

# PROPOSED RETAIL DEVELOPMENT

42 FULLERTON COVE ROAD, FULLERTON COVE, 2318  
CIVIL ENGINEERING PACKAGE



### DRAWING LIST

DWG No.	DRAWING TITLE
DA-C01.01	COVER SHEET, DRAWING LIST AND LOCALITY PLAN
DA-C01.21	GENERAL ARRANGEMENT PLAN
DA-C02.01	EROSION AND SEDIMENT CONTROL PLAN
DA-C02.11	EROSION AND SEDIMENT CONTROL DETAILS
DA-C03.01	CUT AND FILL PLAN
DA-C03.21	CUT AND FILL SECTIONS
DA-C04.01	CIVIL WORKS PLAN - SHEET 1
DA-C04.02	CIVIL WORKS PLAN - SHEET 2
DA-C04.21	TYPICAL SECTIONS
DA-C05.01	SWEPT PATHS PLAN - B99 MANOEUVRES
DA-C05.02	SWEPT PATHS PLAN - SRV MANOEUVRES
DA-C05.03	SWEPTS PATH PLAN - MRV MANOEUVRES
DA-C05.04	SWEPT PATHS PLAN - AV MANOEUVRES - SHEET 1
DA-C05.05	SWEPT PATHS PLAN - AV MANOEUVRES - SHEET 2
DA-C05.06	SWEPT PATHS PLAN - AV MANOEUVRES - SHEET 3
DA-C05.07	SWEPT PATHS PLAN - AV MANOEUVRES - SHEET 4
DA-C05.08	SWEPT PATHS PLAN - AV MANOEUVRES - SHEET 5
DA-C09.01	CIVIL DETAILS

DRAWN: D. MAVROUDIS  
DESIGNED: E. GEARING  
JOB MANAGER: K. SINCLAIR  
VERIFIER: K. SINCLAIR

LOCALITY PLAN

IMAGE SOURCE : NEARMAPS

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	SCALE	PROJECT	DRAWING TITLE	JOB NUMBER
A	ISSUED FOR INFORMATION	DM	KS	EG	08.09.23	<div>M&amp;P</div>	<div>EJE architecture</div>	SCALE 1:2000@ A1	PROPOSED RETAIL DEVELOPMENT 42 FULLERTON COVER ROAD FULLERTON COVE 2318	CIVIL ENGINEERING PACKAGE  COVER SHEET, DRAWING LIST AND LOCALITY PLAN	NL161067
B	ISSUED FOR DEVELOPMENT APPLICATION	DM	KS	EG	03.10.23						
C	RE-ISSUED FOR DA APPROVAL	DM	KS	EG	20.03.24						
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED						THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD		0 20 40 60 80 100m	Level 1, 215 Pacific Hwy, Charlestown NSW 2290 Ph (02) 4943 1777 Email newcastle@northrop.com.au ABN 81 094 433 100		DRAWING NUMBER DA-C01.01
											REVISION C
DRAWING SHEET SIZE = A1											



SHEET 2 EXTENTS - REFER TO C04.02

FULLERTON COVE ROAD

SHEET 1 EXTENTS - REFER TO C04.01

B1-E2 LAND ZONE BDT

B1-E2 LAND ZONE BDT

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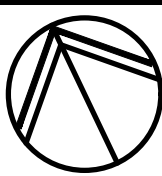
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A	ISSUED FOR INFORMATION	DM	KS	EG	08.09.23	<div><div>M &amp; P</div><div>McIntosh &amp; Partners</div></div> <div>DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED</div>
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E	RE-ISSUED FOR DA APPROVAL	DM	KS	EG	20.03.24	

M & P  
McIntosh & Partners

ARCHITECT

EJE architecture



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SCALE 1:500@A1

0 5 10 15 20 25m

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ABN 81 094 433 100

PROJECT

**PROPOSED RETAIL DEVELOPMENT  
42 FULLERTON COVER ROAD  
FULLERTON COVE  
2318**

DRAWING TITLE

**CIVIL ENGINEERING PACKAGE  
  
GENERAL ARRANGEMENT PLAN**

JOB NUMBER

**NL161067**

DRAWING NUMBER

**DA-C01.21**

REVISION

**E**

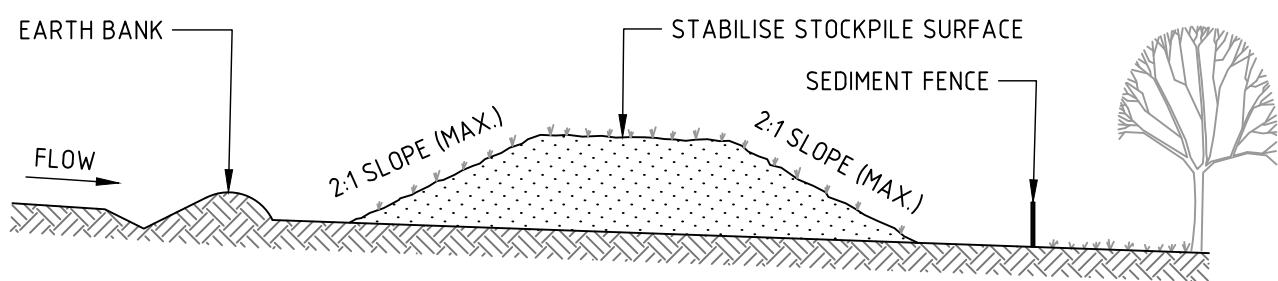
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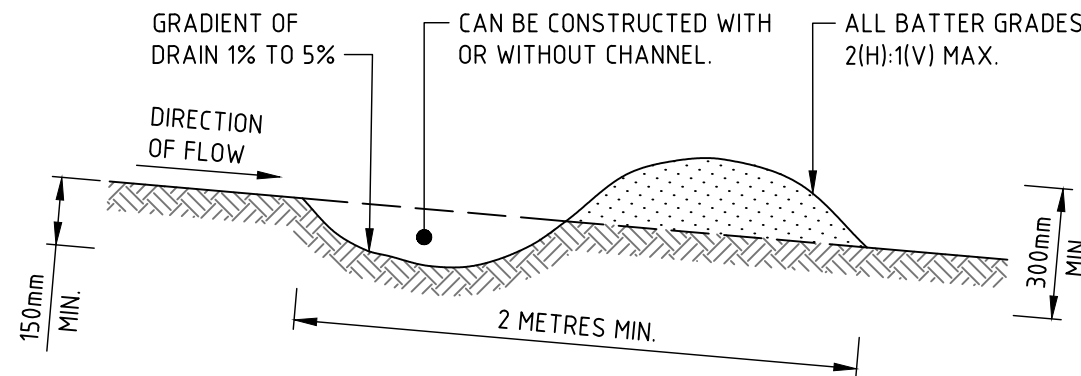
VERIFIER: K. SINCLAIR  
JOB MANAGER: K. SINCLAIR  
DESIGNED: E. GEARING  
DRAWN: D. MAVROUDIS



#### CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

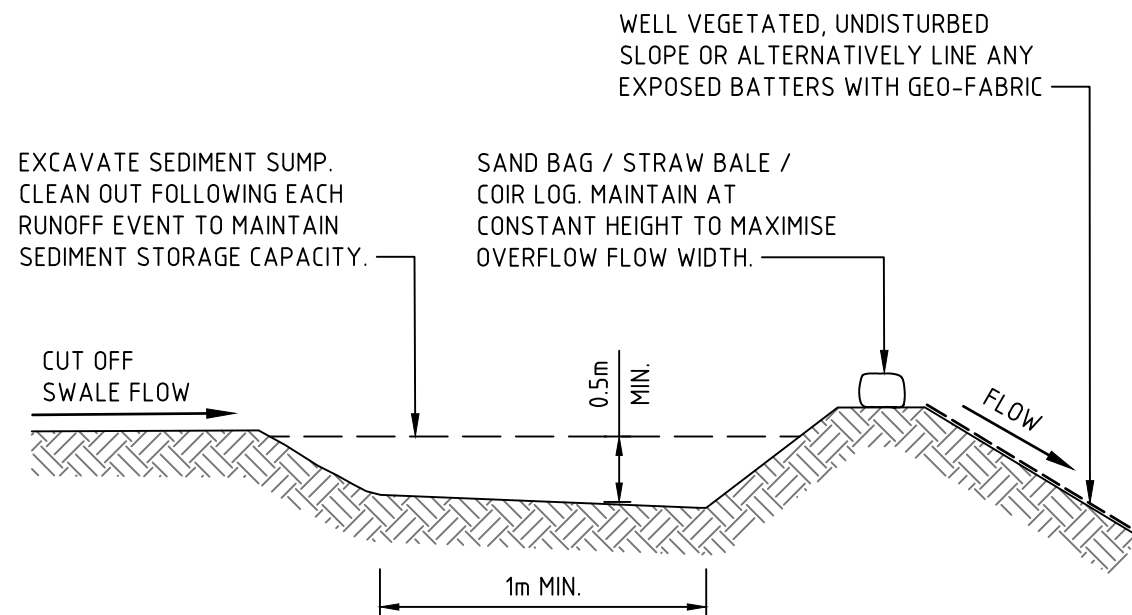
STOCKPILES (SD 4-1)



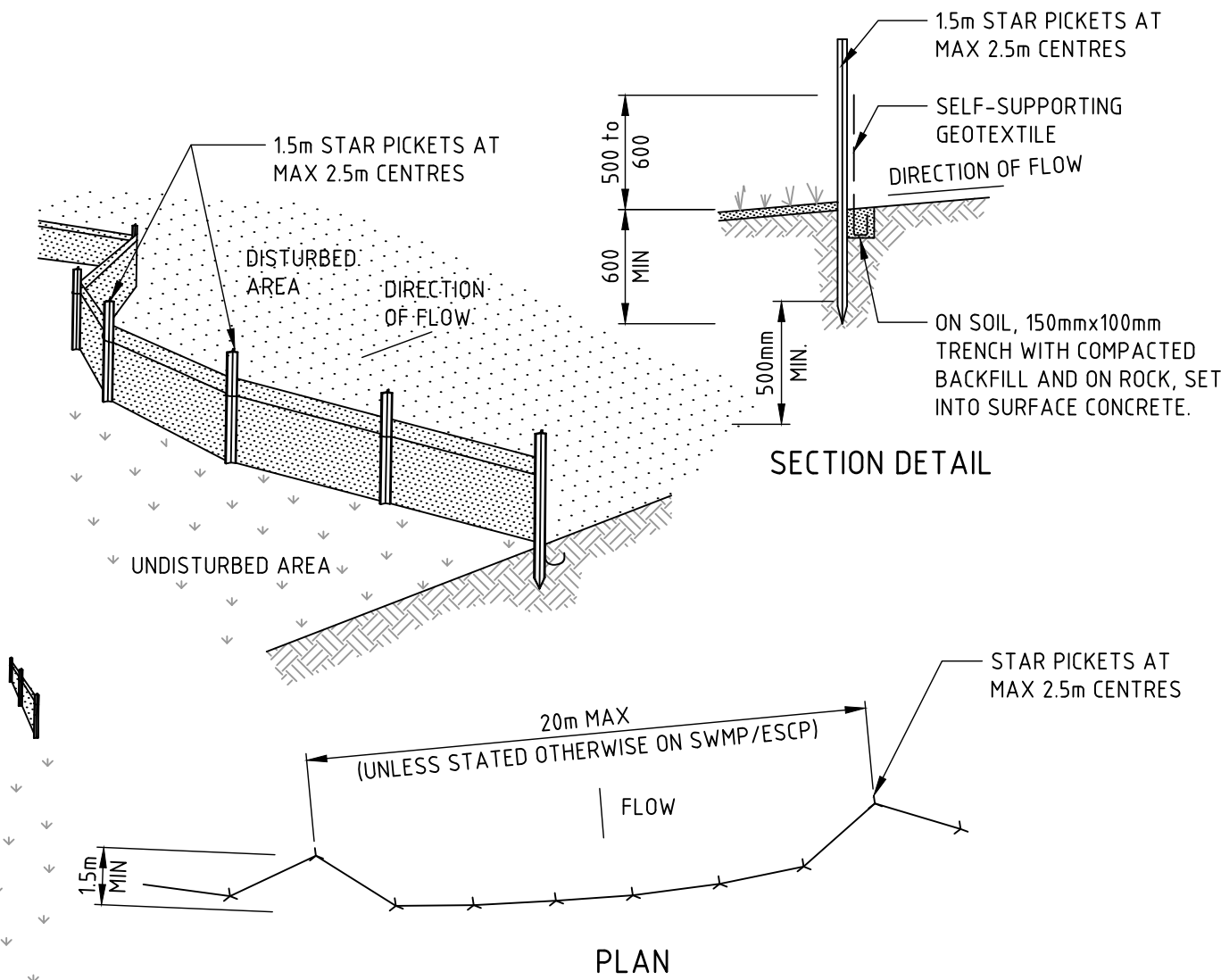
#### CONSTRUCTION NOTES

1. BUILD WITH GRADIENTS BETWEEN 1 AND 5 PERCENT.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

NOTE: ONLY TO BE USED AS TEMPORARY BANK  
WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.  
EARTH BANK - LOW FLOW (SD 5-5)



