DA Ammendment

ROCKHAMPTON REGIONAL COUNCIL
AMENDED PLANS APPROVED
22 May 2020
DATE
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/87-2018
Dated: 26 October 2018

NORTH

49
SP199417

25
SP238738

LOT 50
SP199417

51
SP199417

EMT B
EMT A
EMT A

DEAN STREET

34.35

Retain
Trees to be removed
Tree to be removed
Trees to be removed
Trees to be removed
Retain
Retain
Retain
Retain

TREE 20
TREE 21
TREE 18
TREE 15
TREE 14
TREE 9
TREE 12
TREE 11
TREE 10
TREE 4
TREE 3
TREE 6
TREE 7
TREE 2
TREE 19
TREE 17
TREE 16

TBM 28.35

PSM 45324 RL 24.034

DOWNPIPE IN GROUND

OP

Survey by : Vision Surveys
Ph: (07) 4927 1744
Email: rockhampton@visionsurveysqld.com.au

ELITE

ELITE FITOUT SOLUTIONS PTY LTD
ABN 69 114 663 222
QBCC LICENCE No. 1076691
VIC - REG. BUILDING PRACTIONERS
ROD PHILLIPS No. CB-L 37510
PO BOX 312
BUDDINA, QLD 4575
PH: 07 5413 5600
FAX: 07 5413 5656

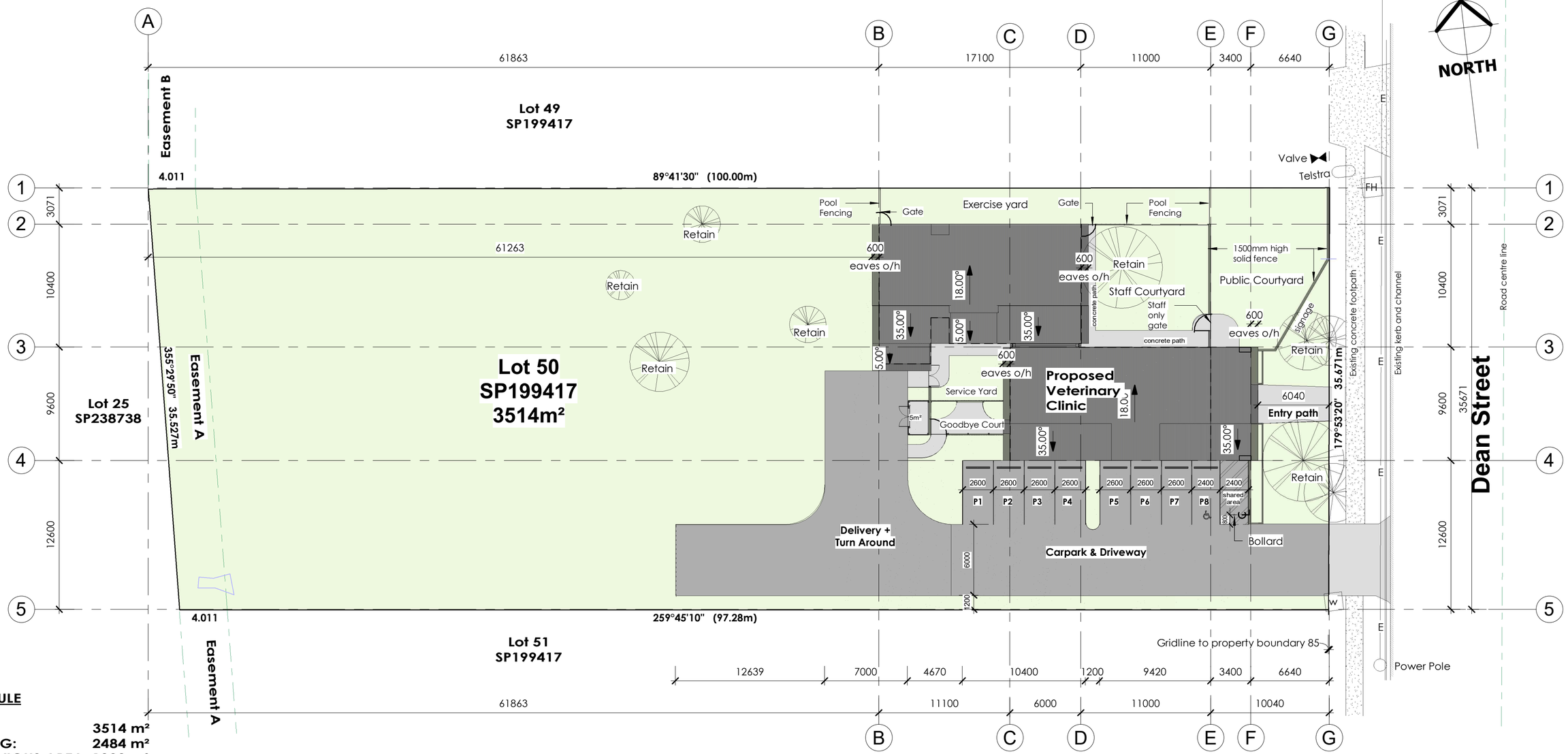
No.	Description	Date
A	Original Issue	15-01-19
B	Issued for Building Approval	08-10-19
C	Issued for Construction	07-11-19

Client: **Skillvet Pty Ltd & S L Fisher**
Project: **Proposed Veterinary Clinic**
Project Address: **339 Dean Street Frenchville**

Sheet Name: Site Plan - Vacant Lot
Project Number: 1791
Drawing Number: 101
Project Status: **DA Ammendment**
Date: 14-01-19 | Drawn: Author
Scale: As indicated @ A2 | Checked: Checker

13/05/2020 10:39:20 AM

DA Ammendment



AREA SCHEDULE

SITE:	**3514 m²**
LANDSCAPING:	**2484 m²**
TOTAL IMPERVIOUS AREA:	**1030 m²**

CARPARK:	318.0 m²
DELIVERY+TURN AROUND:	236.5 m²
REFUSE AREA:	5.0 m²
ENTRY PATH:	24.9 m²
SERVICE YARD PATHS:	16.4 m²
GOODBYE COURT PATHS:	16.7 m²
STAFF COURTYARD:	34.5 m²
VETERINARY BUILDING GFA:	340.25 m²
OPEN COVERED AREA:	37.75 m²
TOTAL IMPERVIOUS AREA:	1030.00 m²

Denotes Landscaping

Denotes Asphalt

Denotes Concrete

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PH: 07 5413 5600
FAX: 07 5413 5656

No.	Description	Date
D	Finishes added	09-08-19
E	Issued for Building Approval	08-10-19
F	Issued for Construction	07-11-19
G	Set out plan ammended. Boundary dimensions ammented	25-11-19
H	Fence height and signage ammended. Site areas updated	11-05-20

Client	**Skillvet Pty Ltd & S L Fisher**
Project	**Proposed Veterinary Clinic**
Project Address	**339 Dean Street Frenchville**

Sheet Name	Proposed Site Plan
Project Number	1791
Drawing Number	102
Project Status	**DA Ammendment**
Date	14-01-19
Drawn	BAJ
Scale	1 : 250 @ A2
Checked	D Fuller

13/05/2020 10:39:20 AM

For Construction

Floor Area
326m²

Proposed Floor Plan

1 : 100

ROCKHAMPTON REGIONAL COUNCIL
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PO BOX 312
BUDDINA, QLD 4575
PH: 07 5413 5600
FAX: 07 5413 5656

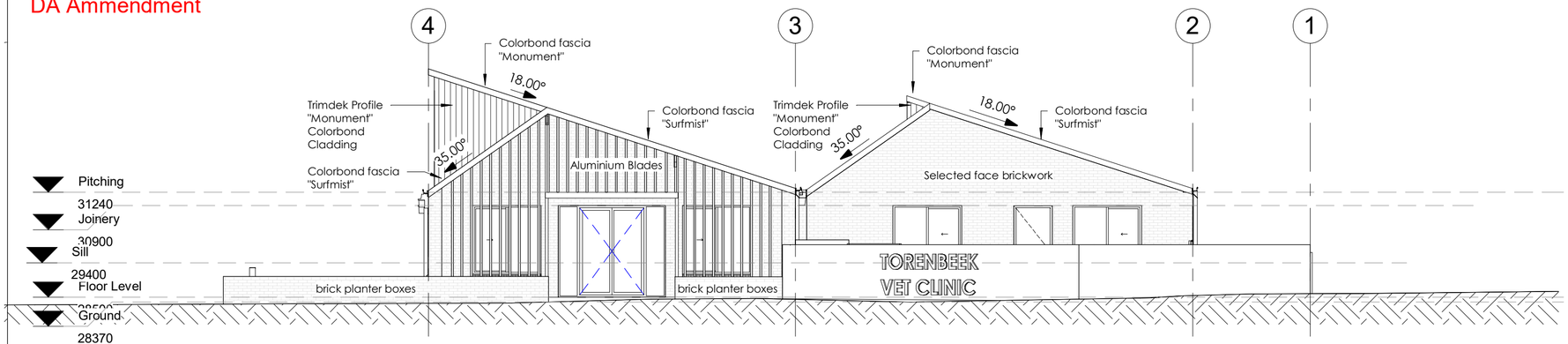
No.	Description	Date
B	Passage width changed to increase treatment width. ISO & Laundry mirrored	06-02-19
C	Passage, ISO & Laundry restored to original position. 2 recovery positions added	20-02-19
D	Client requested changes Imaging	24-07-19
E	Finishes added	09-08-19
F	Issued for Building Approval	08-10-19
G	Issued for Construction	07-11-19

