

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2025-FLA-4182

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Engineering Report Incl. Stormwater Management

142 Teviot Road,
Greenbank, Queensland

Arcos Project: 2400774.02

Attention: Tomas Lancini

Lancorp Pty Ltd

By Email

16 December 2025

Arcos Project: 2400774.02

Version 1

AG-2400774.02-RPT-C-01

Engineering Report Incl. Stormwater Management

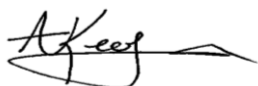
142 Teviot Road,

Greenbank, Queensland

Document Control

Version	Date	Details	Prepared	Checked	Approved
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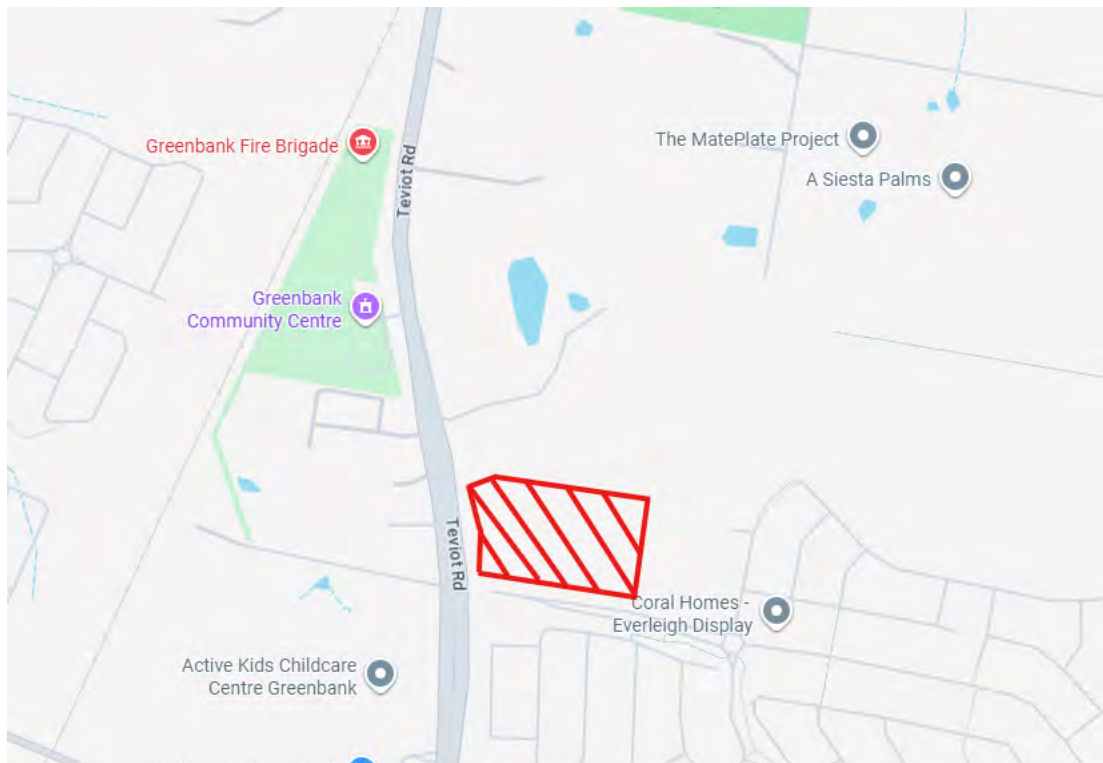
1 Introduction

Arcos Unit Group Pty Ltd (Arcos) has been commissioned by Lancorp Pty Ltd to prepare this Engineering Services Report (including stormwater management strategy) and associated preliminary civil engineering drawings for a proposed commercial development at 142 Teviot Road, Greenbank, Queensland. The site is formally known as Lot 9006 on SP351253, has an area of 2.98ha, and is currently undergoing a Priority Development Area (PDA) Development Application (DA) with Economic Development Queensland (EDQ) under **DEV2022/1354**.

A Decision Notice was issued on 24/01/2023, granting preliminary approval for an MCU application over the site, and a development permit for a ROL application. This report supports the MCU development permit application, which calls for the creation of a shop, business, health care services, indoor sport and recreation, fast food premises, food premises, shopping centre, and car park.

The site is currently vacant and has been levelled off to support the development of the surrounding subdivision. The site is bound by Teviot Road to the west, and a new subdivision road, Anderson Drive, to the south. Retaining walls have been built along the site boundary to support the subdivision works. Future subdivision roads and services are planned to run along the northern and eastern boundaries of the site. A site locality plan is presented in **Figure 1**.