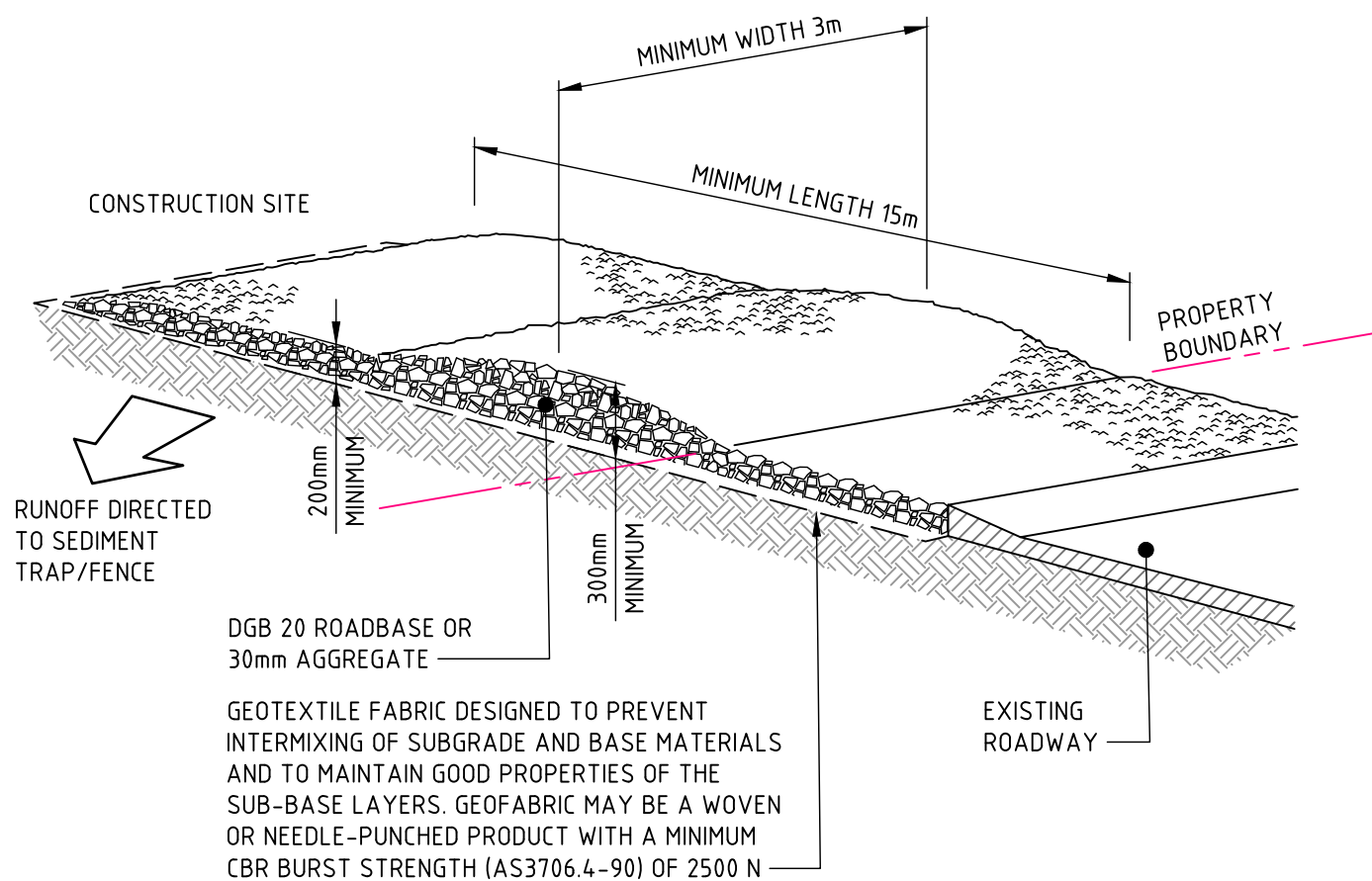
SEDIMENT TRAP DETAIL



#### CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 15 METRE LONG STAR PICKETS INTO GROUND AT 25 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

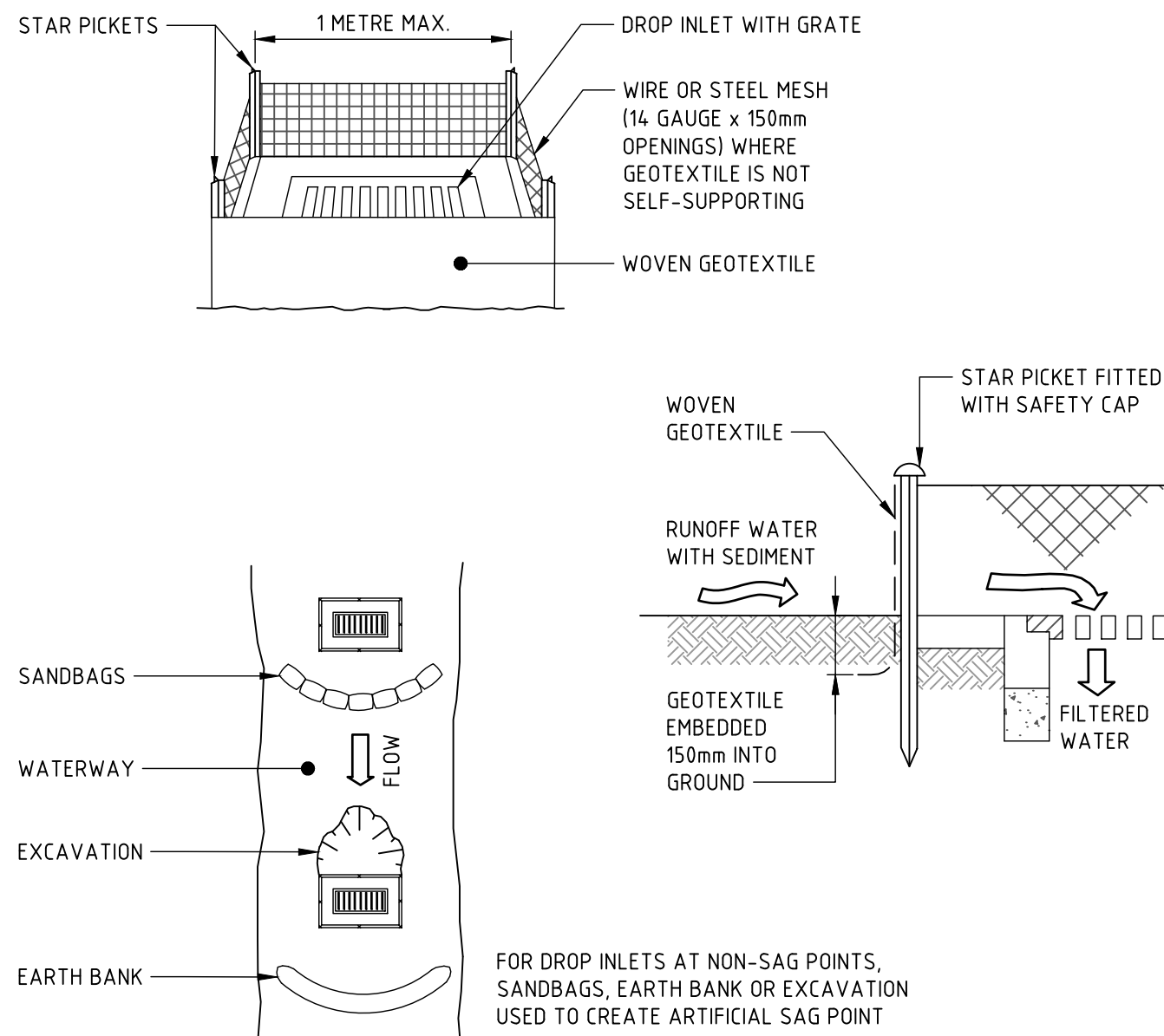
SEDIMENT FENCE (SD 6-8)



#### CONSTRUCTION NOTES

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

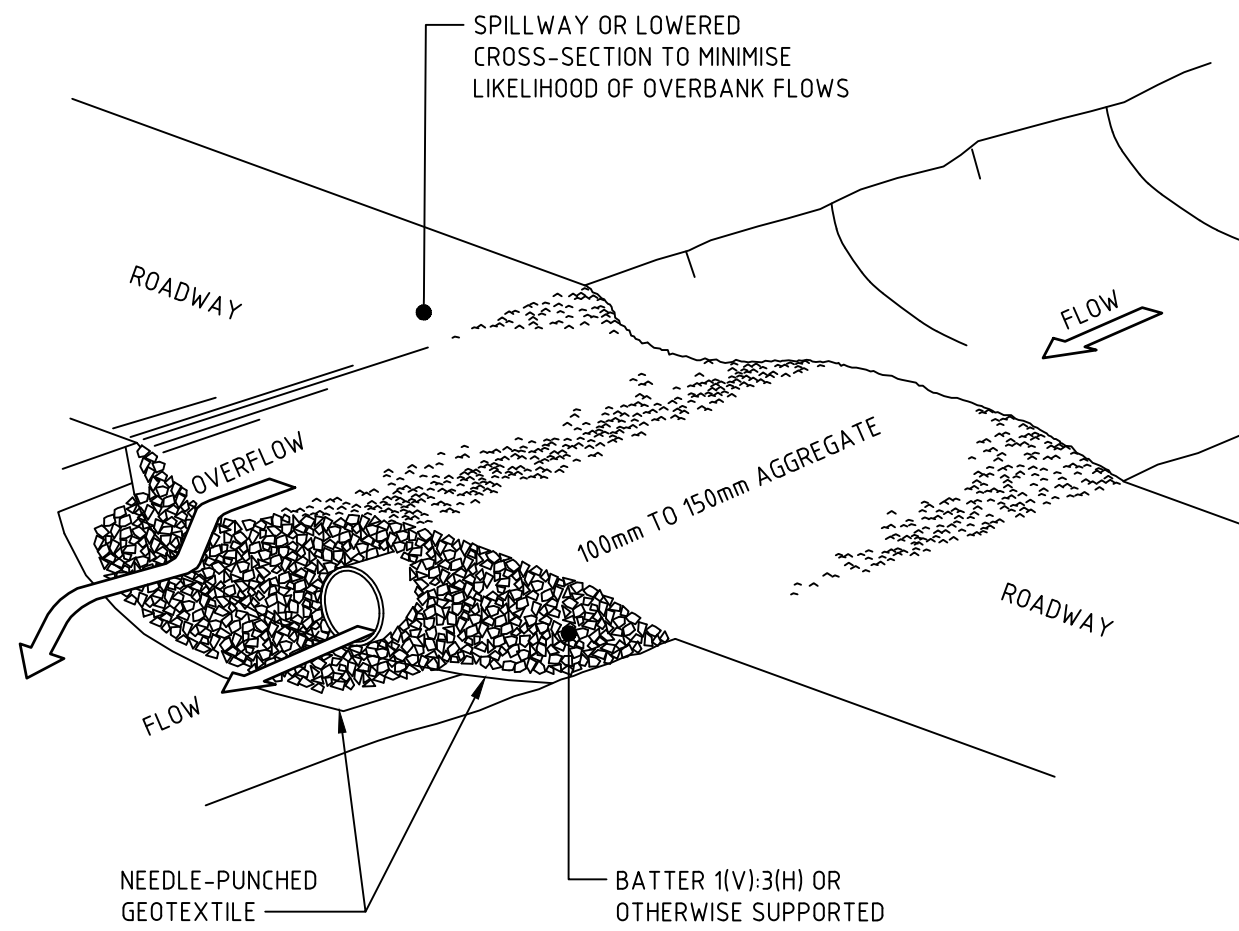
STABILISED SITE ACCESS (SD 6-14)



#### CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER (SD 6-12)






#### CONSTRUCTION NOTES

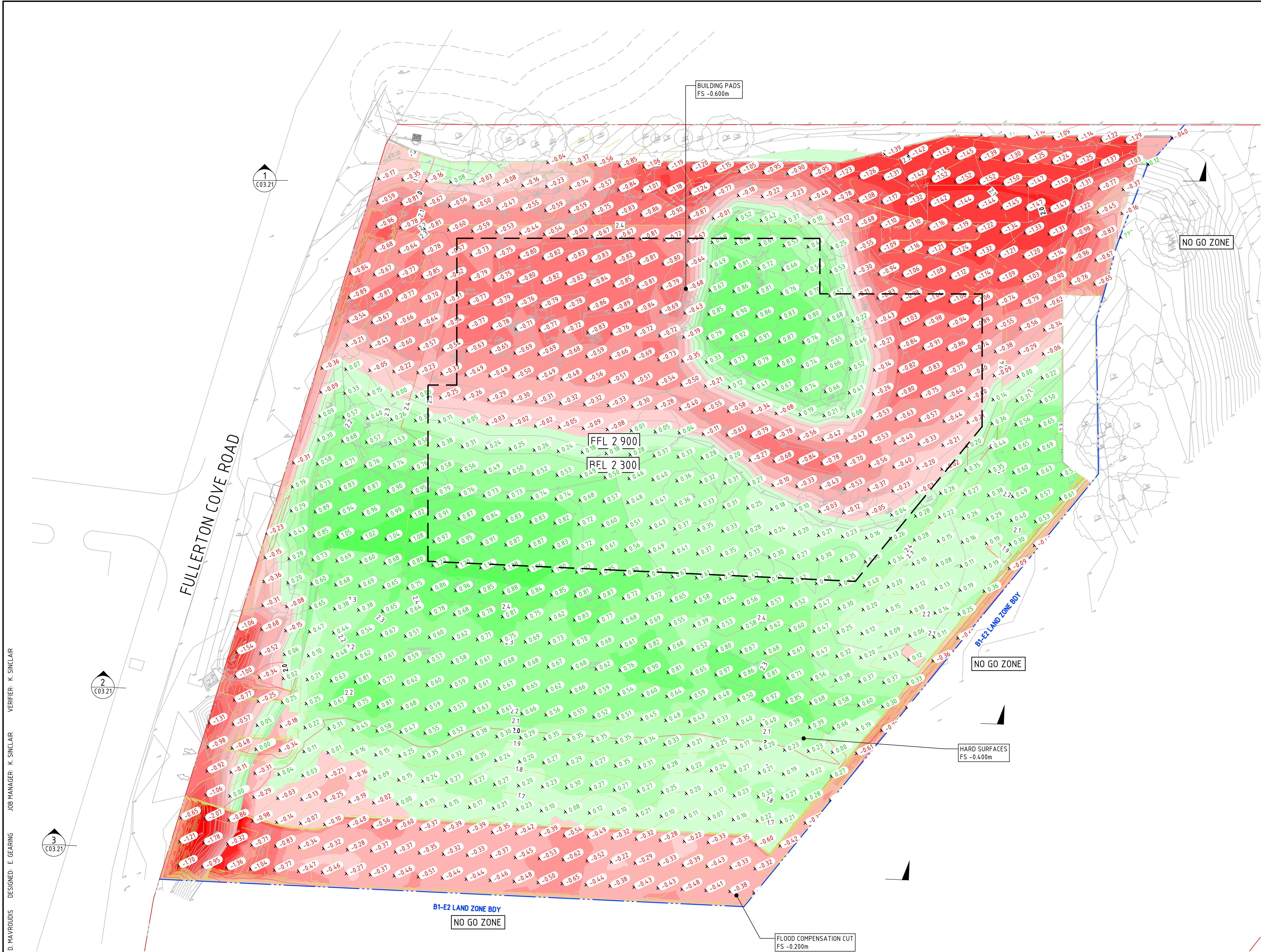
1. PROHIBIT ALL TRAFFIC UNTIL THE ACCESS WAY IS CONSTRUCTED.
2. STRIP ANY TOPSOIL AND PLACE A NEEDLE-PUNCHED TEXTILE OVER THE BASE OF THE CROSSING.
3. PLACE CLEAN, RIGID, NON POLLUTING AGGREGATE OR GRAVEL IN THE 100mm TO 150mm SIZE CLASS OVER THE FABRIC TO A MINIMUM DEPTH OF 200mm.
4. PROVIDE A 3m WIDE CARRIAGEWAY WITH SUFFICIENT LENGTH OF CULVERT PIPE TO ALLOW LESS THAN A 3(H): 1 (V) SLOPE ON SIDE BATTERS.
5. INSTALL A LOWER SECTION TO ACT AS AN EMERGENCY SPILLWAY IN GREATER THAN DESIGN STORM EVENTS.
6. ENSURE THAT CULVERT OUTLETS EXTEND BEYOND THE TOE OF FILL EMBANKMENTS.