Client	**Skillvet Pty Ltd & S L Fisher**
Project	**Proposed Veterinary Clinic**
Project Address	**339 Dean Street Frenchville**

Sheet Name	Proposed Floor Plan
Project Number	1791
Drawing Number	103
Project Status	**For Construction**
Date	14-01-19
Drawn	BAJ
Scale	1 : 100 @ A2
Checked	D Fuller

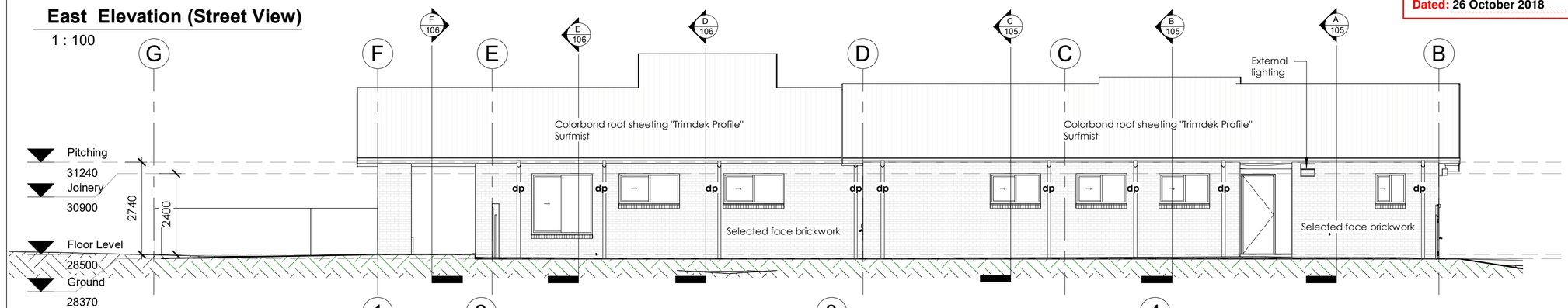
2/12/2019 1:34:34 PM

DA Ammendment



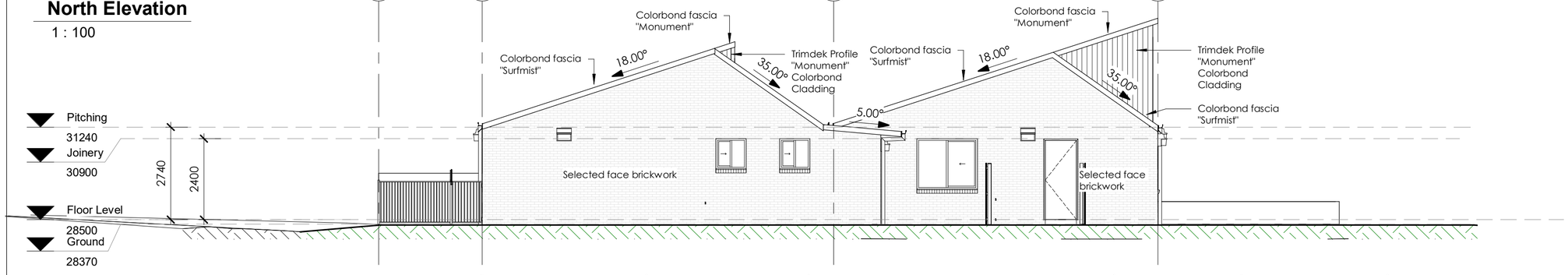
East Elevation (Street View)

1 : 100



North Elevation

1 : 100



West Elevation

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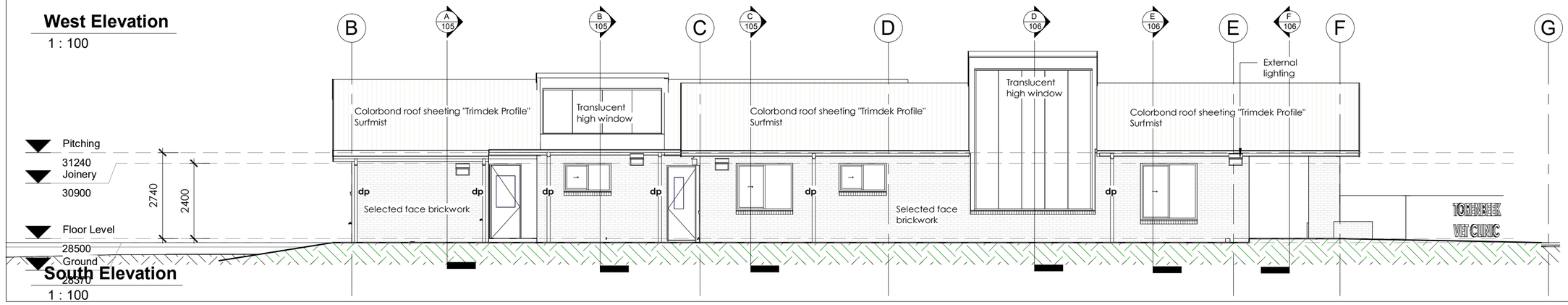

South Elevation

1 : 100

NOTE
All Fixings to be in accodance with manufacturers specifications for Wind Speed C2

ROCKHAMPTON REGIONAL COUNCIL
AMENDED PLANS APPROVED
22 May 2020
DATE
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/87-2018
Dated: 26 October 2018

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PO BOX 312
BUDDINA, QLD 4575
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No	Description	Date
D	Finishes added	09-08-19
E	Issued for Building Approval	08-10-19
F	Issued for Construction	07-11-19
G	Fence height and signage ammended. Site areas updated	11-05-20

Skillvet Pty Ltd & S L Fisher

Proposed Veterinary Clinic

339 Dean Street
Frenchville

Elevations

Project Number	1791
1791	1791
Date	14-01-19
Drawn by	B Jorgensen
Checked by	D Fuller

104

Project Status: DA Ammendment

Scale 1 : 100 @ A3

13/05/2020 10:39:22 AM

mcmurtrie
CONSULTING ENGINEERS

Stormwater Management Plan

Veterinary Clinic

339 Dean Street, Frenchville, Rockhampton

Prepared For: Torenbeek Veterinary Clinic

Job No. 003-18-19

07 September 2018

Revision B

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/87-2018

Dated: 26 October 2018

ABN 69 958 286 371
P (07) 4921 1780
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PO Box 2149
Wandal Q 4700
63 Charles Street
North Rockhampton Q 4701

Stormwater Management Plan

Rev.	Description	Signature	RPEQ No	Date
B	Responding to Council information request D/87-2018		5141	07.09.18
A	Issued For Approval	-	-	07.08.18

CONTENTS

Stormwater Management Plan

Veterinary Clinic

1.0 INTRODUCTION AND APPROACH

1.1. PROJECT OVERVIEW

McMurtrie Consulting Engineers (MCE) have been commissioned by Torenbeek Veterinary Clinic to undertake a site based Stormwater Management Plan (SMP) for a proposed veterinary clinic which is located at 339 Dean Street, Frenchville on Lot 50 on SP199417. This report supersedes the previous "Stormwater Management" section in the Technical Memorandum completed by McMurtrie Consulting Engineers for the veterinary clinic, dated 07 August 2018, Revision A.

The aim of this SMP is to demonstrate that the proposed development will comply with Capricorn Municipal Development Guidelines (CMDG), Queensland Urban Drainage Manual (QUDM 2016), Australian Rainfall and Runoff 2016 (ARR'16) and State Planning Policy (SPP 2017).

1.2. METHODOLOGY

The assessment methodology adopted for this SMP is summarised below.

- Broadly identify the contributing catchments to the project.
- Identify Lawful Point of Discharge (LPOD) for the site stormwater runoff.
- Identify the critical storm events and duration for this project
- Estimate peak discharge runoff for pre-development and post-development scenarios.
- Identify potential mitigation and management strategies to ensure no worsening to downstream catchments and infrastructure.
- Assess the stormwater quality treatment requirements for the project.

1.3. DATA SOURCES

The background data used to undertake this assessment were collected from the following sources:

- ARR'16 data hub
    - Rainfall data
    - Design storm ensemble temporal patterns
- Rockhampton Regional Council GIS data
- Preliminary overall layout plan (completed by Design + Architecture)

2.0 SITE CHARCTERISTICS

2.1. SITE LOCATION

The proposed site is located on Lot 50 on SP199417, at 339 Dean Street, Frenchville, Rockhampton. Site details have been summarised within Table 1 and a QLD Globe extract is presented as Figure 1.

