DEVELOPMENT WORKS UNDERTAKEN FOR:

CAPPELLO DEVELOPMENT No.10

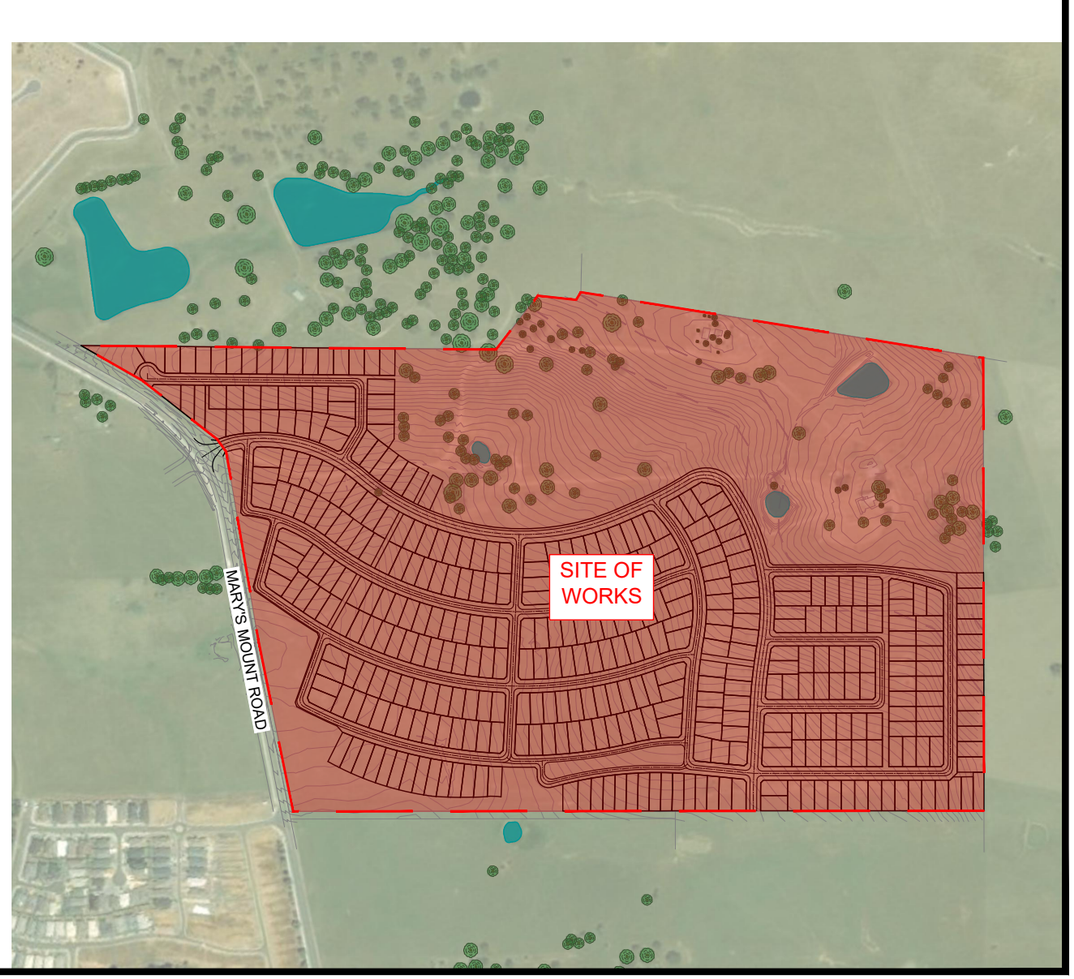
SUBDIVISION OF LOT 28, DP479 GOULBURN, NSW

ISSUED FOR DEVELOPMENT APPLICATION

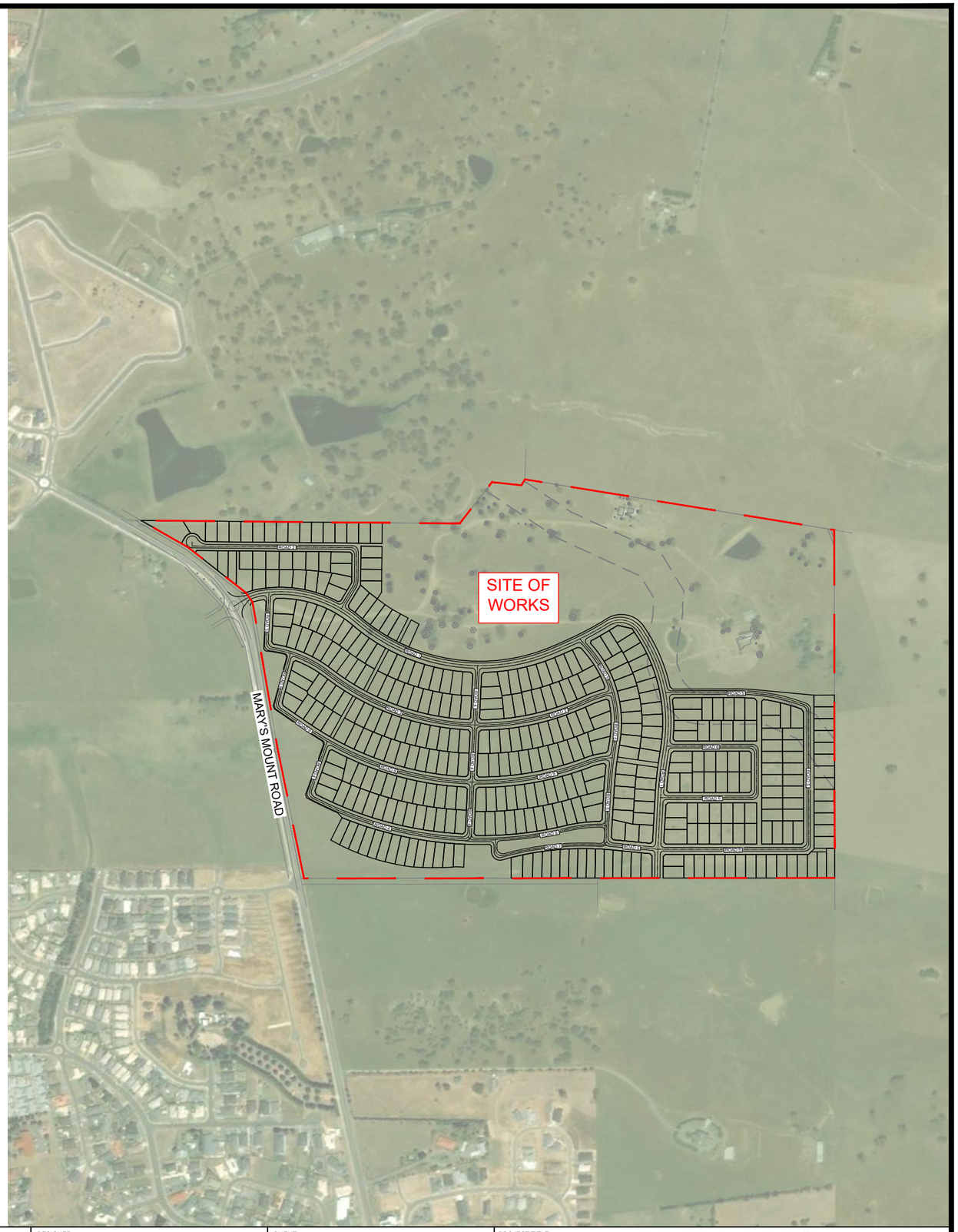
NOVEMBER 2017

FRAISH Consulting
Civil & Structural Engineers

1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au



DRAWING INDEX DRAWING NUMBER	DRAWING TITLE
C001	COVER SHEET
C002	LAYOUT & INDEX
C005	CIVIL NOTES & LEGEND
LAYOUT	
C006	GENERAL ARRANGEMENT PLAN
TYPICAL DETAILS	
C105	TYPICAL CROSS SECTIONS ROAD 1
C106	TYPICAL CROSS SECTIONS ROAD 2
C107	TYPICAL CROSS SECTIONS ROAD 3
C108	TYPICAL CROSS SECTIONS ROAD 4
C109	TYPICAL CROSS SECTIONS ROAD 5
C110	TYPICAL CROSS SECTIONS ROAD 6
C111	TYPICAL CROSS SECTIONS ROADS 7 & 8
C112	TYPICAL CROSS SECTIONS ROAD 9
TRAFFIC MANAGEMENT	
C201	TEMPORARY TRAFFIC CONTROL DEVICES
EROSION & SEDIMENT CONTROL	
C211	EROSION & SEDIMENT CONTROL PLAN
C212	EROSION & SEDIMENT CONTROL DETAILS
C213	EROSION & SEDIMENT CONTROL NOTES
PAVEMENT	
C220	PAVEMENT PLAN
C230	PAVEMENT MARKINGS & SIGNS
STORMWATER	
C300	STORMWATER CATCHMENT PLAN
C305	STORMWATER PLAN
C310	RAIN GARDEN DETAILS
WATER	
C320	WATER SUPPLY CONCEPT PLAN
SEWER	
C330	SEWER CONCEPT PLAN



REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	14/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

0m 60m 120m 180m 240m 300m

1:4000 @ A1, 1:8000 @ A3

DESIGNER

FRAISH Consulting
Civil & Structural Engineers

1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

LAYOUT & DRAWING INDEX

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C002	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C002 LAYOUT & INDEX.dwg

GENERAL

1. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH SNOWY MONARO REGIONAL COUNCIL AUSPEC #1 DESIGN & AUSPEC #2 CONSTRUCTION SPECIFICATION, AND STANDARD DRAWINGS
2. ALL DRAWINGS SHOULD BE READ IN CONJUNCTION WITH THE RELEVANT SERVICES DRAWINGS & ALL OTHER DRAWINGS FROM OTHER CONSULTANTS.
3. THE CONTRACTOR SHOULD REPORT ANY DISCREPANCIES ON THE DRAWINGS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN.
4. THE CONTRACTOR SHALL LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION AND PROTECT AND MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE AND/OR ADJUST IF NECESSARY. INFORMATION GIVEN ON THE DRAWINGS IN RESPECT TO SERVICES IS FOR GUIDANCE ONLY AND IS NOT GUARANTEED COMPLETE NOR CORRECT.
5. CONTRACTOR IS NOT TO ENTER UPON NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT THE PERMISSION OF THE OWNER.
6. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED WHERE DIRECTED OR REMOVED FROM SITE.
7. ALL NEW WORKS SHALL MAKE A SMOOTH JUNCTION WITH EXISTING.
8. ALL DRAINAGE LINES THOUGH ADJACENT LOTS SHALL BE CONTAINED WITHIN EASEMENTS CONFORMING TO COUNCIL'S STANDARDS.
9. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL PROVIDE A TRAFFIC MANAGEMENT PLAN PREPARED BY AN ACCREDITED PERSON IN ACCORDANCE WITH RMS REQUIREMENTS, FOR ANY WORK ON OR ADJACENT TO PUBLIC ROADS, PLAN TO BE SUBMITTED TO COUNCIL & RMS AS APPLICABLE.
10. ALL EXISTING SERVICES TO BE LOCATED AND LEVELLED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORK. ALL SERVICES AFFECTED BY THE NEW WORK TO BE ADJUSTED TO SUIT IN THE FIELD, TO THE SATISFACTION OF THE RELEVANT SERVICE AUTHORITY
11. ALL CONSTRUCTION WORK IS TO BE CARRIED OUT SO THAT AT ANY TIME ADJOINING PROPERTY OWNERS ARE NOT DEPRIVED OF AN ALL - WEATHER ACCESS OR SUBJECTED TO ADDITIONAL STORMWATER RUN-OFF DURING THE PERIOD OF CONSTRUCTION.
12. ALL DISTURBED SURFACES TO BE REINSTATED TO AS NEARLY AS POSSIBLE TO THE PRE-CONSTRUCTED CONDITION.

SURVEY

1. FRAISH IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY SURVEY INFORMATION PROVIDED ON THIS DRAWING.
2. ALL LEVELS ARE TO A.H.D.
3. ALL CHAINAGES AND LEVELS ARE IN METRES, AND DIMENSIONS IN MILLIMETRES.
4. THE SURVEY INFORMATION ON THIS DRAWING HAS BEEN PROVIDED BY P.J.SHAW & ASSOCIATES PTY LTD CONSULTING SURVEYORS.
5. CONTRACTORS SHALL ARRANGE FOR THE WORKS TO BE SET OUT BY A REGISTERED SURVEYOR.

DRAINAGE RETICULATION NOTES

GENERAL DRAINAGE INSTALLATION NOTES

1. ENDS OF PIPES AND STUB CONNECTIONS TO BE SEALED WITH AN APPROVED SEALED DISC.
2. MILD STEEL 'STAR' PICKET 1200mm LONG WITH 300mm PAINTED GREEN, EXTENDED ABOVE GROUND LEVEL TO BE PLACED AT EACH INTER-ALLOTMENT DRAINAGE CONNECTION POINT.
3. PROVIDE 90 DIAMETER STUB CONNECTION WHERE SHOWN.
4. GEOTEXTILE FABRIC TO BE PLACED UNDER RIP RAP SCOUR PROTECTION.
5. ALL BASES OF PITS TO BE BENCHED TO HALF PIPE DEPTH AND PROVIDE GALVANISED ANGLE SURROUNDINGS TO GRATE.
6. PROVIDE 1m WIDE JUTE MESH ANCHORED ALONG BASE OF SWALES AND SPRAY GRASS SWALE USING A SEED MIX CONSISTING OF:
   a. JAPANESE MILLET (75%)
   b. HULLED COUCH (6.25%)
   c. RED CLOVER (INOCULATED) (6.25%)
   d. WHITE CLOVER (INOCULATED) (6.25%)
   e. "ELKA" PERENNIAL RYE (6.25%)
7. ALL PIPES SHALL BE RUBBER RING JOINTED (RRJ)
8. ALL PIPE TRENCHES TO BE INSPECTED & APPROVED BY SITE SUPERINTENDENT & COUNCIL ENGINEER PRIOR TO PLACING OF PIPES & BACKFILLING. THIS CONSTITUTES A HELD POINT.

SUBSOIL DRAINAGE NOTATION

1. SUBSOIL DRAINS TO KERBS SHALL BE 100Ø TYPE 1 CLASS 400 SOCKED PIPE.
2. 100Ø CLASS 'SH' SHALL BE USED WHERE SUBSOIL PIPES CROSS ROAD PAVEMENTS LAID AT MIN GRADE 1%, UNLESS SHOWN AS SLOTTED PIPES ON THE DRAWING.
3. GRADE SUBSOIL DRAINS AT MINIMUM AT 1% FROM OUTLET POINT UNLESS NOTED OTHERWISE ON THE DRAWINGS.
4. COMPACT 7mm CRUSHED TOCK FILTER MATERIAL TO ID=9% IN 250 TO 300mm DEEP LAYERS. THE PIPE SHALL BE 300mm DEEP.

INTER-ALLOTMENT DRAINAGE

1. INTER-ALLOTMENT DRAINAGE PIPES SHALL BE uPVC STORMWATER PIPE. INTER-ALLOTMENT DRAINAGE PIPES ARE TO BE LOCATED CENTRALLY IN IAD EASEMENT UNLESS OTHERWISE DIMENSIONED, MINIMUM COVER 600mm WITH A MINIMUM GRADE OF 1 in 300.
2. ALL INTER-ALLOTMENT DRAINAGE PITS TO BE MIN 600 x 600 IN SITU OR COUNCIL APPROVED PRE-CAST PITS.
3. PITS TO BE FITTED WITH LOCKING CHAIN OR J BOLTS TO PREVENT GRATE REMOVAL.
4. AREA AROUND PIT TO BE TURFED, MINIMUM 900mm RADIUS. TURF TO BE MAINTAINED UNTIL ESTABLISHED.
5. ON CAST-INSITU INTER-ALLOTMENT PITS A 150mm STUB IS TO BE PROVIDED FOR ROOF WATER CONNECTION.

