

This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach copyright legislation

REPORT 22915, APRIL 2018

**SITE BASED STORMWATER
MANAGEMENT PLAN**

FOR PLANNING APPLICATION PURPOSES

**AT 5 MILL ROAD
LARA**

**PREPARED FOR: APCO Service Stations Pty Ltd
371 Thompson Road
NORTH GEELONG VIC 3215**

REPORT NO.: 22915

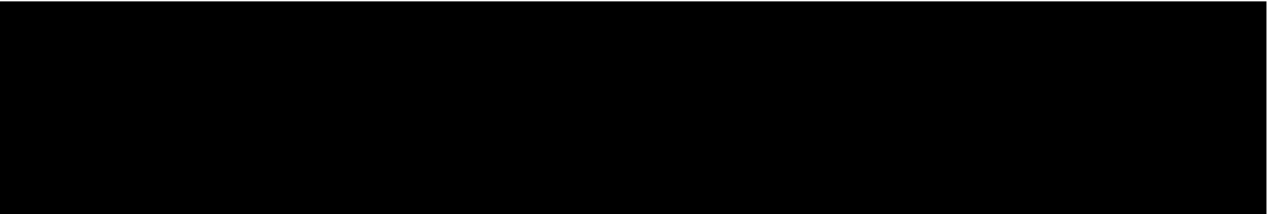
APRIL 2018

Office use only:

Issued to:

No. Copies:

Date:





REPORT 22915, APRIL 2018

CONTENTS

- 1.0 INTRODUCTION
- 2.0 SITE CHARACTERISTICS
- 3.0 STORMWATER DETENTION
- 4.0 SPILL CONTROL
- 5.0 WATER QUALITY MANAGEMENT
- 6.0 CONCLUSION

APPENDIX A – Concept Civil Works for Planning Approval



REPORT 22915, APRIL 2018

STORMWATER MANAGEMENT PLAN AT 5 MILL ROAD, LARA REFERENCE NO. 22880

1.0 INTRODUCTION

[REDACTED] has been commissioned by APCO Pty Ltd to establish a Preliminary Site Based Stormwater Management Plan (SBSMP) for the development at 5 Mill Road, Lara. It is proposed to extend an existing service station shop/café with new access road, carparking and associated landscaping works.

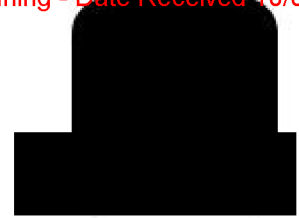
This report has been developed for planning application purposes for this site. The report discusses the pre-existing and proposed conditions, and provides options for management of stormwater discharge on the site.

The extent of upgrade works is subject to review and approval by council. The final design of the water quality treatment system shall be undertaken during the design phase of the project, in accordance with the planning conditions outlined in the planning permit.

A planning permit has not yet been granted, and therefore the planning conditions have not yet been outlined. Typical planning requirements related to stormwater management would usually include:

1. *Collect all stormwater runoff and discharge to the legal point of discharge.*
2. *Runoff from hardstand areas shall be treated to achieve current best practice pollutant removal targets by the connection to an appropriate Water Treatment Facility.*
- 3a. *Site run-off shall be limited to equivalent pre-development levels for rainfall events for up to and including the critical 10 year ARI event; or*
- 3b. *The site stormwater discharge is not increased by the proposed development. An appropriate on site detention system designed in accordance with the Infrastructure Design Manual may be required.*

Further discussion with council is required to determine if upgrade works are required to achieve best practice targets for stormwater detention and water quality for both the existing and new facilities.



REPORT 22915, APRIL 2018

2.0 SITE CHARACTERISTICS

The existing service station site is located on the corner of Mill Road and McClelland Avenue, Lara. A site plan is shown on Figure 1 & 2. The existing site is leased off VicTrack and currently occupies an area of approximately 3600m².

