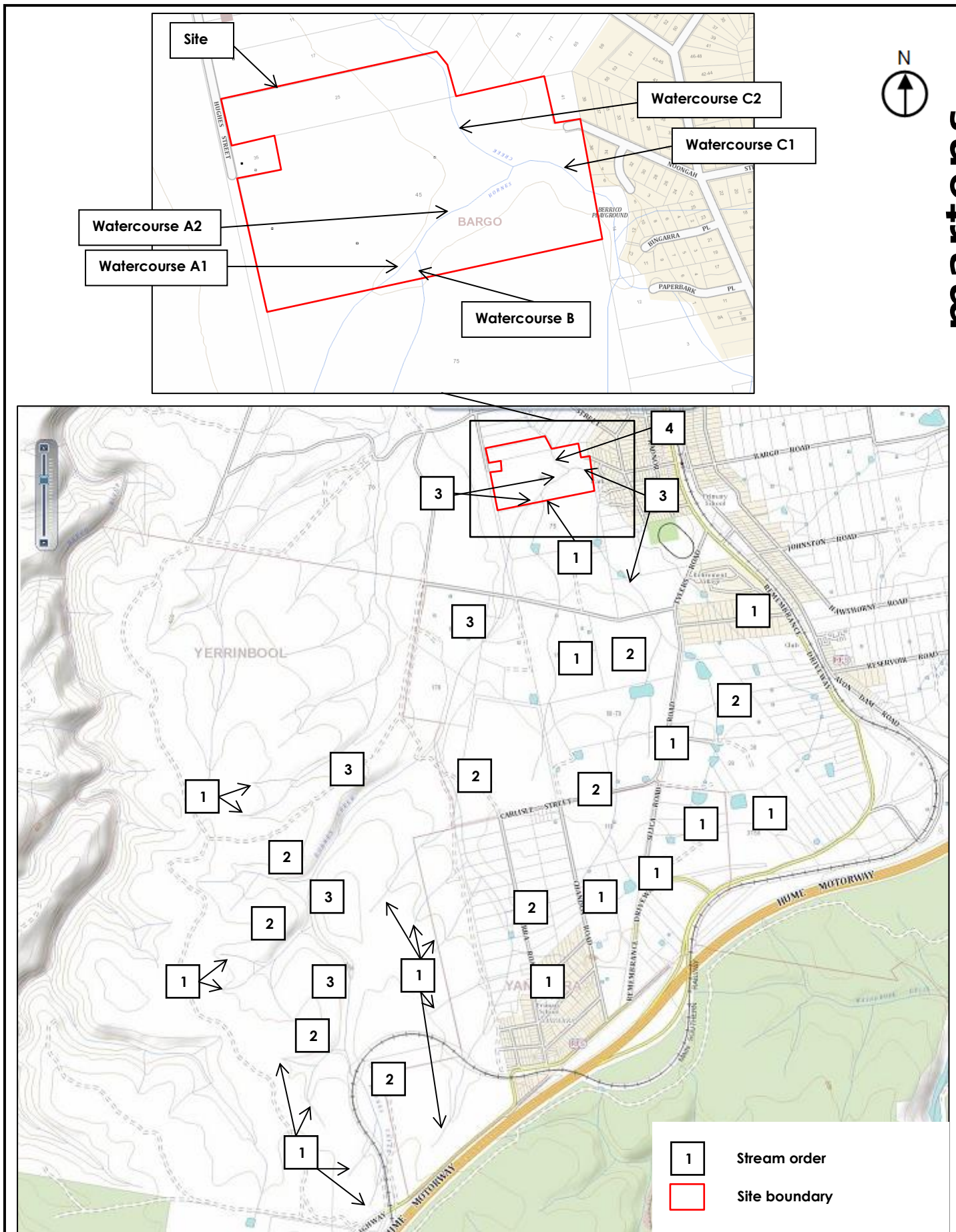


A Watercourse identification

Site boundary

NB: Watercourse locations as shown are approximate only and are subject to detailed survey at development application stage.

Martens & Associates Pty Ltd ABN 85 070 240 890		Environment Water Wastewater Geotechnical Civil Management	
Drawn:	MLK	Site Aerial Source: Nearmaps, 2014	Drawing No:
Approved:	JF		FIGURE 1
Date:	30.07.2015		
Scale:	NA		Job No: P1504816



Martens & Associates Pty Ltd ABN 85 070 240 890		Environment Water Wastewater Geotechnical Civil Management	
Drawn:	MLK	Watercourse Classification Assessment Source: Sixmaps, 2015	Drawing No:
Approved:	JF		FIGURE 2
Date:	30.07.2015		
Scale:	NA		Job No: P1504816