SSD 9522 MOD 3

657-708 MAMRE ROAD, KEMPS CREEK, NSW CIVIL DRAWINGS

DRAWING LIST:

CO13362.02-C3-500

CO13362.02-C3-501

CO13362.02-C3-502

CO13362.02-C3-503

CO13362.02-SK3-01

C013362.02-SK3-02

C013362.02-SK3-03

C013362.02-SK3-04

C013362.02-SK3-05

C013362.02-SK3-06

C013362.02-SK3-07

CO13362.02-SK3-08

C013362.02-SK3-09

CO13362.02-SK3-10

DRAWING NO. DRAWING TITLE DRAWING LIST & GENERAL NOTES CO13362.02-C3-100 CO13362.02-C3-200 EARLY WORKS ENGINEERING NOTES CO13362.02-C3-201 EROSION & SEDIMENT CONTROL PLAN - STAGE 1 CO13362.02-C3-202 EROSION & SEDIMENT CONTROL PLAN - STAGE 2 CO13362.02-C3-203 EROSION & SEDIMENT CONTROL PLAN - STAGE 3 CO13362.02-C3-204 **EROSION & SEDIMENT CONTROL DETAILS - SHEET 1** CO13362.02-C3-205 EROSION & SEDIMENT CONTROL DETAILS - SHEET 2 CO13362.02-C3-206 **EROSION & SED CONTROL RUSLE CALCULATIONS** CO13362.02-C3-207 **EROSION & SED CONTROL SEDIMENT BASIN INFORMATION** BULK EARTHWORKS CUT/FILL PLAN CO13362.02-C3-300 BULK EARTHWORKS SECITONS CO13362.02-C3-301 CO13362.02-C3-400 CIVIL WORKS KEY PLAN CO13362.02-C3-401 CIVIL WORKS PLAN - SHEET 1 CO13362.02-C3-402 CIVIL WORKS PLAN - SHEET 2 CO13362.02-C3-405 STORMWATER DRAINAGE DETAILS - SHEET 1 CO13362.02-C3-406 STORMWATER DRAINAGE DETAILS - SHEET 2 CO13362.02-C3-407 STORMWATER DRAINAGE DETAILS - SHEET 3 CO13362.02-C3-408 STORMWATER DRAINAGE DETAILS - SHEET 4 OVERALL STORMWATER MANAGEMENT PLAN CO13362.02-C3-420

ROADWORKS DETAILS

ROAD PAVEMENT PLAN

ROAD LONG SECTIONS - SHEET 1

ROAD LONG SECTIONS - SHEET 2

FUNCTIONAL LAYOUT PLAN - MOD 3 STAGE 1

FUNCTIONAL LAYOUT PLAN - MOD 3 STAGE 2

FUNCTIONAL LAYOUT PLAN - MOD 3 STAGE 3

TURNING PATHS PLAN - MOD 3 - SHEET 1

TURNING PATHS PLAN - MOD 3 - SHEET 2

TURNING PATHS PLAN - MOD 3 - SHEET 3

TURNING PATHS PLAN - MOD 3 - SHEET 4

TURNING PATHS PLAN - MOD 3 - SHEET 5

TURNING PATHS PLAN - MOD 3 - SHEET 6

TURNING PATHS PLAN - MOD 3 - SHEET 7

GENERAL NOTES:

- G1 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- G2 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT STANDARDS AUSTRALIA CODES AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
- G3 ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEER'S DRAWINGS ISSUED IN ANY ELECTRONIC FORMAT MUST NOT BE USED FOR DIMENSIONAL SETOUT REFER TO THE ARCHITECT'S DRAWINGS FOR ALL DIMENSIONAL SETOUT
- G4 DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.
- G5 UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.
- G6 ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH ACCEPTABLE SAFETY STANDARDS & APPROPRIATE SAFETY SIGNS SHALL BE INSTALLED AT ALL TIMES DURING THE PROGRESS OF THE JOB.
- G7 ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH PENRITH CITY COUNCIL'S ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS

ELECTRONIC INFORMATION NOTES:

- 1. THE ISSUED DRAWINGS IN HARD COPY OR PDF FORMAT TAKE PRECEDENCE OVER ANY ELECTRONICALLY ISSUED INFORMATION, LAYOUTS OR DESIGN MODELS.
- THE CONTRACTOR'S DIRECT AMENDMENT OR MANIPULATION OF THE DATA OR INFORMATION THAT MIGHT BE CONTAINED WITHIN AN ENGINEER-SUPPLIED DIGITAL TERRAIN MODEL AND ITS SUBSEQUENT USE TO UNDERTAKE THE WORKS WILL BE SOLELY AT THE DISCRETION OF AND THE RISK OF THE CONTRACTOR.
- THE CONTRACTOR IS REQUIRED TO HIGHLIGHT ANY DISCREPANCIES BETWEEN THE DIGITAL TERRAIN MODEL AND INFORMATION PROVIDED IN THE CONTRACT AND/OR DRAWINGS AND IS REQUIRED TO SEEK CLARIFICATION FROM THE SUPERINTENDENT.
- THE ENGINEER WILL NOT BE LIABLE OR RESPONSIBLE FOR THE POSSIBLE ON-GOING NEED TO UPDATE THE DIGITAL TERRAIN MODEL, SHOULD THERE BE ANY AMENDMENTS OR CHANGES TO THE DRAWINGS OR CONTRACT INITIATED BY THE CONTRACTOR.

CROSS REFERENCE NOTES

PLANS TO BE READ IN CONJUNCTION WITH CEMP & ASSOCIATED SUB PLANS INLUDING THE CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN (CSWMP), CONTAMINATION MANAGEMENT PLAN & CONSTRUCTION ACCESS MANAGEMENT PLAN.

SURVEY NOTE:

COORDINATES AND DESIGN DRAWINGS ARE BASED ON GROUND SURVEY COORDINATE SYSTEM MGA2020 (ZONE 56). TO CONVERT TO GRID (ALLOWING FOR THE GEODESIC CURVATURE OF THE EARTH) PLEASE NOTE THE ORIGIN PM33568 (E:294645.403 N:6253924.312) AND SCALE FACTOR 1.000109.

REFER TO BOXALL SURVEY 10129-005-TOPO REV B FOR DETAILS.

STORMWATER DRAINAGE NOTES

- ALL STORMWATER WORKS TO BE COMPLETED IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3500.3:2003 PLUMBING AND DRAINAGE, PART 3: STORMWATER DRAINAGE
- ALL FINISHED PAVEMENT LEVELS SHALL BE AS INDICATED ON CIVIL WORKS PLANS PLANS (401-DA409. 4. PIT SIZES SHALL BE AS INDICATED IN THE SCHEDULE WHILE PIPE SIZES AND DETAILS ARE PROVIDED ON
- EXISTING STORMWATER PIT LOCATIONS AND INVERT LEVELS TO BE CONFIRMED BY SURVEY PRIOR TO
- ALL STORMWATER PIPES Ø375 OR GREATER SHALL BE CLASS 2 (WITH HS2 SUPPORT) REINFORCED CONCRETI

- 9. ALL CONCRETE PITS GREATER THAN 1000mm DEEP SHALL BE REINFORCED USING N12-200 EACH WAY CENTERED IN WALL AND BASE. LAP MINIMUM 300mm WHERE REQUIRED. ALL CONCRETE FOR PITS SHALL BE F'C 32 MPA. PRECAST PITS MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
- 10. IN ADDITION TO ITEM 6 ABOVE, ALL CONCRETE PITS GREATER THAN 3000mm DEEP SHALL HAVE WALLS AND BASE THICKNESS INCREASED TO 200mm.
- 11. PIPES SHALL BE LAID AS PER PIPE LAYING DETAILS. PARTICULAR CARE SHALL BE TAKEN TO ENSURE THAT THE PIPE IS FULLY AND EVENLY SUPPORTED. RAM AND PACK FILLING AROUND AND UNDER BACK OF PIPES AND PIPE FAUCETS, WITH NARROW EDGED RAMMERS OR OTHER SUITABLE TAMPING DETAILS.
- 12. CONCRETE PIPES UNDER, OR WITHIN THE ZONE OF INFLUENCE OF PAVED AREAS SHALL BE LAID USING HS2 TYPE SUPPORT, AS A MINIMUM, IN ACCORDANCE WITH AS 3725. AGGREGATE BACKFILL SHALL NOT BE USED
- FOR PIPE BEDDING AND OR HAUNCH/SIDE SUPPORT 13. WHERE PIPE LINES ENTER PITS, PROVIDE 2m LENGTH OF STOCKING WRAPPED SLOTTED Ø100 uPVC TO EACH
- 14. ALL SUBSOIL DRAINAGE LINES SHALL BE Ø100 SLOTTED uPVC WITH APPROVED FILTER WRAP LAID IN 300mm WIDE GRANULAR FILTER UNLESS NOTED OTHERWISE. LAY SUBSOIL LINES TO MATCH FALLS OF LAND AND/OF
- 1 IN 200 MINIMUM. PROVIDE CAPPED CLEANING EYE (RODDING POINT) AT UPSTREAM END OF LINE AND AT 30m MAX. CTS. PROVIDE SUBSOIL LINES TO ALL PAVEMENT/ LANDSCAPED INTERFACES, TO REAR OF RETAINING WALLS (AS NOMINATED BY STRUCTURAL ENGINEER) AND AS SHOWN ON PLAN.
- ALL PIPE GRADES 1 IN 100 MINIMUM UNO. 16. PROVIDE STEP IRONS IN PITS DEEPER THAN 1000mm.
- 17. MIN. 600 COVER TO PIPE OBVERT BENEATH ROADS & MIN. 400 COVER BENEATH LANDSCAPED AND PEDESTRIAN AREAS.
- 18. PIT COVERS IN TRAFFICABLE PAVEMENT SHALL BE CLASS D'HEAVY DUTY', THOSE LOCATED IN
- NON-TRAFFICABLE AREAS SHALL BE CLASS B 'MEDIUM DUTY' U.N.O. 19. PROVIDE CLEANING EYES (RODDING POINTS) TO PIPES AT ALL CORNERS AND T-JUNCTIONS WHERE NO PITS
- ARE PRESENT. 20. DOWN PIPES (DP) TO BE AS PER HYDRAULIC ENGINEERS DETAILS WITH CONNECTOR TO MATCH DP SIZE U.N.O.
- ON PLAN. PROVIDE CLEANING EYE AT GROUND LEVEL 21. PIPE LENGTHS NOMINATED ON PLAN OR LONGSECTIONS ARE MEASURED FROM CENTER OF PITS TO THE
- NEAREST 0.5m AND DO NOT REPRESENT ACTUAL LENGTH. THE CONTRACTOR IS TO ALLOW FOR THIS.

FINISHED LEVELS PLAN NOTES:

- LEVELS DATUM IS A.H.D.
- ALL CONTOUR LINES & SPOT LEVELS INDICATE FINISHED PAVEMENT LEVELS U.N.O. ON PLAN.
- THE MAJOR CONTOUR INTERVAL IS 0.5m THE MINOR CONTOUR INTERVAL IS 0.1m.
- MINIMUM PAVEMENT GRADE IS TO BE 1:100 (1%).
- MAXIMUM PAVEMENT GRADE IS TO BE 1:20 (5%) IN CARPARKING AREAS AND 1:25 (4%) ELSEWHERE.
- MAXIMUM RAMP GRADES ARE TO BE 1:12 (8.3%) U.N.O. ON PLAN PROVIDE MINIMUM 3.0m LONG TRANSITION WHERE CHANGES GRADE EXCEDE 1:20 (5%).
- PERMANENT BATTER SLOPES ARE TO HAVE A MAXIMUM GRADE OF 1V:3H.
- ALL BATTER SLOPE WITH GRADES AT OR EXCEDING 1V:6H ARE TO BE TURFED IMMEDIATELY OR APPROPRIATE EROSION CONTROL IS TO BE PROVIDED TO THE SATISFACTION OF THE ENGINEER.
- 11. ALL ACCESS ROADS TO HAVE A CROSSFALL OF 3% AS INDICATED ON PLAN.
- ALL FOOTPATHS ARE TO FALL AWAY FROM THE BOUNDARY AT 2.5% NOMINAL. GRADE. 13. ALL PAVEMENTS ARE TO BE SET AT 50mm BELOW THE FINISHED FLOOR LEVEL OF THE WAREHOUSE AND

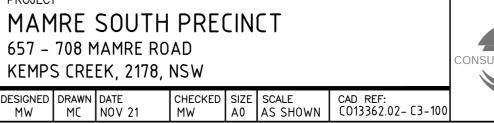


FOR DEVELOPMENT APPLICATION

ISSUED FOR DEVELOPMENT APPLICATION 05.08.22 ISSUED FOR DEVELOPMENT APPLICATION 19.11.21 ISSUED FOR DEVELOPMENT APPLICATION ISSUED FOR DEVELOPMENT APPLICATION 12.11.21 ISSUED FOR DEVELOPMENT APPLICATION DATE ISSUE AMENDMENTS **AMENDMENTS**









Costin Roe Consulting Pty Ltd

DRAWING LIST AND GENERAL NOTES

AWING No CO13362.02- C3-100

TABLE 1 – STABILISATION REQUIREMENTS AND TREATMENT METHODS

	(REFER SE	STABILISATION STABILISATION REQUIEMENTS)					
LANDS	STABILISATION REQUIREMENT	TIMEFRAMES	TREATMENT METHODS - PRODUCTS	REMARKS			
ALL LANDS	C-FACTOR = 0.15 (50% EQUIVALENT GROUND COVER ^[1]	APPLIES AFTER 20 WORKING DAYS OF INACTIVITY (EVEN THOUGH WORKS MIGHT CONTINUE LATER)	SOIL BINDER (I.E VITAL P47/STONEWALL OR EQUIVALENT ^[1]) GEOTEXTILE, JUTE MATTING, BLACK	- SPRAY ALL SURFACES WITH VITAL P47/STONEWALL OR EQUIVALENT ^[1] VITAL DILUTION RATE = 1:10(VITAL:WATER)RE-APPLY/MAINTAIN AS NECESSARY (APPROX. EVERY 3-6 MONTHS WITHOUT SUITABLE VEGETATION COVER) TO ENSURE THE REQUIRED COVER IS PROVIDED COVER ALL EXPOSED SOILS RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.			
			EXAM	AIN SPECIFICATIONS DETAILED ON THE PLAN FOR SPECIFIC LINING/STABILISATION REQUIREMENTS. PLE TREATMENT METHODS ARE SHOWN BELOW. - COMPLETE ANY SUBSOIL TREATMENT BEFORE LAYING TH MATTING INSTALL MATTING IN ACCORDANCE WITH SD 5-7 RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE			
WATERWAYS, DRAINAGE LINES AND CONCENTRATED	C-FACTOR = 0.05 (70% GRASS COVER OR EQUIVALENT	APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION AND BEFORE THEY ARE ALLOWED TO CARRY CONCENTRATED FLOWS.	WORKING DAYS FROM COMPLETION OF FORMATION AND BEFORE THEY ARE	JUTE MESH, SEEDING AND SOIL BINDER (I.E. VITAL P47/STONEWALL OR EQUIVALENT ⁽¹⁾) - LOW FLOWS TO MODERATE	REQUIRED COVER IS PROVIDED. - COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF 5 TONNES/Ha). - PLACE TOPSOIL TO A DEPTH OF AT LEAST 75mm. - COMPLETE ANY FERTILISATION AND SEEDING BEFORE LAYING THE MATTING. - INSTALL MATTING IN ACCORDANCE WITH SD 5-7. - SPRAY ALL SURFACES WITH VITAL P47/STONEWALL OR EQUIVALENT ^[1] . - VITAL DILUTION RATE = 1L / m ² OF DILUTED VITAL MIXTURE. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.		
FLOW AREAS	GROUND COVER ^[1]		(~350gsm) AND SEEDING OR EQUIVALENT ^[1]) - LOW FLOWS TO MODERATE	- COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF STONNES/Ha) PLACE TOPSOIL TO A DEPTH OF AT LEAST 75mm COMPLETE ANY FERTILISATION AND SEEDING BEFORE LAYING THE MATTING INSTALL MATTING IN ACCORDANCE WITH SD 5-7 RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY			
						MA_ E	REINFORCEMENT MATTING (TRM) (E.G. TERRAMAT OR EQUIVALENT ^[1]) – MODERATE FLOWS
			ROCK LINING	RIPPED INTO SUBGRADE AT A RATE OF STONNES/Ha). - INSTALL GEOTEXTILE UNDERLAY (IF SPECIFIED) IN ACCORDANCE WITH SD 5-7. - INSTALL ROCK ARMOURING (TO THE DEPTH AND SIZE AS SPECIFIED ON THE PLAN).			
STOCKPILES	C-FACTOR = 0.10 (60% GRASS COVER OR EQUIVALENT GROUND COVER ^[1]	APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION	SEEDING AND SOIL BINDER (I.E. VITAL P47/STONEWALL OR EQUIVALENT ^[1])	- APPLY SEED TO ALL STOCKPILE SURFACES (NOTE: SEEDING MAY NOT BE REQUIRED IF EXISTING SEEDBED IS PRESENT)SPRAY ALL STOCKPILE SURFACES WITH VITAL P47/STONEWALL OR EQUIVALENT ^[1] VITAL DILUTION RATE = 1:10 (VITAL:WATER) APPLICATION RATE = 1L / m2 OF DILUTED VITAL MIXTURI - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.			
			GEOTEXTILE, JUTE MATTING, BLACK PLASTIC OR EQUIVALENT ^[1]	- RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.			
GENERAL SURFACES	C-FACTOR = 0.10 / A 0.05 (60% / 70% GRASS F	C-FACTOR = 0.1 APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION AND C-FACTOR = 0.05	TOPSOIL, SEEDING AND SOIL BINDER (I.E. VITAL P47/STONEWALL OR EQUIVALENT ^[1])	- REFER TO SD 7-1 - COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF 5TONNES/Ha) PLACE GYPSUM TREATED TOPSOIL TO A DEPTH OF AT LEAST 75mm APPLY ANY FERTILISERS REQUIRED APPLY SEED TO ALL SURFACES SPRAY ALL SURFACES WITH VITAL P47/STONEWALL OR EQUIVALENT[1] VITAL DILUTION RATE = 1:10 (VITAL:WATER) APPLICATION RATE = 1L / m2 OF DILUTED VITAL MIXTURE RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.			
	EQUIVALENT GROUND COVER ^[1]	APPLIES WITHIN A FURTHER 60 DAYS	HYDROMULCH OR EQUIVALENT ^[1]	- REFER TO SD 7-1 - COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF STONNES/Ha) PLACE GYPSUM TREATED TOPSOIL TO A DEPTH OF AT LEAST 75mm APPLY HYDROMULCH WITH APPROVED SEED MIX TO SOIL SURFACE RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.			

[1] – EQUIVALENT COVER/PRODUCT MUST ACHIEVE THE EQUIVALENT C-FACTOR WITH PROVEN RESEARCH/DOCUMENTATION TO VERIFY THIS. STANDARD DRAWINGS REFERENCED CAN BE LOCATED IN THE 'SOILS & CONSTRUCTION, MANAGING URBAN STORMWATER – VOLUME 1' BOOK BY LANDCOM. ALTERNATIVE DETAILS MAY BE SOUGHT IN CONSULTATION WITH THE ENGINEER

TABLE 2 – LIMITATIONS TO ACCESS DURING CONSTRUCTION

	17,022 2 211117,11	iono to Access Borning Constituction
LAND USE	LIMITATION	REMARKS
CONSTRUCTION AREAS	2) METRES FROM THE EDGE	ALL SITE WORKERS SHOULD CLEARLY RECOGNISE THESE AREAS THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCE (DOWNSLOPE) OR SIMILAR MATERIALS.
ACCESS CORRIDORS		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 EFFICIENT WORKS ACTIVITIES. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE BOUNDARIES.
REMAINING LANDS, INCLUDING REVEGETATION AREA		THINNING OF GROWTH MIGHT BE NECESSARY, FOR EXAMPLE, FOR FIRE REDUCTION OR WEED REMOVAL.

DATE ISSUE AMENDMENTS

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DUST CONTROL NOTES:

- 1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE DUST CONTROL MEASURES ARE APPLIED AND MAINTAINED IN ACCORDANCE WITH THE GOVERNING AUTHORITIES REQUIREMENTS.
- 2. THE APPLICATION OF LIQUID BASED DUST SUPPRESSION MEASURES MUST BE SUCH THAT SEDIMENT LADEN RUNOFF RESULTING FROM SUCH MEASURES DOES NOT CREATE A TRAFFIC OR ENVIRONMENTAL HAZARD. (EG UTILISING SEDIMENT CONTROLS)
- 3. DUST GENERATION ASSOCIATED WITH WIND EROSION TO BE CONTROLLED USING WATER TRUCKS, DUST SUPPRESSING FOG, MIST GENERATORS, SEALANT PLACED OVER THE SOIL, SURFACE ROUGHENING OR RE-VEGETATION.
- 4. THE FOLLOWING ACTIVITIES SHALL BE ADOPTED, IF NECESSARY, TO MANAGE DUST CONTROL ON SITE:
- · LIMITING THE AREA OF SOIL DISTURBANCE AT ANY GIVEN TIME REPLACING TOPSOIL AFTER COMPLETION OF EARTHWORKS. PROGRAMMING WORK TO MINIMISE THE LIFE OF STOCKPILES.
- TEMPORARILY STABILISING LONG-TERM STOCKPILES. GRAVELLING UNSEALED ACCESS AND HAUL ROADS. MINIMISING TRAFFIC MOVEMENT ON EXPOSED SURFACES.
- LIMITING VEHICULAR TRAFFIC TO 15km/h. RETAINING EXISTING VEGETATION AS WIND BREAKS.
- · UTILISING A WATER CART WITH POTABLE WATER OR SEDIMENT CONTROL BASIN WATER 5. OIL, LANDFILL GAS CONDENSATE OR ANY CONTAMINATED LEACHATE IS NOT TO BE USED FOR DUST SUPPRESSION.