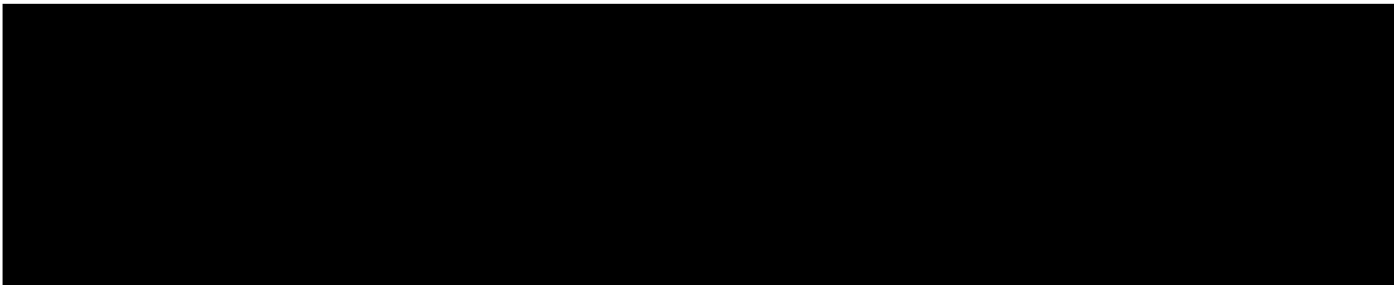
It is proposed to lease an additional 420m² of the adjoining vacant VicTrack land to the east of the site.

A new service station shop is proposed to be constructed to replace the existing shop. The fuel canopy, pumps and pavement are proposed to remain unchanged. Part of the carwash is proposed to be removed, and a new access driveway is proposed for drive-through coffee to the rear of the shop.

The existing site levels vary from RL14.50m to RL14.00m AHD, with the lowest point at the west of the site.

The stormwater generated from existing conditions includes overland flow from paved areas and roof areas of the service station, discharging to a council stormwater pit in Mill Road. The roof of the carwash discharges to a rainwater tank for reuse in the carwash.

Currently, there appears to be no stormwater detention, water quality treatment or hydrocarbon capture devices on the site. An oil-water separator is provided to the carwash prior to discharge to the sewer.





