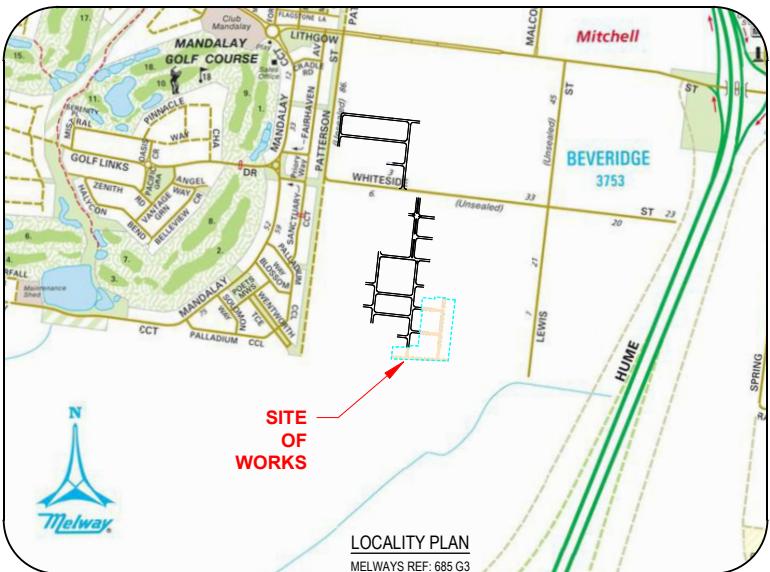


# OORANYA ESTATE, STAGE 3

## ROAD & DRAINAGE CONSTRUCTION PLAN

# WHITESIDE STREET - BEVERIDGE



## **GENERAL NOTES**

### **PRIOR TO THE COMMENCEMENT OF WORKS**

1. THE CONTRACTOR MUST NOTIFY THE RELEVANT AUTHORITY 7 DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION OF THE RELEVANT WORKS.
  2. THE CONTRACTOR MUST OBTAIN ALL NECESSARY PERMITS FROM THE MUNICIPALITY & INCORPORATE FOR ANY WORKS UNDERTAKEN WITHIN AN EXISTING ROAD RESERVE PRIOR TO THE COMMENCEMENT OF WORKS.
  3. THE CONSULTANT HAS MADE EVERY REASONABLE ATTEMPT TO LOCATE EXISTING SERVICES AND HAS SHOWN THESE ON THE DRAWINGS. THE CONTRACTOR SHALL TAKE PHOTOGRAPHS AND PROVIDE A WRITTEN REPORT DETAILING THE CONDITION REGARDING ALL EXISTING INFRASTRUCTURE WHICH ARE INTERFACING WITH, OR OTHERWISE HAVING AN IMPACT ON.
  4. PRIOR TO COMMENCING WORKS THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL SERVICES BY SITE SURVEY (INSPECTION AND CONSULTATION WITH ALL RELEVANT SERVICING AUTHORITIES). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING SERVICES, WHETHER SHOWN OR NOT.
  5. THE CONTRACTOR MUST CONTACT DIAL BEFORE YOU DIG (CALL 1100), OR VISIT THE DAIS SITES OR YOUR DAIS WEBSITE PRIOR TO COMMENCING WORKS AND SATISFY THEMSELVES THAT THERE ARE NO SERVICES WITHIN THE VICINITY OF THE WORK AREA.
  6. NO WORK IS TO COMMENCE BEFORE THE CONTRACTOR HAS ASCERTAINED WHAT UNDERGROUND SERVICES ARE PRESENT.
  7. CONTRACTOR MUST FOLLOW THE 'NO GO ZONE' SAFETY PROCEDURES AT ALL TIMES, WHICH ARE AVAILABLE FROM ALL UTILITY AND TELECOMMUNICATIONS COMPANIES, INCLUDING THE OFFICE OF THE CHIEF ELECTRICAL INSPECTOR, THE DAIS OF GAS SAFETY AND WORKSAFE VICTORIA.
  8. IF THESE SAFETY PROCEDURES CANNOT BE COMPLIED WITH THEN NO WORK IS TO BE UNDERTAKEN WITHOUT PERMISSION FROM THE UTILITY COMPANY.
  9. THE CONTRACTOR MUST PREPARE A PROJECT MANAGEMENT PLAN (OTHERWISE CALLED A CONSTRUCTION OR SITE MANAGEMENT PLAN) AND HAVE IT APPROVED BY BOTH COUNCIL & THE SUPERINTENDENT PRIOR TO THE COMMENCEMENT OF ANY WORKS. THIS PROJECT MANAGEMENT PLAN IS TO INCORPORATE THE FOLLOWING REQUIREMENTS, AT A MINIMUM AND IN ACCORDANCE WITH ANY LEGISLATION REQUIREMENTS:
    - a. OCCUPATIONAL HEALTH & SAFETY PROCEDURES
    - b. SITE STAFFING INCLUDING CONTACT DETAILS
    - c. TRAFFIC MANAGEMENT PLAN

d. ENVIRONMENTAL MANAGEMENT PLAN

- CONSTRUCTION SETOUT**

  1. ALL LEVELS ARE TO A.H.D. AND ARE REFERENCED TO THE T.B.M. INDICATED.
  2. COORDINATION OF THIS DESIGN USES MGA 94, CORRECT AS OF THE DATE OF THESE PLANS. FROM 1ST JANUARY 2017, MGA 2020 MAY BE IN STANDARD USE AND WILL DIFFER IN POSITION BY AROUND 1.8 METRES FROM THIS DOCUMENT.
  3. NO TBM CAN BE USED WITHOUT FIRST PROVING IT TO BE CORRECT TO A SECOND TBM. NO HORIZONTAL SETOUT CONTROL CAN BE USED WITHOUT FIRST PROVING IT TO BE CORRECT TO A THIRD known POINT. THE CONSULTING SURVEYOR MUST BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY. TITLE PEGS AND T.B.M. ARE TO BE RE-ESTABLISHED BY A LICENSED SURVEYOR IF FOUND TO BE MISSING.
  4. IF USING GNSS / GPS FOR SETOUT FOR CONSTRUCTION PLEASE NOTE:
    - a. GNSS HAS REDUCED VERTICAL PRECISION COMPARED TO TRADITIONAL SURVEY METHODS
    - b. ONLY USE A SINGLE POINT CALIBRATION FOR THE VERTICAL, THEN TEST AT LEAST 1 OTHER STATED TBM BEFORE PROCEEDING.
    - c. IF YOU HAVE ANY QUERIES OR CONCERN'S CONTACT THE CONSULTING SURVEYOR.

**SITE MANAGEMENT DURING CONSTRUCTION**

  1. THE SUPERINTENDENT IS RESPONSIBLE FOR THE DESIGN AND MANAGEMENT OF THE CONSTRUCTION WORKS. ANY PROBLEMS ARISING DURING CONSTRUCTION SHALL BE DIRECTED TO THE SUPERINTENDENT.
  2. ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE ENGINEERING DESIGN CONSTRUCTION MANUAL AND ANY OTHER RELEVANT AUTHORITY DESIGNATION. A COPY OF THE EDCM CAN BE FOUND AT [WWW.VPA.ORG.VU](http://WWW.VPA.ORG.VU).  
• IF YOU HAVE ANY ISSUES, INTERPRETING THE MANUAL, CONTACT THE SUPERINTENDENT.
  3. ALL WORKS MUST ADOBE BY THE APPROVED CONSTRUCTION MANAGEMENT PLAN AND MUST COMPLY WITH THE RECOMMENDATIONS OF THE ENVIRONMENT PROTECTION AUTHORITY PUBLICATION "CONSTRUCTION TECHNIQUES FOR SEDIMENT POLLUTION CONTROL" (PUBLICATION NO 279), APPROPRIATE SILTATION CONTROL IS TO BE CARRIED OUT DURING THE CONSTRUCTION AND MAINTENANCE PERIOD.
  4. BEFORE COMMENCING ANY EXCAVATION WORKS OF 1.5m DEPTH OR GREATER, THE CONTRACTOR IS REQUIRED TO SUBMIT THE REQUIRED NOTIFICATION TO WORKSAFE VICTORIA. THE NOTIFICATION MUST BE RECEIVED BY THE AUTHORITY.

AT LEAST THREE (3) DAYS PRIOR TO COMMENCING EXCAVATIONS, A COPY OF THE NOTIFICATION IS TO BE PROVIDED TO THE SUPERINTENDENT, THE

- CONTRACTOR SHALL COMPLY WITH THE MINES ACT, OCCUPATIONAL HEALTH AND SAFETY ACT, WORKSAFE VICTORIA REQUIREMENTS INCLUDING COMPLIANCE CODES.

18. TWENTY-FOUR (24) HOURS NOTIFICATION TO INSPECTORS OF RELEVANT AUTHORITY IS REQUIRED PRIOR TO AN INSPECTION BEING CONDUCTED ON ANY PARTICULAR PORTION OF THE WORKS.

19. THE CONTRACTOR SHALL TAKE THE UTMOST CARE TO PRESERVE EXISTING TREES. NO TREES SHALL BE REMOVED WITHOUT THE PRIOR APPROVAL OF THE SUPERINTENDENT.

20. THE CONTRACTOR IS REQUIRED TO CONFINE CONSTRUCTION VEHICLES TO THE ROAD RESERVE AND EASEMENTS. ANY DAMAGE CAUSED TO THE ALLOTMENT MUST BE MADE GOOD.

21. THE CONTRACTOR SHALL TO THE SATISFACTION OF THE SUPERINTENDENT AND COUNCIL'S SUPERVISORY OFFICER PROVIDE AND MAINTAIN ALL NECESSARY WARNING SIGNS, LIGHTS AND BARRICADES TO COMPLY WITH THE REQUIREMENTS OF THE ROAD MANAGEMENT ACT.

22. DISPOSAL OF EXCESS SPOIL, TRUCK ROUTE AND DISPOSAL LOCATION ARE TO BE APPROVED BY THE MUNICIPAL ENGINEERING DEPARTMENT.

23. AT THE COMPLETION OF WORKS ALL RUBBISH, DEBRIS AND SURPLUS SPOIL IS TO BE REMOVED AND ALL LOTS AND ROAD RESERVE TO BE LEFT IN A TIDY CONDITION TO THE SATISFACTION OF THE SUPERINTENDENT & RELEVANT AUTHORITY.

**PROTECTION OF VEGETATION**

24. NO WORKS ARE TO BE UNDERTAKEN WITHIN THE DRIP ZONE (CANOPY) OF AN EXISTING TREE UNLESS APPROVED BY THE RESPONSIBLE AUTHORITY.

25. MACHINERY IS NOT TO BE DRIVEN OVER OR PARKED WITHIN THE DRIP ZONE OF ANY TREE.

**EARTHWORKS**

26. ALL EARTHWORKS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH AS 3798 (2016) - GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS.

27. ALL FILLING WITHIN AREAS OF PROPOSED ROAD PAVEMENT IS TO ACHIEVE A MINIMUM COMPACTION OF 98% STANDARD.

28. ALL FILLING WITHIN OTHER AREAS IS TO ACHIEVE A MINIMUM COMPACTION OF

## ROAD & DRAINAGE CONSTRUCTION PLANS

CITY PLAN & GENERAL NOTES	S148803R16	LEADBEATER CCT
ALL DEVELOPMENT PLAN	S148803R17	LEADBEATER CCT
ING CONDITIONS & SURVEY STATION/TBMS	S148803R18	LILLYPILLY RD (RS2)
STRUCTION LAYOUT PLAN	S148803R19-R22	LILLYPILLY RD (RS2)
FILL DEPTH RANGES & LOT LEVELS	S148803R23-26	CROSS SECTIONS
GE & LINEMARKING	S148803R27	DRAINAGE LONG S
MATERIAL DETAILS	S148803R28	PR SCHEDULE
SECTION DETAILS (2 SHEETS)	S148803R28	CATCHMENTS & 1%
AL DETAILS	S148803R29	20% AEP DRAINEAGE
EFOWL BVD (RS08)	S148803R30	5% AEP DRAINEAGE
CROSS SECTIONS	S148803R31	1% AEP DRAINEAGE
ONG PL (RS12) LONG SECTION	S148803R32	20% AEP DRAINEAGE
ONG PL (RS12) CROSS SECTIONS	S148803R33	5% AEP DRAINEAGE
UNGI RD (RS14) LONG SECTION	S148803R34	1% AEP DRAINEAGE
UNGI RD (RS14) CROSS SECTIONS		

CT (RS16) LONG SECTION  
CT (RS16) CROSS SECTIONS

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
THE LOCATIONS OF UNDERGROUND  
SERVICES ARE APPROXIMATE ONLY AND  
THEIR EXACT POSITION SHOULD BE PROVED  
ON SITE. NO GUARANTEE IS GIVEN THAT  
ALL EXISTING SERVICES ARE SHOWN.

## TABLE OF OFFSETS FOR SERVICES

SETS	STREET	GAS		WATER		ELEC		TELCO	
		OFFSET	SIDE	OFFSET	DW NW	SIDE	UGL CABLE	OFFSET	SIDE
HS	MALLEFOOWL BVD (RS08)	2.1m	EAST	3.0m	2.55m	EAST	2.4m	WEST	1.9m
ATA	MURNONG PL (RS12)	2.1m	NORTH	3.0m	2.55m	NORTH	2.4m	SOUTH	1.9m
ATA	CUMBUNGI RD (RS14)	2.1m	NORTH	3.0m	2.55m	NORTH	2.4m	SOUTH	1.9m
ATA	LEASBEATER CCT (RS16)	2.1m	NORTH	3.0m	2.55m	NORTH	1.2m	SOUTH	1.75m
LILYPLYL RD (RS21)		2.1m	EAST	3.0m	2.55m	EAST	2.4m	WEST	1.9m

[REDACTED] THIS SHEET MUST BE READ IN CONJUNCTION WITH ALL SHEETS OF THIS SET AND ANY ACCOMPANYING DOCUMENTS  
NOTE: THIS IS AN UNCONTROLLED DOCUMENT AND WILL NOT BE UPDATED. IT IS THE RESPONSIBILITY OF THE USER TO CONFIRM THAT THIS IS A CURRENT COPY AND SUITABLE FOR THE PROPOSED USE. THIS SHEET IS FOR INFORMATION PURPOSES ONLY.  
PLOT DATE: 15/10/2020 FILE C120/DA/2019/063/1488 - THE CORCOS GROUP DEVELOPMENT PTY LTD, BEVERLY, 9 ENGINEERING DESIGNS AND PLANS SUA 4863 AND THE CONSTRUCTION PLANS REV/C



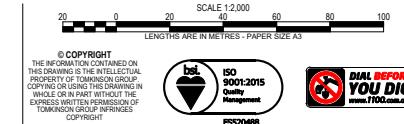
C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS  
B AMENDMENTS AS REQUESTED BY COUNCIL

A AS SUBMITTED TO COUNCIL

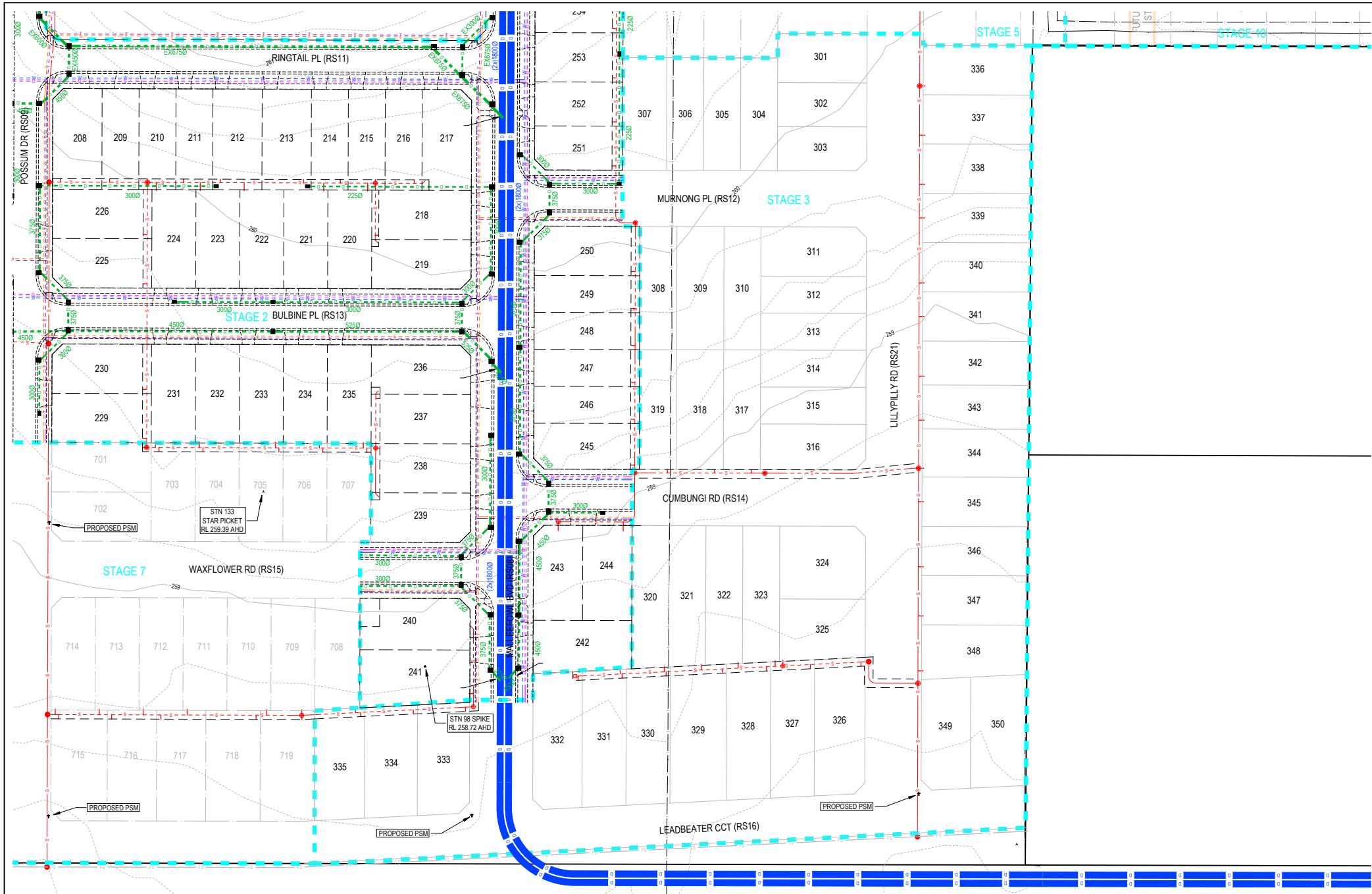
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**OORANYA ESTATE - STAGE 3**  
**WHITESIDE ST - BEVERIDGE**  
**ROADS & DRAINAGE CONSTRUCTION PLANS**  
**OVERALL DEVELOPMENT PLAN**  
MITCHELL SHIRE COUNCIL REF: F  
THE CORCORAN GROUP DEVELOPMENTS PTY LTD  
DWG STATUS: PROJECT & DWG No:  
**FOR CONSTRUCTION** S148803R02 / 34



C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS  
B AMENDMENTS AS REQUESTED BY COUNCIL  
A AS SUBMITTED TO COUNCIL



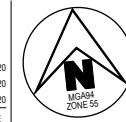
APPROVED  
29/09/2020

AR JM NB 29/06/20

AR JM NB 26/06/20

REV 001

DESK DWG CHK DATE



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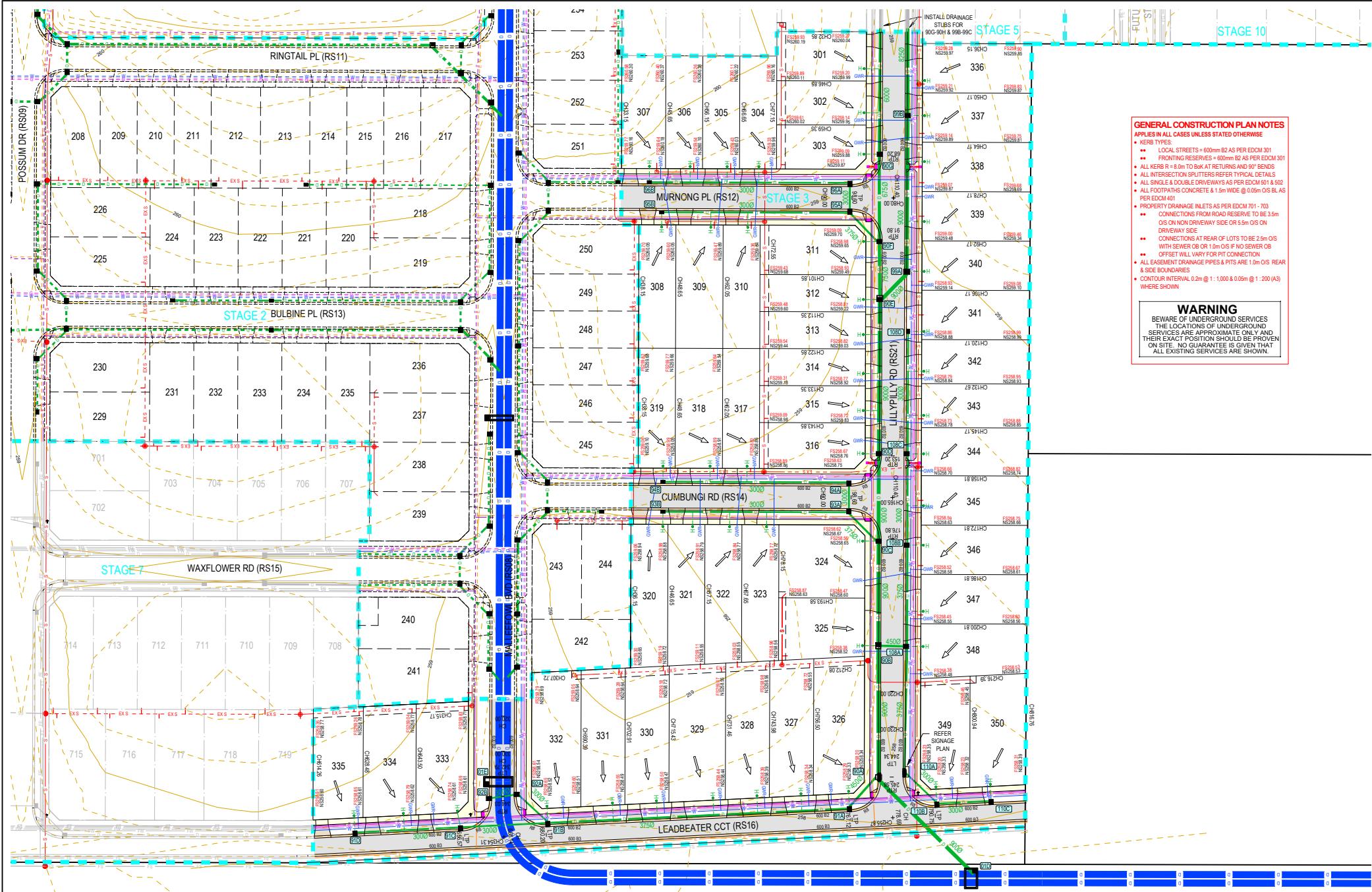


SCALE 1:11,000  
LENGTHS ARE IN METRES - PAPER SIZE A3

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**OORANYA ESTATE - STAGE 3**  
**WHITESIDE ST - BEVERIDGE**  
**ROADS & DRAINAGE CONSTRUCTION PLANS**  
**EXISTING CONDITIONS & SURVEY STATIONS/TBM'S**  
MITCHELL SHIRE COUNCIL REF: F001  
THE CORCORAN GROUP DEVELOPMENTS PTY LTD  
DWG STATUS:  
**FOR CONSTRUCTION** PROJECT & DWG No:  
S148803R03 / 34 C REV



