

Assyrian Schools Limited
C/- PMDL



Riparian Zone Management
Assessment: Proposed St Peter Paul
Assyrian Primary School;

Lots 2320 and 2321 DP 1223137,
17 and 19 Kosovich Place,
Cecil Park, NSW

ENVIRONMENTAL



WATER



WASTEWATER



GEOTECHNICAL



CIVIL



PROJECT
MANAGEMENT



P1705798JR03V03
August 2018

Copyright Statement

Martens & Associates Pty Ltd (Publisher) is the owner of the copyright subsisting in this publication. Other than as permitted by the Copyright Act and as outlined in the Terms of Engagement, no part of this report may be reprinted or reproduced or used in any form, copied or transmitted, by any electronic, mechanical, or by other means, now known or hereafter invented (including microcopying, photocopying, recording, recording tape or through electronic information storage and retrieval systems or otherwise), without the prior written permission of Martens & Associates Pty Ltd. Legal action will be taken against any breach of its copyright. This report is available only as book form unless specifically distributed by Martens & Associates in electronic form. No part of it is authorised to be copied, sold, distributed or offered in any other form.

The document may only be used for the purposes for which it was commissioned. Unauthorised use of this document in any form whatsoever is prohibited. Martens & Associates Pty Ltd assumes no responsibility where the document is used for purposes other than those for which it was commissioned.

Limitations Statement

The sole purpose of this report and the associated services performed by Martens & Associates Pty Ltd is to prepare a Riparian Zone Management Assessment in accordance with the scope of services set out in the contract / quotation between Martens & Associates Pty Ltd and Assyrian Schools Limited, C/- PMDL (hereafter known as the Client). That scope of works and services were defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to the site.

Martens & Associates Pty Ltd derived the data in this report primarily from a number of sources which may include for example site inspections, correspondence regarding the proposal, examination of records in the public domain, interviews with individuals with information about the site or the project, and field explorations conducted on the dates indicated. The passage of time, manifestation of latent conditions or impacts of future events may require further examination / exploration of the site and subsequent data analyses, together with a re-evaluation of the findings, observations and conclusions expressed in this report.


In preparing this report, Martens & Associates Pty Ltd may have relied upon and presumed accurate certain information (or absence thereof) relative to the site. Except as otherwise stated in the report, Martens & Associates Pty Ltd has not attempted to verify the accuracy or completeness of any such information (including for example survey data supplied by others).

The findings, observations and conclusions expressed by Martens & Associates Pty Ltd in this report are not, and should not be considered an opinion concerning the completeness and accuracy of information supplied by others. No warranty or guarantee, whether express or implied, is made with respect to the data reported or to the findings, observations and conclusions expressed in this report. Further, such data, findings and conclusions are based solely upon site conditions, information and drawings supplied by the Client etc. in existence at the time of the investigation.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between Martens & Associates Pty Ltd and the Client. Martens & Associates Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

© August 2018
Copyright Martens & Associates Pty Ltd
All Rights Reserved

Head Office
Suite 201, 20 George Street
Hornsby, NSW 2077, Australia
ACN 070 240 890 ABN 85 070 240 890
Phone: +61-2-9476-9999
Fax: +61-2-9476-8767
Email: mail@martens.com.au
Web: www.martens.com.au

Document and Distribution Status							
Author(s)		Reviewer(s)		Project Manager		Signature	
Carolyn Stanley		Terry Harvey Andrew Norris		Terry Harvey Andrew Norris			
Revision No.	Description	Status	Release Date	Document Location			
				File Copy	Assyrian Schools Limited	PMDL	
1	For Client Review	Draft	17/03/2017	1E,1P,1H	1P	1P	
2	For Client Review	Draft	8/03/2018	1E,1P,1H	1P	1P	
2	For Submission	Final	25/07/2018	1E,1P,1H	1P	1P	
3	For Submission	Final	28/08/2018	1E,1P,1H	1P	1P	

Distribution Types: F = Fax, H = hard copy, P = PDF document, E = Other electronic format. Digits indicate number of document copies.