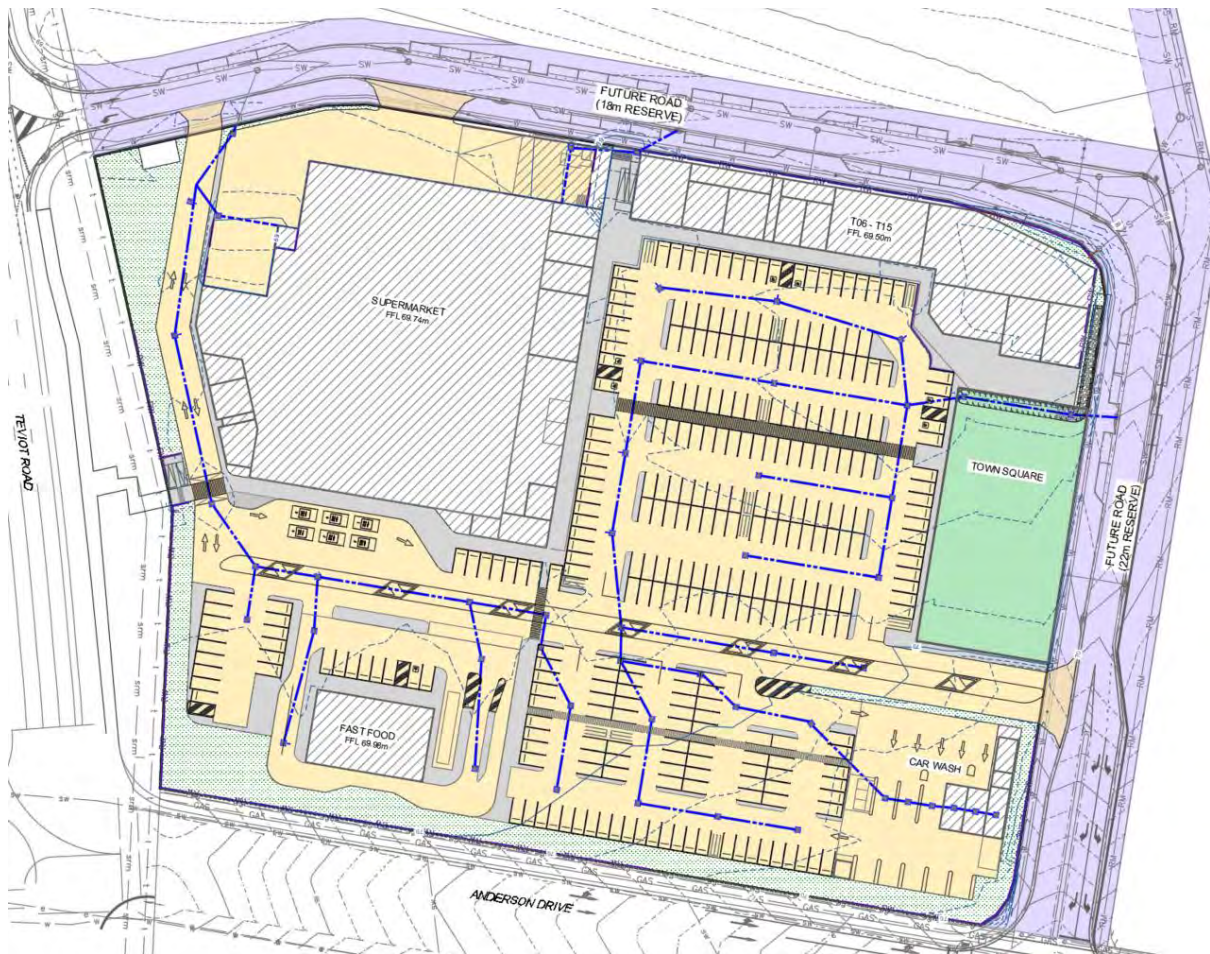
FIGURE 1: SITE LOCALITY (SOURCE: GOOGLE MAPS)



2 Proposed Development

As per the preliminary MCU approval, the proposed development calls for the creation of a new Coles shopping centre complex, along with additional commercial tenancies, a fast-food outlet, car wash, public open space (community 'town square'), and associated car parking facilities. The development will primarily service the burgeoning community of Everleigh, which extends to the south of the development. The proposed development layout plan is shown in **Figure 2** below.

FIGURE 2: DEVELOPMENT LAYOUT PLAN (SOURCE: ARCOS GROUP)



3 Site Access

The development will feature three driveway crossover connections to the future subdivision roads (as can be seen in **Figure 2** above and **Appendix A**). Primary access will be along the eastern boundary off Anderson Drive. This will be the most attractive location for Everleigh residents as it provides the most convenient access to Coles, the Town Square, and the other commercial tenancies.

Secondary access will be in the north-west corner of the site, providing a convenient link to Teviot Road, thus easing pressure on Anderson Drive. Finally, a dedicated access for the Coles loading bay shall be provided along the northern boundary, this works to separate heavy vehicles from the general public, maximising safety and efficiency within the car park.

Each site access will be designed in accordance with IPWEA guidelines.

3.1 Sight Distances

Site distance is not considered to be an issue for the proposed development. All three access locations have open sight lines with no significant structures obstructing views for drivers and pedestrians. In addition, the longitudinal grading of the site and the future subdivision roads are gradual and free from crests.

3.2 Service Vehicles

The vehicle turn paths have been checked to confirm a 19m semi can access the loading bay behind Coles and exit in a forward gear. It has also been checked that passenger vehicles (B95) can safely access, park and exit the site in a forward gear.

4 Earthworks

Significant earthworks have already been completed on the site to support works for the surrounding/adjacent subdivision. The site falls from a high point in the south-west corner to a low point in the north-east corner. The site sits higher than the surrounding road network and retaining walls along the interface with Teviot Road will need to be constructed as part of the development works. An existing retaining wall has been built along Anderson Drive.

Minimal additional earthworks to finalise the site levels and grades are proposed for the development. These can be seen in the civil engineering drawings (refer Appendix A). A new retaining wall will be required along the northern and eastern site boundaries, with a maximum design height of 1.50m. The retaining all along Teviot Road will be up to 2.50m high.

All cutting and filling are to be carried out in accordance with AS3798:2007 Guidelines on Earthworks for Commercial and Residential Developments. Any site filling will be from site spoil (subject to Geotechnical Investigation), provided it meets the requirements of AS3798 and is placed with controlled compaction.

Impacts of proposed earthworks on overland flow conditions will not adversely affect adjacent or downstream properties. Proposed earthworks will not encroach on adjacent properties or affect the function of stormwater catchments external to the site.

All construction activities, including Erosion and Sediment Control (ESC) methods, would be managed under the control measures of a Construction Environmental Management Plan (CEMP) for the development site. The CEMP and ESC plans would be prepared for submission with the future application for Operational Works Approval.

5 Stormwater Management

5.1 General

The proposed stormwater management identified in this report generally complies with the requirements of Council Planning Scheme, Queensland Urban Drainage Manual 2017 (QUDM) and other relevant codes and guidelines.

The minor storm event is the 10% Annual Exceedance Probability (AEP), and major storm event is the 1% AEP event in accordance with the commercial development category in QUDM.