REPORT 22915, APRIL 2018

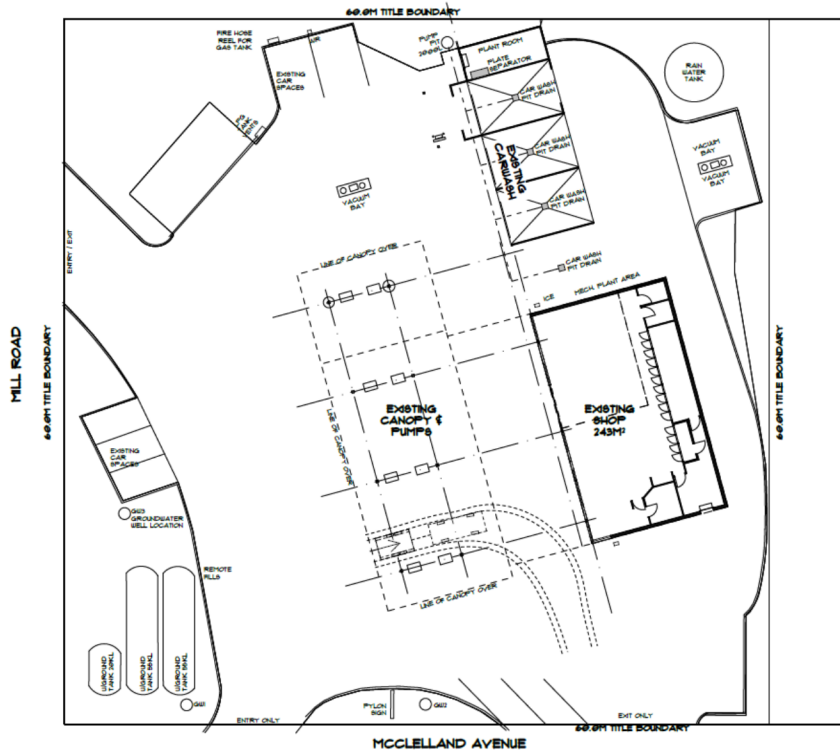


Figure 1: Existing Site Plan

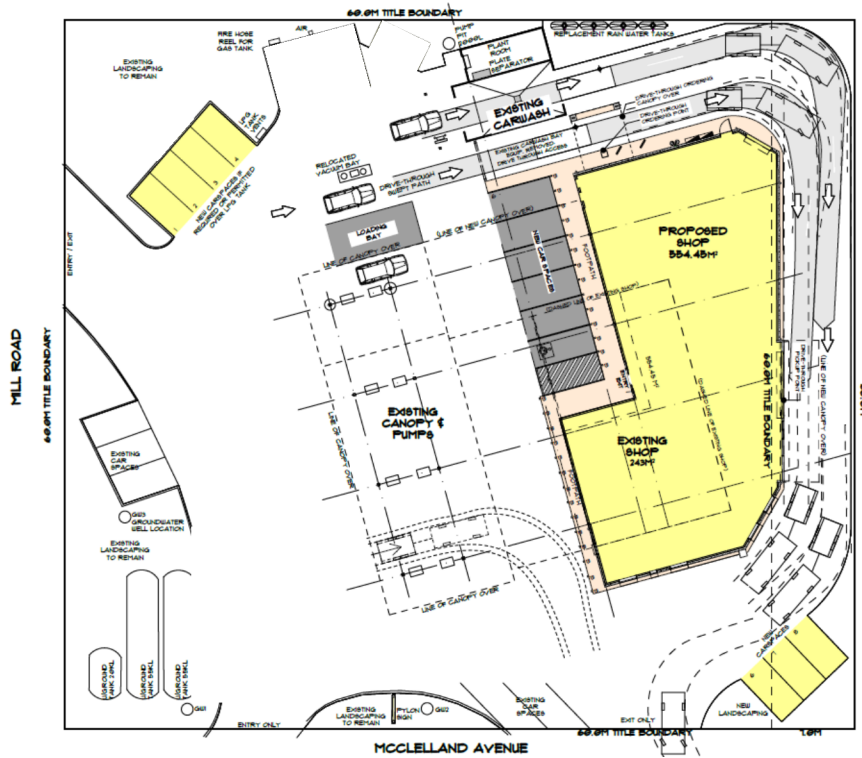


Figure 2: Proposed Development Plan



REPORT 22915, APRIL 2018

3.0 STORMWATER DETENTION

Preliminary assessment has been undertaken to determine the stormwater detention requirements for the development. The minimum requirements for detention are subject to review and approval by Council.

Reference to the Infrastructure Design Manual (2017) for on-site detention systems for commercial developments requires a storage volume 56.3 cubic metres of (14L/m²). Further discussion is required as to whether this volume is required, considering:

- The existing development currently has limited detention and many parts of the development are unchanged.
- There is limited room to be able to locate a 56m³ underground tank system at the end of the line of the existing stormwater system.
- There is increased cost and risk for installing and maintaining pump systems to these underground tanks.

It is proposed that the roof areas of the new shop, canopy and carwash are directed towards rainwater tanks (minimum 25 cu.m); to be used for reuse for toilet flushing and the carwash, and for nominated stormwater detention (9 cu.m).

Whilst part of the site will remain uncontrolled, the proposed works will limit the site discharge to current existing conditions for up to a 100 year storm event. Limiting the site to pre-development levels may not be considered necessary due to the existing development already at this site.

A similar solution has previously been undertaken at an existing APCO service station site at 343 Thompson Road, North Geelong, with approvals provided by CoGG (Permit 507/2013/A, email 29/10/2015).



REPORT 22915, APRIL 2018

4.0 SPILL CAPTURE

Currently, there appears to be no existing hydrocarbon capture at the site (aside from the oil-water separator to the carwash), or any major spill containment infrastructure. Management procedures are provided for tanker refuelling and for spill incidents on site.

EPA Publication 1670 (February 2018) and Worksafe Victoria (MIA059/01/04.14, 2015) provide guidance on preventing and managing spills, including recommendations for drainage and bunding of forecourts.

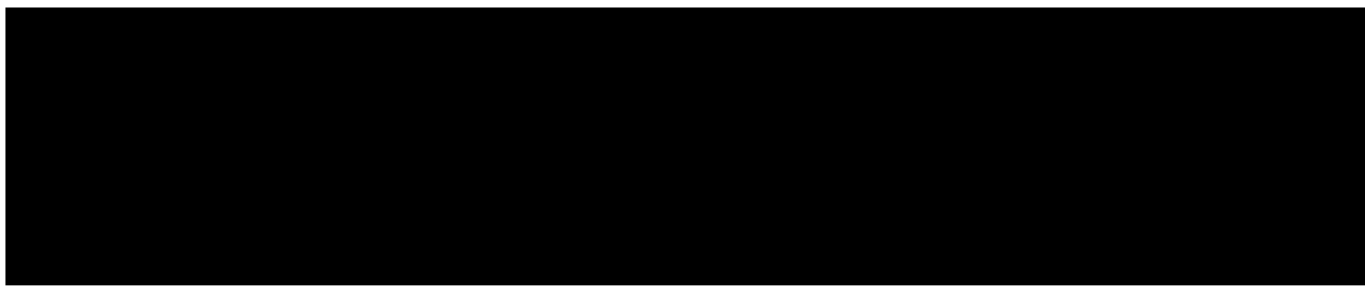
Section 3.2 of the ACAPMA Best Practice Guidelines (Stormwater management systems at retail fuel outlets, Draft 2018) discusses the minimum capture volume for spill containment, including recommendations from New Zealand that a *“spill containment of 2500 litres provided a 99.9% containment of spills”*.