Table 1: Site Description

Developer	Property and Location	
	Lot and Property Description	Address
Torenbeek Veterinary Clinic	Lot 50 on SP199417	339 Dean Street, Frenchville, Rockhampton

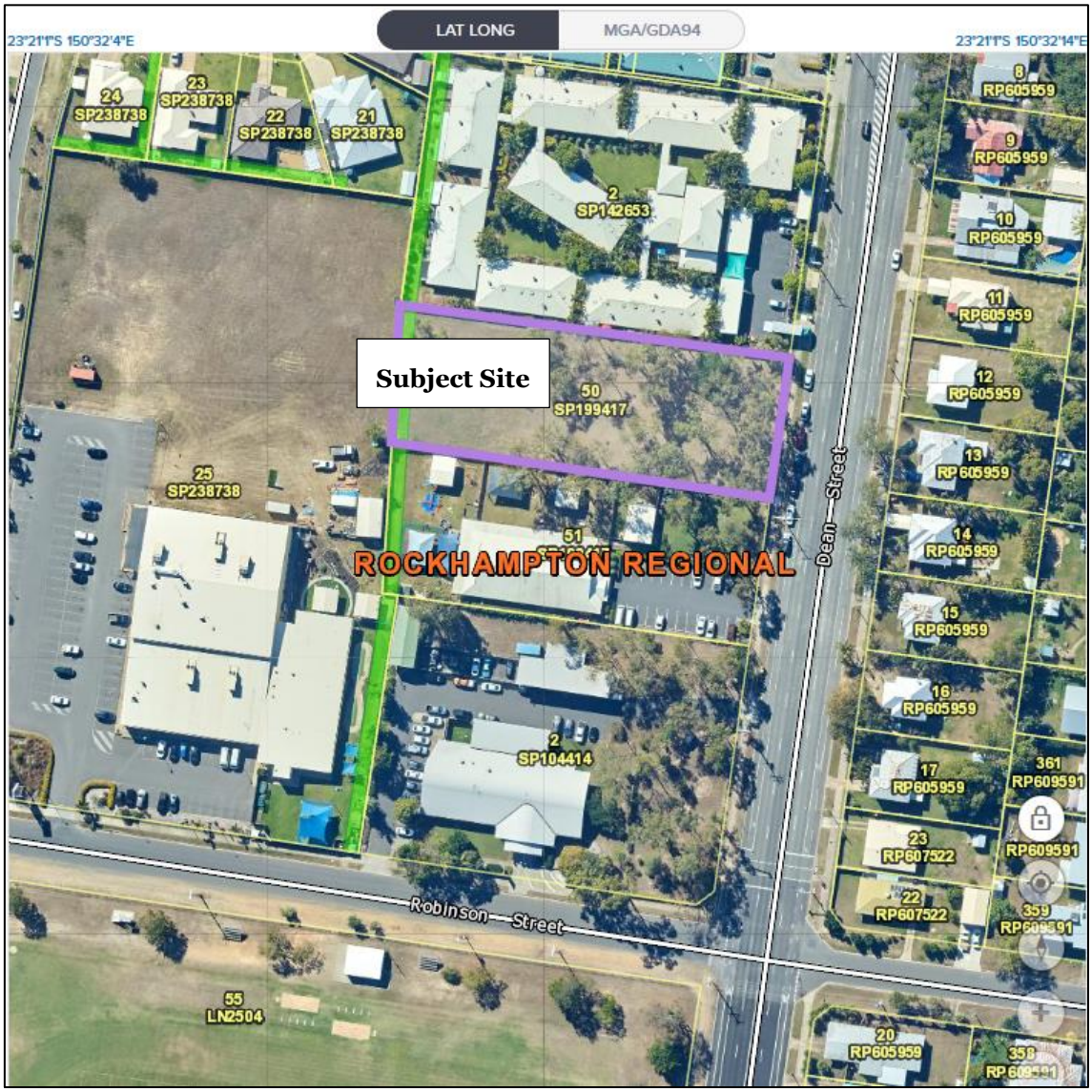


Figure 1: Site Location **[Source: QLD Globe]**

The proposed the site abuts Dean Street on eastern side and shares a common boundary with the adjacent lots on north, south and western sides. Refer Appendix A for proposed site layout.

2.2. TOPOGRAPHY

The existing site is a vacant block and approximately 3515m² in land area. The site is covered with light grass and scattered trees. The existing site levels range from approximately 28.5m AHD on the eastern side along Dean Street and 27.5m AHD on the western side along the rear boundary.

3.0 HYDROLOGY ASSESSMENT

3.1. LAWFUL POINT OF DISCHARGE

The existing site surface grades towards the south-western corner to Easement A which will be the Lawful Points of Discharge (LPOD) for the site. This point is under the lawful control of the local government and satisfies the Lawful Points of Discharge in accordance with QUDM. Easement A, along the rear boundary of the site provides for an inter-allotment drainage system as detailed in Appendix B. The existing inter-allotment drainage system falls south and includes a graded swale for overland flow and a stormwater piped system with grated pit inlets on every second lot.

Post development discharge will be detained to ensure there will be no adverse impacts on downstream properties and infrastructure.

3.2. HYDROLOGIC MODELLING

Hydrologic calculations have been undertaken using XPSTORM 2017 V2.2 for pre and post development scenarios. The modelling within XPSTROM environment has been undertaken to estimate the peak discharge for storms up to 1% AEP. Hydrologic modelling has been undertaken using the Laurenson Runoff Routing Method. Laurenson's Method is an industry leading hydrologic routing method that can be used for catchments ranging between 10m² up to 20,000km². The information required to apply Laurenson's Method include:

- Rainfall Intensity Data (obtained from the Bureau of Meteorology 2016 IFD utility)
- Rainfall Temporal Patterns (obtained from the ARR'16 Data Hub)
- Catchment Area (ha)
- Catchment Slope
- Initial and Continuing Infiltration Data
- Catchment Roughness (Manning's 'n')

Given the relatively limited scope of this hydraulic impact assessment a lumped catchment approach, as defined by ARR'16 and shown in Figure 2 below, was applied to the hydrologic review of the site. The lumped approach is suitable for this site given the relative consistency in land use and the ultimate purpose of the model.

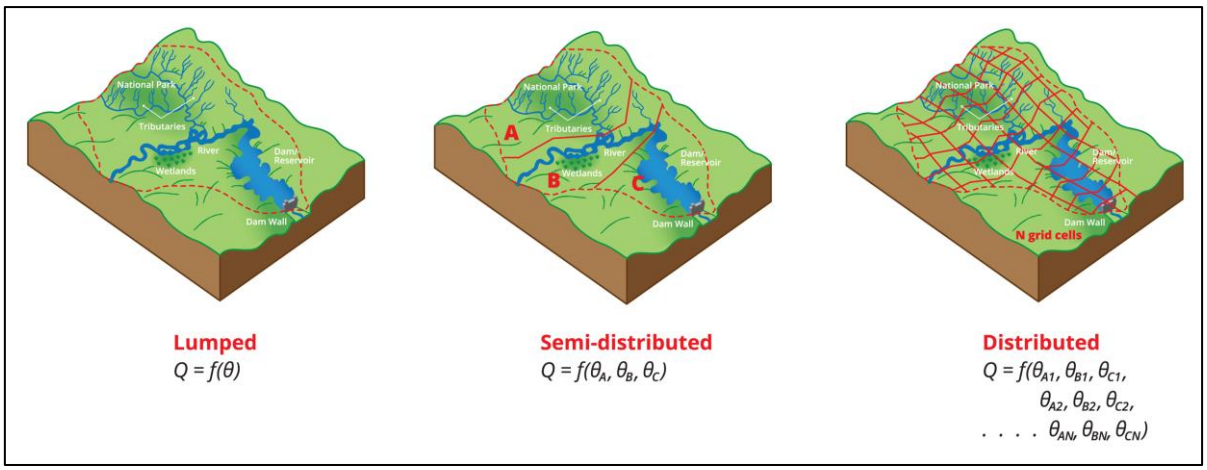


Figure 2: Catchment Analysis Options

Refer Appendix A for catchment boundaries for the site.

3.2.1. CATCHMENT HYDROLOGY PARAMETERS

Table 2 and 3 summarises the input data for the development site in pre-development and post-development conditions.

Table 2: Pre-Development Model Parameters (XP Storm)

Parameter		Existing Site
		Pervious
Area (ha)		0.351
Impervious (%)		0.0
Slope (%)		1.0
Laurenson 'n' (storage non-linearity exponent)		-0.285
Infiltration	Initial Loss (mm/hr)	0.0
	Continuing Loss (mm/hr)	1.5
Manning's Roughness (n)		0.030

Table 3: Post-Development Model Parameters (XP Storm)

Parameter		Veterinary Clinic	
		Pervious	Impervious
Area (ha)		0.264	0.087
Impervious (%)		0.0	100
Slope (%)		1.0	1.0
Laurenson 'n' (storage non-linearity exponent)		-0.285	-0.285
Infiltration	Initial Loss (mm/hr)	0.0	0.0
	Continuing Loss (mm/hr)	1.5	0.0
Manning's Roughness (n)		0.030	0.015

Applying no initial losses within the model is consistent with the requirements of both ARR'87 and ARR'16. ARR'16 states that there is no evidence that infiltration losses change with respect to the recurrence interval being modelled and that continuing losses can be applied equally to frequent and rare events. The following Manning's roughness values have been applied to the catchments:

- Pervious 'n' = 0.030 (weighted average roughness of poor grass and shrub cover with scattered trees)
- Impervious 'n' = 0.015 (weighted average roughness of bitumen and roof surface)

3.2.2. HYDROLOGY RESULTS

Applying the ARR'16 ensemble temporal patterns to the catchment allowed the identification of the critical duration for the mean minor and major storm event. Below figures are screen shots of Box and Whisker plot taken from XPSTORM software. This plot shows the comparison of storm ensembles for different durations for minor and major storm events.