All enquiries regarding this project are to be directed to the Project Manager.

Contents

1 SITE AND WATERWAY ANALYSIS	5
1.1 Overview	5
1.2 Site Description	5
1.3 Waterway Description	5
1.4 Review of Historical Aerials	6
1.5 Previous Council Consent	7
2 RIPARIAN ZONE MANAGEMENT.....	8
2.1 NSW Department of Industries - Water (DOI Water) Requirements	8
2.2 Fairfield Council Planning Instruments	9
2.3 Riparian Zone Management Recommendations	9
3 ATTACHMENT A - FIGURES.....	11
4 ATTACHMENT B – MAPPED RIPARIAN AND WATERFRONT CORRIDORS	16

1 Site and Waterway Analysis

1.1 Overview

This Riparian Zone Management Assessment has been prepared to provide advice to the Client regarding existing drainage and riparian zones and their management requirements in consideration of a proposed primary school development at part of 17 and 19 Kosovich Place, Cecil Park, NSW (the 'site'), being Lots 2320 and 2321 DP 1223137.

1.2 Site Description

The site, Lots 2320 and 2321 DP 1223137, Kosovich Place, Cecil Park, is within Fairfield City Council LGA. It is approximately 2.9 ha in area and bound by Kosovich Place to the north east, a church property to the north, an unnamed tributary of Ropes Creek to the west, Western Sydney Parklands to the south, and a rural property to the east.

The watercourse corridor near the western boundary is zoned E2 – Environmental Conservation, and the remainder of the site is zoned RU4 – Primary Production – Small Lots. The site was primarily used for rural purposes, primarily market gardening.

1.3 Waterway Description

A site walkover inspection was completed on 9 February, 2017, and assessed the onsite mapped watercourse channel form and riparian value. The watercourse has three distinct reaches (refer to Sheet PS02-AZ08, Attachment B). The following comments are made in relation to the onsite waterway characteristics and associated riparian lands.

- Ropes Creek is located approximately 50 to 100 m north of the site.
- An unnamed mapped tributary of Ropes Creek drains north through an online dam, near to the western boundary of the site.
- The tributary is ephemeral, with no water other than the dam at the time of inspection.
- According to Strahler, the watercourse as mapped on 1:25 000 topographic map is considered second order, receiving overflow from several farm dams located on upstream properties to the south.

- Reach 1 is a grassed shallow (0.5 m – 1.0 m) wide (approximately 4.0 m) depression with a single willow tree.
- Reach 2 is narrower (2.5 – 3.5 m) and more deeply incised (1.5 – 2.5 m), and is heavily vegetated with typha.
- The watercourse, as well as overland flow, drain to the online dam, which forms part of the north western site boundary. Vegetation within the dam consists of dense typha, and water hyacinth, which is considered an aggressive weed.
- Upstream of the site, the drainage line is heavily vegetated with willows, privet, and other invasive weed species.

Plates of the existing waterway environment are provided in Figure 4 (Attachment A).

The watercourse is characterised as a highly degraded rural drainage depression which presently maintains minimal riparian values.

1.4 Review of Historical Aerials

A review of historical aerial photography of the drainage areas in the western portion of Lot 2321 is summarised in Table 1. Historical aerial images are available in Attachment A (Figure 3).

Table 1: Summary of aerial photography.

Year	Historical Review
1955	Watercourse is visible adjacent to the lot's western boundary. An eroded open channel is visible extending south into the northern portion of Lot 2321 from Ropes Creek, which is located to the north of the site.
1965	Online dam has been constructed near the north western lot boundary. Eroded channel from Ropes Creek to the north extends across the north western portion of the site, and appears to connect to the watercourse south of the dam.
1978	Appears to be little change to the drainage area from previous image.
1986	Eroded drainage channel no longer appears to connect to watercourse south of the dam, indicating possible filling to south east of dam.
1994	Appears to be little change to the drainage area from previous image.
2007 (Google Earth Maps)	Eroded drainage channel no longer visible, and area now used for agricultural purposes (possible market gardens), indicating likely filling in the north western portion of the lot.