Australian Runoff Quality (EA, 2006) refers to the UK Environment Agency requiring 7600 litres capacity but does also not provide comment for requirements in Australia.

An end-of-line hydrocarbon capture and treatment system is expected to be required in order to improve water quality and reduce risks of major hydrocarbon spills at the existing facility. The system shall provide a minimum 2500 litre spill containment and hydrocarbon removal. An appropriate system may include the following:

- SPEL Purceptor
- Rocla ecoStop® Oil-spill control system
- ECOSOL GPT 4600
- Other similar system with spill control.

The most appropriate option will depend on the acceptable water quality improvement levels as part of the WSUD design (refer following).



5.0 WATER QUALITY MANAGEMENT

The existing site does not include any water quality improvement devices, because most of the site pre-dates current water quality guidelines.

Whilst a number of treatment options are available, it is sometimes difficult to upgrade existing facilities due to geometric and financial constraints.

Preliminary MUSIC analysis has been undertaken for the following treatment train:

- Rainwater tanks with 25 m³ reuse and stormwater detention volume to the new shop roof areas.
- Ecosol GPT4600 in-line GPT with spill control at the end of the stormwater system, prior to discharge to the LPOD.

The analysis provides the following reductions:

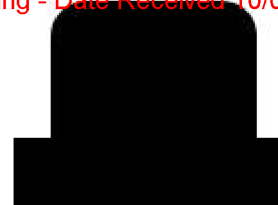
	SEPP Target Objective	Achieved	
TSS	90%	64.4%	X
TN	45%	51.1%	✓
TP	45%	49.6%	✓
GP	70%	99.2%	✓

The above analysis indicates the use of rainwater tanks and GPT with spill control provides a significant improvement in the water quality at the site and may be acceptable to Council considering the pre-existing conditions.

It is noted that the total suspended solids does not meet the target objective for 80% reduction. If this is unacceptable to Council, the following options may be available.

- Adopt a SPEL Purceptor, possibly with an additional SPEL Hydrosystem (subject to further analysis).
- Payment of a WSUD Contribution to Council, in addition to installation of the rainwater tanks and GPT with spill control (<https://www.geelongaustralia.com.au/idm/article/item/8cf5fa500e94eca.aspx>)

It is expected that the contribution cost would be more economically viable than the additional cost of the SPEL system/s; if at all required by Council.