The minor drainage system is generally limited to kerb flows, inlets, underground drainage etc., for pedestrian safety and convenience, and vehicle access. Generally, the major drainage system consists of overland flow paths designed for flows above the capacity of the minor drainage system (i.e. 1% AEP minus minor storm AEP) up to and including the major storm event.

5.2 Drainage & Lawful Point of Discharge

5.2.1 Minor Storm Event

Runoff generated from the minor storm event within the development will be conveyed via the proposed pit and pipe network to one of three proposed pipe outlets (LPDs) as shown on the engineering drawings (refer Appendix A). The site is split into three minor event sub-catchments, referred to as Catchment A1, B1, and C1 as shown in **Figure 3** below. Arcos has coordinated with the engineers delivering the external/adjacent future subdivision roads to ensure our proposed pipe outlets can connect into their future stormwater network. These lawful points of discharge are compliant with Section 3.9.1 requirements of QUDM.

A summary of the existing and proposed 10% AEP peak flow rates from each of the sub-catchments is included in **Table 1** below.



FIGURE 3. MINOR STORM EVENT SUB-CATCHMENTS

TABLE 1 - 10% AEP PEAK DISCHARGE CALCULATIONS

CATCHMENT	AREA (ha)	FI (%)	COEFFICIENT OF RUNOFF	TIME OF CONCENTRATION (MIN)	RAINFALL INTENSITY (mm/hr)	PEAK RUNOFF (m ³ /s)
Existing	2.981	5%	0.55	21	135	0.612
A1	1.064	95%	0.88	13	170	0.443
B1	1.778	95%	0.88	12	176	0.766
C1	0.093	95%	0.88	6	219	0.050

5.2.2 Major Storm Event

The gap flow between the minor storm event and the major storm event shall be conveyed overland via a central invert in the internal driveway/carpark pavement. The site is split into two separate major storm catchments, as shown in **Figure 4** below. Catchment A2 has an area of 1.584ha, and outlets near the north-west corner of the site via the proposed crossover. Catchment B2 is 1.397ha and outlets near the north-east corner via a flow spreading device. The split catchment was designed in order to minimise overall earthworks, reduce retaining wall heights, and to avoid concentrating major storm events to a single outlet.

A severe storm check will also be completed to ensure the overland flow routes can contain the major storm in a fully blocked pit and pipe scenario.

Catchment B2 will be provided with a flow spreading device at the outlet to ensure that major storm flows are converted back to sheet flow, before entering the adjacent road reserve. Weir capacity, and depth x velocity checks have been done to ensure a value of less than 0.3 is achieved in accordance with guidance from QUDM. Details can be seen in the civil engineering drawings, refer **Appendix A**.

A summary of the existing and proposed 10% AEP peak flow rates from each of the sub-catchments is included in **Table 2** below.

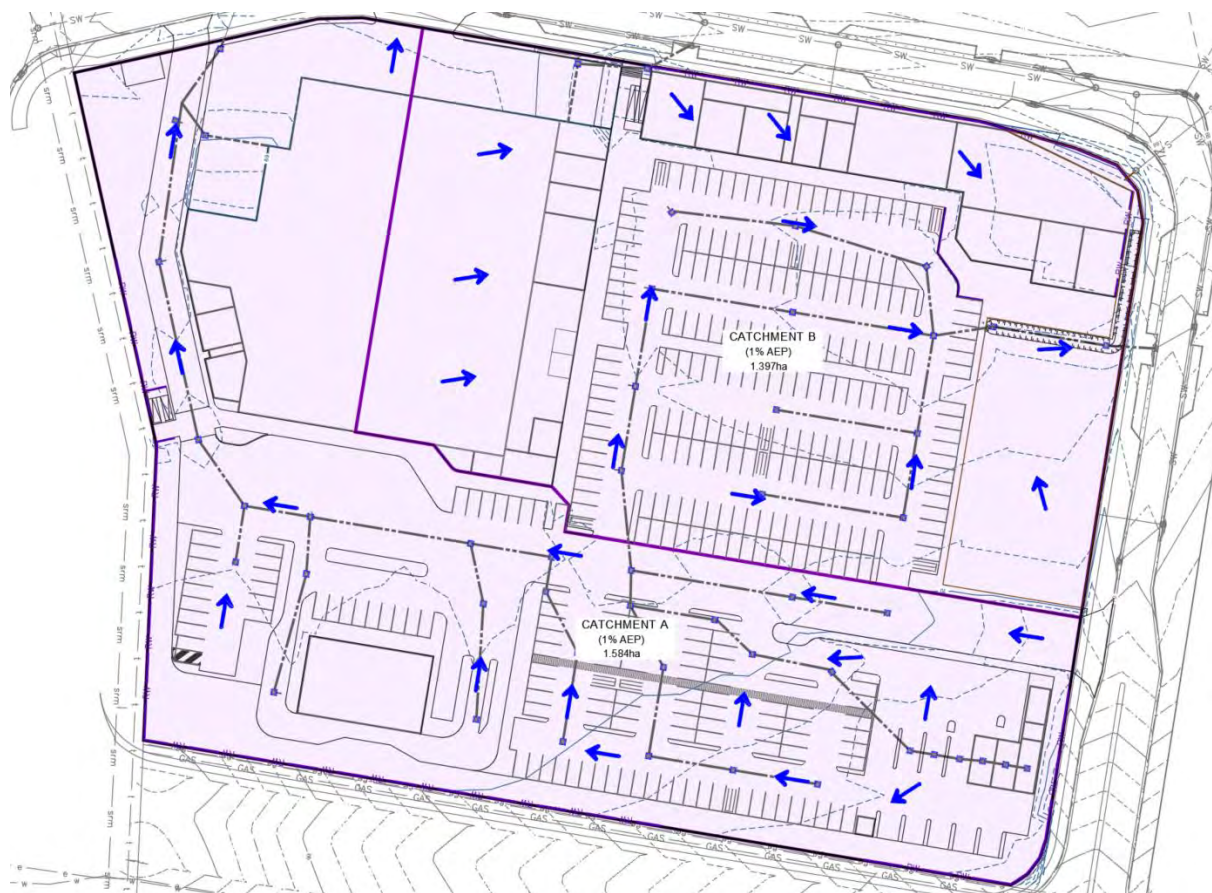


FIGURE 4. MAJOR STORM EVENT SUB-CATCHMENTS

TABLE 2 - 1% AEP PEAK DISCHARGE CALCULATIONS

CATCHMENT	AREA (ha)	FI (%)	COEFFICIENT OF RUNOFF	TIME OF CONCENTRATION (MIN)	RAINFALL INTENSITY (mm/hr)	PEAK RUNOFF (m ³ /s)
Existing	2.981	5%	0.66	21	202	1.100
A2	1.584	95%	1.00	15	237	1.043
B2	1.397	95%	1.00	10	280	1.087