Year	Historical Review
2017 (Nearmap)	Appears to be little change to the drainage area from previous image, although lot no longer appears to be used for market garden purposes.

Review of historical aerals indicates that some filling likely occurred to the south of the site dam between 1965 and 1978, and within the north western portion of the site between 1994 and 2007, to mitigate eroded drainage channels, and provide additional useable agricultural lands.

1.5 Previous Council Consent

Council consent has been determined for DA 51.1/2016 Torrens Title Subdivision to Create Four (4) Non-Urban Residential Allotments and One (1) Residual Allotment, determined 13 July, 2016.

A condition of consent has been imposed on the property by Council *"to ensure that the subdivision does not prejudice the amenity of the local environment and/or achieve the objectives of the relevant planning instruments and statutory authorities"*, being Clause 21 Restriction on use of Land – Residue Lot: The creation of a Restriction on Use of Land over the proposed residue Lot 2321 in the following term:-

"No development within the meaning of the Environmental Planning and Assessment Act 1979, as amended, shall be effected upon the lot hereby burdened unless the unauthorised fill, potential contamination and flooding issues have been determined and resolved and satisfactory arrangements have been made with the relevant service authorities for the provision of water supply, electricity and telephone".

City of Fairfield Council is empowered to release, vary or modify the restriction covenant.

2 Riparian Zone Management

2.1 NSW Department of Industries - Water (DOI Water) Requirements

The NSW DOI Water (formerly NSW Office of Water) (2012) guidelines recommends vegetated riparian zone (VRZ) widths be adopted based on stream classification, and in accordance with the *Water Management Act 2000*. VRZ width determined for the unnamed mapped open channel (second order watercourse) located in the north western portion of Lot 2321, based on NSW DOI Water (2012) guidelines, Council's DCP (2013), a site inspection merits assessment, and stream classification is 20 m either side of the creek as measured from top of channel bank, and a total riparian corridor (RC) width of 40 m plus channel width.

NSW DOI Water (2012) guidelines enable certain works and activities that can occur on waterfront land and within the 20 m RCs for second order watercourses, including:

- RC offsetting for non-RC uses, such as asset protection zones as long as the offsets are provided in accordance with the averaging rule, where non-riparian corridor works or development may be undertaken within the outer 50% of a VRZ as long as this activity is offset by connecting an equivalent area to the riparian corridor elsewhere in the development site;
- Cycleways and paths;
- Detention basins, stormwater outlet structures and essential services; and
- Road crossings.

A Controlled Activity Approval (CAA), to be assessed by NSW DOI Water, will be required for any works within 40 m of the highest bank of the watercourse, including remedial contamination works.

Any required in-channel works shall use soft engineering methods and be completed in accordance with NSW DOI Water (2012) *Guidelines for Instream Works on Waterfront Land*.

A site plan showing VRZ width (20 m) and CAA width (40 m) from mapped watercourses is provided in Attachment B.

2.2 Fairfield Council Planning Instruments

Developments are to be assessed in accordance with the following Council planning instruments:

- *Fairfield Local Environmental Plan 2013* (FLEP 2013), which maps the watercourse and riparian areas in the western portion of Lot 2321 as:
 - Riparian lands and waterways; and
 - Terrestrial biodiversity – it is of note that the area so mapped is improved pasture and has no significant current riparian nor terrestrial biodiversity values (refer to Figure 2, Attachment A for mapping).

Proposed developments are to be considered in accordance with relevant objectives of Council's LEP 2013 Land Use Table, and Part 6 Additional local provisions – generally.

- The *Fairfield Citywide Development Control Plan 2016* (FC DCP 2016) supplements FLEP 2013 controls, in accordance with the *Environmental Planning and Assessment Act 1979*. The detailed developmental controls within the FC DCP 2016 will be used by Council to assess development applications, including assessment of developmental impacts to biodiversity, and riparian land and waterways.
- *Fairfield Biodiversity Strategy* (2012) provides a framework for the conservation and management of native animals, plants, habitat and ecological processes, and measures to enhance biodiversity in accordance with principles of ecologically sustainable development.