TABLE DRAINS STABILISATION

1. ALL TABLE DRAINS, SWALES, MITRES, BATTERS AND VERGESARE TO BE TOPSOILED AND SOWN WITH THE SEED MIX AS SHOWN IN THE EROSION AND SEDIMENT CONTROL PLAN AS SOON AS POSSIBLE AFTER COMPLETION.
2. TABLE DRAINS AND SWALES EXCEEDING 5% GRADE ARE TO BE STABILISED WITH JUTE MATTING AND BITUMEN IMMEDIATELY AFTER SOWING.
3. WHERE DRAINS ARE ON GRADES IN EXCESS OF 10% THEY SHALL BE ARMOURED WITH ROCK, GENERALLY SIZED TO D/50 100mm UNDERLAID WITH BIDIM A14.
4. SIMILAR TREATMENT IS TO BE PROVIDED TO ALL DRAINS, SWALES AND BATTERS IN PROPERTY ACCESS DRIVEWAYS.
5. RIPRAP SCOUR PROTECTION IS TO BE INSTALLED AT THE OUTLETS. TO ALL THE CULVERTS & TABLE DRAINS. CONSISTING OF D/50=150mm AND PLACED OVER BIDIM A14.
6. AREAS FOR PROTECTION ARE AS FOLLOWS:
7. Ø300 & Ø375 PIPES = 1m WIDE X 2m LONG

PAVEMENT NOTES

1. ALL SUBGRADES TO BE PROOF ROLLED & APPROVED BY SITE SUPERINTENDENT & COUNCIL ENGINEER PRIOR TO PLACING OF PAVEMENT LAYERS. THIS CONSTITUTES A HOLD POINT.
2. SUB-BASE & BASECOURSE CAN BE CONSTRUCTED OF APPROVED NGB & NGS IN LIEU OF DGS AND DSB. IN ACCORDANCE WITH AUSPEC #2 C242 FLEXIBLE PAVEMENTS.
3. WHERE REQUIRED BY SUPERVISING ENGINEER DESIGN CBR TO BE CONFIRMED ON SITE BY A MINIMUM OF FOUR DAY SOAKED CBR TESTS DURING THE BOXING OUT FOR THE PAVEMENT. NO PAVEMENT MATERIALS ARE TO BE PLACED UNTIL THE DESIGN CBR IS CONFIRMED AND THE SUBGRADE INSPECTED BY AN ENGINEER TO CONFIRM THE CONSISTENCY OF MATERIALS.
4. PRIOR TO THE PLACEMENT OF THE PRIMERSEAL AND AFTER THE REQUIRED DENSITY IS ACHIEVED, THE PAVEMENT IS TO BE ALLOWED TO DRY BACK TO APPROXIMATELY 60% TO 70% OPTIMUM MOISTURE CONTENT.
5. ALL PAVEMENTS TO BE PROOF ROLLED & APPROVED BY SITE SUPERINTENDENT & COUNCIL ENGINEER PRIOR TO PLACING OF PRIME, SEAL OR ASPHAULT. THIS CONSTITUTES A HOLD POINT.
6. COMPACTION TESTS ARE TO BE UNDERTAKEN FOR ALL PAVEMENT LAYERS INCLUDING SUBGRADE AT A RATES AS STATED IN AUSPEC #2 TO BE DETERMINED BY THE SUPERVISING ENGINEER AND THE RESULTS TO BE SUPPLIED TO THE ENGINEER PRIOR TO PLACEMENT OF THE NEXT PAVEMENT LAYER.

RCP CONVENTIONAL INSTALLATIONS & ROAD CROSSINGS

1. SUPPLY & INSTALLATION OF DRAINAGE WORKS TO BE IN ACCORDANCE WITH THESE DRAWINGS, THE COUNCIL SPECIFICATION AUSPEC #2 AND THE CURRENT APPLICABLE AUSTRALIAN STANDARDS.
2. ALL PIPE TRENCHES TO BE INSPECTED & APPROVED BY SITE SUPERINTENDENT & COUNCIL ENGINEER PRIOR TO PLACING OF PIPES & BACKFILLING. THIS CONSTITUTES A HOLD POINT.
3. BEDDING OF THE PIPELINES IS TO BE TYPE 'HS2' IN ACCORDANCE WITH THE STANDARDS AND AS FOLLOWS:
   a. BEDDING DEPTH UNDER THE PIPE TO BE 100mm.
   b. BEDDING MATERIAL TO BE EXTENDED FROM THE TOP OF THE BEDDING ZONE UP TO 0.3 TIMES PIPE OUTSIDE DIAMETER. THIS REPRESENTS THE 'HAUNCH ZONE.'
   c. THE BEDDING & HAUNCH ZONE MATERIAL IS TO BE COMPACTED TO A MINIMUM RELATIVE COMPACTION OF 98% WITHIN ROAD RESERVES AND TRAFFICABLE AREAS AND 95% ELSEWHERE FOR COHESIVE MATERIAL OR A MINIMUM DENSITY INDEX OF 70% IN ACCORDANCE WITH THE STANDARDS FOR COHESIVENESS MATERIAL.
3. COMPACTION TESTING SHALL BE CARRIED OUT BY AN APPROVED ORGANISATION WITH A NATA CERTIFIED LABORATORY FOR ALL DRAINAGE LINES LAID WHOLLY OR IN PART UNDER THE KERB & GUTTER OR PAVEMENT.
4. BACKFILL SHALL BE PLACED & COMPACTED IN ACCORDANCE WITH THE SPECIFICATION. TESTING OF BACKFILL IS TO OCCUR AT THE SAME INTERVALS FOR THE BEDDING AND HAUNCH ZONES.
5. A MINIMUM OF 300mm CLEARANCE IS TO BE PROVIDED BETWEEN THE OUTSIDE OF THE PIPE BARREL AND THE TRENCH WALL.
6. A Ø90 SUBSOIL DRAIN IS TO CONNECT INTO THE BASE OF EACH PIT WITHIN THE ROAD RESERVE & EXTEND 3.0m UPSTREAM OF THE PIT.
7. ALL SERVICE CONNECTIONS SHALL BE Ø100 uPVC STORMWATER CLASSIFICATION TO AS1254 AT 1.0% MIN. GRADE UNLESS NOTED OTHERWISE.
8. INSTALL TEMPORARY SEDIMENT BARRIERS TO INLET PITS, TO COUNCILS SPECIFICATIONS UNTIL SURROUNDING AREAS ARE PAVED OR GRASSED.CONTRACTOR IS TO VERIFY THE LEVEL AND ALIGNMENT OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF EXCAVATION FOR DRAINAGE.
9. STORMWATER PIT LOCATIONS & LEVELS MAY BE VARIED TO SUIT SITE CONDITIONS, AFTER CONSULTATION WITH THE ENGINEER.
10. ALL COURTYARD & LANDSCAPE PITS TO BE 450 SQ UNLESS NOTED OTHERWISE. ALL DRIVEWAY & OSD PITS TO BE 600 SQ.
11. HAND EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS.
12. FOOTPATH CROSSING LEVELS SHOWN ARE TO BE ADJUSTED TO FINAL COUNCIL ISSUED LEVELS.

SEWER MAINS

1. ALL SEWERS SHALL BE uPVC CLASS SH (<3m DEPTH) OR uPVC CLASS SEH (>3m DEPTH)
2. ALL HOUSE CONNECTIONS SHALL BE 150mm uPVC
3. ALL SEWERS AND HOUSE CONNECTIONS ARE TO BE LAID IN ACCORDANCE WITH STANDARD DRAWINGS AND SEWER SPECIFICATION.
4. ALL MANHOLES SHALL BE AS PER STANDARD DRAWINGS. STEP IRONS SHALL BE INSTALLED IN ALL MANHOLES DEEPER THAN 1.2m.
5. CONNECTION TO EXISTING LIVE SEWERAGE RETICULATION SHALL BE CARRIED OUT BY COUNCIL OR BY THE CONTRACTOR WITH COUNCILS WRITTEN APPROVAL AT THE CONTRACTOR'S EXPENSE.
6. END OF LINE MANHOLES SHALL BE AS PER STANDARD DRAWINGS.

STORMWATER

1. ROAD DRAINAGE PIPES SHALL BE RRJ REINFORCED CONCRETE CLASS 2. UNLESS OTHERWISE SHOWN.
2. ROAD DRAINAGE PITS SHALL BE CONSTRUCTED AS PER PLANS, TYPE R SUMP.
3. INVERT LEVELS REFER TO THE CENTRE OF THE DRAINAGE STRUCTURE.
4. ALL PIPES LAID UNDER TRAFFICABLE PAVEMENTS ARE TO BE BACK FILLED.
5. ALL PIPES WITH LESS THAN 600mm COVER ARE TO BE CONCRETE ENCASED.
6. ALL STRUCTURES TO HAVE A 1.22m SHORT LENGTH OF PIPE ON ALL INCOMING AND OUTGOING PIPES.
7. MINIMUM CONCRETE STRENGTH TO BE 32MPa-20

LEGEND

- PROPOSED SEWER MAIN
- PROPOSED WATER MAIN
- PROPOSED WATER SERVICE
- PROPOSED WATER HYDRANT
- PROPOSED SLUICE VALVE
- PROPOSED END CAP
- THRUST BLOCK
- EXISTING OVERHEAD ELECTRICITY LINE
- EXISTING ELECTRICAL POWER POLE
- PROPOSED STORMWATER LINE
- PROPOSED STORMWATER PIT
- 600x600 IAD PIT
- 900x910 GRATED PIT
- STORMWATER MANHOLE
- PROPOSED HEADWALL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- HER SUBSOIL HIGH END RISER
- IFP SUBSOIL INTERMEDIATE FLUSHING POINT
- SUBSOIL DRAINAGE
- EXISTING OVERHEAD POWER LINE
- KERB & GUTTER TYPE KERB
- BOULDER RIP RAP
- INTER-ALLOTMENT DRAINAGE PIT
- PROPOSED SEWER MANHOLE
- EXISTING HOUSING STRUCTURE TO BE REMOVED
- EXISTING HOUSING STRUCTURE TO BE RETAINED
- DENOTES SEWER STRUCTURE
- DENOTES STORM WATER STRUCTURE
- SURVEY MARK
- EARTH BERM
- COMMON TRENCH

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	14/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

SCALE

DESIGNER
FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT
CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

CIVIL NOTES & LEGEND

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C005	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C005.dwg

EXISTING WATER MAIN

EXISTING SEWER

WETLAND

DIVERSION SWALE

RAINGARDEN

RAINGARDEN

MARYS MOUNT ROAD

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	20/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

SCALE

0m 30m 60m 90m 120m

1:1500 @ A1, 1:3000 @ A3

DESIGNER

FRAISH Consulting
Civil & Structural Engineers

1/8 Victoria Street, Holt ACT
PO Box 310, Holt ACT 2615
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

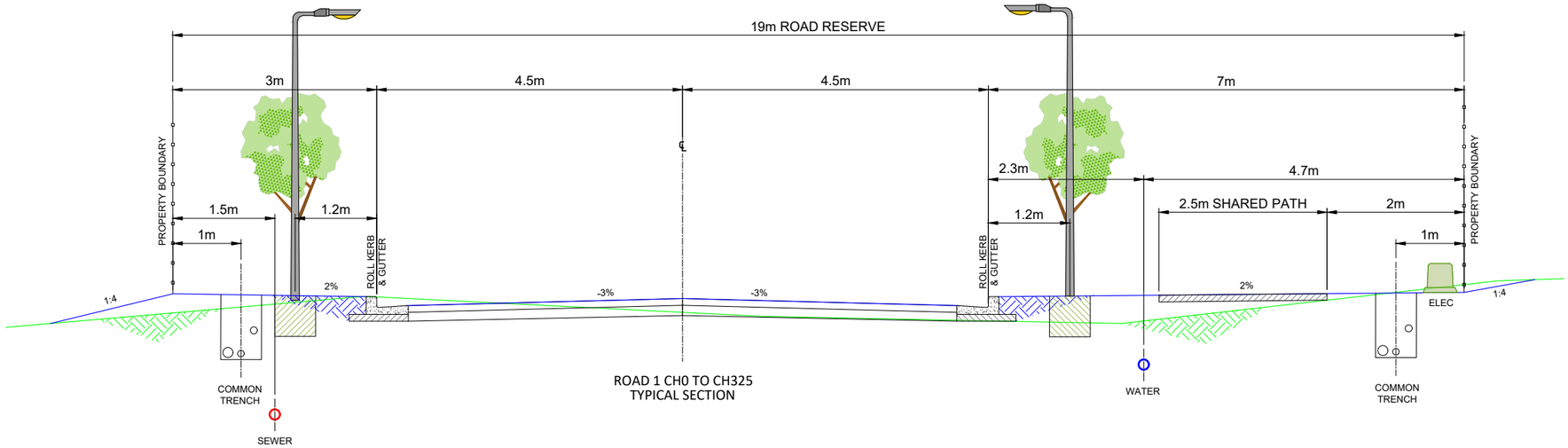
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

GENERAL ARRANGEMENT PLAN

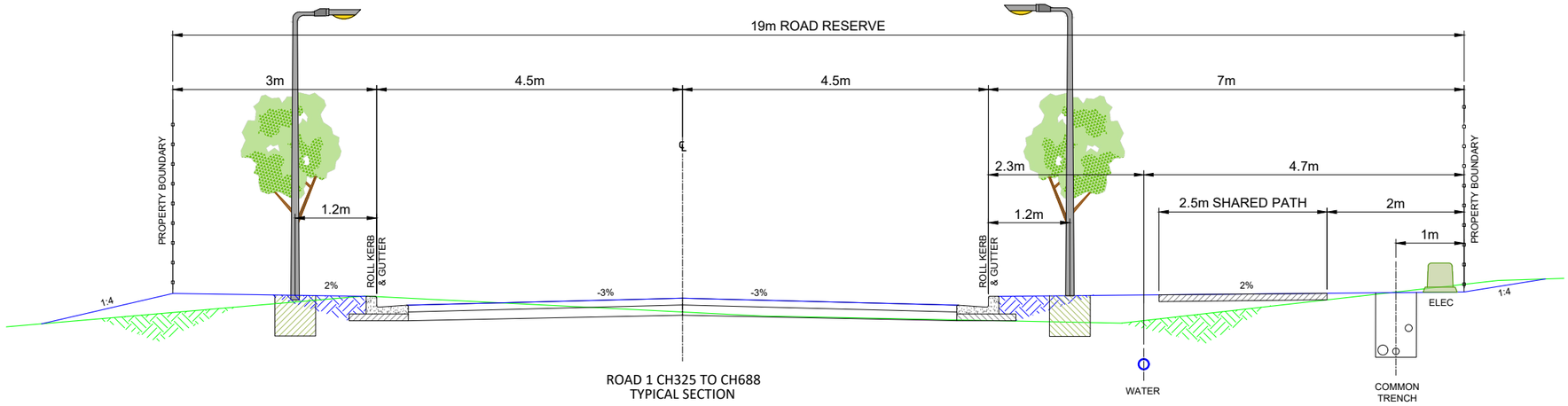
SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C006	A

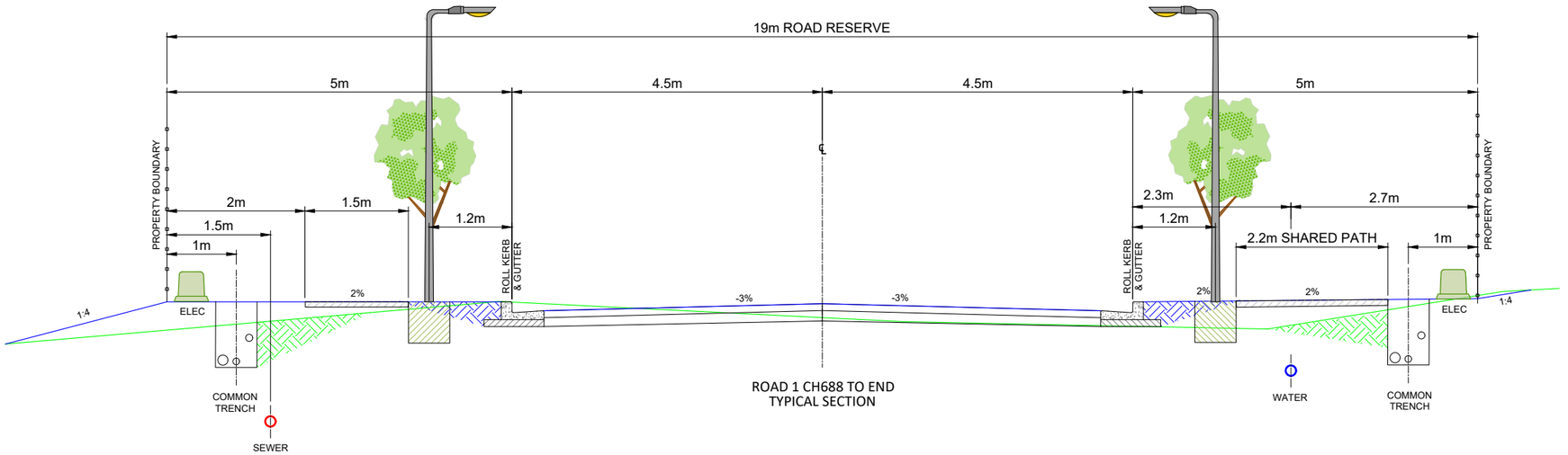
Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C006 GENERAL ARRANGEMENT.dwg



ROAD 1 CH0 TO CH325
TYPICAL SECTION



ROAD 1 CH325 TO CH688
TYPICAL SECTION



ROAD 1 CH688 TO END
TYPICAL SECTION

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	15/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

SCALE

0m 1m 2m 3m

SCALE: A1 1:40, A3 1:80

DESIGNER

FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

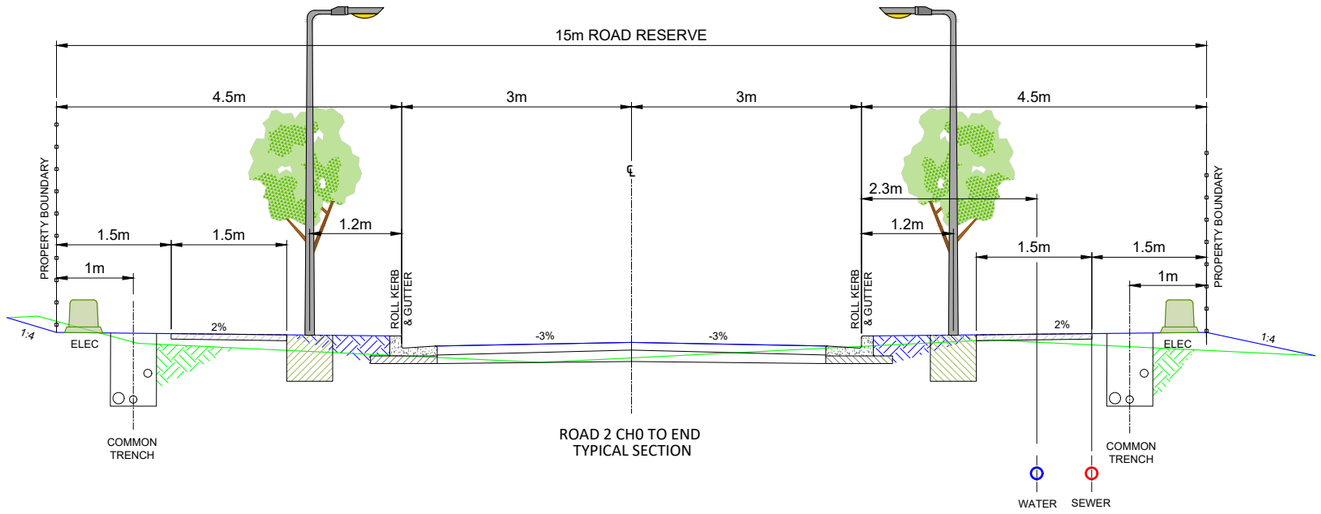
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

