



Civil



TaylorThomsonWhitting

Civil Engineering Design Report MLC Senior School Centre, Burwood

for MLC School

17 July 2014

131737 P

Taylor Thomson Whitting (NSW) Pty Ltd Consulting Engineers ACN 113 578 377
48 Chandos Street St Leonards NSW 2065 PO Box 738 Crows Nest 1585
T 61 2 9439 7288 F 61 2 9439 3146 ttwsyd@ttw.com.au www.ttw.com.au

This document is copyright and is the property of Taylor Thomson Whitting (NSW) Pty Ltd and must not be used without authorisation. © 2014 Taylor Thomson Whitting



TABLE OF CONTENTS

Section	Page
1.0 INTRODUCTION.....	3
2.0 EXISTING SITE	3
2.1 SITE LOCATION.....	3
2.2 SITE CONDITIONS.....	3
3.0 PROPOSED DEVELOPMENT	4
3.1 OVERVIEW OF PROPOSED DEVELOPMENT	4
3.2 PROPOSED CIVIL WORKS.....	4
4.0 STORMWATER	5
4.1 WATER SENSITIVE URBAN DESIGN.....	5
4.2 PIPED DRAINAGE.....	5
4.3 ON-SITE DETENTION.....	5
4.4 OVERLAND FLOW PATHS	6
4.5 FLOOD IMPACTS.....	6
4.6 STORMWATER QUALITY	6
5.0 BULK EARTHWORKS	6
6.0 PAVEMENTS AND ROADWORKS	6
7.0 OTHER SERVICES.....	6
8.0 CONCLUSION	7
APPENDIX A – CIVIL ENGINEERING CONCEPT PLANS	8

1.0 INTRODUCTION

TTW have been engaged by MLC School as consultants for the Civil Engineering works associated with the proposed development at MLC School in Park Road, Burwood. This report outlines the civil design for the site including considerations and criteria used during the design process.

2.0 EXISTING SITE

2.1 Site Location

The subject site is located in a predominantly residential area at 45 Park Road, Burwood. It is bounded by Park Road to the east, Rowley Street to the south and Grantham Street to the west. Existing residential properties are located immediately north of the subject site.



Figure 1 – Aerial Photograph of Site (nearmap, 27/11/13)

2.2 Site Conditions

The site of the proposed redevelopment works covers an area of approximately 6,500m² and contains a number of existing school buildings and courtyards, as well as two houses at its northern end.

The existing site falls gently from west to east at a grade of approximately 5%. There are several lawn areas and trees spread around the site amongst the buildings. A paved amphitheatre is located immediately to the south of the tuckshop building.

An existing fence spans the length of the site frontage along Park Road.

3.0 PROPOSED DEVELOPMENT

3.1 Overview of Proposed Development

The proposed redevelopment of the site includes a new three-level Learning Centre, a single basement level underneath, extensions to the existing middle school building, an art centre, renovations to the ILC building and associated landscape works. Several existing buildings on the site will be demolished to provide the required space.