EROSION CONTROL NOTES

ALL SEDIMENT CONTROL WORK INCLUDING DIVERSION BANKS, CATCH DRAINS, DIVERSION DRAINS AND SEDIMENT FENCES SHALL BE COMPLETED IN ACCORDANCE WITH THE STAGED PLANS PRESENTED AND SHALL FACILITATE A STAGED CONSTRUCTION METHODOLOGY.

- ALL EROSION & SEDIMENT CONTROLS SHALL BE COMPLETED IN ACCORDANCE WITH THE 'SOILS AND CONSTRUCTION, MANAGING URBAN STORMWATER - THE BLUE BOOK' BY LANDCOM
- SEDIMENT FENCES AND SEDIMENT FENCE RETURNS SHALL BE ERECTED CONVEX TO THE CONTOUR TO POND WATER.
- STRAW BALE BARRIERS & GEOFABRIC FENCES OR SEDIMENT FENCES ARE TO BE CONSTRUCTED TO TOE OF BATTER, PRIOR TO COMMENCEMENT OF EARTHWORKS,
- IMMEDIATELY AFTER CLEARING OF VEGETATION AND BEFORE REMOVAL OF TOP SOIL. 4. ALL TEMPORARY EARTH BERMS, DIVERSION AND SEDIMENT BASIN EMBANKMENTS ARE TO BE MACHINE COMPACTED. SEEDED AND MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED. REFER TO TABLE 1 FOR APPROVED STABILISATION
- CLEAN OR NON-SITE WATER IS TO BE DIVERTED AWAY FROM DISTURBED GROUND AND INTO THE DRAINAGE SYSTEM OVER STABLE SURFACES.
- 5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND PROVIDING ON GOING
- ADJUSTMENT TO EROSION CONTROL MEASURES AS REQUIRED DURING CONSTRUCTION. ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS OF 5mm OR GREATER WITHIN A 24 HOUR PERIOD FOR STRUCTURAL DAMAGE OR CLOGGING, TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE, APPROVED LOCATION.
- 3. THE SITE IS TO BE INSPECTED FOLLOWING A RAINFALL EVENT OF 5mm OR GREATER WITHIN A 24 HOUR PERIOD FOR EVIDENCE OF EROSION AND RESPOND WITH INCREASED CONTROL IF REQUIRED.
- 9. ALL FINAL EROSION PREVENTION MEASURES INCLUDING THE ESTABLISHMENT OF GRASSING ARE TO BE MAINTAINED UNTIL THE END OF THE DEFECTS LIABILITY PERIOD.
- 10. ALL EARTHWORKS AREAS SHALL BE ROLLED ON A REGULAR BASIS TO SEAL THE EARTHWORKS. 11. ALL FILL AREAS ARE TO BE LEFT WITH A BUND AT THE TOP OF THE SLOPE AT THE END
- OF EACH DAY'S EARTHWORKS TO DIRECT WATER TO A STABLE OUTLET OVER THE BATTER OR INTERNALLY TOWARDS SEDIMENT CONTROL. THE HEIGHT OF THE BUND SHALL BE A MINIMUM OF 200mm.
- 12. ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND HYDROMULCHED WITHIN 10 DAYS OF COMPLETION OF FORMATION.
- AFTER PERMANENT STABILISATION OF THE SITE IS COMPLETE (I.E. BY TOPSOILING, PAVING ETC.) AND THE SITE IS DEEMED TO BE STABLE IN THE OPINION OF A SUITABLY QUALIFIED PERSON ALL TEMPORARY WORK SUCH AS SEDIMENT FENCE, DIVERSION DRAINS ETC SHALL BE REMOVED.
- 14. ALL STOCKPILES ARE TO BE SUITABLY COVERED AND STABILIZED TO THE SATISFACTION OF THE SITE MANAGER TO PREVENT WIND AND WATER EROSION.
- 15. ANY AREA THAT IS NOT APPROVED BY THE CONTRACT ADMINISTRATOR FOR CLEARING OR DISTURBANCE BY THE CONTRACTOR'S ACTIVITIES SHALL BE CLEARLY MARKED AND SIGN POSTED, FENCED OFF OR OTHERWISE APPROPRIATELY PROTECTED AGAINST ANY SUCH DISTURBANCE.
- 16. ALL STOCKPILE SITES SHALL BE SITUATED IN AREAS INDICATED ON THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN OR APPROVED FOR SUCH USE BY THE SITE MANAGER. A BUFFER ZONE SHALL EXIST BETWEEN STOCKPILE SITES AND ANY STREAM OR FLOW PATH IN ACCORDANCE WITH THE CSWMP. ALL STOCKPILES SHALL BE ADEQUATELY PROTECTED FROM EROSION AND CONTAMINATION OF THE SURROUNDING
- AREA BY USE OF THE MEASURES IN THE APPROVED ESCP. 17. ACCESS AND EXIT AREAS SHALL INCLUDE TRUCK SHAKER GRID OR OTHER METHODS APPROVED BY THE SITE MANAGER FOR THE REMOVAL OF SOIL MATERIALS FORM MOTOR
- 18. THE CONTRACTOR IS TO ENSURE RUNOFF FROM ALL AREAS WHERE THE NATURAL SURFACE IS DISTURBED BY CONSTRUCTION, INCLUDING ACCESS ROADS, DEPOT AND STOCKPILE SITES. SHALL BE FREE OF SEDIMENTS BEFORE IT IS EITHER DISPERSED TO STABLE AREAS OR DIRECTED TO NATURAL WATERCOURSES.
- 19. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SLOPES, CROWNS AND DRAINS ON ALL EXCAVATIONS AND EMBANKMENTS TO ENSURE SATISFACTORY DRAINAGE AT ALL TIMES WATER SHALL NOT BE ALLOWED TO POND ON THE WORKS UNLESS SUCH PONDING IS PART OF AN APPROVED ESCP / SWMP.

SOIL & WATER MANAGEMENT PLAN NOTE:

DATE ISSUE AMENDMENTS

ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN (CSWMP) BY COSTIN ROE CONSULTING. REF 13362.02-02.rpt

SEDIMENT CONTROL BASIN NOTES

TYPE D BASIN IS REQUIRED.

- 2. VOLUME OF THE BASINS SHALL BE AS NOMINATED ON DRAWING. NOMINAL POND LOCATIONS AND NOMINAL DIMENSIONS.
- SEDIMENT BUILD UP TO NOT EXCEED 33% TOTAL CAPACITY OF BASIN.
- 4. DEWATERING OF BASIN TO BE PERFORMED TO THE BOTTOM OF THE SEDIMENT SETTLING ZONE FOLLOWING ACHIEVEMENT OF WQO'S. MANAGEMENT OF DOSAGE AND DISCHARGE TO BE ACHIEVED WITHIN 5 DAYS OF THE INITIAL RAINFALL EVENT.
- FOLLOWING DEWATERING PER NOTE 4, WATER LEVEL TO BE MAINTAINED AT 20% CAPACITY AFTER A FOUR DAY SETTLING PERIOD FOLLOWING A STORM EVENT SUCH THAT THE BASIN HAS SUFFICIENT CAPACITY TO CONTAIN RUNOFF AND SEDIMENT FROM SUBSEQUENT RAINFALL EVENTS.
- 6. WATER TO BE DOSED WITH GYPSUM TO ACCELERATE SETTLEMENT OF SUSPENDED SOLIDS
- AS REQUIRED. GYPSUM DOSAGE RATE TO BE APPLIED AT APPROX. 32-50kg PER 100 CUBIC METRE OF
- 8. THE USE OF ALUM (OR ANY OTHER ALTERNATIVE) AS A FLOCCULANT IS NOT RECOMMENDED. ALUM OR ANY OTHER FLOCCULANT IS TO BE USED ONLY FOLLOWING
- CONSULTATION WITH AND ACCEPTANCE FROM COUNCIL ESC OFFICERS. DISCHARGE FROM POND IS PERMISSIBLE WHEN THE WATER PH IS 6.5-8.5 AND IS CLARIFIED TO AT OR BELOW A TSS OF 50mg/L. CLARIFICATION WOULD GENERALLY BE ACHIEVED IN 36-72 HOURS WITH THE USE OF GYPSUM PLUS NO VISIBLE OIL OR GREASE. CORRELATION
- TESTS MUST BE UNDERTAKEN ON SITE TO ENSURE THIS IS ACHIEVED. 10. DEWATERING SHALL BE DONE IN SUCH A MANNER AS TO REMOVE THE CLEAN WATER (BEING WATER WITHIN THE ADOPTED CRITERIA) WITHOUT REMOVING OR DISTURBING THE SEDIMENT THAT HAS SETTLED. THE PUMP INTAKE PIPE IS NOT TO REST ON THE SETTLED SEDIMENT LAYER.
- 11. IF WATER EXCEEDS TSS OF 50mg/L DURING DEWATERING, PUMPING IS TO CEASE. RECORDS ARE TO BE KEPT (ON-SITE AT ALL TIMES) OF ALL MEASUREMENT PRIOR TO, DURING AND AFTER DISCHARGE. RECORDS TO BE MADE AVAILABLE TO COUNCIL OFFICERS UPON REQUEST.
- 12. PROVIDE SECURITY FENCE TO BASIN FOR SAFETY.

INSTREAM WORKS:

- SEDIMENT FENCES AND SEDIMENT FENCE RETURNS TO BE ERECTED PRIOR TO THE COMMENCEMENT OF ANY WORK. SEDIMENT FENCES TO REMAIN UNTIL COMPLETION OF INSTREAM WORK IN THESE LOCATION TO PROTECT EXISTING DOWNSTREAM PROPERTIES AND ROAD PAVEMENT. (REFER TO DRG-EW204 FOR DETAILS).
- UNDERTAKE WORK DURING A PERIOD OF DRY FORECASTED WEATHER.
- PROTECT DISTURBED AREA WITH COFFERDAMS AS REQUIRED. TEMPORARY LOW FLOW DIVERSION PIPE OR PUMPED SYSTEM MAY BE INSTALLED AT THE
- BASE OF CHANNEL TO DIVERT CLEAN WATER FROM UPSTREAM BASEFLOW. UNDERTAKE ALL INSTREAM WORK IN THE SPECIFIED SECTION OF THE CHANNEL IN
- ACCORDANCE WITH APPROVED PLANS AND IMMEDIATELY PLANT TO STABLISE THE
- 6. PLANT WITH APPROPRIATE SPECIES, AT A DENSITY THAT WOULD NATURALLY OCCUR.

INSPECTION & MAINTENANCE NOTES:

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ADEQUATE INSPECTIONS AND MAINTENANCE ARE CARRIED OUT DURING SITE WORKS. DAILY AND WEEKLY INSPECTION CHECKLISTS HAVE BEEN PROVIDED IN THE COSTIN ROE SOIL AND WATER MANAGEMENT PLAN (SWMP) Co13362.02-02.rpt.

AS NOTED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ADEQUATE MAINTENANCE OF EROSION & SEDIMENT CONTROL MEASURES ARE UNDERTAKEN DURING THE WORKS PERIOD. DAMAGED, DISLODGED OR FAULTY ESC MEASURES ARE TO BE IMMEDIATELY RECTIFIED AND THE SURROUNDING AREA IS TO BE REMEDIATED AS PER NOTES ON THIS DRAWING, THE SWMP AND THE LANDCOM 'BLUE BOOK'.

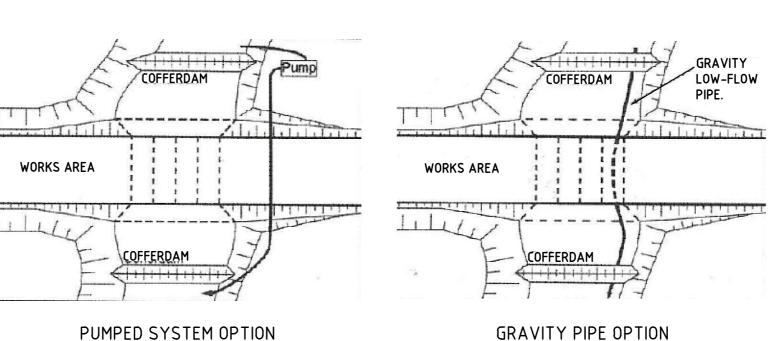
SEDIMENTATION BASIN NOTE:

REFER TO SEDIMENT & EROSION CONTROL NOTES.

FOR SEDIMENT AND EROSION CONTROL DETAILS, REFER TO THE LANDCOM 'BLUE BOOK' AND EXTRACTS ON DRAWING CO13362.02-C204.

SEDIMENTATION BASIN SIZING BASED ON RECOMMENDATIONS OF 'SOILS AND CONSTRUCTION, MANAGING URBAN STORMWAER-THE BLUE BOOK'. CAPACITY BASED ON 5-DAY RAINFALL DEPTHS AT 85th PERCENTILE INTENSITY (35mm) IN THE PENRITH CATCHMENT AREA.

- ASSUME TYPE D SOIL (CLAY/SILTY CLAY)
- 2. ASSUME GROUP D SOIL (HIGH PLASTICITY AND SHRINK/SWELL PROPERTIES)
- 3. REFER TO DRAWING C013362.02-C206 FOR SEDIMENTATION BASIN CALCULATIONS



INSTREAM WORKS COFFERDAM ARRANGEMENT

SITE PREPARATION NOTES :

- ALL EARTHWORKS SHALL BE COMPLETED GENERALLY IN ACCORDANCE WITH THE GUIDELINES SPECIFIED BY THE GEOTECHNICAL REPORT PSM3276-102S PROVIDED BY PELLS SULLIVAN MEYNINK **DATED** 01.06.20
- EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY BOXALL TITLED
- 10129-005-TOPO REV B **DATED** 12.06.20.
- STRIP ANY TOP SOIL OR DELETERIOUS MATERIAL AND DISPOSE OF FROM SITE OR STORE AS
- COMPLETE CUT TO FILL EARTHWORKS TO ACHIEVE THE REQUIRED LEVELS AS INDICATED ON THE DRAWINGS WITHIN A TOLERANCE OF +0mm/-10mm THROUGH BUILDING PADS/PAVEMENTS AND +0mm/-20mm ELSEWHERE.
- PREPARE STEEP BATTERS TO RECEIVE FILL BY CONSTRUCTING BENCHING TO FACILITATE FILL PLACEMENT AND COMPACTION.
- 5. AREAS TO RECEIVE FILL (THAT ARE NOT ON BENCHED BATTERS) AND AREAS IN CUT SHALL BE PROOF ROLLED TO IDENTIFY ANY SOFT HEAVING MATERIAL. SOFT MATERIAL SHALL BE BOXED OUT AND REMOVED PRIOR TO FILL PLACEMENT. PROOF ROLLING TO BE INSPECTED BY A GEOTECHNICAL ENGINEER OR THE EARTHWORKS DESIGNER.
- SITE WON FILL SHALL BE COMPACTED IN MAXIMUM 300mm LAYERS AND TO DRY OR HILF DENSITY RATIOS (STANDARD COMPACTION) OF BETWEEN 98% AND 103%. THE PLACEMENT MOISTURE VARIATION OR HILF MOISTURE VARIATION SHALL BE CONTROLLED TO BE BETWEEN 2% DRY AND 2% WET.
- B. IMPORTED FILL SHALL BE COMPACTED IN MAXIMUM 300mm LAYERS AND TO DRY OR HILF DENSITY RATIOS (STANDARD COMPACTION) OF BETWEEN 98% AND 103%. THE PLACEMENT MOISTURE VARIATION OR HILF MOISTURE VARIATION SHALL BE CONTROLLED TO BE BETWEEN 2% DRY AND 2% WET.
- ALL ENGINEERED FILL PARTICLES SHALL BE ABLE TO BE INCORPORATED WITHIN A SINGLE LAYER. FURTHER, LESS THAN 30% OF PARTICLES SHALL BE RETAINED ON THE 37.5 MM SIEVE. ENGINEERED FILL SHALL BE ABLE TO BE TESTED IN ACCORDANCE WITH THE STANDARD COMPACTION METHOD (AS1289.5.4.1) OR HILF TEST METHOD (AS1289.5.7.1). THESE METHODS REQUIRE LESS THAN 20% RETAINED ON THE 37.5 MM SIEVE. WHERE BETWEEN 20% AND 30% OF PARTICLES ARE RETAINED ON THE 37.5 MM SIEVE THE ABOVE TEST METHODS SHALL STILL BE ADOPTED AND TEST REPORTS ANNOTATED APPROPRIATELY. THESE REQUIREMENTS SHOULD BE MET BY THE MATERIAL AFTER PLACEMENT AND COMPACTION
- 10. ALL THE EARTHWORKS UNDERTAKEN AND THE SUBGRADE CONDITION IN THE CUT AREAS [IN THE STATED PERIOD] ARE DOCUMENTED IN THE REPORTS AND HAVE BEEN UNDERTAKEN IN ACCORDANCE WITH THE SPECIFICATION.
- 11. PRIOR TO ANY EARTHWORKS, EROSION CONTROL AS OUTLINED IN THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE COMPLETED.
- 12. EXISTING ROCK, IF ANY, SHALL BE REMOVED BY HEAVY ROCK BREAKING OR RIPPING.
- MATCH EXISTING LEVELS AT BATTER INTERFACE.
- 14. CONTRACTOR TO MATCH EXISTING LEVELS AT THE INTERFACE OF EARTHWORKS AND EXISTING SURFACE AT BATTER LOCATIONS OR WHERE NO RETAINING WALLS ARE PRESENT. ANY DISCREPANCY BETWEEN DESIGN AND EXISTING LEVELS TO BE REFERRED TO THE ENGINEER FOR DIRECTION OR ADJUSTMENTS TO DESIGN LEVELS.
- 15. DURING EARTHWORKS THE CONTRACTOR IS TO ENSURE ALL AREAS ARE FREE DRAINING & WILL NOT RETAIN WATER DURING RAINFALL. PROVIDE TEMPOARY MEASURES AS REQUIRED TO ENSURE FREE FLOWING RUNOFF THROUGH MANAGED DRAINAGE PATHS, DIVERSION DRAINS OR OTHER SUITABLE DISPOSAL METHOD AS AGREED DURING THE WORKS. REFER ANY CONCERNS TO THE ENGINEER. REFER TO EROSION AND SEDIMENT CONTROL DRAWINGS