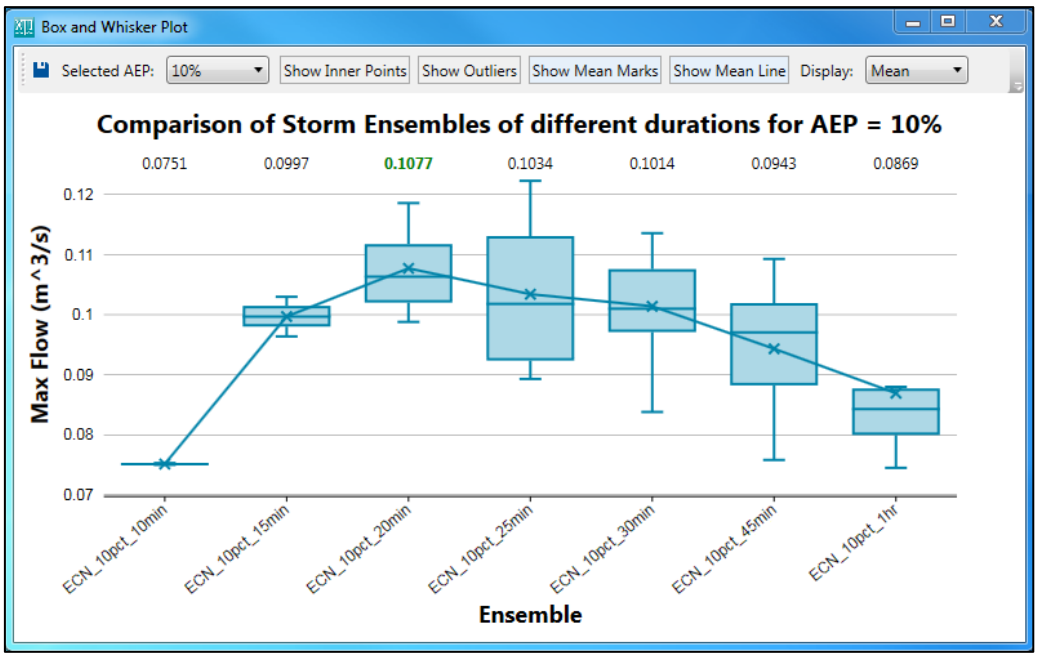


Figure 3: Comparison of Storm Ensembles of different durations for 10% AEP (XPSTORM Model)

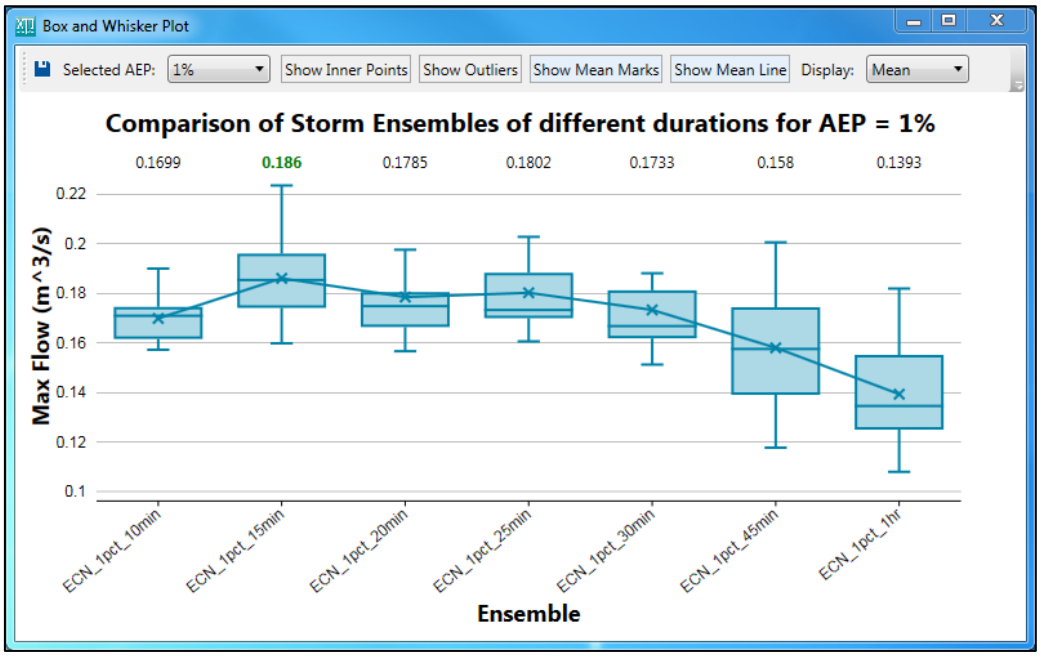


Figure 4: Comparison of Storm Ensembles of different durations for 1% AEP (XPSTORM Model)

The results of each of the ensembles are summarised in Table 4. The same storm events are applied to the hydraulic analysis.

Table 4: Critical Storm Events

Annual Exceedance Probability (AEP %)	Critical Storm Event
39.35%	0.5EY_25min_8
10% (Minor Event)	10pct_20min_5
1% (Major Event)	1pct_15min_2

3.2.3. EXTERNAL CATCHMENTS

There are no external catchments impacting the subject site based on the surface grading surrounding the site.

4.0 HYDRAULIC ASSESSMENT

4.1 BACKGROUND

The hydraulic assessment for the site has been carried out using XPSTORM 2017 V2.2. The aim of the hydraulic modelling is to demonstrate that the post-development minor and major storm peak discharge at the LPOD is equal or less than the peak pre-development discharge. This will be achieved by detaining the site runoff within the carpark and turnaround area to a maximum height of 90mm for storm event up to 1%AEP.

4.2 DETENTION

The proposed development will require approximately 22m³ of detention volume to ensure no worsening to downstream catchments and infrastructure. The proposed method of detention is to detain the rainfall captured within the carpark and turnaround area which is bounded by 150mm high barrier kerb and fall towards rear boundary. Outflow from this detained area will be directed to a 400mm wide kerb break which will throttle the runoff prior to discharging onto the existing grass area (refer Appendix A). A rock pad will be installed at the kerb break to prevent any scouring. Undetained runoff from the roof and grassed area will be directed to LPOD. The detention routing calculations have been performed to ensure sufficient detention volume provided in the carpark and turnaround area to offset the increase in flow from the undetained roof and grassed areas. Table 5 summarises the peak discharge for different scenarios.

Table 5: Peak Discharge Rate at LPOD

Storm Event (AEP %)	Pre-Development Discharge (m³/s)	Post-Development Discharge excluding Carpark and Turnaround Areas - Undetained (m³/s)	Outflow from Kerb Break - Detained (m³/s)
39.35%	0.072	0.065	0.007
10% (Minor Event)	0.107	0.094	0.010
1% (Major Event)	0.175	0.157	0.017