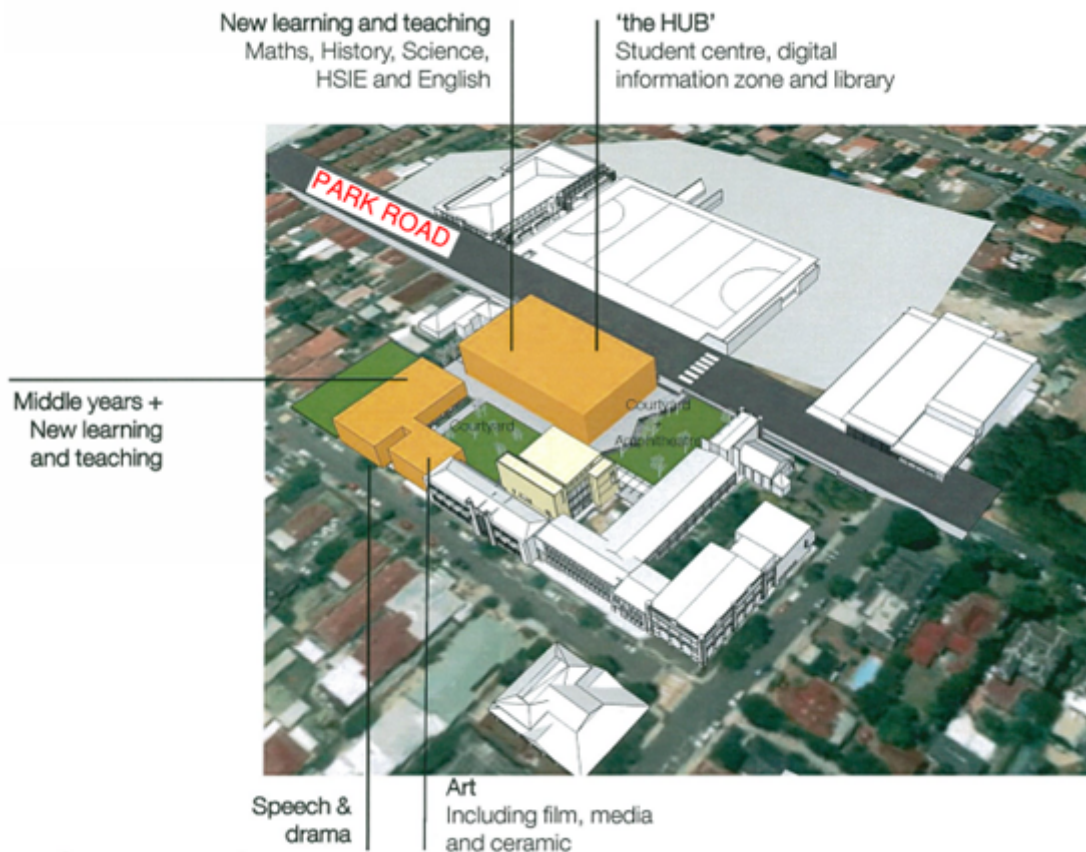


Figure 2 – Proposed Stage 1 Development (BVN Architects, October 2013)

3.2 Proposed Civil Works

The proposed civil works include stormwater drainage, external site levels and bulk earthworks associated with the basement excavation. They will be designed in accordance with relevant Burwood Council planning and design documents and approvals including the following:

- Burwood Council Stormwater Management Code
- Burwood Council Development Control Plan

The civil work will also be compliant with relevant Australian Standards and accepted engineering practice.

4.0 STORMWATER

The design of the stormwater system for the proposed development will be in accordance with the Burwood Council Stormwater Management Code, Australian Rainfall and Runoff (AR&R, 1987), AS3500.3 – National Plumbing and Drainage Code Part 3 – Stormwater Drainage, and accepted engineering practice.

Runoff from buildings will be designed and documented by the hydraulic engineer in accordance with AS3500.3 – National Plumbing and Drainage Code Part 3 – Stormwater Drainage.

4.1 Water Sensitive Urban Design

In reference to NSW Planning and Environment Department Secretary's Environmental Assessment Requirements (SEARs) Key Issue 10 – Utilities and Water Sensitive Urban Design (WSUD);

Stormwater will be collected from roof and hard stand areas and directed to water reuse tanks and the Onsite Stormwater Detention (OSD) tank via roof gutters, pits and pipes. Prior to reuse, water will be cleaned by the incorporation of devices such as first flush, gross pollutant, oil and silt arrestors and trash screens into the stormwater system. Potential nutrients, gross pollutants, oil and silt will be removed from the collected water via pollutant control devices.

The incorporation of WSUD systems such as bioretention swales, retention basins, pervious paving and other practices, into the stormwater design are limited due to site area constraints.

Temporary WSUD system devices; basins, swales, etc. will used during construction - refer section 4.6 for more information on stormwater quality control.

4.2 Piped Drainage

The piped stormwater drainage system will be designed to convey the 20 year ARI flows from the development.

Stormwater flows from the subject site are currently discharged into a piped system at a grated pit adjacent to the pedestrian entrance from Park Road. A 375mm diameter pipe flows east from this pit, under Park Road and through the MLC property (pool/tennis court complex) to the east, eventually connecting into an existing Council gully pit on Britannia Ave. Final design to be coordinated with Burwood Council engineers.

Refer to Drawing SKC01 in **Appendix A** for the Stormwater Drainage Concept Plan for the site.

