

ISSUED FOR DEVELOPMENT APPLICATION			17.04.26	E							ARCHITECT			CLIENT			PROJECT						Costin Roe Consulting Pty Ltd. ABN 50 005 691 445			 CIVIL & STRUCTURAL ENGINEERS			DRAWING TITLE DRAWING LIST AND LOCALITY PLAN		
ISSUED FOR DEVELOPMENT APPLICATION			10.04.26	D							 GRIMSHAW  Stockland						KOGARAH GOLF CLUB DEVELOPMENT PROPOSED WAREHOUSE DISTRIBUTION & OFFICE MARSH STREET, ARNCLEIFFE, NSW 2205			PO Box 1419 Sydney NSW 1520 Level 4 & 5 Windmill Street, Millers Point NSW 2000 t: +61 2 9251 7699 e: mail@costinroe.com.au w: costinroe.com.au			DRAWING NO C09916.06-SSDA100			ISSUE E					
ISSUED FOR DEVELOPMENT APPLICATION			15.12.25	C																											
ISSUED FOR DEVELOPMENT APPLICATION			08.12.25	B																											
ISSUED FOR DEVELOPMENT APPLICATION			20.10.25	A																											
AMENDMENTS			DATE	ISSUE	AMENDMENTS			DATE	ISSUE																						
AMENDMENTS			DATE	ISSUE	AMENDMENTS			DATE	ISSUE																						

GENERAL NOTES:

- 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.
- 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.
- ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEER'S DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS. 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 INFORMATION.
- 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.
- UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.
- 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.

ELECTRONIC INFORMATION NOTES:

- 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.

EXISTING SERVICES NOTES:

- DURING THE EXECUTION OF WORKS, THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF EXISTING SERVICES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED TO THE EXISTING SERVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT SERVICE AUTHORITY, AT NO COST TO THE PRINCIPAL.
- WHERE IT IS NECESSARY TO REMOVE, DIVERT OR CUT INTO ANY EXISTING SERVICE, THE CONTRACTOR SHALL GIVE AT LEAST THREE (3) DAYS NOTICE OF ITS REQUIREMENTS TO THE SUPERINTENDENT, WHO WILL ADVISE WHAT ARRANGEMENTS SHOULD BE MADE FOR THE ALTERATION OF SUCH EXISTING WORKS.
- EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA. THE ACCURACY IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO COMMENCING WORK. ALL CLEARANCES AND APPROVALS SHALL ALSO BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY PRIOR TO THE COMMENCEMENT OF WORK.
- ALL NEW AND EXHUMED SERVICES THAT CROSS EXISTING AND FUTURE ROADS/PAVEMENTS WITHIN THE SITE SHALL BE BACKFILLED WITH DGB20 MATERIAL TO SUBGRADE LEVEL AND COMPACTED TO 98% STANDARD DENSITY RATIO. SUBJECT TO PRIOR APPROVAL FROM RELEVANT AUTHORITY.
- ON COMPLETION OF SERVICES INSTALLATION, ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.
- CARE TO BE TAKEN WHEN EXCAVATING NEAR UTILITY SERVICES. NO MECHANICAL EXCAVATION TO BE UNDERTAKEN OVER SERVICES. LIAISE WITH RELEVANT AUTHORITY.
- THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION AND REMOVAL IF REQUIRED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY THE WORKS WITHIN THE CONTRACT AREA AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT. ALL TO REGULATORY AUTHORITY STANDARDS AND APPROVAL.
- THE CONTRACTOR IS TO MAINTAIN EXISTING STORMWATER DRAINAGE FLOWS THROUGH THE ROADS AT ALL TIMES. MAKE DUE ALLOWANCE FOR ALL SUCH FLOWS AT ALL TIMES.
- PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL OBTAIN THE SUPERINTENDENT'S APPROVAL OF THE PROGRAM FOR THE RELOCATION/CONSTRUCTION OF TEMPORARY SERVICES.
- CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES AS REQUIRED TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
- INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE OR DAMAGE TO THE ADJACENT RESIDENCES. CONTRACTOR TO GAIN APPROVAL OF THE SUPERINTENDENT FOR TIME OF INTERRUPTION.
- THE CONTRACTOR SHALL UNDERTAKE A DIAL BEFORE YOU DIG (DBYD 1100) SERVICES SEARCH BEFORE THE COMMENCEMENT OF ANY WORKS.

SURVEY NOTE:

EXISTING SITE LEVELS AND DETAILS BASED ON SURVEY INFORMATION PROVIDED BY THE FOLLOW SOURCES:

- G&B SURVEY SOLUTIONS DRG No. 5288-001 DATED 08.09.25
- MNG LANDPARTNERS DRG No. SY075733.001 DATED 24.01.25
- 75733.00 COMBINED ANNOTATION DTM DATED 28.03.23
- DEGOTARDI SMITH & PARTNERS #284.31a02 DATED 10.08.01

FINISHED LEVELS PLAN NOTES:

- LEVELS DATUM IS AUSTRALIAN HEIGHT DATUM (A.H.D.).
- GRADING REQUIREMENTS TO BE COMPLETED IN ACCORDANCE WITH AUSTRALIAN STANDARD AS2890.1, AS2890.2 AND AS2890.6.
- ALL CONTOUR LINES & SPOT LEVELS INDICATE FINISHED PAVEMENT LEVELS U.N.O. ON PLAN.
- CONTOUR INTERVALS
 - THE MINOR CONTOUR INTERVAL IS 0.1m.
 - THE MAJOR CONTOUR INTERVAL IS 0.5m.
- HARDSTAND GRADING
 - MINIMUM PAVEMENT GRADE IS TO BE 1:100 (1%).
 - GRADING OF ON-GRADE DOCKS TO BE 1:100 (1%) FALL AWAY FROM THE DOCK FACE FOR A LENGTH OF 15m U.N.O.
 - GRADING OF TRUCK CIRCULATION ZONES TO BE MINIMUM AS NOTED ABOVE, 3-4% NOMINAL AND MAX. 5%.
- CAR PARKING AREA GRADES
 - MINIMUM PAVEMENT GRADE IS TO BE 1:100 (1%), DESIRABLE MINIMUM GRADE 1:50 (2%).
 - MAXIMUM PAVEMENT GRADE IS TO BE 1:20 (5%) IN CARPARKING AREAS AND 1:25 (4%) ELSEWHERE.
 - DISABLED ACCESS PARKING ZONES AND SHARED SPACE TO BE MAXIMUM OF 1:33 (3%) IN ASPHALT PAVEMENT AND MAXIMUM OF 1:40 (2.5%) IN CONCRETE PAVEMENT.
 - CARPARK RAMP GRADES TO BE MAX 1:5 WITH 2.5m SMOOTH TRANSITION AT TOP AND BOTTOM U.N.O.
- TRUCK RAMP GRADES
 - MAXIMUM B-DOUBLE OR 19.0m AV RAMP GRADES ARE TO BE 1:8.3 (12%) U.N.O. ON PLAN
 - PROVIDE MINIMUM 4.0m LONG TRANSITION WHERE CHANGES OF GRADE EXCEED 1:20 (5%) AT A CREST U.N.O.
 - PROVIDE MINIMUM 3.0m LONG TRANSITION WHERE CHANGE OF GRADE EXCEED 1:20 (5%) AT A SAG U.N.O.
 - TRANSITIONS ARE TO PROVIDE A SMOOTH CONTINUOUS CIRCULAR AND TANGENTIAL CHANGE IN GRADE TO ENSURE NO SHARP OR ACUTE CHANGES IN GRADE ARE PRESENT.
- WHERE FIRE BRIGADE ACCESS IS REQUIRED, MAXIMUM RAMP GRADIENTS ARE TO BE 1:6 (16.6%), DESIRABLE RAMP GRADIENTS ARE TO BE 1:8 (12.5%) WITH 7m TRANSITION TOP AND BOTTOM U.N.O. ON PLAN.
- PERMANENT BATTER SLOPES ARE TO HAVE A MAXIMUM GRADE OF 1V:3H U.N.O. BASED ON GEOTECHNICAL ASSESSMENT. PROVIDE MINIMUM 0.5m BERM BETWEEN THE BACK OF KERB OR PAVEMENT EDGES AND THE TOP OR TOE OF A BATTER.
- ALL BATTER SLOPE WITH GRADES AT OR EXCEEDING 1V:6H ARE TO BE TURFED IMMEDIATELY OR APPROPRIATE EROSION CONTROL IS TO BE PROVIDED TO THE SATISFACTION OF THE ENGINEER.
- ALL FOOTPATHS ARE TO FALL AWAY FROM THE BUILDING AT 2.5% NOMINAL GRADE.
- ALL PAVEMENTS ARE TO BE SET AT 30mm BELOW THE FINISHED FLOOR LEVEL OF THE WAREHOUSE AND OFFICE AREAS. PROVIDE LOCAL FEATHERING AT DOORWAYS OR ROLLER SHUTTERS TO PROVIDE FLUSH FINISH AS REQUIRED.
- WHERE NEW AND EXISTING INTERFACING IS REQUIRED, MATCH EXISTING LEVELS AND PROVIDE SMOOTH INTERFACE BETWEEN NEW AND EXISTING GRADIENTS. REFER ANY CONCERNS TO THE ENGINEER.

STORMWATER DRAINAGE NOTES:

STORMWATER DRAINAGE NOTES ARE APPLICABLE FOR PRIVATE INTERNAL STORMWATER DRAINAGE WORKS ONLY. REFERENCE SHOULD BE MADE TO THE RELEVANT COUNCIL/ ROADS AUTHORITY GUIDELINES AND SPECIFICATIONS FOR ALL STORMWATER DRAINAGE WORKS NOT PART OF THE PRIVATE INTERNAL WORKS.