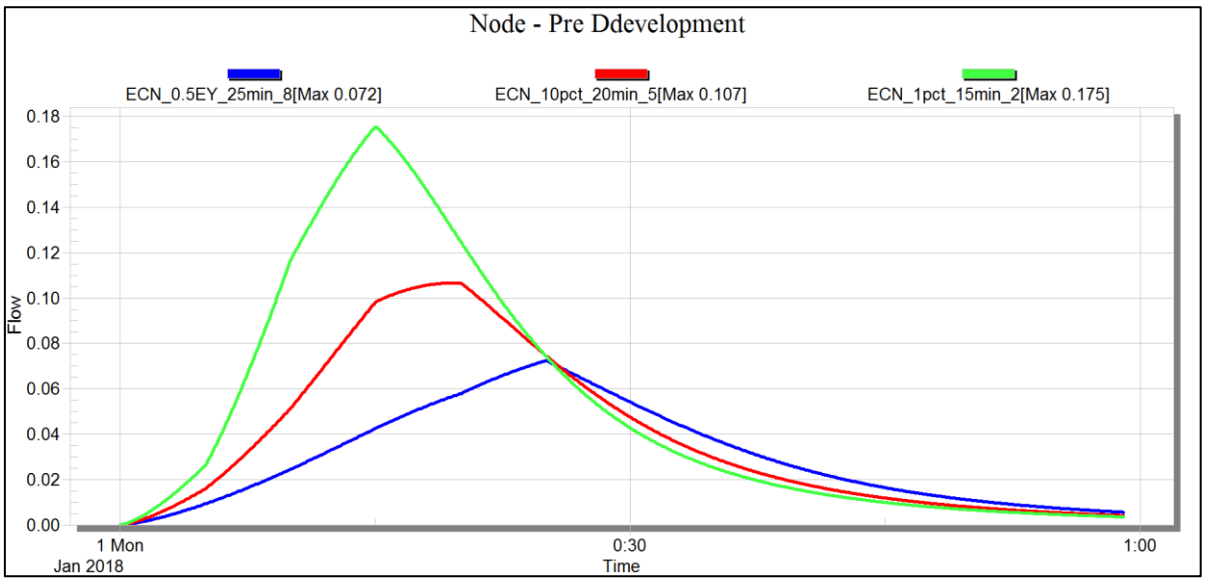


Figure 5: Pre-Development Peak Discharge Rate at LPOD

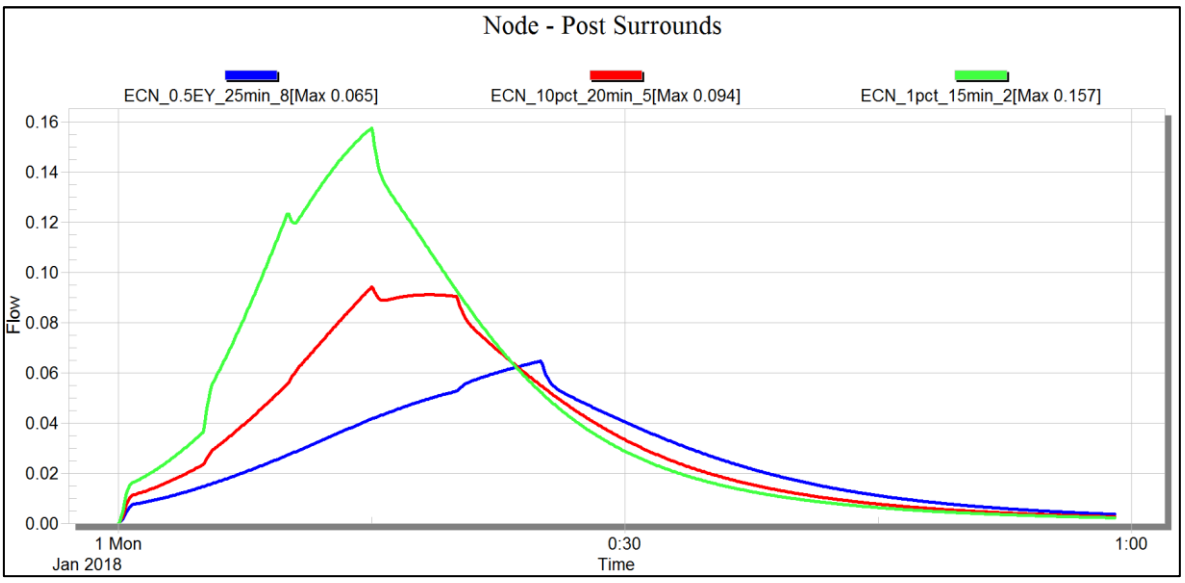


Figure 6: Post-Development Peak Discharge Rate at LPOD from Undetained Roof and Grass Areas

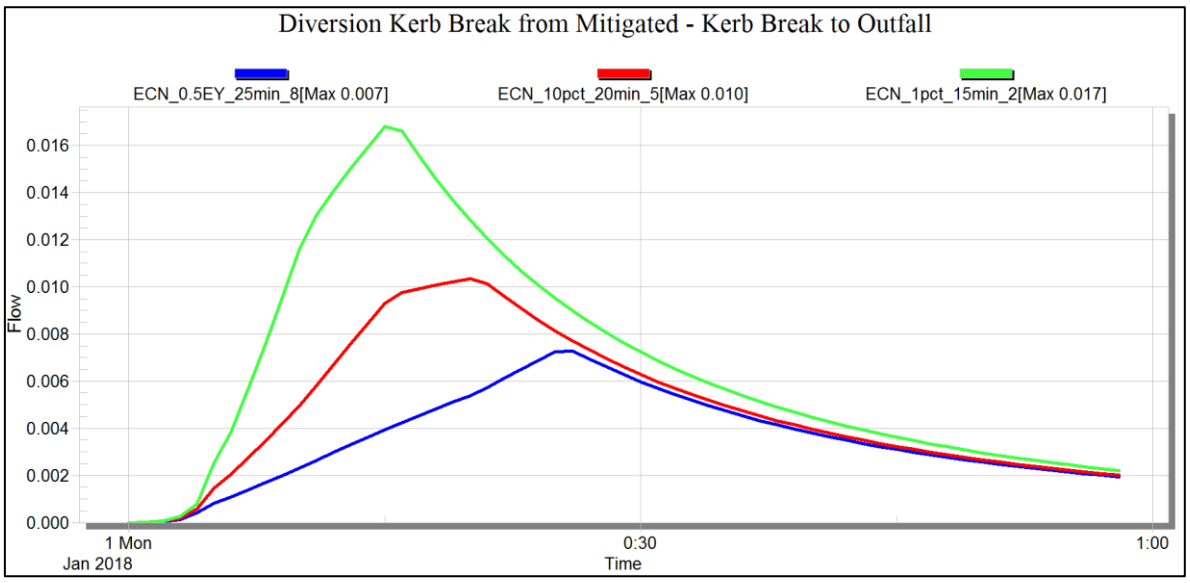


Figure 7: Post-Development Outflow from 400mm Wide Kerb Break - Detained

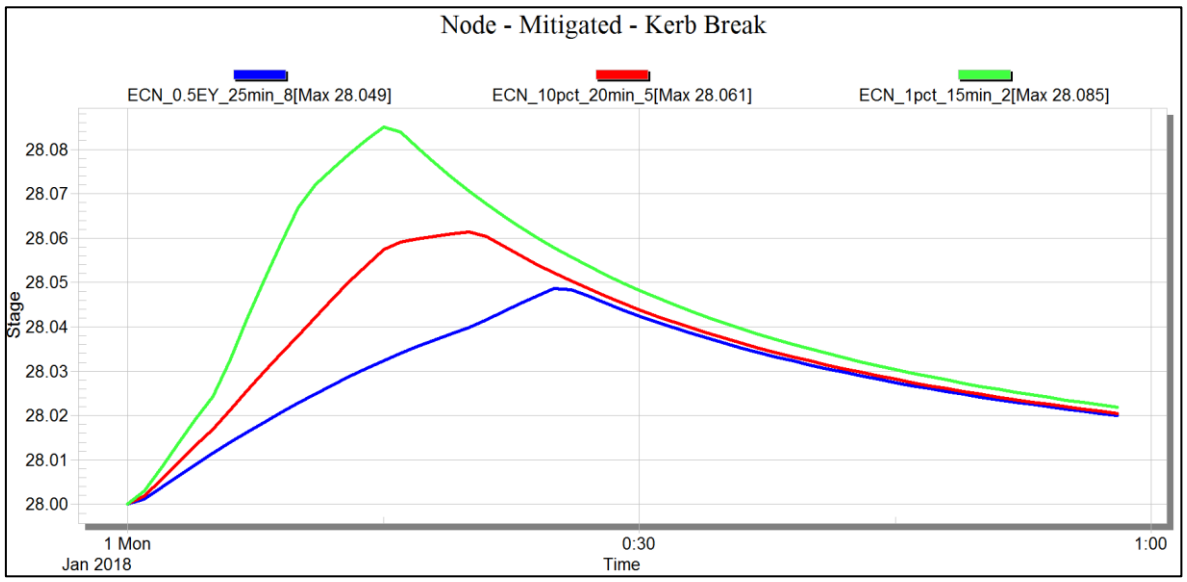


Figure 8: Water Surface Elevation in the Carpark and Turnaround Area

Table 6 summarises detention basin parameters to achieve the target mitigated pre-development flow rates.

Table 6: Detention Basin Parameters

Detention Surface Area (approximate)	**250m²**
Detention Volume (approximate)	**22m³**
Outlet Structure	**400mm wide Kerb Break**
Kerb Break Level (Turnaround Area Surface Level)	**28.00m**
Maximum Water Surface Elevation at 1%AEP	**28.085m**

It is acknowledged that during a storm event, detained water will not be evenly distributed across the proposed detention area (carpark and turnaround areas) and that water will start to back up from the throat of the kerb break.

5.0 QUALITY ASSESSMENT

5.1. BACKGROUND

The proposed development involves material change of use for an urban purpose that involves premises greater than 2500m² in size. This development will result in an impervious area less than 25 per cent of the net developable area and therefore water quality assessment benchmarks setout in State Planning Policy (July 2017) will not be applicable. The total impervious area for the development is approximately 865m² which is less than the 25 per cent of 3515m² of net developable area.

During construction phase of the development, disturbances to the existing ground have the potential to significantly increase sediment loads entering downstream drainage systems and watercourses. The operational phase of the development will potentially increase the amount of sediments and nutrients washing from the site.

The following section describes construction phase controls in compliance with Council guidelines.

5.2. CONSTRUCTION PHASE

5.2.1. KEY POLLUTANTS

During the construction phase a number of key pollutants have been identified for this development. Table 9 illustrates the key pollutants that have been identified.