4.3 On-Site Detention

According to Clause 8.2 of the Burwood Council Stormwater Management Code, new developments require On-Site Detention (OSD) to limit discharges to pre-development conditions for all rainfall events up to the 100 year ARI.

Based on the latest site layout, the increase in impervious area will be approximately 500m². The resulting mass-curve analysis has identified that the required volume of OSD storage will be approximately 34m³.

The tank will be positioned underneath the external paved area located immediately south of

the new Learning Centre building. This would allow a gravity connection to the proposed stormwater pit at the kerb of Park Road.

4.4 Overland Flow Paths

The development lies at the top end of the St Lukes catchment. Overland flow from the school site flows east and northeast into the Park Road road reserve. It will be necessary to preserve any existing overland flow paths through the site.

External levels are designed to direct runoff away from the building entrances.

4.5 Flood Impacts

The existing and proposed levels of the site (in the vicinity of 26m AHD) are above the Probable Maximum Flood (PMF). There are no known local flooding issues on the site.

4.6 Stormwater Quality

The Burwood Council Stormwater Management Code does not specify any stormwater quality control standards for developments other than where there is the potential for contamination by specific pollutants. Treatment requirements are at the discretion of Council.

In accordance with NSW Department of Conservation and Land Management (CALM), *Urban Erosion and Sediment Control Handbook*, an Erosion and Sedimentation Control Plan has been prepared to identify suitable measures to prevent the release of sediment and other pollutants to the downstream receiving environment during construction.

5.0 BULK EARTHWORKS

A geotechnical investigation and report has been completed by Coffey Geotechnics.

Excavation for the proposed basement of the Learning Centre at SRL10.80m AHD may involve cuts of up to 5.0m depth and require shoring walls adjacent to Park Road.

There is no Potential Acid Sulfate Soil (PASS) for the site.

6.0 PAVEMENTS AND ROADWORKS

Pavements will be provided around the development to provide pedestrian linkages between buildings, recreational zones and access to and from Park Road. The design of these areas will ensure access from existing buildings and surfaces to the new development is provided at appropriate levels and grades.

No additional vehicle access or parking is proposed for the new development. However, replacement kerb and channel will need to be provided along the western side of Park Road for the length of the stormwater connection.

7.0 OTHER SERVICES

A Dial Before You Dig search has identified that Telstra infrastructure is present in the western verge of Park Road..

An existing 150mm diameter Cast Iron Cement Lined (CICL) watermain is also located within Park Road and a 225mm Vitrified Clay (VC) sewer is located through the centre of the site. Connection and/or diversion of these services will be coordinated by the hydraulic engineer.

8.0 CONCLUSION

The civil engineering design will be undertaken in accordance with Burwood Council requirements.