TYPICAL SECTIONS ROAD 1

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C105	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C105 TO C112 TYPICAL CROSS SECTIONS.dwg



ROAD 2 CH0 TO END
TYPICAL SECTION

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	15/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

SCALE

0m 1m 2m 3m

SCALE: A1 1:40, A3 1:80

DESIGNER

FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

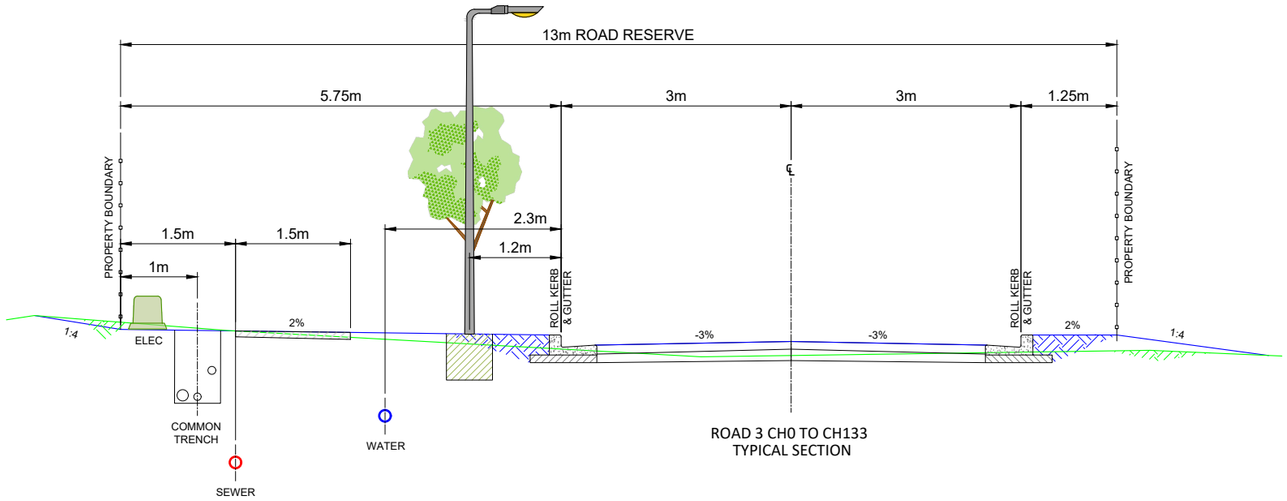
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

TYPICAL SECTIONS ROAD 2

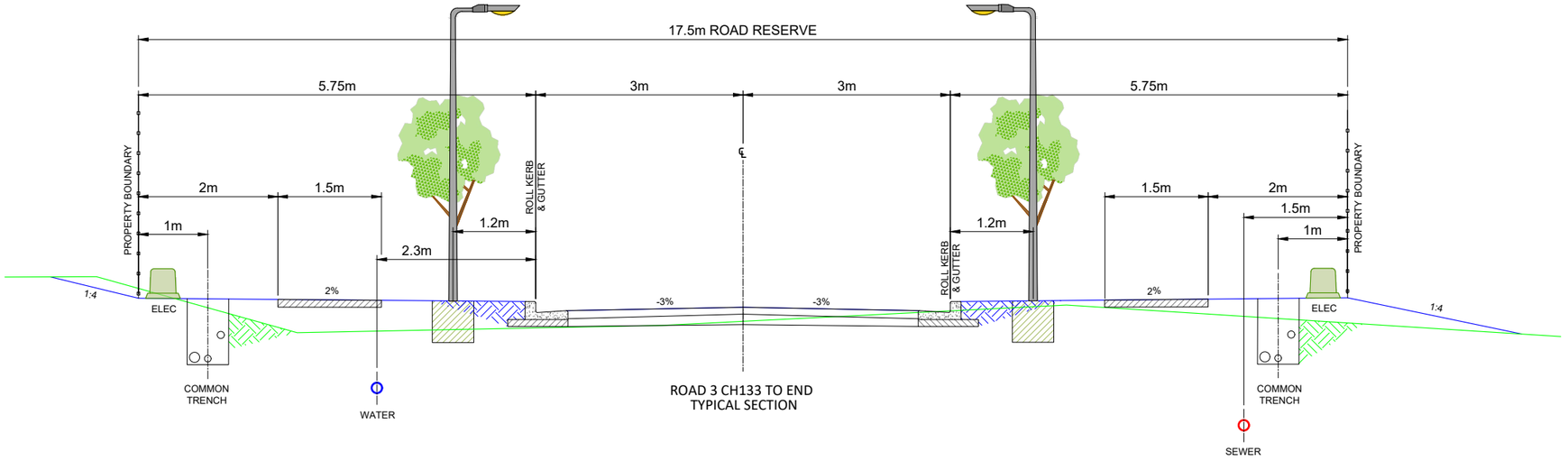
SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C106	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C105 TO C112 TYPICAL CROSS SECTIONS.dwg



ROAD 3 CH0 TO CH133
TYPICAL SECTION



ROAD 3 CH133 TO END
TYPICAL SECTION

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	15/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

0m 1m 2m 3m

SCALE: A1 1:40, A3 1:80

DESIGNER

FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Holt ACT
PO Box 310, Holt ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

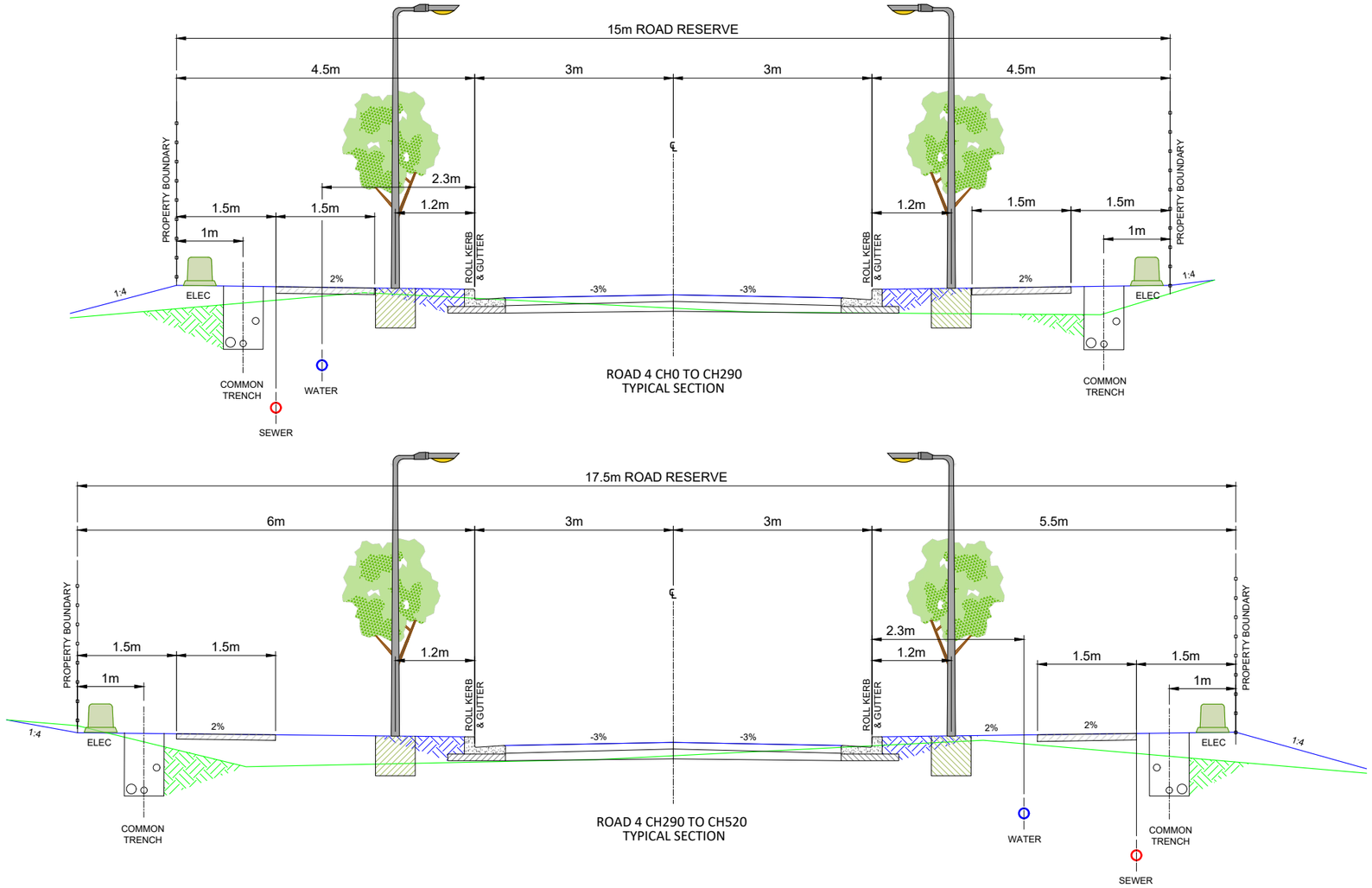
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

TYPICAL SECTIONS ROAD 3

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C107	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C105 TO C112 TYPICAL CROSS SECTIONS.dwg



REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	15/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

SCALE

0m 1m 2m 3m

SCALE: A1 1:40, A3 1:80

DESIGNER

FRAISH Consulting
Civil & Structural Engineers

1/8 Victoria Street, Holt ACT
PO Box 310, Holt ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

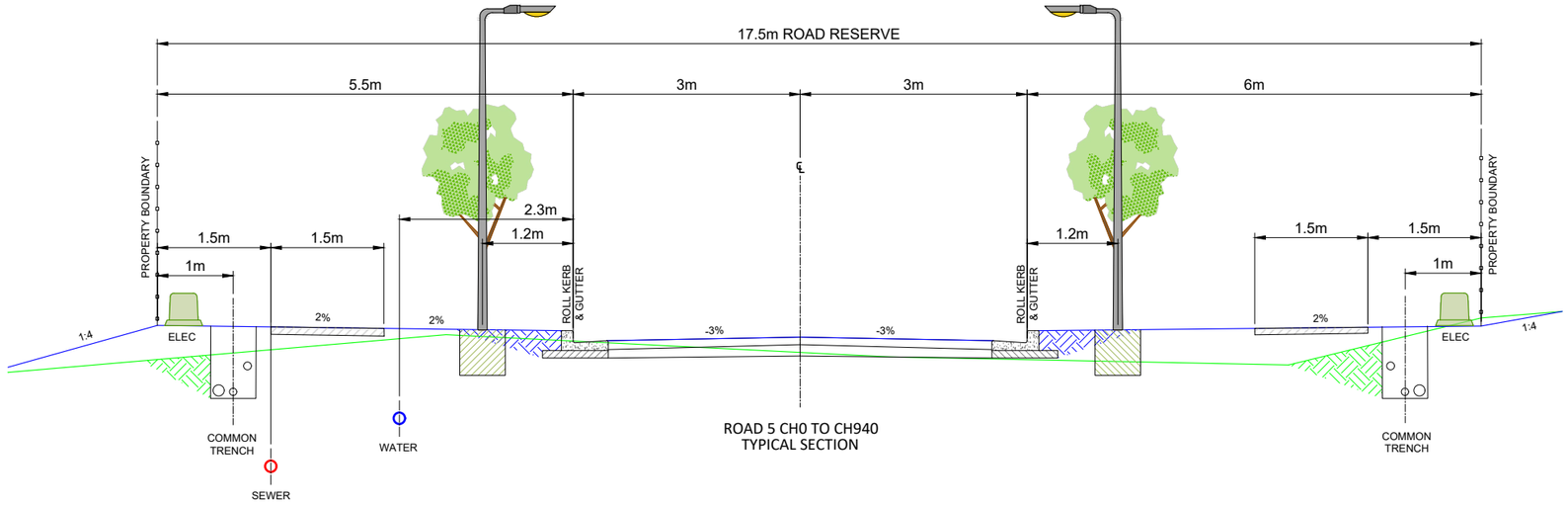
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

TYPICAL SECTIONS ROAD 4

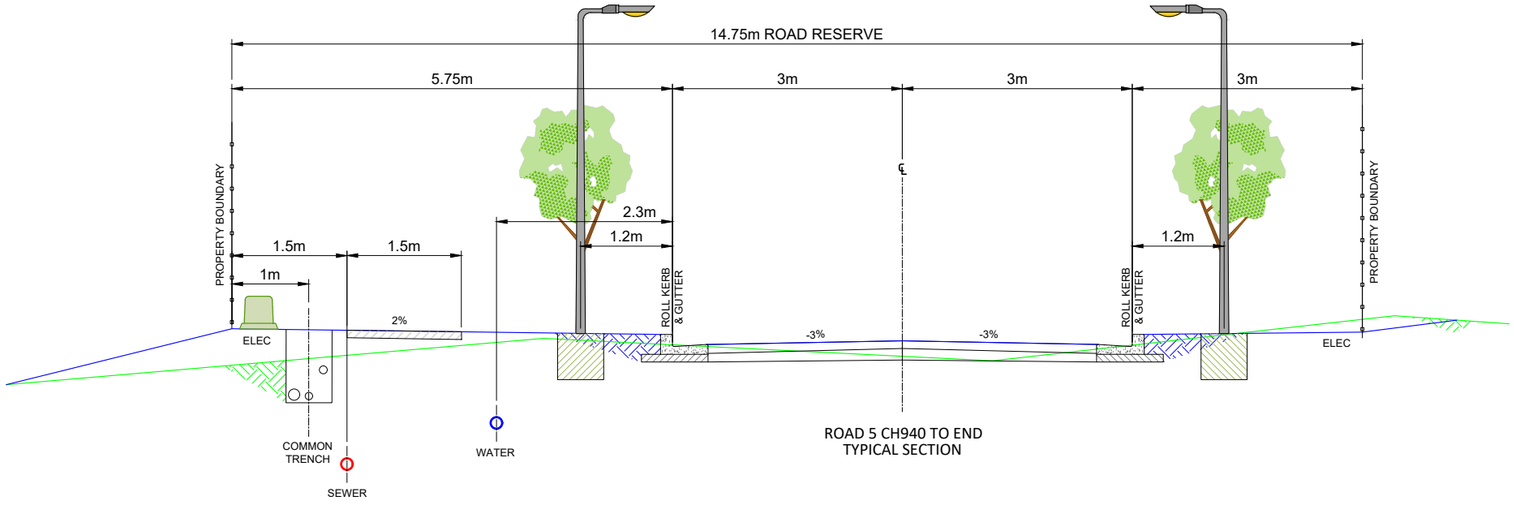
SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C108	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C105 TO C112 TYPICAL CROSS SECTIONS.dwg



ROAD 5 CH0 TO CH940
TYPICAL SECTION



ROAD 5 CH940 TO END
TYPICAL SECTION

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	15/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

0m 1m 2m 3m

SCALE: A1 1:40, A3 1:80

DESIGNER

FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

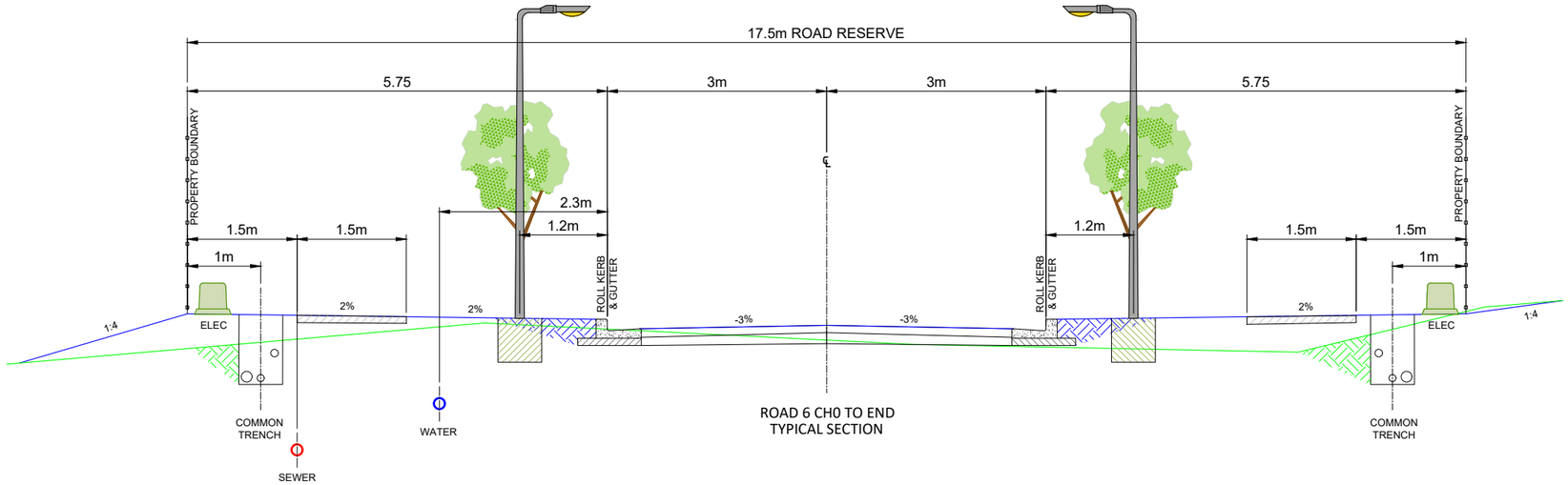
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