TEMPORARY WATERWAY CROSSING (SD 5-1)

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A	ISSUED FOR INFORMATION		DM	KS	EG	08.09.23			 Newcastle Level 1, 215 Pacific Hwy, Charlestown NSW 2290 Ph (02) 4943 1777 Email newcastle@northrop.com.au ABN 81 094 433 100	PROPOSED RETAIL DEVELOPMENT 42 FULLERTON COVER ROAD FULLERTON COVE 2318	CIVIL ENGINEERING PACKAGE  EROSION AND SEDIMENT CONTROL DETAILS	NL161067		
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LEGEND

SITE BOUNDARY LINE

B1-E2 ZONE BOUNDARY

FFL XX.XX

FINISHED FLOOR LEVEL

BEL XX.XX

BULK EARTHWORKS LEVEL

XX.XX

DESIGN CONTOURS (0.1m INTERVAL)

DEPTH OF CUT

- 999m

TO

- 2.0m

- 2.0m

TO

- 1.5m

- 1.5m

TO

- 1.25m

- 1.25m

TO

- 1.0m

- 1.0m

TO

- 0.75m

- 0.75m

TO

- 0.5m

- 0.5m

TO

- 0.25m

- 0.25m

TO

- 0.0m

DEPTH OF FILL

0.0m

TO

0.25m

0.25m

TO

0.5m

0.5m

TO

0.75m

0.75m

TO

1.0m

1.0m

TO

1.25m

1.25m

TO

1.5m

1.5m

TO

2.0m

2.0m

TO

999m

- NOTES
1.

BULK EARTHWORKS LEVELS AND VOLUMES ARE BASED ON A COMPARISON OF THE DESIGN BULK EARTHWORKS SURFACE AND THE EXISTING SURFACE LEVEL AS SURVEYED WITH NO ALLOWANCE FOR TOPSOIL STRIPPING. THE FOLLOWING ALLOWANCES HAVE BEEN MADE TO GENERATE DESIGN BULK EARTHWORKS SURFACE:  
FINISHED DESIGN SURFACE MINUS:
  - BUILDING PADS: 600mm
  - HARD SURFACES: 400mm
  - FLOOD COMPENSATION: 200mm
2.

NO ALLOWANCE HAS BEEN MADE FOR SELECT LAYERS OR UNSUITABLE MATERIAL THAT IS LIKELY TO BE PRESENT.
3.

NO ALLOWANCE HAS BEEN MADE FOR TEMPORARY SEDIMENT DAMS
4.

NO ALLOWANCE HAS BEEN MADE FOR SAND LEVELING LAYER BENEATH BUILDING PADS
5.

NO ALLOWANCE HAS BEEN MADE FOR SERVICE TRENCHES, DRAINAGE TRENCHES, DRAINAGE INFRASTRUCTURE (PITS, CULVERTS, ETC) IN THE LEVELS OR VOLUMES PRESENTED ON THIS PLAN.
6.

NO ALLOWANCE FOR ANY TEMPORARY BATTERS DURING WORKS.
7.

NO BULKING FACTORS HAVE BEEN CONSIDERED/ALLOWED FOR.
8.

APPROXIMATE BULK EARTHWORKS VOLUMES BASED ON THE NOTES ABOVE ARE AS FOLLOWS:
  - BULK CUT = 7,920m<sup>3</sup>
  - BULK FILL = 6,039m<sup>3</sup>
  - BULK CUT/FILL BALANCE = 1,881m<sup>3</sup> (EXCESS)
9.

ALL BULK EARTHWORKS TO BE UNDERTAKEN IN ACCORDANCE WITH SITE SPECIFIC GEOTECHNICAL REPORT AND BULK EARTHWORKS NOTES.

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C	ISSUED FOR DEVELOPMENT APPLICATION	DM	KS	EG	05.10.23				FULLERTON COVE		
D	RE-ISSUED FOR DA APPROVAL	DM	KS	EG	20.03.24				2318		
E	RE-ISSUED FOR DA APPROVAL	BD	KS	EG	21.06.24					CUT AND FILL PLAN	

M&P

EJE architecture

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SCALE 1:500@A1

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PROJECT

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DRAWING

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M & P

Horizontal & Precip

EJE

architecture

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PROJECT

PROPOSED RETAIL DEVELOPMENT

42 FULLERTON COVER ROAD

FULLERTON COVE

2318

DRAWING TITLE

CIVIL ENGINEERING PACKAGE

CUT AND FILL SECTIONS

JOB NUMBER

NL161067

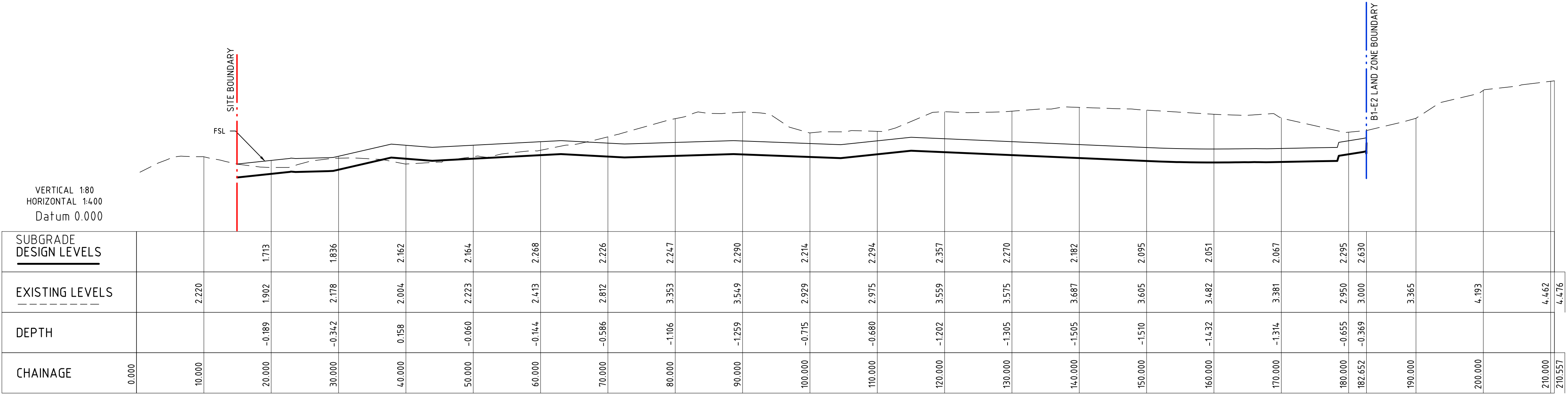
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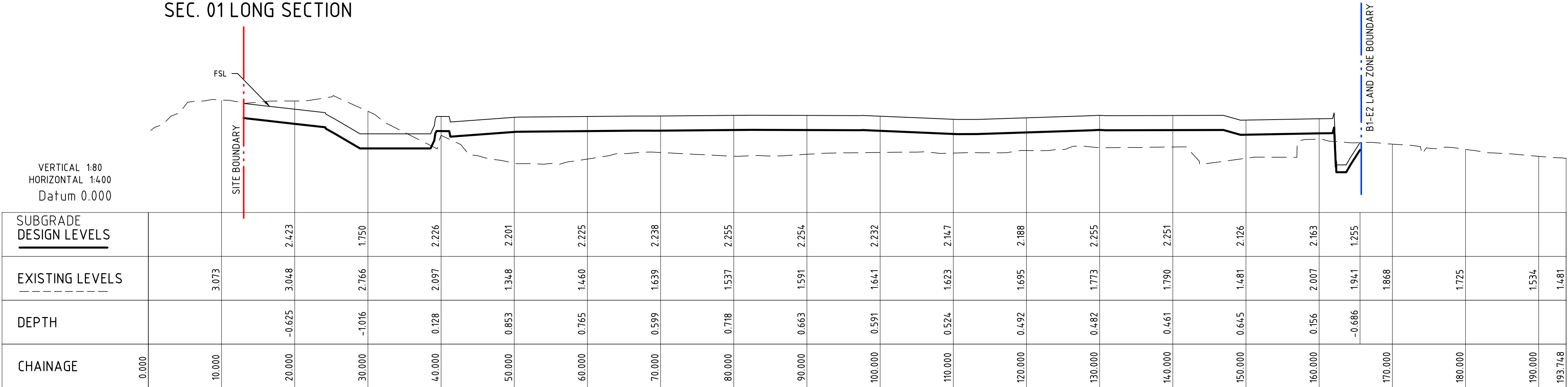
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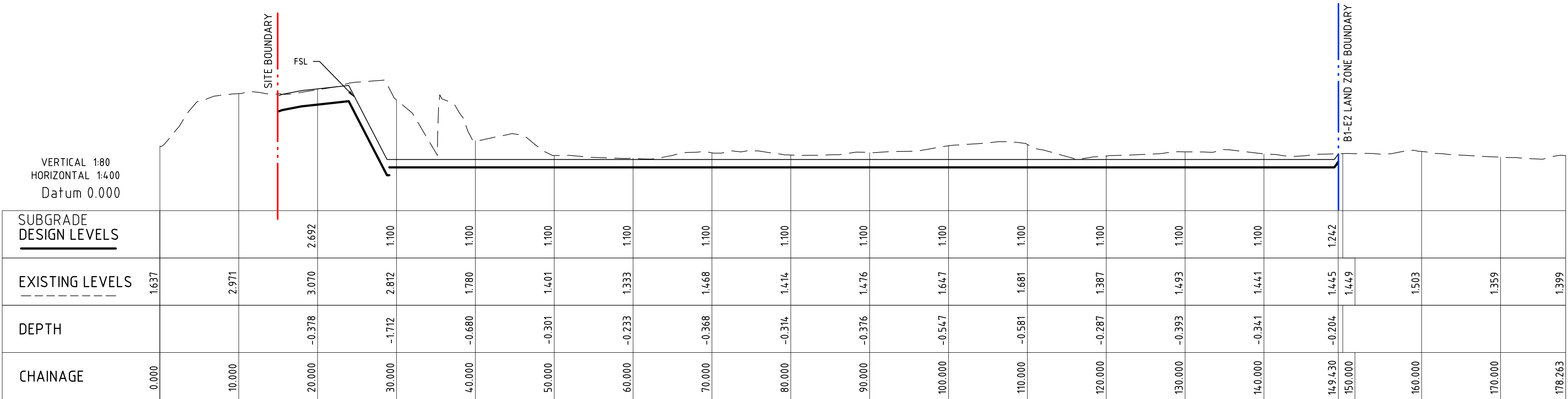
SEC. 01 LONG SECTION



SEC. 02 LONG SECTION



SEC. 03 LONG SECTION



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<b>NL161067</b>	
DRAWING NUMBER	REVISION
<b>DA-C04.01</b>	<b>E</b>
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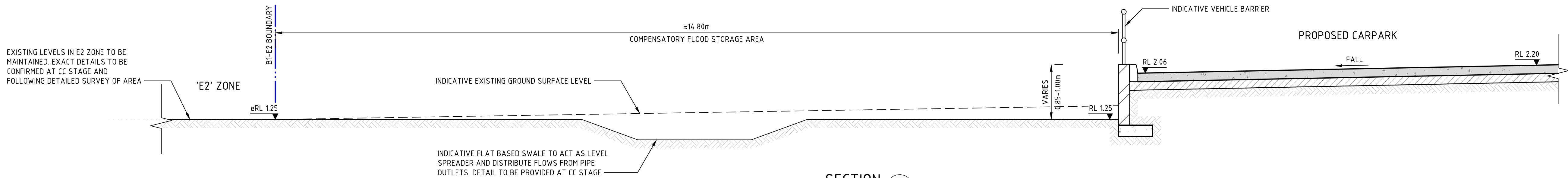