- ALL STORMWATER WORKS TO BE COMPLETED IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3500.3 PLUMBING AND DRAINAGE, PART 3: STORMWATER DRAINAGE.
- THE MINOR (PIPED) SYSTEM HAS BEEN DESIGNED FOR THE 1 IN 20 YEAR ARI STORM EVENT AND THE MAJOR (OVERLAND) SYSTEM HAS BEEN DESIGNED FOR THE 1 IN 100 YEAR ARI STORM EVENT.
- ALL FINISHED PAVEMENT LEVELS SHALL BE AS INDICATED ON FINISHED LEVELS PLANS
- PIT SIZES SHALL BE AS INDICATED IN THE SCHEDULE WHILE PIPE SIZES AND DETAILS ARE PROVIDED ON PLAN.
- EXISTING STORMWATER PIT LOCATIONS AND INVERT LEVELS TO BE CONFIRMED BY SURVEY PRIOR TO COMMENCING WORKS ON SITE.
- ALL STORMWATER PIPES Ø375 OR GREATER SHALL BE CLASS 2 (WITH HS2 SUPPORT) REINFORCED CONCRETE WITH RUBBER RING JOINTS UNLESS NOTED OTHERWISE.
- ALL PIPES UP TO AND INCLUDING Ø300 TO BE uPVC GRADE S88 U.N.O.
- PIPE CLASS NOMINATED ARE FOR IN-SERVICE LOADING CONDITIONS ONLY. CONTRACTOR IS TO MAKE ANY NECESSARY ADJUSTMENTS REQUIRED FOR CONSTRUCTION CONDITIONS.
- 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_{cd}≥25 MPa. PRECAST PITS MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
- IN ADDITION TO ITEM 9 ABOVE, ALL CONCRETE PITS GREATER THAN 3000mm DEEP SHALL HAVE WALLS AND BASE THICKNESS INCREASED TO 200mm.
- 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.
- 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.
- WHERE PIPE LINES ENTER PITS, PROVIDE 2m LENGTH OF STOCKING WRAPPED SLOTTED Ø100 uPVC TO EACH SIDE OF PIPE.
- 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/OR 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.
- WHERE SUBSOIL DRAINAGE PASSES UNDER A PAVEMENT OR A SLAB, UNSLOTTED uPVC ARE TO BE PROVIDED UNLESS NOTED OTHERWISE.
- ALL PIPE GRADES 1 IN 200 MINIMUM U.N.O.
- PROVIDE STEP IRONS IN PITS DEEPER THAN 1000mm.
- MIN. 600 COVER TO PIPE OVERT BENEATH ROADS & MIN. 400 COVER BENEATH LANDSCAPED AND PEDESTRIAN AREAS.
- PIT COVERS IN TRAFFICABLE PAVEMENT SHALL BE CLASS D 'HEAVY DUTY'. WHERE FORKLIFT USE IS REQUIRED EXTERNAL TO THE BUILDING PIT COVERS SHALL BE MIN. CLASS E. PIT COVERS IN CONTAINER PAVEMENTS ARE TO BE MIN. CLASS G. REFER TO ENGINEER FOR SPECIAL DETAILS. THOSE LOCATED IN NON-TRAFFICABLE AREAS SHALL BE CLASS B 'MEDIUM DUTY' U.N.O.
- PROVIDE CLEANING EYES (RODDING POINTS) TO PIPES AT ALL CORNERS AND T-JUNCTIONS WHERE NO PITS ARE PRESENT.
- 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.
- 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.
- WHERE CONNECTION TO EXISTING INGROUND DRAINAGE SYSTEMS, OPEN SWALES, CHANNELS OR ANY OTHER EXISTING SYSTEM, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION AND INVERT ON SITE AT THE BEGINNING OF THE CONSTRUCTION PERIOD. REFER ANY VARIANCE FROM DOCUMENTATION OR SURVEYS TO THE ENGINEER FOR CLARIFICATION.

RETAINING WALL NOTES:

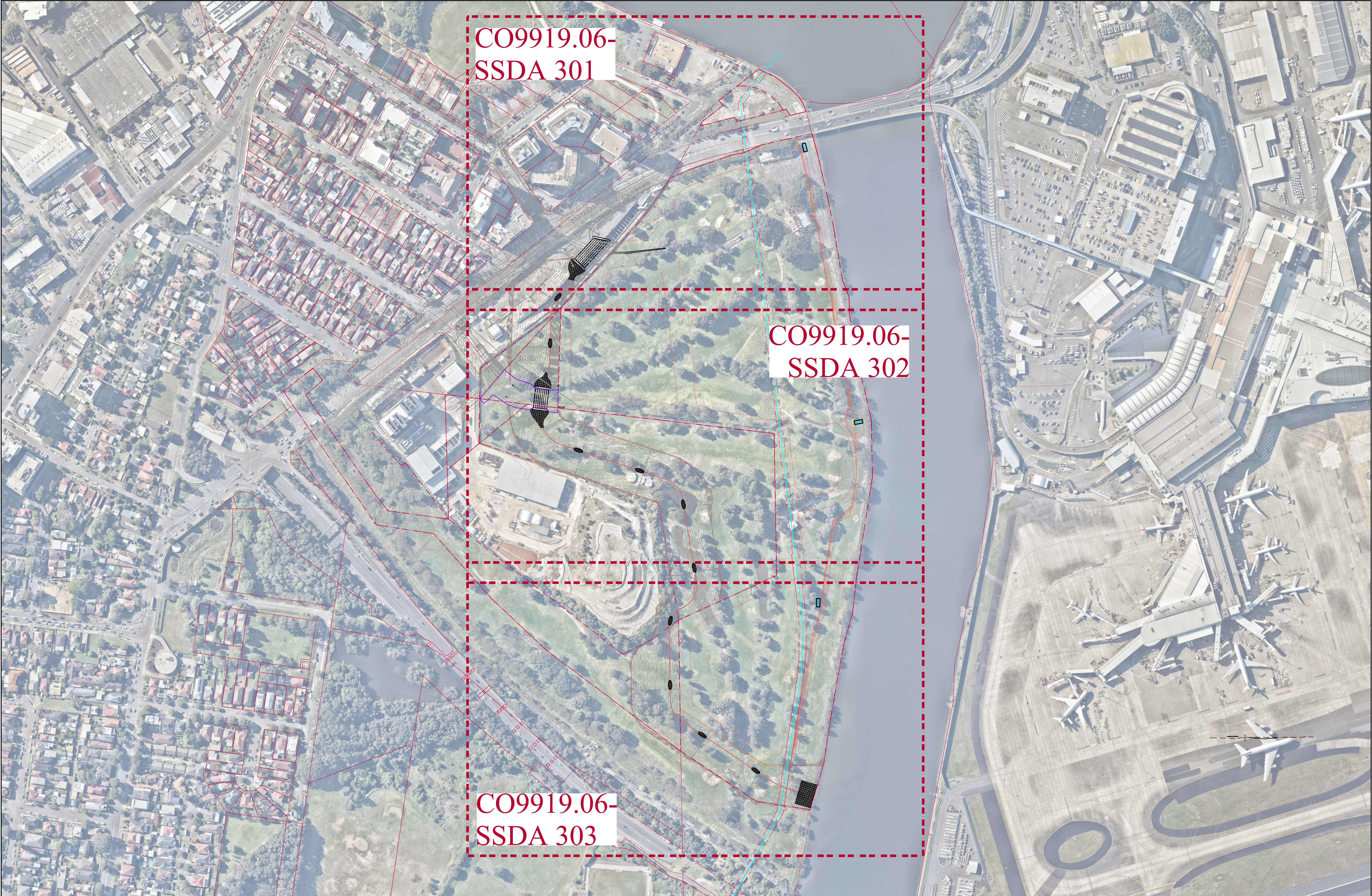
- ALL COMPONENTS AND INSTALLATION SHALL COMPLY WITH AS4678 AND THE STANDARDS REFERRED TO THEREIN.
- MINIMUM BEARING CAPACITY OF FOUNDATION TO BE AS FOLLOWS :
 - H MAX. 2.0m ± 100 kPa
 - H MAX. 3.5m ± 150 kPa
 - H MAX. 5.0m ± 200 kPa
- BEFORE COMMENCEMENT OF CONSTRUCTION THE FOUNDATION SHALL BE INSPECTED AND VERIFIED BY A QUALIFIED GEOTECHNICAL ENGINEER.
- WHERE MINIMUM BEARING IS NOT ACHIEVABLE OR NOT MEETING DESIGN REQUIREMENT, THE FOUNDATION MATERIAL IS TO BE EXCAVATED AND REPLACED WITH APPROVED MATERIAL PLACED IN ACCORDANCE WITH THE FILLING SPECIFICATION TO A MINIMUM COMPACTION OF 100% SMDD AND PLACED WITHIN 2% OF OMC.
- MINIMUM SURCHARGE LOADS TO BE APPLIED AS FOLLOWS U.N.O. ON PLAN:
 - LIVE LOAD = 20 kPa
 - DEAD LOAD = 5 kPa
 - CONSTRUCTION TRAFFIC LIVE LOAD = 10 kPa
- MINIMUM WALL EMBEDMENT AT THE TOE OF THE WALL TO BE 300mm MINIMUM UNLESS NOTED OTHERWISE.
- DESIGN LIFE OF STRUCTURE IS TO BE 100 YEARS.
- TIED WALLS ARE TO BE TEMPORARILY PROPPED AT TOP UNTIL SUCH TIME THE TOP OF WALL IS TIED TO THE SLAB AND 28-DAY CONCRETE STRENGTH HAS BEEN ACHIEVED.
- CONSTRUCTION EQUIPMENT WEIGHING MORE THAN 500KG STATIC WEIGHT IS TO BE KEPT BACK 15m FROM THE REAR FACE OF THE WALL FACING UNITS. COMPACTION OF THE SELECT FILL MATERIAL WITHIN THE 15m STRIP ADJACENT TO THE WALL SHALL BE ACHIEVED BY LIGHT MECHANICAL TAMPERS (VIBRATING PLATE, TRENCH COMPACTOR OR SIMILAR) TO GIVE THE SAME DENSITY AS IN THE REMAINDER OF THE SELECT FILL.
- ALL DESIGN AND CONSTRUCT WALL SYSTEM TO BE COMPLETED IN ACCORDANCE WITH THESE NOTES.
- WALL ELEVATIONS ALLOW FOR NOMINAL EMBEDMENT DEPTHS. WHERE DESIGN AND CONSTRUCT (D-C) WALL SYSTEMS ARE PROPOSED IT IS THE CONTACTORS RESPONSIBILITY TO ALLOW FOR THE FINAL EMBEDMENT DEPTHS AS PER THE D-C DESIGN.
- ALLOWANCE FOR OVERALL WALL AREAS TO CONSIDER THE FINAL EMBEDMENT DEPTH. WALL ELEVATIONS AND AREAS ARE BASED ON THE VERTICAL PLAN AREA. CONTRACTOR TO ALLOW ADDITIONAL SURFACE AREA WHERE WALLS ARE NOT VERTICAL OR HAVE BACKSLOPES.