5.3 External Catchments

The site is not impacted by external catchments.

5.4 Flooding

The site is not identified as being impacted by any flood risk as per Logan City Council Flood Portal.

5.5 Stormwater Quantity & Quality Management

As the development site sits within a larger subdivision, stormwater quantity and quality management is being provided by a future basin to the north east of the development. This basin is to be designed and constructed by others, has been sized to cater for the developed case and has already received development approval.

Therefore, no specific stormwater quantity or quality management devices are proposed for the operational phase of the development. Details of the construction phase stormwater quality management can be found in **Appendix B**.

6 Service Provisions

6.1 Water

Water servicing to the site will be from the future watermain to be built by others as part of the surrounding/adjacent subdivision.

6.2 Sewer

Sewer servicing for the site will be provided by the future sewer to be built by others as part of the surrounding/adjacent subdivision. A new branch shall be provided in the north-east corner of the development.

6.3 Communications & Electrical

Details of electrical supply and communication infrastructure and services proposed for the development site are outside the scope of this report. However, we understand that supply to the development can be provided via an extension to the adjacent underground electricity network.

7 Conclusion

This Engineering Services Report has been prepared to provide a review and information on the Engineering requirements to support the MCU development permit application on the proposed commercial development at 142 Teviot Road, Greenbank.

The following requirements have been reviewed as part of this report:

- Suitable access can be provided off future subdivision roads
- Minimal additional earthworks are required to finalise site levels and grades;
- New retaining walls are to be built along the site boundaries;
- Stormwater quality and quantity requirements for drainage discharge are being provided by works associated with the surrounding/adjacent subdivision;
- Sewerage reticulation can be connected to the future sewer network; and
- Water reticulation can be connected to the future water network.

In summary, this report shows that the development site can be adequately serviced and provision made as currently shown and in further detailed design for this development to be in accordance with Council's code requirements.

LIMITATIONS

Arcos Unit Group Pty Ltd (Arcos) has prepared this document for the project described on the title page for the client's exclusive use. The document is specific to this particular project and for the purposes as described within the document. The document cannot be used for any other project on the same site or other sites or relied upon by a third party. Any party relying upon this document beyond its exclusive use and purpose as stated above, and without the express written consent of Arcos, does so entirely at its own risk and without recourse to Arcos for any loss or damage. Arcos has necessarily relied upon information provided by the client and/or their agents.

The required detailed design for the service infrastructure will be subject to the conditions (if any), attached to the Development Approval provided by Council and any nominated referral agencies.

The advice given in this document is based upon the assumed conditions and data outlined herein. The relevance and accuracy of advice given are directly affected by variations in the information supplied and open source information relied upon.

This document must be kept in its entirety, read in full and understood. Interpretations or conclusions made by others unless supported by an expressed written statement, interpretation, outcome or stated within this document cannot be the responsibility of Arcos.

This document or parts of it should not be used as part of a specification or design for a project without prior review and agreement by Arcos.

Appendix A – Civil Engineering Drawings

PROJECT & PHASE
COMMERCIAL PRECINCT DEVELOPMENT
MATERIAL CHANGE OF USE - CIVIL
CLIENT
LANCORP PTY. LTD.

SITE ADDRESS / PROPERTY ID
142 TEVIOT ROAD
GREENBANK, QLD, 4124



IMAGE (NEARMAPS)
LOCALITY PLAN
SCALE N.T.S

SURVEY DATA
SURVEYED BY PREMISE DATED 30/03/2022.
PLAN REFERENCE MIR-1300

RP DESCRIPTION
LOT 9003 RP317644
SITE AREA = 29,810m²

COUNCIL PERMIT No. PHASE MCU



ARCOS

DRAWING INDEX		
DRAWING No.	REV	DRAWING TITLE
2400774-MCU-C-001	B	COVER SHEET, LOCALITY & DRAWING INDEX
2400774-MCU-C-101	B	EXISTING FEATURES PLAN
2400774-MCU-C-201	B	EARTHWORKS PLAN
2400774-MCU-C-211	B	EARTHWORKS SITE SECTIONS SHEET 1 OF 2
2400774-MCU-C-212	B	EARTHWORKS SITE SECTIONS SHEET 2 OF 2
2400774-MCU-C-213	B	GROUTED ROCK RETAINING WALL DETAILS
2400774-MCU-C-301	B	DEVELOPMENT SITE PLAN
2400774-MCU-C-302	B	SITE LEVELS PLAN
2400774-MCU-C-401	B	STORMWATER LAYOUT PLAN
2400774-MCU-C-402	B	STORMWATER CATCHMENT PLAN MINOR EVENT
2400774-MCU-C-403	B	STORMWATER CATCHMENT PLAN MAJOR EVENT

Project No.	Status	Drawing No.	Rev No.
2400774	FOR APPROVAL	MCU-C-001	B



EXISTING LEGEND

- SUBJECT PROPERTY BOUNDARY
- 4.00 MAJOR CONTOUR 1.00m INTERVAL
- MINOR CONTOUR 0.25m INTERVAL
- s SEWER MAIN
- srmm SEWER RISING MAIN
- w WATER MAIN
- t U/G TELECOMMS
- o/h O/H ELECTRICITY
- e U/G ELECTRICITY
- sw STORMWATER
- GAS GAS MAIN