Pollutant	Sources
Litter	Paper, construction packaging, food packaging, cement bags, material off cuts.
Sediment	Exposed soils and stockpiles during earthworks and building works.
Hydrocarbons	Fuel and oil spills, leaks from construction equipment and temporary car park areas.

Table 7: Key Pollutants – Construction Phase

5.2.2. EROSION AND SEDIMENT CONTROLS

Erosion and Sediment Control (ESC) devices employed on the site shall be designed and constructed in accordance with CMDG.

Details of the proposed controls are shown on McMurtrie Consulting Engineers, Sediment and Erosion Control Device Details included as Appendix C.

PRE CONSTRUCTION

- Stabilised site access/exit on Old Capricorn Highway.
- Sediment fences to be located along the contour lines downstream of disturbed areas.
- Diversion drains to divert clean runoff around the construction site.
- Educate site personnel to the requirements of the Sediment and Erosion Control Plan.

CONSTRUCTION

- Maintain construction access/exit, sediment fencing, catch drains and all other existing controls as required.
- Progressively surface and revegetate finished areas as appropriate.

During construction, all areas of exposed soils allowing dust generation are to be suitably treated. Treatments will include mulching the soil and watering. Road access is to be regularly cleaned to prevent the transmission of soil on vehicle wheels and eliminate any build-up of typical road dirt and tyre dusts from delivery vehicles.

Adequate waste disposal facilities are to be provided and maintained on the site to cater for all waste materials such as litter hydrocarbons, toxic materials, acids or alkaline substances.

APPENDIX A

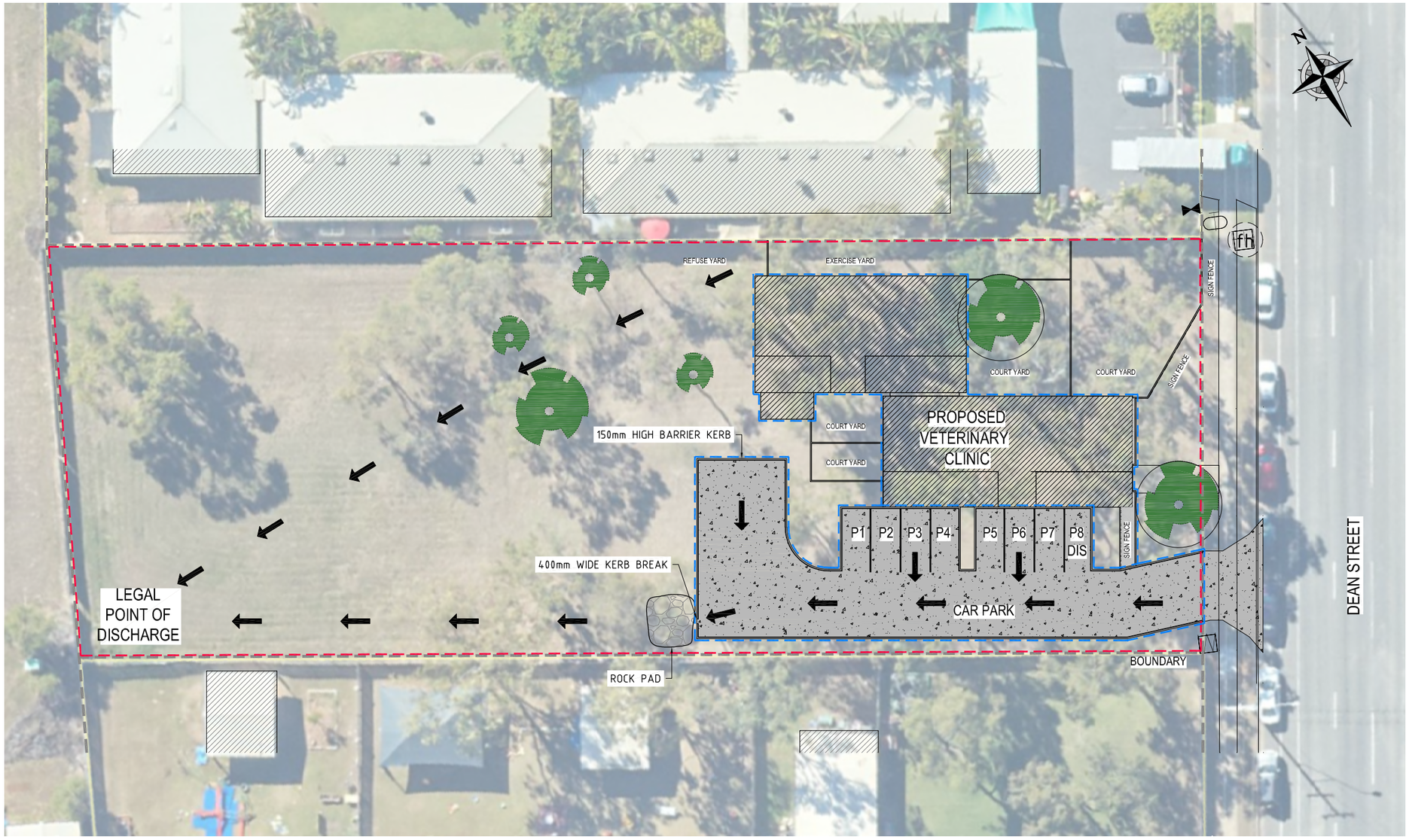
Stormwater Management Plan

LEGEND

- EXISTING PROPERTY BOUNDARY
- PRE-DEVELOPMENT CATCHMENT BOUNDARY
- POST-DEVELOPMENT CATCHMENT BOUNDARY
- PROPOSED 150mm HIGH BARRIER KERB
- PROPOSED CONCRETE
- INDICATES DIRECTION OF FLOW

PRE - DEVELOPMENT	
GRASSED AREA (ha)	0.351

POST - DEVELOPMENT	
CARPARK AREA (ha)	0.0308
TURNAROUND (ha)	0.0144
ENTRY PATH (ha)	0.0031
VETERINARY BUILDING GFA (ha)	0.0326
OPEN COVERED AREA (ha)	0.0052
LANDSCAPING AREA (ha)	0.2532
TOTAL	0.351



STORMWATER MANAGEMENT PLAN
SCALE: 1:200(A1) 1:400(A3)

4 0 4 8 12 16 20m
SCALE 1:200 @ A1 SCALE 1:400 @ A3

INFORMATION ONLY

SURVEYOR
N/A
ADDRESS:
CO-ORDINATE DATUM
HEIGHT DATUM

DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	DFT	DFT CHK	DES	DES CHK
		A	07.08.2018	SUBMITTED FOR INFORMATION	RC	MM	MM	MM

	BY	DATE
REVIEWED		
RPEQ ENG		

RPEQ No:

CLIENT

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SCALE: AS SHOWN

PREPARED BY 0031819
mcmurtrie CONSULTING ENGINEERS
Address: 63 Charles Street NORTH ROCKHAMPTON QLD 4701
Postal: PO BOX 2149, WANDAL QLD 4700
E-mail: mail@mcmengineers.com
Phone: (07) 4921 1780
Mobile: 0407 631 066
Fax: (07) 4921 1790