TYPICAL SECTIONS ROAD 5

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C109	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C105 TO C112 TYPICAL CROSS SECTIONS.dwg



ROAD 6 CH0 TO END
TYPICAL SECTION

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C105 TO C112 TYPICAL CROSS SECTIONS.dwg

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	15/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

0m 1m 2m 3m

SCALE: A1 1:40, A3 1:80

DESIGNER

FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

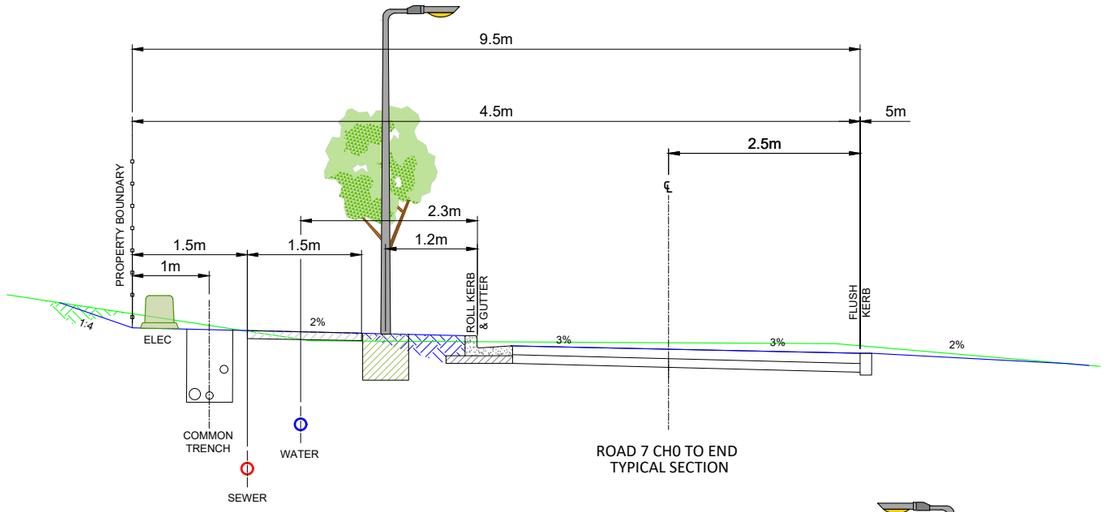
PROJECT TITLE

SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

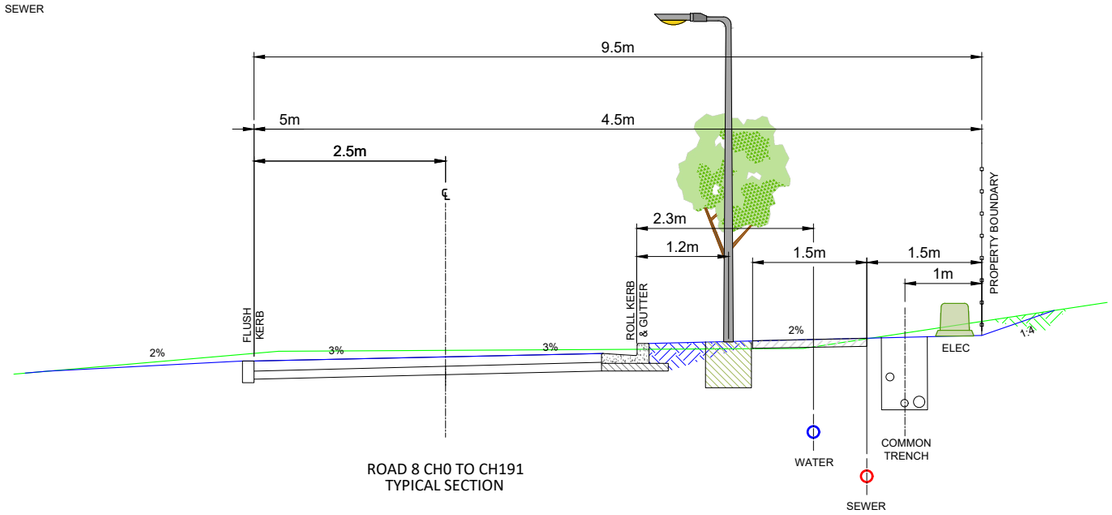
TYPICAL SECTIONS ROAD 6

SHEET 1

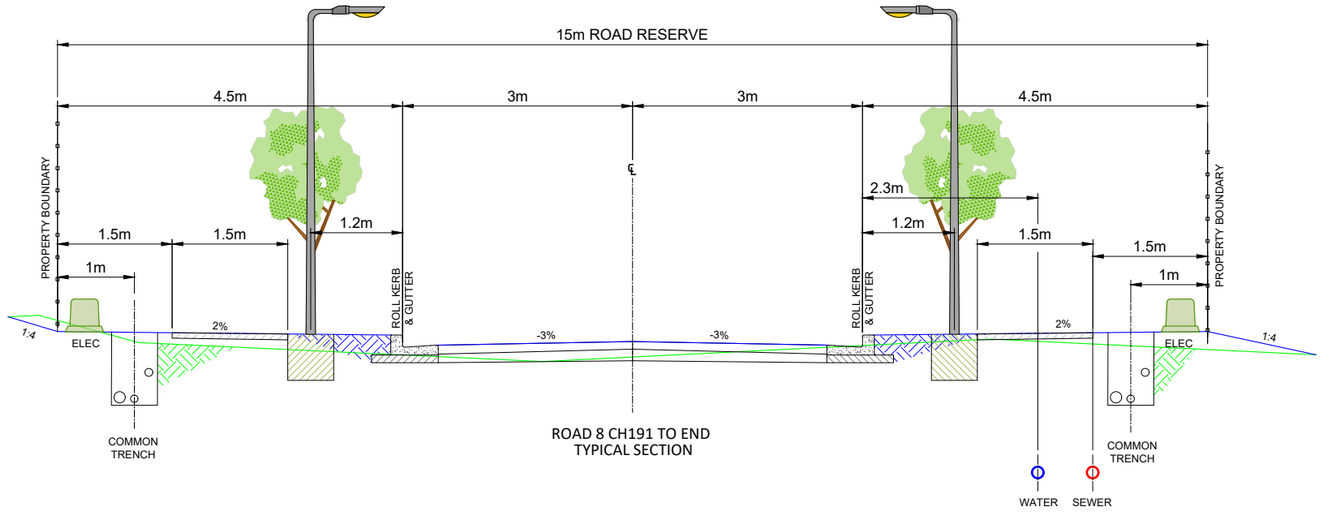
SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C110	A



ROAD 7 CH0 TO END
TYPICAL SECTION



ROAD 8 CH0 TO CH191
TYPICAL SECTION



ROAD 8 CH191 TO END
TYPICAL SECTION

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	15/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

0m 1m 2m 3m

SCALE: A1 1:40, A3 1:80

DESIGNER

FRAISH Consulting
Civil & Structural Engineers

1/8 Victoria Street, Holl ACT
PO Box 310, Holl ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

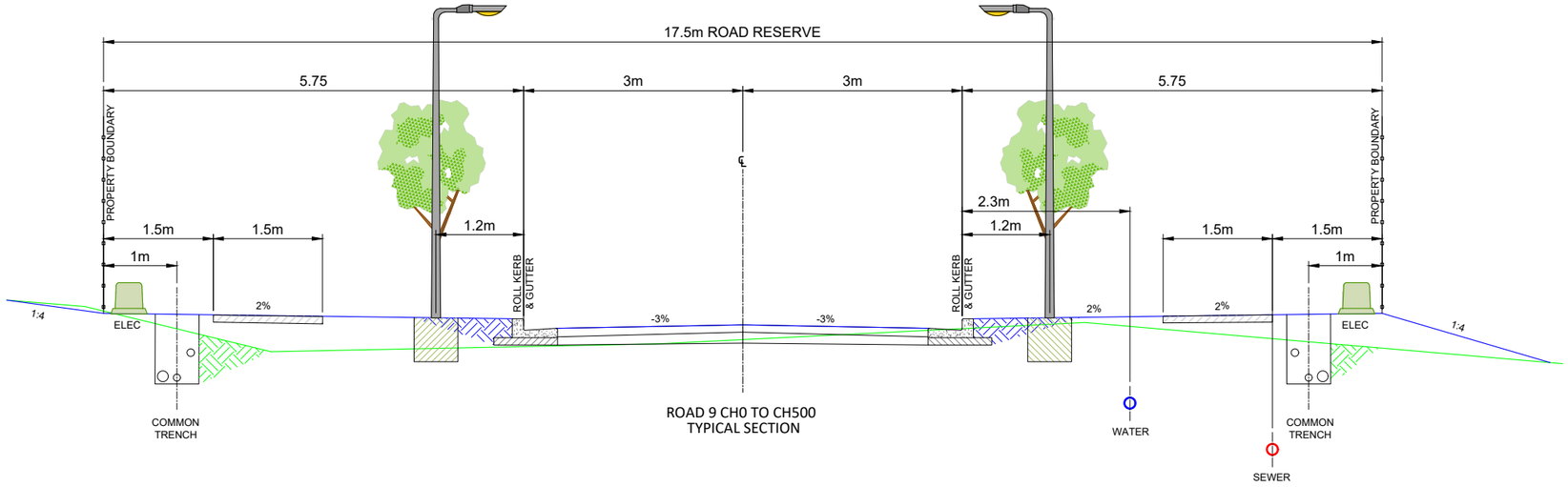
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

TYPICAL SECTIONS ROADS 7 & 8

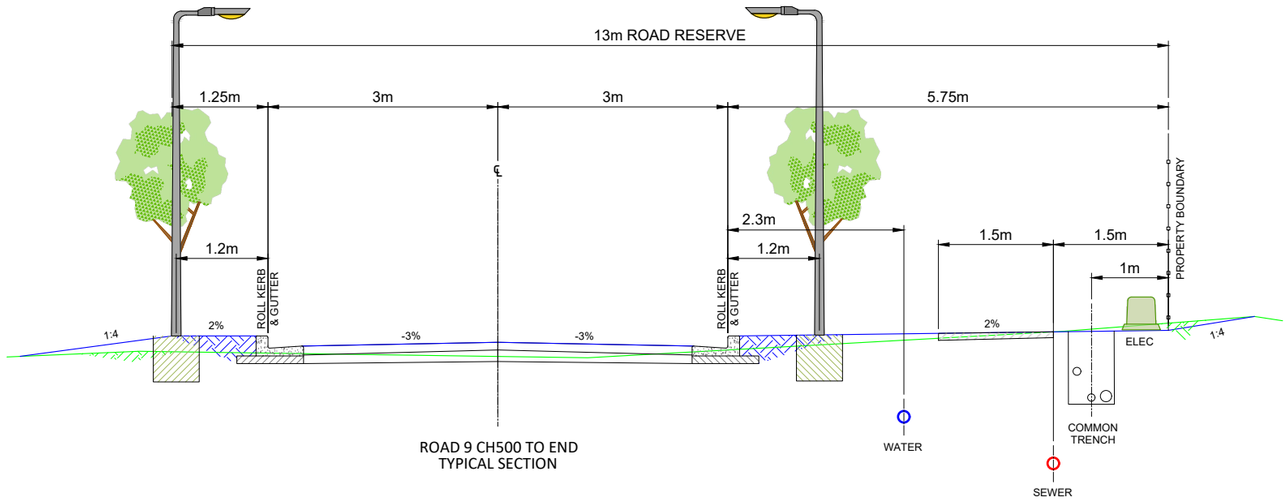
SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C111	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C105 TO C112 TYPICAL CROSS SECTIONS.dwg



ROAD 9 CH0 TO CH500
TYPICAL SECTION



ROAD 9 CH500 TO END
TYPICAL SECTION

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	15/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

SCALE

0m 1m 2m 3m

SCALE: A1 1:40, A3 1:80

DESIGNER
FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT
CAPPELLO DEVELOPMENTS NO.10

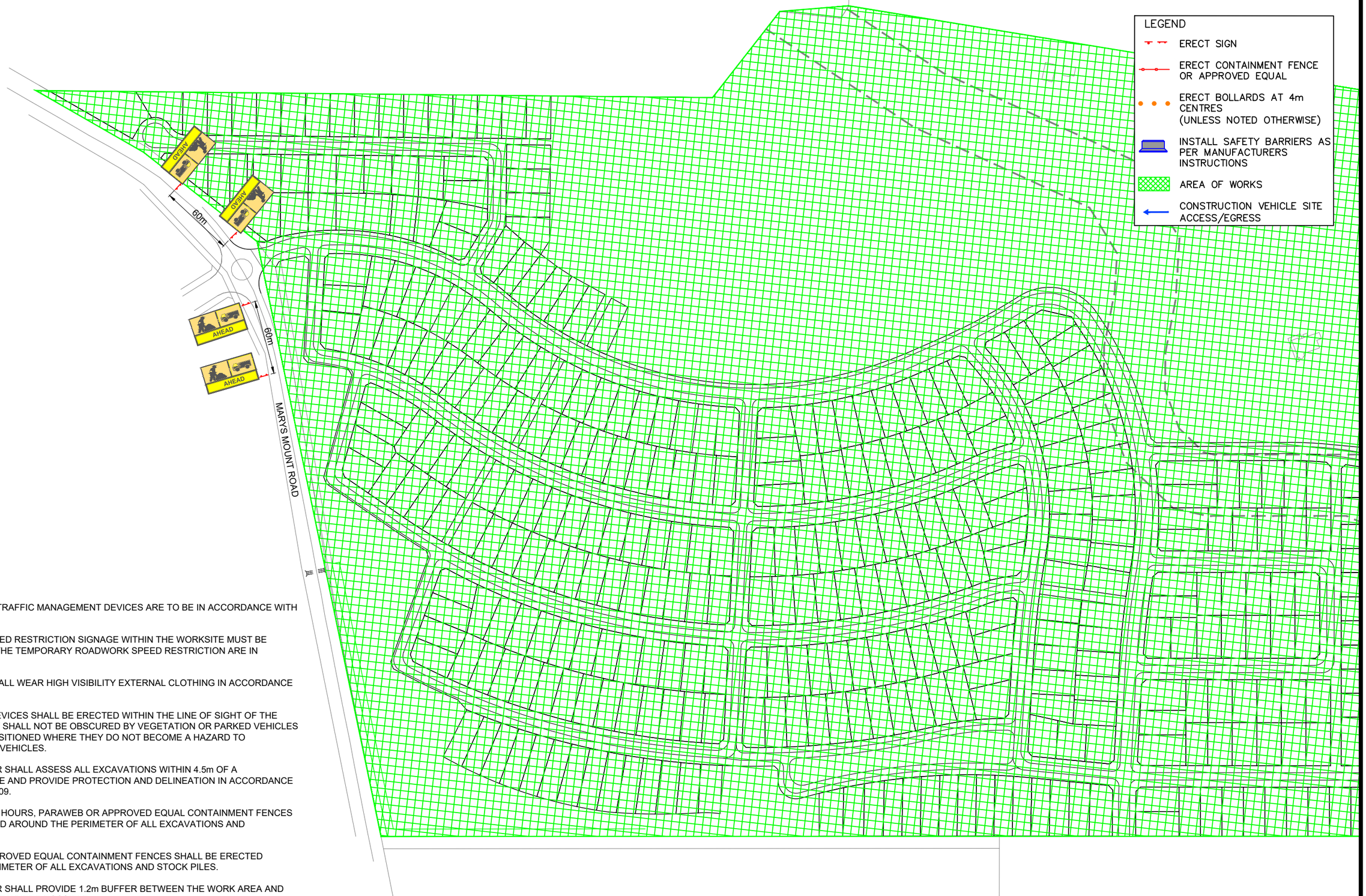
PROJECT TITLE
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

TYPICAL SECTIONS ROAD 9

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C112	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C105 TO C112 TYPICAL CROSS SECTIONS.dwg



NOTES:

1. ALL TEMPORARY TRAFFIC MANAGEMENT DEVICES ARE TO BE IN ACCORDANCE WITH AS 1742.3-2009.
2. ALL EXISTING SPEED RESTRICTION SIGNAGE WITHIN THE WORKSITE MUST BE COVERED WHEN THE TEMPORARY ROADWORK SPEED RESTRICTION ARE IN OPERATION.
3. ALL WORKERS SHALL WEAR HIGH VISIBILITY EXTERNAL CLOTHING IN ACCORDANCE WITH AS 1742.3.
4. ALL SIGNS AND DEVICES SHALL BE ERECTED WITHIN THE LINE OF SIGHT OF THE ROAD USER. THEY SHALL NOT BE OBSCURED BY VEGETATION OR PARKED VEHICLES AND SHALL BE POSITIONED WHERE THEY DO NOT BECOME A HAZARD TO PEDESTRIANS OR VEHICLES.
5. THE CONTRACTOR SHALL ASSESS ALL EXCAVATIONS WITHIN 4.5m OF A TRAFFICABLE LANE AND PROVIDE PROTECTION AND DELINEATION IN ACCORDANCE WITH AS 1742.3-2009.
6. OUT OF WORKING HOURS, PARAWEB OR APPROVED EQUAL CONTAINMENT FENCES SHALL BE ERECTED AROUND THE PERIMETER OF ALL EXCAVATIONS AND STOCKPILES.
7. PARAWEB OR APPROVED EQUAL CONTAINMENT FENCES SHALL BE ERECTED AROUND THE PERIMETER OF ALL EXCAVATIONS AND STOCK PILES.
8. THE CONTRACTOR SHALL PROVIDE 1.2m BUFFER BETWEEN THE WORK AREA AND TRAFFICABLE LANE WHERE POSSIBLE.
9. CONTAINMENT TAPE SHALL BE ERECTED TO SEPARATE THE WORKERS AND THE TRAFFICABLE LANE.