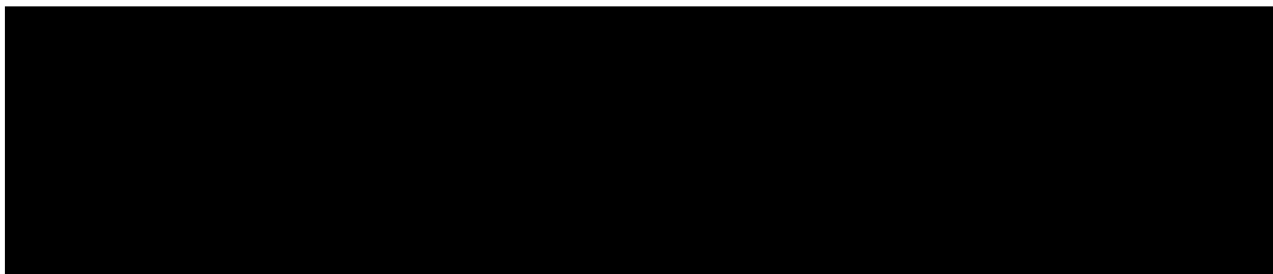
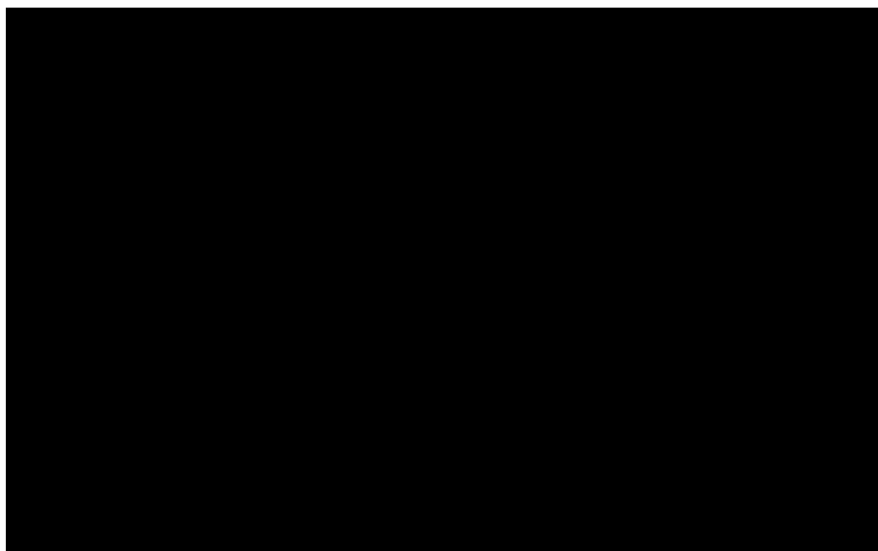
REPORT 22915, APRIL 2018

6.0 CONCLUSION

The Stormwater Management Plan outlines the proposed improvement to the current stormwater quality and drainage conditions; including a reduction in pollutant loadings and no net increase in flow rates entering the drainage network within the existing network.

To achieve these improvements, stormwater run-off from all new roof areas are proposed to be directed to rainwater tanks (min 25 m³) with reuse for toilet flushing and carwash and with minimum 9 m³ stormwater detention. A GPT with minimum 2500 litre spill control (ECOSOL GPT 4600 or approved equivalent) is proposed to the end of the existing stormwater system, prior to the legal point of discharge. Refer to concept civil works plan in Appendix A.

These works are considered to be a significant improvement on current conditions and are appropriate for the extent of development. Council may request additional below-ground storage and other WSUD improvements but these would be at significant cost to the development.