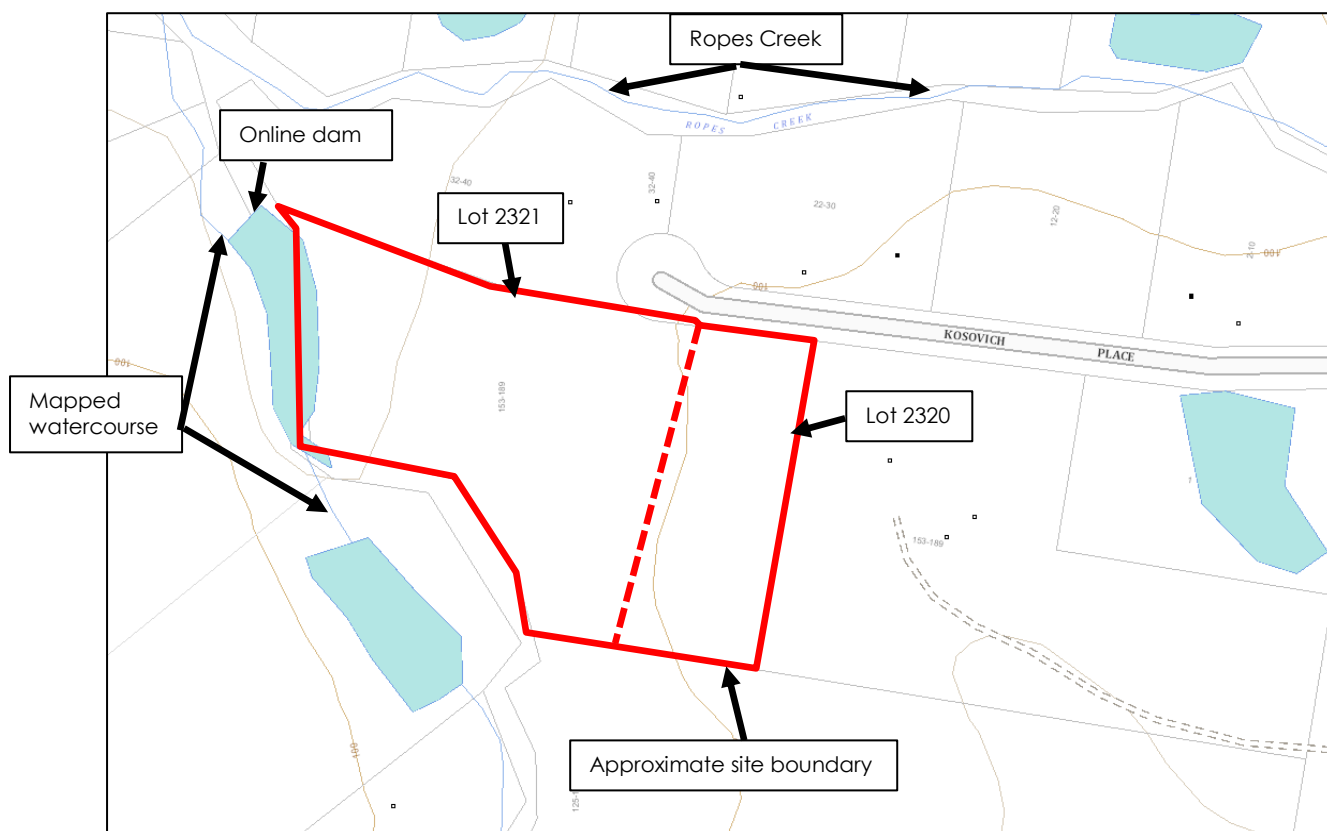
2.3 Riparian Zone Management Recommendations

The following recommendations are made in relation to riparian zone management:

- Review of historical aerals, past Council's conditions of consent, and results of recent investigations by Martens confirm some filling has occurred within 40 m of the mapped watercourse. This filling was to remediate significant erosion gullies formed between 1965 and 1994. Consent conditions for DA 51.1/2016 specify that all unauthorised site filling must be remediated prior to any lot development.