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	20/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

0m 30m 60m 90m 120m

1:1500 @ A1, 1:3000 @ A3

DESIGNER

FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Holt ACT
PO Box 310, Holt ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

TEMPORARY TRAFFIC MANAGEMENT PLAN

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C201	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C201 TEMPORARY TRAFFIC MANAGEMENT.dwg

Diversion Drain label Label	Clean Water or Dirty Water Divession Drain	Design ARI Storm Event (Years)	Time of Concentration (Mins)	Rainfall Intensity (mm/hr)	Contributing Area (Ha)	Runoff Coefficient (C10)	Design Flow (m3/s)	Bottom width (m)	Side slopes (1:?)	Longitudinal Gradient (%)	Lining Material	Mannings (n)	Flow Depth (m)	Velocity (m/s)
CD1	Clean Water	10	5	111	7	0.35	0.8	1.0	3	2.4	Geofabric	0.022	0.23	2.06
CD2	Clean Water	10	N/A	CD1 & Eastern Development			3.8	3.0	3	2.4	Geofabric	0.022	0.338	2.87
CD 3	Clean Water	10	5	111	11	0.35	1.2	1.0	3	2.5	Geofabric	0.022	0.28	2.34
CD 4	Clean Water	10	5	111	22.8	0.35	2.5	2.0	3	3.3	Geofabric	0.022	0.291	2.99
CD 5	Clean Water	10	5	111	1	0.35	0.1	1.0	3	1	Geofabric	0.022	0.1	0.84
CD 6	Clean Water	10	5	111	22.8	0.35	2.5	2.0	3	1	Geofabric	0.022	0.4	1.96
DD 1	Dirty Water	10	5	111	0.7	0.35	0.1	1.0	3	1	Geofabric	0.022	0.1	0.84
DD 2	Clean Water	10	5	111	6.3	0.35	0.7	1.0	3	1	Geofabric	0.022	0.268	1.45
DD 3	Clean Water	10	5	111	12.8	0.35	1.4	1.0	3	2.4	Geofabric	0.022	0.305	2.4
DD 4	Clean Water	10	5	111	26.5	0.35	2.9	2.0	3	2.4	Geofabric	0.022	0.343	2.79

LEGEND

- NO GO AREA
- SEDIMENT FENCE
- BARRIER FENCE
- SEDIMENT BASIN
- CLEAN WATER DIVERSION DRAIN
- DIRTY WATER DIVERSION DRAIN
- PROPOSED STORMWATER DRAINAGE LINE
- DIVERSION MOUND
- STOCKPILE
- FILLING WORKS REQUIRED
- STABILISED SITE ACCESS
- EXISTING SURFACE CONTOUR
- LEVEL SPREADER
- TREE TO BE REMOVED

DD-1
SITE COMPOUND
CD-5
CD-4
CD-3
CLEAN WATER BYPASS PIPES
DD-2
CD-6
WETLAND
SEDIMENT BASIN 1
CD-2
CD-1
DD-4
DD-3
FLOW FROM ADJACENT SITE

NOTE:
THIS DRAWING TO BE READ IN CONJUNCTION WITH THE SOIL AND WATER MANAGEMENT PLAN REPORT

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	20/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

0m 30m 60m 90m 120m

SCALE: A1 1:1500, A3 1:3000

DESIGNER

FRAISH Consulting
Civil & Structural Engineers

1/8 Victoria Street, Holt ACT
PO Box 310, Holt ACT 2615
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

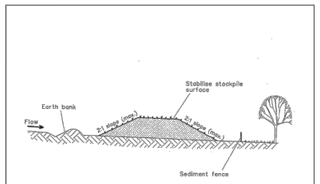
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

SEDIMENT & EROSION CONTROL PLAN

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C211	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - LAP10 - C211 TO C213 SEDIMENT & EROSION.dwg

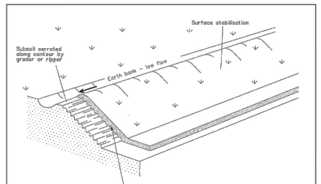


Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres 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 2 metres 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 2 metres downslope.

STOCKPILES **SD 4-1**

4-5

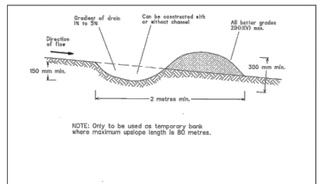


Construction Notes

1. Scarify the ground surface along the line of the contour to a depth of 50 mm to 100 mm to break up any hardsetting surfaces and to provide a good bond between the respread material and subsoil.
2. Add soil ameliorants as required by the ESCP or SWMP.
3. Rip to a depth of 300 mm if compacted layers occur.
4. Where possible, replace topsoil to a depth of 40 to 60 mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.

REPLACING TOPSOIL **SD 4-2**

4-6

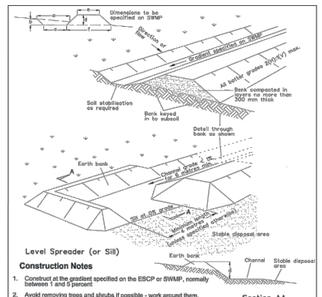


Construction Notes

1. Build with gradients between 1 percent 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.

EARTH BANK (LOW FLOW) **SD 5-5**

5-25

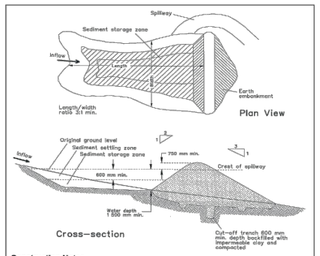


Construction Notes

1. Construct at the gradient specified on the ESCP or SWMP, normally 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, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
8. Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
9. Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

EARTH BANK (HIGH FLOWS) **SD 5-6**

5-26

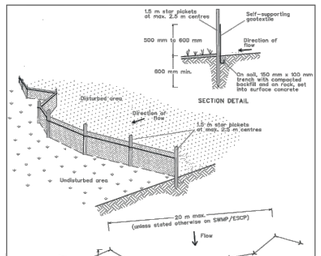


Construction Notes

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Construct a cut-off trench 500 mm deep and 1,200 mm wide along the centreline of the embankment extending to a point on the gully wall level with the riser crest.
3. Maintain the trench free of water and recompact the materials with equipment as specified in the SWMP to 95 per cent Standard Proctor Density.
4. Select fill following the SWMP that is free of roots, wood, rock, large stone or foreign material.
5. Prepare the site under the embankment by ripping to at least 100 mm to help bond compacted fill to the existing substrata.
6. Spread the fill in 100 mm to 150 mm layers and compact it at optimum moisture content following the SWMP.
7. Construct the emergency spillway.
8. Rehabilitate the structure following the SWMP.

EARTH BASIN - WET **SD 6-4**
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)

6-19

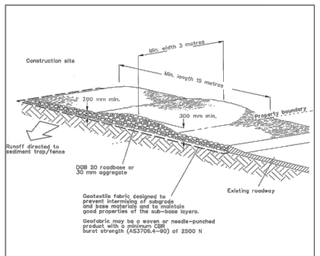


Construction Notes

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 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5-metre long star pickets into ground at 2.5 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 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE **SD 6-8**

6-36

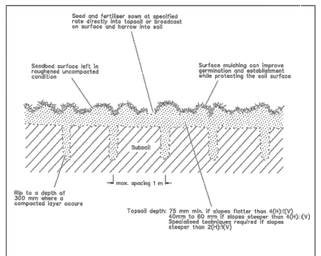


Construction Notes

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200-mm thick pad over the geotextile using road base or 30-mm 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**

6-48



Construction Notes

1. Loosen compacted soil before sowing any seed. If necessary, rip the soil to a depth of 300 mm. Avoid rotary hoe cultivation.
2. Work the ground only as much as necessary to achieve the desired tilth and prepare a good seedbed.
3. Avoid cultivation in very wet or very dry conditions.
4. Cultivate on or close to the contour where possible, not up and down the slope.

SEEDBED PREPARATION **SD 7-1**

7-7

Table A3 Soil Stabilisation Control Matrix (adapted from various sources, including Meyer and Ports (1976), Israelson et al. (1980), Goldman et al. (1986), URS Greiner Woodward Clyde (1999) and the North American Green website).

Class	Type	Suitable for Vegetation Type [1]	Design Life (months)	Use in Concentrated Flow [2]	Availability (days) [3]	Relative Cost Bracket [4]	Residual Impact [5]	C -factor [6] <33%, <6m	C -factor <33%, 6-15m	C -factor <33%, >15m	C -factor 33-50%, <6m	C -factor 33-50%, 6-15m	C -factor 33-50%, >15m
BIODEGRADABLE MULCHES [7]													
Straw (anchored)	4.5 tonnes per hectare	Grass	1 to 6	No	< 5days	Low	Moderate	0.17	0.17	0.20	0.20	0.20	0.20
Wood Chip	16 tonnes per hectare	Grass/Shrubs	1 to 6	No	< 5days	Low	Moderate	0.08	0.08	0.08		No data	
Wood Chip	27 tonnes per hectare	Shrubs	1 to 6	No	< 5days	Low	Moderate	0.05	0.05	0.05		No data	
Wood Chip	56 tonnes per hectare	Shrubs	1 to 6	No	< 5days	Low	Moderate	0.02	0.02	0.02	0.02	0.02	0.02
Hydromulching	1.5 tonnes mulch + 300 litres binder per hectare	Grass	1 to 3	No	< 5days	Low	Low	0.00	0.03	0.07	0.03	0.06	0.10
Bonded Fibre	5 tonnes fibre per hectare	Grass	1 to 6	No	< 5days	Low	Moderate	0.00	0.03	0.07	0.03	0.06	0.10
ROLLED EROSION CONTROL PRODUCTS (RECPs) [7]													
Biodegradable	Jute mesh	Grass	6 to 12	Yes	< 5days	Low	Moderate	0.10	0.20	0.40	0.20	0.40	0.60
	Coconut fibre mesh	Grass	6 to 12	Yes	< 5days	Low	Moderate	0.10	0.20	0.40	0.20	0.40	0.60
	Curled wood fibre	Grass	6 to 12	Yes	< 5days	Medium	Moderate	0.01	0.05	0.10	0.10	0.15	0.20
	Jute matting (~350 gsm)	Grass	6 to 12	Yes	< 5days	Medium	Moderate	0.00	0.03	0.07	0.03	0.06	0.10
	Jute matting (~600 gsm)	Shrubs	6 to 12	Yes	< 5days	Medium	Moderate	0.00	0.03	0.07	0.03	0.06	0.10
	Coconut fibre matting (~450 gsm)	Grass	6 to 12	Yes	< 5days	Medium	Moderate	0.00	0.03	0.07	0.03	0.06	0.10
	Coconut fibre matting (~900 gsm)	Shrubs	6 to 12	Yes	< 5days	Medium	Moderate	0.00	0.03	0.07	0.03	0.06	0.10
Photodegradable	Mesh (< 5 mm openings)	Grass	1 to 6	Yes	< 5days	Low	Moderate	0.01	0.05	0.10	0.10	0.15	0.20
Non Biodegradable	Plastic fibres with netting	Grass	> 12	Yes	< 5days	High	High	0.00	0.05	0.10	0.03	0.05	0.10
	Composite with biodegradable	Grass/Shrubs	> 12	Yes	< 5days	High	High	0.00	0.03	0.07	0.03	0.06	0.10
HYDRAULIC SOIL STABILISERS [7]													
	Polymers/Polyacrylamide (rate depends on type)	Grass	1 to 6	No	< 5days	Low	Low	0.01	0.05	0.10	0.10	No data	
	Bitumen emulsion (12,000 l/ha)	Grass	1 to 6	No	< 5days	Low	Low	0.01	0.05	0.10	0.10	No data	
TEMPORARY SEEDING													
	Annual	NA	6 to 12	No	< 5days	Low	Low	0.05	0.05	0.10	0.10	No data	
	Perennial	NA	> 12	No	< 5days	Low	Low to moderate	0.05	0.05	0.10	0.10	No data	
INSTANT TURF [7]													
	Kikuyu	Grass	> 12	Yes	< 5days	Medium	Low	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Reinforced turf (pregrown)	Grass	> 12	Yes	5 - 15 days	High	High	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Notes

1. Whether vegetation is required and its type if so, will affect the technique used. Biodegradable mulches, RECPs and hydraulic soil stabilisers can all be used on their own to provide short term protection. However, their effectiveness is less when used in isolation than when used with vegetative growth. Most techniques are used to help establish vegetative growth using sown grasses. Should the client specify shrubs (primarily planted as tubestocks), then thicker mulches, RECPs or biodegradable mulches should be used. Non biodegradable RECP's are used to reinforce grasses (turf) permanently. They are not suitable for use with individual shrubs. They can work synergistically with the established grass to increase its resistance to shear stress and, therefore, increase its resistance to erosion by concentrated flow.
2. Products might or might not be suitable for use in areas of concentrated flow. All products are suitable for sheet flow conditions, although some would be over designed in such cases.
3. Whether or not a product is readily available is critical to the selection process. Many RECP and hydraulic soil stabiliser techniques use products that might be "off the shelf" and available from several suppliers. Biodegradable mulches can be affected by seasonal variation, although they might also be available on site after initial clearing and grubbing. Temporary seeding might also be seasonal.
4. For any given technique, cost can vary greatly depending on geographic location, size of project and installation requirements. In addition, costs can vary over time. Because of these factors, giving accurate installed costs is not possible. However, if a product is relatively inexpensive to purchase and install close to its point of manufacture, it will still be relatively inexpensive to purchase and install remote from it.
5. This criterion relates to the impact that a particular practice might have on construction activities once they are resumed on an area that was temporarily stabilised.
6. The performance of an erosion control technique is quantified by assigning it with a C-factor (Appendix A). The C-factor will vary from close to zero for full cover, to 1.0 for no cover on highly disturbed soils. The C-factor strongly affects the soil loss calculation (RUSLE) and users need to be careful in specifying its value, particularly when values <0.01 are quoted. Note that the C-factor does not apply to concentrated flow.

   Values for the C-factor are given for various slopes gradients and lengths and show that it can change dramatically with them. The values given are compiled from existing data and from inference between products of a similar nature. They are given as a guide only and do not profess to be accurate in all respects. Overall, accurate C factors are only available for manufactured products, primarily from the USA (RECP's in particular) where extensive independent testing has been undertaken. Unfortunately, very little data is available for the "lower cost" options such as biodegradable mulches, jute mesh and hydraulic soil stabilisers. Wherever possible, the manufacturers should be contacted for their latest data on acceptable C-factors.

   For the RECP's in particular, the C-factors given here are for the product as installed with no vegetation. Note however that lower C-factors can be expected if vegetation is promoted with many RECP's. Indeed, non biodegradable RECP's are designed to work synergistically with turf and must be used with it.
7. For information on trade names and suppliers of those products, please phone the office of Australasian Chapter of the International Erosion Control Association on 1800 354 322 or (+61 2) 4677 0901.