PROPOSED LEGEND

- 50.00 MAJOR CONTOUR 1.00m INTERVAL
- MINOR CONTOUR 0.25m INTERVAL

- CUT 0 - 0.5m
- CUT 0.5 - 1.0m
- CUT 1.0 - 1.5m
- CUT 1.5 - 2.0m
- CUT 2.0 - 2.5m
- CUT 2.5 - 3.0m
- CUT 3.0 - 3.5m
- CUT 3.5 - 4.0m
- CUT 4.0 - 4.5m
- CUT 4.5 - 5.0m
- FILL 0 - 0.5m
- FILL 0.5 - 1.0m
- FILL 1.0 - 1.5m
- FILL 1.5 - 2.0m
- FILL 2.0 - 2.5m
- FILL 2.5 - 3.0m
- FILL 3.0 - 3.5m
- FILL 3.5 - 4.0m
- FILL 4.0 - 4.5m
- FILL 4.5 - 5.0m

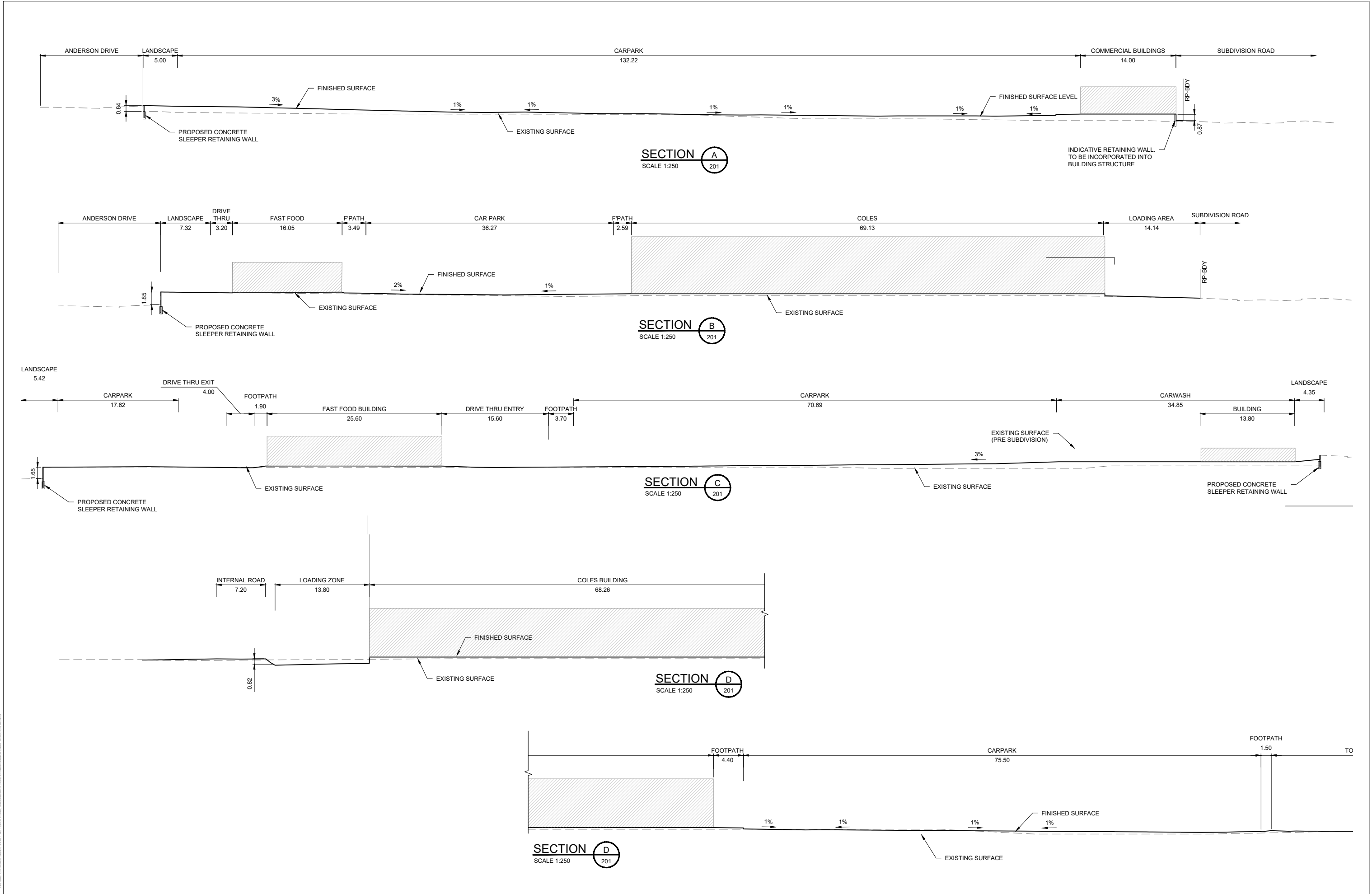
EARTHWORKS QUANTITIES

TOP SOIL STRIP: 4.472m³
EARTHWORKS CUT: -1.846m³
EARTHWORKS FILL: 5.200m³
BALANCE: 3.354m³

- NOTES:
- ALL VOLUMES INDICATED ARE SOLID VOLUMES.
 - ASSUMED TOP SOIL STRIP 150mm THICK.
 - EARTHWORKS QUANTITIES BASED ON COMPARISON BETWEEN PROPOSED SUBGRADE SURFACE AND STRIPPED EXISTING SURFACE.

- NOTES:
- RETAINING WALLS TO BE DESIGNED BY OTHERS/STRUCTURAL ENGINEER.