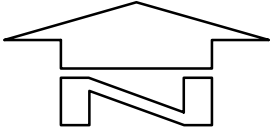
REINFORCED EARTH RETAINING WALL NOTES:

- ALL COMPONENTS AND INSTALLATION SHALL COMPLY WITH AS4678 AND THE STANDARDS REFERRED TO THEREIN.
- MINIMUM HEIGHT (H) TO GEOGRID REINFORCEMENT LENGTH (L) TO BE 1.0.
- MINIMUM BEARING CAPACITY OF FOUNDATION (BASED ON MINIMUM H/L RATIO OF 1.0) TO BE AS FOLLOWS :
 - H MAX. 2.0m ± 100 kPa
 - H MAX. 3.5m ± 150 kPa
 - H MAX. 5.0m ± 200 kPa
- BEFORE COMMENCEMENT OF CONSTRUCTION THE FOUNDATION SHALL BE INSPECTED AND VERIFIED BY A QUALIFIED GEOTECHNICAL ENGINEER.
- WHERE MINIMUM BEARING IS NOT ACHIEVABLE OR NOT MEETING DESIGN REQUIREMENT, THE FOUNDATION MATERIAL IS TO BE EXCAVATED AND REPLACED WITH APPROVED MATERIAL PLACED IN ACCORDANCE WITH THE FILLING SPECIFICATION TO A MINIMUM COMPACTION OF 100% SMDD AND PLACED WITHIN 2% OF OMC.
- MINIMUM SURCHARGE LOADS TO BE APPLIED AS FOLLOWS U.N.O. ON PLAN:
 - LIVE LOAD = 20 kPa
 - DEAD LOAD = 5 kPa
 - CONSTRUCTION TRAFFIC LIVE LOAD = 10 kPa
- THE GEOGRIDS SHALL BE OF THE TYPE AND INDEX STRENGTH NOMINATED ON THE DRAWINGS. THE MINIMUM GEOGRIDS SHALL BE A SINGLE LENGTH IN THE DIRECTION OF DESIGN TENSION, NOT LAPPED, MAKING PROVISION FOR CONNECTION TO THE FACING ACROSS THE WHOLE WIDTH OF THE FACING AND PROVIDING FOR THE SPECIFIED ANCHORAGE WITHIN THE DESIGNATED ANCHORAGE ZONE. GEOGRIDS SHALL COVER THE WHOLE OF THE PLAN AREA BEHIND THE WALL FOR THE SPECIFIED ANCHORAGE LENGTH AND SHALL BE LAPPED WITH ADJACENT SECTIONS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- MINIMUM WALL EMBEDMENT AT THE TOE OF THE WALL TO BE 300mm.
- DESIGN LIFE OF STRUCTURE IS TO BE 100 YEARS.
- SELECT BACKFILL MATERIAL WITHIN THE REINFORCED SOIL BLOCK SHALL BE SOUND GRANULAR MATERIAL OF NATURAL OR INDUSTRIAL ORIGIN, NON-EXPANSIVE, FREE FROM ORGANIC OR OTHER DELETERIOUS MATERIAL, CONFORMING TO THE PHYSICAL, CHEMICAL AND ELECTROCHEMICAL LIMITS AS SPECIFIED AND SHALL NOT BE SUBJECT TO BREAKDOWN UNDER COMPACTION. THE SELECT BACKFILL MATERIAL IS TO HAVE THE FOLLOWING PARAMETERS:
 - MINIMUM INTERNAL FRICTION, Ø = 34°
 - EFFECTIVE COHESION, C' = 0 kPa
 - UNIT WEIGHT = 21 kN/m³
 - PH BETWEEN 4 AND 9.
- SELECT BACKFILL IS TO BE PLACED AND COMPACTED IN LAYERS NOT MORE THAN 300mm (LOOSE). COMPACTION TO NOT LESS THAN 100% SMDD WILL BE ACHIEVED AND MATERIAL PLACED WITHIN 2% OF OMC. DENSITY TESTING SHALL BE PERFORMED IN EACH COMPACTED LIFT IN ACCORDANCE WITH AS3798.
- PROVIDE A DRAINAGE LAYER DIRECTLY BEHIND THE FACING UNITS IN A MINIMUM 300mm WIDE 12-20mm AGGREGATE LAYER. FACING UNIT VOIDS TO BE FILLED WITH AGGREGATE. PROVIDE 100mm MINIMUM AG. DRAIN IN GEOTEXTILE SOCK AT TOE OF WALL FACING AND CONNECT TO DRAINAGE SYSTEM AT 30m MAX. SPACING.
- THE NEED FOR A CHIMNEY DRAIN OR DRAINAGE AT THE REAR OF THE MASS SOIL BLOCK IS TO BE CONFIRMED ON SITE BY THE GEOTECHNICAL ENGINEER AND DESIGNER FOLLOWING PREPARATION OF THE FOUNDATION AND PRIOR TO CONSTRUCTION OF THE MASS SOIL BLOCK.
- CONSTRUCTION EQUIPMENT WEIGHING MORE THAN 500KG STATIC WEIGHT IS TO BE KEPT BACK 15m FROM THE REAR FACE OF THE WALL FACING UNITS. COMPACTION OF THE SELECT FILL MATERIAL WITHIN THE 15m STRIP ADJACENT TO THE WALL SHALL BE ACHIEVED BY LIGHT MECHANICAL TAMPERS (VIBRATING PLATE, TRENCH COMPACTOR OR SIMILAR) TO GIVE THE SAME DENSITY AS IN THE REMAINDER OF THE SELECT FILL.
- ALL DESIGN AND CONSTRUCT WALL SYSTEM TO BE COMPLETED IN ACCORDANCE WITH THESE NOTES.
- TOP OF WALL HEIGHTS ARE NOTED TO ALIGN WITH FINISHED PAVEMENT HEIGHTS. THE CONTRACTOR AND THEIR DESIGN AND CONSTRUCT WALLING CONTRACTORS ARE TO ENSURE THAT ALL WALL STRAPS ARE INSTALLED BELOW THE DESIGN EARTHWORKS SUBGRADE. CONTRACTOR TO ALLOW FOR WALL STRAPS TO BE GRADED AWAY FROM THE FACE OF THE WALL OR OTHERWISE INSTALLED TO SUIT EARTHWORKS DESIGN LEVELS AND GRADES.
- DIFFERENTIAL SETTLEMENT NOTE:**
FUTURE BUILDING AND SERVICE DESIGNERS TO CONSIDER DIFFERENTIAL SETTLEMENT OF REINFORCED EARTH WALL BLOCK AND GENERAL FILL AREAS. PARTICULAR ATTENTION TO BE DRAWN TO HEAVILY LOADED AREAS, OR DIFFERING LOADED AREAS (INCLUDING SPRINKLER TANK AND TRUCK PAVEMENT AREAS) AND WHERE SIGNIFICANT CHANGES IN OVERALL WALL HEIGHT OR FILL AMOUNTS ARE EXPERIENCED. IT IS THE RESPONSIBILITY OF THE FUTURE DESIGNERS TO ENSURE APPROPRIATE DESIGN CONSIDERATION TO DIFFERENTIAL SETTLEMENT ARE MADE DEPENDING ON THE DESIGN ELEMENT AND INTERACTION WITH RETAINED ELEMENTS AND GENERAL FILL MATERIAL.