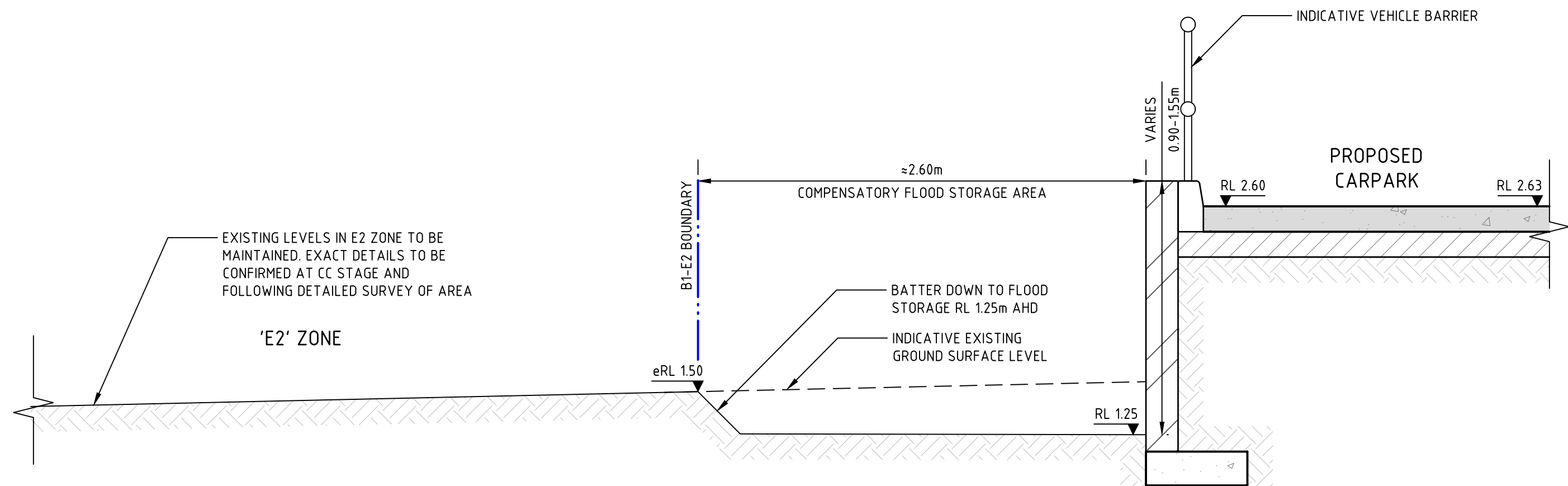
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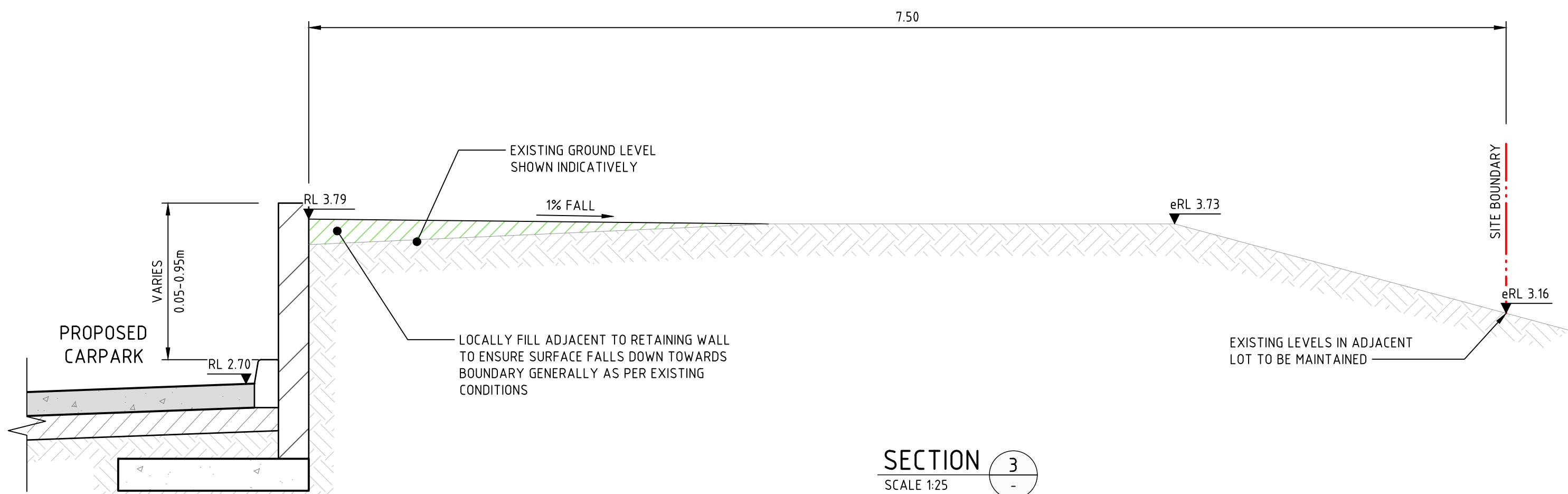
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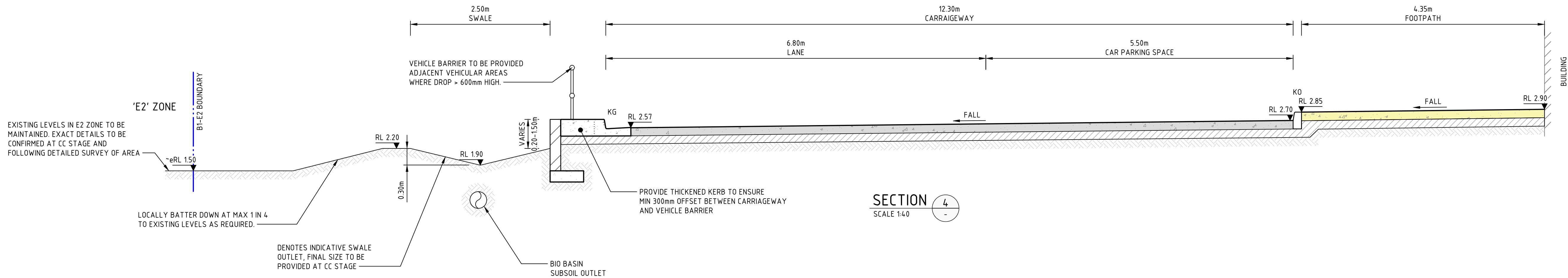
SECTION 1  
SCALE 1:40



SECTION 2  
SCALE 1:25



SECTION 3  
SCALE 1:25



SECTION 4  
SCALE 1:40

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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CLIENT	ARCHITECT
M&P	EJE architecture

ARCHITECT
EJE architecture

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SCALE 1:25@A1
SCALE 1:40@A1

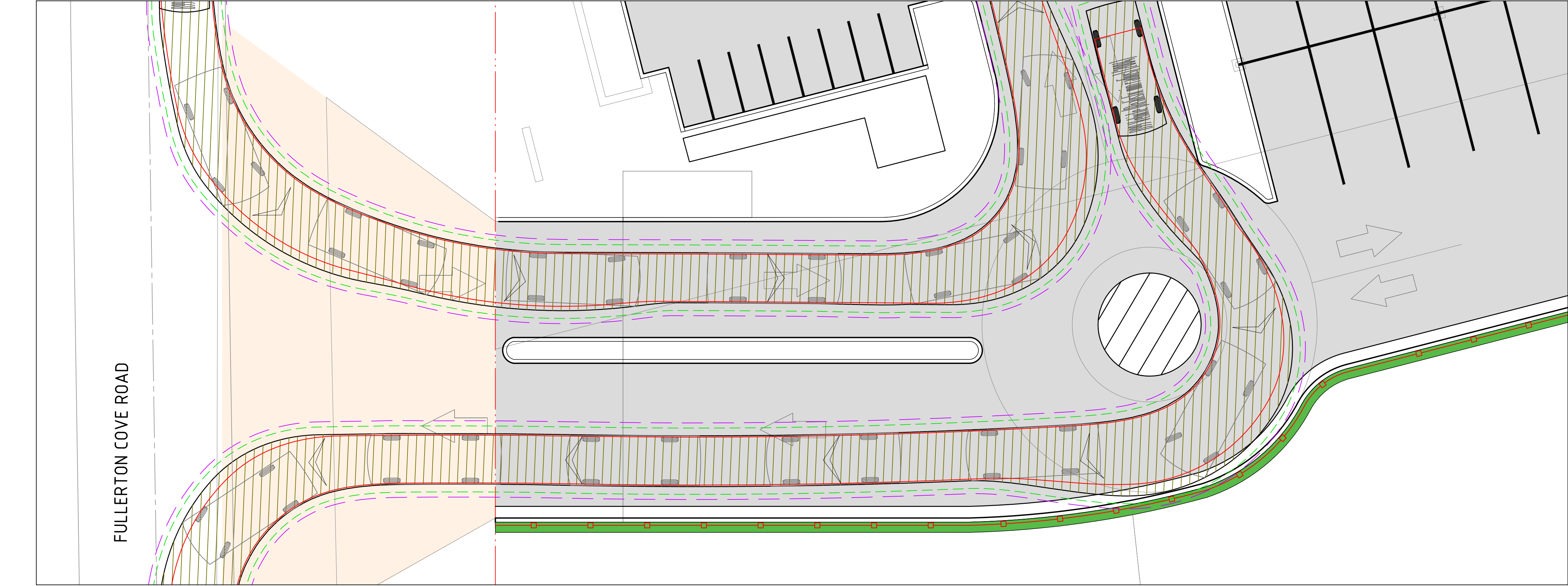
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PROJECT
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42 FULLERTON COVER ROAD
FULLERTON COVE
2318

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
TYPICAL SECTIONS

JOB NUMBER
NL161067
DRAWING NUMBER
DA-C04.21
REVISION
C





B99 MULTIPLE VEHICLE ROUND-ABOUT MANOEUVRE



B99 SINGLE VEHICLE ROUND-ABOUT MANOEUVRE

VEHICLE PROFILE	
B99 VEHICLE (REALISTIC MIN RADIUS) (2004)	
OVERALL LENGTH	5.200m
OVERALL WIDTH	1.940m
OVERALL BODY HEIGHT	1.878m
MIN BODY GROUND CLEARANCE	0.272m
TRACK WIDTH	1.840m
LOCK-TO-LOCK TIME	4.00s
CURB TO CURB TURNING RADIUS	6.250m
TRAVELLING SPEED	5 km/h

VEHICLE MOVEMENTS	
FORWARD MOVEMENT	
	VEHICLE BODY
	VEHICLE WHEELS
	VEHICLE LATERAL CLEARANCE (0.3m FROM BODY)
	VEHICLE LATERAL CLEARANCE (0.5m FROM BODY)
REVERSE MOVEMENT	
	VEHICLE BODY
	VEHICLE WHEELS
	VEHICLE LATERAL CLEARANCE (0.3m FROM BODY)
	VEHICLE LATERAL CLEARANCE (0.5m FROM BODY)

DISCLAIMER
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IT IS NORTHROP'S INTENTION TO UTILISE STANDARD VEHICLES NOMINATED IN AS2890.1 AND AS2890.2 FOR ALL DESIGN/CHECKING VEHICLE SIMULATIONS AT AN IDEAL MOVEMENT SPEED OF 10KM/H WITH A NOMINAL VEHICLE BODY OFFSET OF 500MM. WHERE MANOEUVRABILITY IS LIMITED AND SITE CONDITIONS ARE FAVOURABLE, AN ABSOLUTE MINIMUM SPEED OF 5KM/H WITH AN ABSOLUTE MINIMUM VEHICLE BODY CLEARANCE OF 300MM MAY BE ADOPTED.
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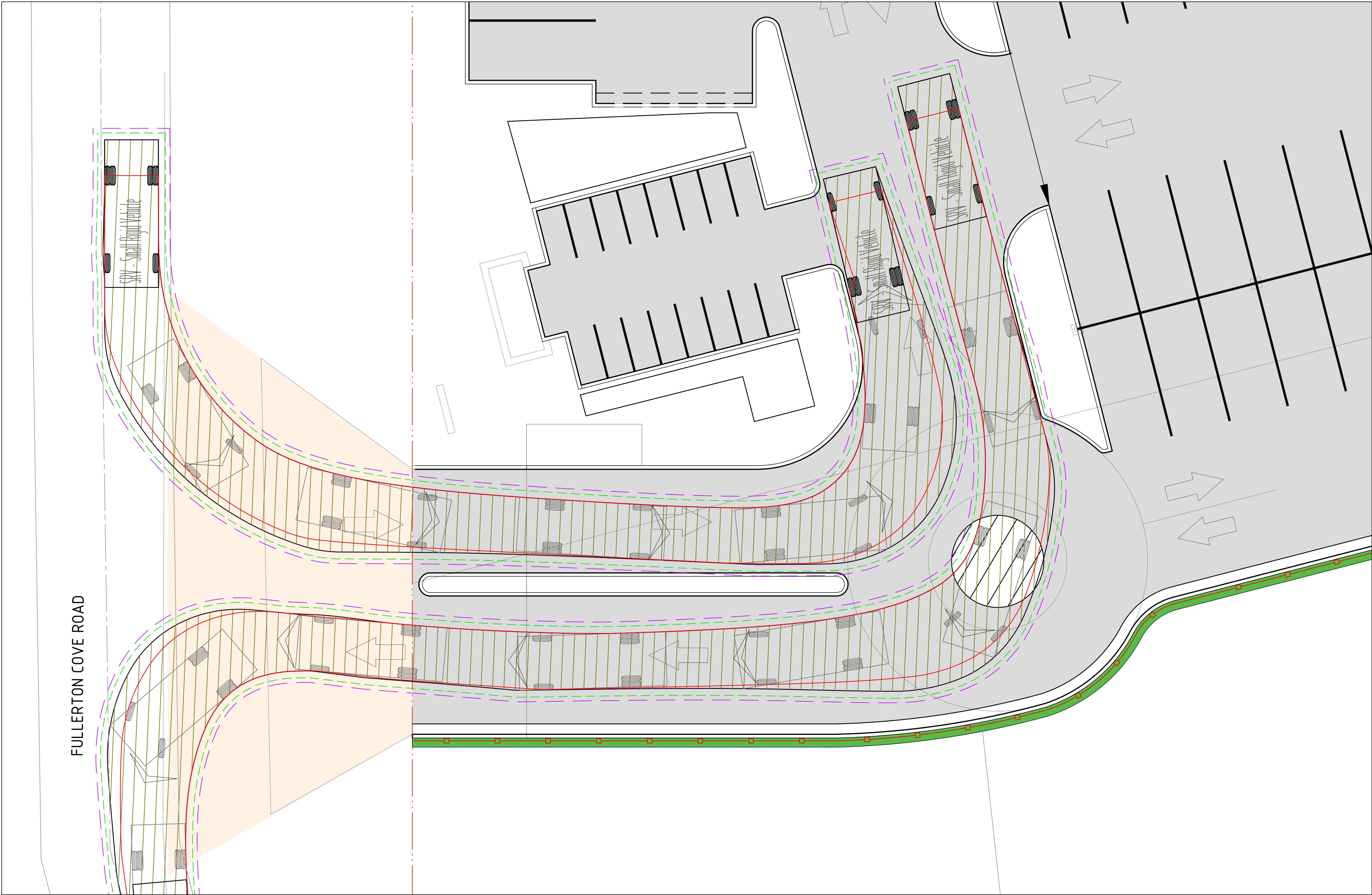
PROJECT
PROPOSED RETAIL DEVELOPMENT
42 FULLERTON COVER ROAD
FULLERTON COVE
2318