A-13

Table D1 Erosion Control products for stabilising disturbed lands

Erosion control practice	Type	Effect on vegetation				Controlling erosion and pollution								Constraints
		enhances germination of grass seeds	controls weeds	enhances growth of tubestock	reinforces root-holding ability	protects soil surfaces	reduces runoff	filters or traps sediment	stops seepage	reinforces steep slopes	resists waves	stable in low (<2 m/sec) channel flows	stable in high (>2 m/sec) channel flows	stabilises pavements	
ORGANIC PRODUCTS (can be recycled)															Might need anchoring
Composted Coarse Mulch	16 tonnes per hectare	1	1	1	0	3	3	2	0	0	0	0	0	0	
Composted Coarse Mulch	27 tonnes per hectare	0	2	3	0	3	3	3	0	0	0	0	0	0	
Composted Coarse Mulch	56 tonnes per hectare	0	3	3	0	3	3	3	0	0	0	0	0	0	
Composted soil conditioner	100 L per m^2 (max)	3	1	3	2	1	1	0	0	0	0	0	0	0	Product needs incorporation into existing soil
Manufactured soils	100 L per m^2 (max)	3	1	3	2	1	1	0	0	0	0	0	0	0	
SPRAY ON PRODUCTS															
Hydromulching	1.5 tonnes mulch + 300 litres binder per hectare	3	0	0	0	3	1	1	0	0	0	0	0	0	
Bonded Fibre	5 tonnes fibre per hectare	3	1	1	0	3	2	1	0	0	0	0	0	0	
ROLLED EROSION CONTROL PRODUCTS (RECPs)															Ensure RECP's have intimate contact with subsoils (post preparation), are well anchored and have check slots in conditions of concentrated flow
Biodegradable **ECB's**	Jute mesh	2	1	0	1	2	1	0	0	0	0	1	1	0	
	Coconut fibre mesh	2	1	0	1	2	1	1	0	0	0	1	1	0	
	Curled wood fibre in plastic mesh	3	1	1	1	3	2	1	0	0	0	1	1	0	Nets might trap fauna
	Jute matting (~350 gsm)	2	1	1	1	3	2	1	0	0	0	2	1	0	Allows weed growth
	Jute matting (~600 gsm)	0	3	3	0	3	2	1	0	0	0	2	1	0	Not for grass growth
	Coconut fibre matting (~400 gsm)	3	1	1	1	3	2	1	0	0	0	2	1	0	Allows weed growth
	Coconut fibre matting (~900 gsm)	0	3	3	0	3	2	1	0	0	0	2	1	0	Not for grass growth
Photodegradable **ECB's**	Mesh (< 5 mm openings)	2	0	0	1	2	1	0	0	0	0	1	0	0	Little moisture retention
	Super light weight nonwoven (~30gsm)	2	0	0	1	2	1	0	0	0	0	1	1	0	Little moisture retention; wet (if included) can trap fauna
Non Biodegradable **TRM's**	Plastic fibres with netting	2	1	0	2	3	2	1	0	0	0	3	3	0	Ensure soil-filled
	Composite with biodegradable	2	1	0	3	3	2	1	0	0	0	3	3	0	Ensure soil-filled
HYDRAULIC SOIL STABILISERS															
	Polymers/Polyacrylamide (rate depends on type)	0	0	0	0	2	0	0	0	0	0	1	0	0	Needs water supply for application
	Bitumen emulsion (12,000 l/ha)	0	0	0	0	2	0	0	0	0	0	1	0	0	Environmental concerns
TEMPORARY SEEDING															
	Annual	0	1	0	0	3	2	2	0	0	0	1	0	0	Minimum 6 days to establish
	Perennial	0	2	0	0	3	2	2	0	0	0	1	0	0	Needs water supply
INSTANT TURF															
	Kikuyu	0	1	0	0	3	2	2	0	0	1	0	1	0	Needs water supply
	Reinforced turf (pregrown)	0	1	0	3	3	2	2	0	1	1	2	2	0	Needs water supply
OTHER PRODUCTS															
Straw (anchored)	4.5 tonnes per hectare	3	1	1	0	3	3	2	0	0	0	0	0	0	
Weed mat		0	3	1	0	3	0	0	0	0	0	0	0	0	Restricts air and moisture
Geotextile		0	1	1	1	3	0	2	0	2	0	2	1	3	Sea-general note for RECP's above if used in channels
Sediment fences		0	0	0	0	0	1	2	0	0	0	0	0	0	
Earth-filled geotextile tubes		0	0	0	0	0	0	3	0	0	0	0	0	0	Low profile
Floating sediment barriers		0	0	0	0	0	0	3	0	0	0	1	0	0	
Grad injected mats		0	1	0	0	3	0	0	0	0	0	2	3	3	Rigid structure
Gabion Mattresses		0	0	0	0	3	0	0	0	0	0	3	3	1	
Articulated concrete mats		0	0	0	0	3	0	0	0	0	0	3	3	2	0
Reinforced armouring systems		0	0	0	0	3	0	0	0	0	0	3	3	2	0
Cellular soil confinement		2	0	0	0	3	1	0	0	2	0	2	1	2	Anchor on steep slopes
Wind barrier fencing		0	0	0	0	0	0	1	0	0	0	0	0	0	
Flexible waterproof membranes		0	0	0	0	0	0	0	1	0	0	0	0	0	
Vertical soil moisture barriers		0	0	0	0	0	0	0	3	0	0	0	0	0	
Geosynthetic clay liners		0	0	0	0	0	0	0	3	0	0	0	0	0	
Prefabricated subsurface drainage		1	0	1	0	1	1	0	3	2	0	0	0	2	
Pipe inlet sediment barriers		0	0	0	0	0	0	3	0	0	0	0	0	0	Clean regularly
Wattles and logs		0	0	0	0	2	1	2	0	0	0	1	0	0	Needs pinning

Key To Rating System
0 – not designed for, and has no expected performance in this application
1 – not specifically designed for, but can enhance performance of other measures in this application
2 – generally designed for this application in conjunction with other applications, but performance is less able to deal with the range of conditions met by specific purpose materials
3 – specifically designed to meet a full range of requirements for this application

For information on trade names and suppliers of these products, please phone the office of Australasian Chapter of the International Erosion Control Association on 1800 354 322 or (+61 2) 4677 0901.

D-9

NOTE:
THIS DRAWING TO BE READ IN
CONJUNCTION WITH THE SOIL AND
WATER MANAGEMENT PLAN REPORT

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	14/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

SCALE: NOT TO SCALE

DESIGNER
FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 565 774
info@fraish.com.au • www.fraish.com.au

CLIENT: CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE: SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

SEDIMENT & EROSION CONTROL NOTES

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C212	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C211 TO C213 SEDIMENT & EROSION.dwg

GENERAL NOTES

1. ALL WORK MUST COMPLY WITH ENVIRONMENT PROTECTION GUIDELINES FOR CONSTRUCTION AND LAND DEVELOPMENT IN NSW.
2. ALL EROSION & SEDIMENTATION CONTROLS TO BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BEST PARACTICE GUIDELINES CONTAINED WITHIN SOILS AND CONSTRUCTION VOL .1 (LANDCOM 2004) (BLUE BOOK).
3. THE KEY PRINCIPLES OF THIS PLAN ARE TO :-
   - INTEGRATE EROSION AND SEDIMENT CONTROL ISSUES INTO SITE AND CONSTRUCTION PLANNING
   - MINIMISE THE EXTENT AND DURATION OF SOIL DISTURBANCE
   - CONTROL WATER MOVEMENT AROUND AND THROUGH THE SITE
   - MINIMISE SOIL EROSION
   - PROMPTLY STABILISE DISTURBED AREAS
   - MAXIMISE SEDIMENT RETENTION ON SITE
   - MAINTAIN ALL ESC MEASURES IN PROPER WORKING ORDER AT ALL TIMES
4. ALL NEW CONSTRUCTION WORK MUST BE CONTAINED WITHIN THE SITE EXCEPT FOR APPROVED SERVICE CONNECTIONS AND ROADWORKS.
5. LIMIT ACCESS TO SITE DURING AND IMMEDIATELY AFTER WET WEATHER
6. NO STORAGE OF CONSTRUCTION MATERIALS, PARKING OF VEHICLES NOR EQUIPMENT PERMITTED OUTSIDE OF BLOCK WITHOUT COUNCIL APPROVAL.
7. NO SITE SHEDS, STORAGE SHEDS, SITE AMENITIES TO BE ERECTED OUTSIDE OF BLOCK WITHOUT COUNCIL APPROVAL.
8. ALL SERVICE TRENCHES TO BE BACK FILLED WITHIN 24HOURS OF INSPECTION
9. EXCESS SOIL IS TO BE DISPOSE AT A SUPERINTENDENT APPROVED LOCATION.
10. THE CONTRACTOR TO CONTACT THE SUPERINTENDENT TO ARRANGE A SITE INSPECTION AND ENDORSEMENT OF SEDIMENT AND EROSION CONTROL MEASURES PRIOR TO WORKS COMMENCING.
11. THE CONTRACTOR TO CONTACT THE SUPERINTENDENT TO DISCUSS ANY PROPOSED MAJOR CHANGES TO SEDIMENT AND EROSION CONTROLS ON SITE PRIOR TO IMPLEMENTING THE CHANGES.
12. THE CONTRACTOR TO ENSURE CONTRACTORS ACCESS AND EXIT THE SITE USING ONLY APPROVED STABILISED ACCESS/EXIT POINTS AS DETAILED ON ENDORSED SEDIMENT AND EROSION CONTROL PLANS.
13. WHERE UNDERGROUND STORMWATER DRAINAGE IS INSTALLED TO ADJACENT ROADWORKS, PROVIDE INLET FILTER IN ACCORDANCE WITH DETAIL ON EROSION & SEDIMENT CONTROL DETAILS DRAWING.

STABILISED SITE ENTRANCE

1. STABILISED SITE ENTRANCE TO BE CONSTRUCTED AT THE LOCATION(S) INDICATED ON THE PLANS.
2. STABILISED SITE ENTRANCE TO BE CONSTRUCTED IN ACCORDANCE WITH DETAIL ON EROSION & SEDIMENT CONTROL DETAILS DRAWING.
3. AT THE LOCATION OF THE STABILISED SITE ENTRANCE FIRST STRIP THE TOPSOIL, LEVEL THE AREA AND COMPACT THE SUBGRADE.
4. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
5. CONSTRUCT A 200MM THICK PAD OVER THE GEOTEXTILE USING COARSE AGGREGATE MIN SIZE 30MM.
6. ENSURE THAT THE STABILISED SITE ENTRANCE IS AT LEAST 15M LONG OR TO THE BUILDING ALIGNMENT AND AT LEAST 3M WIDE.
7. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.
8. REGULARILY MAINTAIN THE STABILISED SITE ENTRANCE BY REPLACING AGGREGATE IF INNUNDATED WITH SILT.

STABILISATION

1. UNDERTAKE PROGRESSIVE STABILISATION OF DISTURBED GROUND SURFACES AS THEY ARE COMPLETED RATHER THAN AT THE END OF THE WORKS PROGRAM (REFER TO TABLE 1)
2. ENSURE THAT DISTURBED LANDS FOR EACH STAGE ARE STABILISED APPROPRIATELY BEFORE COMMENCING WORK ON THE FOLLOWING STAGE
3. FINAL STABILISATION IS TO ACHIEVE THE C-FACTORS OUTLINED IN TABLE 1
4. BATTERS SHOULD BE STABILISED TO BRING C-FACTORS DOWN TO 0.1 WITHIN 10 WORKING DAYS OF FINAL FORMATION
5. STABILISATION OF BATTERS CAN BE ACHIEVED BY PLACING TOPSOIL OVER THEM WITH LOCALLY SOURCED NATIVE MULCH PLACED OVER THE SOIL, OR ALTERNATIVELY, THEY CAN BE HYDROMULCHED (OR EQUIVALENT)
6. APPROPRIATE SEEDBED PREPARATION SHOULD BE CARRIED OUT WHEN STABILISING LANDS
7. DIVERSION DRAINS AND TABLE DRAINS ARE TO BE STABILISED AS INDICATED IN TABLES 1 & 3
8. STOCKPILES ARE TO BE STABILISED AS PER THE REQUIREMENTS OF TABLE 1
9. SEDIMENT DAM AND CULVERT OUTLETS ARE TO BE STABILISED IN ACCORDANCE WITH TABLE 1 AND ENERGY DISSIPATERS ARE TO BE PROVIDED
10. STABILISATION MEASURES AND PRODUCTS SHOULD BE IN ACCORDANCE WITH TABLES A1 AND A3
11. AS SURFACES ARE STABILISED AND PERMANENT DRAINAGE MEASURES ARE INSTALLED, TEMPORARY WATER MANAGEMENT STRUCTURES CAN BE REMOVED (EG. DIVERSION DRAINS)

SEDIMENT BASIN

1. SEDIMENT BASIN SIZE AND DETAILS ARE SHOWN ON RELEVANT DRAWINGS
2. THE SEDIMENT BASIN IS TO BE BUILT TO INCORPORATE A PRIMARY OUTLET (WEIR OVERFLOW) SIZED TO HAVE A CAPACITY TO PASS THE 100 YEAR PEAK FLOW. THIS MUST BE MINIMUM 3m IN BASE WIDTH BY 0.3m IN DEPTH WITH SIDE SLOPES 1:3
3. ENERGY DISSIPATERS ARE TO BE CONSTRUCTED ON THE OUTLETS OF THE WEIR OVERFLOWS. CONSTRUCT OUT OF ROCK RIP-RAP
4. SECURITY FENCING AND WATER SAFETY CONTROL MEASURES MUST BE IMPLEMENTED AROUND ALL SEDIMENT BASINS
5. ANY RELEASE OF WATER FROM THE SEDIMENT BASIN UP TO THE DESIGN RAINFALL DEPTH (18mm IN 5 DAYS) WILL REQUIRE FLOCCULATION TO ACHIEVE ADEQUATE SETTLING OF DISPERSIBLE FINE MATERIAL (REFER TO FLOCCULATION NOTES FOR MORE DETAILS) HOWEVER IF THE WATER IS GOING TO BE USED WITHIN THE CONSTRUCTION SITE FOR DUST-SUPPRESSION PURPOSES AND WILL DRAIN BACK INTO THE SEDIMENT CAPTURE SYSTEM IT WILL NOT REQUIRE FLOCCULATION
6. IF WATER IS PUMPED INTO A TANKER TRUCK TO USE FOR DUST SUPPRESSION AT A LATER STAGE, IT CANNOT BE DISCHARGED FROM THE TANKER INTO A CREEK/DAM WITHOUT FIRST BEING FLOCCULATED
7. SEDIMENT BASIN MUST BE EFFECTIVELY FLOCCULATED, SETTLED AND DISCHARGED WITHIN 5 DAYS OR LESS FOLLOWING A RAINFALL EVENT
8. SEDIMENT BASIN SHOULD INCORPORATE A "FULL OF SEDIMENT" MARKER TO SHOW WHEN THE SEDIMENT STORAGE CAPACITY HAS BEEN REACHED AND SEDIMENT REMOVAL IS REQUIRED (REFER TO TABLE 4)

FLOCCULATION OF SEDIMENT BASIN

1. FLOCCULATION IS TO BE ACHIEVED BY USING GYPSUM AT A RATE OF APPROXIMATELY 40kg/100m³ OF STORMWATER TO ACHIEVE 50mg/l OR LESS OF SUSPENDED SEDIMENT. OTHER FLOCCULANTS ARE PERMISSIBLE.
2. IT IS ESSENTIAL THAT THE FLOCCULATING AGENT IS SPREAD EVENLY OVER THE ENTIRE POND SURFACE FOR PROPER TREATMENT OF WATER
3. FLOCCULATION MUST OCCUR WHENEVER THE AREA OF A STAGE IS LESS THAN 70% STABILISED
4. ONCE FLOCCULATED THE TREATED WATER WILL BE RELEASED TO THE WETLAND

SLOPE LENGTHS

1. ENSURE SLOPE LENGTHS ARE MAINTAINED AT 80m ACROSS ALL DISTURBED LANDS DURING ANY RAINFALL EVENT
2. DIVERSION BUNDS/DRAINS, LOW FLOW EARTH BANKS OR SANDBAGS/EQUIVALENT SHOULD BE INSTALLED PRIOR TO ANY RAINFALL EVENT TO ACHIEVE THIS

NOTE:
THIS DRAWING TO BE READ IN
CONJUNCTION WITH THE SOIL AND
WATER MANAGEMENT PLAN REPORT

TOPSOIL STOCKPILES

1. TOPSOIL STOCKPILES TO BE CONSTRUCTED AT THE LOCATION(S) INDICATED ON THE PLANS.
2. TOPSOIL STOCKPILES TO BE CONSTRUCTED IN ACCORDANCE WITH DETAIL ON EROSION & SEDIMENT CONTROL DETAILS DRAWING.
3. PLACE STOCKPILES MORE THAN 2M (PREFERABLY 5M) FROM EXISTING VEGETATION, CONCENTRATED WATERFLOWS, ROADS AND HAZARD AREAS.
4. STOCKPILES ARE NOT TO BE POSITIONED WITHIN A RIPARIAN ZONE (IE. WITHIN 40m OF THE DRAINAGE RESERVE/CREEK).
5. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
6. BATTERS SHOULD BE NO STEEPER THAN 1:2.
7. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2M IN HEIGHT.
8. WHERE TOPSOIL STOCKPILES ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE THEIR SURFACE AREA USING AN APPROVED METHOD. THIS SHOULD REDUCE THE C-FACTOR TO LESS THAN 0.10.
9. CONSTRUCT EARTHBANKS ON THE UPSLOPE SIDE OF TOPSOIL STOCKPILES TO DIVERT WATER AROUND.
10. CONSTRUCT SEDIMENT FENCES AROUND THE DOWNSLOPE SIDE OF TOPSOIL STOCKPILES. PREFERRABLY 1 TO 2M FROM THE EDGE OF THE STOCKPILE.
11. REGULARILY INSPECT AND MAINTAIN TOPSOIL STOCKPILE EROSION AFTER RAINFALL EVENTS.