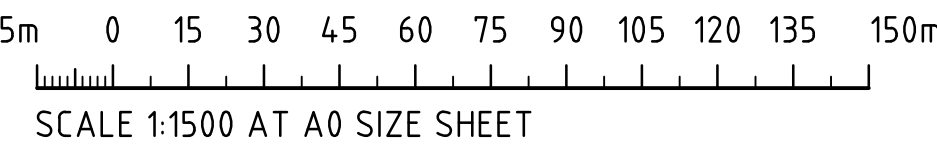
FOR DEVELOPMENT APPLICATION

									ARCHITECT			CLIENT			PROJECT						Costin Roe Consulting Pty Ltd. ABN 50 003 696 446			 			DRAWING TITLE GENERAL NOTES		
ISSUED FOR DEVELOPMENT APPLICATION			10.04.26			B									KOGARAH GOLF CLUB DEVELOPMENT PROPOSED WAREHOUSE DISTRIBUTION & OFFICE MARSH STREET, ARNCLIFFE, NSW 2205						PO Box N419 Sydney NSW 1220 Level 4 & 8 Westfield Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au w: costinroe.com.au			 			DRAWING No. C09916.06-SSDA101		
AMENDMENTS			08.12.25			A																							
DATE			ISSUE			DATE			ISSUE			DATE			ISSUE														
AMENDMENTS			DATE			ISSUE			AMENDMENTS			DATE			ISSUE														



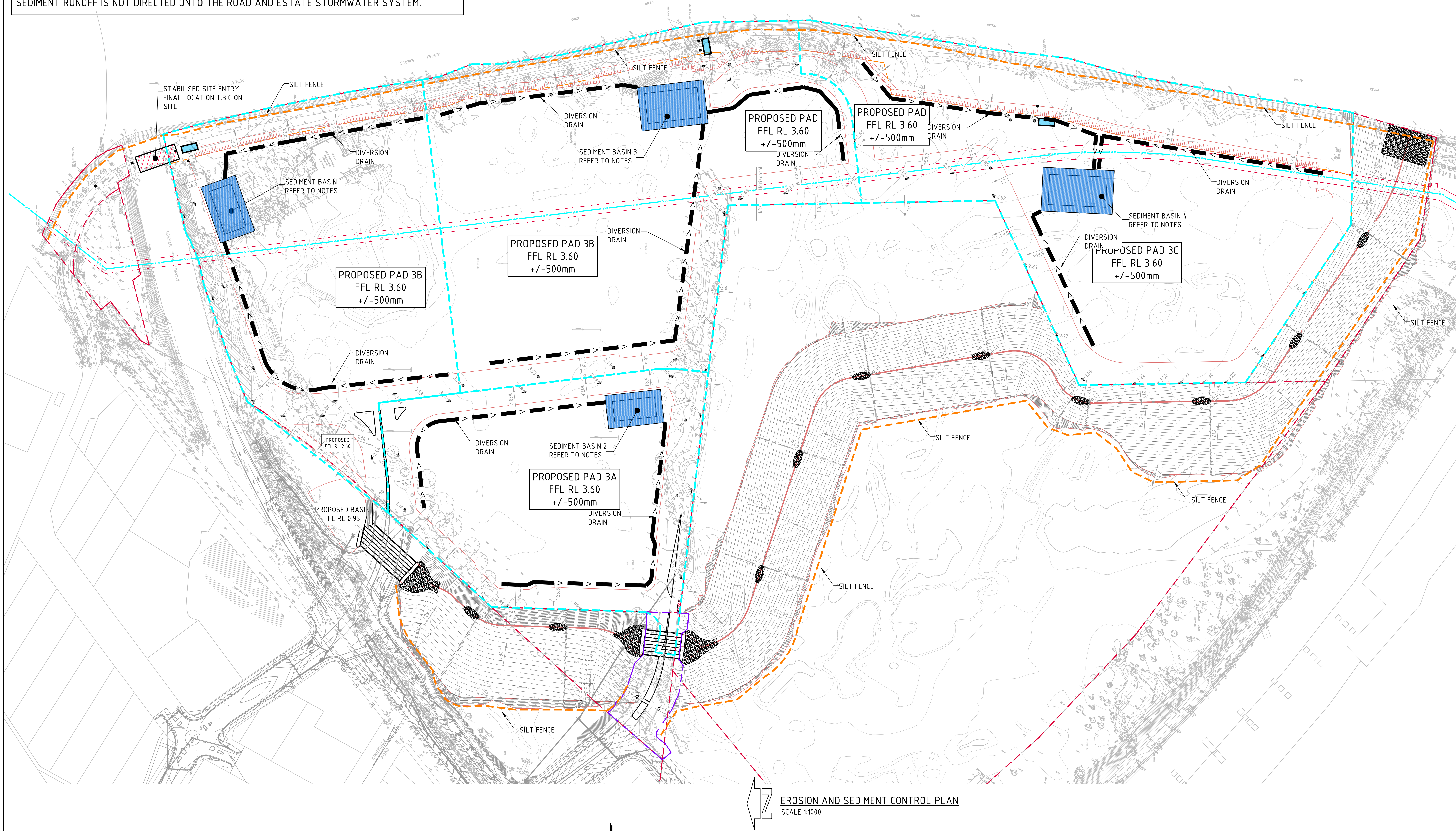
 **SITE KEY PLAN**
SCALE 1:1500

FOR DEVELOPMENT APPLICATION



ISSUED FOR DEVELOPMENT APPLICATION				17.04.26	F					ARCHITECT				CLIENT				PROJECT				 Costin Roe Consulting Pty Ltd. ABN 50 003 696 446 PO Box N419 Sydney NSW 1220 Level 4, 8 Woodhill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au w: costinroe.com.au  CIVIL & STRUCTURAL ENGINEERS				DRAWING TITLE			
ISSUED FOR DEVELOPMENT APPLICATION				10.04.26	E									KOGARAH GOLF CLUB DEVELOPMENT PROPOSED WAREHOUSE DISTRIBUTION & OFFICE MARSH STREET, ARNCLEIFFE, NSW 2205				SITE KEY PLAN											
ISSUED FOR DEVELOPMENT APPLICATION				15.12.25	D													DRAWING No											
ISSUED FOR DEVELOPMENT APPLICATION				08.12.25	C													C09916.06-SSDA110											
ISSUED FOR INFORMATION				17.11.25	B													ISSUE											
ISSUED FOR INFORMATION				20.10.25	A																								
AMENDMENTS				DATE	ISSUE	AMENDMENTS				DATE	ISSUE	AMENDMENTS				DATE	ISSUE												

THE CONTRACTOR/BUILDER IS RESPONSIBLE FOR MAINTAINING AND PROVIDING ON GOING ADJUSTMENT TO EROSION CONTROL MEASURES AS REQUIRED DURING CONSTRUCTION. ADJUSTMENTS TO ESC MEASURES ARE TO BE MADE IN ACCORDANCE WITH THE GENERAL REQUIREMENTS OF THE CSMP. SITE ACCESS POINTS ARE TO BE MAINTAINED IN WORKABLE ORDER TO THE RESPONSIBILITY OF THE CONTRACTOR/BUILDER. THE CONTRACTOR/BUILDER IS TO ENSURE SEDIMENT RUNOFF IS NOT DIRECTED ONTO THE ROAD AND ESTATE STORMWATER SYSTEM.



- LEGEND:**
- LEVELS DATUM IS AHD.
- SHEET-FLOW DIRECTION
 - SITE BOUNDARY
 - CATCHMENT BOUNDARY
 - DIRTY WATER DIVERSION DRAIN
 - CLEAN WATER DIVERSION DRAIN
 - EXISTING DRAINAGE PIPE
 - SEDIMENT FENCING
 - SEDIMENT BASIN (REFER TO PLAN)
 - DENOTES CONSTRUCTION ENTRY

SEDIMENTATION BASIN NOTES:

- REFER TO SEDIMENT & EROSION CONTROL NOTES.
- FOR SEDIMENT AND EROSION CONTROL DETAILS REFER TO DRAWING C09919.06-SSDA250&SSDA260
- SEDIMENTATION BASIN SIZING BASED ON RECOMMENDATIONS OF 'SOILS AND CONSTRUCTION, MANAGING URBAN STORMWATER - THE BLUE BOOK'. CAPACITY BASED ON 5-DAY RAINFALL DEPTHS AT 85th PERCENTILE INTENSITY 38.9mm IN THE SUTHERLAND CATCHMENT AREA.

APPROXIMATE AREA OF DISTURBED SITE = 16.4 Ha

SEDIMENT BASIN 1
CATCHMENT AREA = 3.5 Ha
REQUIRED BASIN VOLUME = 102m³
BASE DIMENSIONS (L x W) = 30m x 15m
TOP DIMENSIONS (L x W) = 39m x 24m
MAX SIDE SLOPE = 1V:3H
PROVIDED BASIN VOLUME = 102m³

SEDIMENT BASIN 2
CATCHMENT AREA = 2.84 Ha
REQUIRED BASIN VOLUME = 829m³
BASE DIMENSIONS (L x W) = 28m x 13m
TOP DIMENSIONS (L x W) = 37m x 22m
MAX SIDE SLOPE = 1V:3H
PROVIDED BASIN VOLUME = 861m³

SEDIMENT BASIN 3
CATCHMENT AREA = 4.93Ha
REQUIRED BASIN VOLUME = 1438m³
BASE DIMENSIONS (L x W) = 35m x 20m
TOP DIMENSIONS (L x W) = 44m x 29m
MAX SIDE SLOPE = 1V:3H
PROVIDED BASIN VOLUME = 146m³

SEDIMENT BASIN 4
CATCHMENT AREA = 5.13Ha
REQUIRED BASIN VOLUME = 1497m³
BASE DIMENSIONS (L x W) = 38m x 20m
TOP DIMENSIONS (L x W) = 47m x 29m
MAX SIDE SLOPE = 1V:3H
PROVIDED BASIN VOLUME = 1570m³

SEDIMENTATION BASINS TO COLLECT RUNOFF IN EXTREME RAINFALL EVENTS. COLLECTED RUNOFF TO BE ASSESSED BY A QUALIFIED LABORATORY FOR DOUSING RATES OF ALUM OF GYPSUM TO SENSURE COAGULATION OF SEDIMENTS PRIOR TO WATER BEING DISCHARGED TO COUNCIL STORMWATER SYSTEM.

EACH BASIN IS TO HAVE A MARKER PLACED AS PER THE DETAIL TO INDICATE WHEN SEDIMENT IS TO BE REMOVED. REMOVED SEDIMENT IS TO BE CLASSED AND DEWATERED PRIOR TO REMOVAL FROM SITE.