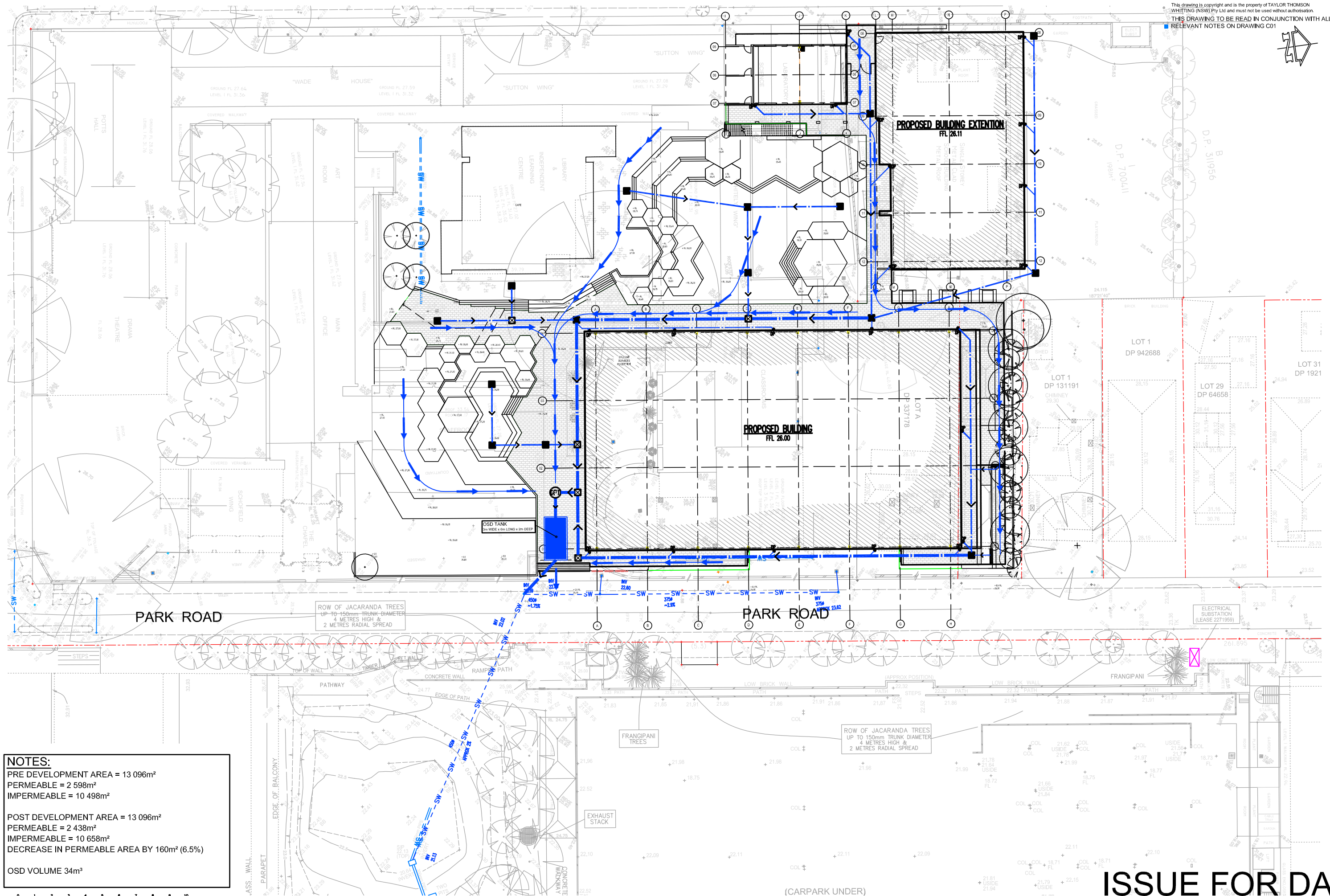
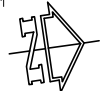
Prepared by:
**TAYLOR THOMSON WHITTING
(NSW) PTY LTD**



**Kelvin Holey
Senior Civil Engineer**

P:\2013\1317\131737\Reports\TTW\Civil\20140717 Civil Design Report_kh.docx

APPENDIX A – CIVIL ENGINEERING CONCEPT PLANS



Filename: C02.dwg - ISSD: Model - Plot File Created: Jul 08, 2014 - 4:17pm

NOTES:
 PRE DEVELOPMENT AREA = 13 096m²
 PERMEABLE = 2 598m²
 IMPERMEABLE = 10 498m²
 POST DEVELOPMENT AREA = 13 096m²
 PERMEABLE = 2 438m²
 IMPERMEABLE = 10 658m²
 DECREASE IN PERMEABLE AREA BY 160m² (6.5%)
 OSD VOLUME 34m³

ISSUE FOR DA

A1 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
P3	ISSUE FOR DA	KH	KH	08.07.14					
P2	ISSUE FOR DA	KH	MS	03.03.14					
P1	ISSUE FOR DA	KH	MS	26.02.14					

Architect
BVN DONOVAN HILL
 255 PITT STREET SYDNEY
 PO BOX N646 GROSVENOR PLACE NSW 1220
 TEL: +61 2 8297 7200
 FAX: +61 2 8297 7299
 SYDNEY@BVN.COM.AU

TaylorThomsonWhitting
 Consulting Engineers
 48 Chandos Street St Leonards NSW 2065
 T: +61 2 9439 7288 F: +61 2 9439 3146 ttwsgo@ttw.com.au
 TaylorThomsonWhitting (NSW) Pty Ltd A.C.N. 113 576 377

Project
**MLC SCHOOL
 NEW LEARNING BUILDING**

Sheet Subject
OVERALL SITEWORKS PLAN

Scale: A1
 1:250
 Drawn: MS
 Authorised:
 Job No: 131737
 Drawing No: C02
 Revision: P3
 Plot File Created: Jul 08, 2014 - 4:17pm