FOR DEVELOPMENT APPLICATION

MAMRE SOUTH PRECINCT 657 - 708 MAMRE ROAD

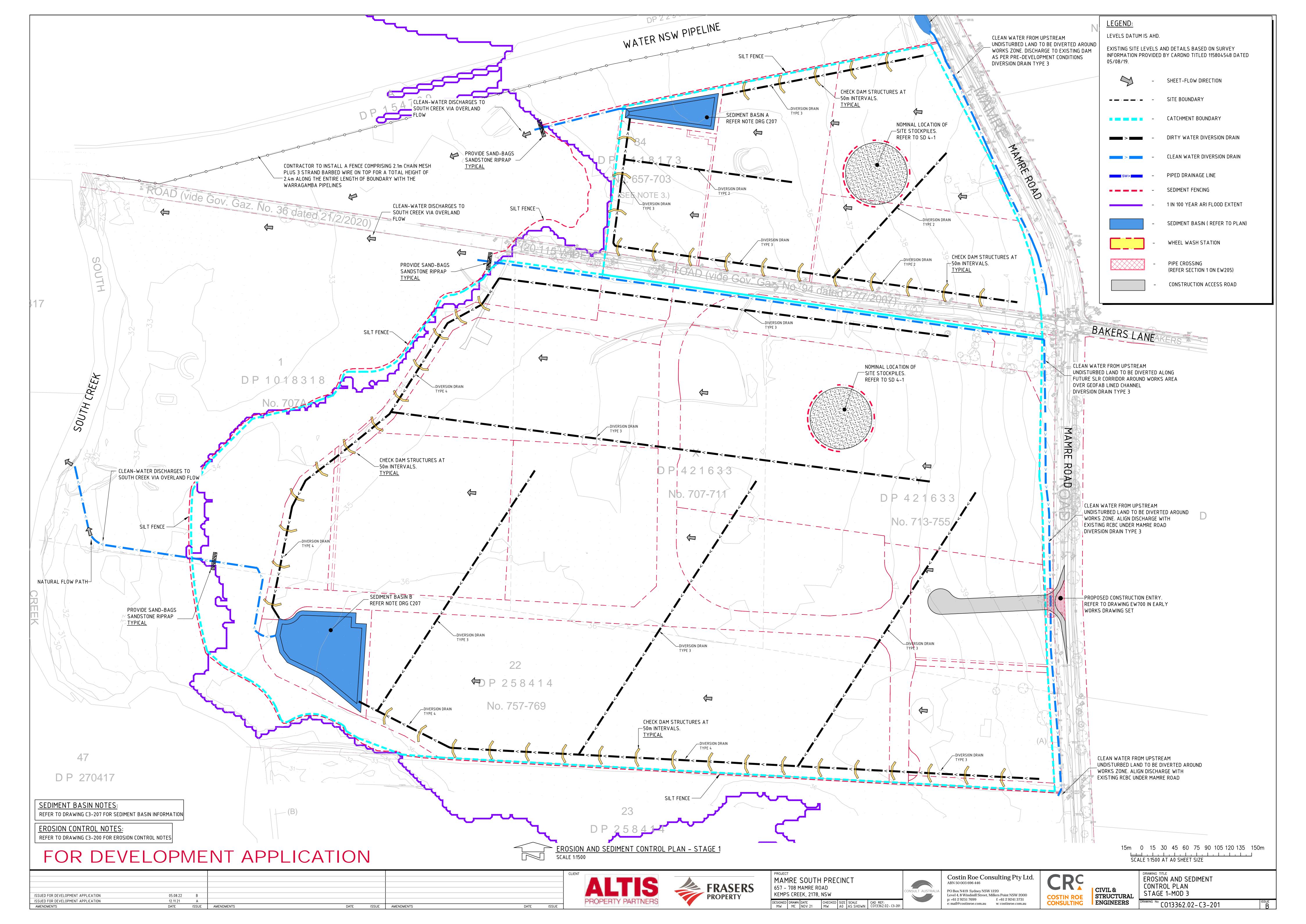


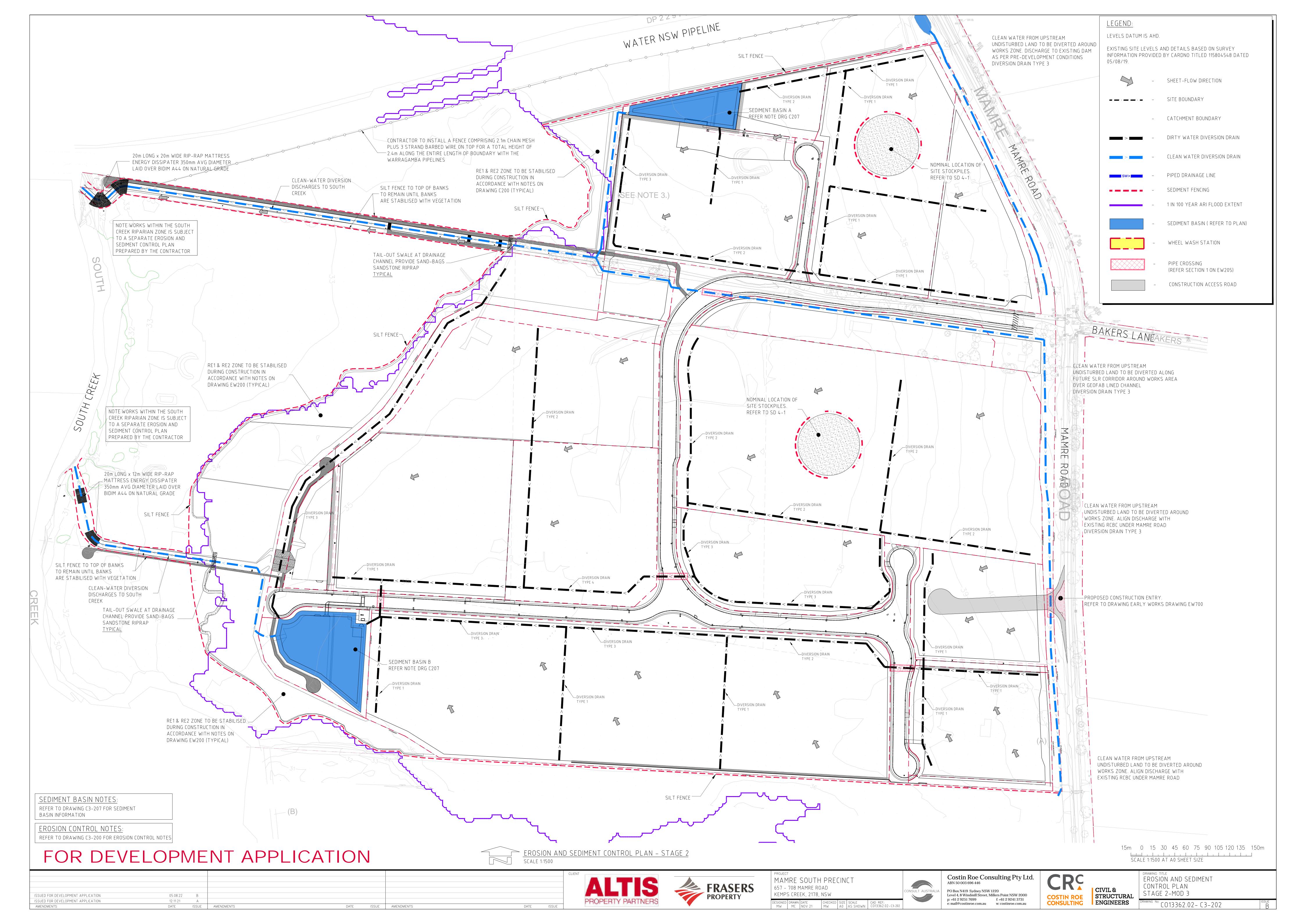


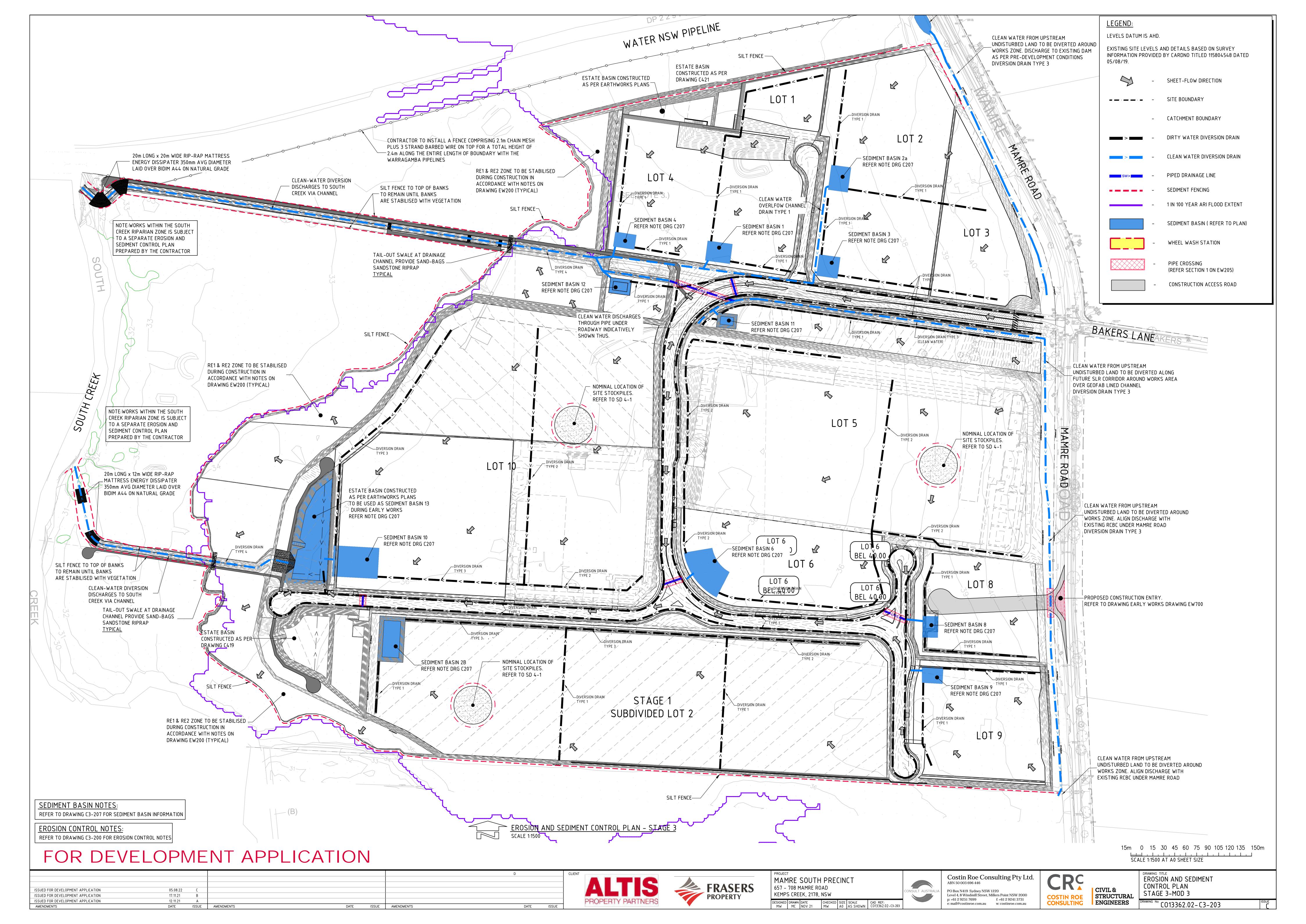
EROSION AND SEDIMENT CONTROL **ENGINEERING NOTES-MOD 3**

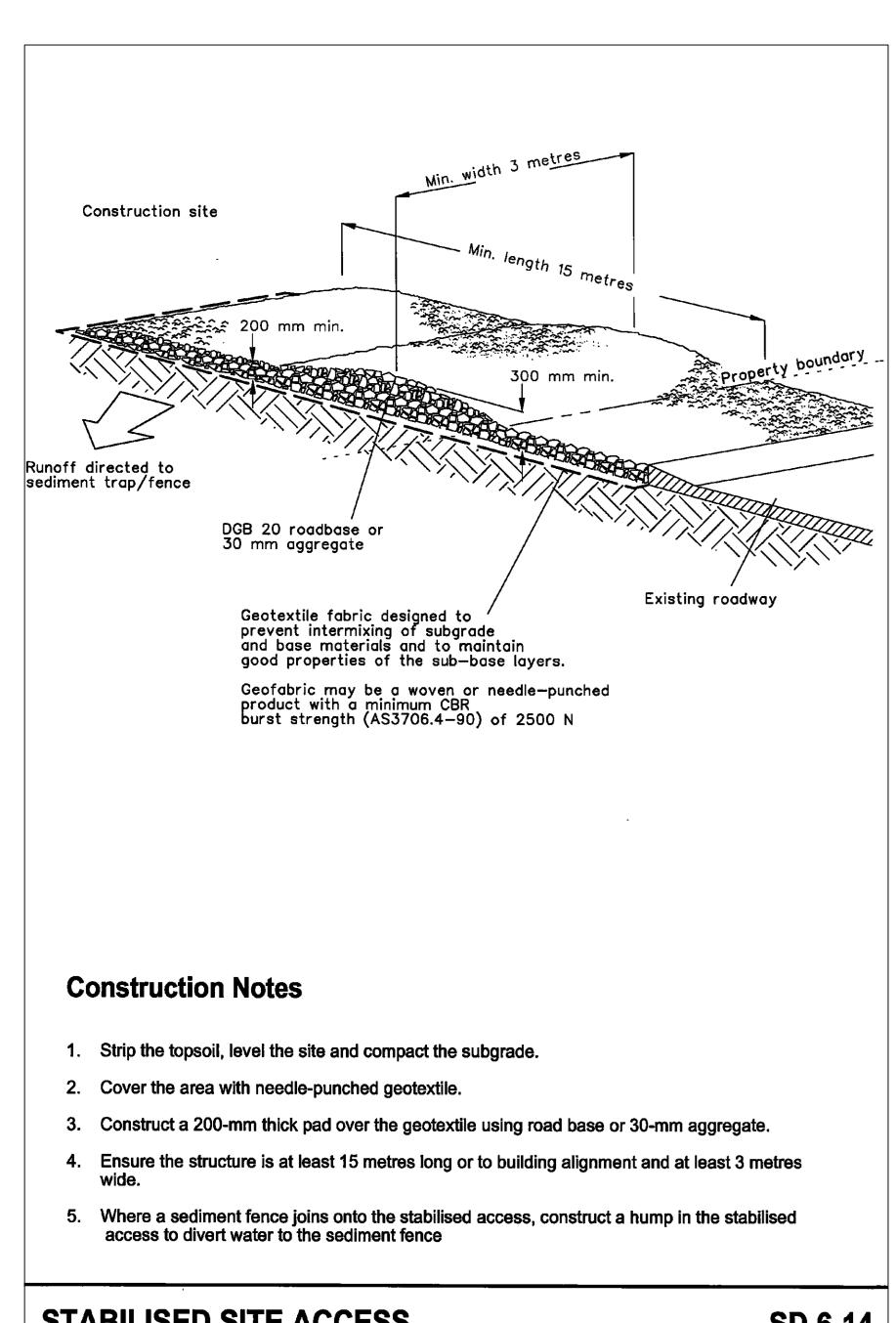
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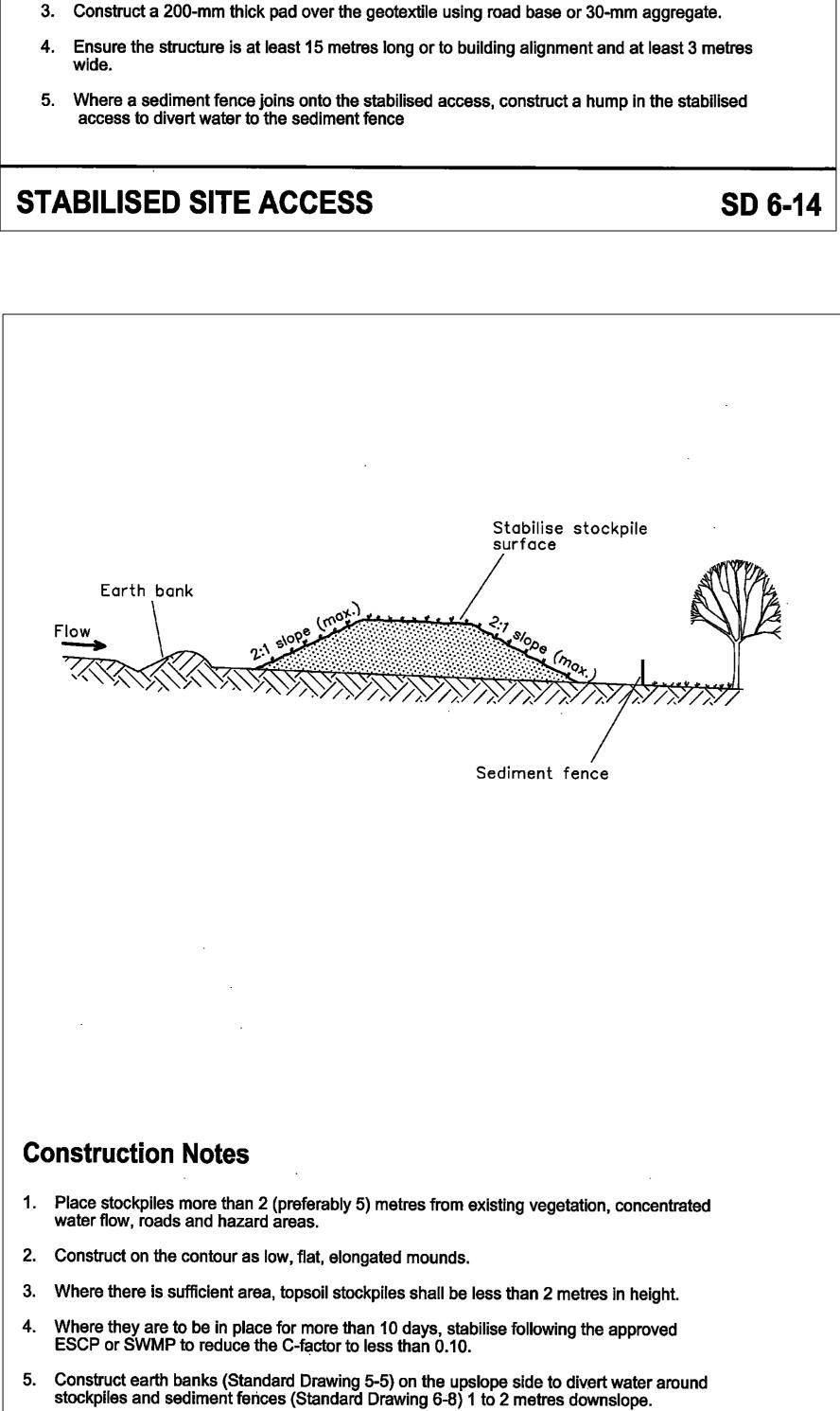
FRASERS KEMPS CREEK, 2178, NSW STRUCTURAL p: +61 2 9251 7699 ENGINEERS DESIGNED DRAWN DATE CHECKED SIZE SCALE CAD REF:
MW MC NOV 21 MW A0 AS SHOWN C013362.02-C3-20 e: mail@costinroe.com.au w: costinroe.com.au