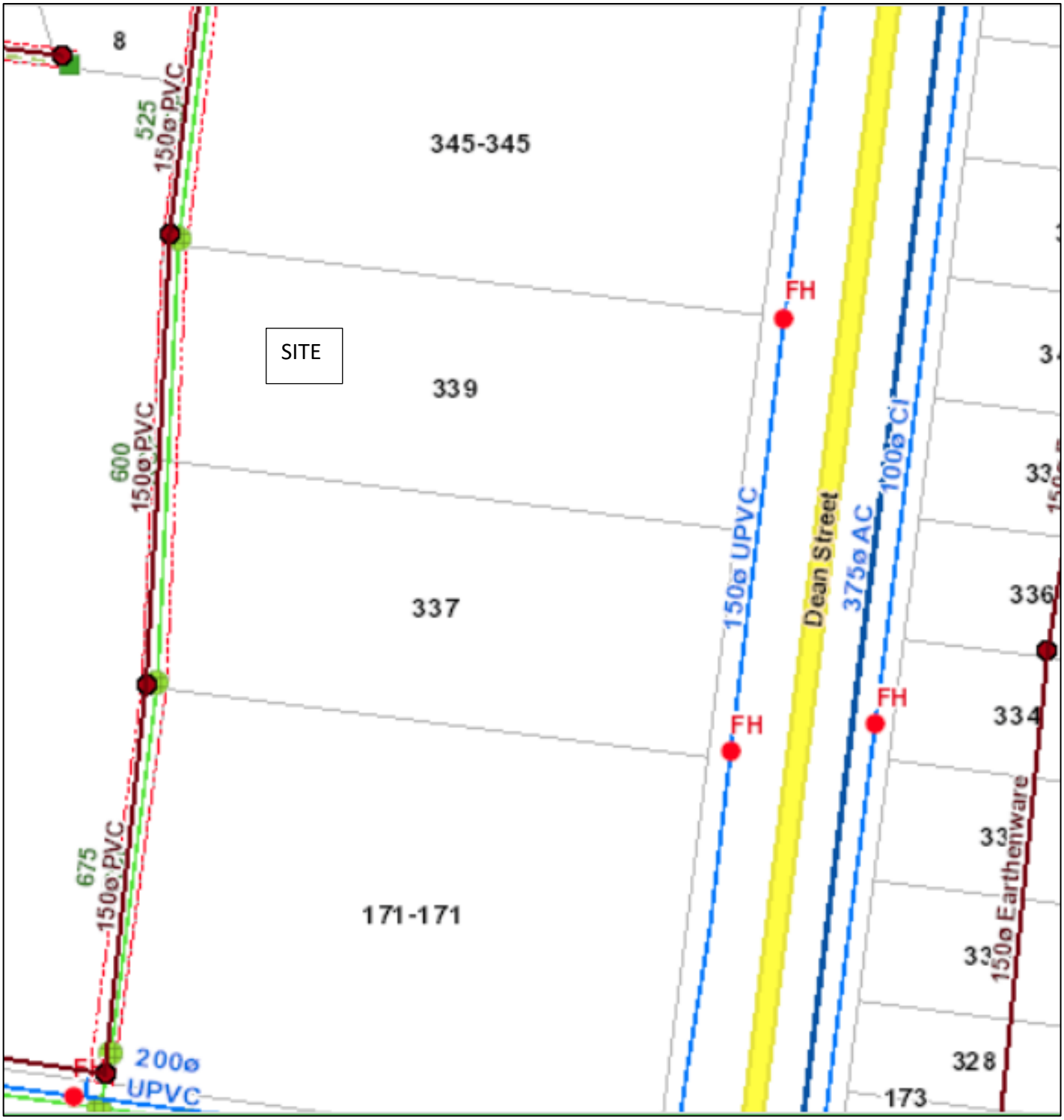
CLIENT TORENBEAK VETERINARY CLINIC
PROJECT VETERINARY CLINIC
TITLE STORMWATER MANAGEMENT PLAN
SHEET 1 OF 1

A1 | DRAWING NUMBER 0031819-SMP-0001 | REVISION A

DRAWING LOCATION: S:\PROJECT RECORDS\18-19\0031819 - STORMWATER MANAGEMENT PLAN\CAD\SKETCHES\0031819 - STORMWATER MANAGEMENT PLAN.DWG
PLOT DATE: 7/09/2018 9:35:35 AM

APPENDIX B

Existing Site Services Excerpt from RRC online Mapping


8
525
150ø PVC
345-345
SITE
339
600
150ø PVC
337
675
150ø PVC
171-171
200ø
UPVC
FH
150ø UPVC
Dean Street
375ø AC
100ø CI
FH
FH
336
334
150ø Earthenware
328
173

APPENDIX C

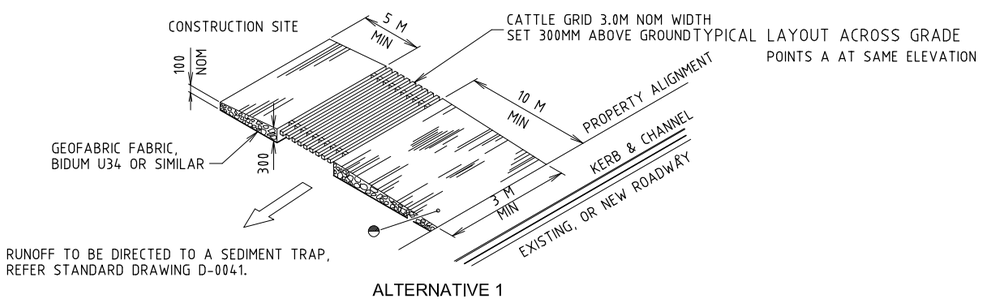
Erosion and Sediment Control Details

NOTES

1. GENERAL
   - (A) TEMPORARY DRAINAGE CONTROL. FLOW SHOULD BE DIVERTED AROUND THE WORK SITE WHERE POSSIBLE.
   - (B) ALL DRAINAGE, EROSION AND SEDIMENT CONTROLS TO BE INSTALLED AND BE OPERATIONAL BEFORE COMMENCING UP-SLOPE EARTHWORKS.
   - (C) ALL CONTROL MEASURES TO BE INSPECTED AT LEAST WEEKLY AND AFTER SIGNIFICANT RUNOFF PRODUCING STORMS.
   - (D) CONTROL MEASURES MAY BE REMOVED WHEN ON-SITE EROSION IS CONTROLLED AND 70% PERMANENT SOIL COVERAGE IS OBTAINED OVER ALL UPSTREAM DISTURBED LAND.
   - (E) IN AREAS WHERE RUNOFF TURBIDITY IS TO BE CONTROLLED, EXPOSED SURFACES TO BE EITHER MULCHED, COVERED WITH EROSION CONTROL BLANKETS OR TURFED IF EARTHWORKS ARE EXPECTED TO BE DELAYED FOR MORE THAN 14 DAYS.
   - (F) STRAW BALE SEDIMENT TRAPS ARE A SECONDARY OPTION WHICH GENERALLY SHOULD NOT BE USED IF OTHER OPTIONS ARE AVAILABLE.
2. SEDIMENT FENCE
   - (A) NOT TO BE LOCATED IN AREAS OF CONCENTRATED FLOW.
   - (B) NORMALLY LOCATED ALONG THE CONTOUR WITH A MAXIMUM CATCHMENT AREA 0.6 HA PER 100M LENGTH OF FENCE.
   - (C) WOVEN FABRICS ARE PREFERRED, NON-WOVEN FABRICS MAY BE USED ON SMALL WORK SITES, I.E. OPERATIONAL PERIOD LESS THAN 6 MONTHS OR ON SITES WHERE SIGNIFICANT SEDIMENT RUNOFF IS NOT EXPECTED.
   - (D) WHERE FENCES NEED TO BE LOCATED ACROSS THE CONTOUR THE LAYOUT SHALL CONFORM TO 'TYPICAL LAYOUT ACROSS GRADE'.
   - (E) FENCES ARE REQUIRED 2M MIN FROM TOE OF CUT OR FILL BATTERS, WHERE NOT PRACTICAL ONE FENCE CAN BE AT THE TOE WITH A SECOND FENCE 1M MIN AWAY. FENCE SHOULD NOT BE LOCATED PARALLEL WITH TOE IF CONCENTRATION OF FLOW WILL OCCUR BEHIND THE FENCE.
3. TEMP CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP.
   - (A) ADJACENT STORMWATER RUNOFF TO BE DIVERTED AWAY FROM ENTRY/EXIT.
   - (B) WHEEL - WASH OR SPRAY UNIT MAY BE REQUIRED DURING WET WEATHER.
4. SAFETY ISSUES MUST BE CONSIDERED AT ALL TIMES, INCORPORATE TRAFFIC CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT.
5. ALL DIMENSIONS IN MILLIMETRES UNLESS INDICATED OTHERWISE.

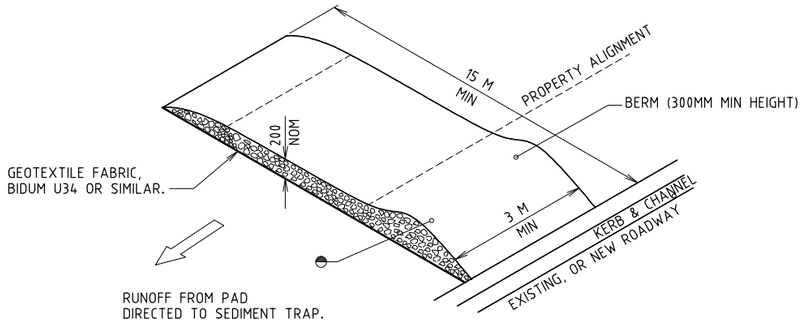
LEGEND

- ◓ UNBOUND PAVEMENT MATERIAL (GRAVEL) TO GRADING B, TABLE 9 OF QT SPECIFICATION MRS11.05, EXCLUDE MATERIAL FINER THAN AS SIEVE 2.36MM.
- ■ WITHOUT F42 FABRIC, 2000 MAX C\C



ALTERNATIVE 1

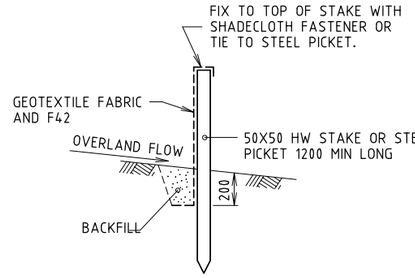
TYPICAL LAYOUT ACROSS GRADE
POINTS A AT SAME ELEVATION



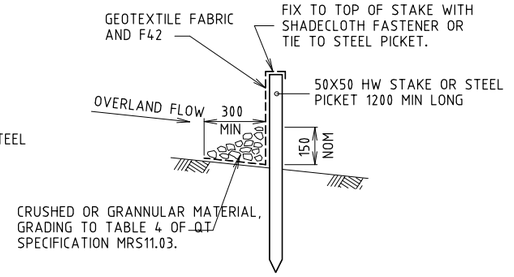
ALTERNATIVE 2

TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP

N.T.S



ALTERNATIVE 1



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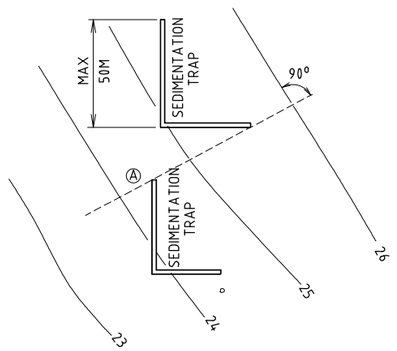