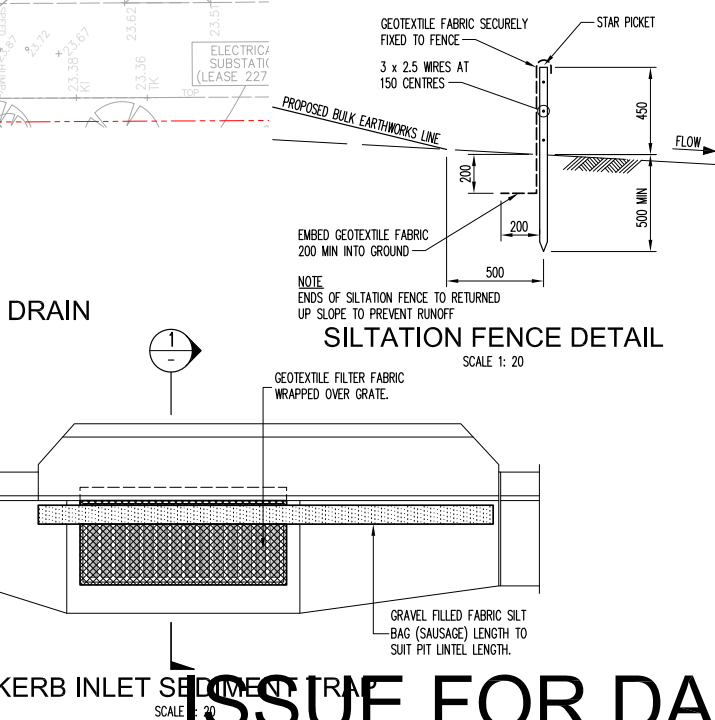
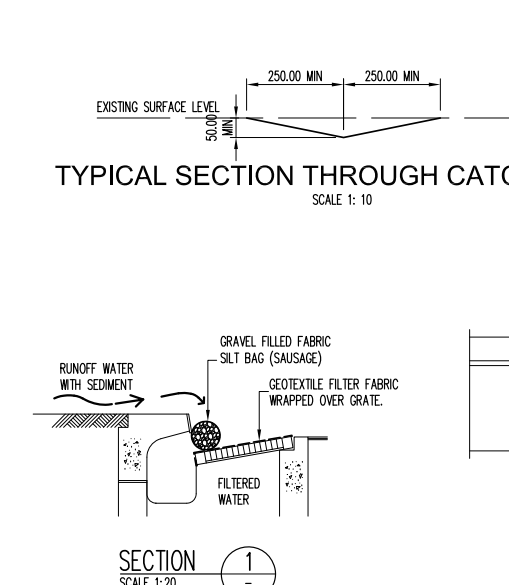
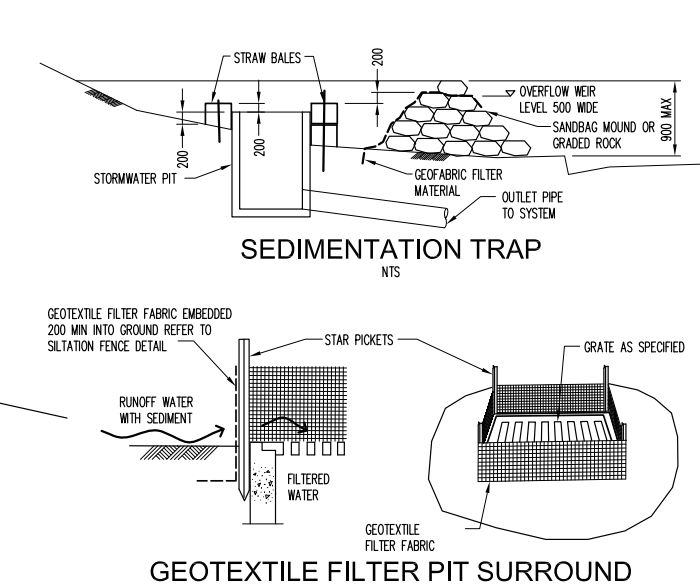