#### GENERAL CONSTRUCTION PLAN NOTES

APPLIES IN ALL CASES UNLESS STATED OTHERWISE  
 • KERB TYPES:  
 -- LOCAL STREETS - 600mm BS 75 PER ECDM 301  
 -- PROPERTY RESERVE - 600mm BS 75 PER ECDM 301  
 • ALL KERBS R = 8.0m TO 600mm AT RETURNS AND 90° BENDS  
 • ALL INTERSECTION SPURTERS REFER TYPICAL DETAILS  
 • ALL SINGLE & DOUBLE CURVATURE AS PER ECDM 501 & 502  
 • ALL FOOTPATHS CONCRETE 1.5m WIDE @ 0.05m O/S BL AS  
 PER ECDM 401  
 • PROPERTY DRAINAGE INLETS AS PER ECDM 701 - 702  
 -- CONNECTIONS FROM ROAD RESERVE TO BE 3.5m O/S ON ONE SIDE OR 5.5m O/S ON OTHER SIDE  
 -- CONNECTIONS AT REAR OF LOTS TO BE 2.5m O/S WITH SEWER OR 10m O/S IF NO SEWER OR  
 -- OFFSET WILL VARY FOR PIT CONNECTION  
 • ALL EASEMENT DRAINAGE PIPES & FITTINGS ARE 1.0m O/S REAR & SIDE BOUNDARIES  
 • CONTOUR INTERVAL 0.2m @ 1: 1000 & 0.05m @ 1: 200 (A3) WHERE SHOWN

#### WARNING

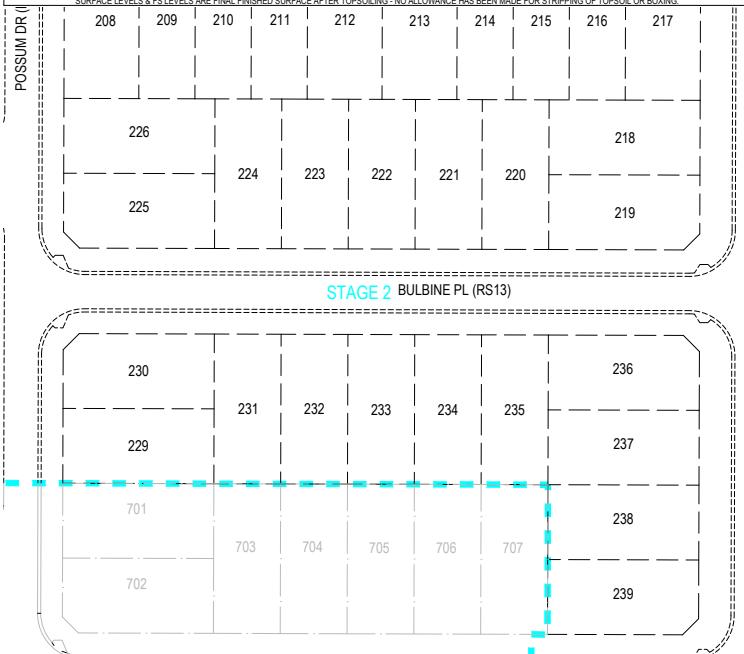
BEWARE OF UNDERGROUND SERVICES  
 THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE DETERMINED ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

## Levels Table

Levels Table											
No.	Min. Level	Max. Level	Colour	No.	Min. Level	Max. Level	Colour	No.	Min. Level	Max. Level	Colour
1	-2.00	-1.50	Red	5	-0.30	0.00	Green	9	1.00	1.50	Blue
2	-1.50	-1.00	Yellow	6	0.00	0.30	Cyan				
3	-1.00	-0.60	Orange	7	0.30	0.60	Magenta				
4	-0.60	-0.30	Grey	8	0.60	1.00	Black				

NOTES: CUT & FILL DEPTH LEVELS ARE A COMPARISON BETWEEN EXISTING SURFACE & DESIGN SURFACE. INS LEVELS ARE ORIGINAL AS-SURVEYED EXISTING SURFACE. CUT & FILL LEVELS ARE IN 0.1M STAGES. CHANGES MADE AFTER 2020-01-01 ARE NOT INCLUDED. ALL DATA HAS BEEN MADE FOR STRING LINE OCT-2020-01-01 DOWNSAMPLED TO 0.1M.

NOTES: CUT & FILL DEPTH LEVELS ARE A COMPARISON BETWEEN EXISTING SURFACE & DESIGN SURFACE. NS LEVELS ARE ORIGINAL AS-SURVEYED EXISTING SURFACE LEVELS & FS LEVELS ARE FINAL FINISHED SURFACE AFTER TOPSOILING - NO ALLOWANCE HAS BEEN MADE FOR STRIPPING OF TOPSOIL OR BOXING



## STAGE 7 WAXFLOWER RD (RS15)

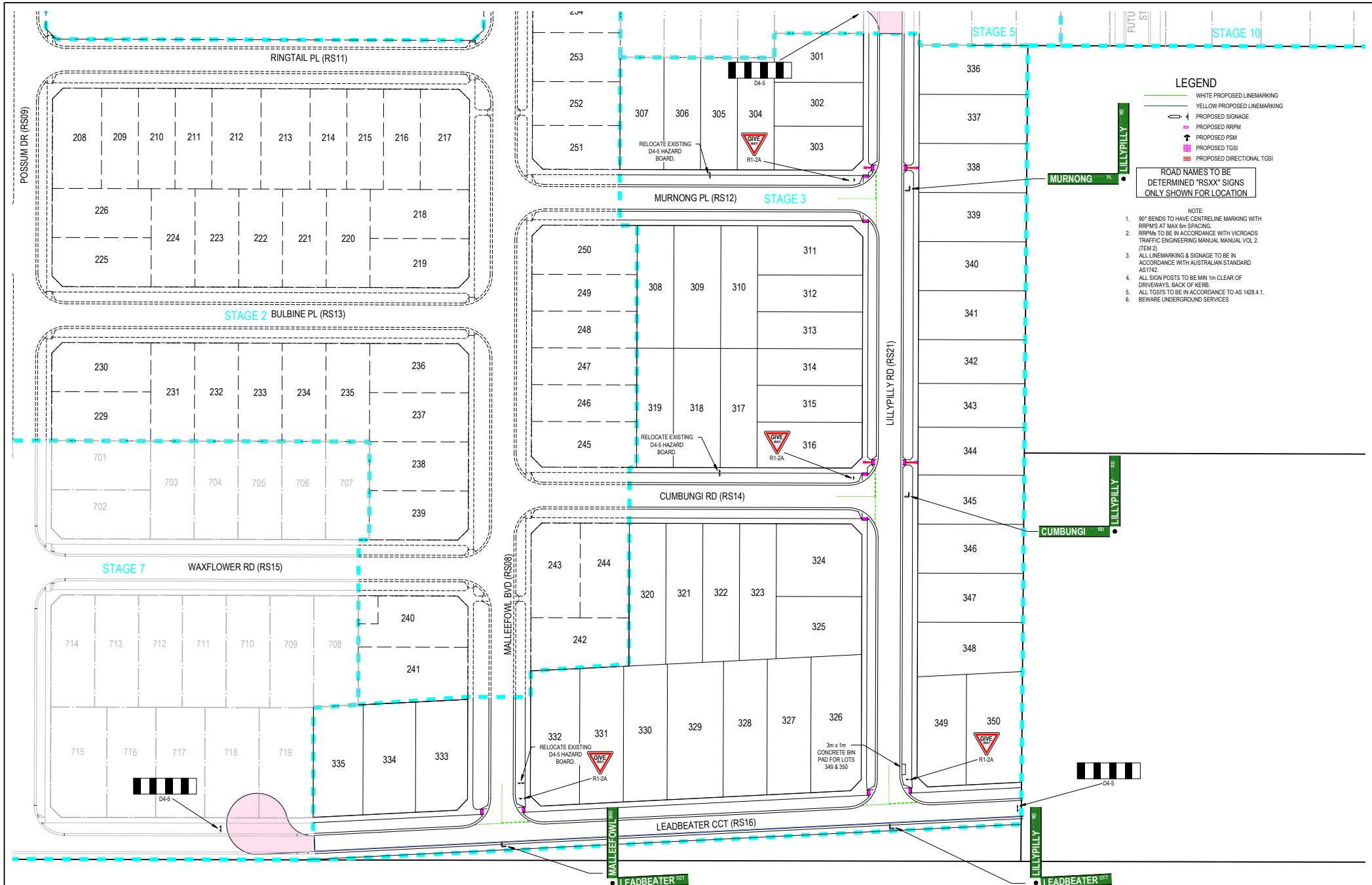


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The logo consists of the BSI bee symbol inside an oval shape. To the right of the oval, the text "ISO 9001:2015" is at the top, followed by "Quality Management" below it.

**OORANYA ESTATE - STAGE 3  
WHITESIDE ST - BEVERIDGE  
ROADS & DRAINAGE CONSTRUCTION PLANS  
CUT & FILL DENSITY RANGES & LOT LEVELS  
MITCHELL SHIRE COUNCIL #REF  
THE CORCORAN GROUP DEVELOPMENTS PTY LTD  
DWG STATUS: PROJECT & DWG No:  
**FOR CONSTRUCTION** S148803R05**



- C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS
- B AMENDMENTS AS REQUESTED BY COUNCIL
- A AS SUBMITTED TO COUNCIL



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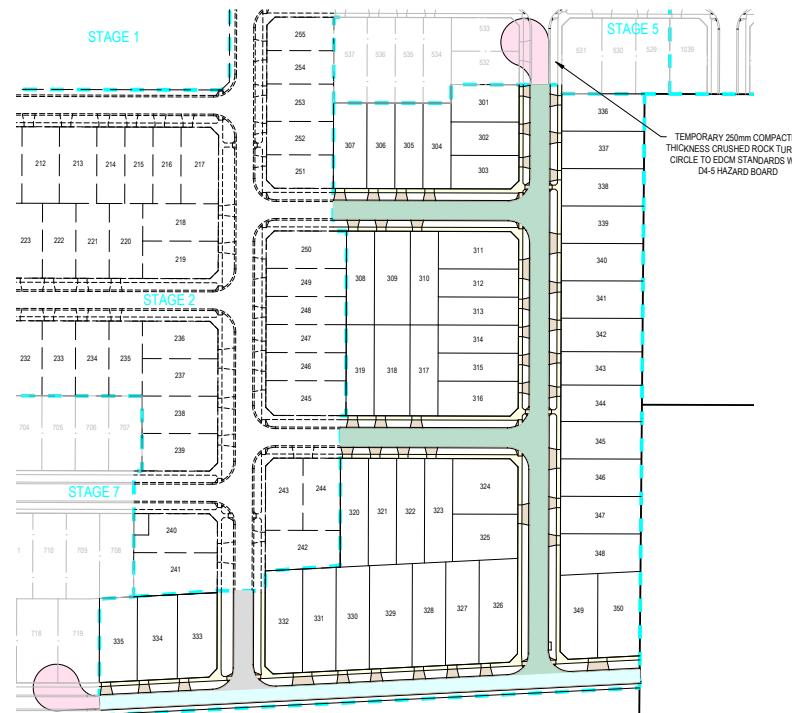
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**OORANYA ESTATE - STAGE 3  
WHITESIDE ST - BEVERIDGE**  
ROADS & DRAINAGE CONSTRUCTION PLANS  
**SIGNAGE & LINEMARKING PLAN**  
MITCHELL SHIRE COUNCIL #REF  
THE CORCUS GROUP DEVELOPMENTS PTY LTD  
DWG STATUS: PROJECT & DWG  
**FOR CONSTRUCTION** S148803

CONCRETE STD SINGLE & DOUBLE DRIVEWAY PAVEMENT DETAILS (EDCM 501 - 502)		
PAVEMENT LAYER	LAYER THICKNESS (mm)	MATERIAL
1 SURFACE FINISH		BROOMED FINISH & TOOLED JOINTS. FINISHED SURFACE TO COMPLY WITH AS 4586 - SLIP RESISTANT CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS
2 CONCRETE	125	CONCRETE 32MPa WITH SL2 TOP REINFORCEMENT WITH 30mm MN COVER.
3 BASE	50	20mm NOM. SIZE CLASS 3 FINE CRUSHED ROCK (SEE NOTE J BELOW)
4 SUBGRADE		SUBGRADE PREPARATION (SEE NOTE G BELOW). SUBGRADE IMPROVEMENT AS DIRECTED BY SUPERINTENDENT

CONCRETE FOOTPATH & SHARED PATH PAVEMENT DETAILS (EDCM 401)		
PAVEMENT LAYER	LAYER THICKNESS (mm)	MATERIAL
1 SURFACE FINISH		BROOMED FINISH & TOOLED JOINTS. FINISHED SURFACE TO COMPLY WITH AS 4586 - SLIP RESISTANT CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS
2 CONCRETE	125	CONCRETE 32MPa WITH SL2 TOP REINFORCEMENT WITH 30mm MN COVER.
3 BASE	50	20mm NOM. SIZE CLASS 3 FINE CRUSHED ROCK (SEE NOTE J BELOW)
4 SUBGRADE		SUBGRADE PREPARATION (SEE NOTE G BELOW). SUBGRADE IMPROVEMENT AS DIRECTED BY SUPERINTENDENT

TEMPORARY TURNING CIRCLE PAVEMENT		
PAVEMENT LAYER	LAYER THICKNESS (mm)	MATERIAL
1 BASE COURSE	250	20mm NOM. SIZE CLASS 2 FINE CRUSHED ROCK



PAVEMENT DESIGN TO BE READ IN CONJUNCTION WITH GTS REPORT 20C 0008-2

- PAVEMENT NOTES:
- A. PAVEMENT DESIGNS PRODUCED IN ACCORDANCE WITH GTS REPORT 20C 0008-2
  - B. PAVEMENT BASE COURSES ARE TO BE COMPACTED TO A MINIMUM DENSITY RATIO OF 98% MODIFIED MAXIMUM DRY DENSITY (MMD).
  - C. UPPER PAVEMENT SUBBASE COURSE TO BE COMPACTED TO A MINIMUM DRY DENSITY RATIO OF 96% MODIFIED DRY DENSITY (MMD).
  - D. LOWER PAVEMENT SUBBASE COURSE TO BE COMPACTED TO A MINIMUM DRY DENSITY RATIO OF 95% MMD.
  - E. THE CAPPING LAYER SHALL BE COMPACTED TO A MINIMUM DRY DENSITY RATIO OF 98% STANDARD AND EXTEND 1.0m BEHIND BACK OF KERB.
  - F. PAVEMENT LAYERS SHOULD BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 200mm THICKNESS.
  - G. SUBGRADE PARTITION ENGINEERED FILL CONSTRUCTION PAVEMENTS TO BE IN ACCORDANCE WITH RELEVANT STANDARDS.
  - H. WHEN PAVEMENT EXCAVATION IS IN ROCK, ALL LOOSE MATERIAL (INCL ROCK & CLAY) MUST BE REMOVED. THE SUBGRADE MUST THEN BE REGULATED WITH COUNCIL APPROVED MATERIAL.
  - I. PRIOR TO PLACEMENT OF THE FILL MATERIAL UNDER NEW PAVEMENT, APPROVAL OF THE MATERIAL TO BE USED MUST BE OBTAINED FROM COUNCIL.
  - J. ALL SUBSURFACE DRAINS TO BE CONSTRUCTED AS PER STANDARD DRAWING EDCM 202 FOR EXPANSIVE SUBGRADES.
  - K. IN THE CASE OF ANY PAVEMENT DESIGN CONFLICTS, GTS REPORT 20C 0008-2 WILL TAKE PRECEDENCE.

620mm DEPTH ACCESS STREET 2 PAVEMENT		
PAVEMENT LAYER	LAYER THICKNESS (mm)	MATERIAL
1 ASPHALT	40	TYPE N ASPHALT
2 BITUMEN CRUMB RUBBER ASPHALT	40	SIZE 10 ASPHALT
3 SAMI SEAL 1 BITUMINOUS PRIME		SAMI SEAL (10mm) - S18RF (APPLICATION RATE OF GREATER THAN OR EQUAL TO 1.8 LITRES/m <sup>2</sup> ). BITUMINOUS PRIME (UNDER SAMI SEAL)
4 BASE COURSE	120	20mm NOM. SIZE CLASS 2 FINE CRUSHED ROCK (SEE NOTE B ABOVE)
5 UPPER SUBBASE COURSE	160	20mm NOM. SIZE CLASS 3 FINE CRUSHED ROCK (SEE NOTE C ABOVE)
6 LOWER SUBBASE COURSE	110	40mm NOM. SIZE CLASS 4 FINE CRUSHED ROCK (SEE NOTE D ABOVE)
7 CAPPING LAYER	150	CONTINUATION OF LOWER SUBBASE COURSE OR EXISTING SUBGRADE MATERIAL STABILISED WITH 3% LIME BY MASS (SEE NOTE E ABOVE)
8 SUBGRADE		

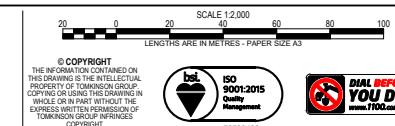
570mm DEPTH ACCESS STREET 1 PAVEMENT		
PAVEMENT LAYER	LAYER THICKNESS (mm)	MATERIAL
1 ASPHALT	30	TYPE N ASPHALT
2 BITUMEN CRUMB RUBBER ASPHALT	30	SIZE 10 ASPHALT
3 SAMI SEAL 1 BITUMINOUS PRIME		SAMI SEAL (10mm) - S18RF (APPLICATION RATE OF GREATER THAN OR EQUAL TO 1.8 LITRES/m <sup>2</sup> ). BITUMINOUS PRIME (UNDER SAMI SEAL)
4 BASE COURSE	130	20mm NOM. SIZE CLASS 2 FINE CRUSHED ROCK (SEE NOTE B BELOW)
5 UPPER SUBBASE COURSE	130	20mm NOM. SIZE CLASS 3 FINE CRUSHED ROCK (SEE NOTE C BELOW)
6 LOWER SUBBASE COURSE	100	40mm NOM. SIZE CLASS 4 CRUSHED ROCK (SEE NOTE D ABOVE)
7 CAPPING LAYER	150	CONTINUATION OF LOWER SUBBASE COURSE OR EXISTING SUBGRADE MATERIAL STABILISED WITH 3% LIME BY MASS (SEE NOTE E ABOVE)
8 SUBGRADE		

440mm DEPTH ACCESS STREET PAVEMENT		
PAVEMENT LAYER	LAYER THICKNESS (mm)	MATERIAL
1 ASPHALT	20	TYPE L ASPHALT
2 BITUMEN CRUMB RUBBER ASPHALT	30	SIZE 10 ASPHALT
3 SAMI SEAL 1 BITUMINOUS PRIME		SAMI SEAL (10mm) - S18RF (APPLICATION RATE OF GREATER THAN OR EQUAL TO 1.8 LITRES/m <sup>2</sup> ). BITUMINOUS PRIME (UNDER SAMI SEAL)
4 BASE COURSE	140	20mm NOM. SIZE CLASS 2 FINE CRUSHED ROCK (SEE NOTE B BELOW)
5 SUBBASE COURSE	100	20mm NOM. SIZE CLASS 3 CRUSHED ROCK (SEE NOTE D ABOVE)
7 CAPPING LAYER	150	CONTINUATION OF LOWER SUBBASE COURSE OR EXISTING SUBGRADE MATERIAL STABILISED WITH 3% LIME BY MASS (SEE NOTE E ABOVE)
8 SUBGRADE		