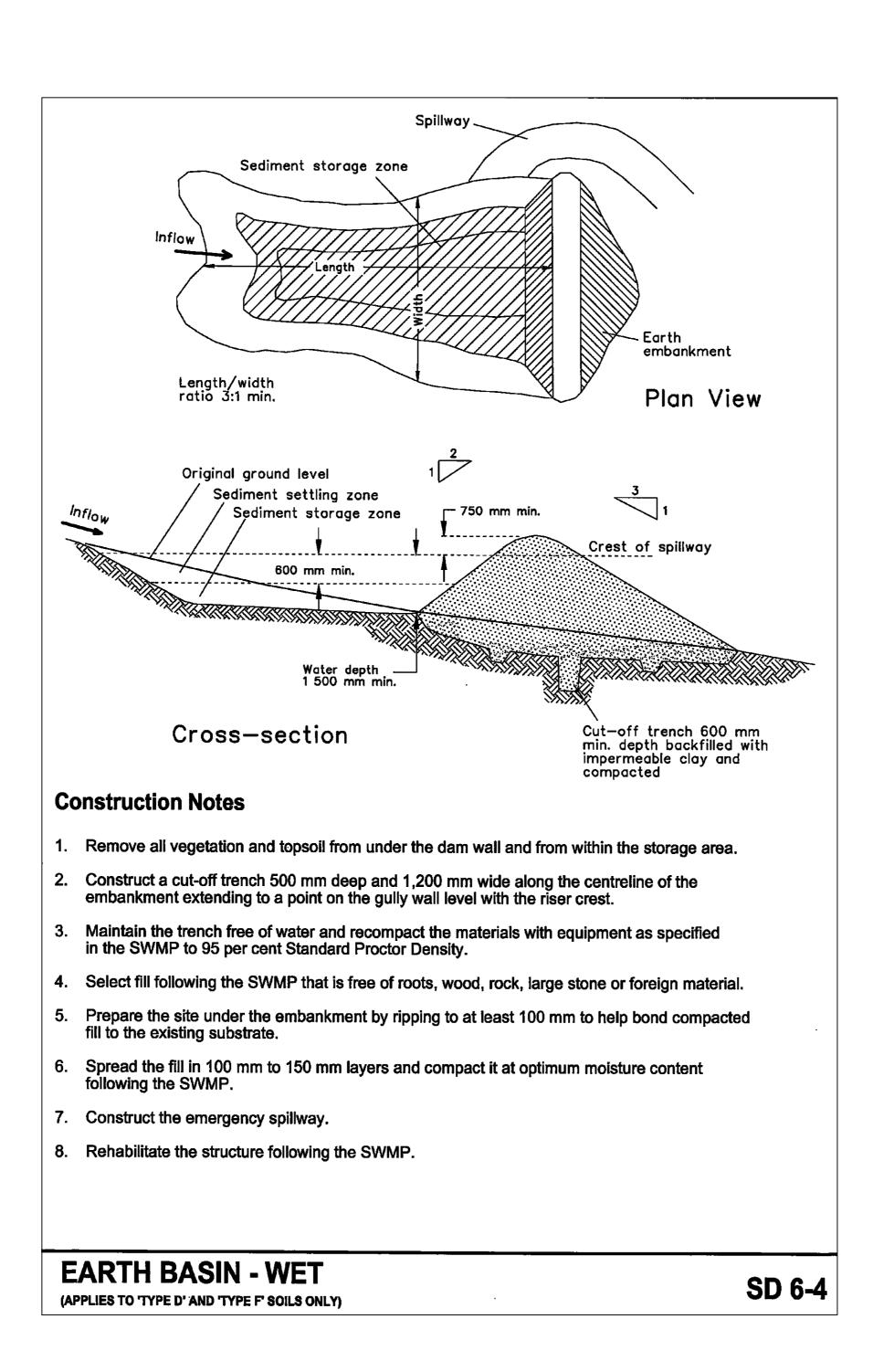


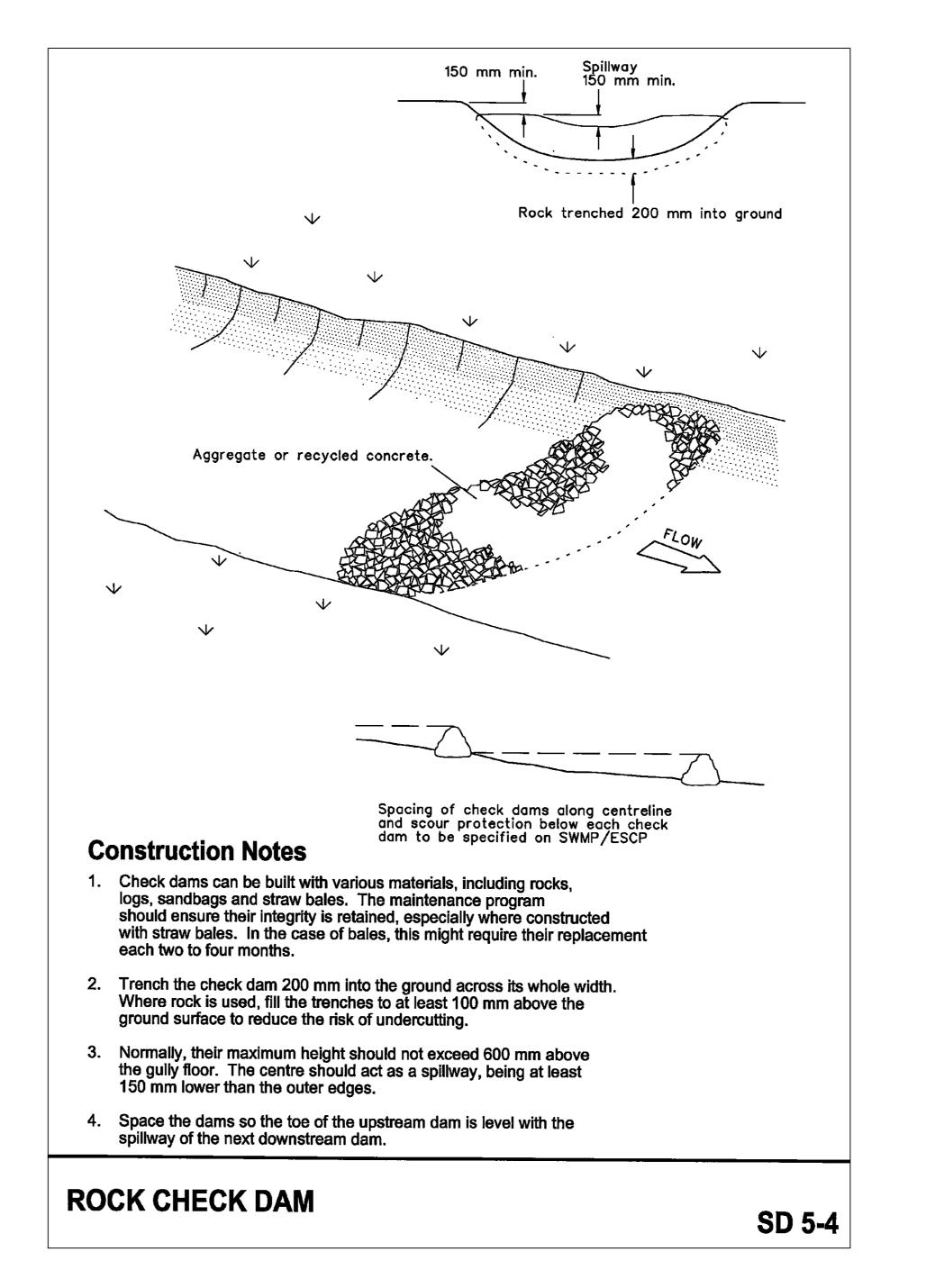


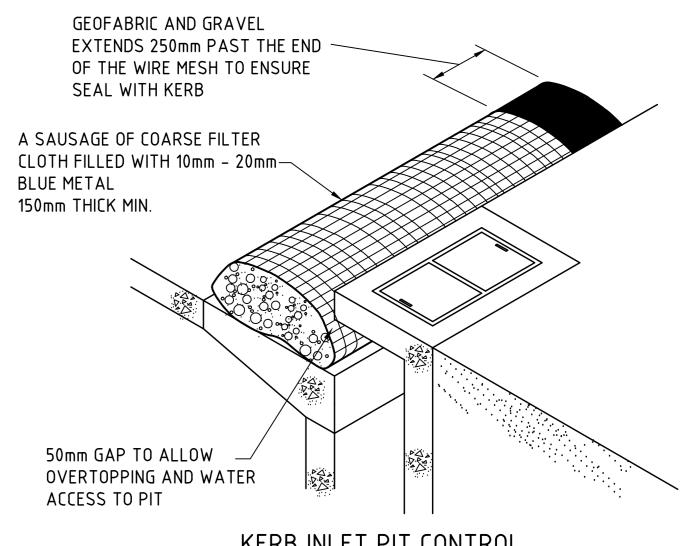




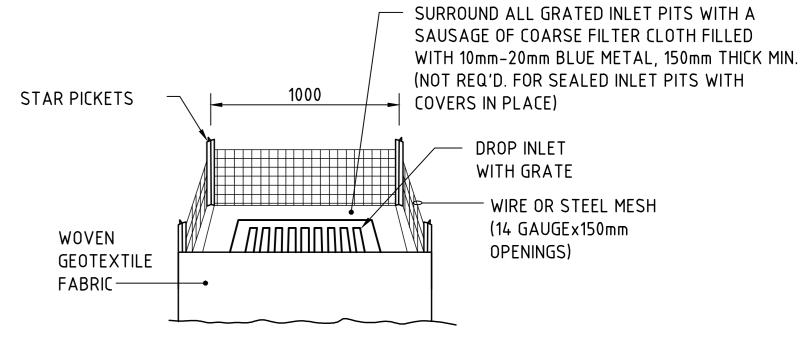








KERB INLET PIT CONTROL



GRATED INLET PIT FILTER DETAIL N.T.S

NOTE: ADOPT ABOVE DETAILS AROUND <u>ALL</u> PITS WITHIN AREA ENCOMPASSED BY SILT FENCE & TO PITS ON THE ROAD ADJACENT TO SITE BOUNDARY.

ENGINEERS

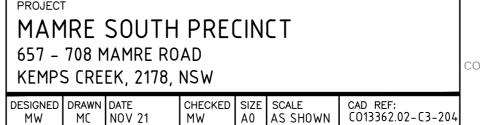
EROSION & SEDIMENT CONTROL NOTES: REFER TO DRAWING C3-200 FOR EROSION & SEDIMENT CONTROL NOTES

FOR DEVELOPMENT APPLICATION

SD 4-1

DATE ISSUE AMENDMENTS





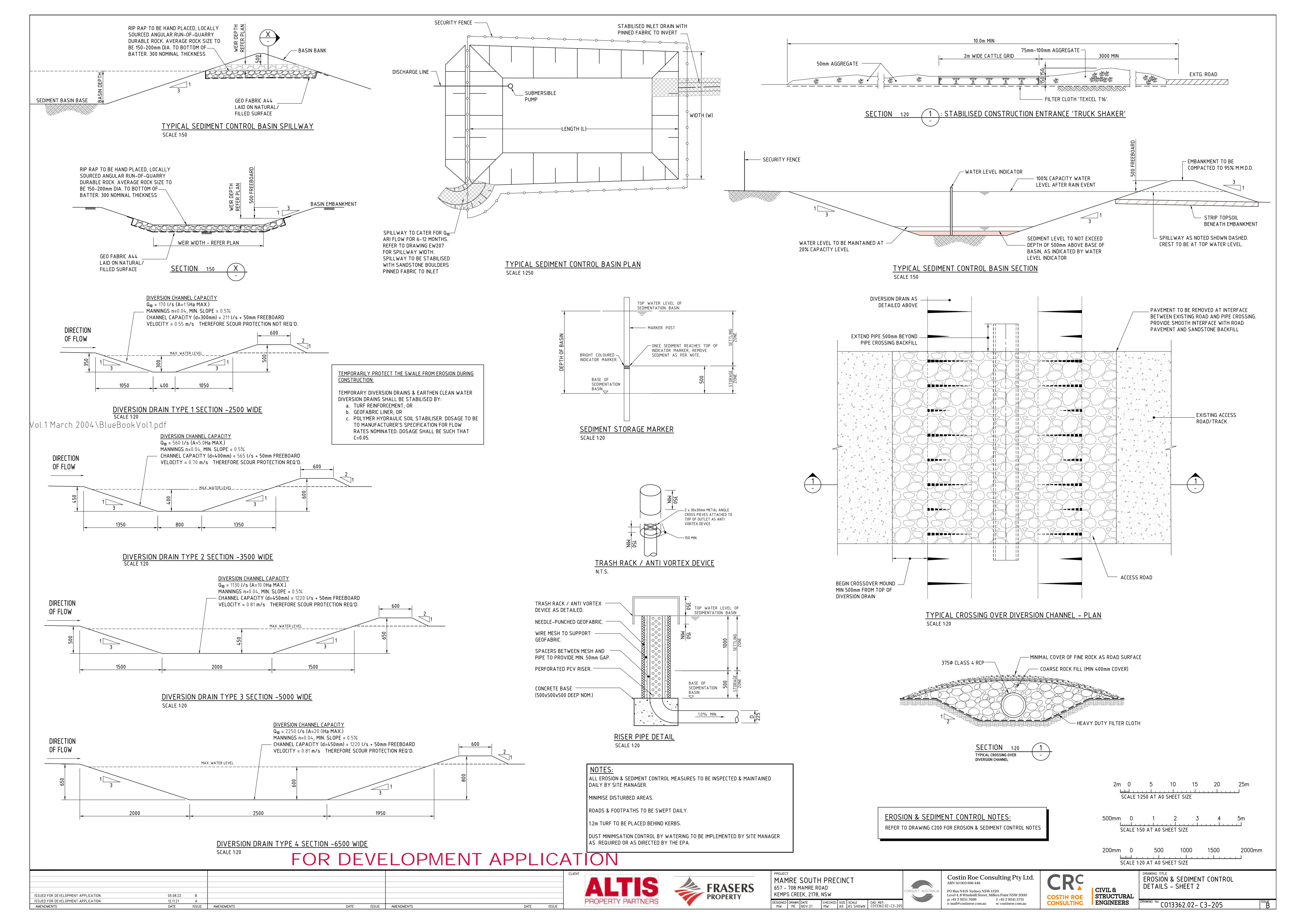


Costin Roe Consulting Pty Ltd. ABN 50 003 696 446

EROSION & SEDIMENT CONTROL DETAILS - SHEET 1 CIVIL & STRUCTURAL

RAWING No CO13362.02- C3-204

STOCKPILES



1. Erosion Hazard and Sediment Basins Site Name: Mamre Road Kemps Creek Site Location: Kemps Creek Precinct/Stage: STAGE 1 EROSION AND SEDIMENT CONTROLS Other Detail is: Sub-catchment or Name of Structure	2. Flow Calculations Peak flow is given by the Rational Formula. Qy = 0.00278 x C ₁₀ x F _Y x I _{y, to} x A where: Q _y is peak flow rate (m*/sec) of average recurrence intenal (ARI) of "Y" years C ₁₀ is the unroll coefficient (dimensionless) for ARI of 10 years. F _Y is a frequency factor for "Y" years A is the catchment area in nectares (ma) I _{y, to} is the average ranial linension. I'm of concentration (t ₀) = 0.76 x (A/100) ^{9.38} hrs Note: For urban catchments that the me of concentration should be determined by more precise calculations or reduced by a factor of 30 per cent. Place an x in the appropriate row below to automatically halve the time of concentration for that sub-catchment. Structure Details Notes Notes Rainfall Intensities Rainfall Intensities 1-year, to 68.6 89.6 99.6 Place as a few to halve to: x x in the properties of the properti	3. Sediment Basin Spillway Design Structure Details Structure Details Structure Name A B Aut-decide from Work Time of concentration (te) 12 20 Aut-calculated assuming: Rainfall Intensities (IFD Values) 1 year, to 98,00 50,00 B B B B B B B B B B B B B B B B B B	Precinct/Stage: STAGE 2 EROSION AND SEDIMENT CONTROLS Site area Sub-catchment or Name of Structure A B B I I I I I I I I I I I I I I I I I	2. Flow Calculations Peak flow is given by the Rational Formula: Qy = 0.00278 x C ₁₀ x F _Y X I _{y, to} x A where: Q _y Is peak flow rate (m*/sec) of average recurrence interval (ARI) of "Y" C ₁₀ is the runoff coefficient (dimension/ess) for ARI of 10 years. F _Y is a frequency factor for "Y" years. A is the calcriment area in hextraes (ha) I _{y, to} is the average rainfall intensity (mm/h) for an ARI of "Y" years and a design duration of "to" (minutes or hours) Time of concentration (t _x) = 0.76 x (A/100) ^{0.38} hrs Note: For urban catchments the time of concentration should be determined by more preclaculations or reduced by a factor of 50 per cent. Place an x in the appropriate row bell automatically halve the time of concentration for that sub-catchment. Structure Details Note: Structure Details Note: Structure Details Note: Catchment Area (ha) 16.69 68.30 Place an x be to halve to x x x Time of concentration (to) 12 20 Place an x be to halve to x x x Time of concentration (to) 12 20 Place an x be to halve to x x x Time of concentration (to) 12 20 Rainfall intensities 1.year, to 6.91 9.91 1.year, to 6.91 9.91 2.year, to 134 134 3.09 year, to 135 136 3.09 year, to 135 136 3.09 year, to 136 136 Can use 0.85 for a const FF, 1-year (10 4) 155 155 Description of the concentration of the const FF, 2-year (10 5) 1.55 Frequency Factors FF, 1-year (10 6) 0.8 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	Catchment Afra (ha) 15.99 63.95 Auto-calculated assuming to is halved
1. Erosion Hazard and Sediment Basins Site Name: Mamre Road Kemps Creek Site Location: Kemps Creek Precinct/Stage: STAGE 3 EROSION AND SEDIMENT CONTROLS Other Details: Site area	2. Flow Calculations Peak flow is given by the Rational Formula: Qy = 0.00278 x C ₁₀ x F _Y x I _{y, to} x A where: Q _y is peak flow rate (m²/sec) of average recurrence interval (ARI) of "Y" years C ₁₀ is the runoff coefficient (dimensionless) for ARI of 10 years. F _y is a frequency factor for "Y" years. A is the catchment area in hectares (ha) I _{y, to} is the average rainfall intensity (mm/hr) for an ARI of "Y" years and a design duration of "tc" (minutes or hours) Time of concentration (t _o) = 0.76 x (A/100) ^{0.38} hrs Note: For urban catchments the time of concentration should be determined by more precise calculations or reduced by a factor of 50 per cent. Place an x in the appropriate row below to automatically halve the time of concentration for that sub-catchment. Structure Details Notes Name 1 2 2 8 3 4 5 Notes Name Catchment Area (ha) 0.944 5.5 13.68 2.53 4.67 3.24 Notes Place an x here to halve to x x x x x x x x x x x x x x x x x x	1. Erosion Hazard and Sediment Basins Site Name: Mamre Road Kemps Creek Site Location: Kemps Creek Precinct/Stage: STAGE 3 EROSION AND SEDIMENT CONTROLS Other Details: Site area Sub-catchment or Name of Structure Notes Site area Sub-catchment or Name of Structure Notes Total catchment area (ha) 3.38 2.57 2.96 6 11.67 Disturbed catchment area (ha) 3.38 2.57 2.96 6 11.67 Soil analysis (enter sediment type if known, or laboratory particle size data) Sediment Type (C, For D) if known: D D D D D From Appendix C (if known) 96 sand (fraction 0.02 to 2.00 mm) 96 sand (fraction 0.02 to 2.00 mm) 96 clay (fraction finer fran 0.002 mm) 96 clay (fraction finer fran 0.002 mm) Dispension percentage E.g. enter 10 for dispension of 10% Sed Sed Section 6.3.3(e). Auto-calculated Soil Texture Group D D D D D D Automatic calculation from above	Peak flow is given by the Rational Formula: Qy = 0.00278 x C ₁₀ x F _Y x I _{y, to} x A Where: Qy is peak flow rate (m³/sec) of average recurrence interval (ARI) of "Y" years C ₁₀ is the runoff coefficient (dimensionless) for ARI of 10 years. Fy is a frequency factor for "Y" years. A is the catchment area in hectares (ha) I _{y, to} is the average rainfall intensity (mm/hr) for an ARI of "Y" years and a design duration of "tc" (minutes or hours) Time of concentration (t _o) = 0.76 x (A/100) ^{0.38} hrs Note: For urban catchments the time of concentration should be determined by more precise calculations or reduced by a factor of 50 per cent. Place an x in the appropriate row below to automatically halve the time of concentration for that sub-catchment. Structure Details Notes Notes Site II Othe Site II Othe Site area Total catchment area (ha) Disturbed catchment area (ha) Disturbed catchment area (ha) Disturbed catchment area (ha) Disturbed catchment area (ha) Soil analysis (enter seed the same of concentration of that sub-catchment. Structure Details Notes	Time	12 13 a (ha) 4.4 5.14 to halve tc x x Place an x if disturbed catchment minutes

IFD: 2-year, 6-hour storm (if known) to be used to be used **RUSLE Factors** RUSLE Factors 2210 2210 2210 2210 2210 2210 Auto-filled from above 2210 | 2210 | 2210 | 2210 | Auto-filled from above C10 run off coefficient 0.9 0.9 0.9 0.9 0.9 Use AR&R or Table F3, pg F-6 C10 runoff coefficient 0.9 0.9 0.9 0.9 Use AR&R or Table F3, pg F-6 erodibility (K-factor) Soil erodibility (K-factor) Soil erodibility (K-factor)
 200
 200
 300
 300
 220
 300

 0.5
 0.5
 0.5
 0.5
 0.5
 RUSLE LS factor calculated for a high

 0.12
 0.12
 0.13
 0.12
 0.13
 rill/interrill ratio.
 RUSLE LS factor calculated for a high FF, 1-year U. Can use 0.8 for a construction site FF, 1-year 0.8 0.8 0.8 0.8 0.8 Can use 0.8 for a construction site Can use 0.8 for a construction site rill/interrill ratio. Can use 0.85 for a construction s Can use 0.85 for a construction site .3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 Can use 0.85 for a construction sit Erosion control practice (P-factor) rosion control practice (P -factor) Erosion control practice (P -factor) Can use 0.95 for a construction s 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 Can use 0.95 for a construction sit Can use 0.95 for a construction site Generally always 1 Generally always 1 Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)

Storage (soil) zone design (no of months)

2 2 2 2 2 Minimum is generally 2 months

Cv (Volumetric runoff coefficient)

0.64 0.64 0.64 0.64 0.64 See Table F2, page F-4 in Appendix F FF, 20-year Can use 1.05 for a construction sit FF, 20-year Can use 1.05 for a construction s Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins) Can use 1.05 for a construction site Can use 1.15 for a construction si Can use 1.15 for a construction sit Can use 1.15 for a construction site Can use 1.2 for a construction site Flow Calculations Flow Calculations Calculations and Type D/F Sediment Basin Volumes Calculations and Type D/F Sediment Basin Volumes Calculations and Type D/F Sediment Basin Volumes 1-year, tc (m³/s) 0.471 0.358 0.441 0.685 1.626 2-year, tc (m³/s) 0.648 0.492 0.607 0.939 2.236 Soil loss (t/ha/yr) 1.054 2.141 0.485 0.957 0.507 See Table 4.2, page 4-13 265 1.543 3.125 0.71 1.399 0.74 Soil loss (m3/ha/yr) 5-year, tc (m³/s) 1.234 1.442 Soil loss (m³/ha/yr) Sediment basin storage (soil) volume (m³)

Sediment basin settling (water) volume (m³)

Sediment basin settling (water) volume (m³)

Total conversion to cubic metres

Sediment basin settling (water) volume (m³)

Total conversion to cubic metres

See Sections 6.3.4(i) for calculations

Sediment basin total volume (m³)

Total conversion to cubic metres

See Sections 6.3.4(i) for calculations

Sediment basin total volume (m³) 316 1.844 3.731 0.848 1.671 0.884 Sediment bas in storage (soil) volume (m³) 10-year, tc (m³/s) 1.133 0.862 1.059 1.636 3.913
 Sediment basin settling (water) volume (m³)
 211
 1232
 3064
 567
 1046
 726
 See Sections 6.3.4(i) for calculations

 Sediment basin total volume (m³)
 214
 1250
 3112
 576
 1062
 737
 See Sections 6.3.4(i) for calculations 5 2.912 5.904 1.339 2.634 1.398 1.789 1.361 1.669 2.59 6.178 0.581 3.385 6.859 1.557 3.071 1.625 100-year, tc (m³/s) 2.08 1.582 1.946 3.008 7.183 NB for sizing of Type C (coarse) sediment basins, see Worksheet 3 (if required). NB for sizing of Type C (coarse) sediment basins, see Worksheet 3 (if required). NB for sizing of Type C (coarse) sediment basins, see Worksheet 3 (if required). NB for flow calculations on sediment basin spillways, see Worksheet 3 (if required). NB for flow calculations on sediment basin spillways, see Worksheet 3 (if required). NB for flow calculations on sediment basin spillways, see Worksheet 3 (if required). 3. Sediment Basin Spillway Design 3. Sediment Basin Spillway Design 3. Sediment Basin Spillway Design
 Structure Details

 Structure Name
 1
 2a
 2b
 3
 4
 5
 Auto-filled from Worksheet 1
 12 13 Structure Name 6 8 9 10 11 Auto-filed from Worksheet 1 Structure Name Catchment Area (ha) Auto-filled from Worksheet 1 Catchment Area (ha) Auto-filled from Worksheet 1 Time of concentration (tc) Time of concentration (tc) Auto-calculated assuming to is halved Rainfall Intensities (IFD Values) Rainfall Intensities (IFD Values) Rainfall Intensities (IFD Values) Enter the relevant rainfall intensities (in nter the relevant rainfall intensities (in 101.56 101.56 94.68 109.97 114.94 127.06 mm/hr) for each of the nominated rainfa nm/hr) for each of the nominated rainfa 10 year, to The time of concentration (tc) determi The time of concentration (tc) determine the duration of the event to be used the duration of the event to be used the duration of the event to be used 100 year, to 100 year, to 0.9 0.9 0.9 0.9 0.9 Use AR&R or Table F3, pg F-6 10 10 10 10 10 Select design ARI (years) from dropdow

See Section 6.3.4 and, particularly,

Table 6.3 on pages 6-24 and 6-25.