- Development should be restricted to areas outside the recommended VRZ areas except works and activities outlined by the Riparian Corridor Matrix in NSW DOI Water (2012) guidelines, or in accordance with the averaging rule.
- A CAA is required under Section 91 of the Water Management Act (2000) for all works within 40 m of a mapped watercourse.
- The development will be assessed under applicable Council planning instruments.
- A site survey which accurately identifies the entire watercourse 20 m VRZ, and 40 m waterfront land from top of bank should be undertaken, under the guidance of an appropriate environmental consultant, prior to final (Construction Certificate) design.

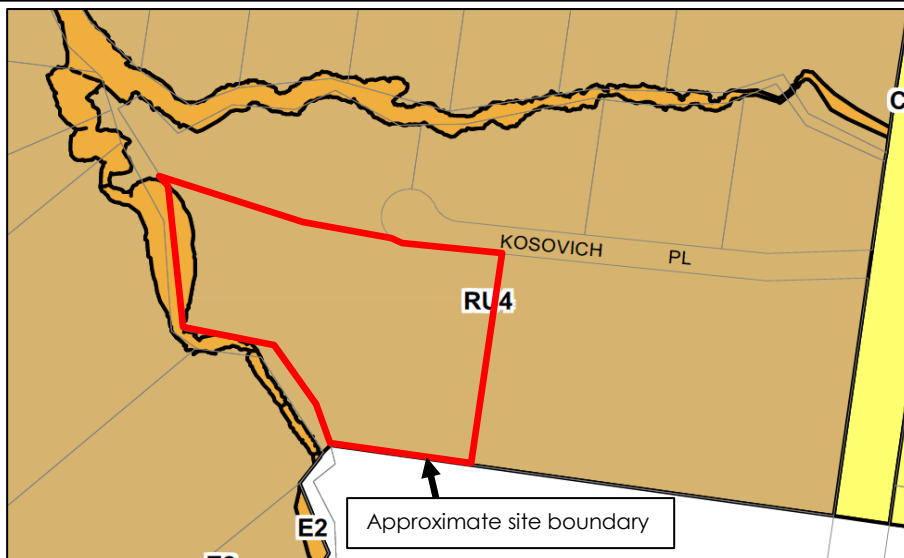
3 Attachment A - Figures



Martens & Associates Pty Ltd ABN 85 070 240 890		Environment Water Wastewater Geotechnical Civil Management	
Drawn:	CS	Site Location 17 and 19 Kosovich Place, Cecil Park, NSW Source: Nearmap, 2016 (top) and NSW SIX Viewer, 2017 (bottom)	FIGURE 1
Approved:	AN		
Date:	August 2018		
Scale:	NA		Job No: P1705798

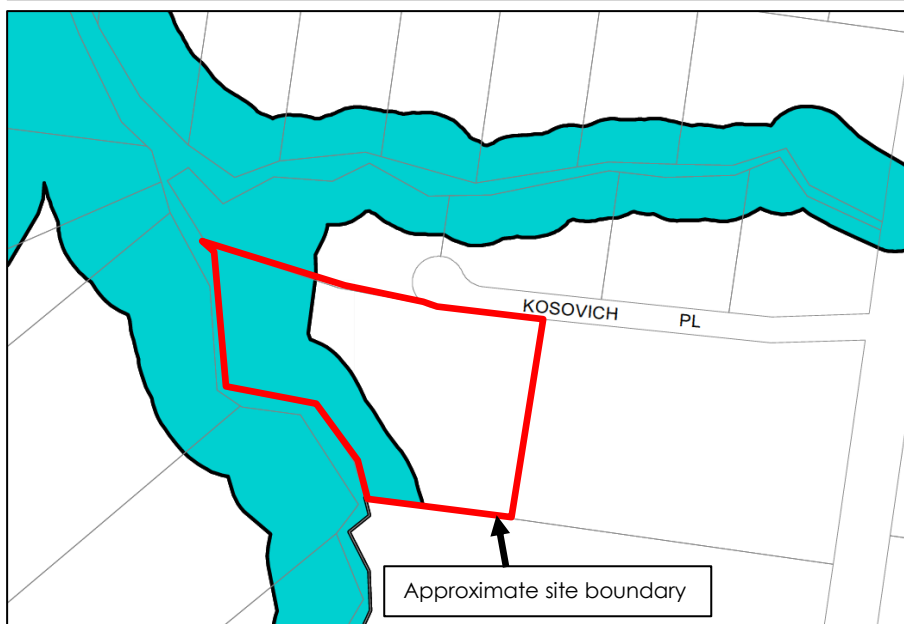
Fairfield Local Environmental Plan 2013
Land Zoning Map - Sheet LZN_004