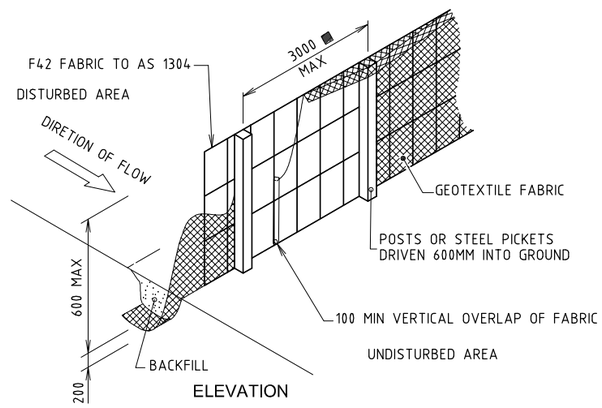

ELEVATION

SEDIMENT FENCE

N.T.S

INFORMATION ONLY

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N/A											
ADDRESS:											
CO-ORDINATE DATUM											
HEIGHT DATUM											
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			A	07.08.2018	SUBMITTED FOR INFORMATION	RC	MM	MM	MM

	BY	DATE
REVIEWED		
RPEQ ENG		
RPEQ No:		

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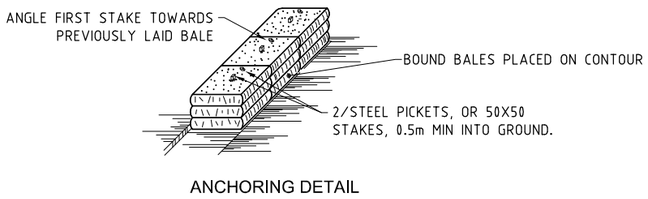
CLIENT TORENBEAK VETERINARY CLINIC
PROJECT VETERINARY CLINIC
TITLE EROSION AND SEDIMENT CONTROL
EROSION AND SEDIMENT CONTROL DETAILS

A1 | DRAWING NUMBER 0031819-ESC-0001 | REVISION A

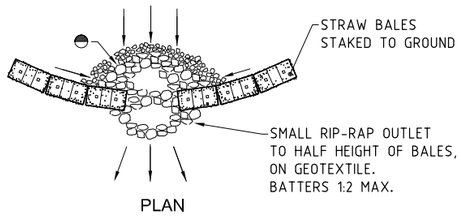
PLOT DATE: 7/09/2018 9:36:48 AM DRAWING LOCATION S:\PROJECT RECORDS\18-19\0031819-ESC-001 - EROSION AND SEDIMENT CONTROL DETAILS - SHEET 1.DWG



ANCHORING DETAIL

BEDDING DETAIL

TYPE 1 - STRAW BALE BANK SEDIMENT CONTROL
N.T.S



PLAN

TYPE 2 - STRAW BALE AND STONE TRAP SEDIMENT CONTROL- CONCENTRATED FLOW
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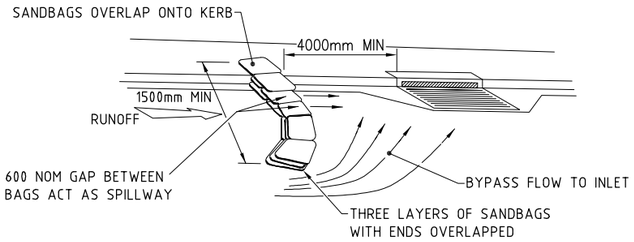

TYPE 3 - ON-GRADE KERB INLET SEDIMENT TRAP
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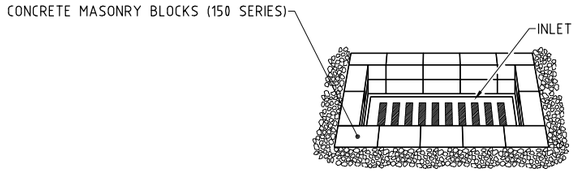

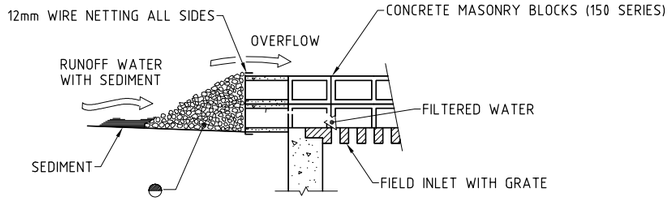

TYPE 4 - FIELD INLET SEDIMENT TRAP
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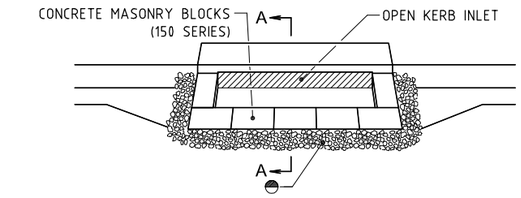
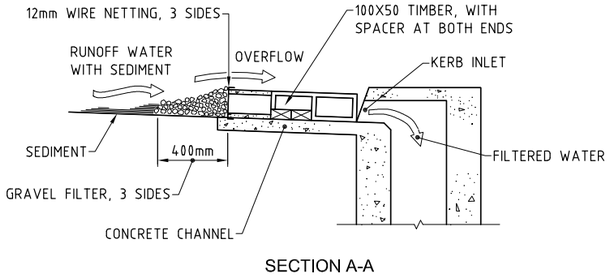




SECTION A-A

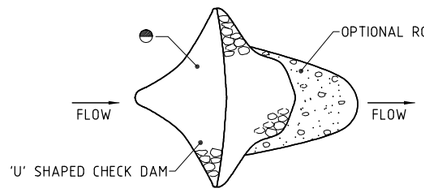
TYPE 5 - SAG INLET SEDIMENT TRAP
A STABILISED BYPASS 'OVERLAND FLOW PATH' SHOULD EXIST ADJACENT TO INLET IN GENUINE SAGS.

LEGEND

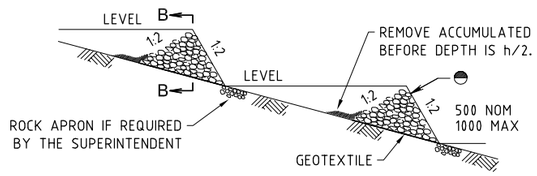
GRAVEL FILTER, REFER GRADING B, TABLE 9 OF QT SPECIFICATION MRS11.05, EXCLUDE MATERIAL FINER THAN AS SIEVE 2.36mm.

NOTES

1. FIELD INLET
   - A) A STABILISED BYPASS OVERLAND FLOW PATH SHOULD EXIST ADJACENT TO THE FIELD INLET.
   - B) WATER LEVEL CONTROL PERIMETER BANKS MAY BE REQUIRED.
   - C) BLOCKS TO BE RESTRAINED BY A HORIZONTAL TIMBER RAIL AT BLOCK JOINT HEIGHT FIXED TO TIMBER STAKES AT CORNERS.
2. CHECK DAMS
   - A) CATCHMENT AREA LIMITED TO 4 HA.
   - B) USE IN MINOR OPEN DRAINS ONLY, (VELOCITY CONTROL), SEDIMENT COLLECTION IS A SECONDARY PURPOSE.
3. STRAW BALE BANKS
   - A) BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR,IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
   - B) EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 100mm ON THE DOWNSTREAM SIDE AND PLACED SO THE BINDINGS ARE HORIZONTAL.
   - C) BALES SHALL BE SECURELY ANCHORED IN PLACE WITH EITHER TWO STAKES OR STEEL PICKETS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER.
   - D) INSPECTIONS SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED. REPLACE AT LEAST 3 MONTHLY.
4. SAFETY ISSUES MUST BE CONSIDERED AT ALL TIMES, INCORPORATE TRAFFIC CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT.



PLAN



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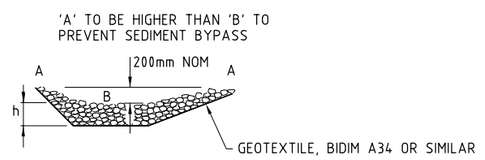

SECTION B-B

TYPE 6 - CHECK DAMS FLOW CONTROL
N.T.S

INFORMATION ONLY

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ADDRESS:										
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HEIGHT DATUM										
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REVIEWED		
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PROJECT VETERINARY CLINIC
TITLE EROSION AND SEDIMENT CONTROL
EROSION AND SEDIMENT CONTROL DETAILS

A1 | DRAWING NUMBER 0031819-ESC-0002 | REVISION A