STAGE 3 BASIN CALCULATIONS - REFER DRAWING CO13362.02-C3-203

DATE ISSUE

1 1 1 1 #N/A Auto-filled based on selected ARI

(in mm/hr) for each of the

nominated rainfall events.

The time of concentration (tc)

determines the duration of the even

DATE ISSUE AMENDMENTS

esign rainfall depth (no of days)

x-day, y-percentile rainfall event (mm)

IFD: 2-year, 6-hour storm (if known)

Design rainfall depth (percentile)

Rainfall R-factor (if known)

FOR DEVELOPMENT APPLICATION

DATE ISSUE AMENDMENTS

0.24 1.398 3.241 0.696 1.343 1.03 Auto-calculated based on selected ARI

See Section 6.3.4 and, particularly,

Table 6.3 on pages 6-24 and 6-25.

Design rainfall depth (no of days)

x-day, y-percentile rainfall event (mm)

D: 2-year, 6-hour storm (if known)

Design rainfall depth (percentile)

Rainfall R-factor (if known)

Flow Calculation

SSUED FOR DEVELOPMENT APPLICATION







Design ARI event (select):

Design rainfall depth (no of days)

x-day, y-percentile rainfall event (mm)

Design rainfall depth (percentile)

(in mm/hr) for each of the

nominated rainfall events.

The time of concentration (tc)

determines the duration of the event



1 1 #N/A #N/A #N/A #N/A Auto-filled based on selected ARI

Costin Roe Consulting Pty Ltd. Level 4, 8 Windmill Street, Millers Point NSW 2000 f: +61 2 9241 3731 p: +61 2 9251 7699

e: mail@costinroe.com.au w: costinroe.com.au

Table 6.3 on pages 6-24 and 6-25.

Only need to enter one or the other here



10-year, tc 134

EROSION AND SEDIMENT CONTROL SEDIMENTATION BASIN RUSLE CALCULATIONS STRUCTURAL

(in mm/hr) for each of the

nominated rainfall events.

The time of concentration (tc)

termines the duration of the event

AWING No CO13362.02− C3−206

SEDIMENT BASIN A: CATCHMENT AREA DISTURBED AREA REQUIRED BASIN VOLUME BASE DIMENSIONS (L X B) TOP DIMENSIONS (L X B) MAX SIDE SLOPE DEPTH PROVIDED BASIN VOLUME	= 39m x 112m = 48m x 121m = 1V:3H = 1.5m = 3886m ³	SEDIMENT BASIN B: CATCHMENT AREA DISTURBED AREA REQUIRED BASIN VOLUME BASE DIMENSIONS (L X B) TOP DIMENSIONS (L X B) MAX SIDE SLOPE DEPTH PROVIDED BASIN VOLUME	= 109m x 80m = 121m x 92m = 1V:3H = 2.0m = 15850m ³
DEPTH	= 1.5m	DEPTH	= 2.0m
PROVIDED BASIN VOLUME	= 3886m ³	PROVIDED BASIN VOLUME	= 15850m ³
Q10 WEIR PEAK FLOW	= 4.24m ³ /s	Q10 WEIR PEAK FLOW	= 17.37m ³ /s
SPILLWAY WIDTH	= 7.2m	SPILLWAY WIDTH	= 30m
SPILLWAY DEPTH	= 0.5m	SPILLWAY DEPTH	= 0.5m

STAGE 1 BASIN INFORMATION - REFER DRAWING CO13362.02-C3-201

SEDIMENT BASIN A:		SEDIMENT BASIN B:	
CATCHMENT AREA	= 16.69 ha	CATCHMENT AREA	= 68.36 ha
DISTURBED AREA	= 16.69 ha	DISTURBED AREA	= 68.36 ha
REQUIRED BASIN VOLUME	= 3797m ³	REQUIRED BASIN VOLUME	= 15551m ³
BASE DIMENSIONS (L X B)	= 39m x 112m	BASE DIMENSIONS (L X B)	$= 109m \times 80m$
TOP DIMENSIONS (L X B)	$= 48m \times 121m$	TOP DIMENSIONS (L X B)	$= 121m \times 92m$
MAX SIDE SLOPE	= 1V:3H	MAX SIDE SLOPE	= 1V:3H
DEPTH	= 1.5m	DEPTH	$= 2.0 \mathrm{m}$
PROVIDED BASIN VOLUME	= 3886m ³	PROVIDED BASIN VOLUME	= 15850m³
Q10 WEIR PEAK FLOW	$= 4.24 \mathrm{m}^3/\mathrm{s}$	Q10 WEIR PEAK FLOW	= 17.37m³/s
SPILLWAY WIDTH	= 7.2 m	SPILLWAY WIDTH	= 30m
SPILLWAY DEPTH	= 0.5m	SPILLWAY DEPTH	= 0.5 m

STAGE 2 BASIN INFORMATION - REFER DRAWING C013362.02-C3-202

SEDIMENT BASIN 1: CATCHMENT AREA = 0.94 ha DISTURBED AREA = 0.94 ha REQUIRED BASIN VOLUME = 220m³ BASE DIMENSIONS (L X B) = 11m x 5m TOP DIMENSIONS (L X B) = 20m x 14m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 230m³ Q10 WEIR PEAK FLOW = 0.24m³/s SPILLWAY WIDTH = 1.0m SPILLWAY DEPTH = 0.3m	SEDIMENT BASIN 3: CATCHMENT AREA = 2.53 ha DISTURBED AREA = 2.53 ha REQUIRED BASIN VOLUME = 567m³ BASE DIMENSIONS (L X B) = 20m x 12m TOP DIMENSIONS (L X B) = 29m x 21m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 616m³ Q10 WEIR PEAK FLOW = 0.696m³/s SPILLWAY WIDTH = 2.6m SPILLWAY DEPTH = 0.3m	SEDIMENT BASIN 6: CATCHMENT AREA = 3.39 ha DISTURBED AREA = 3.39 ha REQUIRED BASIN VOLUME = 787m³ BASE DIMENSIONS (L X B) = 28m x 12m TOP DIMENSIONS (L X B) = 37m x 21m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 812m³ Q10 WEIR PEAK FLOW = 1.13m³/s SPILLWAY WIDTH = 4.5m SPILLWAY DEPTH = 0.3m	SEDIMENT BASIN 10: CATCHMENT AREA = 6.00Ha DISTURBED AREA = 6.00Ha REQUIRED BASIN VOLUME = 1397m³ BASE DIMENSIONS (L X B) = 35m x 20m TOP DIMENSIONS (L X B) = 44m x 29m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 1461m³ Q10 WEIR PEAK FLOW = 1.63m³/s SPILLWAY WIDTH = 6.0m SPILLWAY DEPTH = 0.3m	SEDIMENT BASIN 13: CATCHMENT AREA = 5.14 ha DISTURBED AREA = 5.014 ha REQUIRED BASIN VOLUME = 1197m³ BASE DIMENSIONS (L X B) = 60m x 8m TOP DIMENSIONS (L X B) = 69m x 17m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 1202m³ Q10 WEIR PEAK FLOW = 1.73m³/s SPILLWAY WIDTH = 6.4m SPILLWAY DEPTH = 0.3m
SEDIMENT BASIN 2a: CATCHMENT AREA = 5.50 Ha DISTURBED AREA = 5.50 Ha REQUIRED BASIN VOLUME = 1250m³ BASE DIMENSIONS (L X B) = 20m x 30m TOP DIMENSIONS (L X B) = 29m x 39m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 1277m³ Q10 WEIR PEAK FLOW = 1.398m³/s SPILLWAY WIDTH = 5.0m SPILLWAY DEPTH = 0.3m	SEDIMENT BASIN 4: CATCHMENT AREA = 4.67 Ha DISTURBED AREA = 4.67 Ha REQUIRED BASIN VOLUME = 1087m³ BASE DIMENSIONS (L X B) = 33m x 15m TOP DIMENSIONS (L X B) = 42m x 24m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 1105m³ Q10 WEIR PEAK FLOW = 1.343m³/s SPILLWAY WIDTH = 5.0m SPILLWAY DEPTH = 0.3m	SEDIMENT BASIN 8: CATCHMENT AREA = 2.57 ha DISTURBED AREA = 2.57 ha REQUIRED BASIN VOLUME = 584m³ BASE DIMENSIONS (L X B) = 20m x 12m TOP DIMENSIONS (L X B) = 29m x 21m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 616m³ Q10 WEIR PEAK FLOW = 0.862m³/s SPILLWAY WIDTH = 3.2m SPILLWAY DEPTH = 0.3m	SEDIMENT BASIN 11: CATCHMENT AREA = 11.67 Ha DISTURBED AREA = 11.67 Ha REQUIRED BASIN VOLUME = 2717m³ BASE DIMENSIONS (L X B) = 70m x 20m TOP DIMENSIONS (L X B) = 84m x 29m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 2741m³ Q10 WEIR PEAK FLOW = 3.913m³/s SPILLWAY WIDTH = 7.0m SPILLWAY DEPTH = 0.5m	
SEDIMENT BASIN 2b: CATCHMENT AREA = 13.68 Ha DISTURBED AREA = 13.68 Ha REQUIRED BASIN VOLUME = 3112m³ BASE DIMENSIONS (L X B) = 50m x 23m TOP DIMENSIONS (L X B) = 62m x 35m MAX SIDE SLOPE = 1V:3H DEPTH = 2.0m PROVIDED BASIN VOLUME = 3226m³ Q10 WEIR PEAK FLOW = 3.24m³/s SPILLWAY WIDTH = 6.6m SPILLWAY DEPTH = 0.5m	SEDIMENT BASIN 5: CATCHMENT AREA = 3.24 Ha DISTURBED AREA = 3.24 Ha REQUIRED BASIN VOLUME = 754m³ BASE DIMENSIONS (L X B) = 30m x 10m TOP DIMENSIONS (L X B) = 39m x 19m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 756m³ Q10 WEIR PEAK FLOW = 1.03m³/S SPILLWAY WIDTH = 4.0m SPILLWAY DEPTH = 0.3m	SEDIMENT BASIN 9: CATCHMENT AREA = 2.96Ha DISTURBED AREA = 2.96Ha REQUIRED BASIN VOLUME = 673m³ BASE DIMENSIONS (L X B) = 20m x 14m TOP DIMENSIONS (L X B) = 29m x 23m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 690m³ Q10 WEIR PEAK FLOW = 1.059m³/s SPILLWAY WIDTH = 3.9m SPILLWAY DEPTH = 0.3m	SEDIMENT BASIN 12: CATCHMENT AREA = 4.40 Ha DISTURBED AREA = 4.40 Ha REQUIRED BASIN VOLUME = 1024m³ BASE DIMENSIONS (L X B) = 20m x 12m TOP DIMENSIONS (L X B) = 29m x 21m MAX SIDE SLOPE = 1V:3H DEPTH = 1.5m PROVIDED BASIN VOLUME = 616m³ Q10 WEIR PEAK FLOW = 0.868m³/s SPILLWAY WIDTH = 3.2m SPILLWAY DEPTH = 0.3m	

STAGE 3 BASIN INFORMATION - REFER DRAWING C013362.02-C3-203

DATE ISSUE AMENDMENTS

FOR DEVELOPMENT APPLICATION

 05.08.22
 B

 12.11.21
 A

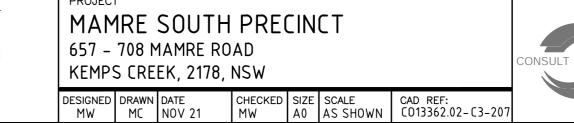
 DATE
 ISSUE
 AMENDMENTS

ISSUED FOR DEVELOPMENT APPLICATION

ISSUED FOR DEVELOPMENT APPLICATION
AMENDMENTS



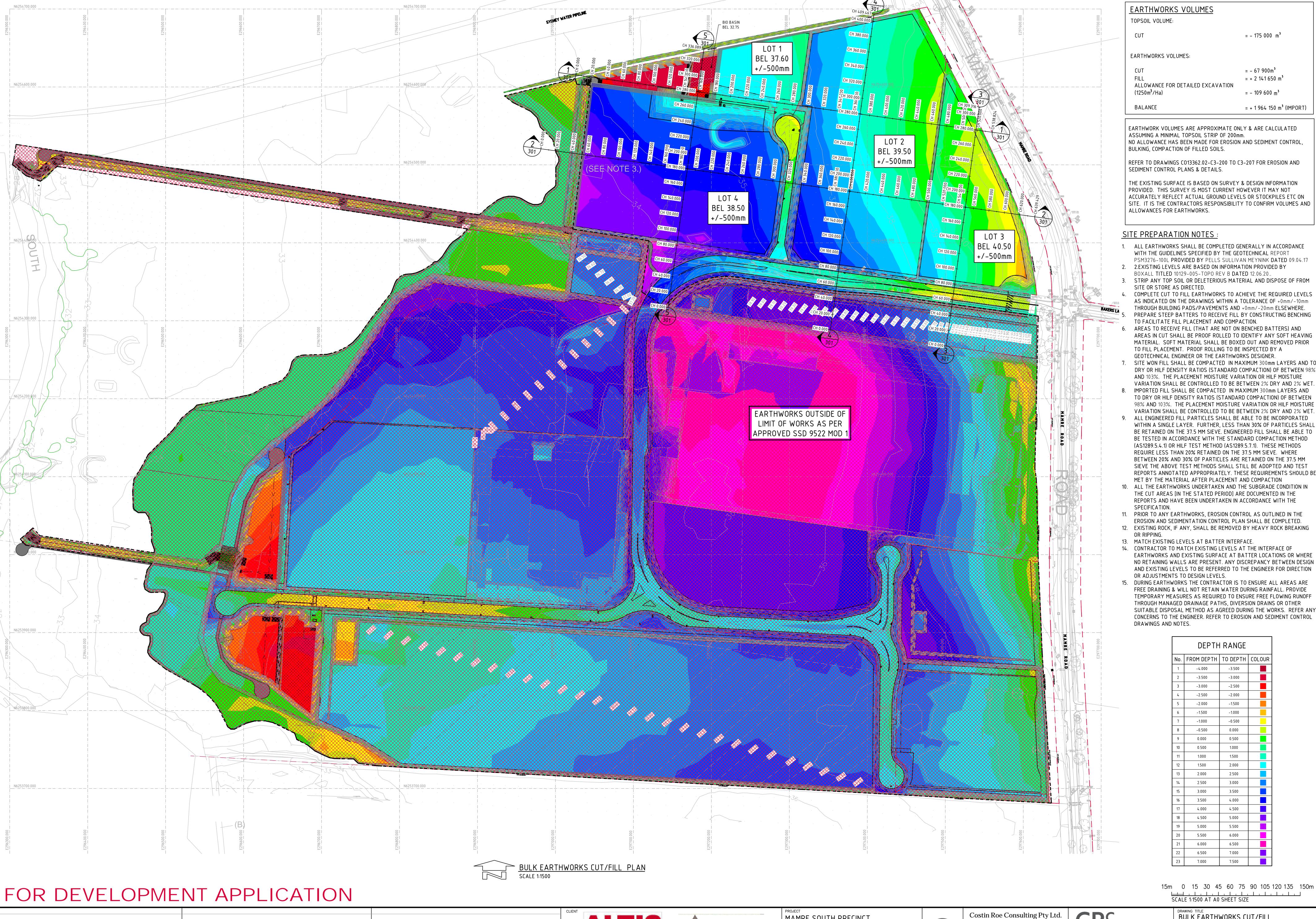






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TOPSOIL VOLUME: = - 175 000 m³ **EARTHWORKS VOLUMES:** = - 67 900m³

> BALANCE = + 1 964 150 m³ (IMPORT)

 $= + 2 141 650 \text{ m}^3$

= - 109 600 m³

BULKING, COMPACTION OF FILLED SOILS. REFER TO DRAWINGS CO13362.02-C3-200 TO C3-207 FOR EROSION AND

THE EXISTING SURFACE IS BASED ON SURVEY & DESIGN INFORMATION PROVIDED. THIS SURVEY IS MOST CURRENT HOWEVER IT MAY NOT ACCURATELY REFLECT ACTUAL GROUND LEVELS OR STOCKPILES ETC ON SITE. IT IS THE CONTRACTORS RESPONSIBILITY TO CONFIRM VOLUMES AND ALLOWANCES FOR EARTHWORKS.

SITE PREPARATION NOTES :

- 1. ALL EARTHWORKS SHALL BE COMPLETED GENERALLY IN ACCORDANCE WITH THE GUIDELINES SPECIFIED BY THE GEOTECHNICAL REPORT PSM3276-100L PROVIDED BY PELLS SULLIVAN MEYNINK DATED 09.04.17
- BOXALL TITLED 10129-005-TOPO REV B DATED 12.06.20.. STRIP ANY TOP SOIL OR DELETERIOUS MATERIAL AND DISPOSE OF FROM
- SITE OR STORE AS DIRECTED. COMPLETE CUT TO FILL EARTHWORKS TO ACHIEVE THE REQUIRED LEVELS AS INDICATED ON THE DRAWINGS WITHIN A TOLERANCE OF +0mm/-10mm
- TO FACILITATE FILL PLACEMENT AND COMPACTION. AREAS TO RECEIVE FILL (THAT ARE NOT ON BENCHED BATTERS) AND MATERIAL. SOFT MATERIAL SHALL BE BOXED OUT AND REMOVED PRIOR TO FILL PLACEMENT. PROOF ROLLING TO BE INSPECTED BY A
- GEOTECHNICAL ENGINEER OR THE EARTHWORKS DESIGNER. 7. SITE WON FILL SHALL BE COMPACTED IN MAXIMUM 300mm LAYERS AND TO DRY OR HILF DENSITY RATIOS (STANDARD COMPACTION) OF BETWEEN 98% AND 103%. THE PLACEMENT MOISTURE VARIATION OR HILF MOISTURE VARIATION SHALL BE CONTROLLED TO BE BETWEEN 2% DRY AND 2% WET. 8. IMPORTED FILL SHALL BE COMPACTED IN MAXIMUM 300mm LAYERS AND TO DRY OR HILF DENSITY RATIOS (STANDARD COMPACTION) OF BETWEEN
- VARIATION SHALL BE CONTROLLED TO BE BETWEEN 2% DRY AND 2% WET. 9. ALL ENGINEERED FILL PARTICLES SHALL BE ABLE TO BE INCORPORATED WITHIN A SINGLE LAYER. FURTHER, LESS THAN 30% OF PARTICLES SHALL BE RETAINED ON THE 37.5 MM SIEVE. ENGINEERED FILL SHALL BE ABLE TO BE TESTED IN ACCORDANCE WITH THE STANDARD COMPACTION METHOD (AS1289.5.4.1) OR HILF TEST METHOD (AS1289.5.7.1). THESE METHODS REQUIRE LESS THAN 20% RETAINED ON THE 37.5 MM SIEVE. WHERE BETWEEN 20% AND 30% OF PARTICLES ARE RETAINED ON THE 37.5 MM SIEVE THE ABOVE TEST METHODS SHALL STILL BE ADOPTED AND TEST REPORTS ANNOTATED APPROPRIATELY. THESE REQUIREMENTS SHOULD BE
- MET BY THE MATERIAL AFTER PLACEMENT AND COMPACTION 10. ALL THE EARTHWORKS UNDERTAKEN AND THE SUBGRADE CONDITION IN THE CUT AREAS [IN THE STATED PERIOD] ARE DOCUMENTED IN THE REPORTS AND HAVE BEEN UNDERTAKEN IN ACCORDANCE WITH THE SPECIFICATION.
- 11. PRIOR TO ANY EARTHWORKS, EROSION CONTROL AS OUTLINED IN THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE COMPLETED. 12. EXISTING ROCK, IF ANY, SHALL BE REMOVED BY HEAVY ROCK BREAKING
- 13. MATCH EXISTING LEVELS AT BATTER INTERFACE.
- 14. CONTRACTOR TO MATCH EXISTING LEVELS AT THE INTERFACE OF EARTHWORKS AND EXISTING SURFACE AT BATTER LOCATIONS OR WHERE NO RETAINING WALLS ARE PRESENT. ANY DISCREPANCY BETWEEN DESIGN AND EXISTING LEVELS TO BE REFERRED TO THE ENGINEER FOR DIRECTION OR ADJUSTMENTS TO DESIGN LEVELS.
- 15. DURING EARTHWORKS THE CONTRACTOR IS TO ENSURE ALL AREAS ARE FREE DRAINING & WILL NOT RETAIN WATER DURING RAINFALL. PROVIDE TEMPORARY MEASURES AS REQUIRED TO ENSURE FREE FLOWING RUNOFF THROUGH MANAGED DRAINAGE PATHS, DIVERSION DRAINS OR OTHER SUITABLE DISPOSAL METHOD AS AGREED DURING THE WORKS. REFER ANY CONCERNS TO THE ENGINEER. REFER TO EROSION AND SEDIMENT CONTROL DRAWINGS AND NOTES.