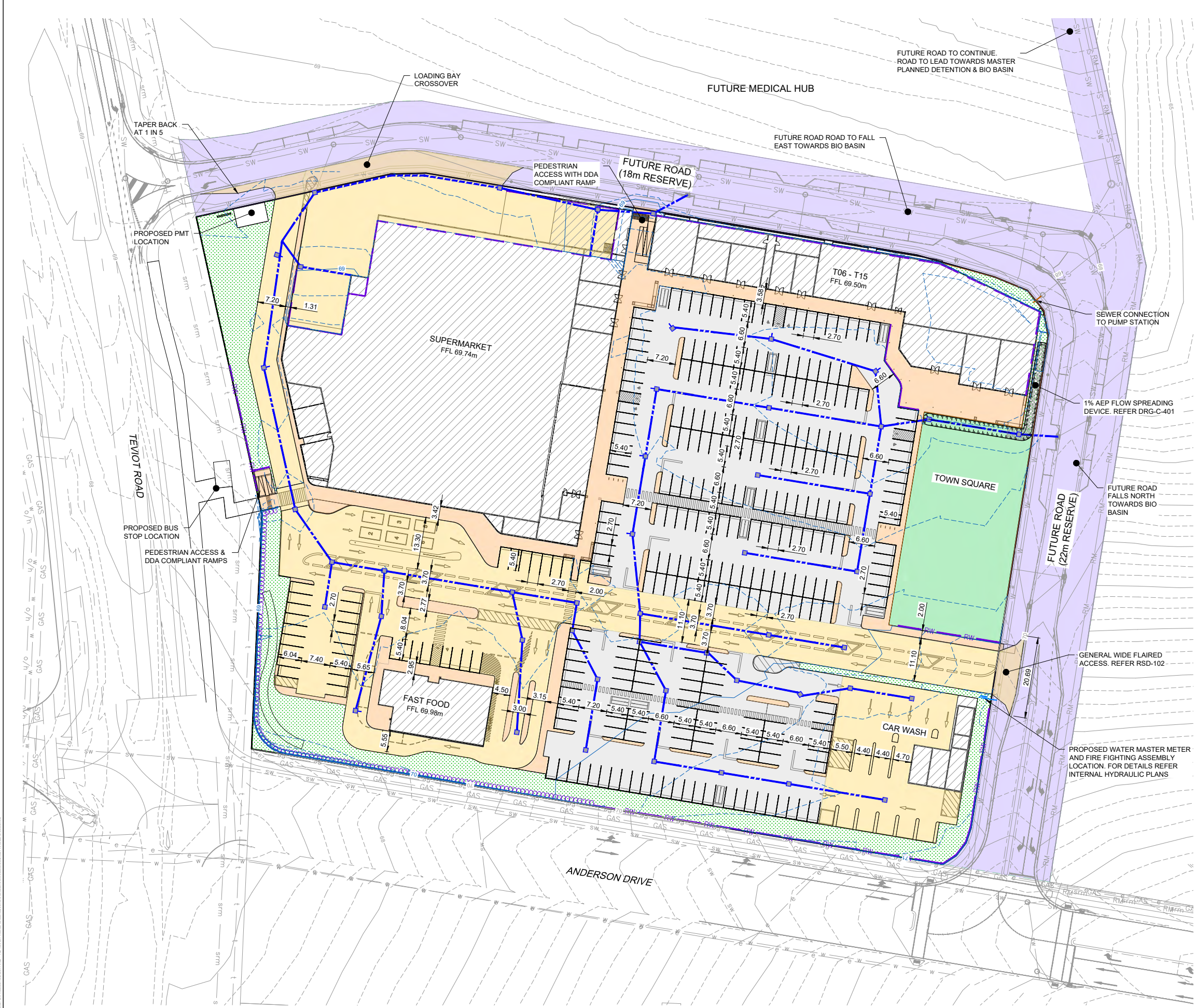
				North Point 	Scale 	Horiz. Datum LOCAL	Client LANCORP PTY. LTD.	Consultant  ARCOS COPYRIGHT © All rights reserved. This work is copyright and cannot be reproduced or copied in any form without the prior consent www.arcosgroup.com.au ABN 51 640 311 842 CIVIL STRUCTURAL GEOTECHNICAL SUNSHINE COAST BRISBANE GOLD COAST	Project COMMERCIAL PRECINCT DEVELOPMENT MATERIAL CHANGE OF USE - CIVIL 142 TEVIOT ROAD GREENBANK, QLD, 4124	Drawn AK	Drawing EARTHWORKS PLAN	Project No. 2400774	Drawing No. MCU-C-201	Rev No. B				
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A FOR APPROVAL						14.11.25				LS								
Rev	Revision Description	Date	Approved															