Zone	
B1	Neighbourhood Centre
B2	Local Centre
C1	Commercial Core
C2	Mixed Use
D1	Business Development
D2	Enterprise Corridor
E1	Environmental Conservation
E2	Environmental Management
I1	General Industrial
I2	Light Industrial
R1	General Residential
R2	Low Density Residential
R3	Medium Density Residential
R4	High Density Residential
RE1	Public Recreation
RE2	Private Recreation
RU1	Primary Production
RU2	Rural Landscape
RU3	Primary Production Small Lots
RU4	Village
S1	Special Activities
S2	Infrastructure
S3	Tourist
W1	Recreational Waterways
WD	SEPP (Major Development) 2005
WS1	SEPP (Western Sydney Parklands) 2008
WS2	SEPP (Western Sydney Employment Area) 2008
CM	Deferred Matter
Cadastral	
Cadastral 2006/2012 © Fairfield City Council	



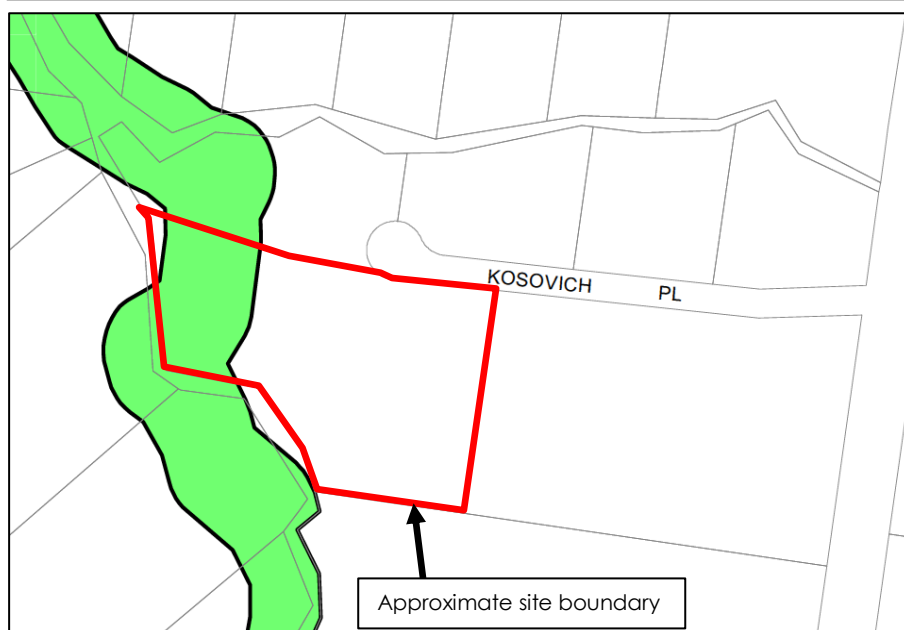
Fairfield Local Environmental Plan 2013
Riparian Lands and Watercourses Map - Sheet WCL_004