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
SWEPT PATHS PLAN - B99
MANOEUVRES

JOB NUMBER
NL161067
DRAWING NUMBER
DA-C05.01
REVISION
C



VERIFIER: K. SINCLAIR  
JOB MANAGER: K. SINCLAIR  
DESIGNED: E. GEARING  
DRAWN: D. MAVROUDIS



SRV MULTIPLE VEHICLE ROUND-ABOUT  
MANOEUVRE

VEHICLE PROFILE	
SRV - SMALL RIGID VEHICLE	
OVERALL LENGTH	6.400m
OVERALL WIDTH	2.330m
OVERALL BODY HEIGHT	3.500m
MIN BODY GROUND CLEARANCE	0.398m
TRACK WIDTH	2.330m
LOCK-TO-LOCK TIME	4.00s
CURB TO CURB TURNING RADIUS	7.100m
TRAVELLING SPEED	5 km/h

VEHICLE MOVEMENTS	
FORWARD MOVEMENT	
	VEHICLE BODY
	VEHICLE WHEELS
	VEHICLE LATERAL CLEARANCE (0.3m FROM BODY)
	VEHICLE LATERAL CLEARANCE (0.5m FROM BODY)
REVERSE MOVEMENT	
	VEHICLE BODY
	VEHICLE WHEELS
	VEHICLE LATERAL CLEARANCE (0.3m FROM BODY)
	VEHICLE LATERAL CLEARANCE (0.5m FROM BODY)

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PROJECT
<b>PROPOSED RETAIL DEVELOPMENT</b> <b>42 FULLERTON COVER ROAD</b> <b>FULLERTON COVE</b> <b>2318</b>

DRAWING TITLE
<b>CIVIL ENGINEERING PACKAGE</b>  <b>SWEPT PATHS PLAN - SRV</b> <b>MANOEUVRES</b>

JOB NUMBER	
NL161067	
DRAWING NUMBER	REVISION
DA-C05.02	C
DRAWING SHEET SIZE = A1	



DRAWN: D. MAVROUDIS    DESIGNED: E. GEARING    JOB MANAGER: K. SINCLAIR    VERIFIER: K. SINCLAIR



MRV ACCESS TO PUMP STATION

VEHICLE PROFILE	
MRV - MEDIUM RIGID VEHICLE	
OVERALL LENGTH	8.800m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	3.633m
MIN BODY GROUND CLEARANCE	0.428m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	4.00s
CURB TO CURB TURNING RADIUS	10.000m
TRAVELLING SPEED	5 km/h

VEHICLE MOVEMENTS	
FORWARD MOVEMENT	
	VEHICLE BODY
	VEHICLE WHEELS
	VEHICLE LATERAL CLEARANCE (0.3m FROM BODY)
	VEHICLE LATERAL CLEARANCE (0.5m FROM BODY)
REVERSE MOVEMENT	
	VEHICLE BODY
	VEHICLE WHEELS
	VEHICLE LATERAL CLEARANCE (0.3m FROM BODY)
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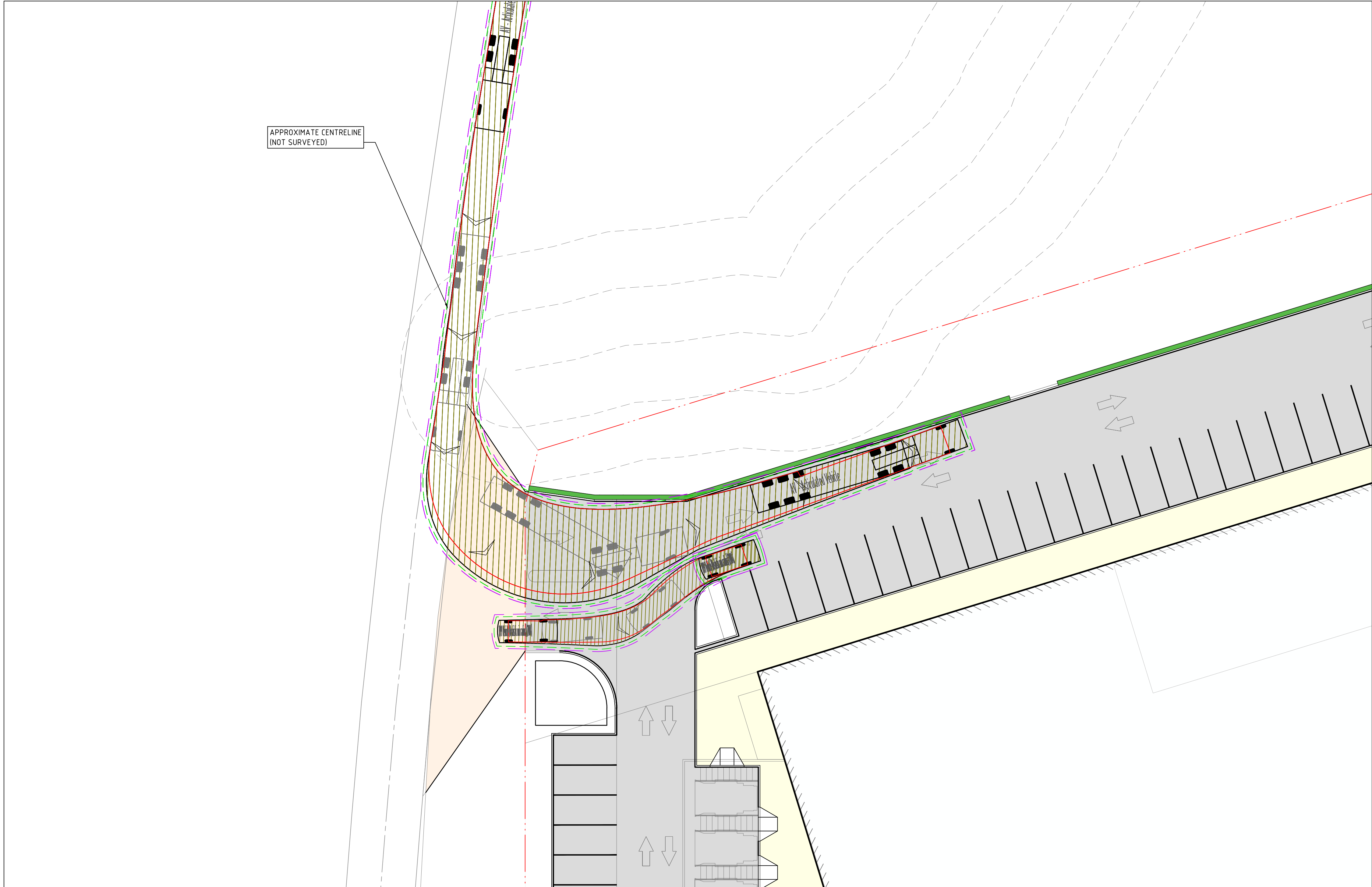
PROJECT
PROPOSED RETAIL DEVELOPMENT
42 FULLERTON COVER ROAD
FULLERTON COVE
2318

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
SWEPTS PATH PLAN - MRV MANOEUVRES

JOB NUMBER
NL161067
DRAWING NUMBER
DA-C05.03
REVISION
C
DRAWING SHEET SIZE ± A1

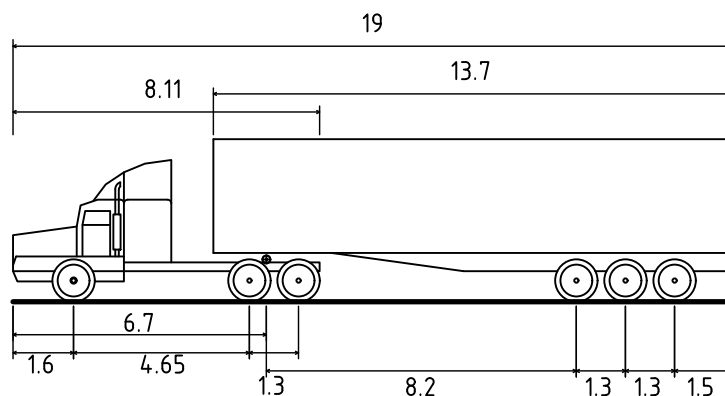


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JOB MANAGER: K. SINCLAIR  
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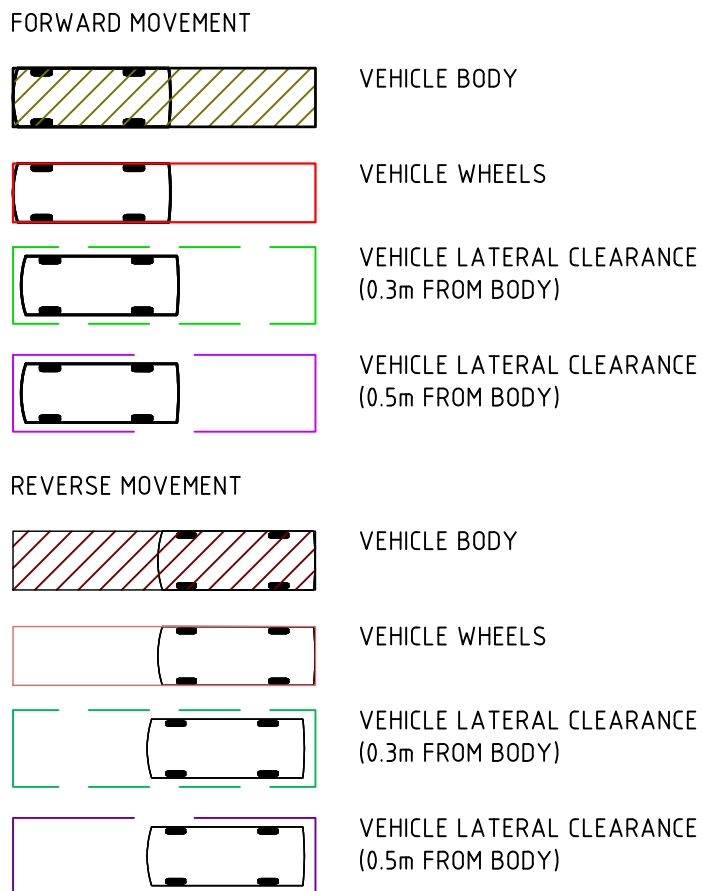
ARTICULATED VEHICLE TURNING LEFT INTO SITE AND BYPASSING B99 VEHICLE MANOEUVRE

### VEHICLE PROFILE



PRIME MOVER AND SEMI TRAILER (19m)	
OVERALL LENGTH	19.000m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	4.300m
MIN BODY GROUND CLEARANCE	0.540m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	6.00s
CURB TO CURB TURNING RADIUS	12.500m
TRAVELLING SPEED	5 km/h

### VEHICLE MOVEMENTS



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PROJECT
PROPOSED RETAIL DEVELOPMENT 42 FULLERTON COVER ROAD FULLERTON COVE 2318

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
SWEPT PATHS PLAN - AV MANOEUVRES - SHEET 1

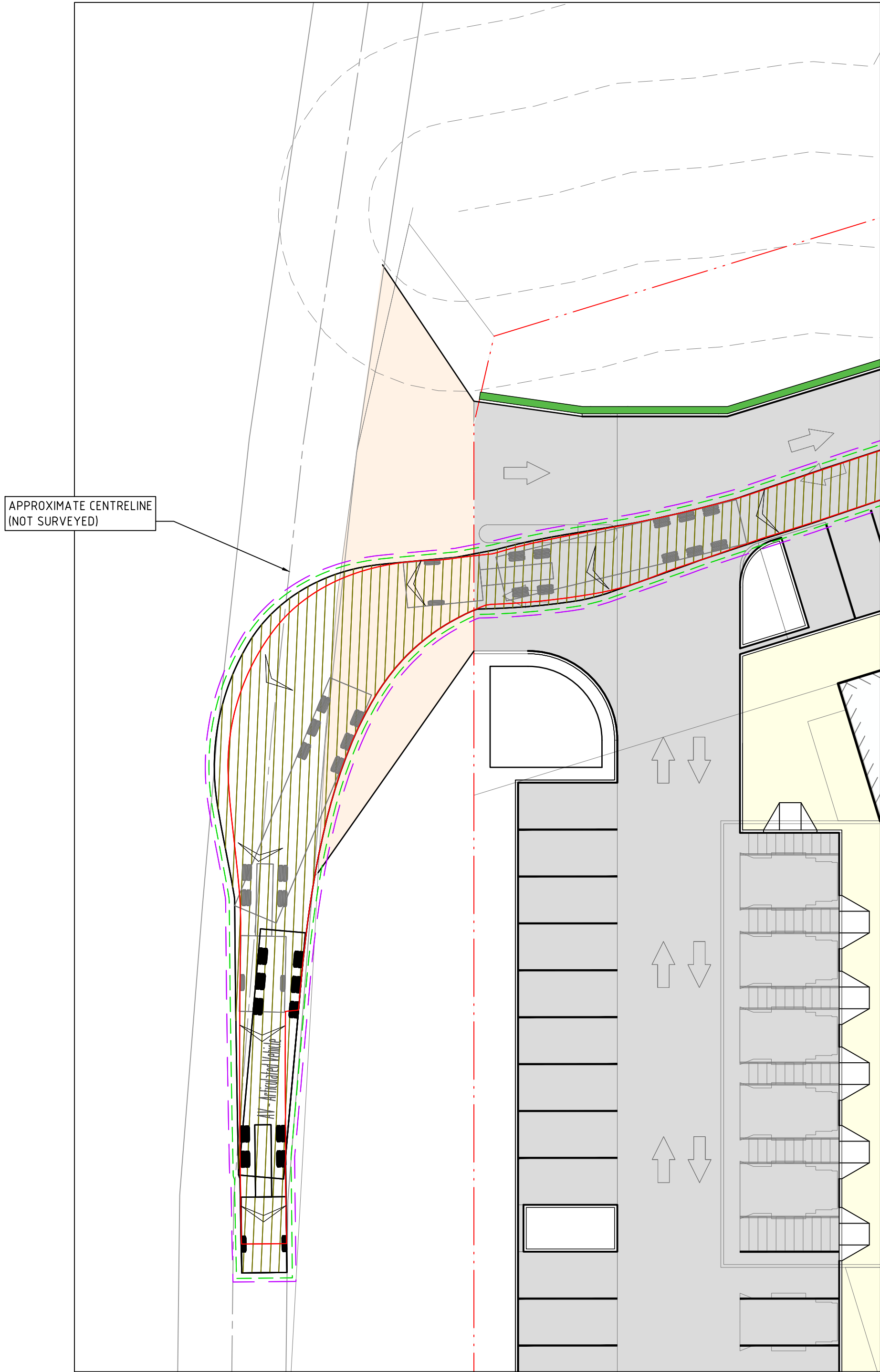
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DRAWING NUMBER
DA-C05.04
REVISION
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DRAWING SHEET SIZE = A1