DEPTH RANGE							
No.	FROM DEPTH	TO DEPTH	COLOUR				
1	-4.000	-3.500					
2	-3.500	-3.000					
3	-3.000	-2.500					
4	-2.500	-2.000					
5	-2.000	-1.500					
6	-1.500	-1.000					
7	-1.000	-0.500					
8	-0.500	0.000					
9	0.000	0.500					
10	0.500	1.000					
11	1.000	1.500					
12	1.500	2.000					
13	2.000	2.500					
14	2.500	3.000					
15	3.000	3.500					
16	3.500	4.000					
17	4.000	4.500					
18	4.500	5.000					
19	5.000	5.500					
20	5.500	6.000					
21	6.000	6.500					
22	6.500	7.000					
23	7.000	7.500					

15m 0 15 30 45 60 75 90 105 120 135 150m SCALE 1:1500 AT A0 SHEET SIZE

ISSUED FOR DEVELOPMENT APPLICATION 17.11.21 ISSUED FOR DEVELOPMENT APPLICATION ISSUED FOR DEVELOPMENT APPLICATION 12.11.21

DATE ISSUE AMENDMENTS



MAMRE SOUTH PRECINCT 657 - 708 MAMRE ROAD KEMPS CREEK, 2178, NSW

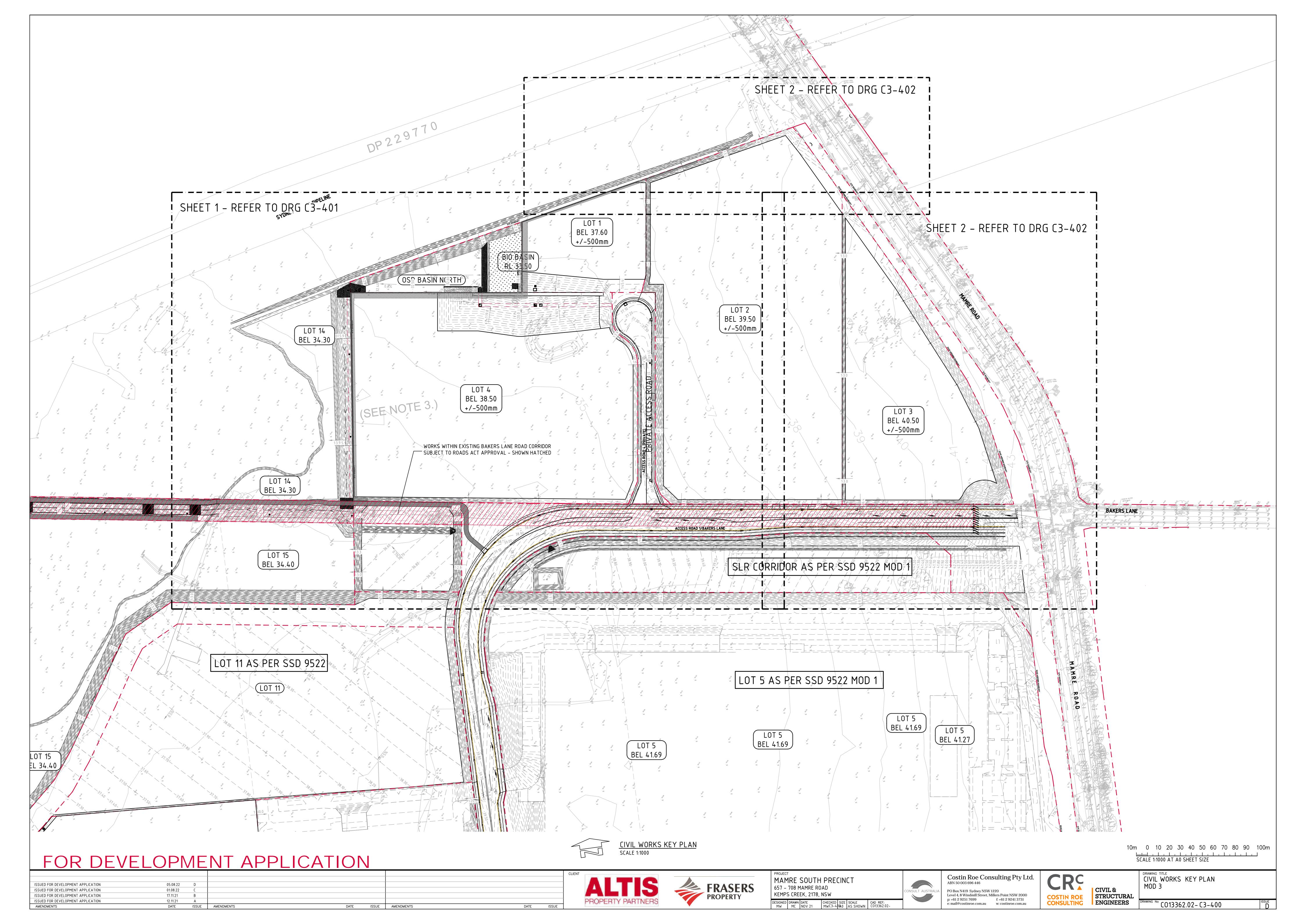
PO Box N419 Sydney NSW 1220 Level 4, 8 Windmill Street, Millers Point NSW 2000

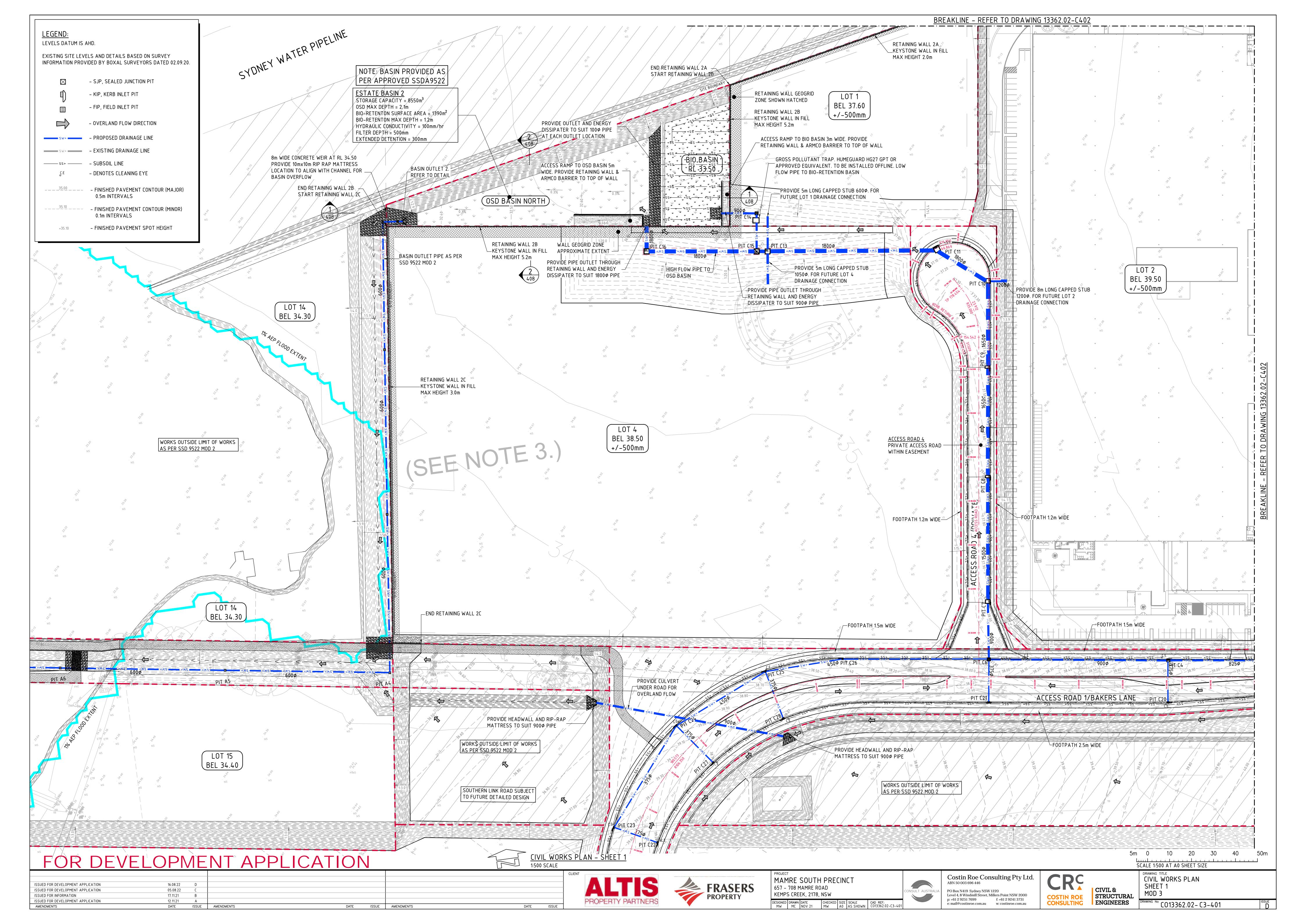
e: mail@costinroe.com.au w: costinroe.com.au

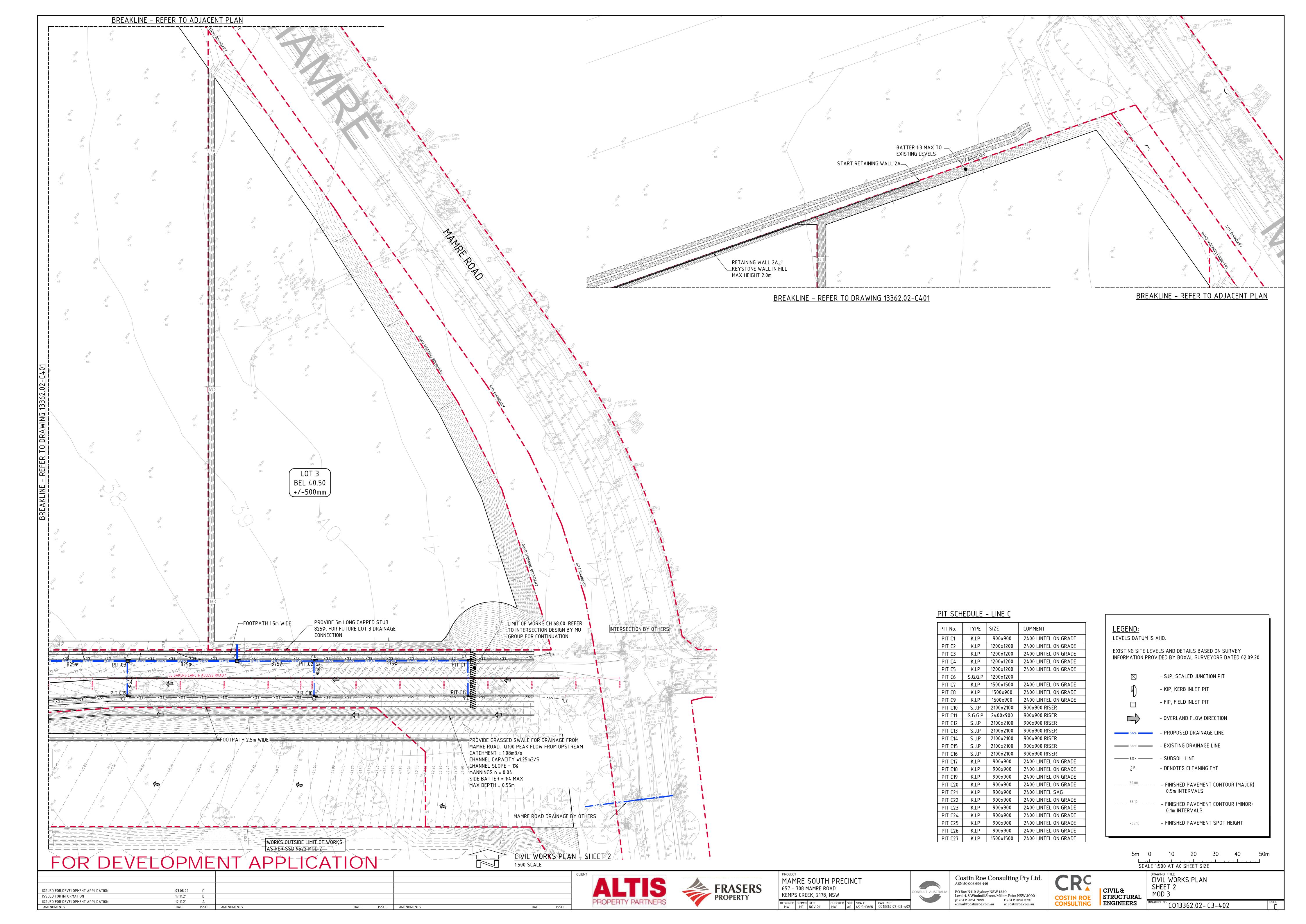
BULK EARTHWORKS CUT/FILL

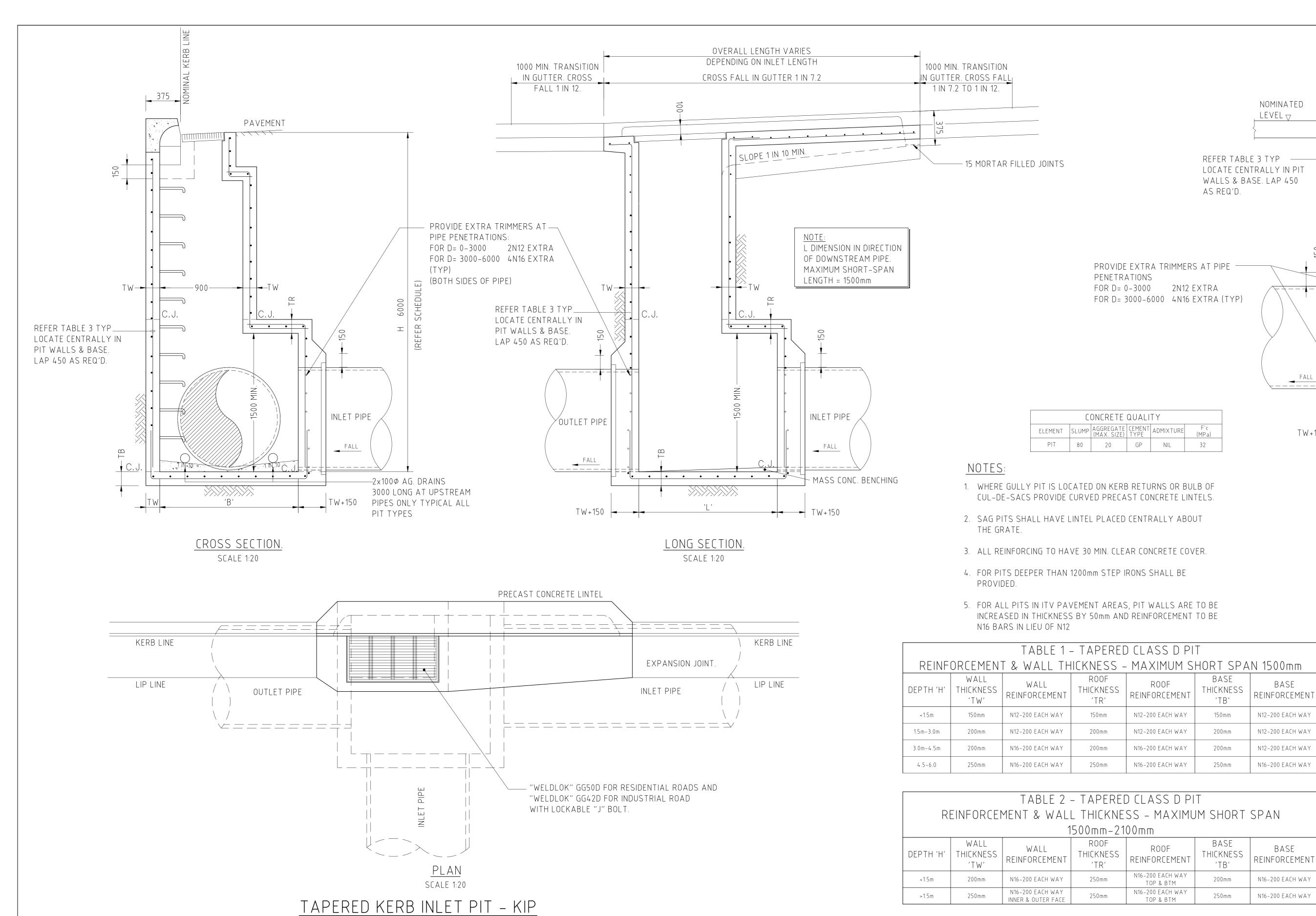
STRUCTURAL

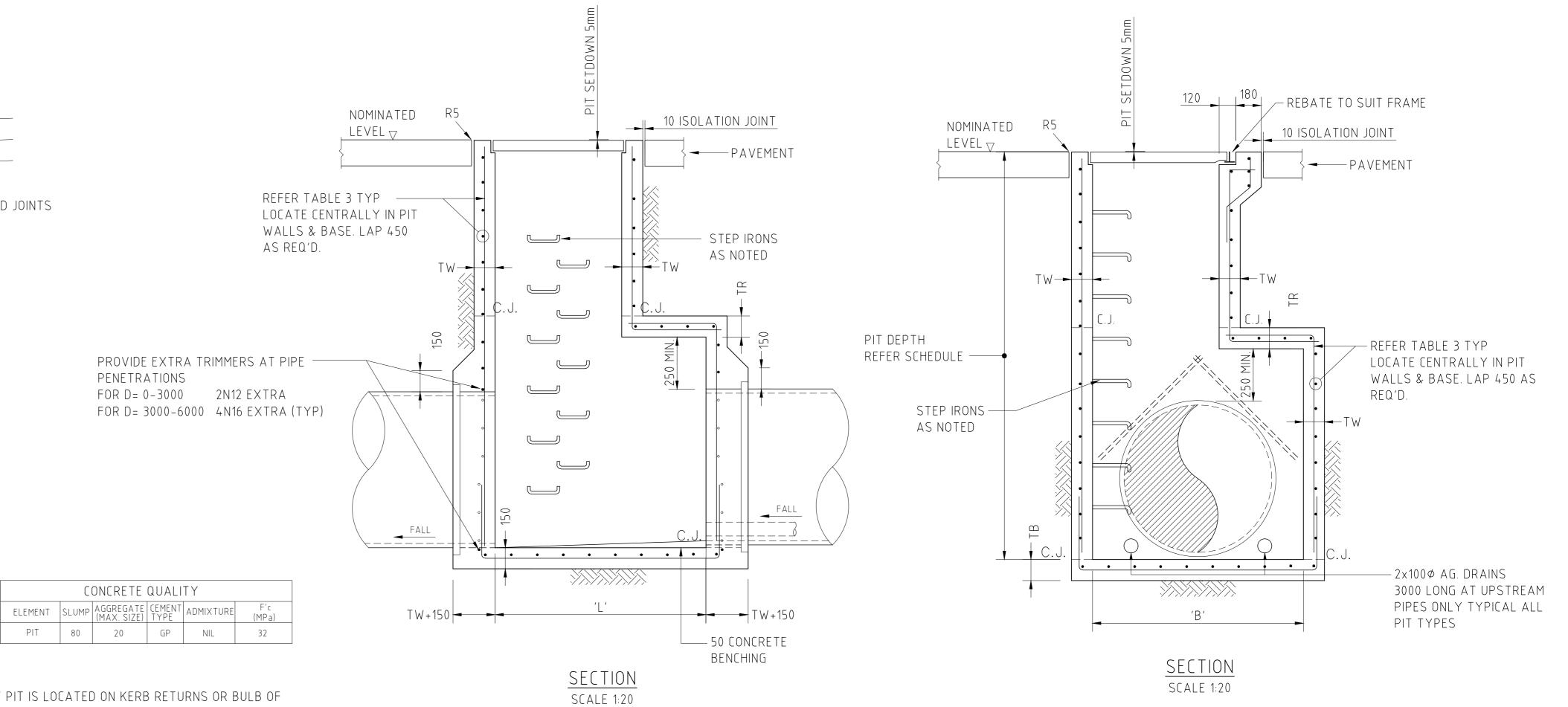
CO13362.02-C3-300











1. WHERE GULLY PIT IS LOCATED ON KERB RETURNS OR BULB OF CUL-DE-SACS PROVIDE CURVED PRECAST CONCRETE LINTELS.

2. SAG PITS SHALL HAVE LINTEL PLACED CENTRALLY ABOUT THE GRATE.

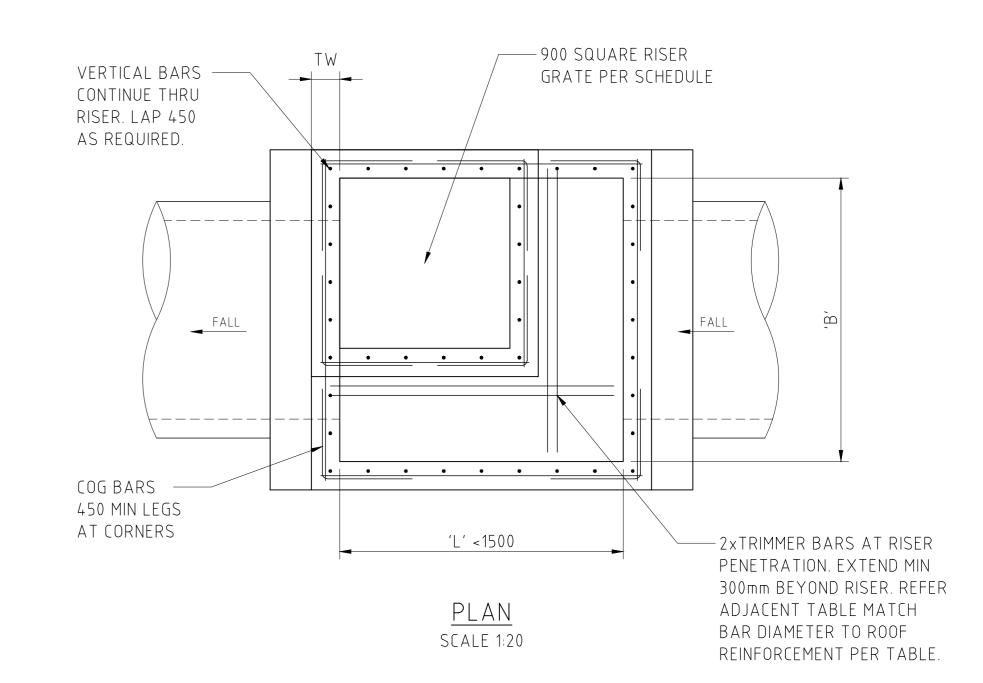
3. ALL REINFORCING TO HAVE 30 MIN. CLEAR CONCRETE COVER.