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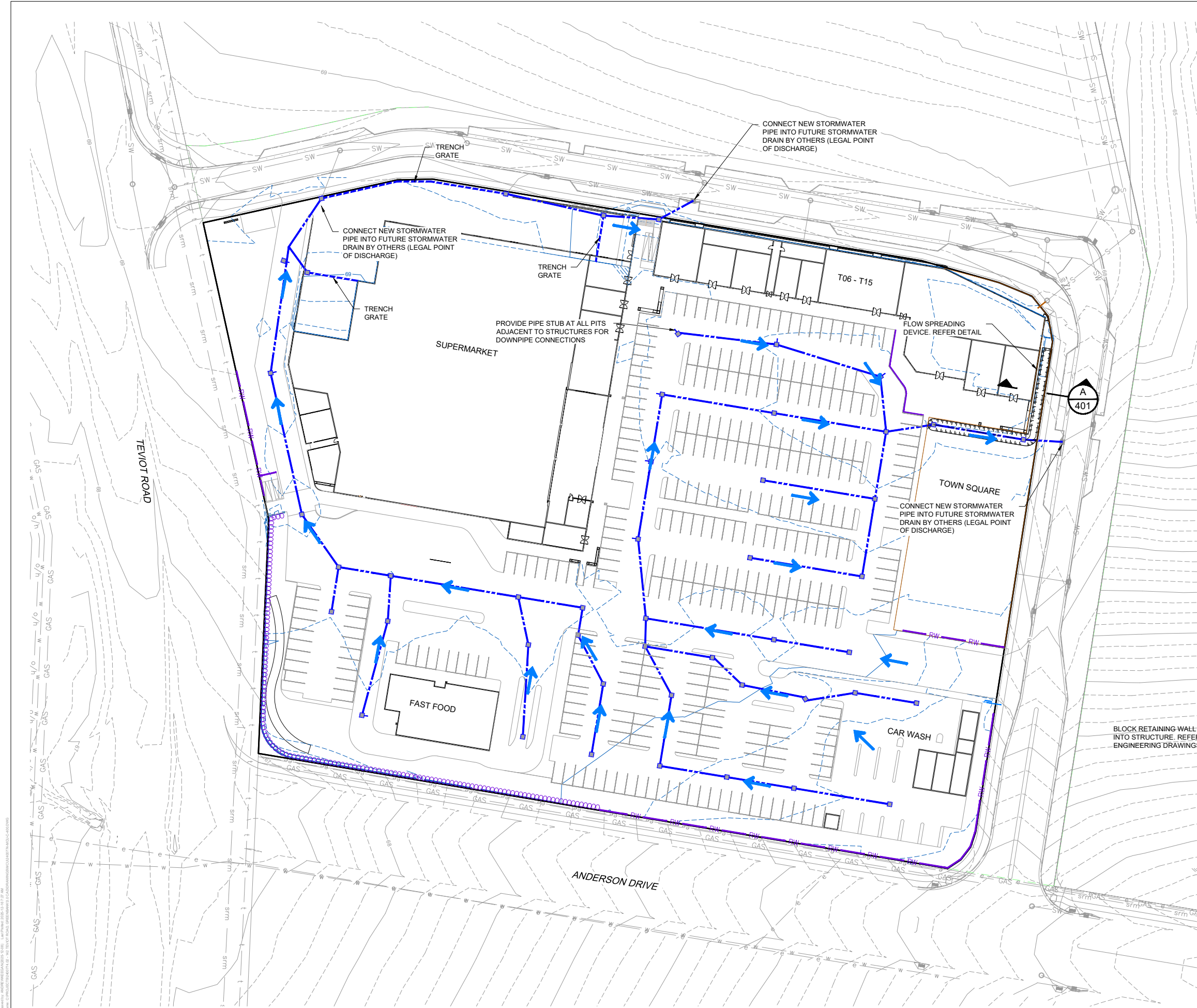
EXISTING LEGEND

- SUBJECT PROPERTY BOUNDARY
- 4.00 MAJOR CONTOUR 1.00m INTERVAL
- MINOR CONTOUR 0.25m INTERVAL
- s SEWER MAIN
- srm SEWER RISING MAIN
- w WATER MAIN
- t U/G TELECOMMS
- o/h O/H ELECTRICITY
- e U/G ELECTRICITY
- sw STORMWATER
- GAS GAS MAIN

PROPOSED LEGEND

- FUTURE SUBDIVISION WORKS (BY OTHERS)
- INTERNAL CONCRETE DRIVEWAY
- CONCRETE DRIVEWAY CROSSOVER
- FLEXIBLE PAVEMENT (ASPHALT SEAL)
- CONCRETE FOOTPATH / CONCRETE ISLAND INFILL
- BUILDING
- PARK / PUBLIC SPACE
- LANDSCAPE
- RW RETAINING WALL
- STORMWATER NETWORK

				North Point 	Scale 	Horiz. Datum LOCAL	Client LANCORP PTY. LTD.	Consultant  ARCOS COPYRIGHT © All rights reserved. This work is copyright and shall not be reproduced or copied in any form without the prior consent of www.arcosgroup.com.au ABN 51 640 311 842 CIVIL STRUCTURAL GEOTECHNICAL SUNSHINE COAST BRISBANE GOLD COAST	Project COMMERCIAL PRECINCT DEVELOPMENT MATERIAL CHANGE OF USE - CIVIL 142 TEVIOT ROAD GREENBANK, QLD, 4124	Drawn AK	Drawing DEVELOPMENT SITE PLAN	Project No. 2400774	Drawing No. MCU-C-301	Rev No. B	
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EXISTING LEGEND

—	SUBJECT PROPERTY BOUNDARY
— 4.00 —	MAJOR CONTOUR 1.00m INTERVAL
- - -	MINOR CONTOUR 0.25m INTERVAL
— s —	SEWER MAIN
— srm —	SEWER RISING MAIN
— w —	WATER MAIN
— t —	U/G TELECOMMS
— o/h —	O/H ELECTRICITY
— e —	U/G ELECTRICITY
— sw —	STORMWATER
— GAS —	GAS MAIN

PROPOSED LEGEND

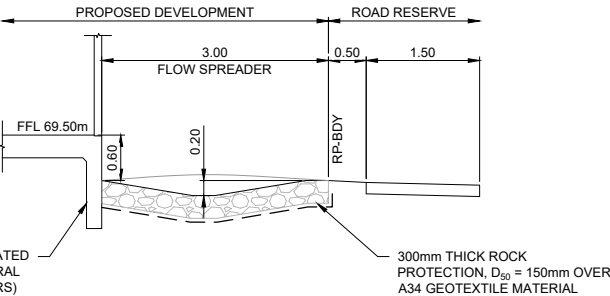
— RW —	RETAINING WALL
— 50.00 —	MAJOR CONTOUR 1.0m INTERVAL
- - -	MINOR CONTOUR 0.25m INTERVAL
→	GENERAL FLOW ARROW
— — —	STORMWATER PIPE

NOTES:

- FOR GENERAL & STORMWATER NOTES REFER DRG C-011.
- DOWNSIDE DETENTION BASIN AND WETLAND (BY OTHERS) SHALL PROVIDE STORMWATER QUALITY AND QUANTITY MANAGEMENT FOR THE SITE. REFER STORMWATER MANAGEMENT STRATEGY