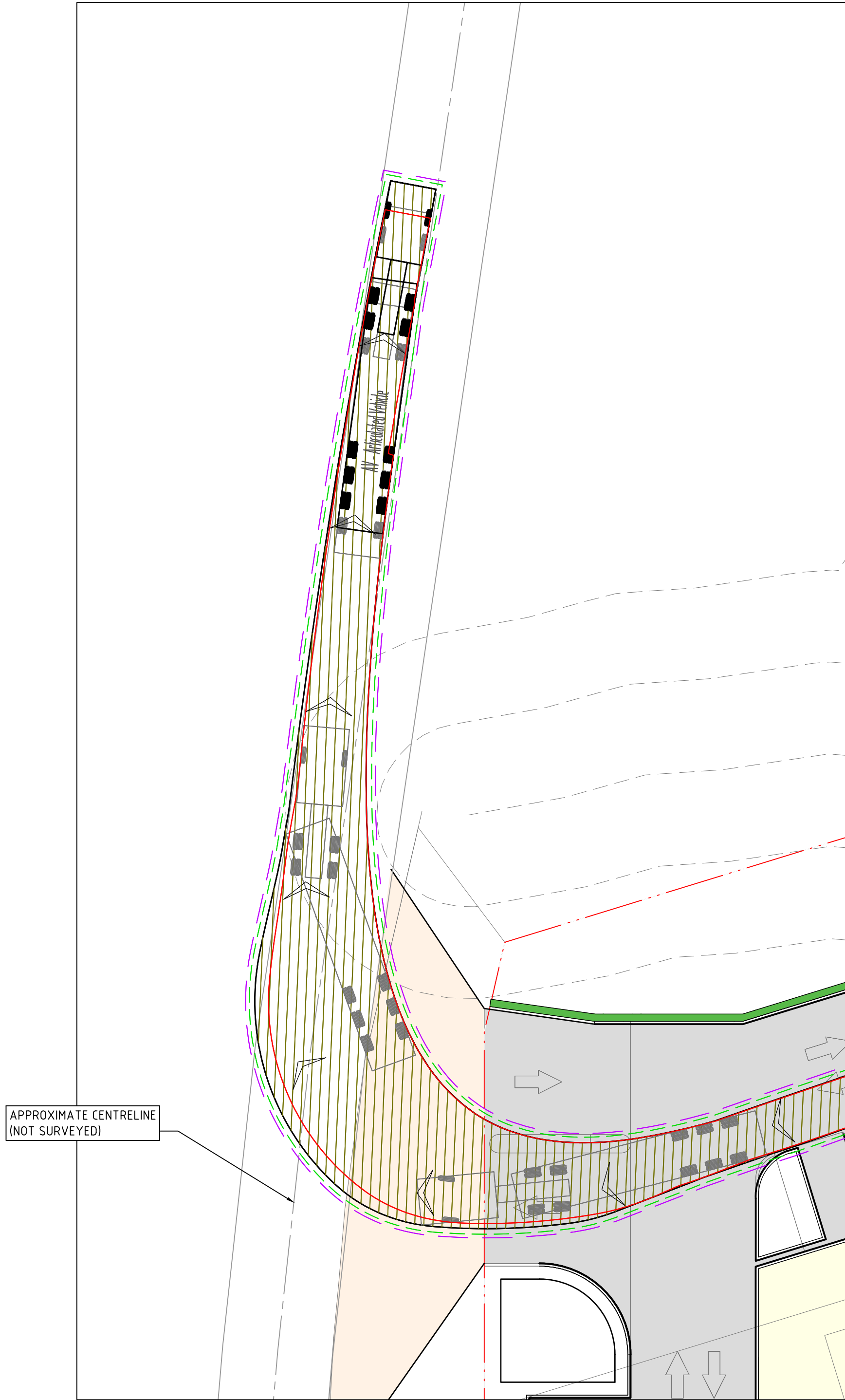




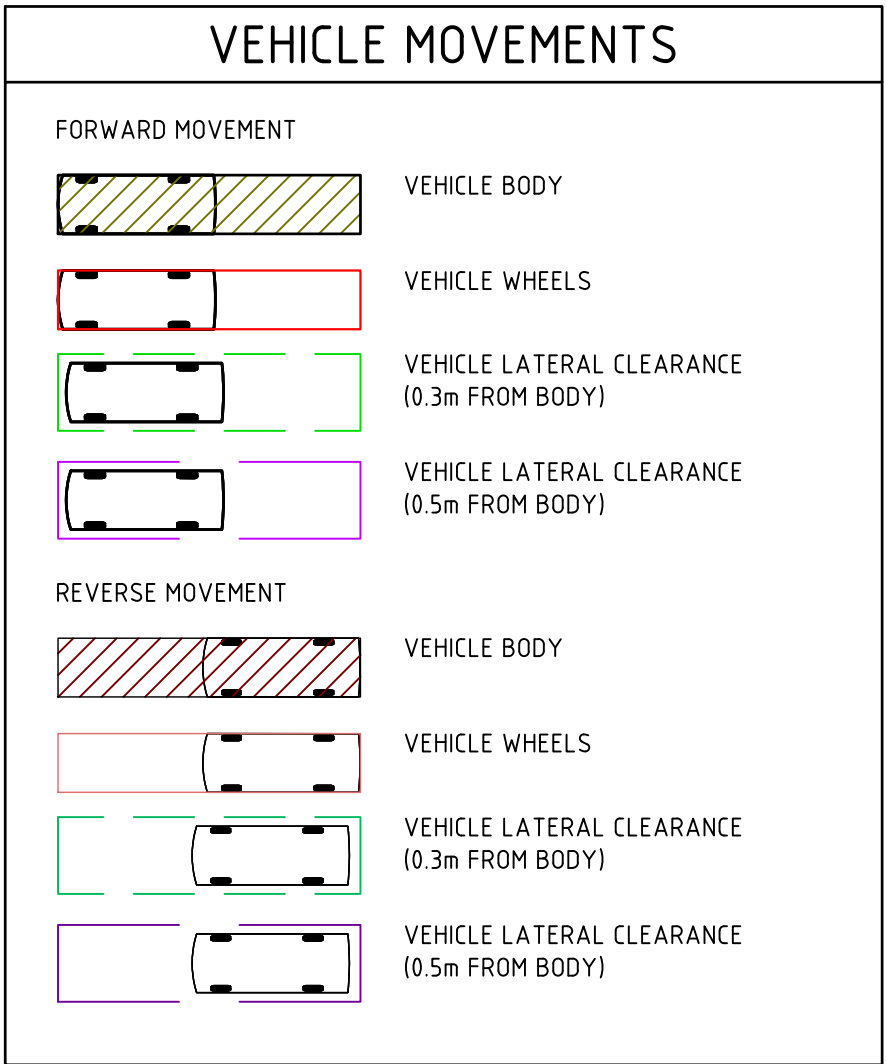
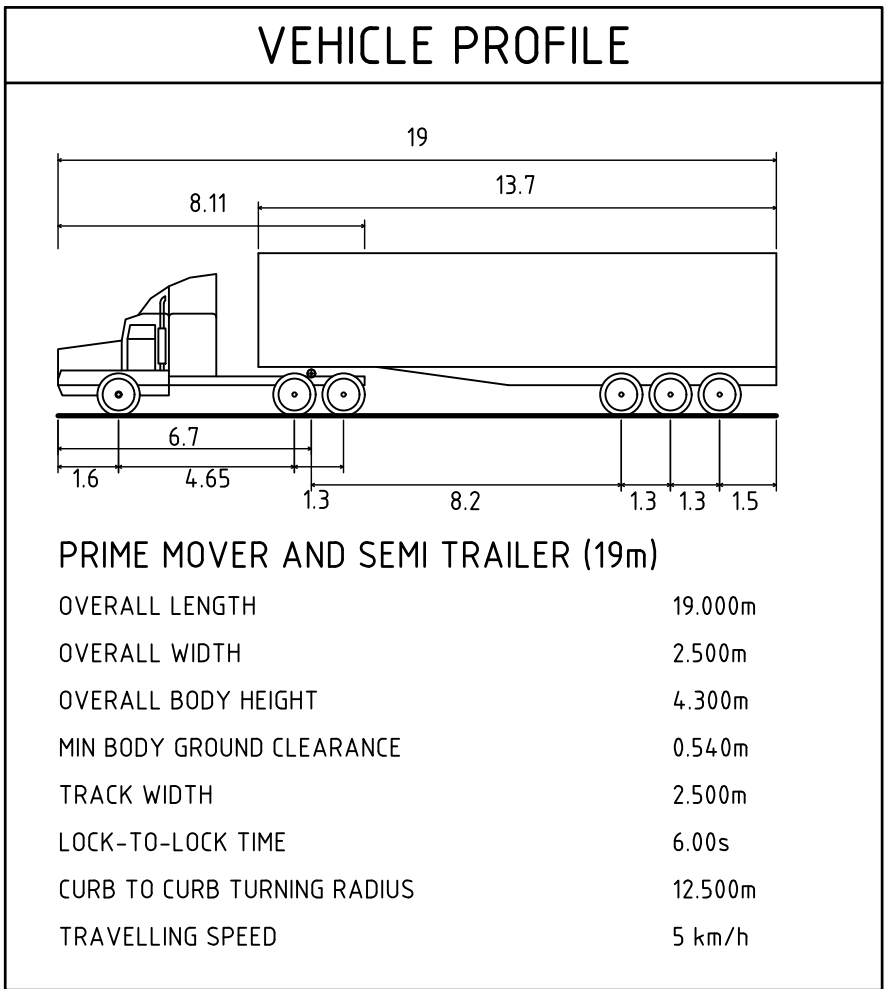
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DESIGNED: E. GEARING  
JOB MANAGER: K. SINCLAIR  
VERIFIER: K. SINCLAIR



AV EXITING SITE LEFT TURN MANOEUVRE



AV EXITING SITE RIGHT TURN MANOEUVRE



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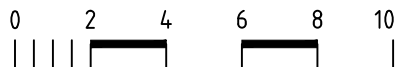
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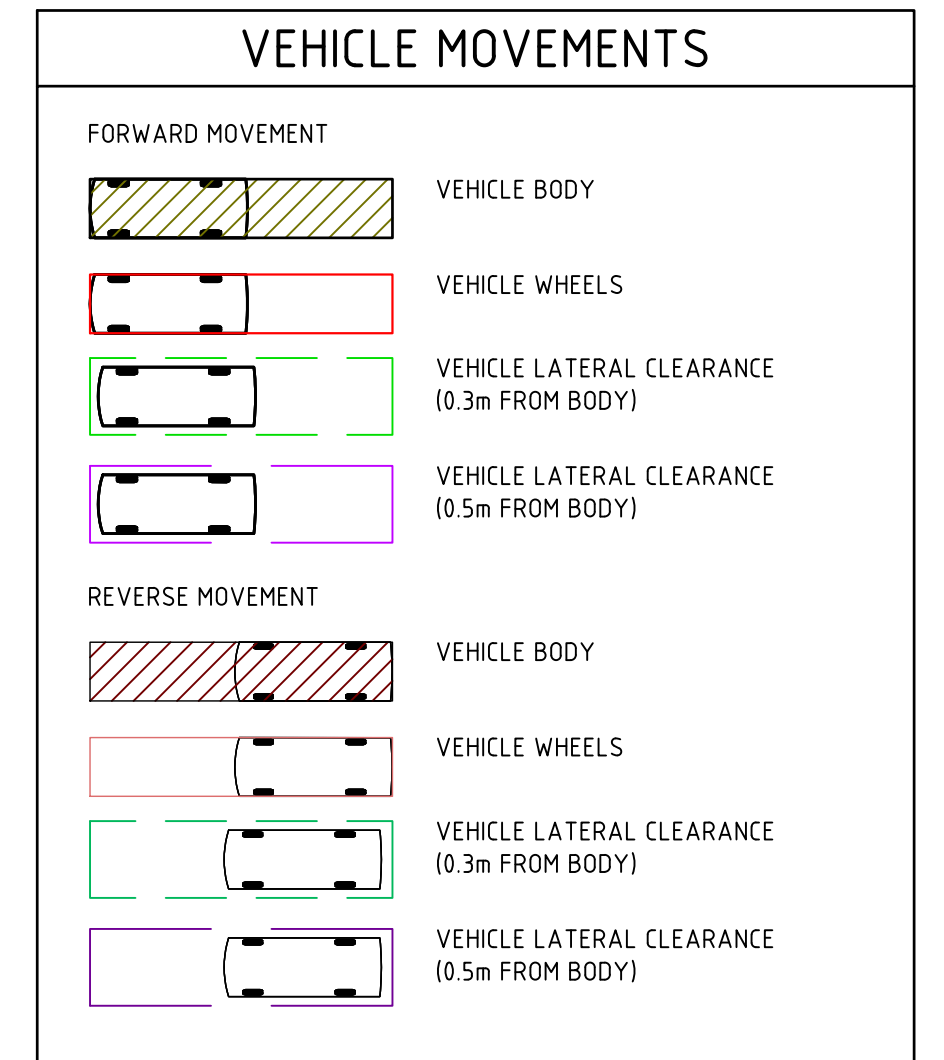
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PROJECT PROPOSED RETAIL DEVELOPMENT 42 FULLERTON COVER ROAD FULLERTON COVE 2318
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DRAWING TITLE CIVIL ENGINEERING PACKAGE  SWEPT PATHS PLAN - AV MANOEUVRES - SHEET 3
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JOB NUMBER NL161067
DRAWING NUMBER DA-C05.06
REVISION D
DRAWING SHEET SIZE ± A1