ALLOWANCE TO BE MADE DURING BENCHING OF SITE TO ENSURE RUNOFF IS DIRECTED TO SEDIMENTATION BASINS.

NOTES:

- ASSUME TYPE D SOIL (CLAY/SILTY CLAY)
- ASSUME GROUP D SOIL (HIGH PLASTICITY AND SHRINK/SWELL PROPERTIES)

EROSION CONTROL NOTES:

ALL CONTROL WORK INCLUDING DIVERSION BANKS AND CATCH DRAINS, V-DRAINS AND SILT FENCES SHALL BE COMPLETED DIRECTLY FOLLOWING THE COMPLETION OF THE EARTHWORKS.

- SILT FENCES AND SILT FENCE RETURNS SHALL BE ERECTED CONVEX TO THE CONTOUR TO POND WATER.
- HAY BALE BARRIERS AND GEOTEXTILE 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.
- ALL TEMPORARY EARTH BERMS, DIVERSION AND SILT DAM EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED AND MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED.
- CLEAR WATER IS TO BE DIVERTED AWAY FROM DISTURBED GROUND AND INTO THE DRAINAGE SYSTEM.
- 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 FOR STRUCTURAL DAMAGE OR CLOGGING; TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE, APPROVED LOCATION.
- ALL FINAL EROSION PREVENTION MEASURES INCLUDING THE ESTABLISHMENT OF GRASSING ARE TO BE MAINTAINED UNTIL THE END OF THE DEFECTS LIABILITY PERIOD.
- ALL EARTHWORKS AREAS SHALL BE ROLLED ON A REGULAR BASIS TO SEAL THE EARTHWORKS.
- ALL FILL AREAS ARE TO BE LEFT WITH A BUND AT THE TOP OF THE SLOPE AT THE END OF EACH DAYS EARTHWORKS. THE HEIGHT OF THE BUND SHALL BE A MINIMUM OF 200mm.
- ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND HYDROMULCHED WITHIN 10 DAYS OF COMPLETION OF FORMATION.
- AFTER REVEGETATION OF THE SITE IS COMPLETE AND THE SITE IS STABLE IN THE OPINION OF A SUITABLY QUALIFIED PERSON ALL TEMPORARY WORK SUCH AS SILT FENCE, DIVERSION DRAINS ETC SHALL BE REMOVED.
- ALL TOPSOIL STOCKPILES ARE TO BE SUITABLY COVERED TO THE SATISFACTION OF THE SITE MANAGER TO PREVENT WIND AND WATER EROSION.
- 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.
- ALL STOCKPILE SITES SHALL BE SITUATED IN AREAS APPROVED FOR SUCH USE BY THE SITE MANAGER. A 6m BUFFER ZONE SHALL EXIST BETWEEN STOCKPILE SITES AND ANY STREAM OR FLOW PATH. ALL STOCKPILES SHALL BE ADEQUATELY PROTECTED FROM EROSION AND CONTAMINATION OF THE SURROUNDING AREA BY USE OF THE MEASURES APPROVED IN THE EROSION AND SEDIMENTATION CONTROL PLAN.
- ACCESS AND EXIT AREAS SHALL INCLUDE SHAKE-DOWN OR OTHER METHODS APPROVED BY THE SITE MANAGER FOR THE REMOVAL OF SOIL MATERIALS FORM MOTOR VEHICLES.
- 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 POLLUTANTS BEFORE IT IS EITHER DISPERSED TO STABLE AREAS OR DIRECTED TO NATURAL WATERCOURSES.
- 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.

EROSION AND SEDIMENT CONTROL PLAN
SCALE 1:1000

FOR DEVELOPMENT APPLICATION

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A0 SIZE SHEET

																				ARCHITECT										CLIENT										PROJECT																				Costin Roe Consulting Pty Ltd. ABN 50 003 696 446																				DRAWING TITLE EROSION AND SEDIMENT CONTROL PLAN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
ISSUED FOR DEVELOPMENT APPLICATION										17.04.26										D																														KOGARAH GOLF CLUB DEVELOPMENT ABN 50 003 696 446																				Costin Roe Consulting Pty Ltd. ABN 50 003 696 446																				DRAWING TITLE EROSION AND SEDIMENT CONTROL PLAN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
ISSUED FOR DEVELOPMENT APPLICATION										19.04.26										C										GRIMSHAW																				PROPOSED WAREHOUSE DISTRIBUTION & OFFICE MARSH STREET, ARNCLIFFE, NSW 2205																				PO Box 1419 Sydney NSW 1220 Level 4 & 8 Woodmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au w: costinroe.com.au																				DRAWING TITLE EROSION AND SEDIMENT CONTROL PLAN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
ISSUED FOR DEVELOPMENT APPLICATION										15.12.25										B																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

TABLE 1 – STABILISATION REQUIREMENTS AND TREATMENT METHODS				
DURING CONSTRUCTION – TEMPORARY STABILISATION (REFER SECTIONS 5.6, 5.7 & 5.8 OF THE CSWMP FOR STABILISATION REQUIREMENTS)				
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])	- 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.
			GEOTEXTILE, JUTE MATTING, BLACK PLASTIC OR EQUIVALENT ^[1]	- COVER ALL EXPOSED SOILS. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.
WATERWAYS, DRAINAGE LINES AND CONCENTRATED FLOW AREAS	C-FACTOR = 0.05 (70% GRASS COVER OR EQUIVALENT GROUND COVER ^[1])	APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION AND BEFORE THEY ARE ALLOWED TO CARRY CONCENTRATED FLOWS.	REFER TO THE DRAIN SPECIFICATIONS DETAILED ON THE PLAN FOR SPECIFIC LINING/STABILISATION REQUIREMENTS. EXAMPLE TREATMENT METHODS ARE SHOWN BELOW.	
			TEMPORARY LINING – GEOTEXTILE (I.E. BIDIM A24 OR EQUIVALENT ^[1])	- COMPLETE ANY SUBSOIL TREATMENT BEFORE LAYING THE MATTING. - INSTALL MATTING IN ACCORDANCE WITH SD 5-7. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.
			JUTE MESH, SEEDING AND SOIL BINDER (I.E. VITAL P47/STONEWALL OR EQUIVALENT ^[1]) - LOW FLOWS TO MODERATE	- 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.
			JUTE MATTING (-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.
			TURF REINFORCEMENT MATTING (TRM) (E.G. TERRAMAT OR EQUIVALENT ^[1]) - MODERATE FLOWS	- 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.
			ROCK LINING – HIGH FLOWS	- COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY 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])
GEOTEXTILE, JUTE MATTING, BLACK PLASTIC OR EQUIVALENT ^[1]	- COVER ALL EXPOSED SOILS. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.			
GENERAL SURFACES	C-FACTOR = 0.10 / 0.05 (60% / 70% GRASS COVER OR EQUIVALENT GROUND COVER ^[1])	C-FACTOR = 0.1 APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION AND C-FACTOR = 0.05 APPLIES WITHIN A FURTHER 60 DAYS	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 STONNES/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 / m ² OF DILUTED VITAL MIXTURE. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			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				

DUST CONTROL NOTES:

- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE DUST CONTROL MEASURES ARE APPLIED AND MAINTAINED IN ACCORDANCE WITH THE GOVERNING AUTHORITIES REQUIREMENTS.
- 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)
- 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.
- 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
- 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 ERCTED 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.
- 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 METHODS.
- CLEAN OR NON-SITE WATER IS TO BE DIVERTED AWAY FROM DISTURBED GROUND AND INTO THE DRAINAGE SYSTEM OVER STABLE SURFACES.
- 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.
- 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.
- ALL FINAL EROSION PREVENTION MEASURES INCLUDING THE ESTABLISHMENT OF GRASSING ARE TO BE MAINTAINED UNTIL THE END OF THE DEFECTS LIABILITY PERIOD.
- ALL EARTHWORKS AREAS SHALL BE ROLLED ON A REGULAR BASIS TO SEAL THE EARTHWORKS.
- 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.
- 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.
- ALL STOCKPILES ARE TO BE SUITABLY COVERED AND STABILIZED TO THE SATISFACTION OF THE SITE MANAGER TO PREVENT WIND AND WATER EROSION.
- 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.
- 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.
- 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 VEHICLES.
- 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.
- 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.

SEDIMENT CONTROL BASIN NOTES

- TYPE D BASIN IS REQUIRED.
- 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.
- DEWATERING OF BASIN TO BE PERFORMED TO THE BOTTOM OF THE SEDIMENT SETTLING ZONE FOLLOWING ACHIEVEMENT OF WOO'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.
- 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 COLLECTED RUNOFF.
- 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.
- 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.
- 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.
- PROVIDE SECURITY FENCE TO BASIN FOR SAFETY.