W1	Riparian Area
Cadastral	
Cadastral 2006/2012 © Fairfield City Council	

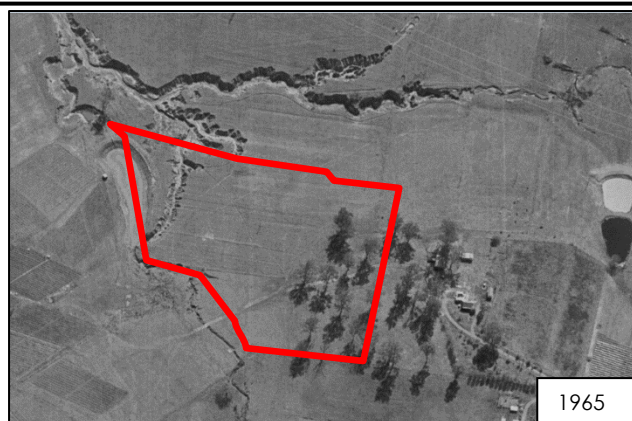


Fairfield Local Environmental Plan 2013
Terrestrial Biodiversity Map - Sheet BIO_004

B1	Biodiversity
Cadastral	
Cadastral 2006/2012 © Fairfield City Council	



Martens & Associates Pty Ltd ABN 85 070 240 890		Environment Water Wastewater Geotechnical Civil Management	
Drawn:	CS	Council Mapping 17 and 19 Kosovich Place, Cecil Park, NSW Source: Fairfield Local Environmental Plan (2013)	FIGURE 2
Approved:	AN		
Date:	August 2018		Job No: P1705798
Scale:	NA		



Martens & Associates Pty Ltd ABN 85 070 240 890		Environment Water Wastewater Geotechnical Civil Management	
Drawn:	CS	Historical Aerials 17 and 19 Kosovich Place, Cecil Park, NSW Source: NSW LPI (1955, 1965, 1978, 1994); Google Earth Maps (2007); Nearthmap (2017)	FIGURE 3
Approved:	AN		
Date:	August 2018		Job No: P1705798
Scale:	NA		



Plate 1: View of open channel facing upstream toward south western boundary.



Plate 2: View of open channel, to south of dam (facing north west).



Plate 3: View of eastern side of dam (facing downstream), in north western portion of lot.