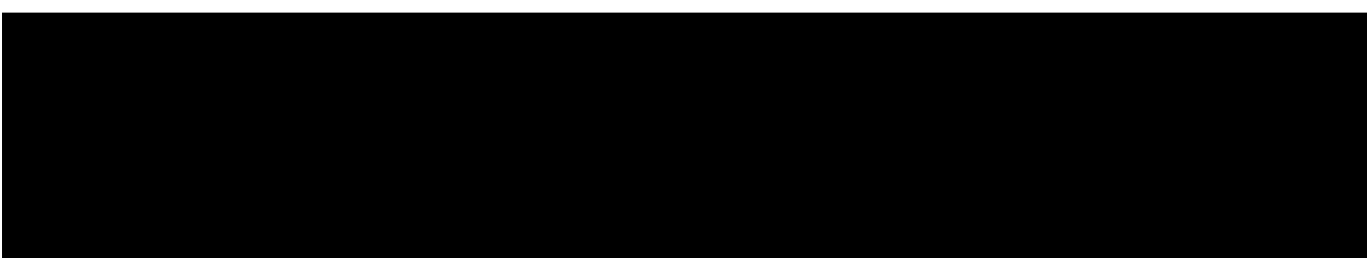


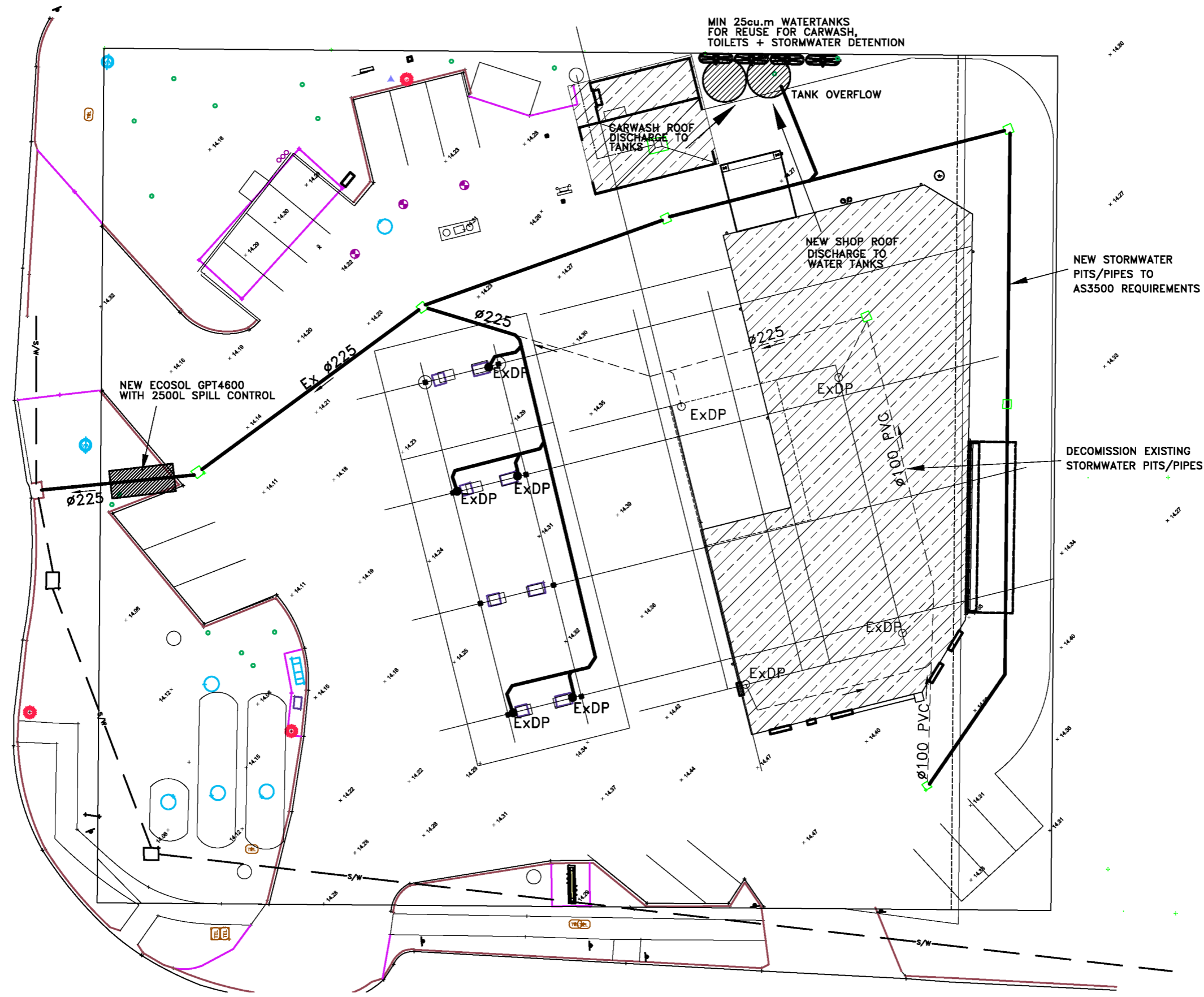


REPORT 22915, APRIL 2018

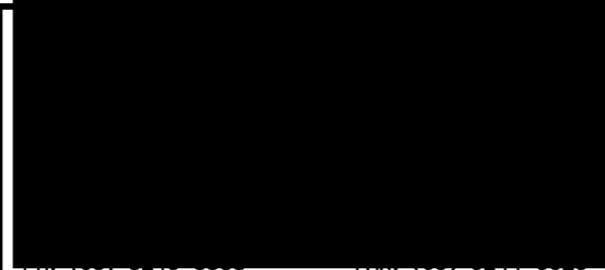
APPENDIX A

Concept Civil Works for Planning Approval





DATE	ISSUED TO	NO	DATE	ISSUED TO	NO
DATE	REVISION		BY		



CLIENT
APCO SERVICE STATIONS PTY. LTD.

PROJECT
APCO - LARA
5 MILLS ROAD, LARA

ENGINEER
DRAWN
AH

CHECKED
SHEET
A1 of 1

SCALE
1:300

DATE
APR 18

JOB No.
22915

REV No.
A3

ISSUE
DRAWING
CONCEPT CIVIL WORKS
FOR PLANNING APPROVAL