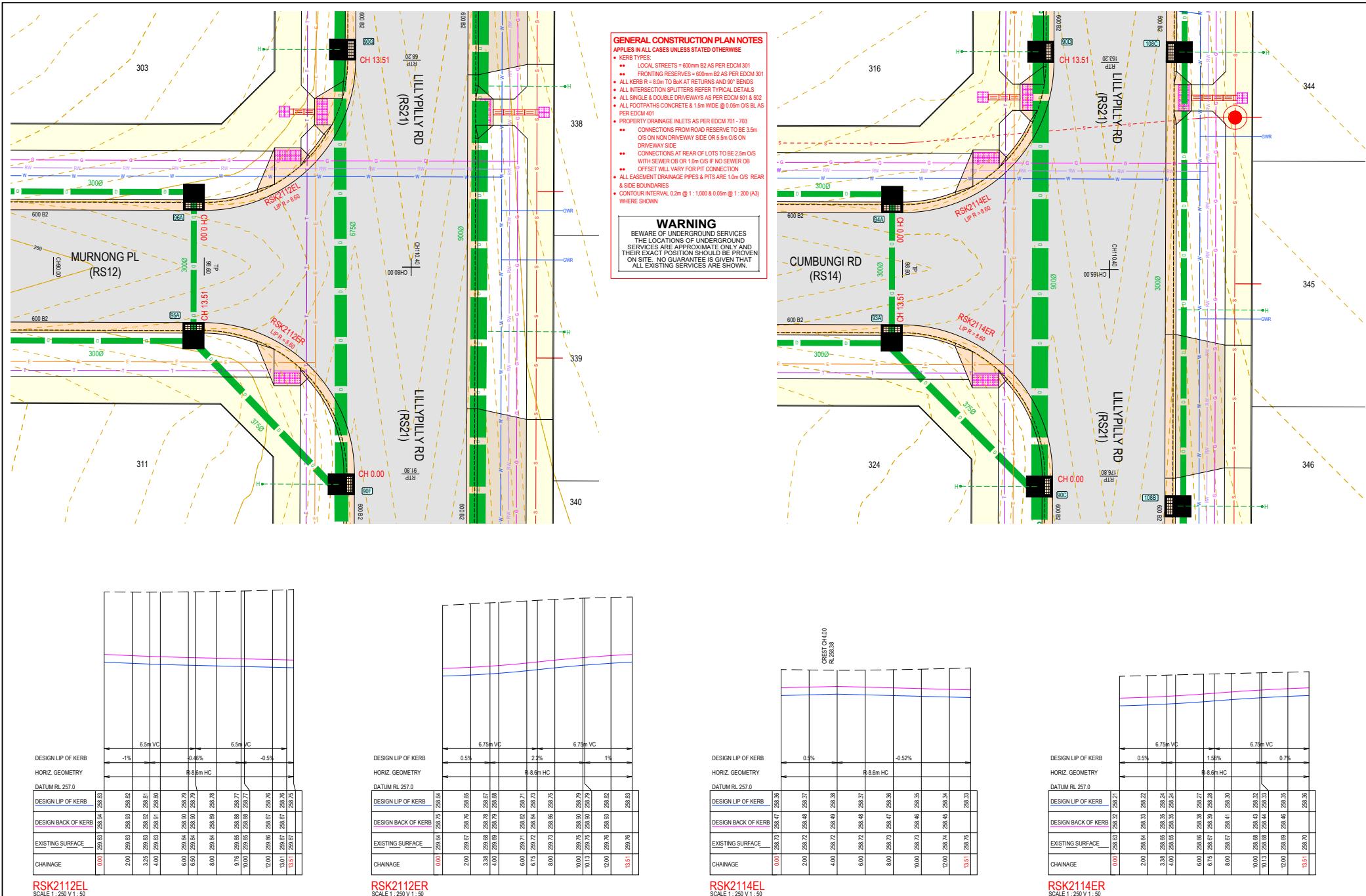
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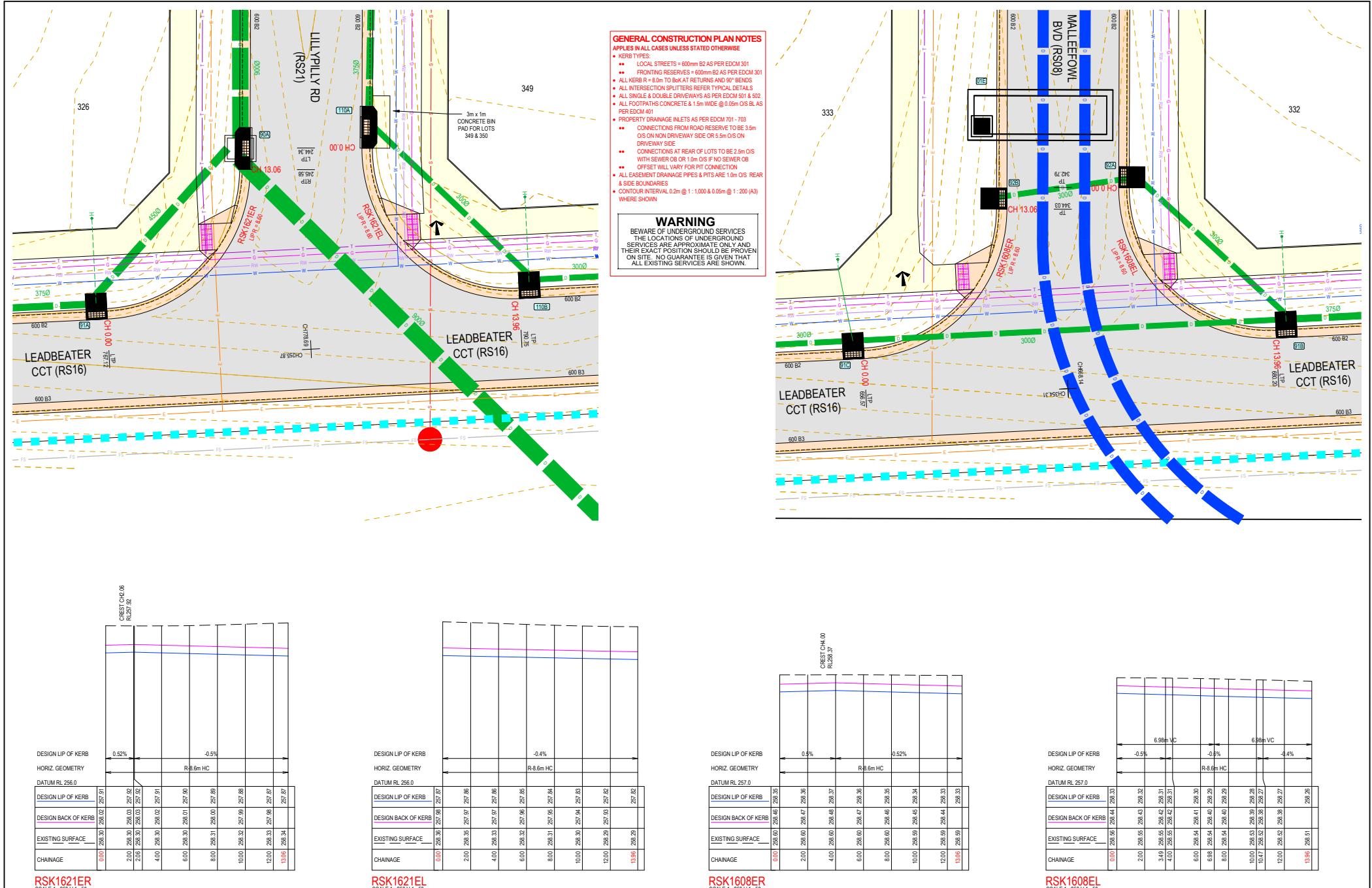
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**OORANYA ESTATE - STAGE 3**  
**WHITESIDE ST - BEVERIDGE**  
**ROADS & DRAINAGE CONSTRUCTION PLANS**  
**PAVEMENT DETAILS**

MITCHELL SHIRE COUNCIL REF: ISO 9001:2015  
THE CORCORAN GROUP DEVELOPMENTS PTY LTD  
DWG STATUS: FOR CONSTRUCTION  
PROJECT & DWG No: S148803R07 / 34

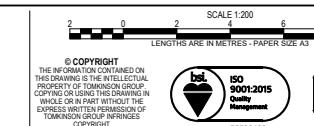




C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS  
B AMENDMENTS AS REQUESTED BY COUNCIL  
A AS SUBMITTED TO COUNCIL



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ABN 11 103 336 358 WWW.TOMKINSON.COM

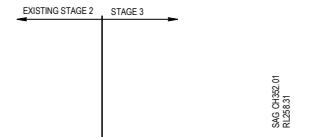
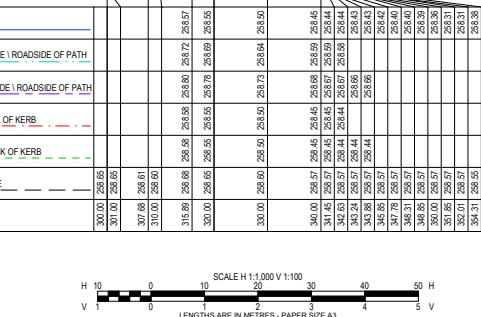


**ORANYA ESTATE - STAGE 3**  
**WHITESIDE ST - BEVERIDGE**  
**ROADS & DRAINAGE CONSTRUCTION PLANS**  
**INTERSECTION DETAILS (SHEET 2 OF 2)**

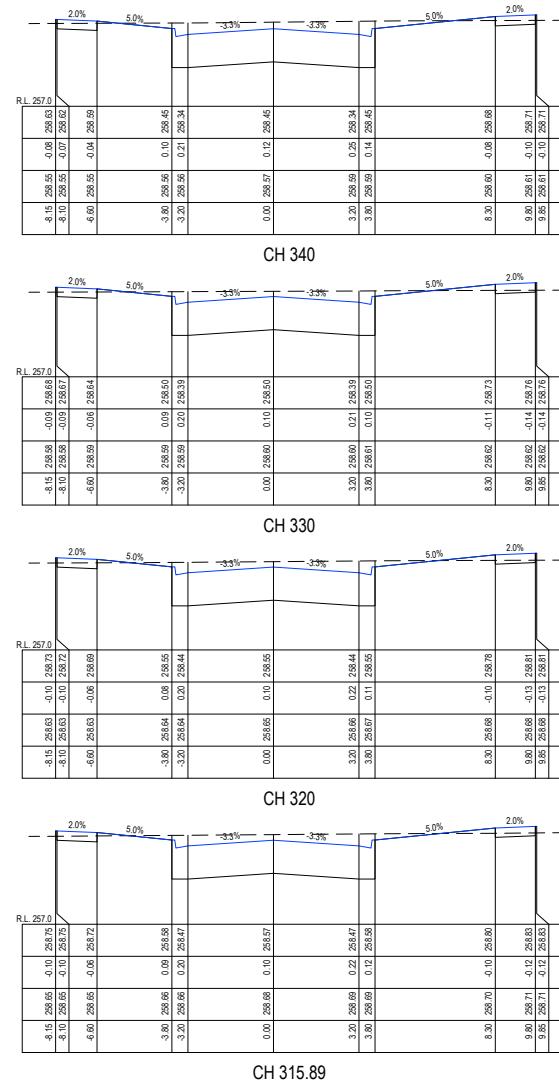
MITCHELL SHIRE COUNCIL #REF  
TOMKINSON GROUP DEVELOPMENTS PTY LTD  
DWG STATUS: **FOR CONSTRUCTION** PROJECT & DWG No: **S148803R09 / 34**



DESIGN C.L.  
HORIZ. GEOMETRY  
DATUM RL 254.0



SAG CH250.01  
R128.31



SCALE H 1:200 V 1:100 LENGTHS ARE IN METRES - PAPER SIZE A3

C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS  
B AMENDMENTS AS REQUESTED BY COUNCIL  
A AS SUBMITTED TO COUNCIL



APPROVED  
by John Conroy and others on 20/02/2020  
AR JM NB 29/06/20  
AR JM NB 26/06/20

REV

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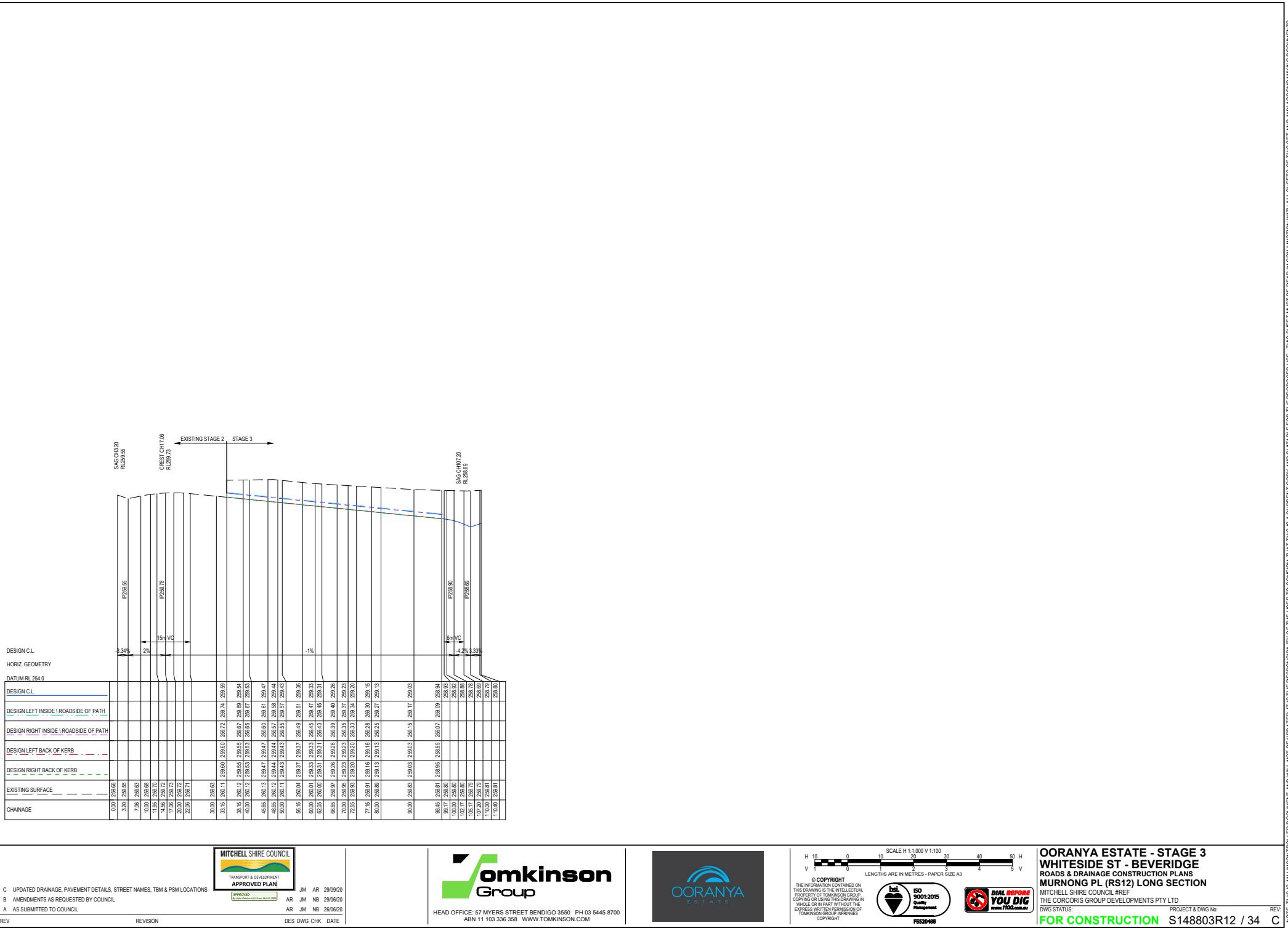


REV  
REVISION  
DES DWG CHK DATE

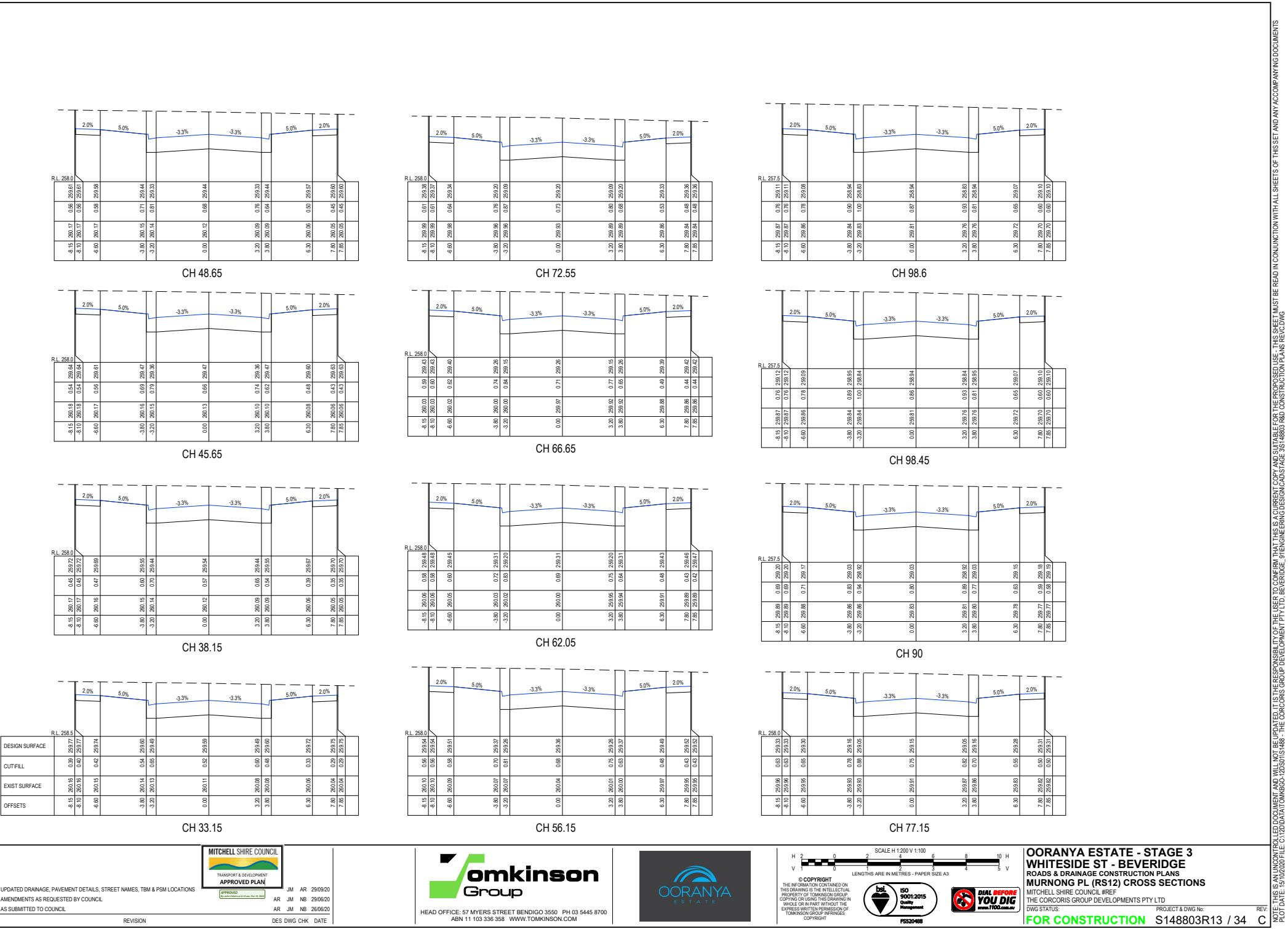


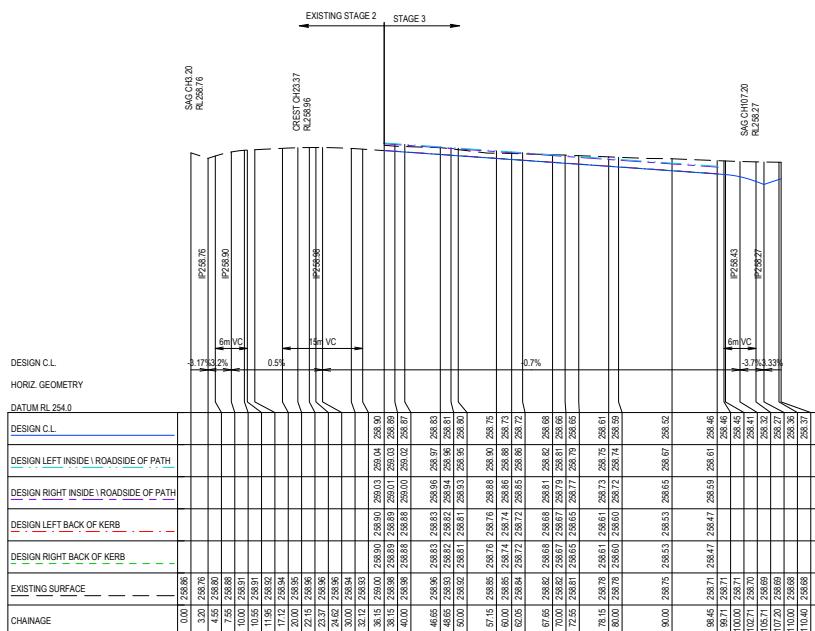
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MITCHELL SHIRE COUNCIL REF: MALLEEFOWL BVD (RS08) LONG & CROSS SECTIONS  
DWG STATUS: PROJECT & DWG No:  
FOR CONSTRUCTION S148803R11 / 34



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C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS  
B AMENDMENTS AS REQUESTED BY COUNCIL

**A AS SUBMITTED TO COUNCIL**

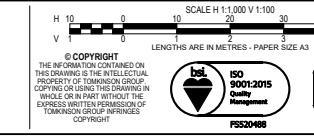
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JM AR 29/09/20  
JM NB 29/06/20  
JM NB 26/06/20

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**OORANYA ESTATE - STAGE 3  
WHITEISES ST - BEVERIDGE  
ROADS & DRAINAGE CONSTRUCTION PLANS  
CUMBUNGI RD (RS14) LONG SECTION**

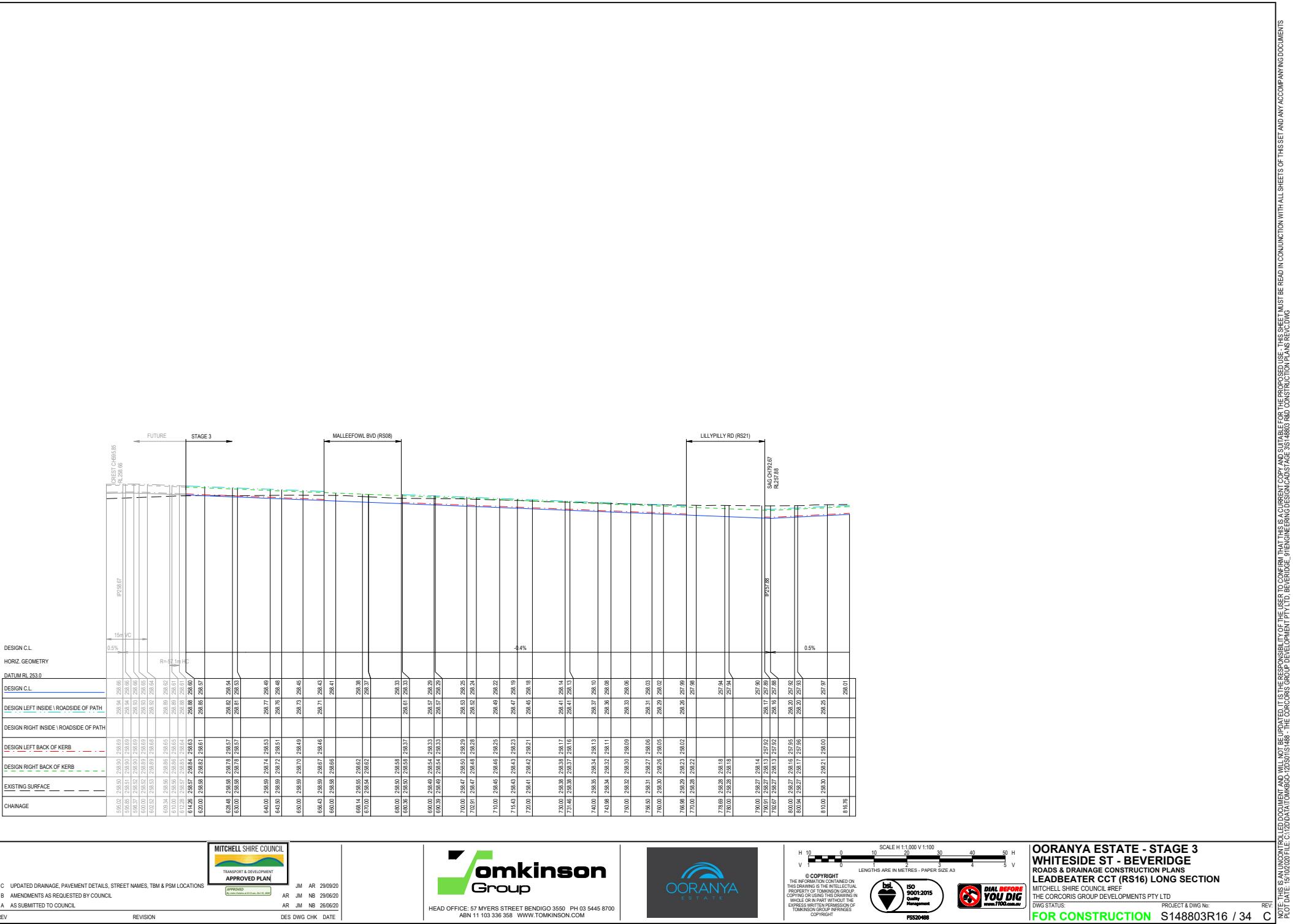
MITCHELL SHIRE COUNCIL #REF  
THE CORCORAN GROUP DEVELOPMENTS PTY LTD

DWG STATUS: PROJECT & DWG N

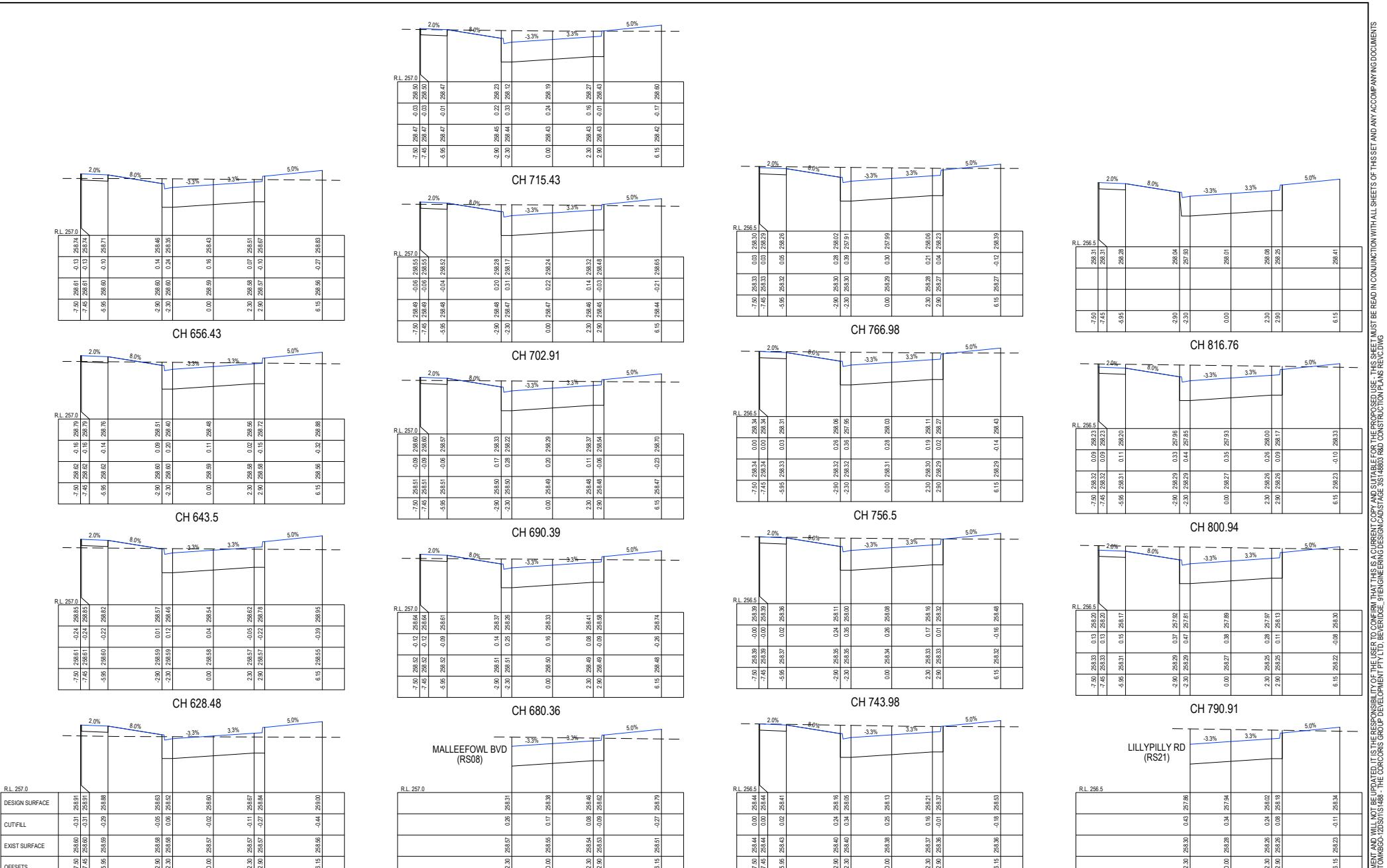
**FOR CONSTRUCTION** S148803



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C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS  
 B AMENDMENTS AS REQUESTED BY COUNCIL  
 A AS SUBMITTED TO COUNCIL