4. FOR PITS DEEPER THAN 1200mm STEP IRONS SHALL BE

5. FOR ALL PITS IN ITV PAVEMENT AREAS, PIT WALLS ARE TO BE INCREASED IN THICKNESS BY 50mm AND REINFORCEMENT TO BE N16 BARS IN LIEU OF N12

	TABLE 1 - TAPERED CLASS D PIT						
REINF	REINFORCEMENT & WALL THICKNESS - MAXIMUM SHORT SPAN 1500mm						
DEPTH 'H'	WALL THICKNESS 'TW'	WALL REINFORCEMENT	ROOF THICKNESS 'TR'	ROOF REINFORCEMENT	BASE THICKNESS 'TB'	BASE REINFORCEMENT	
<1.5m	150mm	N12-200 EACH WAY	150mm	N12-200 EACH WAY	150mm	N12-200 EACH WAY	
1.5m-3.0m	200mm	N12-200 EACH WAY	200mm	N12-200 EACH WAY	200mm	N12-200 EACH WAY	
3.0m-4.5m	200mm	N16-200 EACH WAY	200mm	N16-200 EACH WAY	200mm	N12-200 EACH WAY	
4.5-6.0	250mm	N16-200 EACH WAY	250mm	N16-200 EACH WAY	250mm	N16-200 EACH WAY	

TABLE 2 - TAPERED CLASS D PIT								
RI	REINFORCEMENT & WALL THICKNESS - MAXIMUM SHORT SPAN							
		1	500mm-21	00mm				
DEPTH 'H'	WALL THICKNESS 'TW'	WALL REINFORCEMENT	ROOF THICKNESS 'TR'	ROOF REINFORCEMENT	BASE THICKNESS 'TB'	BASE REINFORCEMENT		
<1.5m	200mm	N16-200 EACH WAY	250mm	N16-200 EACH WAY TOP & BTM	200mm	N16-200 EACH WAY		
. 15m	250mm	N16-200 EACH WAY	250.mm	N16-200 EACH WAY	250mm	NIA 200 EACH WAY		



TAPERED SINGLE GRATED GULLY PIT - SGGP SUBSOIL NOT SHOWN FOR CLARITY.



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SCALE 1:20 AT AO SIZE SHEET

STORMWATER DRAINAGE DETAILS - SHEET 1 ^{NG No} CO13362.02−C3−405

FOR DEVELOPMENT APPLICATION

SUBSOIL NOT SHOWN FOR CLARITY.

FRASERS

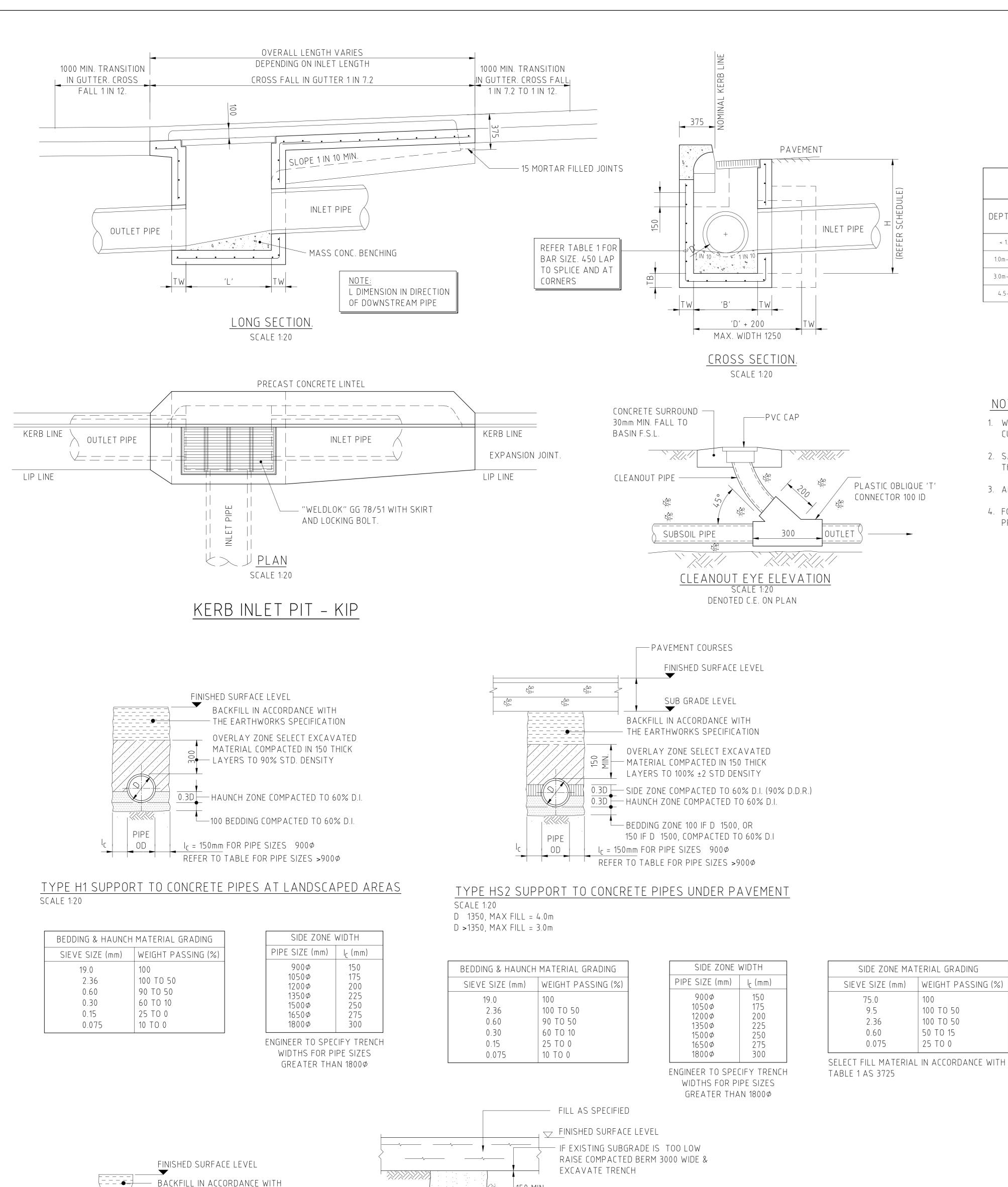
657 - 708 MAMRE ROAD

KEMPS CREEK, 2178, NSW

MAMRE SOUTH PRECINCT DESIGNED DRAWN DATE CHECKED SIZE SCALE CAD REF:
MW MC NOV 21 MW A0 AS SHOWN C013362.02-C3-4

Costin Roe Consulting Pty Ltd. ABN 50 003 696 446 PO Box N419 Sydney NSW 1220 Level 4, 8 Windmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 f: +61 2 9241 3731

ENGINEERS



150 MIN SAND COMPACTED IN 150 THICK

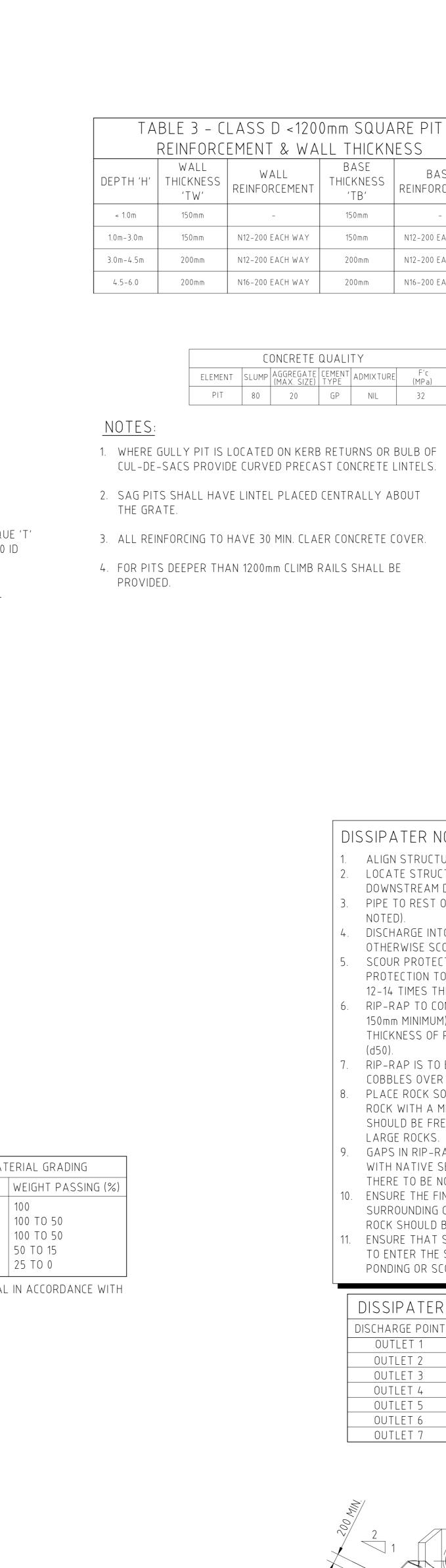
75 SAND BEDDING COMPACTED TO 60% D.I.

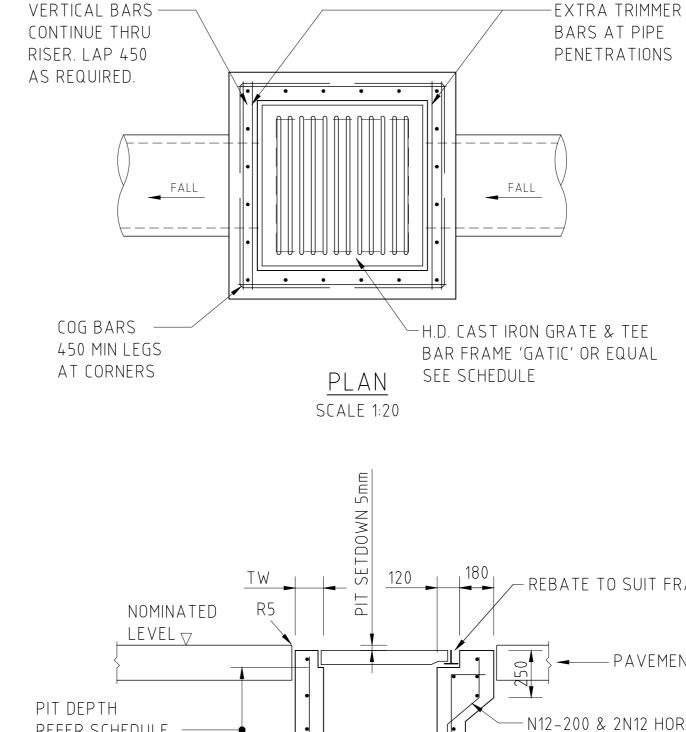
LAYERS TO 60% D.I

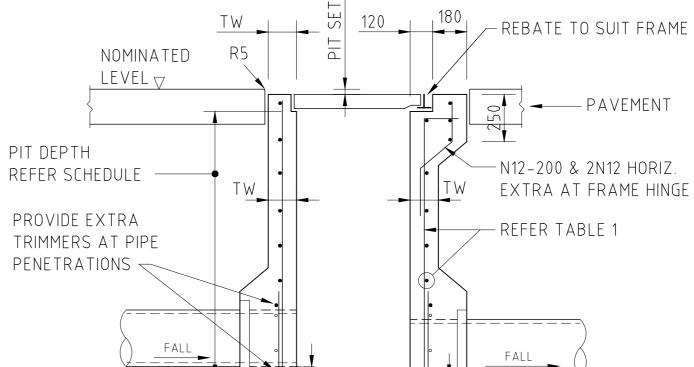
DATE ISSUE AMENDMENTS

'200' PIPE '200'

SUPPORT TO uPVC PIPES







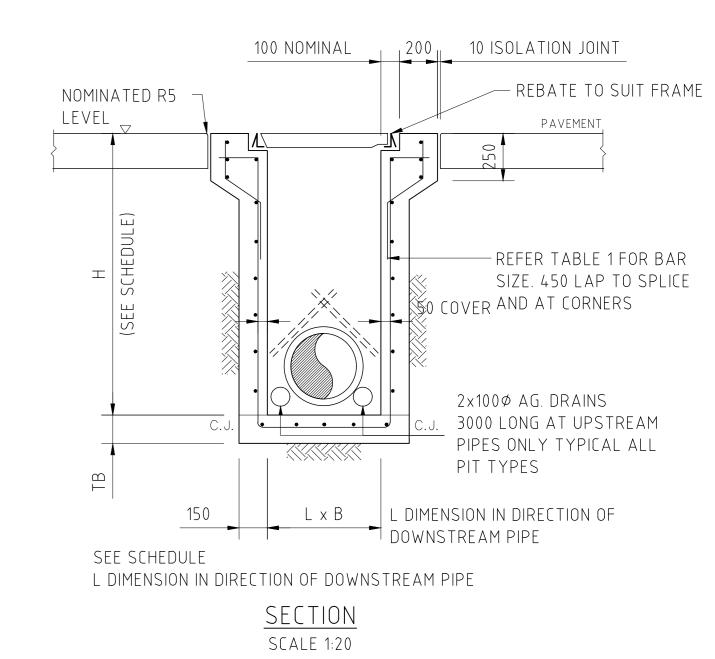
TW+150 - L x B - TW+150

SEE SCHEDULE L DIMENSION IN DIRECTION OF DOWNSTREAM PIPE

50 CONCRETE

BENCHING

-EXTRA TRIMMER VERTICAL BARS —— BARS AT PIPE CONTINUE THRU PENETRATIONS RISER. LAP 450 AS REQUIRED. FALL COG BARS - CONCRETE FILLED CAST IRON 450 MIN LEGS COVER & FRAME (GATIC OR AT CORNERS EQUAL) SEE SCHEDULE SCALE 1:20



SEALED PIT - SP

SINGLE GRATED GULLY PIT - SGGP

SCALE 1:20



THICKNESS

150mm

150mm

200mm

200mm

REINFORCEMENT

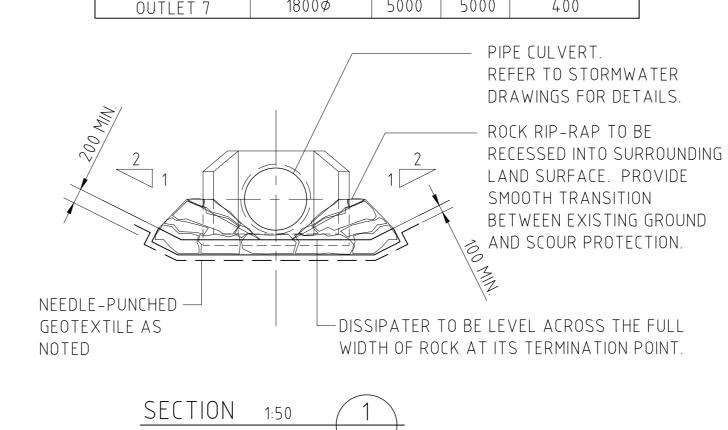
N12-200 EACH WAY

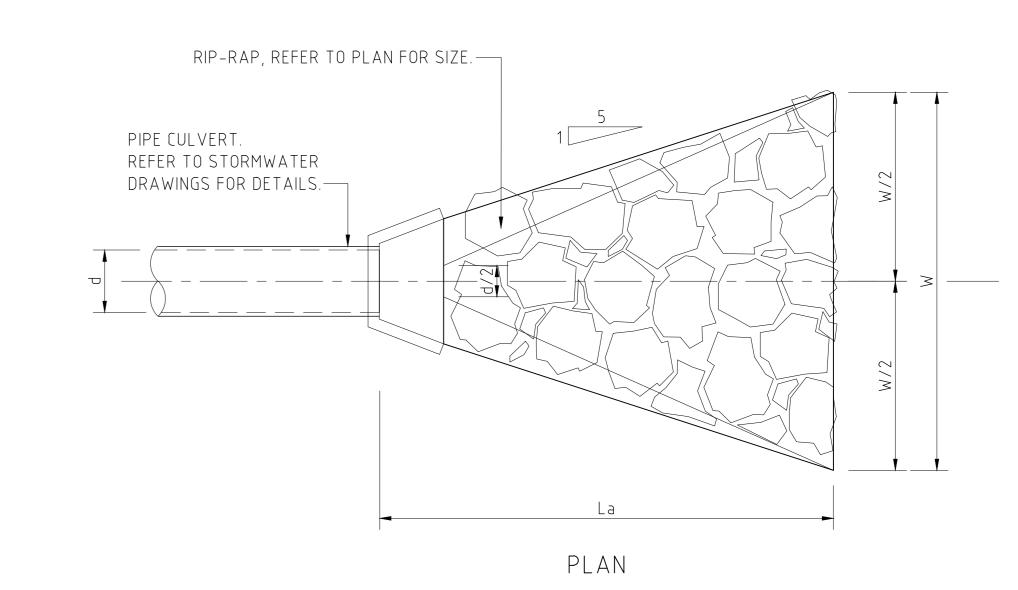
N12-200 EACH WAY

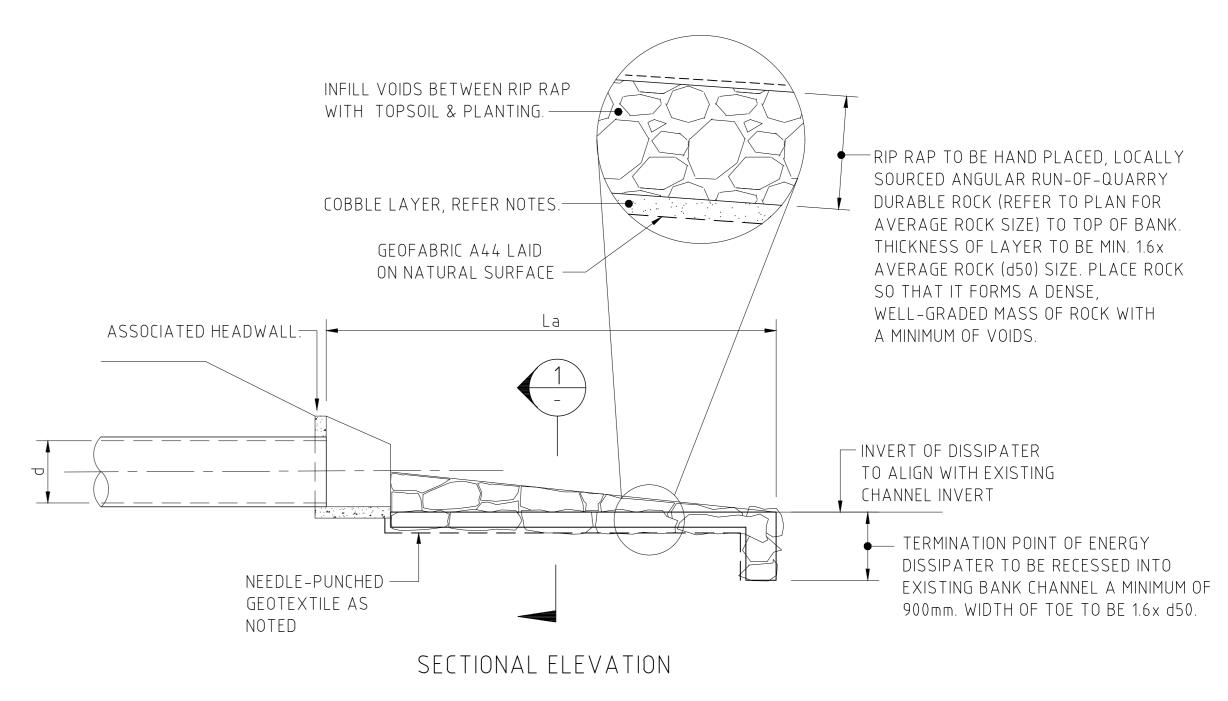
N16-200 EACH WAY

- ALIGN STRUCTURE EVENLY WITH BANK.
- 2. LOCATE STRUCTURE AT INVERT LEVEL OF STREAM AND POINT IN A DOWNSTREAM DIRECTION.
- 3. PIPE TO REST ON, AND BE PACKED IN, BY RIP-RAP (SIZE AS
- DISCHARGE INTO STREAM WHERE BEDROCK IS PRESENT,
- OTHERWISE SCOUR PROTECT AS REQUIRED.
- SCOUR PROTECT THE OPPOSITE BANK AS REQUIRED. SCOUR PROTECTION TO BE PROVIDED WHERE OPPOSITE BANK IS WITHIN 12-14 TIMES THE PIPE DIAMETER.
- RIP-RAP TO CONSIST OF ANGULAR RUN-OF-QUARRY ROCK (d50= 150mm MINIMUM) AS NOTED ON THE PLAN. RIP-RAP TO BE MINIMUM THICKNESS OF RIP-RAP LAYER TO BE 1.6x AVERAGE ROCK SIZE
- RIP-RAP IS TO BE PLACED OVER A 200mm LAYER OF 140mm COBBLES OVER NEEDLE-PUNCHED GEOFAB A44.
- 8. PLACE ROCK SO THAT IT FORMS A DENSE, WELL-GRADED MASS OF ROCK WITH A MINIMUM OF VOIDS. THE FINISHED RIP-RAP SURFACE SHOULD BE FREE OF POCKETS OF SMALL ROCK OR CLUSTERS OF LARGE ROCKS.
- 9. GAPS IN RIP-RAP TO BE HAND PACKED WITH TOPSOIL & PLANTED WITH NATIVE SEDGES & RUSHES TO PROVIDE. THE INTENT IS FOR THERE TO BE NO VOIDS BETWEEN RIP-RAP BOULDERS.
- 10. ENSURE THE FINISHED ROCK SURFACE BLENDS WITH THE SURROUNDING GROUND LEVELS. NO OVERFALL OR PROTRUSION OF
- ROCK SHOULD BE APPARENT. 11. ENSURE THAT STORMWATER FROM SURROUNDING GROUND IS FREE TO ENTER THE STRUCTURE WITHOUT CAUSING UNDESIRABLE PONDING OR SCOUR.