EARTHWORKS, DISPOSAL OF SPOIL & IMPORTING FILL

1. PRIOR TO ANY WORKS COMMENCING INVOLVING EXPORT OF SPOIL GREATER THAN 100M³, THE FOLLOWING INFORMATION MUST BE PROVIDED TO THE SUPERINTENDENT:

a. WHERE THE SPOIL WILL ORIGINATE FROM,
b. WHO IS DISPOSING OF THE SPOIL
c. WHERE THE SPOIL WILL BE TAKEN
d. THE AMOUNT OF SPOIL TO BE TAKEN AWAY
e. MOVEMENT DATES AND CONTACT DETAILS
f. DESCRIPTION OF THE TYPE OF SPOIL TAKEN AWAY
g. DETAILS OF HOW RECORDS WILL BE KEPT

2. TIME FRAME TO COMPLETE THE WORKS
3. SPOIL MAY BE TAKEN TO AN APPROVED LANDFILL SITE WITHOUT APPROVAL.
4. IF THE SPOIL IS TO BE TAKEN TO AN AREA OTHER THAN APPROVED LANDFILL SITE, ENSURE THE ACCEPTOR OF THE SPOIL IS AWARE OF ANY COUNCIL REQUIREMENTS SUCH AS A DA
5. THE CONTRACTOR IS NOT TO ACCEPT IMPORTED MATERIAL WITHOUT RECEIVING DOCUMENTED EVIDENCE THAT THE MATERIAL COMPLIES WITH SPECIFICATION REQUIREMENTS.
6. WASTE ENCLOSURE(S) ARE TO BE USED FOR ALL RUBBISH ON SITE AND RUBBISH REMOVED FROM ENCLOSURE(S) WHEN REQUIRED OR FULL.

DUST MANAGEMENT

WHERE BUILDING WORK GENERATES DUST, ALL REASONABLE AND PRACTICABLE MEASURES SHOULD BE TAKEN TO MINIMISE THAT DUST.
THIS CAN OFTEN BE ACHIEVED BY :-

1. RETAIN EXISTING VEGETATION WHERE POSSIBLE
2. STRIPPING ARES PROGRESSIVELY AND ONLY WHERE IT IS NECESSARY FOR WORKS TO OCCUR;
3. EMPLOYING STABILISING METHODS SUCH AS MATTING, GRASSING OR MULCH;
4. DAMPENING THE GROUND WITH A LIGHT WATER SPRAY (CONTACT THE ENVIRONMENT PROTECTION AUTHORITY FOR REQUIREMENTS DURING EXTREME DROUGHT CONDITIONS);
5. ROUGHENING SURFACE OF EXPOSED SOIL;
6. COVERING STOCKPILES AND LOCATING THEM WHERE THEY ARE PROTECTED FROM THE WIND;
7. RESTRICTING VEHICLE MOVEMENTS;
8. COVERING THE LOAD WHEN TRANSPORTING MATERIAL;
9. CONSTRUCTING WIND BREAKS SUCH AS WIND FENCES IN ACCORDANCE WITH THE BLUE BOOK;
10. A WATER CART OR SUFFICIENT WATER SPRAYS SHALL BE MADE AVAILABLE AT ALL TIMES. IN ADVERSE CONDITIONS WHEN DUST CANNOT BE ADEQUATELY CONTROLLED WHEN WORKS ARE BEING UNDERTAKEN, WORKS WILL CEASE IN THESE AREAS UNTIL CONDITIONS IMPROVE;
11. WATER SHALL BE APPLIED TO SUPPRESS DUST FROM OPEN EARTHWORKS AS WELL AS UNPROTECTED STOCKPILES;
12. AREAS OF COMPLETED EARTHWORKS SHALL BE PROGRESSIVELY REHABILITATED WITH DRY LAND GRASS AND FENCED OFF AS SOON AS PRACTICABLE TO PREVENT FURTHER EROSION;
13. THE CONTRACTOR SHALL CONTACT COUNCIL TO OBTAIN WATER FOR CONSTRUCTION WORKS

SEDIMENT FENCING

1. SEDIMENT FENCING TO BE CONSTRUCTED AT THE LOCATION(S) INDICATED ON THE PLANS.
2. SEDIMENT FENCING TO BE CONSTRUCTED IN ACCORDANCE WITH DETAIL ON EROSION & SEDIMENT CONTROL DETAILS DRAWING.
3. 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 BETWEEN RETURNS 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.
4. CUT A 150MM DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
5. DRIVE 1.5M LONG STAR PICKETS INTO GROUND AT 2.5M INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
6. FIX SELF SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX 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 ACCEPTABLE.
7. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150MM OVERLAP.
8. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOUROUGHLY OVER THE GEOTEXTILE.
9. REGULARILY MAINTAIN THE SILT FENCING BY REMOVING SILT AFTER RAINFALL EVENTS.

MAINTENANCE & INSPECTION

DAILY

1. SWEEP AND REMOVE DIRT AND ANY OTHER BUILDING MATERIAL FROM GUTTERS, FOOTPATHS OR ROADWAYS ADJACENT TO THE SITE BY CLOSE OF BUSINESS AND OR PRIOR TO RAIN AND WHEN REQUIRED.
2. ALL NECESSARY STEPS SHOULD BE TAKEN THAT ARE PRACTICAL AND REASONABLE TO MINIMISE DUST POLLUTION.

WEEKLY

1. INSPECT STABILISED CONSTRUCTION ENTRY AND TURN OVER STABILISED CONSTRUCTION ENTRY MATERIAL MONTHLY AND RENEW WHEN REQUIRED.
2. CHECK AND REINSTATE SILT CONTROL FENCES.

DURING/AFTER WET WEATHER:

3. LIMIT CONSTRUCTION VEHICLE ACCESS TO SITE DURING AND IMMEDIATELY FOLLOWING WET WEATHER.

GENERAL NOTES

1. WASTE ENCLOSURE(S) ARE TO BE USED FOR ALL RUBBISH ON SITE AND RUBBISH REMOVED FROM ENCLOSURE(S) WHEN REQUIRED OR FULL.

ALL WORK MUST COMPLY WITH NSW BLUE BOOK

NOISE

ENSURE ALL BUILDING WORK THAT GENERATES NOISE IS CONDUCTED WITHIN THE TIME PERIODS DETAILED IN THE CONTRACT
IN ADDITION:

1. SCHEDULE NOISY ACTIVITIES FOR THE LEAST SENSITIVE TIMES OF THE DAY SUCH AS MID-MORNING AND MID-AFTERNOON.
2. SELECT MACHINERY THAT PRODUCE LESS NOISE; AND
3. ENSURE MACHINERY IS WELL MAINTAINED.

FIRE

1. BURNING OF WASTE MATERIALS ON THE SITE, SUCH AS PLASTICS, CHEMICALS OR WOOD THAT MAY BE PAINTED, CHEMICALLY TREATED OR CONTAMINATED WITH CHEMICALS IS ILLEGAL.
2. A FIRE MAY BE PERMITTED FOR HEATING PURPOSES PROVIDED IT IS IN A BRAZIER OR CONSTRUCTED FIREPLACE. ONLY SEASONED, UNTREATED TIMBER CAN BE BURNED FOR HEATING PURPOSES.

TABLE 1 - MAXIMUM ACCEPTABLE C-FACTORS AT NOMINATED TIMES

LANDS	MAX. C-FACTOR	REMARKS
WATERWAYS AND OTHER AREAS SUBJECTED TO CONCENTRATED FLOWS (EG. TABLE DRAINS), POST CONSTRUCTION AND DURING OPERATION	0.05	APPLIES AFTER TEN WORKING DAYS FROM THE COMPLETION OF FORMATION AND BEFORE THEY ARE ALLOWED TO CARRY ANY CONCENTRATED FLOWS. FLOWS WILL BE LIMITED TO THOSE SHOWN IN TABLE 5.2 OF LANDCOM (2004). FOOT AND VEHICULAR TRAFFIC WILL BE PROHIBITED IN THESE AREAS
STOCKPILES AND BATTERS, POST CONSTRUCTION AND DURING OPERATION	0.10	APPLIES AFTER TEN WORKING DAYS FROM COMPLETION OF FORMATION. MAXIMUM C-FACTOR OF 0.10 EQUALS 60% GROUND COVER
ALL LANDS, INCLUDING WATERWAYS AND STOCKPILES DURING CONSTRUCTION AND OPERATION	0.15	APPLIES AFTER 20 WORKING DAYS OF INACTIVITY, EVEN THOUGH WORKS MIGHT CONTINUE LATER. MAXIMUM C-FACTOR of 0.15 EQUALS 50% GROUND COVER
ALL LANDS POST CONSTRUCTION	0.05	APPLIES AFTER 60 WORKING DAYS OF COMPLETION OF WORKS. MAXIMUM C-FACTOR OF 0.05 EQUALS 70% GROUND COVER

TABLE 2 - LIMITATIONS TO ACCESS DURING CONSTRUCTION

LAND USE	LIMITATION	REMARKS
CONSTRUCTION AREAS	LIMITED TO 5 (PREFERABLY 2) METERS FROM THE EDGE OF ANY ESSENTIAL CONSTRUCTION ACTIVITY AS SHOWN ON THE ENGINEERING PLANS	ALL SITE WORKERS SHOULD CLEARLY RECOGNISE THESE AREAS THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT (DOWNSLOPE) OR SIMILAR MATERIALS
ACCESS AREAS	LIMITED TO MAXIMUM WIDTH OF 5 METERS	THE SITE MANAGER WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON SITE. THEY CAN VARY IN POSITION SO AS TO BEST CONSERVE EXISTING VEGETATION AND PROTECT DOWNSTREAM AREAS WHILE BEING CONSIDERATE OF THE NEEDS OF EFFICIENT WORKS ACTIVITIES. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE BOUNDARIES
REMAINING LANDS, INCLUDING RE-VEGETATION AREAS	ENTRY PROHIBITED EXCEPT FOR ESSENTIAL MANAGEMENT WORKS	THINNING OF GROWTH MIGHT BE NECESSARY, FOR EXAMPLE, FOR FIRE REDUCTION OR WEED REMOVAL

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	14/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

DESIGNER

FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO
DEVELOPMENTS
NO.10

PROJECT TITLE

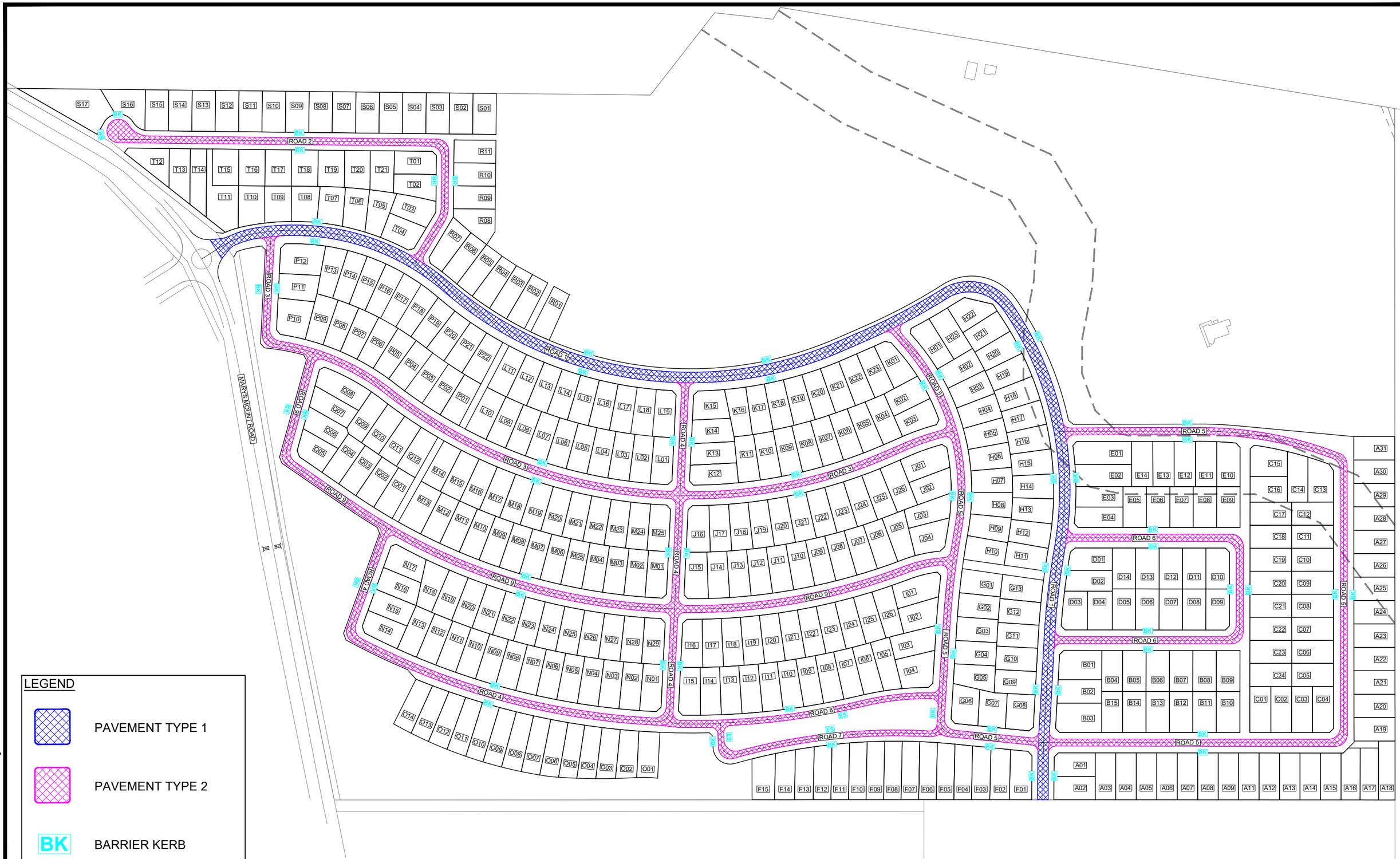
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

SEDIMENT & EROSION CONTROL NOTES

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C213	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C211 TO C219 SEDIMENT & EROSION.dwg



LEGEND

- PAVEMENT TYPE 1
- PAVEMENT TYPE 2
- BK — BARRIER KERB
- ES — EDGE STRIP

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	20/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

0m 30m 60m 90m 120m

1:1500 @ A1, 1:3000 @ A3

DESIGNER

FRAISH Consulting
Civil & Structural Engineers

1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

PAVEMENT PLAN

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C220	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C220 PAVEMENT PLAN.dwg

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	14/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

SCALE

DESIGNER
FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT
CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

PAVEMENT MARKINGS & SIGNS

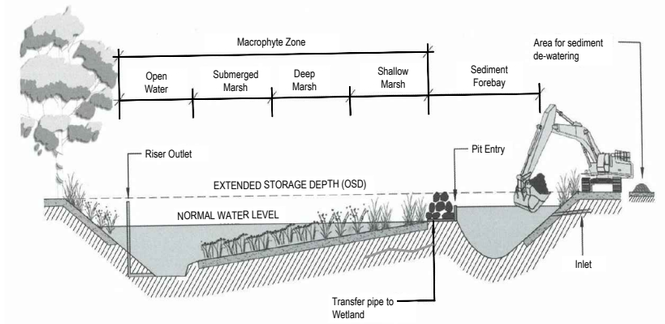
SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C230	A

Z:\PROJECTS\Cappello Development's No 10\Civil\DA\DA - CAP10 - C230 PAVEMENT MARKING.dwg

WETLAND / RAINGARDEN / SSR DETAILS

TOTAL CONTRIBUTING FLOW = Q100 24m3/s
PERMISSIBLE SITE DISCHARGE = 248l/s/Ha = Q100 16m3/s
SITE STORAGE REQUIREMENT = 56m3/Ha = 3,643m3
SITE STORAGE IN TANKS = 393 @ 5m3 = 1,965m3
SITE STORAGE (OSD) ABOVE WETLAND AND FORBAY = 1,678m3
SEDIMENT FOREBAY SIZING = 1880m3 min, 1000m2 min
(Increased in size for erosion control)
WETLAND SIZING = 3,000m3 min, 2,500m2 min
RAINGARDEN SIZING (Catch 2) = Water Area 800m2 , Treatment Area 500m2
RAINGARDEN SIZING (Catch 4) = Water area 300m2 , Treatment Area 150m2



TYPICAL SECTION THROUGH WETLAND

Catchment 8
Area :3.5Ha
Q100 : 1.6m3/s
Q5 : 0.6m3/s

Catchment 1
Area :12.8Ha
Q100 : 2.6m3/s
Q5 : 0.9m3/s

Catchment 2
Area :11Ha
Q100 : 2.4m3/s
Q5 : 0.8m3/s

Catchment 6
Area :5.2Ha
Q100 : 2.2m3/s
Q5 : 0.8m3/s

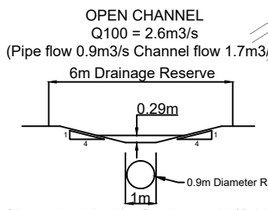
Catchment 7
Area : 5.5Ha
Q100 : 2.5m3/s
Q5 : 0.9m3/s

Catchment 5
Area :10.4Ha
Q100 : 4.4m3/s
Q5 : 1.5m3/s

Catchment 4
Area : 2.4Ha
Q100 : 0.9m3/s
Q5 : 0.2m3/s

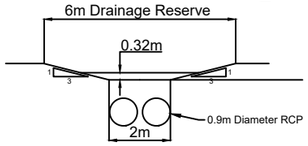
Catchment 3
Area :18Ha
Q100 : 4.4m3/s
Q5 : 1.6m3/s

OPEN CHANNEL
Q100 = 2.6m3/s
(Pipe flow 0.9m3/s Channel flow 1.7m3/s)



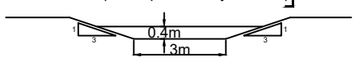
Q100 Channel = 1.7m3/s, Gradient = 4.5%, Velocity = 2.4m/s

OPEN CHANNEL
Q100 = 4.8m3/s
(Pipe flow 1.7m3/s Channel flow 3.1m3/s)



Q100 Channel = 3.0m3/s, Gradient = 4.5%, Velocity = 3.0m/s

OPEN CHANNEL WITH BYPASS FLOW
FROM ADJACENT DEVELOPMENT
Q100 = 3m3/s (Flows provided by Indesco)



Q100 = 3.3m3/s, Gradient = 2.4%, Velocity = 2.8m/s

WETLAND
SEDIMENT FOREBAY
WETLAND

RAINGARDEN
RAINGARDEN

Offsite Catchment from adjacent development
Q100 : 3.0m3/s (Indesco)

NOTE : Q100 OVERLAND FLOW PATHS TO BE IN OPEN CHANNELS DESIGNED ABOVE OR CONTAINED WITHIN THE ROAD CARRAIGEWAY/GUTTER FLOW.