INSTREAM WORKS:

- SEDIMENT FENCES AND SEDIMENT FENCE RETURNS TO BE ERCTED 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 STABILISE THE WORKS.
- 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 CIVIL ENGINEERING REPORT C09919-06-12.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:

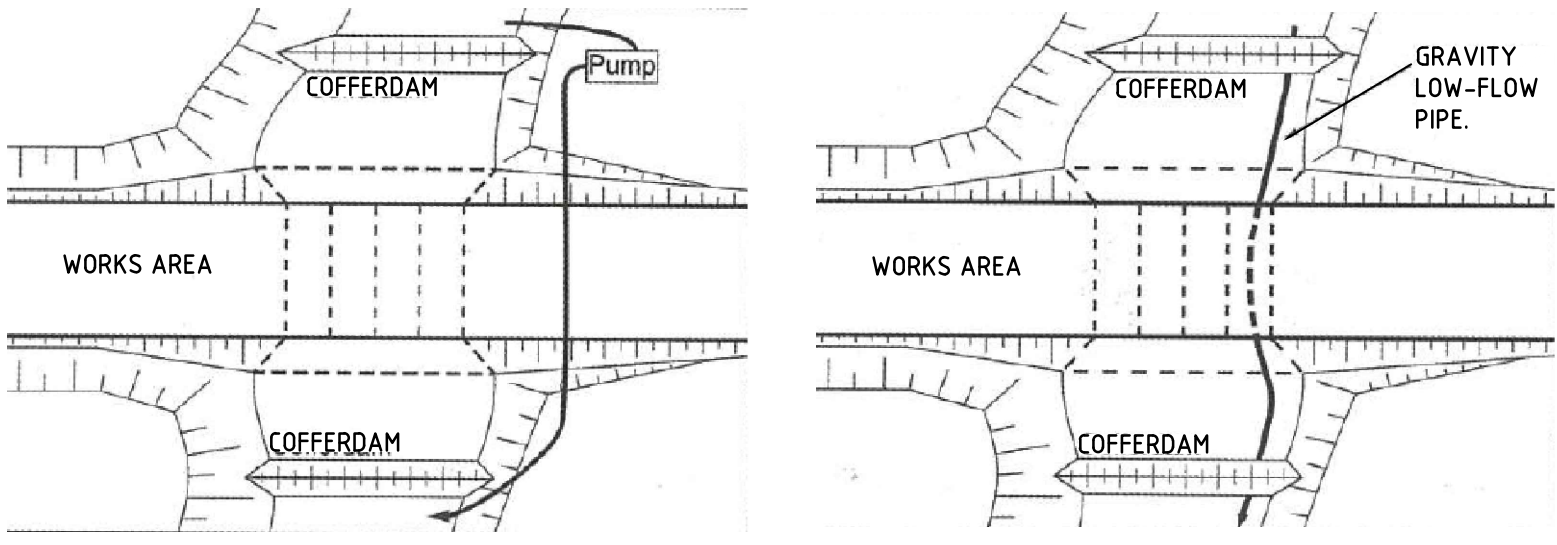
REFER TO SEDIMENT & EROSION CONTROL NOTES.

FOR SEDIMENT AND EROSION CONTROL DETAILS, REFER TO THE LANDCOM 'BLUE BOOK' AND EXTRACTS ON DRAWING C013362.16-C250.

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

NOTES:

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

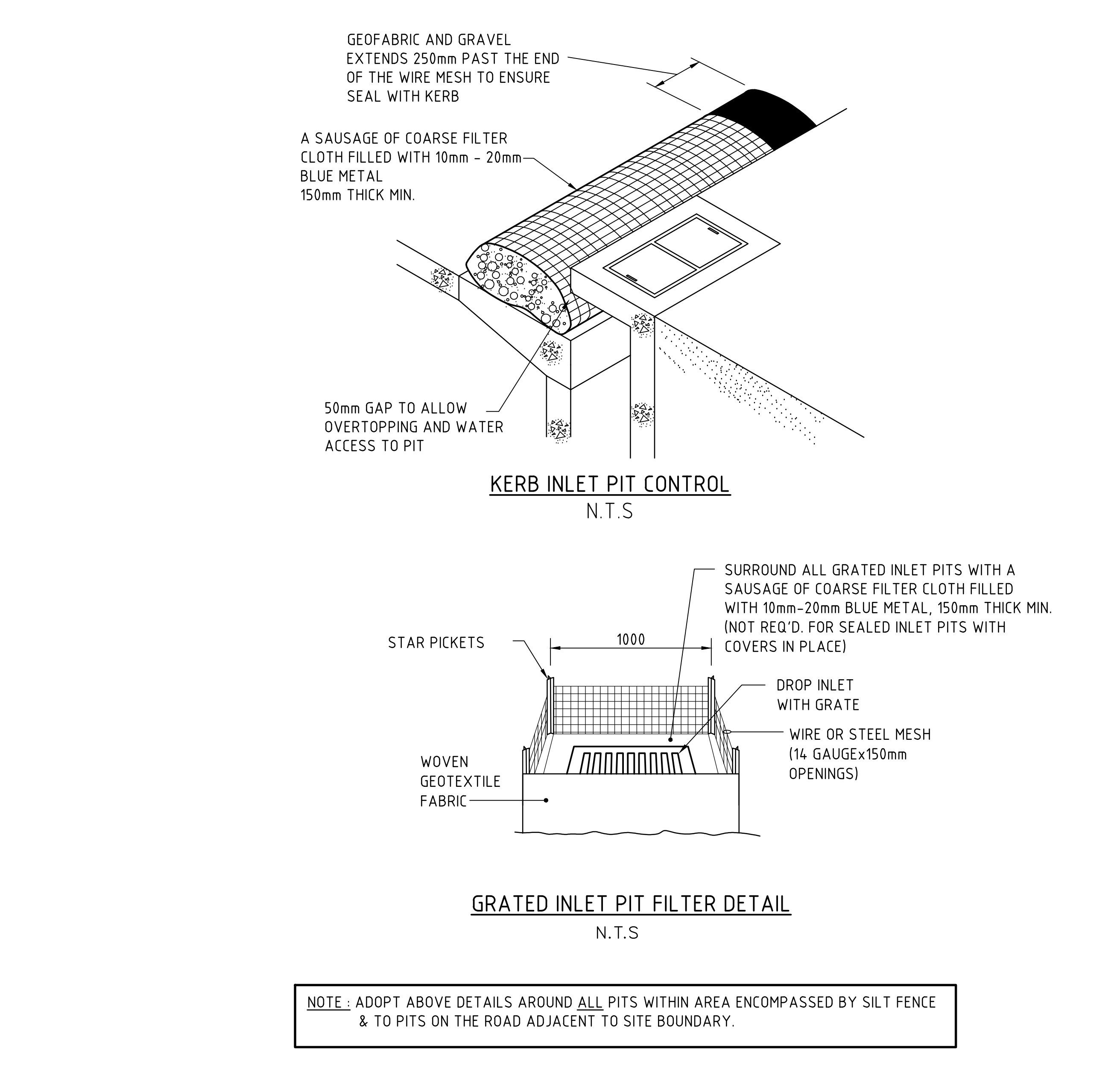
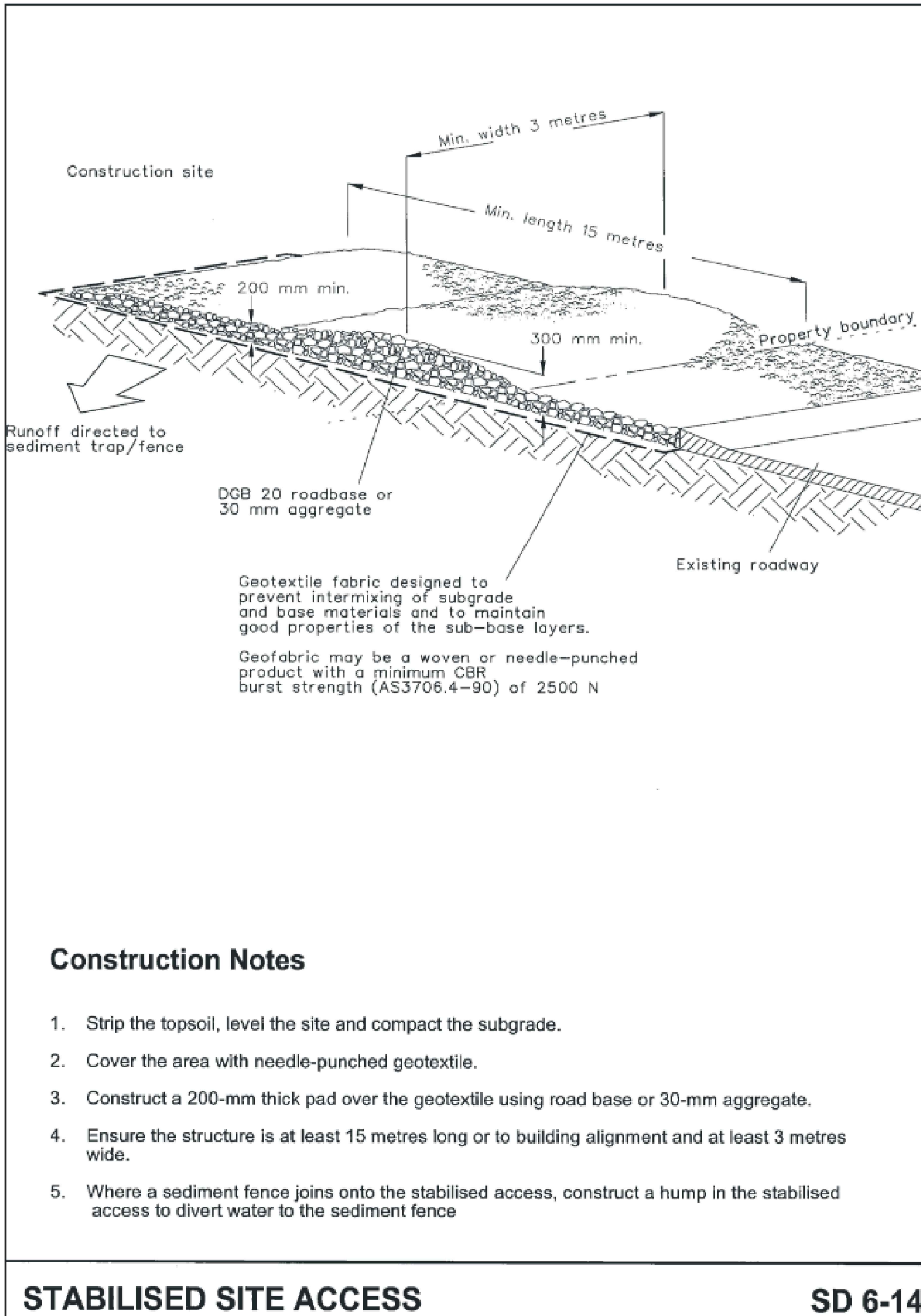
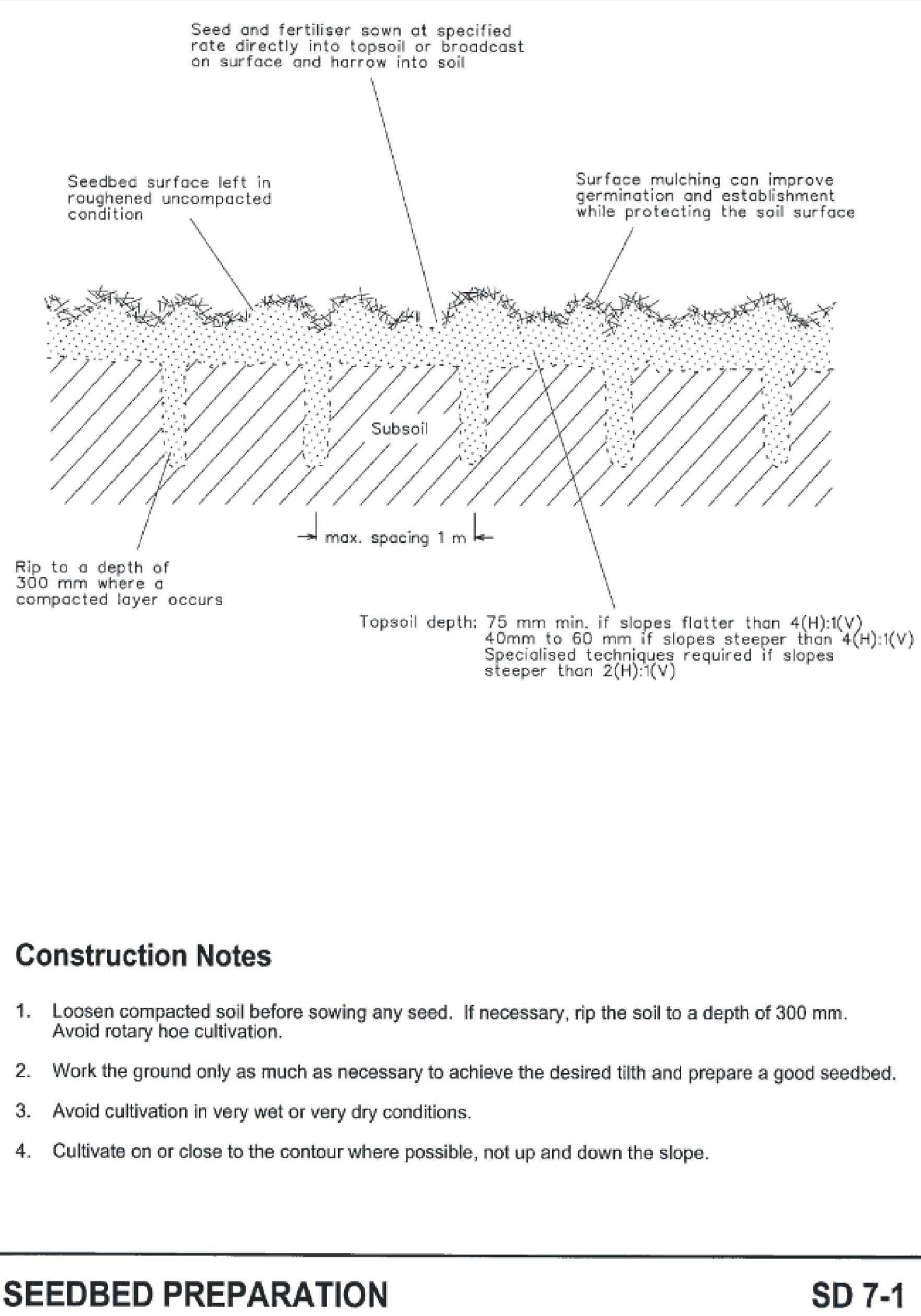