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 AR JM NB 29/06/20  
 AR JM NB 26/06/20

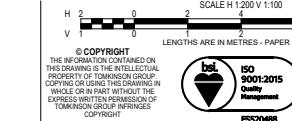
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REVISION

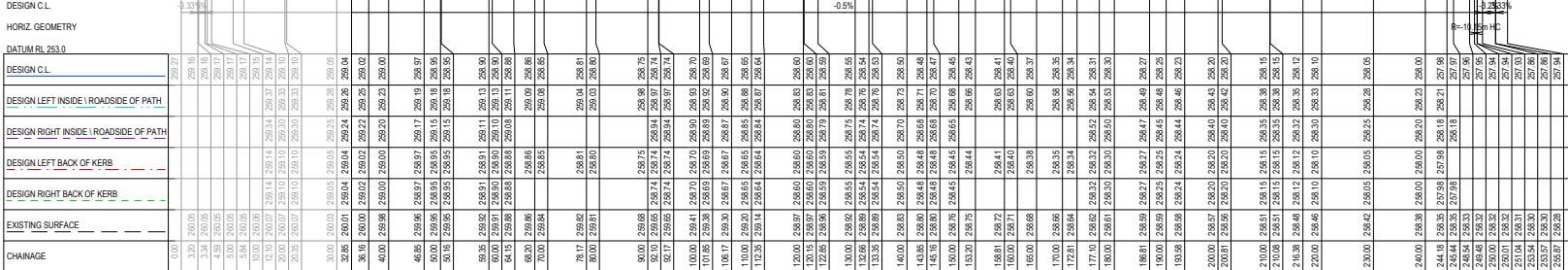
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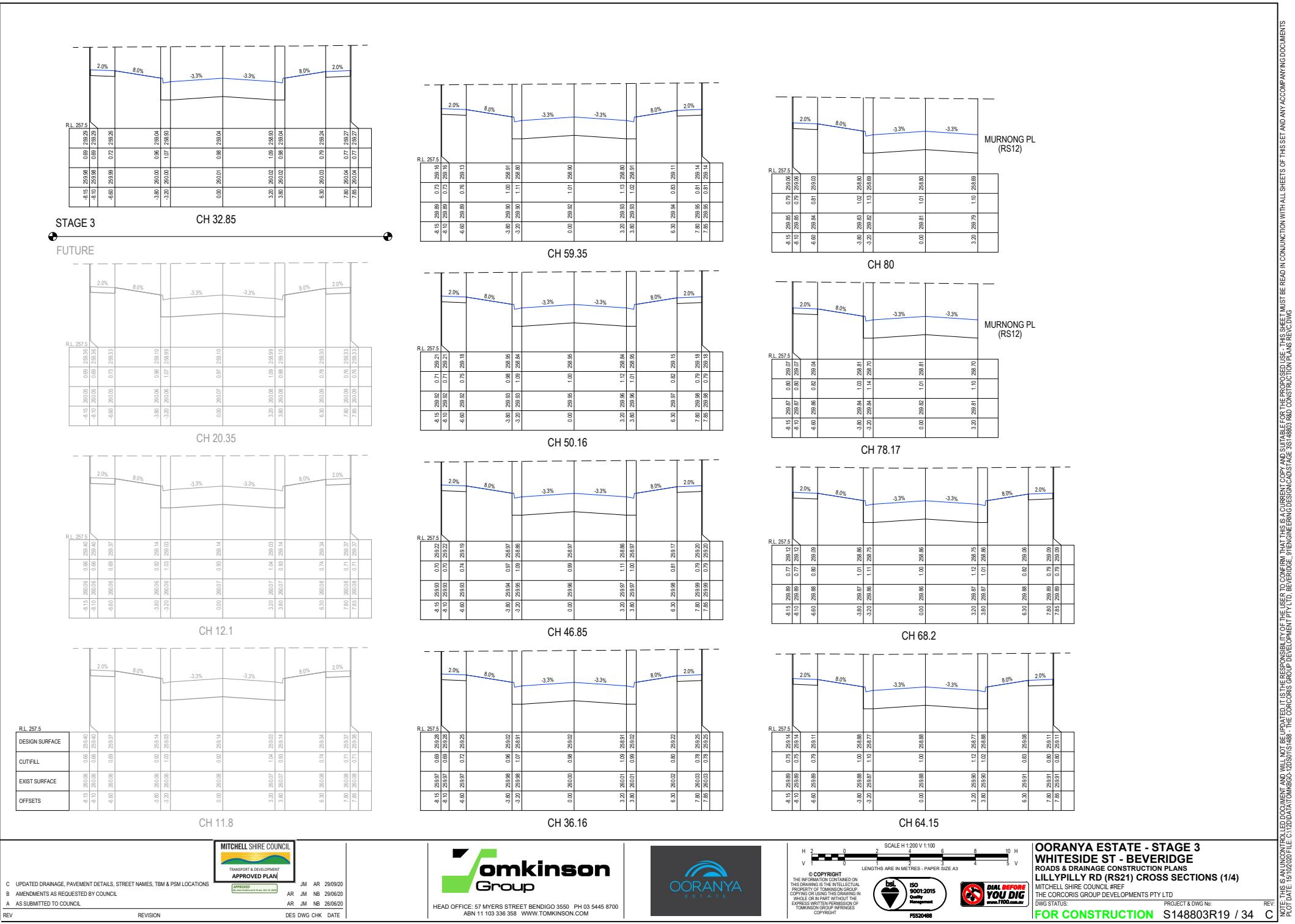


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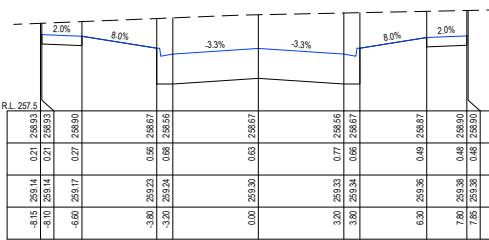


**ORANYA ESTATE - STAGE 3**  
**WHITESIDE ST - BEVERIDGE**  
**ROADS & DRAINAGE CONSTRUCTION PLANS**  
**LEADBEATER CCT (RS16) CROSS SECTIONS**

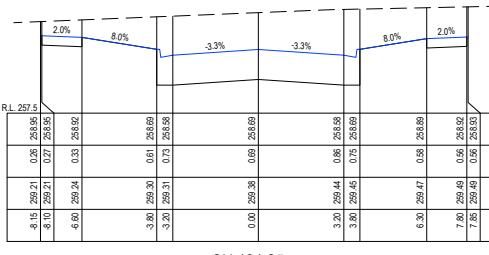




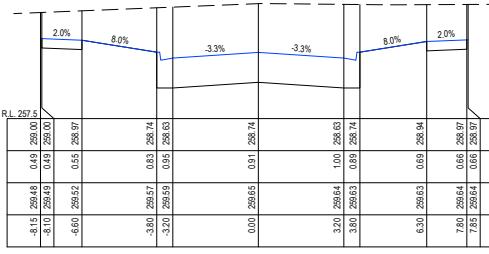
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CH 106.17



CH 101.85



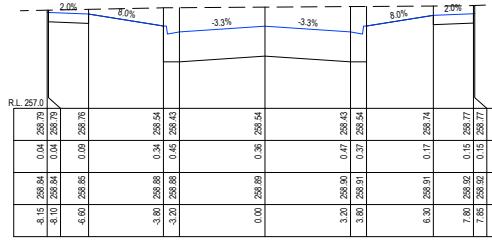
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R.L. 257.5				
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OFFSETS	0.40	259.46	0.46	260.00
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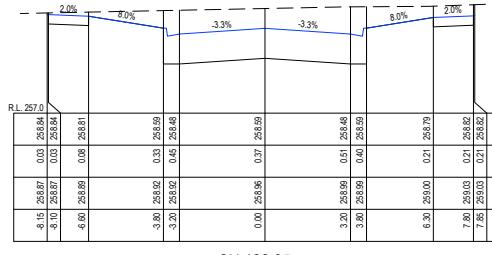
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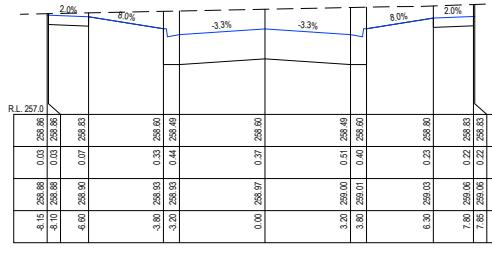
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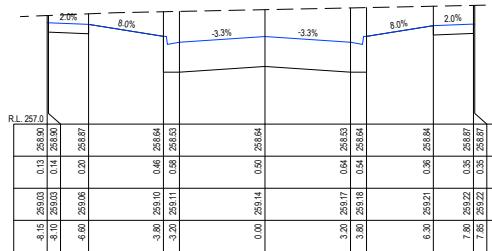
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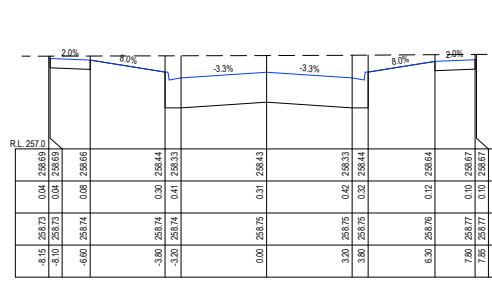
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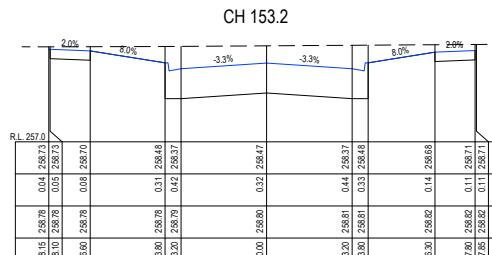
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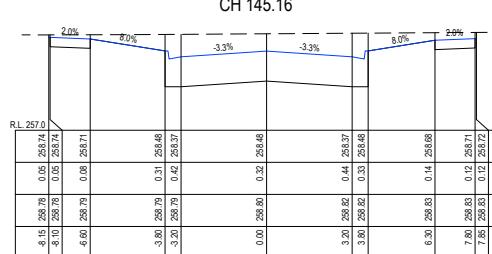
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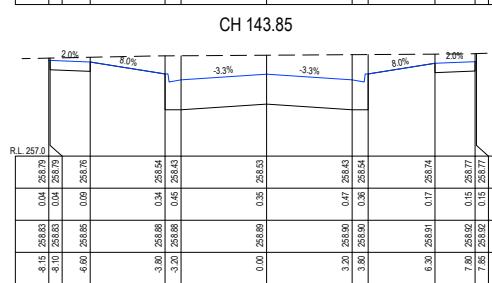
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CH 145.1



CH 143.8



CH 133.3

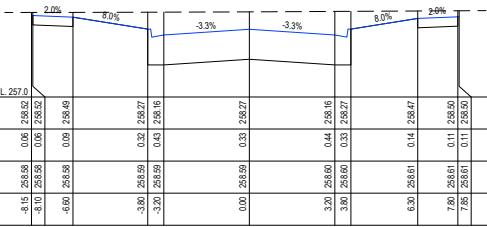


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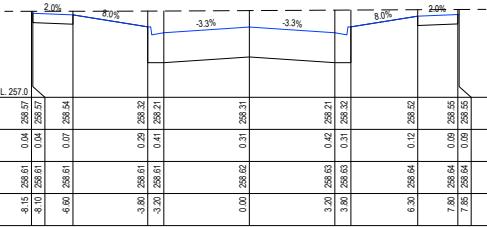


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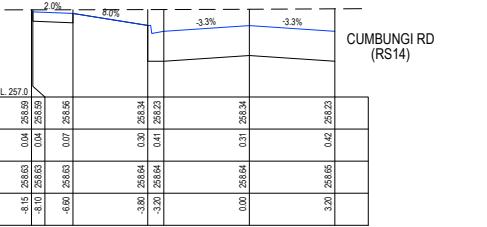
**OORANYA ESTATE - STAGE 3  
WHITESIDE ST - BEVERIDGE  
ROADS & DRAINAGE CONSTRUCTION PLANS  
LILYPILLY RD (RS21) CROSS SECTIONS (2/4)**



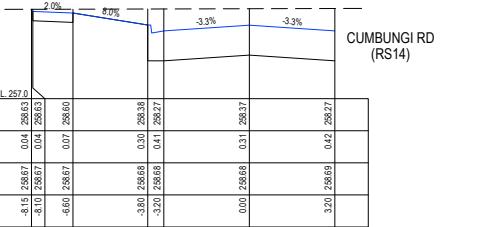
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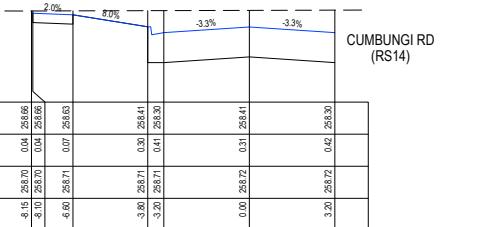
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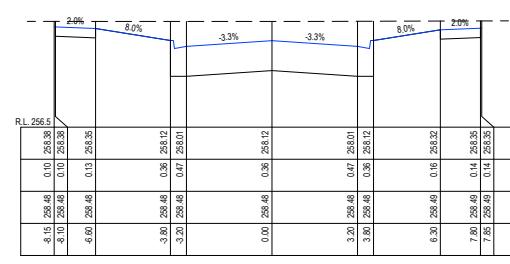
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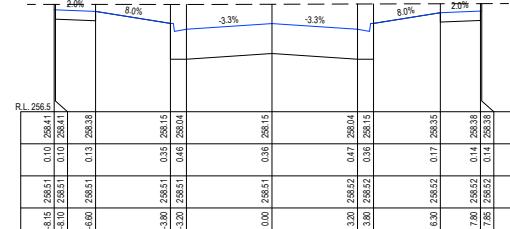
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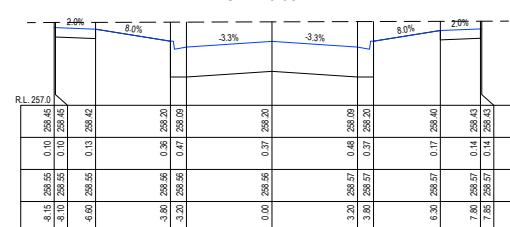
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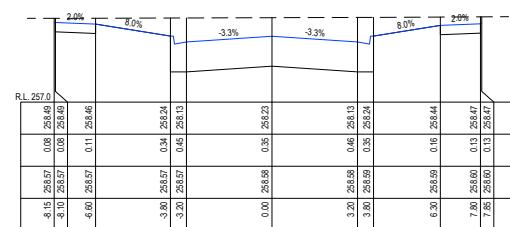
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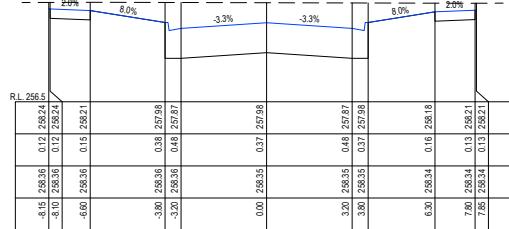
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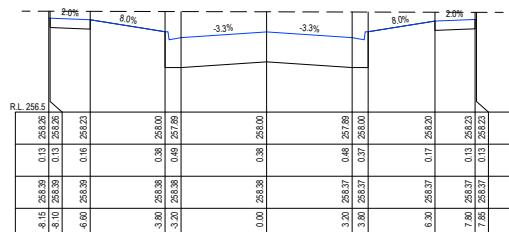
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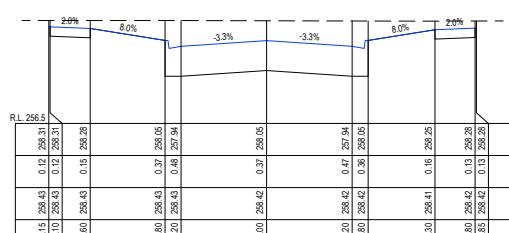
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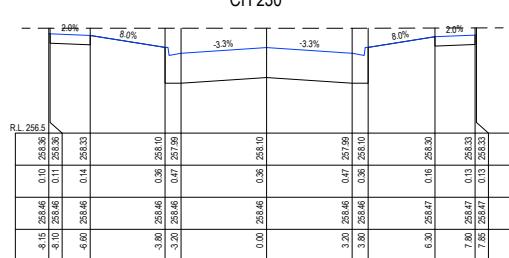
CH 220



CH 244.18



CH 230



CH 220

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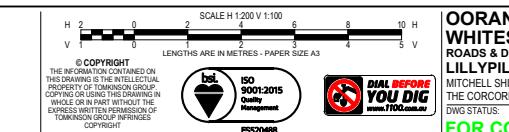
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AR JM NB 26/06/20  
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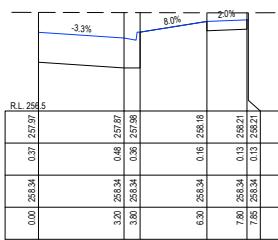
C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS  
B AMENDMENTS AS REQUESTED BY COUNCIL  
A AS SUBMITTED TO COUNCIL

REV: REVISION DES DWG CHK: DATE

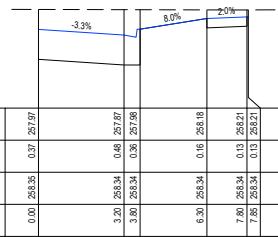


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CH 245.58



CH 245.44

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B AMENDMENTS AS REQUESTED BY COUNCIL

A AS SUBMITTED TO COUNCIL



APPROVED  
by John Conroy at 04 Mar 2020  
AR JM NB 29/09/20  
AR JM NB 26/06/20

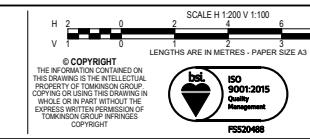
REV

REVISION

DESK DWG CHK DATE



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MITCHELL SHIRE COUNCIL REF  
THE CORCORAN GROUP DEVELOPMENTS PTY LTD  
DWG STATUS:  
**FOR CONSTRUCTION** S148803R22 / 34

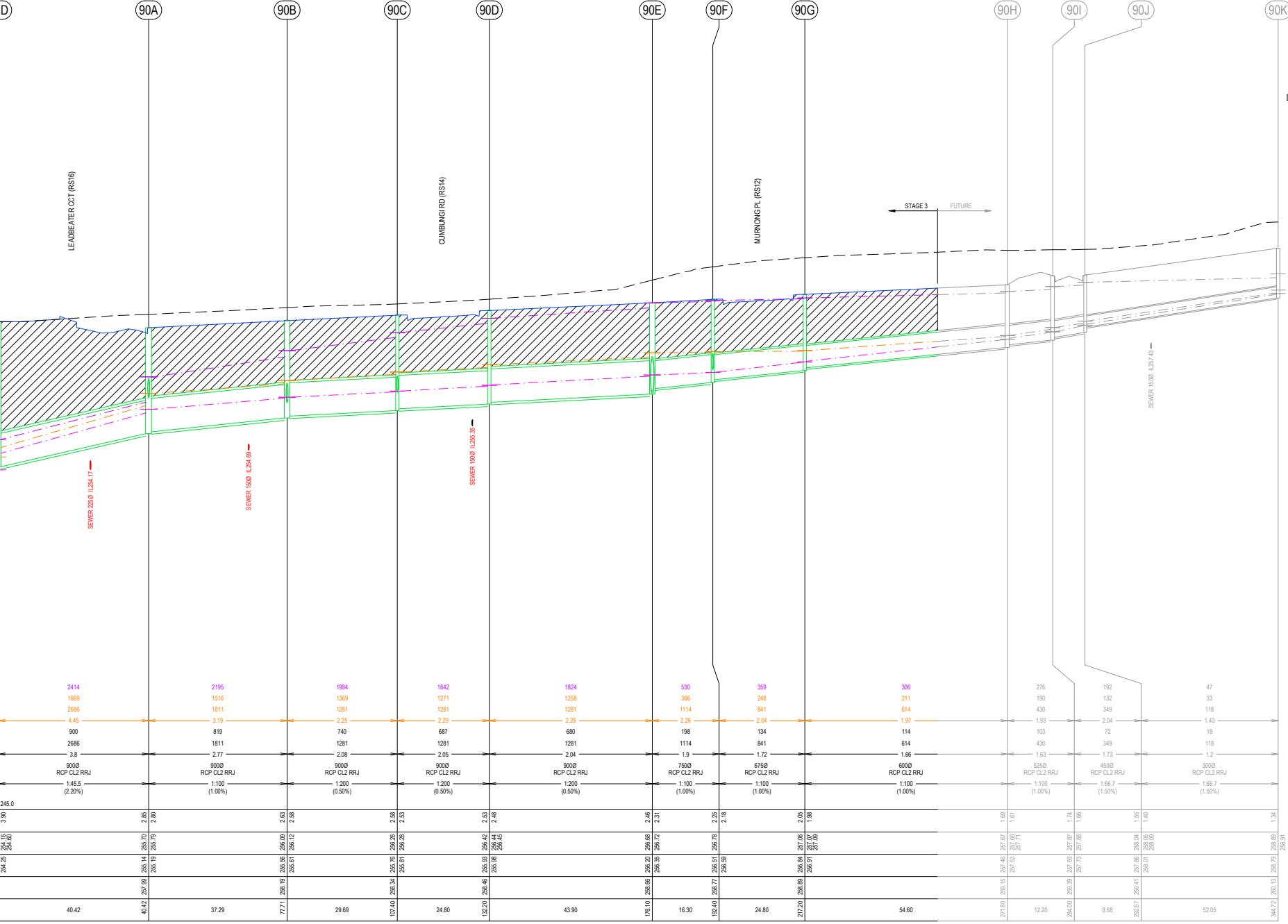
PROJECT & DWG No:  
REV C

**OORANYA ESTATE - STAGE 3**  
**WHITESIDE ST - BEVERIDGE**  
**ROADS & DRAINAGE CONSTRUCTION PLANS**  
**LILYPILLY RD (RS21) CROSS SECTIONS (4/4)**  
MITCHELL SHIRE COUNCIL REF  
THE CORCORAN GROUP DEVELOPMENTS PTY LTD  
DWG STATUS:

**NOTE:**  
DENOTES FULL  
DEPTH 20mm CLASS  
3 BACKFILL

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MITCHELL SHIRE COUNCIL	
TRANSPORT & DEVELOPMENT APPROVED PLAN	
APPROVED:	Mr John Smith et al on 28/01/2020
AR JM NB 29/06/20	AR JM NB 29/06/20
AS SUBMITTED TO COUNCIL	AR JM NB 26/06/20



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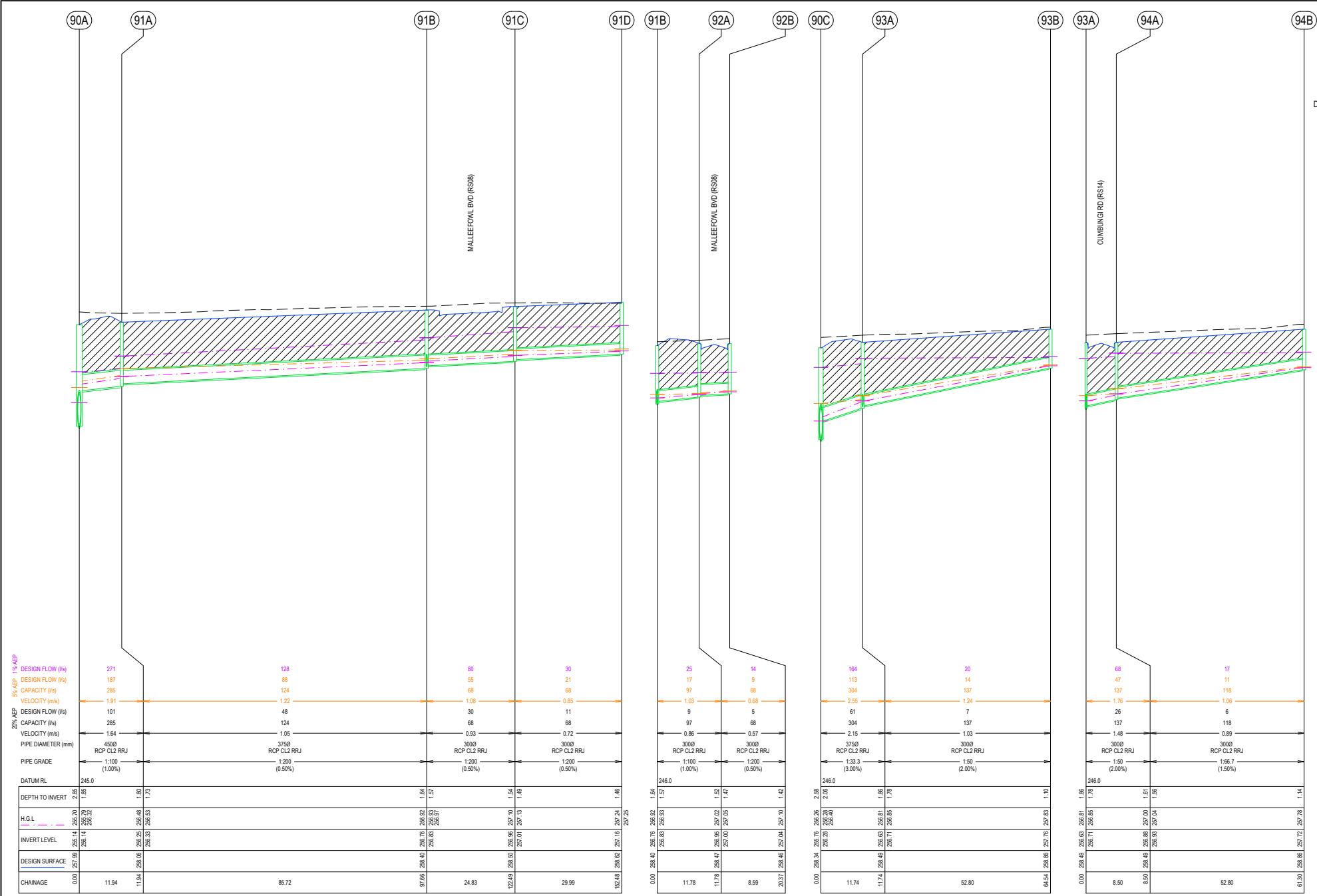


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**ORANYA ESTATE - STAGE 3**  
**WHITESIDE ST - BEVERIDGE**  
**ROADS & DRAINAGE CONSTRUCTION PLANS**  
**DRAINAGE LONG SECTIONS (1/4)**  
MITCHELL SHIRE COUNCIL REF  
THE CORCORAN GROUP DEVELOPMENTS PTY LTD  
DWG STATUS: PROJECT & DWG No:  
**FOR CONSTRUCTION** S14803R23 / 34

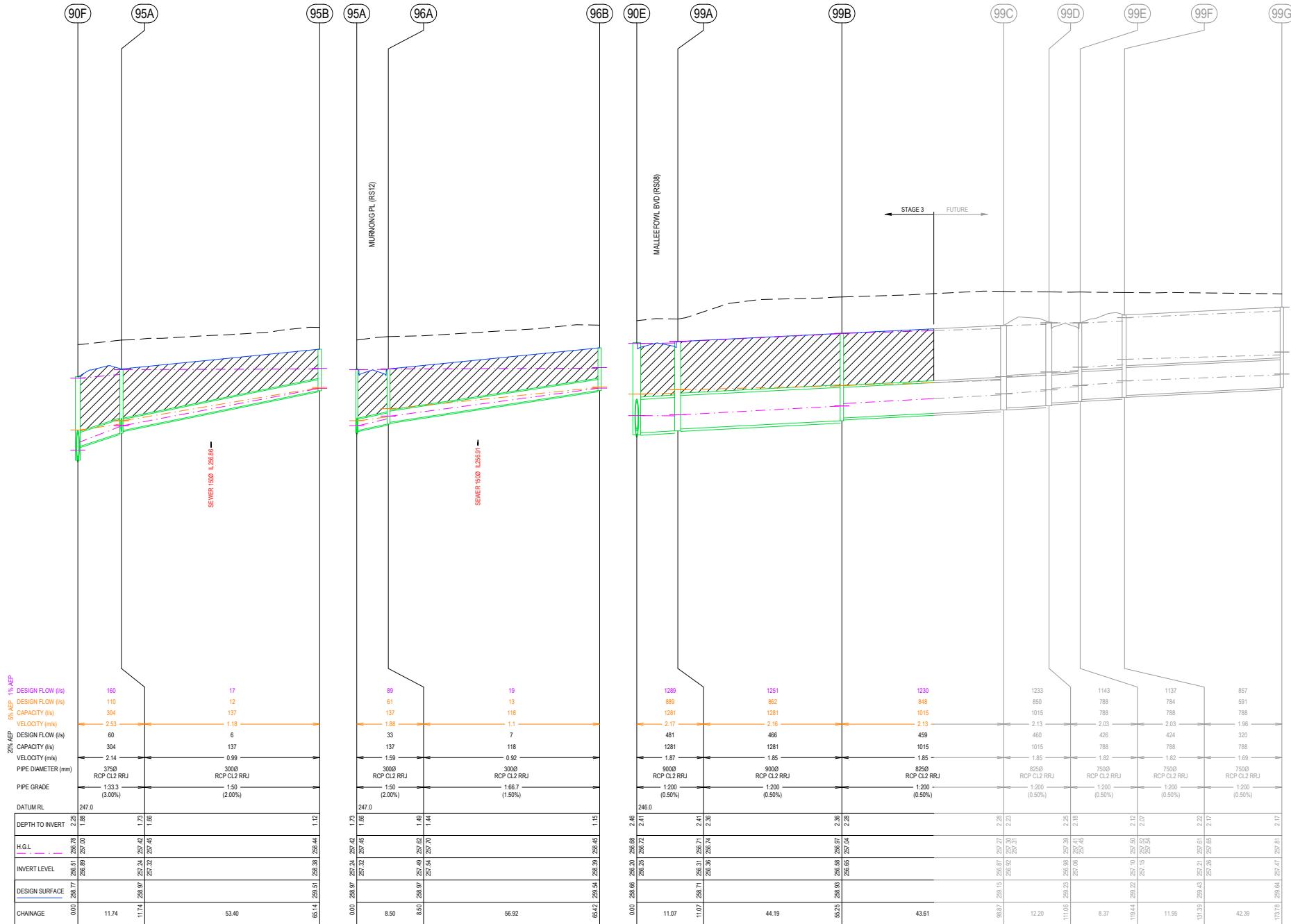
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C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS

B AMENDMENTS AS REQUESTED BY COUNCIL

A AS SUBMITTED TO COUNCIL

REV



JM AR 29/09/20

AR JM NB 29/06/20

AR JM NB 26/06/20

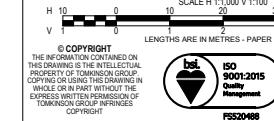
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By [Signature]

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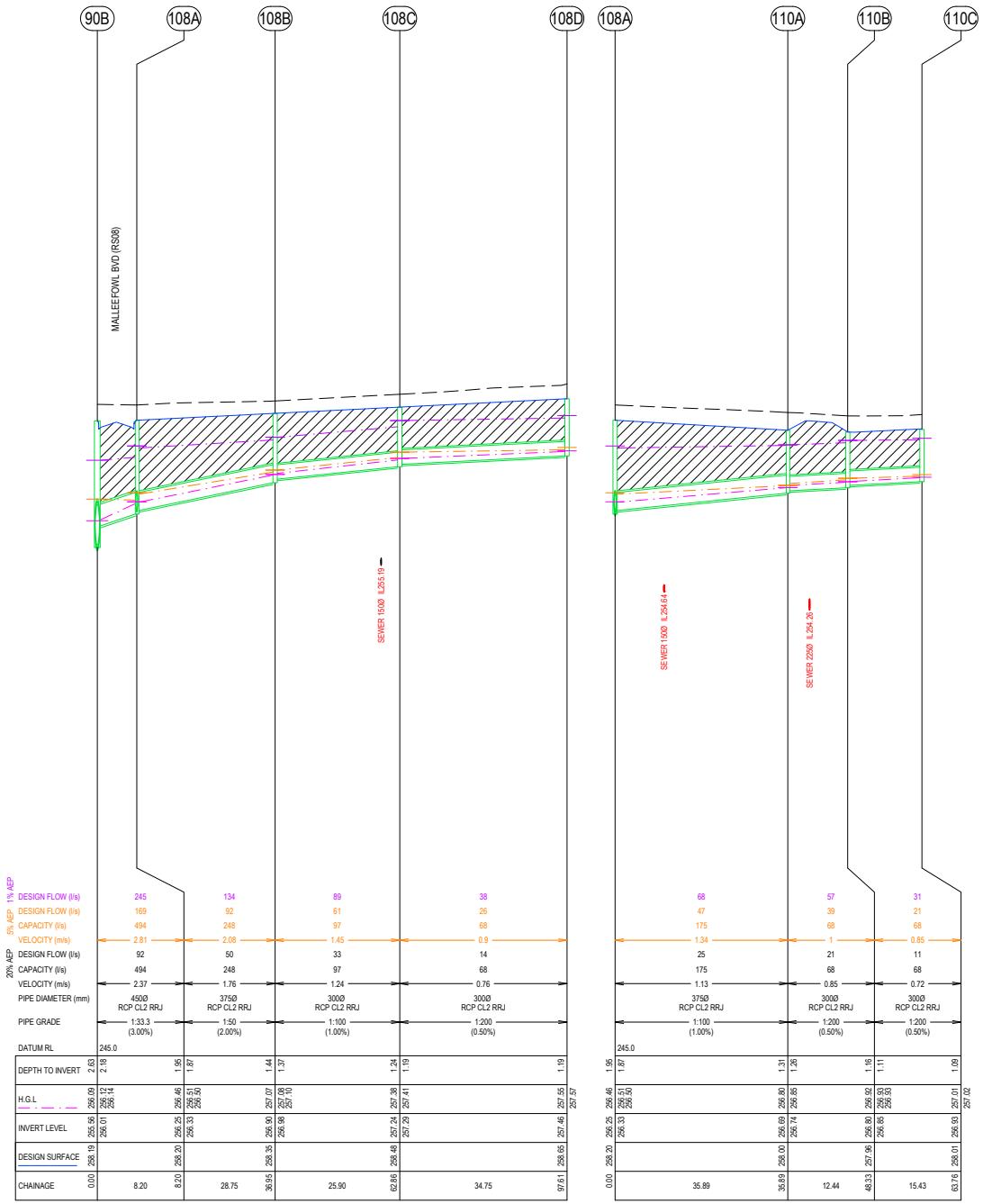
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**ORANYA ESTATE - STAGE 3**  
**WHITESIDE ST - BEVERIDGE**  
**ROADS & DRAINAGE CONSTRUCTION PLANS**  
**DRAINAGE LONG SECTIONS (3/4)**  
 MITCHELL SHIRE COUNCIL REF  
 THE CORCORAN GROUP DEVELOPMENTS PTY LTD  
 DWG STATUS  
 PROJECT & DWG No:  
**FOR CONSTRUCTION S148803R25 / 34**

**NOTE:**  
  
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 DEPTH 20mm CLASS  
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C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS  
 B AMENDMENTS AS REQUESTED BY COUNCIL  
 A AS SUBMITTED TO COUNCIL

MITCHELL SHIRE COUNCIL  
 TRANSPORT & DEVELOPMENT APPROVED PLAN  
 APPROVED  
 AR JM NB 29/09/20  
 AR JM NB 29/06/20  
 AR JM NB 26/06/20

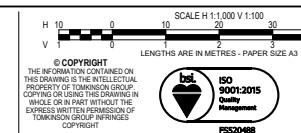
REVISION

DES DWG CHK DATE



**Tomkinson**  
**Group**

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**ORANYA ESTATE - STAGE 3**  
**WHITESIDE ST - BEVERIDGE**  
**ROADS & DRAINAGE CONSTRUCTION PLANS**  
**DRAINAGE LONG SECTIONS (4/4)**  
 MITCHELL SHIRE COUNCIL REF  
 THE CORCORAN GROUP DEVELOPMENTS PTY LTD  
 DWG STATUS: PROJECT & DWG No:  
**FOR CONSTRUCTION** S148803R26 / 34 C

PIT SCHEDULE											
PIT NAME	TYPE	EASTING	NORTHING	INTERNAL WD LEN	INLET	INV LEV	OUTLET	INV	PIT DEPTH	REMARKS	
01D	SEP	319745.83	5849671.59	5200 3000	900	254.25		258.15	3.90	MW PIT	
90A	GSEP	319720.54	5849703.11	1200 1500	900	255.19	900	255.14	257.99	2.86	2400 EKI SAG
90B	GSEP	319724.51	5849740.19	1500 1200	900	255.61	900	255.56	258.19	2.63	EDCM601+607
90C	GSEP	319727.70	5849769.71	1200 900	900	255.81	900	255.76	258.34	2.58	EDCM601+607
90D	GSEP	319730.37	5849794.37	1200 900	900	255.98	900	255.93	258.46	2.53	EDCM601+607
90E	JP	319735.24	5849838.00	1500 1500	750	256.35	900	256.20	258.66	2.46	EDCM601+607
90F	GSEP	319736.84	5849854.22	1200 900	675	256.59	750	256.51	258.77	2.25	EDCM601+607
90G	GSEP	319739.36	5849878.89	900 900	600	256.91	675	256.84	258.89	2.05	EDCM601+607
90H	GP	319745.43	5849933.15	900 900	525	257.53	600	257.46	259.15	1.69	2400 EKI SAG
91A	GSEP	319711.55	5849695.26	600 900	375	256.33	450	256.25	258.06	1.80	EDCM601
91B	GSEP	319625.96	5849699.99	600 900	300	256.83	375	256.76	258.40	1.64	EDCM601
91C	GSEP	319601.16	5849701.36	600 900	300	257.01	300	256.96	258.50	1.54	EDCM601
91D	GSEP	319571.22	5849703.02	600 900		300	257.16	258.62	1.46	EDCM601	
92A	GSEP	319618.33	5849708.97	600 900	300	257.00	300	256.95	258.47	1.52	EDCM601
92B	GSEP	319609.75	5849708.65	600 900		300	257.04	258.46	1.42	EDCM601	
93A	GSEP	319720.18	5849778.72	600 900	300	256.71	375	256.63	258.49	1.86	EDCM601
93B	JP	319667.68	5849784.40	600 900	300		300	257.77	258.86	1.10	EDCM605
94A	GSEP	319721.09	5849787.37	600 900	300	256.93	300	256.88	258.49	1.62	EDCM601
94B	JP	319668.66	5849792.85	600 900		300	257.72	258.86	1.14	EDCM605	
95A	GSEP	319729.32	5849863.23	600 900	300	257.32	375	257.24	258.97	1.73	EDCM601
95B	JP	319676.23	5849868.97	600 900		300	258.38	259.51	1.12	EDCM605	
96A	GSEP	319730.23	5849871.60	600 900	300	257.54	300	257.49	258.97	1.49	EDCM601
96B	JP	319673.64	5849877.80	600 900		300	258.39	259.54	1.15	EDCM605	
99A	GSEP	319743.79	5849845.02	1200 1500	900	256.36	900	256.31	258.71	2.41	EDCM601+607
99B	GSEP	319748.54	5849886.95	1200 900	825	256.65	900	256.58	258.93	2.36	EDCM601+607
99C	GSEP	319753.19	5849932.31	1200 1500	825	256.92	825	256.87	259.15	2.28	2400 EKI SAG
108A	GSEP	319732.64	5849739.15	600 900	375	256.33	450	256.25	258.20	1.95	EDCM601
108B	GSEP	319735.73	5849767.73	600 900	300	256.98	375	256.90	258.35	1.44	EDCM601
108C	GSEP	319738.52	5849793.48	600 900	300	257.29	300	257.24	258.48	1.24	EDCM601
108D	JP	319742.26	5849828.04	600 900		300	257.46	258.65	1.19	EDCM605	
110A	GSEP	319728.44	5849703.51	600 900	300	256.74	375	256.69	258.00	1.31	2400 EKI SAG

C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS  
 B AMENDMENTS AS REQUESTED BY COUNCIL  
 A AS SUBMITTED TO COUNCIL



APPROVED  
By [Signature] Date [Signature]  
AR JM NB 29/06/20  
AR JM NB 26/06/20

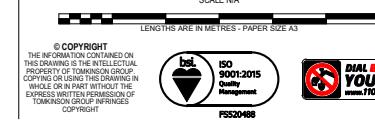
REV

REVISION

DES DWG CHK DATE



HEAD OFFICE: 57 MYERS STREET BENDIGO 3550 PH 03 5445 8700  
 ABN 11 103 336 358 WWW.TOMKINSON.COM



### OORANYA ESTATE - STAGE 3

### WHITESIDE ST - BEVERIDGE

### ROADS & DRAINAGE CONSTRUCTION PLANS

### PIT SCHEDULE

MITCHELL SHIRE COUNCIL REF:

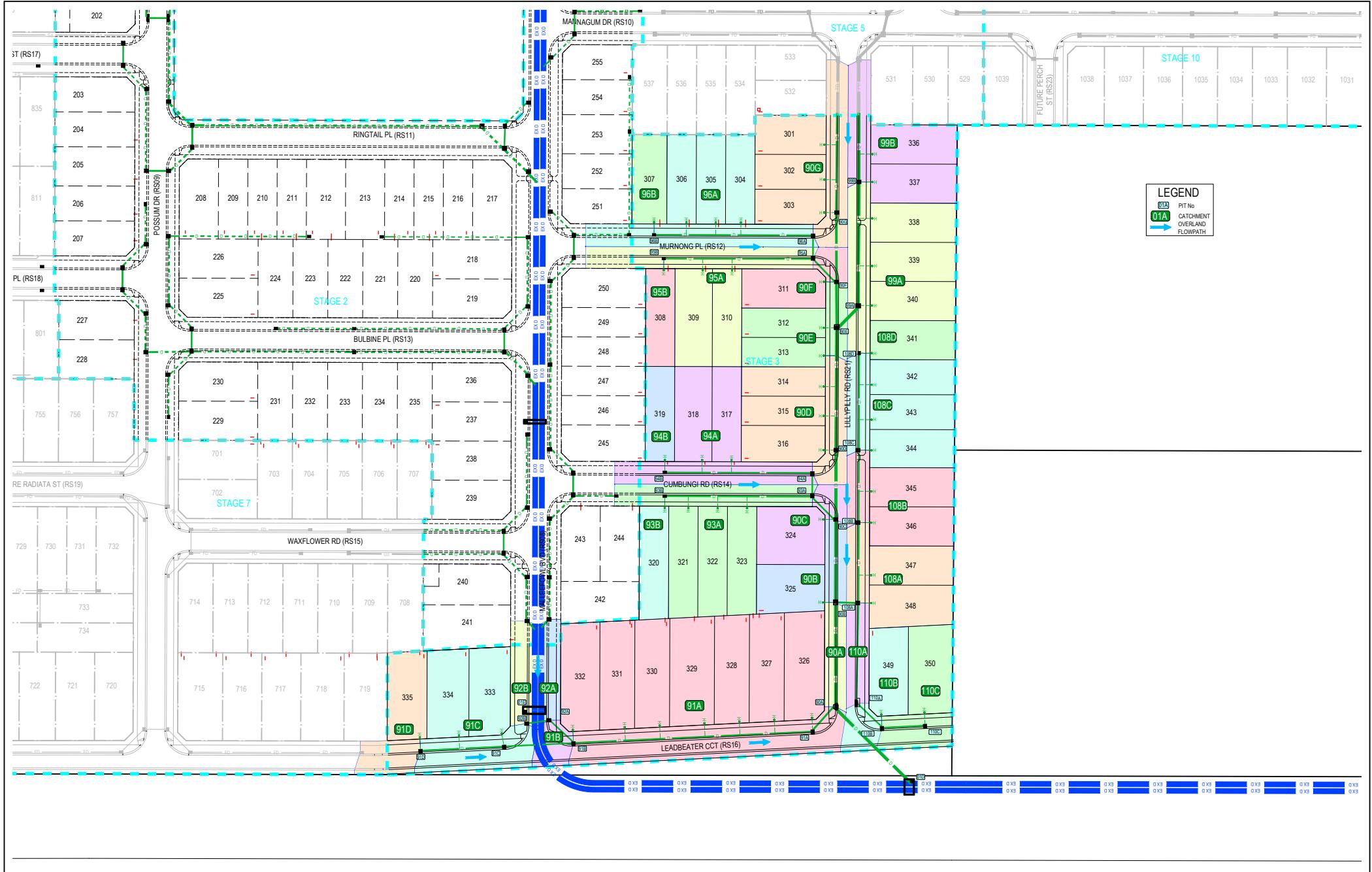
THE CORCORAN GROUP DEVELOPMENTS PTY LTD

DWG STATUS:

PROJECT & DWG NO:

FOR CONSTRUCTION S148803R27 / 34 C





C UPDATED DRAINAGE, PAVEMENT DETAILS, STREET NAMES, TBM & PSM LOCATIONS  
 B AMENDMENTS AS REQUESTED BY COUNCIL  
 A AS SUBMITTED TO COUNCIL



JM AR 29/09/20  
 AR JM NB 29/06/20  
 AR JM NB 26/06/20

AMENDMENT  
 APPROVED  
 By John Connor at 09 June 2020



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12.5 0 12.5 25 37.5 50 62.5  
 LENGTHS ARE IN METRES - PAPER SIZE A3  
 SCALE 1:1250  
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**OORANYA ESTATE - STAGE 3**  
**WHITESIDE ST - BEVERIDGE**  
**ROADS & DRAINAGE CONSTRUCTION PLANS**  
**DRAINAGE CATCHMENTS & 1% AEP FLOWPATHS**  
 MITCHELL SHIRE COUNCIL REF: R2020/15485  
 THE CORCORAN GROUP DEVELOPMENTS PTY LTD  
 DWG STATUS: FOR CONSTRUCTION PROJECT & DWG No: S148803R28 / 34  
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 ROT DATE 15/02/2020 FILE C:\120\DATA\TMKG60-120301\15485 - THE CORCORAN GROUP DEVELOPMENTS PTY LTD

## 12D MODEL - HYDRAULIC DESIGN SHEET

Project: Design Drainage JM  
 Drainage Model: stg3 minor 12d DRN  
 Rainfall File: Beveridge Intensities.12dhydro  
 Rainfall Method: IDF Table  
 Pipe Cover Limit: 0.75m  
 Manning's Roughness: 0.013  
 Freeboard Limit: 0.15m

## Minor 20% AEP Storm Event

Pipe ID	Pipe Type	Pipe Length	Pipe Size	Pipe Area Af	Pipe Grade	Pipe Tct	Full-area I	Full-area Sum CA	Qc=CIA	Part-area Tct	Part-area I	Part-area Sum CA	Qc=CIA	Flow Q	Flow Qcap	Q/Ratio	Full Pipe	Norm Depth	Crit Depth	Capacity Vel	Vcap=Qcap/AI	US Node	Pipe US IL	Pipe DS IL	DS Node	Cover	Pipe	US Node	US Node	Pipe	P'head Loss	WSE Loss	Pipe	US Node	Pipe US HGL	Pipe DS HGL	HGL Grade	F'board US			
(-)	(-)	(m)	(mm)	(sq.m.)	(%)	(in)	(min)	(mm/hr)	(ha)	(L/s)	(min)	(mm/hr)	(ha)	(L/s)	(L/s)	(L/s)	(-)	(m/s)	(m/s)	(m/s)	(deg)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)						
90A to 01D	RCP CL2 RRU	40.42	900	0.636	2.20	45.5	10.02	65.85	2.8940	529.4	7.06	76.96	2.7582	589.7	589.7	2686.3	0.22	0.93	3.38	1.86	4.22	257.99	255.14	254.25	258.15	1.76	0.0	0.900	1.02	1.06	0.04	0.04	0.05	0.64	255.63	255.58	254.53	254.53	2.60	38.4	2.36
90B to 90A	RCP CL2 RRU	37.79	900	0.636	1.00	100.0	9.71	66.89	2.4191	449.5	6.79	78.22	2.2901	497.6	497.6	1811.1	0.27	0.78	2.43	1.76	2.85	258.19	255.56	255.19	257.99	1.65	44.8	0.050	0.36	0.03	0.01	0.01	0.37	255.98	255.97	255.63	255.63	0.91	109.7	2.21	
90C to 90B	RCP CL2 RRU	29.69	900	0.636	0.50	200.0	9.46	67.73	1.9796	372.4	6.81	78.15	1.8840	400.0	400.0	1280.6	0.32	0.64	1.79	1.65	2.01	258.34	255.76	255.61	258.19	1.60	0.1	0.050	0.33	0.02	0.01	0.01	0.15	256.13	256.13	255.98	255.98	0.50	201.4	2.21	
90D to 90C	RCP CL2 RRU	24.89	900	0.636	0.50	200.0	9.26	68.43	1.6816	319.7	6.77	78.32	1.6054	349.3	349.3	1280.6	0.27	0.55	1.71	1.58	2.01	258.46	255.93	255.81	258.34	1.40	0.0	0.050	0.32	0.02	0.01	0.01	0.12	256.28	256.27	256.13	256.13	0.56	179.7	2.18	
90E to 90D	RCP CL2 RRU	43.90	900	0.636	0.50	200.0	8.89	69.71	1.5819	306.3	6.45	79.90	1.5100	335.2	335.2	1280.6	0.26	0.53	1.69	1.56	2.01	258.66	256.20	255.98	258.46	1.49	0.2	0.050	0.48	0.01	0.01	0.01	0.22	256.54	256.53	256.29	256.28	0.55	183.2	2.12	
90F to 90E	RCP CL2 RRU	16.30	750	0.442	1.00	100.0	6.84	78.01	0.7011	151.9	5.76	83.43	6.6772	156.9	156.9	1113.7	0.14	0.36	1.78	1.30	2.52	258.77	256.51	256.35	258.66	1.44	0.7	0.150	0.54	0.01	0.00	0.01	0.14	256.75	256.75	256.54	256.54	2.29	77.6	2.01	
90G to 90F	RCP CL2 RRU	24.80	675	0.354	1.00	100.0	6.63	79.02	0.4084	89.6	6.06	81.79	0.4006	91.0	91.0	840.9	0.11	0.25	1.54	1.14	2.35	258.89	256.84	256.59	258.77	1.20	0.2	0.075	1.09	0.00	0.00	0.00	0.24	257.02	257.02	256.75	256.75	1.08	93.0	1.86	
90H to 90G	RCP CL2 RRU	54.60	600	0.281	1.00	100.0	6.17	81.25	0.3059	69.0	5.61	84.30	6.2981	69.8	69.8	614.3	0.11	0.25	1.44	1.08	2.17	259.15	257.46	256.91	258.89	1.04	0.6	0.075	1.15	0.00	0.00	0.00	0.53	257.63	257.62	257.05	257.05	1.06	94.7	1.52	
90I to 90H	RCP CL2 RRU	12.20	525	0.216	1.00	100.0	6.07	81.75	0.2527	57.4	5.51	84.87	0.2444	57.7	57.7	430.2	0.13	0.27	1.38	1.06	1.99	259.39	257.65	257.53	258.15	1.00	-44.4	0.075	1.47	0.00	0.01	0.01	0.11	257.8	257.8	257.66	257.63	1.23	81.5	1.58	
90J to 90I	RCP CL2 RRU	8.68	450	0.159	1.50	66.7	6.00	82.10	0.1792	40.9	5.43	85.27	0.1714	40.6	40.6	349.3	0.12	0.26	1.47	0.99	2.20	259.41	257.86	257.73	258.39	0.88	32.5	0.075	3.29	3.52	0.00	0.01	0.01	0.10	258.0	258.00	257.83	257.82	1.89	52.9	1.40
90K to 90J	RCP CL2 RRU	52.05	300	0.071	1.50	66.7	5.00	87.70	0.0726	17.7	5.00	87.70	0.0726	17.7	17.7	118.5	0.15	0.25	1.20	0.85	1.68	260.13	258.79	258.01	259.41	1.00	-78.4	0.150	7.00	0.00	0.02	0.00	0.02	0.77	258.8	258.89	258.09	258.01	1.54	64.8	1.22
91A to 91B	RCP CL2 RRU	11.94	450	0.150	1.00	100.0	6.92	77.59	0.4580	98.7	6.00	82.10	0.4445	101.4	101.4	285.2	0.36	0.64	1.64	1.30	1.79	258.06	256.25	256.14	257.99	1.33	-92.4	1.000	2.75	0.02	0.06	0.00	0.10	256.56	256.48	256.32	256.33	1.30	76.9	1.53	
91B to 91A	RCP CL2 RRU	85.72	370	0.110	0.50	200.0	6.21	81.09	0.2109	47.5	6.00	82.10	0.2090	47.7	47.7	124.0	0.38	0.43	1.05	1.12	258.40	256.76	256.33	258.06	1.23	44.3	0.075	1.13	0.01	0.01	0.01	0.41	256.56	256.52	256.53	256.53	0.45	221.7	1.47		
91C to 91B	RCP CL2 RRU	24.83	300	0.071	0.50	200.0	6.00	82.10	0.1308	29.8	5.25	86.30	0.1242	29.8	29.8	68.4	0.44	0.42	0.93	0.99	0.97	258.50	256.96	256.83	258.40	1.05	0.0	0.075	3.31	0.01	0.03	0.01	0.12	257.13	257.13	256.93	256.93	0.53	190.2	1.37	
91D to 91C	RCP CL2 RRU	29.99	300	0.071	0.50	200.0	5.00	87.70	0.0467	11.4	5.00	87.70	0.0467	11.4	11.4	68.4	0.17	0.16	0.75	0.97	258.62	257.16	257.01	258.50	1.13	0.0	0.050	7.00	0.00	0.01	0.01	0.13	257.25	257.24	257.13	257.13	0.38	263.0	1.37		
92A to 91B	RCP CL2 RRU	117.30	300	0.071	1.00	100.0	5.07	87.30	0.0379	9.2	5.00	87.70	0.0379	9.2	9.2	96.7	0.09	0.13	0.86	0.71	1.37	258.47	256.95	256.83	258.40	1.20	46.5	0.075	2.06	2.18	0.00	0.00	0.00	0.11	257.02	257.02	256.93	256.93	0.79	127.2	1.44
92B to 92A	RCP CL2 RRU	8.59	300	0.071	0.50	200.0	5.00	87.70	0.0210	5.1	5.00	87.70	0.0210	5.1	5.1	68.4	0.07	0.07	0.57	0.60	0.97	258.46	257.04	257.00	258.47	0.91	51.8	0.050	7.00	0.00	0.00	0.00	0.04	257.10	257.10	257.05	257.02	0.53	190.2	1.36	
92C to 92B	RCP CL2 RRU	54.30	300	0.071	0.50	200.0	5.00	87.70	0.0626	6.4	5.00	87.70	0.0626	6.4	6.4	136.8	0.05	0.10	1.03	0.66	1.94	258.86	257.76	257.71	258.49	0.76	44.0	0.075	2.00	0.00	0.00	0.00	0.01	257.83	257.83	256.85	256.85	1.86	53.7	1.03	
92D to 92C	RCP CL2 RRU	8.50	300	0.071	0.50	200.0	5.00	85.04	0.1389	32.8	5.00	87.70	0.136	33.2	33.2	136.8	0.19	0.36	1.48	0.95	1.94	258.97	257.49	257.32	258.97	0.99	46.0	0.075	6.65	6.80	0.01	0.07	0.08	0.17	257.04	257.04	256.85	256.85	1.86	53.7	1.27
92E to 92D	RCP CL2 RRU	56.92	300	0.071	1.50	66.7	5.00	87.70	0.0286	7.0	5.00	87.70	0.0286	7.0	7.0	118.5	0.06	0.10	0.92	0.65	1.68	258.54	258.39	257.54	258.97	0.82	-90.0	0.050	7.00	0.00	0.00	0.00	0.07	257.8	257.78	257.74	257.04	1.40	71.6	1.08	
92F to 92E	RCP CL2 RRU	11.07	900	0.636	0.50	200.0	8.80	70.05	0.8284	161.2	7.08	76.86	0.8067	172.2	172.2	180.6	0.13	0.27	1.40	1.29	1.6	258.71	256.31	256.25	258.66	1.40	1.05	0.050	1.28	0.00	0.00	0.00	0.09	256.55	256.54	256.54	256.54	0.01	8876.0	2.16	
99B to 99A	RCP CL2 RRU	44.19	900	0.636	0.50	200.0	8.71	71.41	0.7157	142.0	6.71	78.61	0.6940	151.5	151.5	180.6	0.12	0.24	1.35	1.24	2.01	258.93	256.58	256.36	258.71	1.39	-44.5	0.050	0.54	0.00	0.00	0.00	0.22	256.66	256.56	256.56	256.56	0.53	188.9	2.13	
99C to 99B	RCP CL2 RRU	43.61	825	0.536	0.50	200.0	8.07	72.76	0.6335	128.0	6.47	79.79	0.619	136.8	136.8	1015.4	0.13	0.26	1.32	1.23	1.90	259.15	256.87	256.75	258.93	1.39	-0.1	0.075	0.79	0.00	0.00	0.00	0.22	257.09	257.09	256.86	256.86	0.53	190.1	2.06	
99D to 99C	RCP CL2 RRU	12.20	825	0.536	0.50	200.0	7.96	73.15	0.6249	127.0	6.37	80																													

## 12D MODEL - HYDRAULIC DESIGN SHEET

**Project:** Design Drainage JM  
**Drainage Model:** stg3 5AEP12d DRN  
**Rainfall File:** Beveridge Intensities.12dhydro  
**Rainfall Method:** IDF Table  
**Pipe Cover Limit:** 0.75m  
**Manning n Roughness:** 0.013  
**Freeboard Limit:** 0.15m

## 5% AEP Storm Event

Pipe ID	Pipe Type	Pipe Length	Pipe Size	Pipe Area Af	Pipe Grade	Pipe Tct	Full-area I	Full-area Sum CA	Full-area Q=CA	Part-area Tct	Part-area I	Part-area Sum CA	Part-area Q=CA	Flow Q	Flow Qcap	Q/Ratio	Full Pipe	Norm Depth	Crit Depth	Capacity Vel	Vcap=Qcap/AI	US Node	Pipe US IL	Pipe DS IL	DS Node	Cover	Pipe	US Node	US Node	Pipe	P'head Loss	WSE Loss	Pipe	US Node	Pipe	DS Node	HGL	F'board	US		
(-)	(-)	(m)	(mm)	(sq.m.)	(%)	(in)	(min)	(mm/hr)	(ha)	(l/s)	(min)	(mm/hr)	(ha)	(l/s)	(l/s)	(l/s)	(-)	(m/s)	(m/s)	(m/s)	(deg)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)				
90A to 01D	RCP CL2 RRU	40.42	900	0.636	2.20	45.5	10.02	96.63	3.6557	981.2	7.06	112.66	3.4841	1090.4	1090.4	2686.3	0.41	1.71	4.00	2.34	4.22	257.99	255.14	254.25	258.15	1.76	0.0	0.900	1.02	1.05	0.15	0.15	0.16	0.57	255.91	255.75	254.65	254.65	2.74	36.5	2.08
90B to 90A	RCP CL2 RRU	37.79	900	0.636	1.00	100.0	9.71	98.24	3.0059	833.9	6.82	114.29	2.8971	919.8	919.8	1811.1	0.51	1.45	2.86	2.18	2.85	258.19	255.56	255.19	257.99	1.65	44.8	0.050	0.35	0.11	0.04	0.04	0.32	256.16	256.12	255.91	0.58	171.3	2.03		
90C to 90B	RCP CL2 RRU	29.69	900	0.636	0.50	200.0	9.46	99.55	2.5007	691.5	6.81	114.36	2.3799	756.0	756.0	1280.6	0.59	1.19	2.10	2.03	2.01	258.34	255.76	255.61	258.19	1.60	0.1	0.050	0.32	0.07	0.02	0.02	0.14	256.29	256.27	256.16	256.16	0.36	281.3	2.05	
90D to 90C	RCP CL2 RRU	24.89	900	0.636	0.50	200.0	9.26	100.65	2.1242	593.9	6.81	114.30	2.0333	645.6	645.6	1280.6	0.50	1.01	2.02	2.01	2.01	258.46	255.93	255.81	258.34	1.40	0.0	0.050	0.32	0.05	0.03	0.03	0.12	256.43	256.40	256.29	256.29	0.45	224.6	2.04	
90E to 90D	RCP CL2 RRU	43.90	900	0.636	0.50	200.0	8.89	102.55	1.9983	569.3	6.45	116.86	1.9075	619.2	619.2	1280.6	0.48	0.97	2.00	1.89	2.01	258.66	256.20	255.98	258.46	1.49	0.2	0.050	0.48	0.05	0.02	0.02	0.22	256.68	256.66	256.43	256.43	0.53	189.2	1.98	
90F to 90E	RCP CL2 RRU	40.97	900	0.636	1.00	100.0	6.84	114.15	0.8578	280.8	5.76	121.89	0.8555	289.7	289.7	1113.7	0.26	0.66	2.12	1.56	2.52	258.77	256.51	256.35	258.66	1.44	0.7	0.150	0.54	0.02	0.01	0.01	0.16	256.85	256.84	256.68	256.68	0.96	104.0	1.91	
90G to 90F	RCP CL2 RRU	24.80	675	0.354	1.00	100.0	6.63	115.60	0.5159	165.6	6.06	119.56	0.5061	168.1	168.1	840.9	0.20	0.47	1.83	2.35	258.89	256.84	256.59	258.77	1.20	0.2	0.075	1.09	0.01	0.01	0.01	0.25	257.10	257.09	256.85	256.85	0.96	104.1	1.79		
90H to 90G	RCP CL2 RRU	54.60	600	0.281	1.00	100.0	6.17	118.8	0.3864	127.5	5.61	123.14	0.3766	128.8	128.8	614.3	0.21	0.46	1.72	2.17	259.15	257.46	256.91	258.89	1.04	0.6	0.075	1.15	0.01	0.01	0.01	0.58	257.70	257.69	257.10	257.10	0.17	93.5	1.45		
90I to 90H	RCP CL2 RRU	12.20	525	0.166	1.00	100.0	6.07	119.49	0.3192	106.0	5.51	123.95	0.3094	106.5	106.5	430.2	0.25	0.49	1.65	1.99	259.39	257.65	257.53	258.15	1.08	-44.4	0.075	1.47	0.01	0.02	0.01	0.10	257.89	257.87	257.71	257.70	1.32	76.0	1.50		
90J to 90I	RCP CL2 RRU	8.68	450	0.150	1.50	66.7	6.00	120.00	0.2623	75.4	5.43	124.53	0.2165	74.9	74.9	349.3	0.22	0.47	1.75	1.18	2.20	259.41	257.86	257.73	258.39	0.88	32.5	0.075	3.30	3.52	0.01	0.04	0.04	0.12	258.09	258.05	257.89	257.89	1.84	54.2	1.32
90K to 90J	RCP CL2 RRU	52.05	300	0.071	1.50	66.7	5.00	128.00	0.0917	32.6	5.00	128.00	0.0917	32.6	32.6	118.5	0.28	0.46	1.43	1.02	1.68	260.13	258.79	258.01	259.41	1.00	-78.4	0.150	7.00	0.01	0.08	0.08	0.76	259.83	258.12	258.09	258.09	1.56	64.1	1.13	
91A to 91B	RCP CL2 RRU	11.94	450	0.150	1.00	100.0	6.92	113.55	0.5785	182.5	6.00	120.00	0.5615	187.2	187.2	285.2	0.66	1.18	1.91	1.63	1.79	258.06	256.25	256.14	257.99	1.33	-92.4	1.000	2.75	0.07	0.19	0.19	0.11	256.75	256.56	256.40	255.91	1.32	75.5	1.31	
91B to 91A	RCP CL2 RRU	85.72	376	0.110	0.50	200.0	6.21	118.55	0.2664	87.7	6.00	120.00	0.2640	88.0	88.0	124.0	0.71	0.80	1.22	1.33	1.12	258.40	256.76	256.33	258.06	1.23	44.3	0.075	1.13	0.03	0.04	0.04	0.28	257.03	256.99	256.75	256.75	0.28	360.1	1.37	
91C to 91B	RCP CL2 RRU	24.83	300	0.071	0.50	200.0	6.00	120.00	0.1653	55.1	5.25	126.00	0.156	54.9	55.1	68.4	0.81	0.78	1.08	1.23	0.97	258.50	256.96	256.83	258.40	1.05	0.0	0.075	3.31	0.03	0.10	0.10	0.13	257.26	257.16	257.16	257.03	0.54	186.3	1.24	
91D to 91C	RCP CL2 RRU	29.99	300	0.071	0.50	200.0	5.00	128.00	0.0590	21.0	5.00	128.00	0.0590	21.0	21.0	68.4	0.31	0.30	0.85	0.89	0.97	258.62	257.16	257.01	258.50	1.13	0.0	0.050	7.00	0.00	0.03	0.03	0.00	257.31	257.28	257.26	257.05	0.05	2184.8	1.31	
92A to 91B	RCP CL2 RRU	117.30	300	0.071	1.00	100.0	5.07	127.43	0.0478	169.7	5.00	128.00	0.0474	169.7	169.7	96.7	0.17	0.24	1.03	0.84	1.37	258.47	256.95	256.83	258.40	1.20	46.5	0.075	2.06	2.18	0.00	0.01	0.01	0.05	257.06	257.05	257.05	257.05	0.18	55.20	1.41
92B to 92A	RCP CL2 RRU	8.59	300	0.071	0.50	200.0	5.00	128.00	0.0265	9.4	5.00	128.00	0.0265	9.4	9.4	68.4	0.14	0.13	0.68	0.71	0.97	258.46	257.04	257.00	258.47	1.01	-51.8	0.050	7.00	0.00	0.01	0.01	0.04	257.13	257.12	257.07	257.06	0.53	189.4	1.33	
92C to 92B	RCP CL2 RRU	11.74	375	0.110	0.30	33.3	6.07	119.50	0.2302	109.6	5.07	127.43	0.2190	112.9	112.9	203.8	0.37	1.02	2.55	1.46	2.75	258.49	256.62	256.25	258.34	1.46	-46.0	0.052	2.11	2.12	0.05	0.11	0.11	0.22	256.99	256.88	256.44	256.29	0.76	26.6	1.50
92D to 92C	RCP CL2 RRU	52.80	300	0.071	2.00	50.0	5.00	128.00	0.0283	13.6	5.00	128.00	0.0283	13.6	13.6	136.8	0.10	0.19	1.24	1.94	2.08	258.86	257.76	256.71	258.49	0.76	-44.0	0.075	7.00	0.00	0.01	0.01	0.08	257.87	257.85	256.99	256.99	1.63	61.5	1.00	
94A to 93A	RCP CL2 RRU	8.50	300	0.071	2.00	50.0	5.00	128.00	0.1395	46.5	5.44	124.48	0.1364	47.2	47.2	136.8	0.34	0.67	1.76	1.16	1.94	258.49	256.88	256.71	258.11	1.12	-46.0	0.075	6.14	6.32	0.02	0.01	0.01	0.14	257.19	257.18	256.99	256.99	0.62	160.7	1.30
94B to 94A	RCP CL2 RRU	52.80	300	0.071	1.50	66.7	5.00	128.00	0.0322	11.4	5.00	128.00	0.0322	11.4	11.4	118.5	0.10	0.16	1.06	0.75	1.68	258.86	257.72	256.93	258.49	0.81	-90.0	0.050	7.00	0.00	0.01	0.01	0.04	257.81	257.80	257.19	257.18	1.16	85.9	1.05	
94C to 94B	RCP CL2 RRU	8.50	300	0.071	0.50	50.0	5.47	124.21	0.1754	60.5	5.00	128.00	0.1730	61.2	61.2	136.8	0.45	0.87	1.88	1.94	2.08	258.97	257.49	257.32	258.97	0.99	-46.0	0.075	5.77	5.94	0.02	0.01	0.01	0.22	256.87	256.86	256.68	256.68	0.68	160.2	1.03
94D to 94C	RCP CL2 RRU	12.20	800	0.281	0.50	6.68	113.62	0.3657	115.0	5.62	123.04	0.3543	121.1	121.1	494.4	0.28	0.43	1.32	1.27	1.54	259.26	258.05	257.92	258.22	1.26	47.5	0.075	2.15	2.68	0.01	0.02	0.03	0.06	257.29	257.28	257.17	257.17	0.62	158.8	1.95	
94E to 94D	RCP CL2 RRU	8.37	750	0.422	0.50	200.0	7.89	107.64	0.6938	207.4	6.30	117.90	0.6730	220.4																											