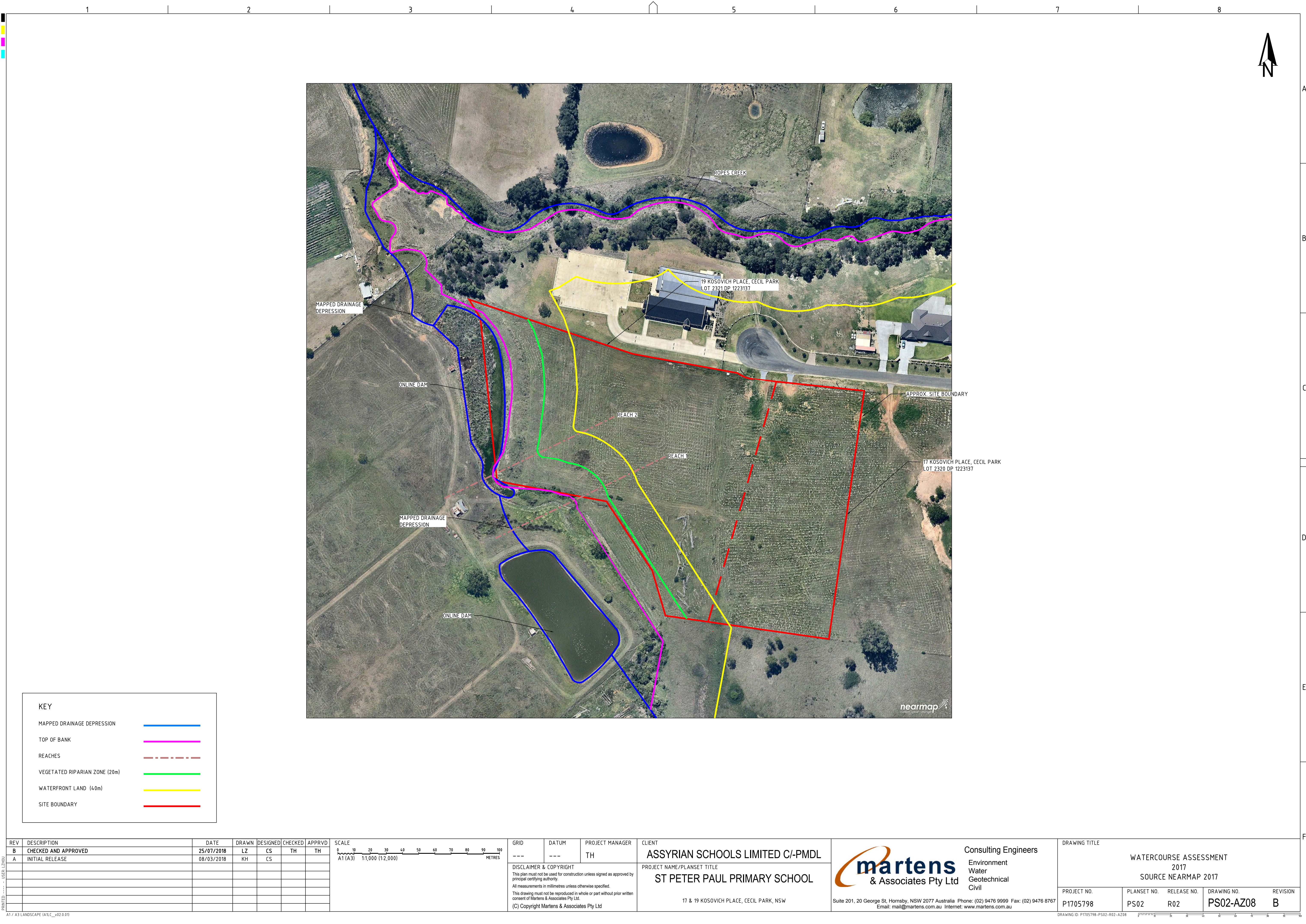
Plate 4: View of eastern side of dam (facing upstream), in north western portion of lot.



Plate 5: View of north western corner of lot, facing south east (upstream).

Martens & Associates Pty Ltd		ABN 85 070 240 890		Environment Water Wastewater Geotechnical Civil Management	
Drawn:	CS	Plates: Existing Waterway and Riparian Environment 17 and 19 Kosovich Place, Cecil Park, NSW Source: MA, 2017		FIGURE 4	
Approved:	AN				
Date:	August 2018				
Scale:	NA			Job No: P1705798	

4 Attachment B – Mapped Riparian and Waterfront Corridors



KEY	
MAPPED DRAINAGE DEPRESSION	—
TOP OF BANK	—
REACHES	- - -
VEGETATED RIPARIAN ZONE (20m)	—
WATERFRONT LAND (40m)	—
SITE BOUNDARY	—

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	CHECKED AND APPROVED	25/07/2018	LZ	CS	TH	TH
A	INITIAL RELEASE	08/03/2018	KH	CS		

SCALE
0 10 20 30 40 50 60 70 80 90 100 A1 (A3) 1:1,000 (1:2,000) METRES

GRID	DATUM	PROJECT MANAGER
---	---	TH
DISCLAIMER & COPYRIGHT This plan must not be used for construction unless signed as approved by principal certifying authority. All measurements in millimetres unless otherwise specified. This drawing must not be reproduced in whole or part without prior written consent of Martens & Associates Pty Ltd. (C) Copyright Martens & Associates Pty Ltd		

CLIENT
ASSYRIAN SCHOOLS LIMITED C/-PMDL
PROJECT NAME/PLANSET TITLE
ST PETER PAUL PRIMARY SCHOOL
17 & 19 KOSOVICH PLACE, CECIL PARK, NSW

 Consulting Engineers Environment Water Geotechnical Civil	Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: www.martens.com.au	

DRAWING TITLE				
WATERCOURSE ASSESSMENT 2017 SOURCE NEARMAP 2017				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1705798	PS02	R02	PS02-AZ08	B