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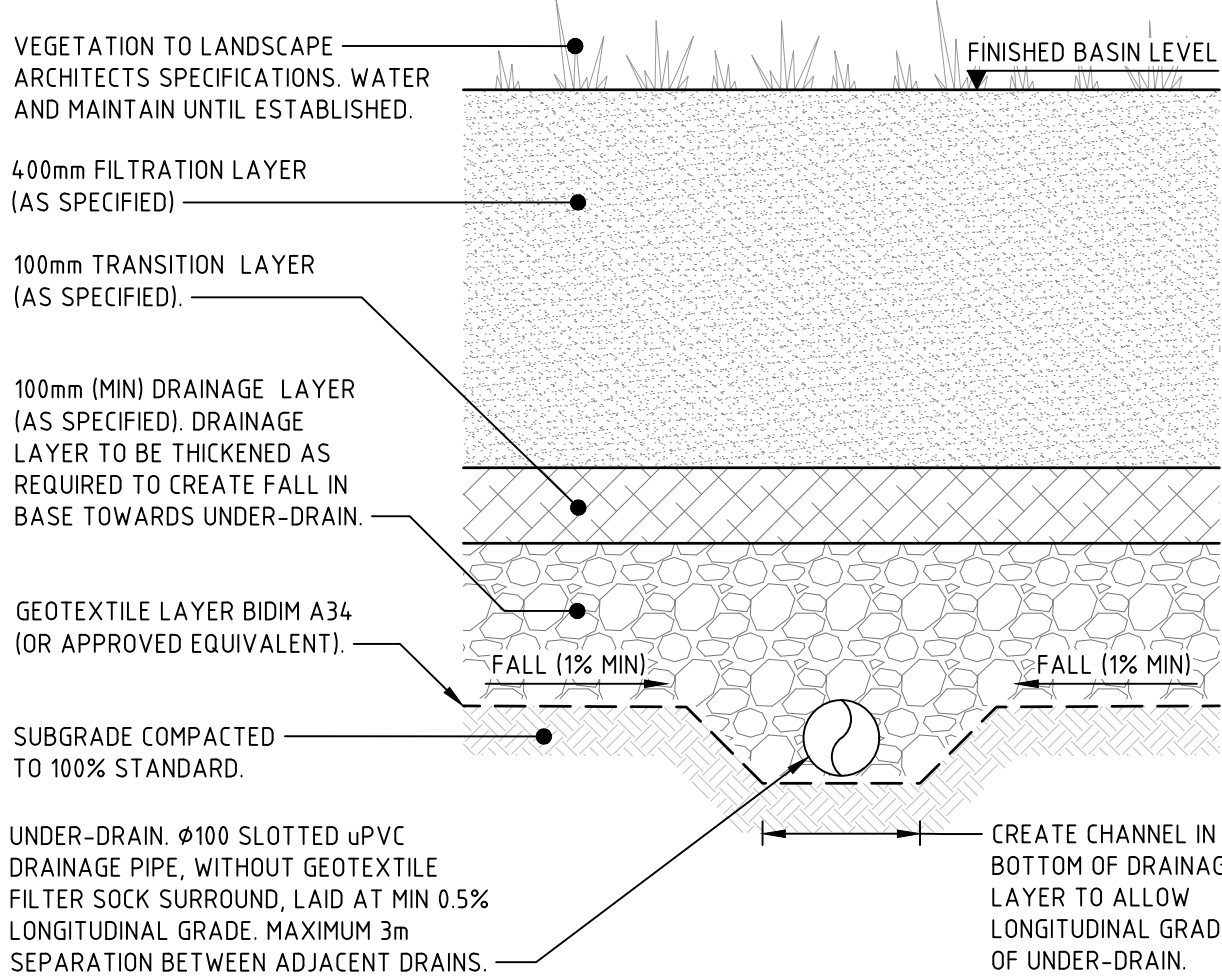
REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	 <p>ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK &amp; WHITE.</p>	 <p><b>NORTHROP</b> Newcastle Level 1, 215 Pacific Hwy, Charlestown NSW 2290 Ph (02) 4943 1777 Email newcastle@northrop.com.au ABN 81 094 433 100</p>	PROJECT	<p><b>PROPOSED RETAIL DEVELOPMENT</b> <b>42 FULLERTON COVER ROAD</b> <b>FULLERTON COVE</b> <b>2318</b></p>	DRAWING TITLE	<p><b>CIVIL ENGINEERING PACKAGE</b></p> <p><b>SWEPT PATHS PLAN - AV</b> <b>MANOEUVRES - SHEET 4</b></p>	JOB NUMBER	<p><b>NL161067</b></p>	DRAWING NUMBER	<p><b>DA-C05.07</b></p>	REVISION	<p><b>E</b></p>	DRAWING SHEET SIZE = A1
A	ISSUED FOR INFORMATION	DM	KS	EG	08.09.23	 <p><b>M &amp; P</b> Infrastructure &amp; Projects</p> <p>DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED</p>	 <p><b>EJE</b> architecture</p> <p>THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD</p>	 <p>ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK &amp; WHITE.</p>	 <p><b>NORTHROP</b> Newcastle Level 1, 215 Pacific Hwy, Charlestown NSW 2290 Ph (02) 4943 1777 Email newcastle@northrop.com.au ABN 81 094 433 100</p>	PROJECT	<p><b>PROPOSED RETAIL DEVELOPMENT</b> <b>42 FULLERTON COVER ROAD</b> <b>FULLERTON COVE</b> <b>2318</b></p>	DRAWING TITLE	<p><b>CIVIL ENGINEERING PACKAGE</b></p> <p><b>SWEPT PATHS PLAN - AV</b> <b>MANOEUVRES - SHEET 4</b></p>	JOB NUMBER	<p><b>NL161067</b></p>	DRAWING NUMBER	<p><b>DA-C05.07</b></p>	REVISION	<p><b>E</b></p>	DRAWING SHEET SIZE = A1
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C	ISSUED FOR DEVELOPMENT APPLICATION	BD	KS	EG	18.10.23															
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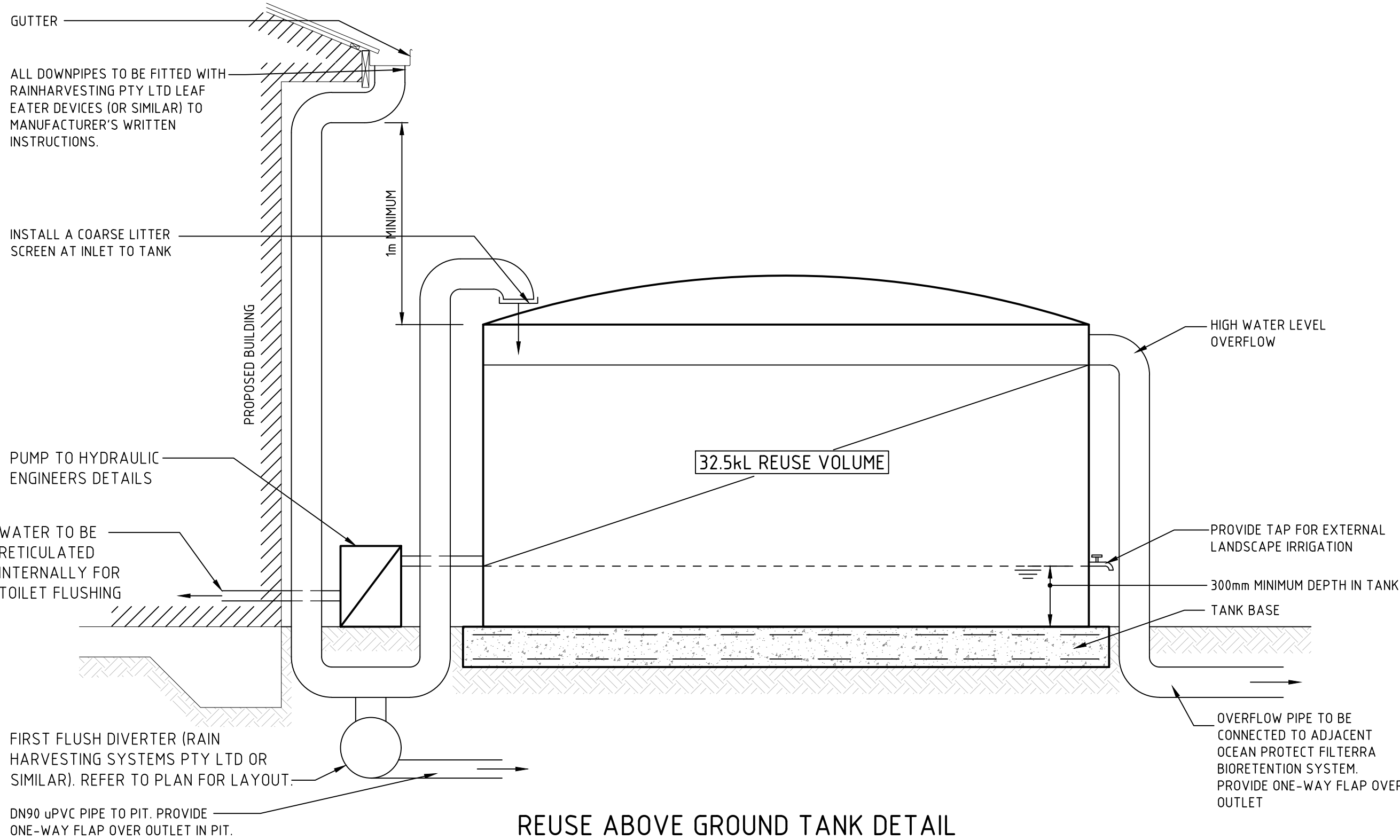




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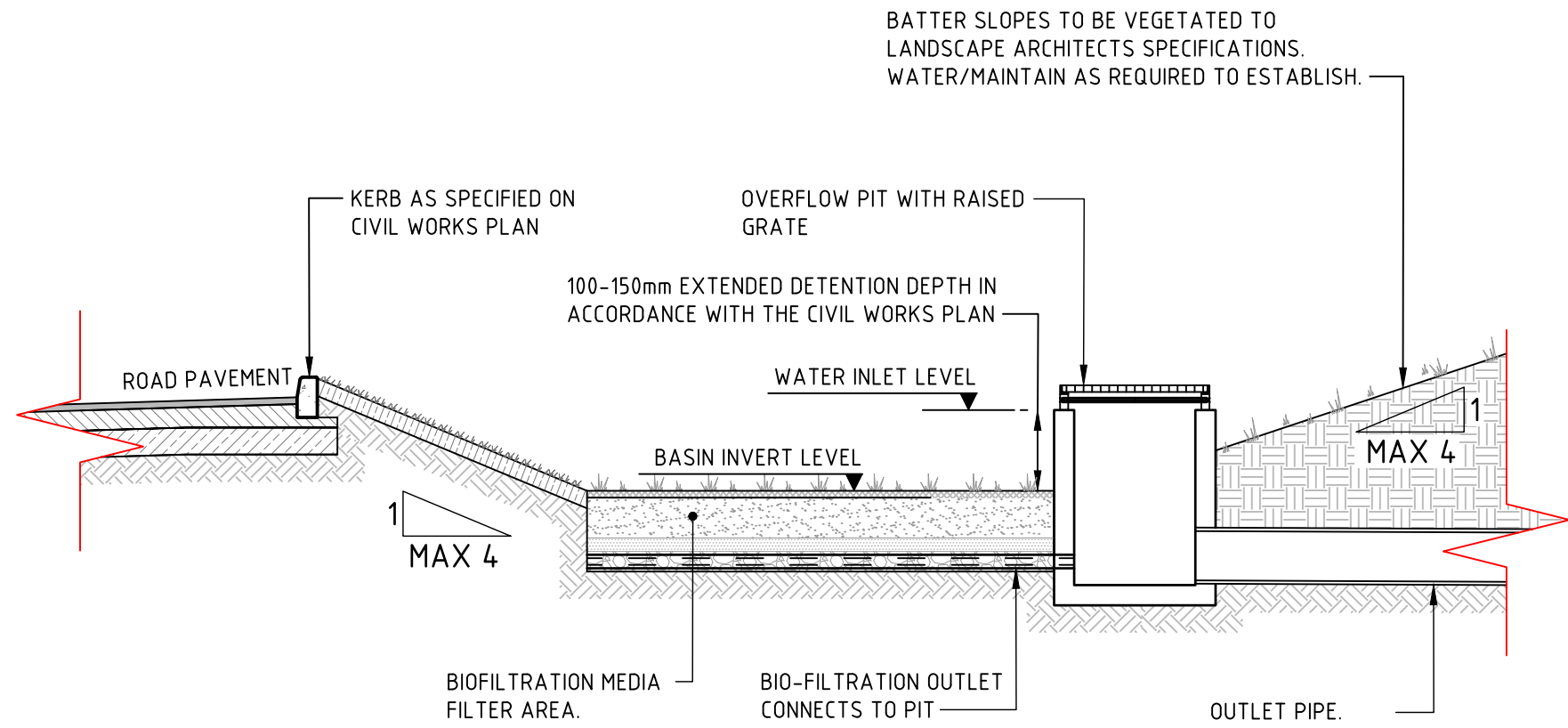
BIOFILTRATION MATERIAL SPECIFICATION