## 12D MODEL - HYDRAULIC DESIGN SHEET

**Project:** Design Drainage JM  
**Drainage Model:** stg3 major 12d DRN  
**Rainfall File:** Beveridge Intensities.12dhydro  
**Rainfall Method:** IDF Table  
**Pipe Cover Limit:** 0.75m  
**Manning n Roughness:** 0.013  
**Freeboard Limit:** 0.15m

## Major 1% AEP Storm Event

Pipe ID	Pipe Type	Pipe Length	Pipe Size	Full Pipe Area Af	Pipe Grade	Full-area Tct	Full-area I	Full-area Sum CA	Qc=CIA	Part-area Tct	Part-area I	Part-area Sum CA	Qc=CIA	Flow Q	Flow Qcap	Capacity Ratio	Full Pipe Vel Vf=Q/Af	Norm Depth Vel Vn=Q/An	Crit Depth Vel Vc=Q/Ac	Capacity Vel Vcap=Qcap/Af	US Node Grate RL	Pipe US IL	Pipe DS IL	DS Node Grate RL	Cover Min	Pipe DS Bend	Pipe DS Drop	Ku	US Node	Pipe US IL	Pipe V'head	P'head Loss (Ku,V'head)	WSE Loss (Kw,V'head)	Pipe US Node HGL	Pipe DS HGL	Pipe US HGL	Pipe DS HGL	HGL Grade	HGL Grade	F'board	US
(-)	(-)	(m)	(mm)	(sq.m)	(%)	(1in)	(min)	(mm/hr)	(ha)	(L/s)	(min)	(mm/hr)	(ha)	(L/s)	(L/s)	(-)	(m/s)	(m/s)	(m/s)	(m)	(m)	(m)	(m)	(deg)	(m)	(-)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	
90A to 01D	RCP CL2 RRJ	40.42	900	0.636	2.20	45.5	10.02	139.89	3.6557	1420.5	7.06	163.49	3.4841	1582.3	1582.3	2686.3	0.59	2.49	4.39	2.83	4.22	257.99	255.14	254.25	258.15	1.76	0.0	0.900	1.02	1.05	0.32	0.33	0.56	256.21	255.88	254.74	254.74	2.80	35.7	1.78	
90B to 90A	RCP CL2 RRJ	39.09	900	0.636	1.00	200.0	9.71	142.03	3.0559	1205.7	6.82	165.85	2.8971	1334.7	1334.7	1811.1	0.74	2.10	3.11	2.57	2.85	258.19	255.56	255.19	257.99	1.65	44.8	0.050	0.35	0.22	0.08	0.19	256.45	256.37	256.20	256.21	0.45	221.7	1.75		
90C to 90B	RCP CL2 RRJ	29.69	900	0.636	0.50	200.0	9.46	143.77	2.5007	998.7	6.81	165.94	2.3799	1097.0	1097.0	1280.6	0.86	1.72	2.26	2.35	2.01	258.34	255.76	255.61	258.19	1.60	0.1	0.050	0.32	0.15	0.05	0.10	256.57	256.52	256.45	256.45	0.25	407.0	1.77		
90D to 90C	RCP CL2 RRJ	24.80	900	0.636	0.50	200.0	9.26	145.21	2.1242	856.8	6.81	165.86	2.0333	936.8	936.8	1280.6	0.73	1.47	2.20	2.01	2.01	258.46	255.93	255.81	258.34	1.40	0.0	0.050	0.52	0.11	0.06	0.07	256.66	256.60	256.57	256.57	0.14	737.5	1.81		
90E to 90D	RCP CL2 RRJ	43.90	900	0.636	0.50	200.0	8.89	147.88	1.9983	820.9	6.45	169.52	1.9075	888.2	888.2	1280.6	0.70	1.41	2.18	2.16	2.01	258.66	256.20	255.98	258.46	1.49	0.2	0.050	0.48	0.10	0.05	0.15	256.81	256.76	256.66	256.66	0.22	436.8	1.85		
90F to 90E	RCP CL2 RRJ	16.30	750	0.442	1.00	100.0	6.84	165.64	0.8857	407.5	5.76	176.84	0.8555	420.2	420.2	1113.7	0.38	0.95	2.34	1.77	2.52	258.77	256.51	256.35	258.66	1.44	0.7	0.150	0.54	0.05	0.02	0.15	256.94	256.91	256.81	256.81	0.63	158.7	1.83		
90G to 90F	RCP CL2 RRJ	24.80	675	0.358	1.00	100.0	6.63	167.71	0.5159	240.3	6.06	173.37	243.7	840.9	0.29	0.68	2.03	1.53	2.35	258.89	256.84	256.59	258.77	1.20	0.2	0.075	1.09	0.02	0.03	0.24	257.17	257.14	256.94	256.94	0.84	118.5	1.72				
90H to 90G	RCP CL2 RRJ	54.60	600	0.283	1.00	100.0	6.17	172.26	0.3864	184.9	5.61	178.71	0.3766	186.9	186.9	0.30	0.66	1.91	1.45	2.17	259.15	257.46	256.91	258.89	1.04	0.6	0.075	1.15	0.02	0.03	0.54	257.76	257.74	257.17	257.17	1.04	96.6	1.39			
90I to 90H	RCP CL2 RRJ	12.20	525	0.216	1.00	100.0	6.07	173.28	0.3192	153.6	5.51	179.93	0.3094	154.6	154.6	492.0	0.36	0.71	1.82	1.99	2.01	259.39	257.65	257.53	258.15	1.08	-44.4	0.075	1.47	0.03	0.04	0.11	257.96	257.92	257.76	257.76	1.27	78.4	1.44		
90J to 90I	RCP CL2 RRJ	8.68	450	0.159	1.00	66.7	6.00	174.00	0.2626	109.4	5.43	180.89	0.2165	108.7	109.4	349.3	0.31	0.69	1.94	1.34	2.00	259.41	257.46	257.73	258.39	0.89	32.5	0.075	3.29	3.52	0.02	0.08	0.13	258.17	258.09	257.96	257.96	1.54	64.8	1.24	
90K to 90J	RCP CL2 RRJ	52.05	300	0.071	1.50	66.7	5.00	186.00	0.0917	47.4	4.74	118.5	0.0917	47.4	4.74	5.00	0.60	0.67	1.58	1.16	1.68	260.13	258.79	258.01	258.41	1.00	-78.4	0.150	6.89	0.02	0.16	0.78	259.12	258.96	258.17	258.17	1.52	65.9	1.02		
91A to 90A	RCP CL2 RRJ	11.94	370	0.450	1.00	100.0	6.92	164.79	0.5785	264.8	6.00	174.00	0.5615	271.4	271.4	285.2	0.95	1.71	2.04	1.96	1.79	258.08	256.25	256.14	257.99	1.33	-92.4	1.000	2.42	0.15	0.36	0.12	256.98	256.62	256.24	256.21	1.12	89.2	1.08		
91B to 91A	RCP CL2 RRJ	85.72	370	0.116	0.50	200.0	6.21	171.93	0.2664	127.2	6.00	174.00	0.26240	127.6	127.6	124.0	1.03	1.16	1.28	1.54	1.12	258.42	256.76	256.33	258.06	1.23	44.3	0.075	0.97	0.07	0.07	0.45	257.50	257.43	256.98	256.98	0.53	188.9	0.90		
91C to 91B	RCP CL2 RRJ	24.83	300	0.071	0.50	200.0	6.00	174.00	0.1653	79.9	5.25	183.00	0.1568	79.7	79.7	68.4	0.17	1.13	1.13	1.44	0.97	258.50	256.96	256.83	258.40	1.05	0.0	0.075	1.91	0.07	0.12	0.17	257.79	257.67	257.50	257.50	0.68	145.7	0.71		
91D to 91C	RCP CL2 RRJ	29.99	300	0.071	0.50	200.0	5.00	186.00	0.0590	30.5	5.00	186.00	0.0590	30.5	30.5	68.4	0.45	0.43	0.94	1.00	0.97	258.62	257.16	257.01	258.50	1.13	0.0	0.050	4.07	0.01	0.04	0.03	257.86	257.82	257.79	257.79	0.10	100.71	0.76		
92A to 91B	RCP CL2 RRJ	11.78	300	0.071	1.00	100.0	5.07	184.14	0.0478	24.6	5.00	186.00	0.0474	24.5	24.6	96.7	0.25	0.35	1.14	0.94	1.37	258.47	256.95	256.83	258.40	1.20	46.5	0.075	1.86	1.94	0.01	0.01	0.01	257.52	257.51	257.50	257.50	0.16	154.0	0.95	
92B to 92A	RCP CL2 RRJ	8.59	300	0.071	0.50	200.0	5.00	186.00	0.0265	13.7	5.00	186.00	0.0265	13.7	13.7	68.4	0.20	0.19	0.76	0.79	0.97	258.46	257.04	257.00	258.47	0.91	51.8	0.050	6.43	0.00	0.01	0.00	257.53	257.52	257.52	257.52	0.02	499.01	0.93		
92C to 92B	RCP CL2 RRJ	11.74	375	0.110	3.00	33.3	6.00	174.00	0.3224	155.8	5.07	185.15	0.3112	160.1	160.1	303.8	0.53	1.45	2.79	1.72	2.75	258.97	257.24	256.89	258.77	1.33	-45.3	0.375	1.82	1.83	0.11	0.20	0.20	257.21	257.21	257.17	257.17	3.86	25.9	1.24	
92D to 92C	RCP CL2 RRJ	53.40	300	0.071	2.00	50.0	5.00	186.00	0.0331	17.1	5.00	186.00	0.0331	17.1	17.1	136.8	0.13	0.24	1.32	0.84	1.94	259.51	258.38	257.32	258.97	0.79	-44.0	0.075	7.00	0.00	0.02	0.02	0.07	258.50	258.48	258.48	258.48	1.41	71.0	1.00	
92E to 92D	RCP CL2 RRJ	8.50	370	0.071	2.00	50.0	5.00	186.00	0.0361	18.6	5.00	186.00	0.0361	18.6	18.6	118.5	0.16	0.26	1.22	0.86	1.68	259.54	258.39	257.54	258.97	0.88	-90.0	0.050	7.00	0.00	0.02	0.02	0.08	258.52	258.49	258.49	258.49	0.63	163.7	1.02	
92F to 92E	RCP CL2 RRJ	11.07	900	0.636	0.50	200.0	8.80	148.62	0.1046	432.0	6.30	163.27	0.1019	462.2	462.2	1280.6	0.36	0.73	1.85	1.72	2.01	258.71	256.31	256.25	258.66	1.30	44.3	0.050	1.28	0.03	0.03	0.03	0.02	256.84	256.81	256.81	256.81	0.02	630.6	1.87	
99B to 99A	RCP CL2 RRJ	44.19	900	0.636	0.50	200.0	8.43	151.57	0.0940	380.6	6.83	165.66	0.8883	364.5	364.5	406.5	0.32	0.64	1.79	1.65	2.01	258.93	258.58	258.36	258.71	1.39	-44.5	0.050	0.54	0.02	0.01	0.01	0.18	256.96	256.95	256.94	256.84	0.24	420.4	1.97	
99C to 99B	RCP CL2 RRJ	43.61	825	0.535	0.50	200.0	7.96	155.33	0.0784	340.6	6.37	170.31	0.7686	363.6	363.6	1015.4	0.36	0.68	1.74	1.63	1.90	259.23	256.98	256.92	258.15	1.39	44.2	0.050	0.91	0.02	0.02	0.06	257.36	257.35	257.30	257.30	3.66	155.6	1.87		
99E to 99D	RCP CL2 RRJ	8.37	750	0.442	0.50	200.0	7.89																																		

## 12D MODEL - HYDROLOGICAL DESIGN SHEET

**Project:** Design Drainage JM  
**Drainage Model:** stg3 minor 12d DRN  
**Rainfall File:** Beveridge Intensities.12dhydro  
**Tc Method:** Direct  
**Rainfall Method:** IDF Table  
**Runoff C Method:** Direct

## Minor 20% AEP Storm Event

Node Name	Node Type	Setout Easting	Setout Northing	Setout RL	Catch ID	Time Tc	Intensity I	Runoff C	Area A	Full CA	Full Sum CA	Partial Qc=CIA	Partial CA	Partial Sum CA	Partial Qc=CIA	Approach Flow Qa
(-)	(-)	(m)	(m)	(m)	(-)	(min)	(mm/hr)	(-)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)
01D	MW 5200x3000	319745.83	5849671.58	258.15												
90A	EDCM 1500x1200 GSEP SD603+607	319720.54	5849703.11	257.99	2P	5.00	87.70	0.57	0.0293	0.0168	0.0168	4.1	0.0168	0.0168	4.1	4.1
90B	EDCM 1500x1200 GSEP SD603+607	319724.36	5849740.21	258.19	2P	5.00	87.70	0.57	0.0293	0.0134	0.0432	10.5	0.0134	0.0432	10.5	10.5
90C	EDCM 900x1200 GSEP SD601+607	319727.55	5849769.73	258.34	2P	5.00	87.70	0.57	0.0138	0.0079	0.0367	8.4	0.0079	0.0319	7.8	8.4
90D	EDCM 900x1200 GSEP SD601+607	319730.22	5849794.38	258.46	2P	5.00	87.70	0.57	0.0473	0.0271	0.0957	24.3	0.0271	0.0957	24.3	24.3
90E	EDCM 1500x1500 JP SD607	319734.92	5849837.88	258.66	2P	5.00	87.70	0.57	0.0129	0.0074	0.0524	12.8	0.0074	0.0524	12.8	12.8
90F	EDCM 900x1200 GSEP SD601+607	319736.69	5849854.23	258.77	2P	5.00	87.70	0.57	0.0138	0.0079	0.0376	9.2	0.0079	0.0376	9.2	9.2
90G	EDCM 900x900 GSEP SD601+607	319739.36	5849878.89	258.89	2P	5.00	87.70	0.57	0.0559	0.0321	0.1025	25.0	0.0321	0.1025	25.0	25.0
90H	EDCM 900x900 GJP SD607	319745.43	5849933.15	259.15	2P	5.00	87.70	0.57	0.0142	0.0083	0.0532	13.0	0.0083	0.0532	13.0	13.0
90I	EDCM 900x900 GSEP SD601+607	319737.92	5849942.76	259.39	2P	5.00	87.70	0.57	0.0445	0.0255	0.0735	17.9	0.0255	0.0735	17.9	17.9
90J	EDCM 900x600 GSEP SD601	319737.09	5849951.40	259.41	2P	5.00	87.70	0.57	0.0424	0.0243	0.1066	24.3	0.0243	0.0929	22.6	24.3
90K	EDCM 900x600 GSEP SD601	319685.35	5849957.00	260.13	2P	5.00	87.70	0.57	0.0263	0.0151	0.0726	17.7	0.0151	0.0726	17.7	17.7
91A	EDCM 900x600 GSEP SD601	319711.55	5849695.26	258.06	2P	5.00	87.70	0.57	0.1199	0.0688	0.2472	56.4	0.0688	0.2174	53.0	56.4
91B	EDCM 900x600 GSEP SD601	319625.96	5849699.99	258.40	2P	5.00	87.70	0.57	0.0197	0.0113	0.0422	9.6	0.0113	0.0370	9.0	9.6
91C	EDCM 900x600 GSEP SD601	319601.16	5849701.36	258.50	2P	5.00	87.70	0.57	0.0533	0.0306	0.0841	19.2	0.0306	0.0752	18.3	19.2
91D	EDCM 900x600 GSEP SD601	319571.22	5849703.02	258.62	2P	5.00	87.70	0.57	0.0278	0.0148	0.0467	11.4	0.0148	0.0467	11.4	11.4
92A	EDCM 900x600 GSEP SD601	319618.33	5849708.97	258.47	2P	5.00	87.70	0.57	0.0294	0.0169	0.0169	4.1	0.0169	0.0169	4.1	4.1
92B	EDCM 900x600 GSEP SD601	319609.75	5849708.65	258.46	2P	5.00	87.70	0.57	0.0366	0.0210	0.0210	5.1	0.0210	0.0210	5.1	5.1
93A	EDCM 900x600 GSEP SD601	319720.18	5849778.72	258.49	2P	5.00	87.70	0.57	0.0560	0.0321	0.1206	29.4	0.0321	0.1206	29.4	29.4
93B	EDCM 900x600 JP SD605	319667.68	5849784.40	258.86	2P	5.00	87.70	0.71	0.0425	0.0303	0.0803	7.4	0.0303	0.0303	7.4	7.4
94A	EDCM 900x600 GSEP SD601	319721.09	5849787.17	258.49	2P	5.00	87.70	0.57	0.0581	0.0333	0.0850	19.4	0.0333	0.0806	19.6	19.6
95B	EDCM 900x600 JP SD605	319676.23	5849868.97	259.51	2P	5.00	87.70	0.71	0.0367	0.0262	0.0262	6.4	0.0262	0.0262	6.4	6.4
96A	EDCM 900x600 GSEP SD601	319730.23	5849871.68	258.97	2P	5.00	87.70	0.57	0.0668	0.0383	0.1103	26.9	0.0383	0.1103	26.9	26.9

## 12D MODEL - HYDROLOGICAL DESIGN SHEET

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**Drainage Model:** stg3 minor 12d DRN  
**Rainfall File:** Beveridge Intensities.12dhydro  
**Tc Method:** Direct  
**Rainfall Method:** IDF Table  
**Runoff C Method:** Direct

## Minor 20% AEP Storm Event

Node Name	Node Type	Setout Easting	Setout Northing	Setout RL	Catch ID	Time Tc	Intensity I	Runoff C	Area A	Full CA	Full Sum CA	Partial Qc=CIA	Partial CA	Partial Sum CA	Partial Qc=CIA	Approach Flow Qa
(-)	(-)	(m)	(m)	(m)	(-)	(min)	(mm/hr)	(-)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)
96B	EDCM 900x600 JP SD605	319673.64	5849877.80	259.54	3P	5.00	87.70	0.71	0.0400	0.0286	7.0	0.0286	0.0286	7.0	7.0	
99A	EDCM 1500x1200 GSEP SD603+607	319743.79	5849845.02	258.71	2P	5.00	87.70	0.57	0.0360	0.0207	11.27	2.5	0.0207	0.1127	27.5	
99B	EDCM 900x1200 GSEP SD601+607	319748.54	5849888.94	258.93	2P	5.00	87.70	0.57	0.0356	0.0204	0.0822	20.0	0.0204	0.0822	20.0	
99C	EDCM 1500x1200 GSEP SD603+607	319753.19	5849932.31	259.15	2P	5.00	87.70	0.57	0.0150	0.0086	2.1	0.0086	0.0086	2.1	2.1	
99D	EDCM 1500x1200 GSEP SD603+607	319762.58	5849940.10	259.23	2P	5.00	87.70	0.57	0.0351	0.0202	0.0757	18.4	0.0202	0.0757	18.4	
99E	EDCM 1500x1200 GSEP SD603+607	319765.15	5849948.07	259.22	2P	5.00	87.70	0.57	0.0362	0.0208	5.1	0.0208	0.0208	5.1	5.1	
99F	EDCM 1500x900 GSEP SD603+607	319774.46	5849955.56	259.43	2P	5.00	87.70	0.57	0.0346	0.0198	0.076	23.8	0.0198	0.076	23.8	
99G	EDCM 900x600 GSEP SD601	319779.02	5849997.70	259.64	2P	5.00	87.70	0.57	0.0204	0.0117	0.0619	15.1	0.0117	0.0619	15.1	
99H	EDCM 900x900 GSEP SD601+607	319787.90	5850006.35	259.69	2P	5.00	87.70	0.57	0.0121	0.0070	0.0317	7.7	0.0070	0.0317	7.7	
99I	EDCM 900x1200 GSEP SD601+607	319789.60	5850021.55	259.77	2P	5.00	87.70	0.57	0.0145	0.0083	0.0374	9.1	0.0083	0.0374	9.1	
99J	EDCM 900x1200 GSEP SD601+607	319798.92	5850029.65	259.82	2P	5.00	87.70	0.57	0.0207	0.0119	0.0119	2.9	0.0119	0.0119	2.9	
99K	EDCM 900x900 GSEP SD601+607	319825.71	5850026.60	259.96	2P	5.00	87.70	0.57	0.0047	0.0027	0.0314	7.7	0.0027	0.0314	7.7	
99L	EDCM 900x1200 GSEP SD601+607	319826.57	5850034.60	259.95	2P	5.00	87.70	0.57	0.0091	0.0052	0.0314	1.3	0.0052	0.0052	1.3	
99M	EDCM 900x1200 GSEP SD601+607	319835.88	5850042.10	259.94	2P	5.00	87.70	0.57	0.0056	0.0032	0.0314	7.6	0.0032	0.0314	7.6	
99N	EDCM 900x600 GSEP SD601	319837.15	5850056.64	259.90	2P	5.00	87.70	0.57	0.0149	0.0240	0.0794	19.3	0.0240	0.0794	19.3	
99O	EDCM 900x600 GSEP SD601	319841.43	5850096.21	260.08	2P	5.00	87.70	0.57	0.0138	0.0079	0.0637	15.5	0.0079	0.0637	15.5	
99P	EDCM 900x600 GSEP SD601	319834.21	5850105.19	260.17	2P	5.00	87.70	0.57	0.0304	0.0174	0.0174	4.2	0.0174	0.0174	4.2	
99Q	EDCM 900x600 GSEP SD601	319835.12	5850113.64	260.17	2P	5.00	87.70	0.57	0.0446	0.0256	0.0256	6.2	0.0256	0.0256	6.2	
99R	EDCM 900x600 GSEP SD601	319844.10	5850120.87	260.20	2P	5.00	87.70	0.57	0.0100	0.0057	0.0339	7.7	0.0057	0.0292	7.7	
108A	EDCM 900x600 GSEP SD601	319732.34	5849739.19	258.20	2P	5.00	87.70	0.57	0.0234	0.0134	0.0752	18.3	0.0134	0.0752	18.3	
108B	EDCM 900x600 GSEP SD601	319735.44	5849767.77	258.35	2P	5.00	87.70	0.57	0.0865	0.0618	0.1618					
108C	EDCM 900x600 GSEP SD601	319738.22	5849793.53	258.48	2P	5.00	87.70	0.57	0.0422	0.0242	0.0809	19.7	0.0242	0.0809	19.7	
108D	EDCM 900x600 JP SD605	319742.26	5849828.04	258.65	3P	5.00	87.70	0.71	0.0808	0.0577	0.0577	14.1	0.0577	0.0577	14.1	
110A	EDCM 900x600 GSEP SD601	319728.44	5849703.51	258.00	2P	5.00	87.70	0.57	0.0293	0.0168	0.1618	4.1	0.0168	0.0168	4.1	
110B	EDCM 900x600 GSEP SD601	319736.47	5849693.44	257.96	2P	5.00	87.70	0.57	0.0203	0.0116	0.0428	10.4	0.0116	0.0428	10.4	
110C	EDCM 900x600 GSEP SD601	319751.74	5849692.89	258.01	2P	5.00	87.70	0.57	0.0375	0.0215	0.0503	11.5	0.0215	0.0455	11.5	