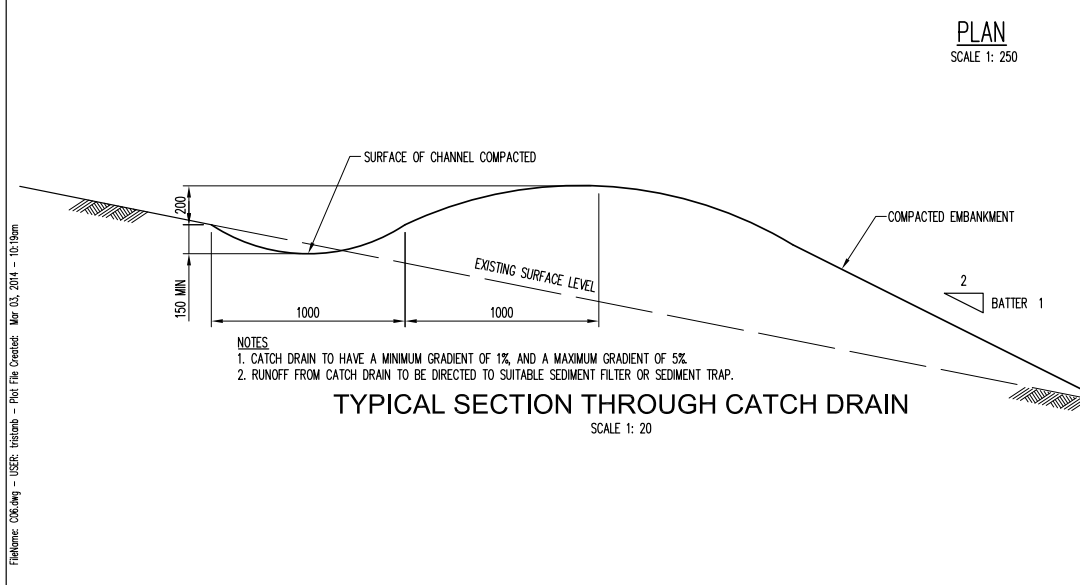
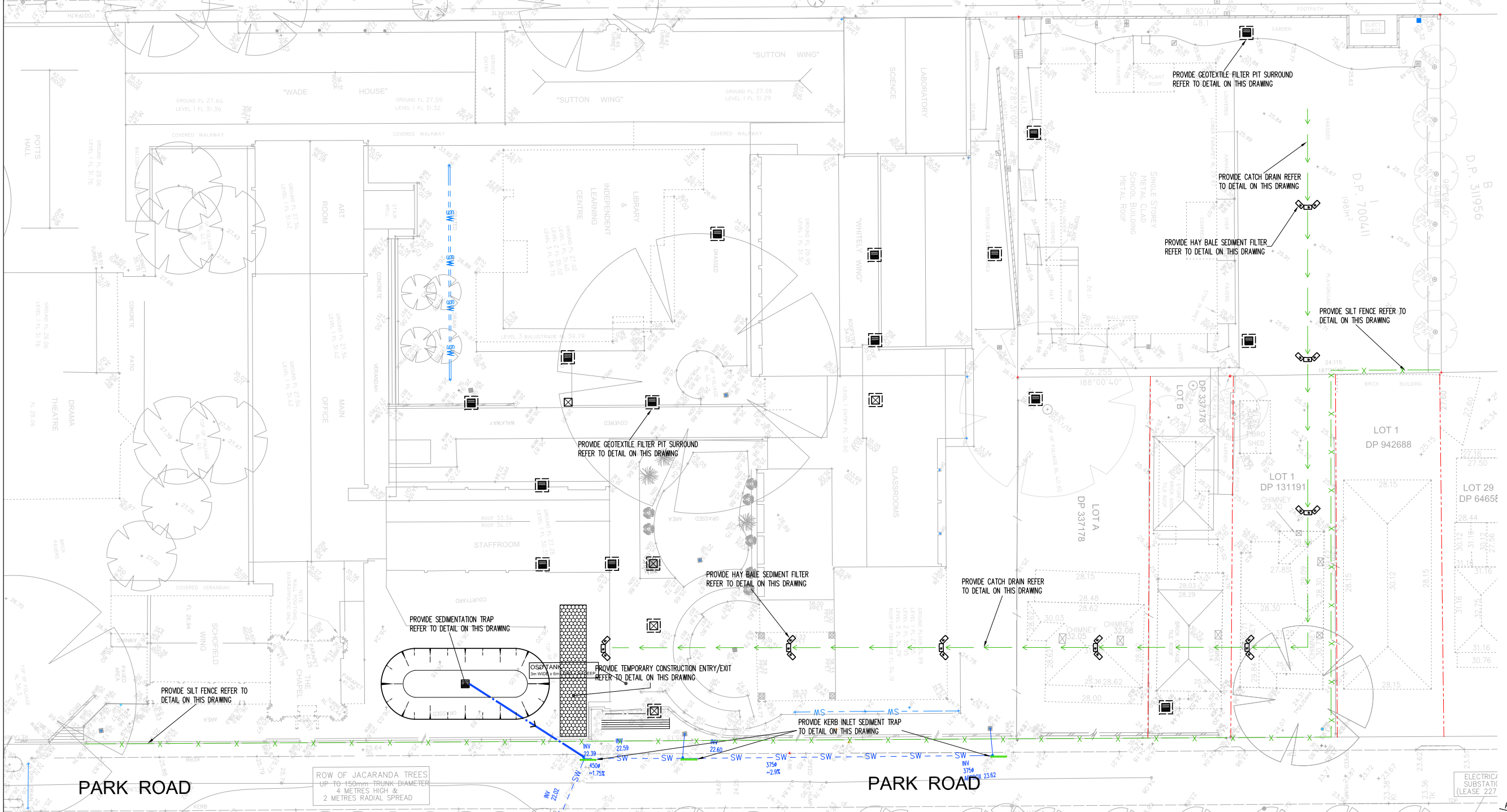
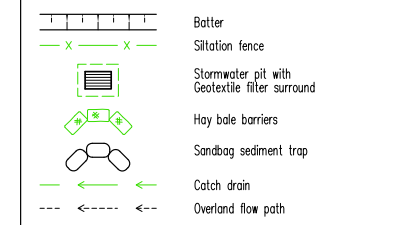
EROSION AND SEDIMENT CONTROL NOTES