FILTRATION LAYER			
HYDRAULIC CONDUCTIVITY ~ 200-300mm/hr			
PARTICLE SIZE DISTRIBUTION			
CLAY AND SILT	~ 3%	( $\leq 0.05\text{mm}$ )	
VERY FINE SAND	~ 5-30%	(0.05-0.15mm)	
FINE SAND	~ 10-30%	(0.15-0.25mm)	
MEDIUM TO COARSE SAND	~ 40-60%	(0.25-1.0mm)	
COARSE SAND	~ 7-10%	(1.0-2.0mm)	
FINE GRAVEL	~ <3%	(2.0-3.4mm)	
SOIL-BASED FILTER MEDIA PROPERTIES			
TOTAL NITROGEN (TN) CONTENT	~ <750mg/kg		
ORTHOPHOSPHATE (PO <sub>4</sub> <sup>3-</sup> ) CONTENT	~ <4.0mg/kg		
ORGANIC MATTER CONTENT	~ >3%		
pH	~ 5.5-7.5		
ELECTRICAL CONDUCTIVITY (EC)	~ <1.2 dS/m		
TRANSITION LAYER			
CLEAN, WELL-GRADED SAND / COARSE SAND MATERIAL.			
% PASSING	~ 1.4mm	100%	
	~ 1.0mm	80%	
	~ 0.7mm	4.4%	
	~ 0.5mm	8.4%	
DRAINAGE LAYER			
CLEAN, FINE GRAVEL (2-5mm WASHED SCREENINGS)			
(REF: GUIDELINE SPECIFICATIONS FOR FILTER MEDIA IN BIORETENTION SYSTEMS, FACILITY FOR ADVANCING WATER BIOFILTRATION (2009))			

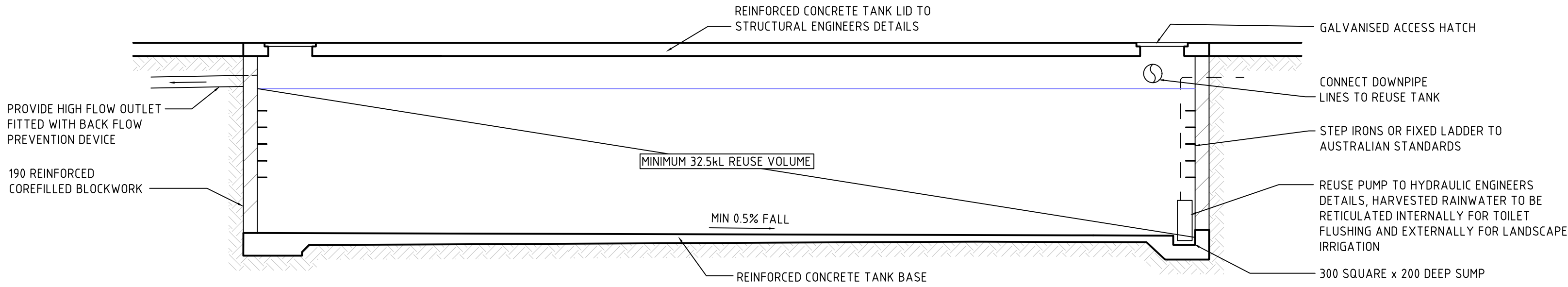


REUSE ABOVE GROUND TANK DETAIL

NOTE: THE ENTIRE PRESSURISED DOWNPIPE SYSTEM SHALL BE AIR TIGHT AND BE ABLE TO WITHSTAND ATMOSPHERIC PRESSURE. THE PIPING SYSTEM SHALL BE MINIMUM S<sub>N</sub>6 AND FITTINGS WITH INTERNAL ULTRA VIOLET STABILISING (OR APPROVED EQUIVALENT).



TYPICAL BIOFILTRATION BASIN SECTION



BELOW GROUND REUSE TANK SCHEMATIC

NOT FOR CONSTRUCTION

VERIFIER: K. SINCLAIR  
JOB MANAGER: K. SINCLAIR  
DESIGNED: E. GEARING  
DRAWN: D. MAVROUDIS

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT
A	ISSUED FOR INFORMATION	DM	KS	EG	08.09.23	M&P Northrop & Partners
B	ISSUED FOR DEVELOPMENT APPLICATION	DM	KS	EG	03.10.23	
C	RE-ISSUED FOR DA APPROVAL	DM	KS	EG	20.03.24	

DRAWING NOT TO BE USED FOR CONSTRUCTION  
UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT	EJE architecture
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SCALE VARIES

**NORTHROP**  
Newcastle  
Level 1, 215 Pacific Hwy, Charlestown NSW 2290  
Ph (02) 4943 1777 Email newcastle@northrop.com.au  
ABN 81 094 433 100

PROJECT	PROPOSED RETAIL DEVELOPMENT 42 FULLERTON COVER ROAD FULLERTON COVE 2318
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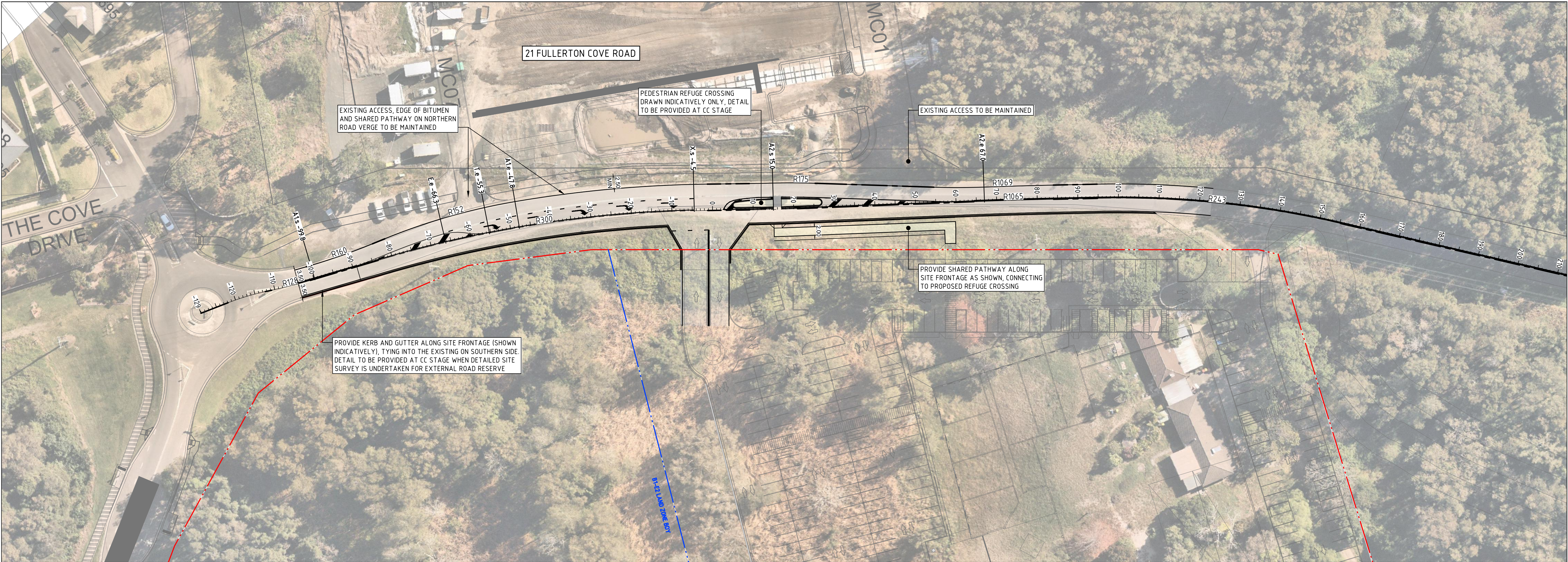
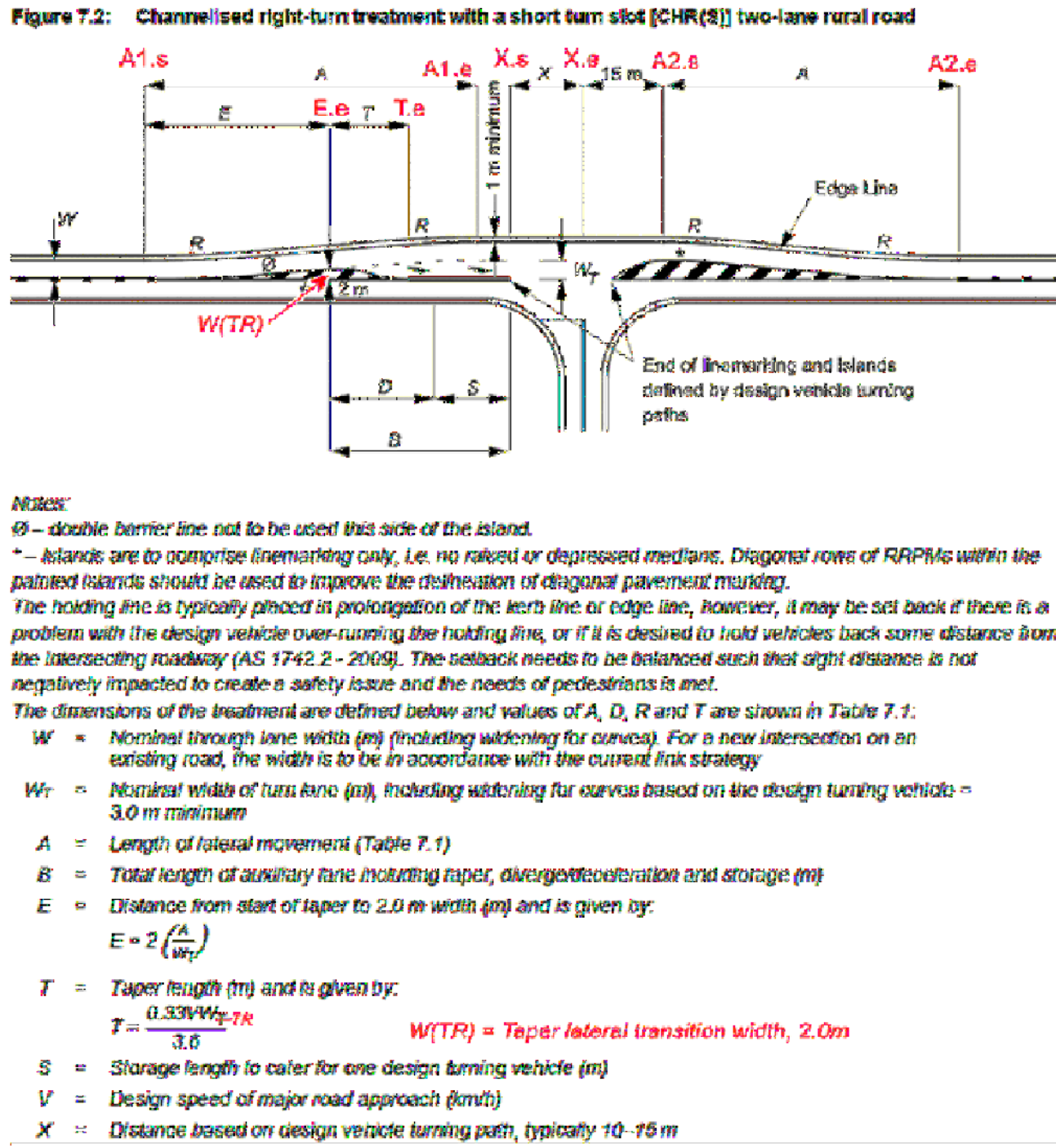
DRAWING TITLE	CIVIL ENGINEERING PACKAGE
	CIVIL DETAILS

JOB NUMBER	NL161067
DRAWING NUMBER	DA-C09.01
REVISION	C
DRAWING SHEET SIZE = A1	



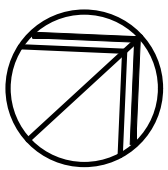
CHR(S)		Comments
V [km/h]	60 <sup>N3</sup>	
W [m]	3.60 <sup>N4</sup>	
W(T) [m]	3.10 <sup>N5</sup>	
X [m]	4.5 <sup>N6</sup>	
A [m]	52.0	
E [m]	33.5	
W(TR) [m]	2.0	
T [m]	11.0	
D (tbl)	25	AGRD04A Table 7.1
D grade	-0.5%	Average grade (Lidar)
D correction	1	AGRD04A Table 5.3
D [m]	25.0	
S [m]	36.8 <sup>N7</sup>	
B [m]	61.8	
R [m]	175.0	
N1 LHS [m]	99.85	
N2 RHS [m]	67	
CHAINAGE SETOUT CALCULATIONS		
X.E	0.0	Point X - end
A1.S	-99.8	Point A1 - start
E.E	-66.3	Point E - end
T.E	-55.3	Point T - end
A1.E	-47.8	Point A1 - end
X.S	-4.5	Point X - start
A2.S	15.0	Point A2 - start
A2.E	67.0	Point A2 - end
NOTES		
N1: 'Left Hand Side' (X+E) total length treatment.		
N2: 'Right Hand Side' (15m+A) total length treatment.		
N3: The speed limit is 70km/h, however, the traffic report has justified 50km/h (+10km/h for operative/design speed).		
N4: 3.50m + 0.10m widening for R300 curve.		
N5: 3.00m min, additional 0.10m on curve widening.		
N6: MRV@15kph 4.15m, rounded to 4.50m.		
N7: 8.8m MRV Design Vehicle + 4 * 7.0m (5.2m Passenger Vehicle + 1.8m gap).		

Cross-section Elements (From LHS Footpath edge)	
LHS TOTAL	9.20
Footpath edge (footpath constructed by neighbouring development)	
Lane separation	2.50 <sup>N1</sup>
Lane	3.60 <sup>N2</sup>
R-Turn Lane	3.10 <sup>N3</sup>
RHS TOTAL	7.80
Lane (+Channel)	3.60 <sup>N2,N4</sup>
Kerb	0.20 <sup>N4</sup>
Verge	1.00
Shared path	2.00
Footpath only	
Verge	1.00
TOTAL	17.00
N1: Distance varies, min 2.50m, combination of Sealed Shoulder and Verge.	
N2: 3.5m standard width + 0.10m widening on curve R300m.	
N3: 3.0m min width + 0.10m on curve widening.	
N4: 0.30m channel included in the Lane width	



NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT
1	ISSUED FOR INFORMATION	SV		KS	05.03.24	
2	ISSUED FOR COORDINATION	SV		KS	18.03.24	
3	ISSUED FOR DA APPROVAL	DM		KS	20.03.24	



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SCALE 1:500 @ A1

0 5 10 15 20 25m

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ABN 81 094 433 100

PROJECT  
**PROPOSED RETAIL DEVELOPMENT  
42 FULLERTON COVE ROAD  
FULLERTON COVE  
2318**

DRAWING TITLE  
**CIVIL ENGINEERING PACKAGE  
EXTERNAL WORKS**

JOB NUMBER  
**NL161067**

DRAWING NUMBER <b>CSK-01.01</b>	REVISION <b>3</b>
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DRAWING SHEET SIZE = A1