DISSIPATER SCHEDULE						
	DISCHARGE POINT	d	La	W	RIP-RAP (d50)	
	OUTLET 1	2×1800	6000	10000	400	
	OUTLET 2	3.6x1.5 RCBC	6000	10000	400	
	OUTLET 3	1200	5000	5000	300	
	OUTLET 4	2x675¢	5000	4000	300	
	OUTLET 5	600¢	5000	3000	300	
	OUTLET 6	900¢	5000	3000	300	
	OUTLET 7	10004	EVVV	ΕΛΛΛ	/ ^ ^	







STORMWATER OUTLET DISSIPATER WITH HEADWALL SCALE 1:50

SCALE 1:50 AT AO SIZE SHEET SCALE 1:20 AT AO SIZE SHEET

FOR DEVELOPMENT APPLICATION

DATE ISSUE AMENDMENTS

05.08.22

12.11.21

THE EARTHWORKS SPECIFICATION

—— 90 DIA. SLOTTED PIPE LAID

ON TRENCH BOTTOM

300 NOM.

SCALE 1:20

ISSUED FOR DEVELOPMENT APPLICATION

ISSUED FOR DEVELOPMENT APPLICATION

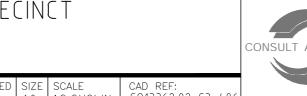
SUPPORT TO AGRICULTURAL DRAIN

FOR USE UNDER CAR PARK PAVEMENTS/LANDSCAPED AREAS

—— 19mm GRAVEL 90% RETAINED ON 9.5 SEIVE











STORMWATER DRAINAGE DETAILS - SHEET 2

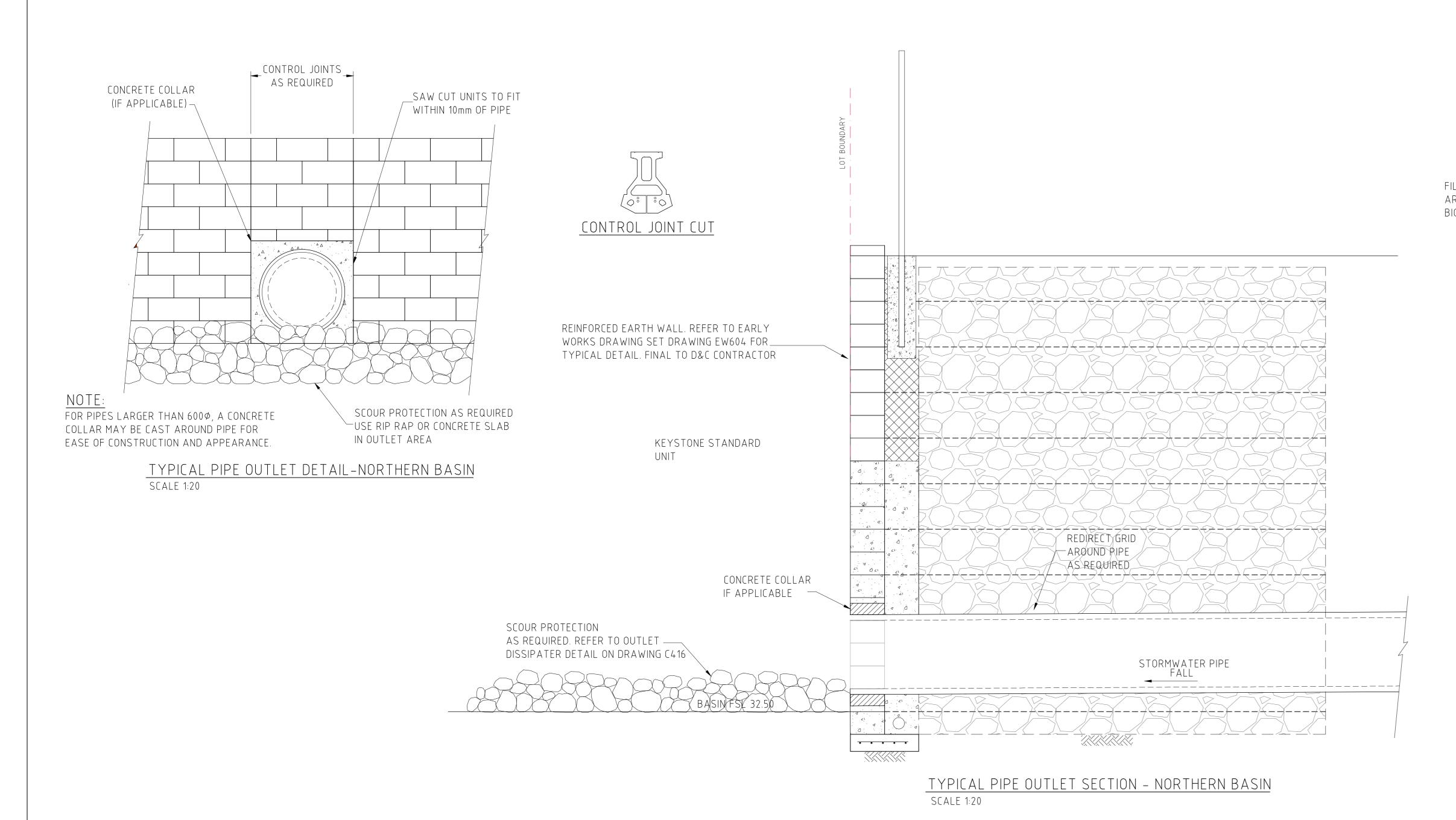
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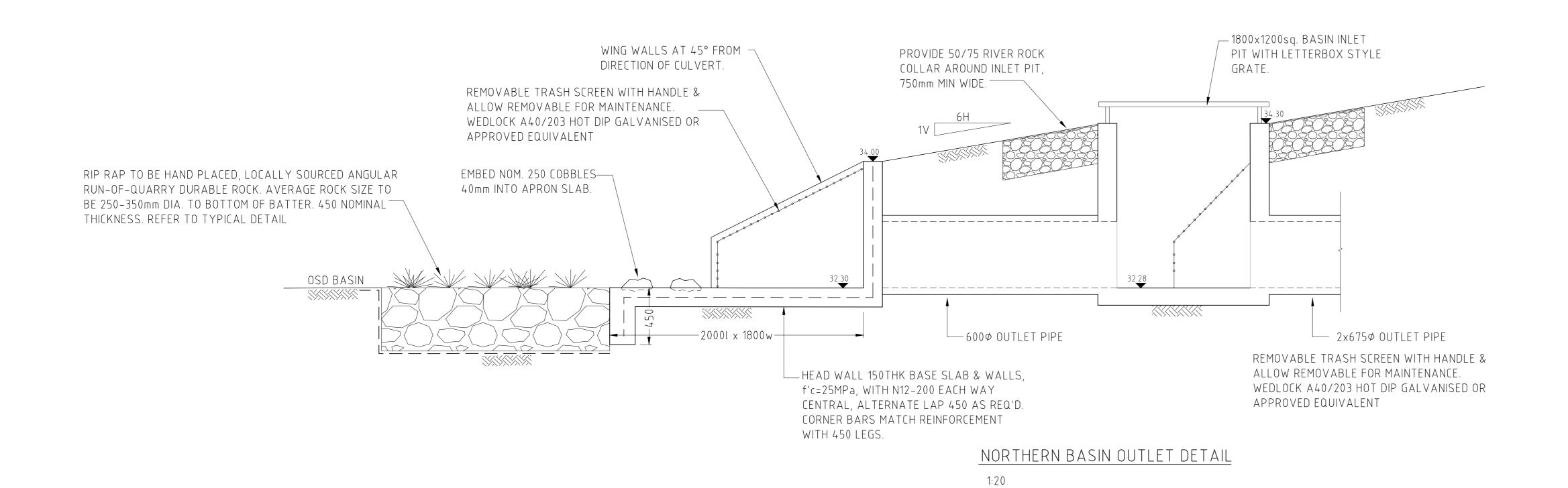




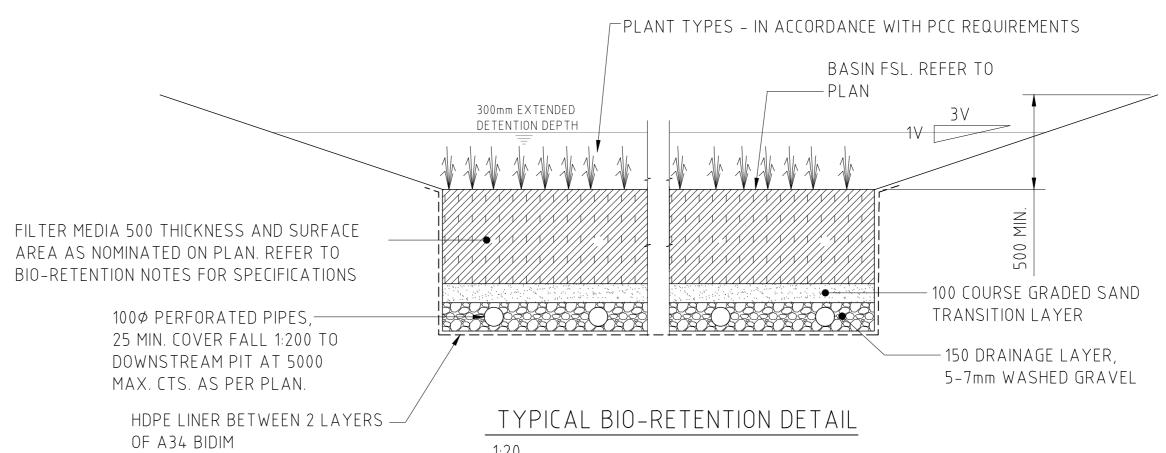
Level 4, 8 Windmill Street, Millers Point NSW 2000

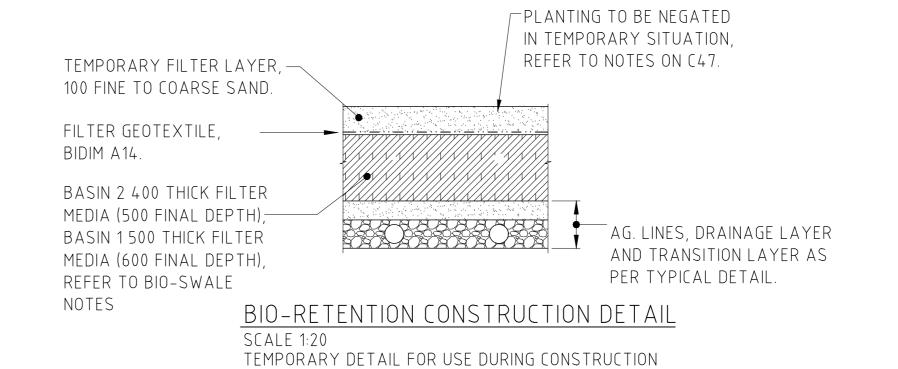
STRUCTURAL ENGINEERS





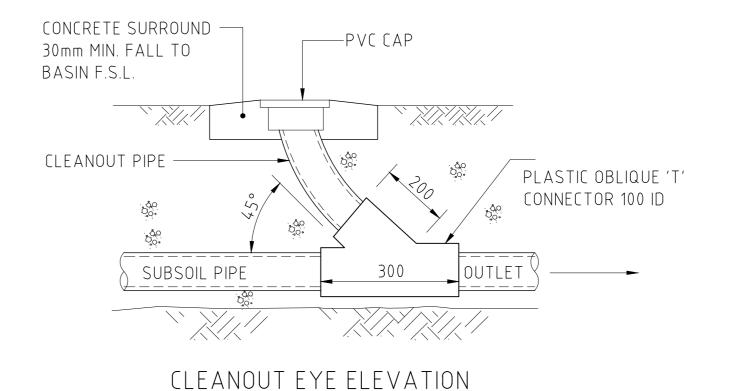
DATE ISSUE AMENDMENTS





& SITE STABILISATION PERIOD - REFER TO NOTES

FOR IMPLIMENTATION PERIODS.



SCALE 1:20 DENOTED C.E. ON PLAN

BIO-RETENTION NOTES:

FILTER MEDIA TO BE LOAMY SAND WITH A PERMEABILITY NOT LESS THAN 200mm/hr. FILTER MEDIA TO BE FREE OF RUBBISH, DELETERIOUS MATERIAL, TOXICANTS, DECLARED PLANTS AND LOCAL WEEDS, AND IS TO NOT BE HYDROPHOBIC.

FILTER MEDIA TO HAVE THE FOLLOWING COMPOSITION RANGE:

CLAY & SILT (<0.05mm) <3%

VERY FINE SAND (0.05-0.15mm) 5-30%

MEDIUM TO COARSE SAND (0.25-1.00mm) 40-60%

FINE SAND (0.15-0.25mm)

COARSE SAND (1.0-2.0mm) 7-10%
FINE GRAVEL (2.0-3.4mm) <3%

FILTER MEDIA THAT DOES NOT MEET THE FOLLOWING CRITERIA SHALL BE

REJECTED:

a. ORGANIC MATTER CONTENT TO BE IDEALLY WITHIN 1% TO 3% (W/W) AND

TO BE NO GREATER THAN 5%(W/W).

10-30%

b. PH TO BE BETWEEN 5.5 AND 7.5c. PHOSPHOROUS CONTENT TO BE NO GREATER THAN 35mg/kg

FILTER MEDIA TO BE ASSESSED BY QUALIFIED HORTICULTURALIST TO ENSURE CAPABILITY OF SUPPORTING PLANT LIFE.

DRAINAGE LAYER TO BE CLEAN GRAVEL 5-7mm.

PROVIDE 100mm TOPSOIL AND TEMPORARY EROSION PROTECTION

(JUTEMASTER OR EQUIV) TO SWALE BATTER SLOPES AND ADJACENT

LANDSCAPED AREAS. NOTE THAT NO TOPSOIL IS TO BE PLACED OVER

FILTRATION MEDIA. PROVIDE SILT FENCE TO TOP OF BANK UNTIL SUCH TIME AS

THIS STABILISING AND VEGETATION HAS BEEN COMPLETED.

BIO-RETENTION TO BE PARTIALLY INSTALLED, FOLLOWING COMPLETION OF THE ROAD, WITH THE TOP 75-100mm OF FILTER MEDIA REPLACED WITH A FINE TO COARSE SAND UNDERLAIN WITH A GEOTEXTILE LAYER (REFER TO DETAIL). FOLLOWING COMPLETION OF THE UPSTREAM DEVELOPMENT AND SITE STABILISATION, THE SAND IS TO BE REMOVED, REPLACED WITH FILTER MATERIAL AND PLANTED OUT. REFER TO TEMPORARY BIO-BASIN DETAIL

PRIOR TO PLANTING, THE TOP 100mm OF THE BIORETENTION FILTER MEDIA IS TO BE AMELIORATED WITH APPROPRIATE ORGANIC MATTER, FERTILISER AND TRACE ELEMENTS TO AID PLANT ESTABLISHMENT AS PER THE TABLE BELOW:

TABLE: RECIPE FOR AMELIORATING TOP 100mm OF BIORETENTION FILTER MEDIA

CONSTITUENT
QUANTITY (kg/m2 OF FILTER AREA)

GRANULATED POULTRY MANURE FINES
50
SUPERPHOSPHATE
2
MAGNESIUM SULPHATE
3
POTASSIUM SULPHATE
2
TRACE ELEMENT MIX
1
FERTILISER NPK (16.4.14)
4

BIO-RETENTION BASIN TO BE IN ACCORDANCE WITH PENRITH CITY COUNCIL WSUD GUILDELINES

200mm 0 500 1000 1500 2000mm

SCALE 1:20 AT A0 SIZE SHEET

FOR DEVELOPMENT APPLICATION

DATE ISSUE AMENDMENTS

12.11.21

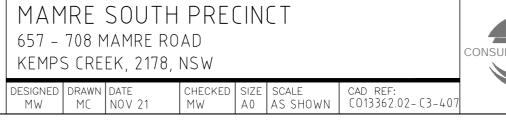
ISSUED FOR DEVELOPMENT APPLICATION

ISSUED FOR DEVELOPMENT APPLICATION

AMENDMENTS





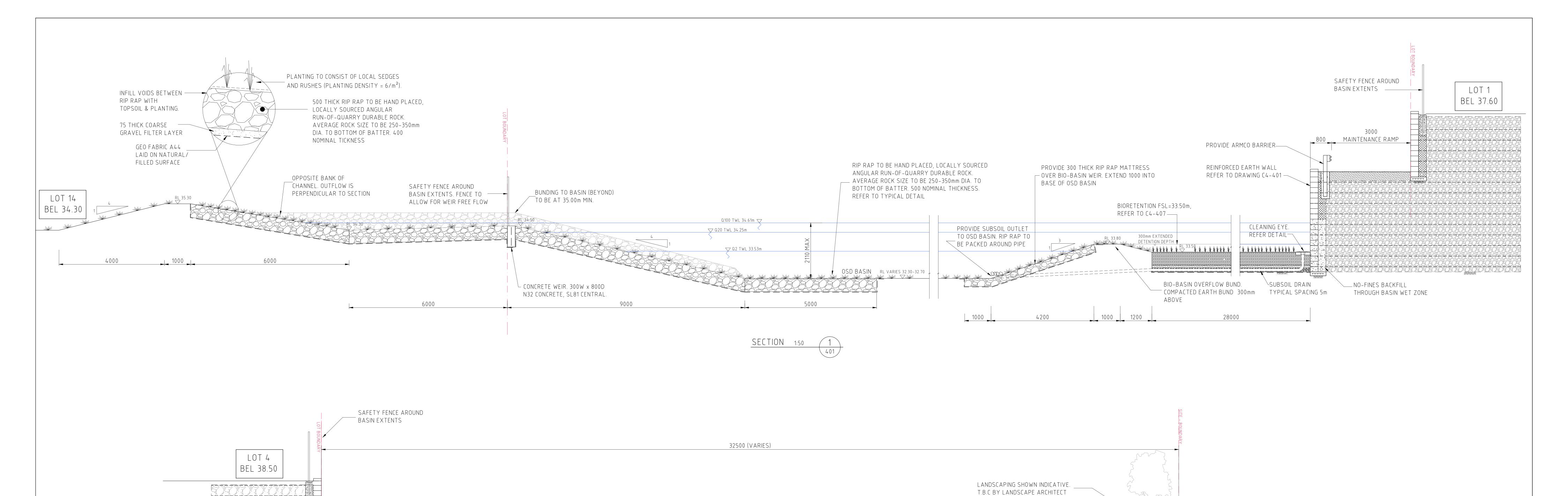








ENGINEERS



SECTION 1:50 2

22500 (VARIES)

▽ Q100 TWL 34.61m

Q 20 TWL 34.25m

OSD BASIN

FOR DEVELOPMENT APPLICATION

DATE ISSUE AMENDMENTS

05.08.22

12.11.21

ISSUED FOR DEVELOPMENT APPLICATION

ISSUED FOR DEVELOPMENT APPLICATION

ISSUED FOR DEVELOPMENT APPLICATION

AMENDMENTS

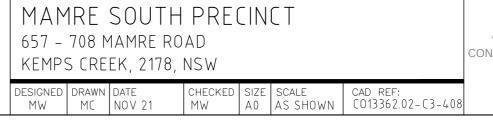
REINFORCED EARTH WALL

REFER TO DRAWING C4-401

DATE ISSUE AMENDMENTS

ALTIS
PROPERTY PARTNERS





_ VEGETATED BATTER 1V:3H

MAX SLOPE



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SAFETY FENCE AROUND BASIN

EXISTING SURFACE PROFILE

IL &
UCTURAL

DETAILS - SHEET 4

DRAWING No CO13362.02- C3-408

500mm 0 1 2 3 4 5m

SCALE 1:50 AT AO SIZE SHEET