REFER TO DRAWING C310 FOR RAINGARDEN DETAILS

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	20/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE
0m 50m 100m 150m
SCALE: A1 1:2000, A3 1:4000

DESIGNER
FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT
CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW
STORMWATER CATCHMENT PLAN
SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C300	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C300 STORMWATER CATCHMENT.dwg

STORMWATER DISCHARGE TO SEDIMENT FOREBAY

WETLAND DISCHARGE TO DIVERSION SWALE

EXTEND EXISTING CULVERTS TO DIVERSRION SWALE

WETLAND OPEN WATER

WETLAND SUBMERGED MARSH

WETLAND DEEP MARSH

WETLAND SHALLOW MARSH

SEDIMENT FOREBAY DISCHARGE TO WETLAND

DIVERSION SWALE

SEDIMENT FOREBAY

SEDIMENT FOREBAY DISCHARGE TO WETLAND

WETLAND SHALLOW MARSH

WETLAND DEEP MARSH

WETLAND SUBMERGED MARSH

WETLAND OPEN WATER

WETLAND DISCHARGE TO DIVERSION SWALE

STORMWATER DISCHARGE TO SEDIMENT FOREBAY

STORMWATER DISCHARGE TO RAINGARDEN

RAINGARDEN. REFER TO DRAWING C310 FOR DETAILS

RAINGARDEN DISCHARGE TO STORMWATER SYSTEM

STORMWATER DISCHARGE TO RAINGARDEN

RAINGARDEN. REFER TO DRAWING C310 FOR DETAILS

RAINGARDEN DISCHARGE TO STORMWATER SYSTEM

REFER TO DRAWING C300 FOR SEDIMENT FOREBAY AND WETLAND DETAILS

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	14/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

DESIGNER

FRAISH Consulting
Civil & Structural Engineers

1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

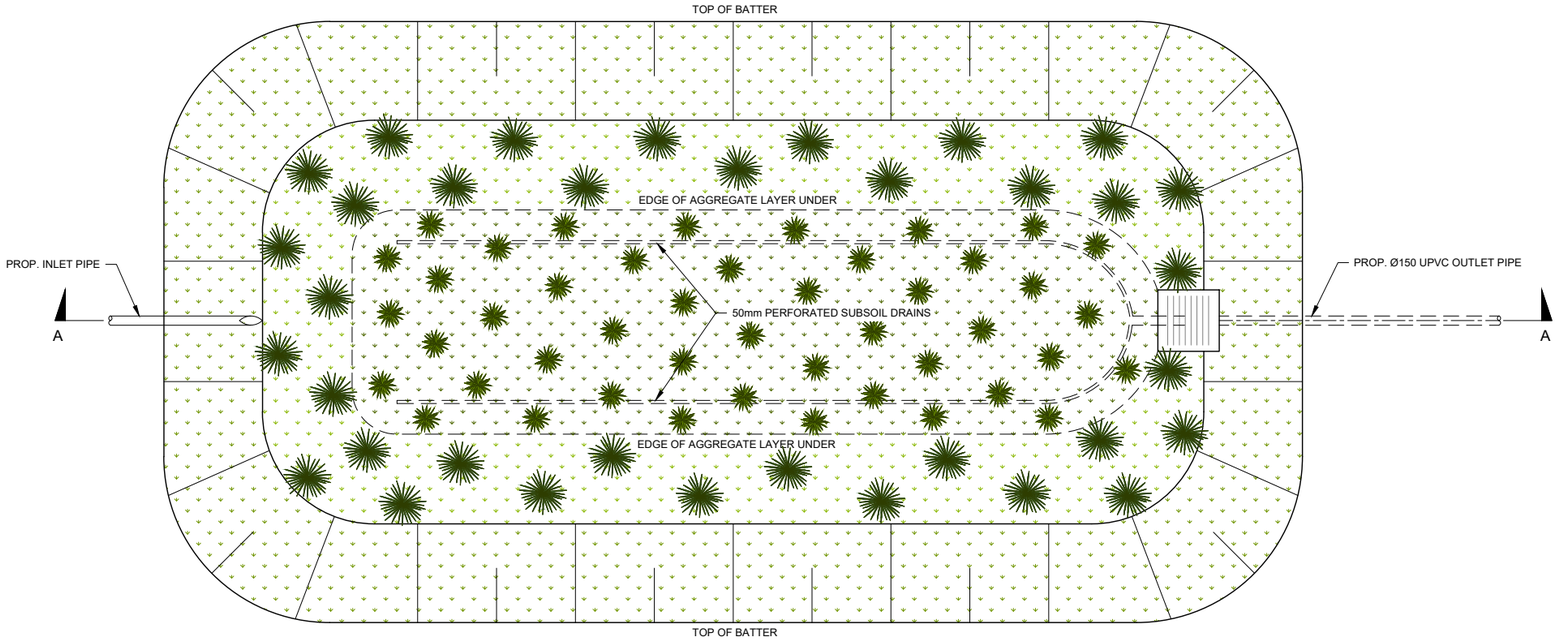
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

STORMWATER PLAN

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C305	A

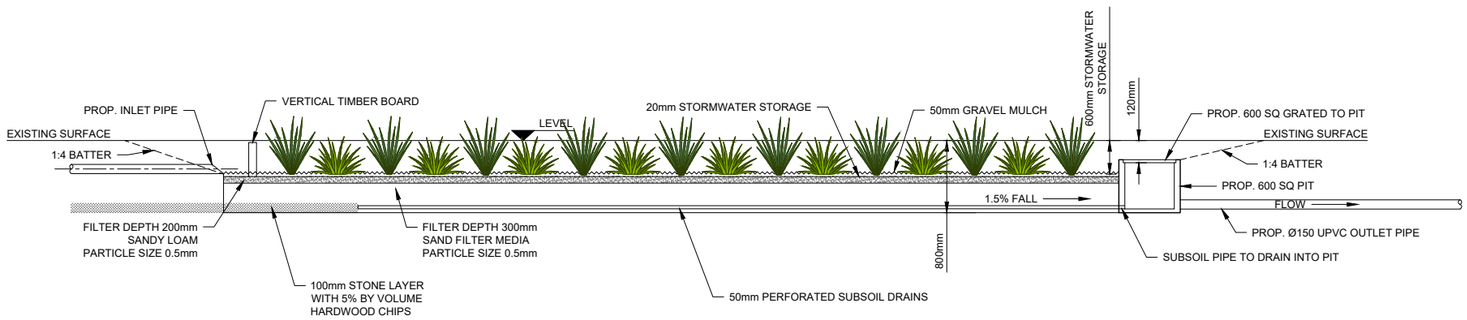
Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C305 STORMWATER PLAN.dwg



NOTE:
SUBSOIL PIPES TO BE EVENLY SPACED AT 1/3 WIDTH UP TO A MAXIMUM DISTANCE OF 1 METER.
RAIN GARDENS WITH WIDTH GREATER THAN 3m WILL REQUIRED ADDITIONAL PIPES.

RAIN GARDEN PLAN
NTS

RAIN GARDEN NOTES:
1. FILTER SURFACE AREA DIMENSIONS DEPENDENT ON THE AREA TO BE TREATED
2. RAIN GARDEN SHAPE MAY BE ALTERED
3. INTERNAL AREA NEEDS TO BE MAINTAINED
4. INLET PIPE FROM FUTURE DWELLING TO CONNECT INTO NEAREST POINT OF THE RAIN GARDEN
5. RAIN GARDEN OUTLET CAN BE POSITIONED TO SUIT THE POINT OF DISCHARGE
6. RAIN GARDEN TO BE PLANTED AT A DENSITY OF 8-12 PLANTS PER SQUARE METER CONSISTING OF CAREX SP WITHIN THE RAIN GARDEN AND JUNCUS SP AROUND THE PERIMETER



SECTION A-A
NTS

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	16/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

SCALE

DESIGNER

FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Holl ACT
PO Box 310, Holl ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

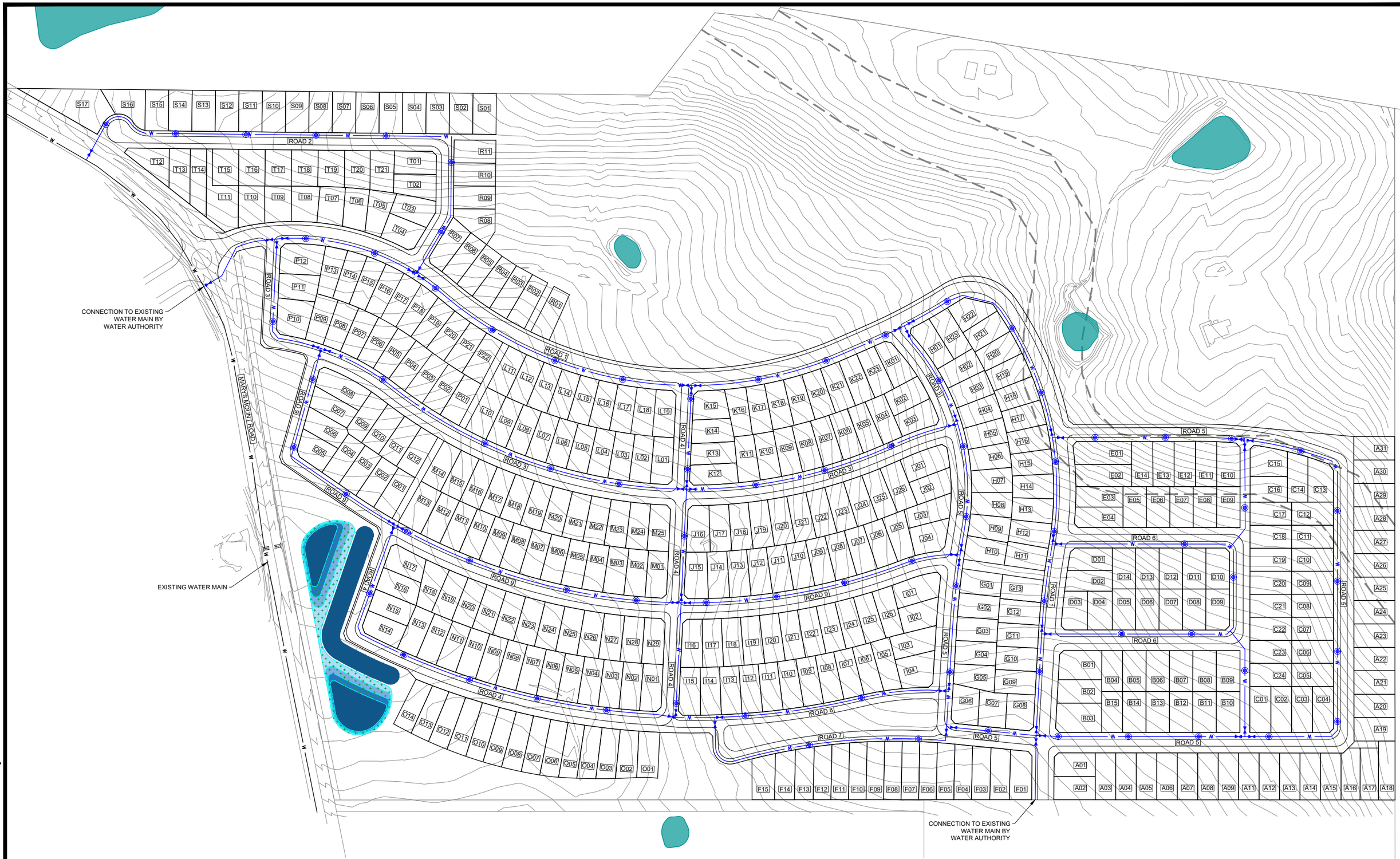
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

RAIN GARDEN DETAILS

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C310	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C310 RAIN GARDEN DETAILS.dwg



NOTE : A DETAILED NETWORK ANALYSIS TO BE PREPARED PRIOR TO CC APPLICATION TO DETERMINE PIPE DIAMETERS.

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	20/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

SCALE

0m 30m 60m 90m 120m

1:1500 @ A1, 1:3000 @ A3

DESIGNER

FRAISH Consulting
Civil & Structural Engineers

1/8 Victoria Street, Hall ACT
PO Box 310, Hall ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

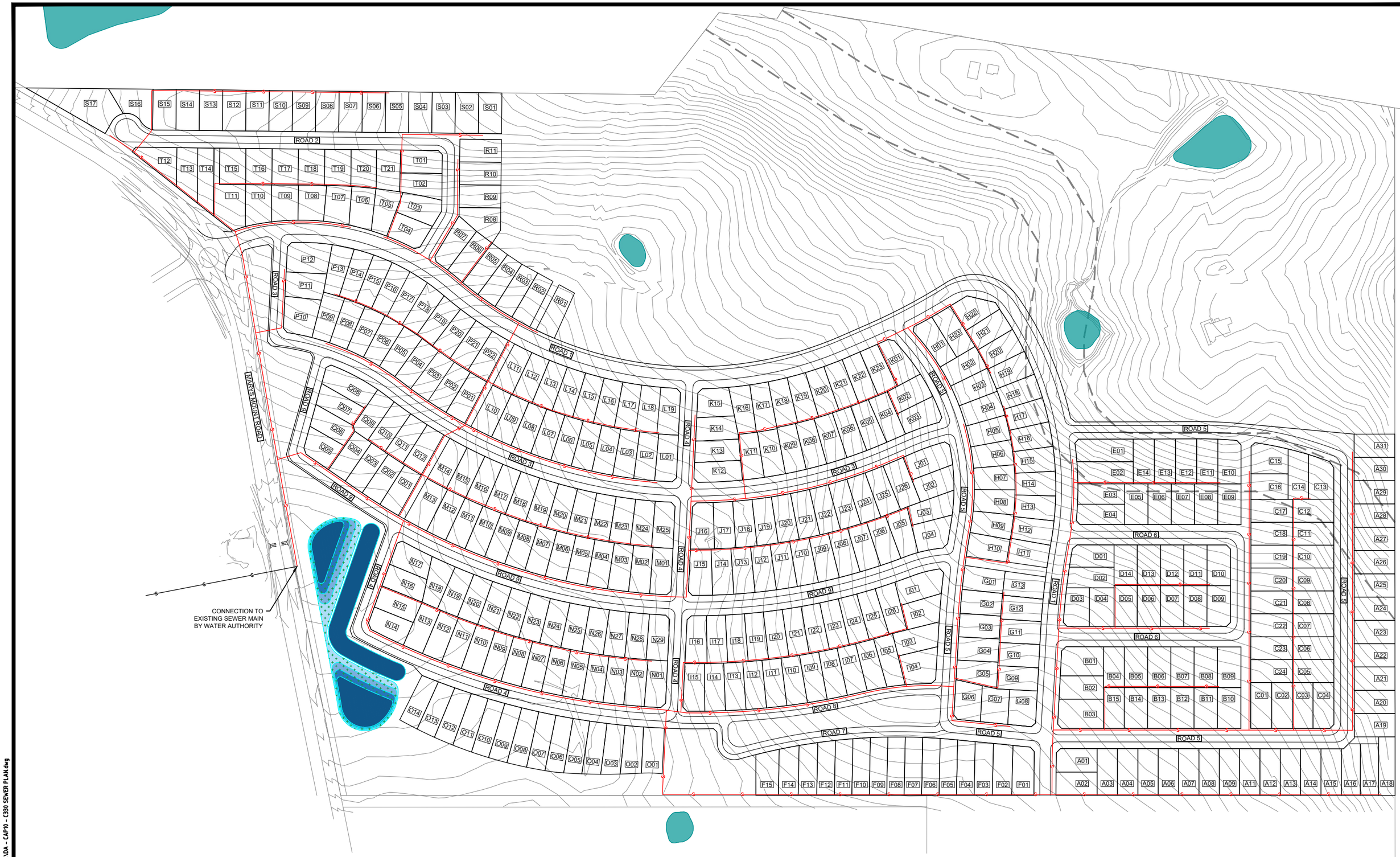
SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

WATER SUPPLY CONCEPT PLAN

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C320	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C320 WATER PLAN.dwg



REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN
A	20/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK

TITLE	NAME
DRAWN	LKK
DESIGNER	AJB

DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK.

SCALE

0m 30m 60m 90m 120m

1:1500 @ A1, 1:3000 @ A3

DESIGNER

FRAISH Consulting
Civil & Structural Engineers
1/8 Victoria Street, Holl ACT
PO Box 310, Holl ACT 2618
02 6230 2823 • 0418 585 774
info@fraish.com.au • www.fraish.com.au

CLIENT

CAPPELLO DEVELOPMENTS NO.10

PROJECT TITLE

SUBDIVISION OF LOT 28, DP479
MARY'S MOUNT ROAD, GOULBURN, NSW

SEWER CONCEPT PLAN

SHEET 1

SCALE	PHASE	DRAWING No.	REV
AS SHOWN	DA	C330	A

Z:\PROJECTS\Cappello Developments No 10\Civil\DA\DA - CAP10 - C330 SEWER PLAN.dwg