- All work shall be generally carried out in accordance with:
 - Local authority requirements,
 - EPA - Pollution control manual for urban stormwater,
 - LANDCOM NSW - Managing Urban Stormwater, Soils and Construction ("Blue Book")
- Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities. The erosion and sediment control plan shall be implemented and adapted to meet the varying situations as work on site progresses.
- Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
- When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
- Minimise the area of site being disturbed at any one time.
- Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
- All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
- Control water from upstream of the site such that it does not enter the disturbed site.
- All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
- All vehicles leaving the site shall be cleaned and inspected before leaving.
- Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
- Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

- Prior to commencement of excavation the following soil management devices must be installed.
 - Construct silt fences below the site and across all potential runoff sites.
 - Construct temporary construction entry/exit and divert runoff to suitable control systems.
 - Construct measures to divert upstream flows into existing stormwater system.
 - Construct sedimentation traps/basin including outlet control and overflow.
 - Construct turf lined swales.
 - Provide sandbag sediment traps around of existing pits.
 - Construct geotextile filter pit surround around all proposed pits as they are constructed.
- On completion of pavement provide sand bag kerb inlet sediment traps around pits.
- Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

EROSION AND SEDIMENT CONTROL LEGEND



Rev	Description	Eng	Draft	Date
P2	ISSUE FOR DA	KH	MS	03.03.14
P1	ISSUE FOR DA	KH	MS	26.02.12

Architect
BVN DONOVAN HILL
 255 PITT STREET SYDNEY
 PO BOX N646 GROSVENOR PLACE NSW 1220
 TEL: +61 2 8297 7200
 FAX: +61 2 8297 7299
 SYDNEY@BVN.COM.AU

TaylorThomsonWhitting
 Consulting Engineers
 48 Chandos Street St Leonards NSW 2065
 T: +61 2 9439 7288 F: +61 2 9439 3146 ttw@tdw.com.au
 Taylor Thomson Whitting (NSW) Pty Ltd A.C.N. 113 578 377

Project
MLC SCHOOL
NEW LEARNING BUILDING

Sheet Subject
EROSION/SEDIMENT CONTROL
PLAN

Scale: A1
 1:250

Job No
131737

Drawn
 MS

Authorised

Drawing No
C06

Revision
P2

Plot File Created: Mar 03, 2014 - 10:13am

ISSUE FOR DA