## 12D MODEL - HYDROLOGICAL DESIGN SHEET

**Project:** Design Drainage JM  
**Drainage Model:** stg3 SAEP 12d DRN  
**Rainfall File:** Beveridge Intensities.12dhydro  
**Tc Method:** Direct  
**Rainfall Method:** IDF Table  
**Runoff C Method:** Direct

## 5% AEP Storm Event

Node Name	Node Type	Setout Easting	Setout Northing	Setout RL	Catch ID	Time Tc	Intensity I	Runoff C	Area A	Full CA	Full Sum CA	Partial Qc=CIA	Partial CA	Partial Sum CA	Partial Qc=CIA	Approach Flow Qa
(-)	(-)	(m)	(m)	(m)	(-)	(min)	(mm/hr)	(-)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)
01D	MW 5200x3000	319745.83	5849671.58	258.15												
90A	EDCM 1500x1200 GSEP SD603+607	319720.54	5849703.11	257.99	2P	5.00	128.00	0.72	0.0293	0.0212	0.0212	7.5	0.0212	0.0212	7.5	7.5
90B	EDCM 1500x1200 GSEP SD603+607	319724.36	5849740.21	258.19	2P	5.00	128.00	0.72	0.0293	0.0169	0.0546	19.4	0.0169	0.0546	19.4	19.4
90C	EDCM 900x1200 GSEP SD601+607	319727.55	5849769.73	258.34	3P	5.00	128.00	0.90	0.0418	0.0377						
90D	EDCM 900x1200 GSEP SD601+607	319730.22	5849794.38	258.46	4P	6.00	120.00	0.72	0.0138	0.0100	0.0463	15.4	0.0100	0.0403	14.3	15.4
90E	EDCM 1500x1200 GSEP SD601+607	319734.92	5849837.88	258.66	2P	5.00	128.00	0.72	0.0129	0.0093	0.0662	23.5	0.0093	0.0662	23.5	23.5
90F	EDCM 900x1200 GSEP SD601+607	319736.69	5849854.23	258.77	3P	5.00	128.00	0.90	0.0631	0.0569						
90G	EDCM 900x900 GSEP SD601+607	319739.36	5849878.89	258.89	2P	5.00	128.00	0.72	0.0559	0.0406	0.1295	46.0	0.0406	0.1295	46.0	46.0
90H	EDCM 900x900 GJP SD607	319745.43	5849933.15	259.15	2P	5.00	128.00	0.72	0.0142	0.0103	0.0672	23.9	0.0103	0.0672	23.9	23.9
90I	EDCM 900x900 GSEP SD601+607	319737.92	5849942.76	259.39	3P	5.00	128.00	0.72	0.0445	0.0323	0.0929	33.0	0.0323	0.0929	33.0	33.0
90J	EDCM 900x600 GSEP SD601	319737.09	5849951.40	259.41	2P	5.00	128.00	0.72	0.0424	0.0308	0.1347	44.9	0.0308	0.1173	41.7	44.9
90K	EDCM 900x600 GSEP SD601	319685.35	5849957.00	260.13	2P	5.00	128.00	0.72	0.0263	0.0191	0.0917	32.6	0.0191	0.0917	32.6	32.6
91A	EDCM 900x600 GSEP SD601	319711.55	5849695.26	258.06	2P	5.00	128.00	0.72	0.1199	0.0869	0.3122	104.1	0.0869	0.2746	97.7	104.1
91B	EDCM 900x600 GSEP SD601	319625.96	5849699.99	258.40	3P	5.00	128.00	0.90	0.0672	0.0606						
91C	EDCM 900x600 GSEP SD601	319601.16	5849701.36	258.50	4P	6.00	120.00	0.72	0.0537	0.0390						
91D	EDCM 900x600 GSEP SD601	319571.22	5849703.02	258.62	4P	6.00	120.00	0.72	0.0933	0.0386	0.1063	35.4	0.0386	0.0950	33.8	35.4
92A	EDCM 900x600 GSEP SD601	319618.33	5849708.97	258.47	2P	5.00	128.00	0.72	0.0294	0.0213	0.0213	7.6	0.0213	0.0213	7.6	7.6
92B	EDCM 900x600 GSEP SD601	319609.75	5849708.65	258.46	3P	5.00	128.00	0.72	0.0366	0.0265	9.4	0.0265	0.0265	9.4	9.4	
93A	EDCM 900x600 GSEP SD601	319720.18	5849778.72	258.49	2P	5.00	128.00	0.72	0.0560	0.0406	0.1523	54.2	0.0406	0.1523	54.2	54.2
93B	EDCM 900x600 GJP SD605	319667.68	5849784.40	258.86	3P	5.00	128.00	0.90	0.0425	0.0383	0.0383	13.6	0.0383	0.0383	13.6	13.6
94A	EDCM 900x600 GSEP SD601	319721.09	5849787.17	258.49	2P	5.00	128.00	0.72	0.0581	0.0421	0.1073	35.8	0.0421	0.1073	36.2	36.2
94B	EDCM 900x600 GJP SD605	319666.60	5849792.85	258.86	4P	6.00	120.00	0.72	0.0456	0.0330						
95A	EDCM 900x600 GSEP SD601	319729.32	5849863.23	258.97	2P	5.00	128.00	0.72	0.0643	0.0466	0.1138	37.9	0.0466	0.1081	38.4	38.4
95B	EDCM 900x600 GJP SD605	319676.23	5849868.97	259.51	3P	5.00	128.00	0.90	0.0367	0.0331	0.0331	11.8	0.0331	0.0331	11.8	11.8
96A	EDCM 900x600 GSEP SD601	319730.23	5849871.68	258.97	5P	5.00	128.00	0.90	0.1008	0.0909						

## 12D MODEL - HYDROLOGICAL DESIGN SHEET

**Project:** Design Drainage JM  
**Drainage Model:** stg3 SAEP 12d DRN  
**Rainfall File:** Beveridge Intensities.12dhydro  
**Tc Method:** Direct  
**Rainfall Method:** IDF Table  
**Runoff C Method:** Direct

## 5% AEP Storm Event

Node Name	Node Type	Setout Easting	Setout Northing	Setout RL	Catch ID	Time Tc	Intensity I	Runoff C	Area A	Full CA	Full Sum CA	Partial Qc=CIA	Partial CA	Partial Sum CA	Partial Qc=CIA	Approach Flow Qa
(-)	(-)	(m)	(m)	(m)	(-)	(min)	(mm/hr)	(-)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)
96B	EDCM 900x600 JP SD605	319673.64	5849877.80	259.54	3P	5.00	128.00	0.90	0.0400	0.0361	0.0361	12.8	0.0361	0.0361	12.8	12.8
99A	EDCM 1500x1200 GSEP SD603+607	319743.79	5849845.02	258.71	2P	5.00	128.00	0.72	0.0360	0.0261	0.1424	50.6	0.0261	0.1424	50.6	50.6
99B	EDCM 900x1200 GSEP SD601+607	319748.54	5849888.94	258.93	3P	5.00	128.00	0.90	0.1289	0.1163						
99C	EDCM 1500x1200 GSEP SD603+607	319753.19	5849932.31	259.15	2P	5.00	128.00	0.72	0.0150	0.0108	3.9	0.0108	0.0108	3.9	3.9	
99D	EDCM 1500x1200 GSEP SD603+607	319762.58	5849940.10	259.23	3P	5.00	128.00	0.72	0.0351	0.0255	0.0956	34.0	0.0255	0.0956	34.0	34.0
99E	EDCM 1500x1200 GSEP SD603+607	319765.15	5849948.07	259.22	2P	5.00	128.00	0.72	0.0362	0.0262	9.3	0.0262	0.0262	9.3	9.3	
99F	EDCM 1500x900 GSEP SD603+607	319774.46	5849955.56	259.43	2P	5.00	128.00	0.72	0.0346	0.0251	0.1233	43.8	0.0251	0.1233	43.8	43.8
99G	EDCM 900x600 GSEP SD601	319779.02	5849997.70	259.64	3P	5.00	128.00	0.90	0.1089	0.0982						
99H	EDCM 900x900 GSEP SD601+607	319787.90	5850006.35	259.69	2P	5.00	128.00	0.72	0.0121	0.0088	0.0400	14.2	0.0088	0.0400	14.2	14.2
99I	EDCM 900x1200 GSEP SD601+607	319789.60	5850021.55	259.77	2P	5.00	128.00	0.72	0.0145	0.0105	0.0473	16.8	0.0105	0.0473	16.8	16.8
99J	EDCM 900x1200 GSEP SD601+607	319798.92	5850029.65	259.82	2P	5.00	128.00	0.72	0.0207	0.0150	0.0150	5.3	0.0150	0.0150	5.3	5.3
99K	EDCM 900x900 GSEP SD601+607	319825.71	5850026.60	259.96	2P	5.00	128.00	0.72	0.0047	0.0034	0.0397	14.1	0.0034	0.0397	14.1	14.1
99L	EDCM 900x1200 GSEP SD601+607	319826.57	5850034.60	259.95	2P	5.00	128.00	0.72	0.0091	0.0066	2.3	0.0066	0.0066	2.3	2.3	
99M	EDCM 900x1200 GSEP SD601+607	319835.88	5850042.10	259.94	3P	5.00	128.00	0.90	0.0394	0.0355						
99N	EDCM 900x600 GSEP SD601	319837.15	5850056.64	259.90	2P	5.00	128.00	0.72	0.0419	0.0304	0.1003	35.7	0.0304	0.1003	35.7	35.7
99O	EDCM 900x600 GSEP SD601	319841.43	5850096.21	260.08	2P	5.00	128.00	0.72	0.0138	0.0100	0.0805	28.6	0.0100	0.0805	28.6	28.6
99P	EDCM 900x600 GSEP SD601	319842.21	5850096.21	260.17	2P	5.00	128.00	0.72	0.0304	0.0220	0.0220	7.8	0.0220	0.0220	7.8	7.8
99Q	EDCM 900x600 GSEP SD601	319853.12	5850113.64	260.17	2P	5.00	128.00	0.72	0.0446	0.0323	0.0323	11.5	0.0323	0.0323	11.5	11.5
99R	EDCM 900x600 GSEP SD601	319844.10	5850120.87	260.20	2P	5.00	128.00	0.72	0.0100	0.0073	0.0428	14.3	0.0073	0.0366	13.1	14.3
108A	EDCM 900x600 GSEP SD601	319732.34	5849739.19	258.20	3P	5.00	128.00	0.72	0.0234	0.0170	0.0950	33.8	0.0170	0.0950	33.8	33.8
108B	EDCM 900x600 GSEP SD601	319735.44	5849767.77	258.35	3P	5.00	128.00	0.90	0.0865	0.0780						
108C	EDCM 900x600 GSEP SD601	319738.22	5849793.53	258.48	3P	5.00	128.00	0.72	0.0422	0.0306	0.1022	36.3	0.0306	0.1022	36.3	36.3
108D	EDCM 900x600 JP SD605	319742.26	5849828.04	258.65	3P	5.00	128.00	0.90	0.0808	0.0729	0.0729	25.9	0.0729	0.0729	25.9	25.9
110A	EDCM 900x600 GSEP SD601	319728.44	5849703.51	258.00	2P	5.00	128.00	0.72	0.0293	0.0212	0.0212	7.5	0.0212	0.0212	7.5	7.5
110B	EDCM 900x600 GSEP SD601	319736.47	5849693.44	257.96	2P	5.00	128.00	0.72	0.0203	0.0147	0.0541	19.2	0.0147	0.0541	19.2	19.2
110C	EDCM 900x600 GSEP SD601	319751.74	5849692.89	258.01	2P	5.00	128.00	0.72	0.0375	0.0272	0.0636	21.2	0.			

## 12D MODEL - HYDROLOGICAL DESIGN SHEET

**Project:** Design Drainage JM  
**Drainage Model:** stg3 major 12d DRN  
**Rainfall File:** Beveridge Intensities.12dhydro  
**Tc Method:** Direct  
**Rainfall Method:** IDF Table  
**Runoff Method:** Direct

## Major 1% AEP Storm Event

Node Name	Node Type	Setout Easting	Setout Northing	Setout RL	Catch ID	Time Tc	Intensity I	Runoff C	Area A	Full CA	Full Sum CA	Partial Qc=CIA	Partial CA	Partial Sum CA	Partial Qc=CIA	Approach Flow Qa
(-)	(-)	(m)	(m)	(m)	(-)	(min)	(mm/hr)	(-)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(ha)	(L/s)
01D	MW 5200x3000	319745.83	5849671.58	258.15												
90A	EDCM 1500x1200 GSEP SD603+607	319720.54	5849703.11	257.99	2P	5.00	186.00	0.72	0.0293	0.0212	0.0212	11.0	0.0212	0.0212	11.0	11.0
90B	EDCM 1500x1200 GSEP SD603+607	319724.36	5849740.21	258.19	2P	5.00	186.00	0.72	0.0293	0.0169	0.0546	28.2	0.0169	0.0546	28.2	28.2
90C	EDCM 900x1200 GSEP SD601+607	319727.55	5849769.73	258.34	2P	5.00	186.00	0.72	0.0138	0.0100	0.0463	22.4	0.0100	0.0403	20.8	22.4
90D	EDCM 900x1200 GSEP SD601+607	319730.22	5849794.38	258.46	2P	5.00	186.00	0.72	0.0473	0.0343	0.1259	65.0	0.0343	0.1259	65.0	65.0
90E	EDCM 1500x1500 JP SD607	319734.92	5849837.88	258.66	2P	5.00	186.00	0.72	0.0129	0.0093	0.0662	34.2	0.0093	0.0662	34.2	34.2
90F	EDCM 900x1200 GSEP SD601+607	319736.69	5849854.23	258.77	2P	5.00	186.00	0.72	0.0138	0.0100	0.0475	24.5	0.0100	0.0475	24.5	24.5
90G	EDCM 900x900 GSEP SD601+607	319739.36	5849878.89	258.89	2P	5.00	186.00	0.72	0.0559	0.0406	0.1295	66.9	0.0406	0.1295	66.9	66.9
90H	EDCM 900x900 GJP SD607	319745.43	5849933.15	259.15	2P	5.00	186.00	0.72	0.0142	0.0103	0.0672	34.7	0.0103	0.0672	34.7	34.7
90I	EDCM 900x900 GSEP SD601+607	319737.92	5849942.76	259.39	2P	5.00	186.00	0.72	0.0445	0.0323	0.0929	48.0	0.0323	0.0929	48.0	48.0
90J	EDCM 900x600 GSEP SD601	319737.09	5849951.40	259.41	2P	5.00	186.00	0.72	0.0244	0.0308	0.1347	65.1	0.0308	0.1173	60.6	65.1
90K	EDCM 900x600 GSEP SD601	319685.35	5849957.00	260.13	2P	5.00	186.00	0.72	0.0263	0.0191	0.0917	47.4	0.0191	0.0917	47.4	47.4
91A	EDCM 900x600 GSEP SD601	319711.55	5849695.26	258.06	2P	5.00	186.00	0.72	0.1199	0.0869	0.3122	150.9	0.0869	0.2746	141.9	150.9
91B	EDCM 900x600 GSEP SD601	319625.96	5849699.99	258.40	2P	5.00	186.00	0.72	0.0197	0.0143	0.0533	25.7	0.0143	0.0468	24.2	25.7
91C	EDCM 900x600 GSEP SD601	319601.16	5849701.36	258.50	2P	5.00	186.00	0.72	0.0533	0.0386	0.1063	51.4	0.0386	0.0950	49.1	51.4
91D	EDCM 900x600 GSEP SD601	319571.22	5849703.02	258.62	2P	5.00	186.00	0.72	0.0263	0.0191	0.0917	47.4	0.0191	0.0917	47.4	47.4
92A	EDCM 900x600 GSEP SD601	319618.33	5849708.97	258.47	2P	5.00	186.00	0.72	0.0294	0.0213	0.0213	11.0	0.0213	0.0213	11.0	11.0
92B	EDCM 900x600 GSEP SD601	319609.75	5849708.65	258.46	2P	5.00	186.00	0.72	0.0366	0.0265	0.0265	13.7	0.0265	0.0265	13.7	13.7
93A	EDCM 900x600 GSEP SD601	319720.18	5849778.72	258.49	2P	5.00	186.00	0.72	0.0560	0.0406	0.1523	78.7	0.0406	0.1523	78.7	78.7
93B	EDCM 900x600 JP SD605	319667.68	5849784.40	258.86	2P	5.00	186.00	0.90	0.0425	0.0383	0.0383	19.8	0.0383	0.0383	19.8	19.8
94A	EDCM 900x600 GSEP SD601	319721.09	5849787.17	258.49	2P	5.00	186.00	0.72	0.0581	0.0421	0.1073	51.9	0.0421	0.1018	52.6	52.6
94B	EDCM 900x600 JP SD605	319668.60	5849792.85	258.86	2P	5.00	186.00	0.90	0.0367	0.0331	0.0331	17.1	0.0331	0.0331	17.1	17.1
95A	EDCM 900x600 GSEP SD601	319729.32	5849863.23	258.97	2P	5.00	186.00	0.72	0.0643	0.0466	0.1138	55.0	0.0466	0.1081	55.9	55.9
95B	EDCM 900x600 JP SD605	319676.23	5849868.97	259.51	2P	5.00	186.00	0.90	0.0367	0.0331	0.0331	17.1	0.0331	0.0331	17.1	17.1
96A	EDCM 900x600 GSEP SD601	319730.23	5849871.68	258.97	2P	5.00	186.00	0.72	0.0668	0.0484	0.1393	72.0	0.0484	0.1393	72.0	72.0

## 12D MODEL - HYDROLOGICAL DESIGN SHEET

**Project:** Design Drainage JM  
**Drainage Model:** stg3 major 12d DRN  
**Rainfall File:** Beveridge Intensities.12dhydro  
**Tc Method:** Direct  
**Rainfall Method:** IDF Table  
**Runoff Method:** Direct

## Major 1% AEP Storm Event

Node Name	Node Type	Setout Easting	Setout Northing	Setout RL	Catch ID	Time Tc	Intensity I	Runoff C	Area A	Full CA	Full Sum CA	Partial Qc=CIA	Partial CA	Partial Sum CA	Partial Qc=CIA	Approach Flow Qa
(-)	(-)	(m)	(m)	(m)	(-)	(min)	(mm/hr)	(-)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(ha)	(L/s)
96B	EDCM 900x600 JP SD605	319673.64	5849877.80	259.54	3P	5.00	186.00	0.90	0.0400	0.0361	0.0361	18.6	0.0361	0.0361	18.6	18.6
99A	EDCM 1500x1200 GSEP SD603+607	319743.79	5849845.02	258.71	2P	5.00	186.00	0.72	0.0360	0.0261	0.1424	73.6	0.0261	0.1424	73.6	73.6
99B	EDCM 900x1200 GSEP SD601+607	319748.54	5849888.94	258.93	2P	5.00	186.00	0.90	0.1289	0.1163		0.1163				
99C	EDCM 1500x1200 GSEP SD603+607	319753.19	5849932.31	259.15	2P	5.00	186.00	0.72	0.0150	0.0108	5.6	0.0108	0.0108	5.6	5.6	
99D	EDCM 1500x1200 GSEP SD603+607	319762.58	5849940.10	259.23	2P	5.00	186.00	0.72	0.0351	0.0255	0.0956	49.4	0.0255	0.0956	49.4	49.4
99E	EDCM 1500x1200 GSEP SD603+607	319765.15	5849948.07	259.22	2P	5.00	186.00	0.72	0.0362	0.0262	13.6	0.0262	0.0262	13.6	13.6	
99F	EDCM 1500x900 GSEP SD603+607	319774.46	5849955.56	259.43	2P	5.00	186.00	0.72	0.0346	0.0251	0.1233	63.7	0.0251	0.1233	63.7	63.7
99G	EDCM 900x600 GSEP SD601	319779.02	5849997.70	259.64	2P	5.00	186.00	0.72	0.0204	0.0148	0.0782	40.4	0.0148	0.0782	40.4	40.4
99H	EDCM 900x900 GSEP SD601+607	319787.90	5850006.35	259.69	2P	5.00	186.00	0.72	0.0121	0.0088	0.0400	20.7	0.0088	0.0400	20.7	20.7
99I	EDCM 900x1200 GSEP SD601+607	319789.60	5850021.55	259.77	2P	5.00	186.00	0.72	0.0145	0.0105	0.0473	24.4	0.0105	0.0473	24.4	24.4
99J	EDCM 900x1200 GSEP SD601+607	319798.92	5850029.65	259.82	2P	5.00	186.00	0.72	0.0207	0.0150	0.0150	7.8	0.0150	0.0150	7.8	7.8
99K	EDCM 900x900 GSEP SD601+607	319825.71	5850026.60	259.96	2P	5.00	186.00	0.72	0.0047	0.0034	0.0397	20.5	0.0034	0.0397	20.5	20.5
99L	EDCM 900x1200 GSEP SD601+607	319826.57	5850034.60	259.95	2P	5.00	186.00	0.72	0.0091	0.0066	3.4	0.0066	0.0066	3.4	3.4	
99M	EDCM 900x1200 GSEP SD601+607	319835.88	5850042.10	259.94	2P	5.00	186.00	0.72	0.0056	0.0041	0.0396	20.5	0.0041	0.0396	20.5	20.5
99N	EDCM 900x600 GSEP SD601	319837.15	5850056.64	259.90	2P	5.00	186.00	0.72	0.0149	0.0104	0.1003	51.8	0.0104	0.1003	51.8	51.8
99O	EDCM 900x600 GSEP SD601	319841.43	5850096.21	260.08	2P	5.00	186.00	0.72	0.0138	0.0100	0.0805	41.6	0.0100	0.0805	41.6	41.6
99P	EDCM 900x600 GSEP SD601	319834.21	5850105.19	260.17	2P	5.00	186.00	0.72	0.0304	0.0220	0.0220	11.4	0.0220	0.0220	11.4	11.4
99Q	EDCM 900x600 GSEP SD601	319835.12	5850113.64	260.17	2P	5.00	186.00	0.72	0.0446	0.0323	0.0323	16.7	0.0323	0.0323	16.7	16.7
99R	EDCM 900x600 GSEP SD601	319844.10	5850120.87	260.20	2P	5.00	186.00	0.72	0.0100	0.0073	0.0428	20.7	0.0073	0.0369	19.1	19.1
108A	EDCM 900x600 GSEP SD601	319732.34	5849739.19	258.20	2P	5.00	186.00	0.72	0.0234	0.0170	0.0950	49.1	0.0170	0.0950	49.1	49.1
108B	EDCM 900x600 GSEP SD601	319735.44	5849767.77	258.35	2P	5.00	186.00	0.72	0.0375	0.0272	0.0780	47.3	0.0272	0.0780	47.3	47.3
108C	EDCM 900x600 GSEP SD601	319738.22	5849793.53	258.48	2P	5.00	186.00	0.72	0.0422	0.0306	0.1022	52.8	0.0306	0.1022	52.8	52.8
108D	EDCM 900x600 JP SD605	319742.26	5849828.04	258.65	3P	5.00	186.00	0.90	0.0808	0.0729	0.0729	37.7	0.0729	0.0729	37.7	37.7
110A	EDCM 900x600 GSEP SD601	319728.44	5849703.51	258.00	2P	5.00	186.00	0.72	0.0293	0.0212	0.0212	11.0	0.0212	0.0212	11.0	11