PIT SIZE

REFER TO IPWEA DS-050	
0-1.0 DEPTH	600mm x 600mm
1-1.5 DEPTH	600mm x 900mm
0-2.0 DEPTH	900mm x 900mm
2.0 GREATER	STANDARD MH WITH APPROVED INLET



SECTION A
TYPICAL FLOW SPREADER DETAIL
SCALE 1:50

FLOW SPREADER CALCS

DESCRIPTION	SYMBOL	VALUE	UNIT
OVERLAND FLOW (FULLY BLOCKED)	Q1%	1.090	m ³ /s
WEIR COEFFICIENT	Cd	1.705	-
DEPTH OF FLOW	D	0.101	m
LENGTH OF WEIR	L	20.000	m
AREA OF FLOW	A	2.020	m ²
VELOCITY OF FLOW	V	0.540	m/s
DEPTH X VELOCITY	D x V	0.055	-

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Appendix B – Construction Phase Stormwater Quality Management

Introduction

The site's management is important in ensuring water quality standards are achieved during the construction phase.

Best practice measures shall be utilised during the construction phase to minimise the potential impacts of the pollutants mentioned above. Detailed Erosion and Sediment Control Management Plans should be developed in conjunction with the Operational Works design prior to construction works commencing in accordance with the International Erosion Control Association (IECA) - "Best Practice Erosion and Sediment Control (BPESC) document" and overseen by a Certified Professional in Erosion and Sediment Control (CPESC) or Registered Professional Engineer Queensland (RPEQ). Through their principal contractor, the developer shall be responsible for ensuring that temporary sediment and erosion controls are installed and maintained correctly.

Pollutants

The pollutants that would typically be generated during the construction of the proposed development are outlined in **Table 3**.

TABLE 3: TYPICAL CONSTRUCTION PHASE POLLUTANTS

Pollutant	Source
Litter	Paper, construction packaging, food packaging, cement bags, offcuts
Sediment	Unprotected exposed soils and stockpiles during earthworks and building
Hydrocarbons	Fuel and oil spills, leaks from construction equipment
Toxic Materials	Cement slurry, asphalt prime, solvents, cleaning agents, wash waters e.g. from tile works)
Ph Altering Substances	Acid sulphate soils, cement slurry

Potential Impacts

Construction activities can have a potential impact on water quality. Removal of vegetation, earthworks and changes to drainage patterns can result in erosion and sediment being washed into waterways. This can impact the physical-chemical parameters of the receiving water, the decline in the health of aquatic ecosystems, and overall aesthetics. The potential impacts on the development site's surrounding receiving waters will be minimised during the construction phase with typical measures outlined below. These measures should be adequately detailed on erosion and sediment control plans as part of the development's Operational Works application.

Performance Objectives

The amount of runoff traversing and discharging from the site while under construction should be kept to a minimum. This will restrict soil erosion and mobilisation of sediments and pollutants through and off the site. During the construction phase, stormwater runoff at discharge points shall comply with the objectives detailed in QLD SPP (July 2017).

Control Measures

The following are typical treatment measures that should be implemented before the commencement of any construction works. Detailed erosion and sediment control procedures shall be based on the erosion and sediment control plans lodged at the Operational Works phase.

Maintenance

Maintenance of erosion and control treatment measures (such as sediment fences) will be undertaken if it is observed that they have not been properly installed or the capacity of the measure falls below 75%.

Minimise Disturbance Area

Clearing of land is to be minimised to areas planned to be actively under construction in the near term (e.g. within the next 3-6 months).

Stabilise Disturbed Areas

Provide temporary stabilisation of disturbed soils whenever active construction is not occurring on a portion of the site. Provide permanent stabilisation during finish grade and landscape the site.

Protect Slopes and Channels

Safely convey runoff from the top of the slope and stabilise temporary and permanent channel crossings as quickly as possible and ensure that increases in runoff velocity caused by the project do not erode the channel.

Diversions of Upslope Runoff

Upslope runoff should be diverted away from areas of exposed soil to prevent the contamination of clean runoff. This may be achieved by installing tightly abutting sandbags, creating a 'sandbag perimeter bank' to divert flow.

Sediment Fences and Inlet Protection

Delineate site perimeter to prevent disturbing areas outside the project limits. Sediment fences should be installed around the perimeter of works to ensure contaminated runoff is filtered and sediment is trapped before leaving the site. Sandbags or geofabric should also be placed around/over existing stormwater inlets/grates throughout the site to filter any contaminated runoff before entering the existing piped stormwater network.

Retain Sediment

Retain sediment-laden waters from disturbed, active areas within the site.

Stabilised Vehicle Entry/Exit Point

A stabilised entry/exit point should be constructed to minimise the transport of sediment off-site. All vehicles entering and leaving the site must use this designated entry/exit point.

Stockpiles

Stockpile locations should be identified before the commencement of works. Ideally, they should be located in a flat area at least 15m from any water body or stormwater inlet. Sediment fences should be installed downslope of all erodible stockpiles, and upslope protection measures should be used (i.e. sandbags or sediment fence) to divert runoff in the event of rain. At the end of each working day, stockpiles should be covered with geofabric if rain or high winds are forecast.

Street Sweeping

Ensure that local roads are swept as required. This will minimise the potential for sediment tracked onto the road to be washed into the stormwater system. If there is a large quantity of sediment being tracked onto the surrounding streets, the stabilised entry/exit point may need to be raked or reinforced with rock treatment to provide more effective sediment removal for vehicles.

Erosion Control Matting and Permanent Stabilisation

Exposed areas onsite should be permanently stabilised (i.e. with turf) as the construction works progress. Erosion control matting or mulching should be used as a temporary measure to stabilise exposed areas before permanent stabilisation can be undertaken.

Monitoring

Monitoring and recording of the performance of the drainage control devices are to be undertaken in accordance with local government requirements. It is further recommended that the proposed construction works be undertaken during periods of dry weather to reduce the potential for sediment to be transported off-site during construction.