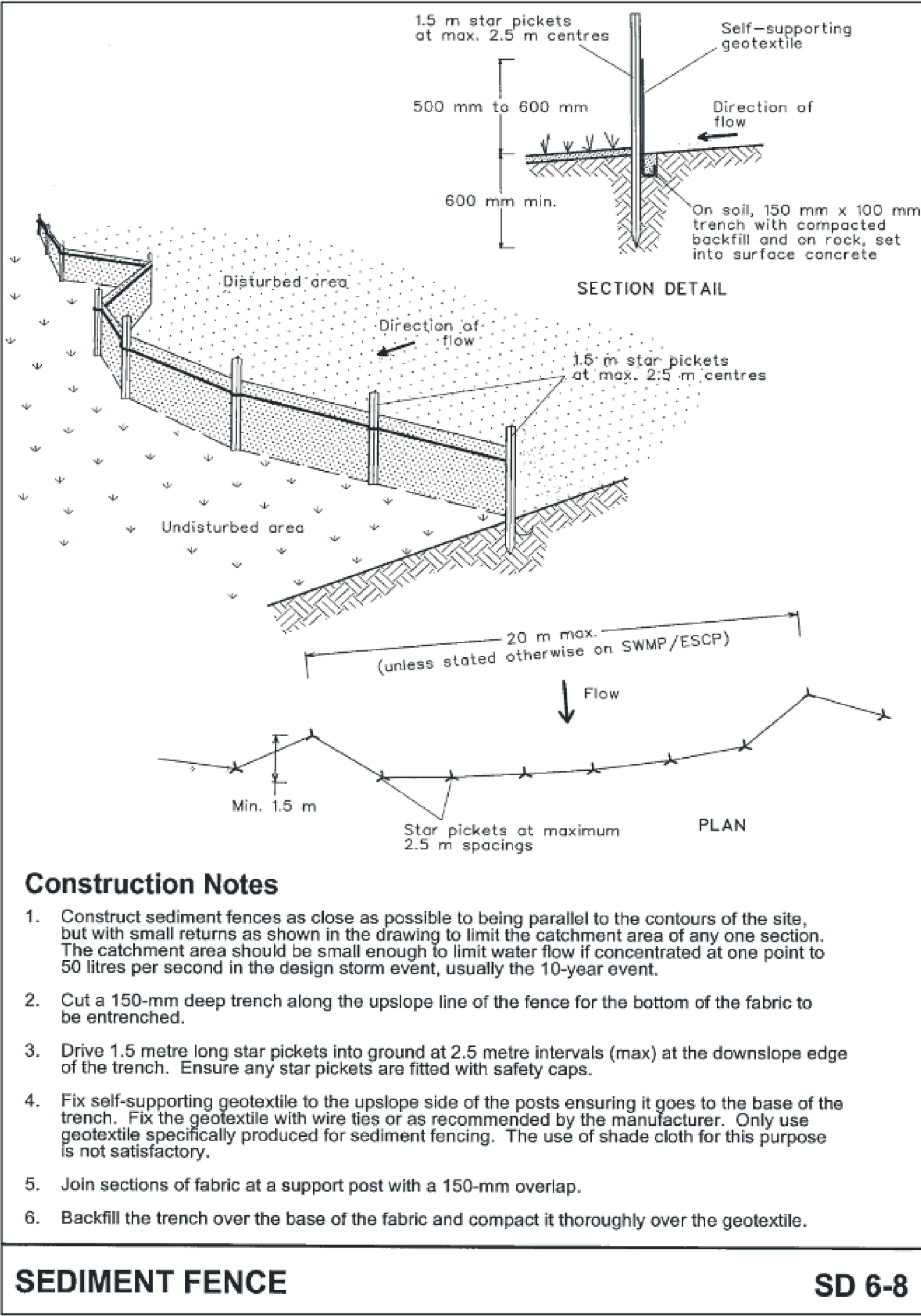
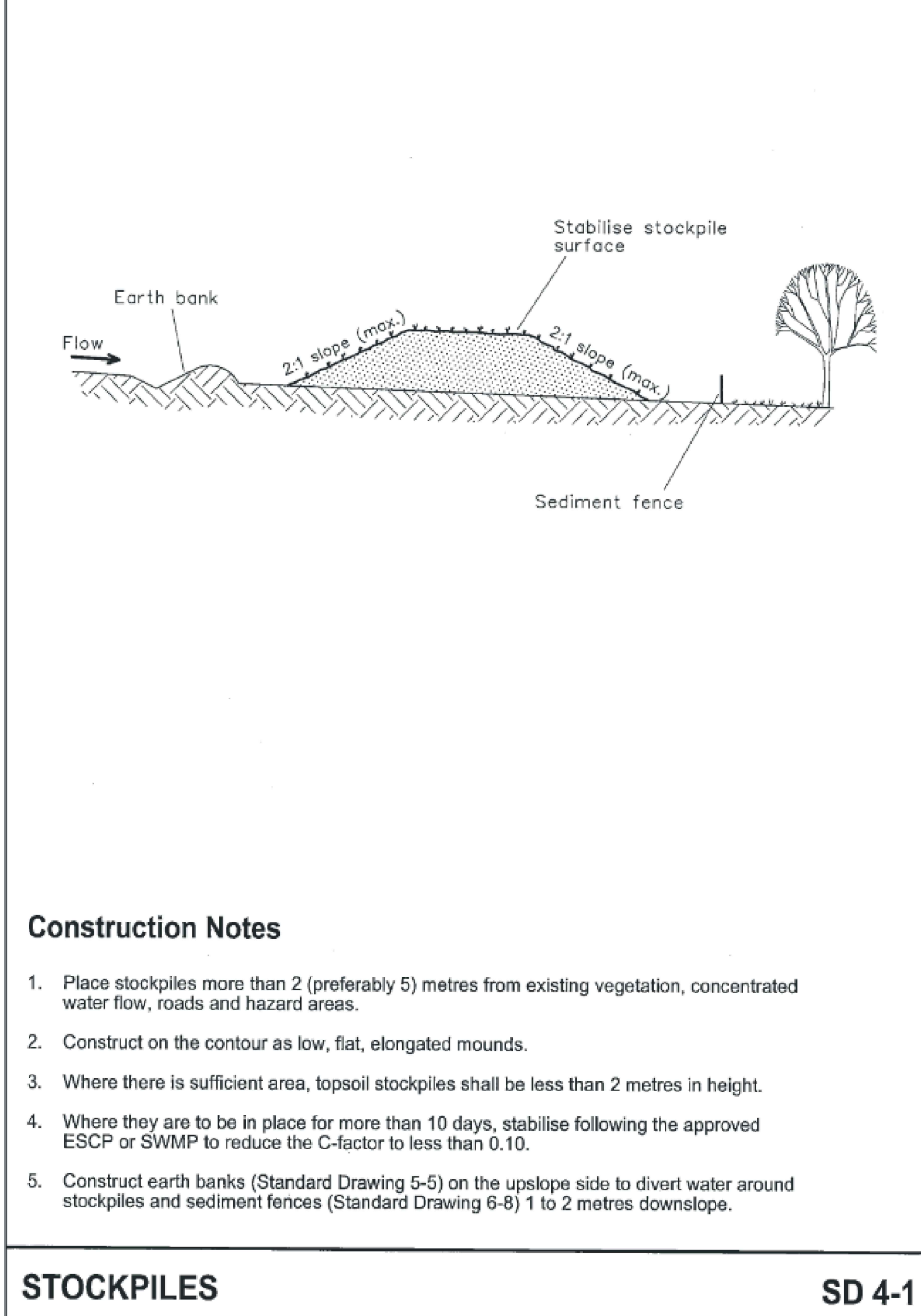
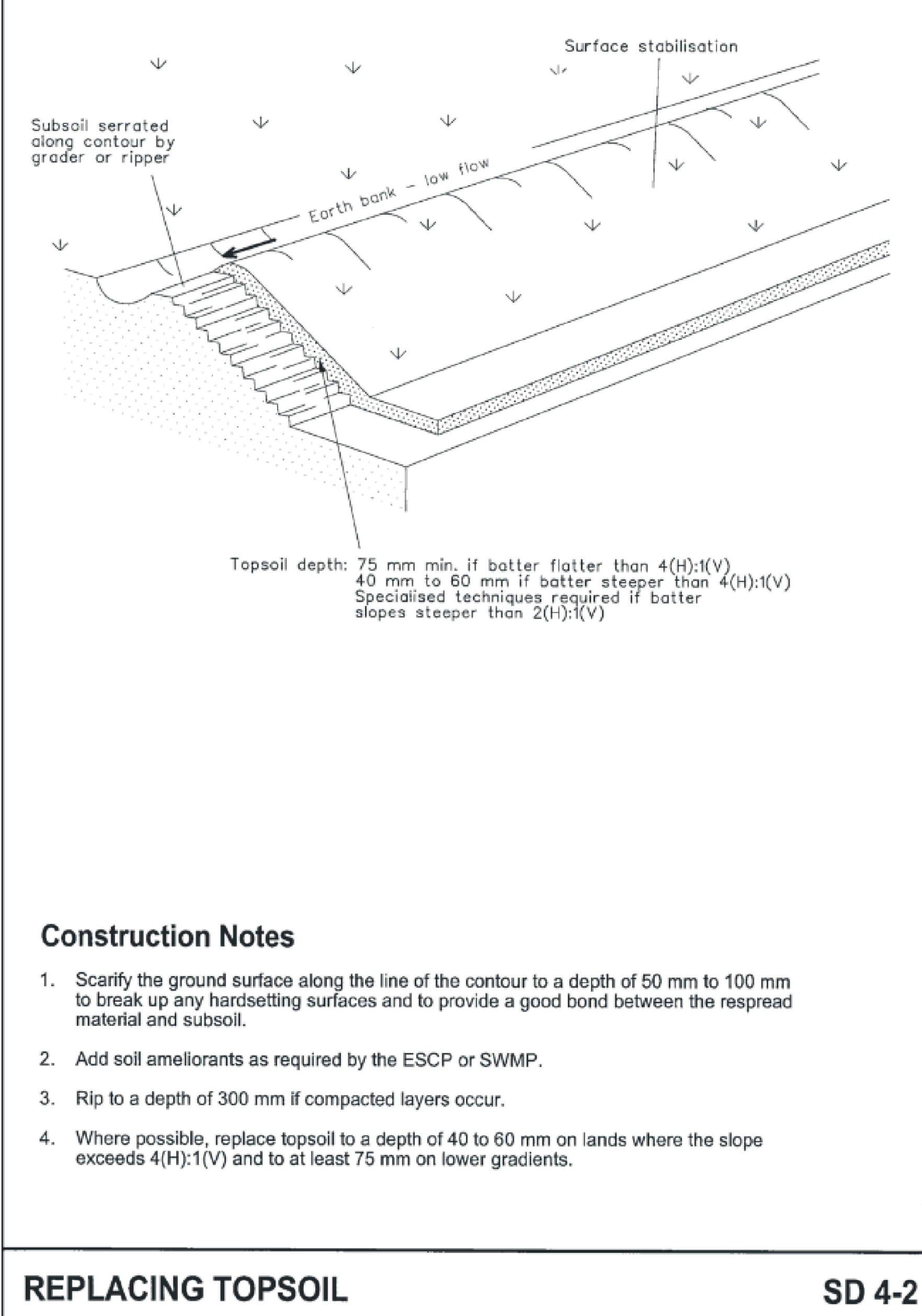
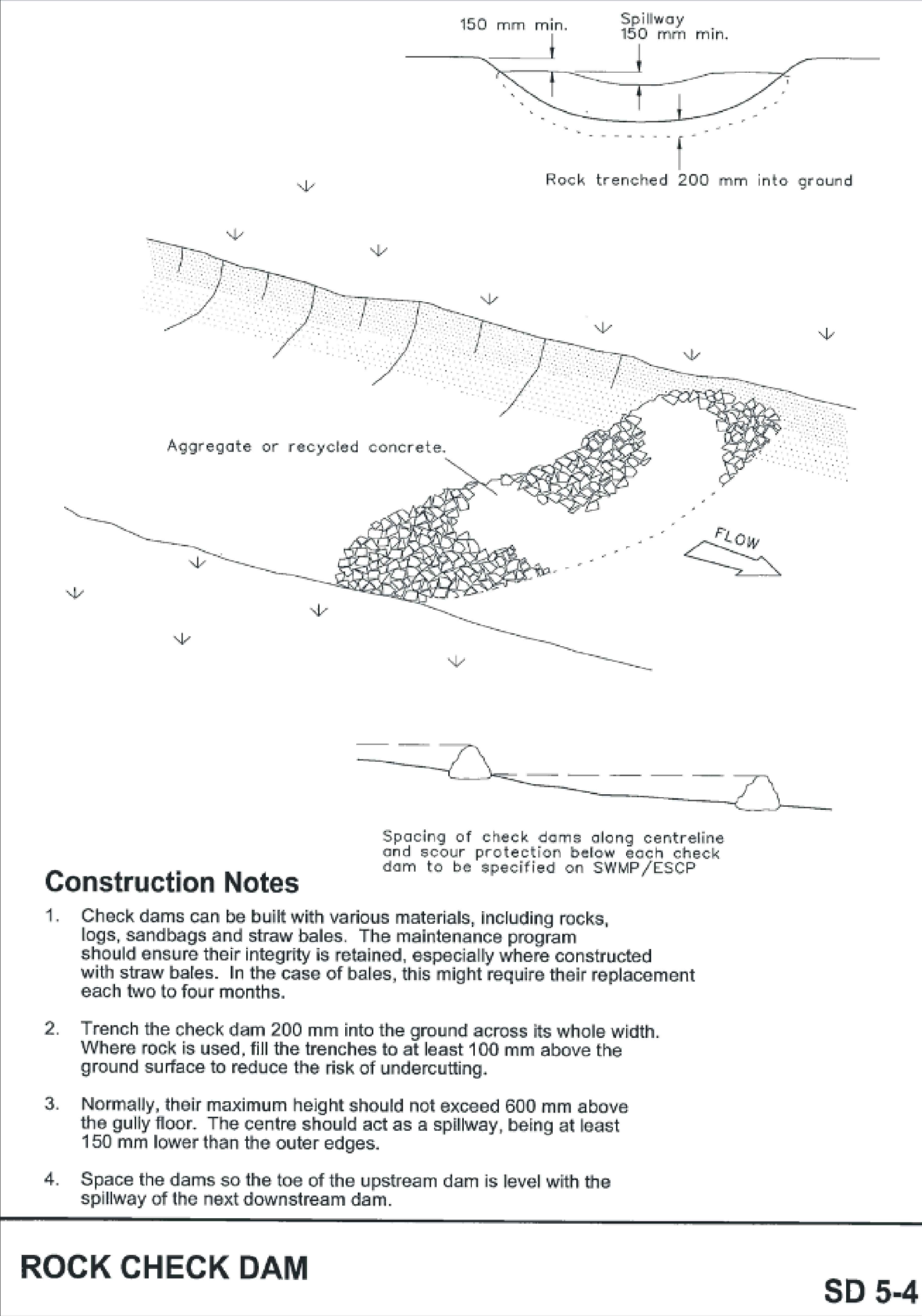
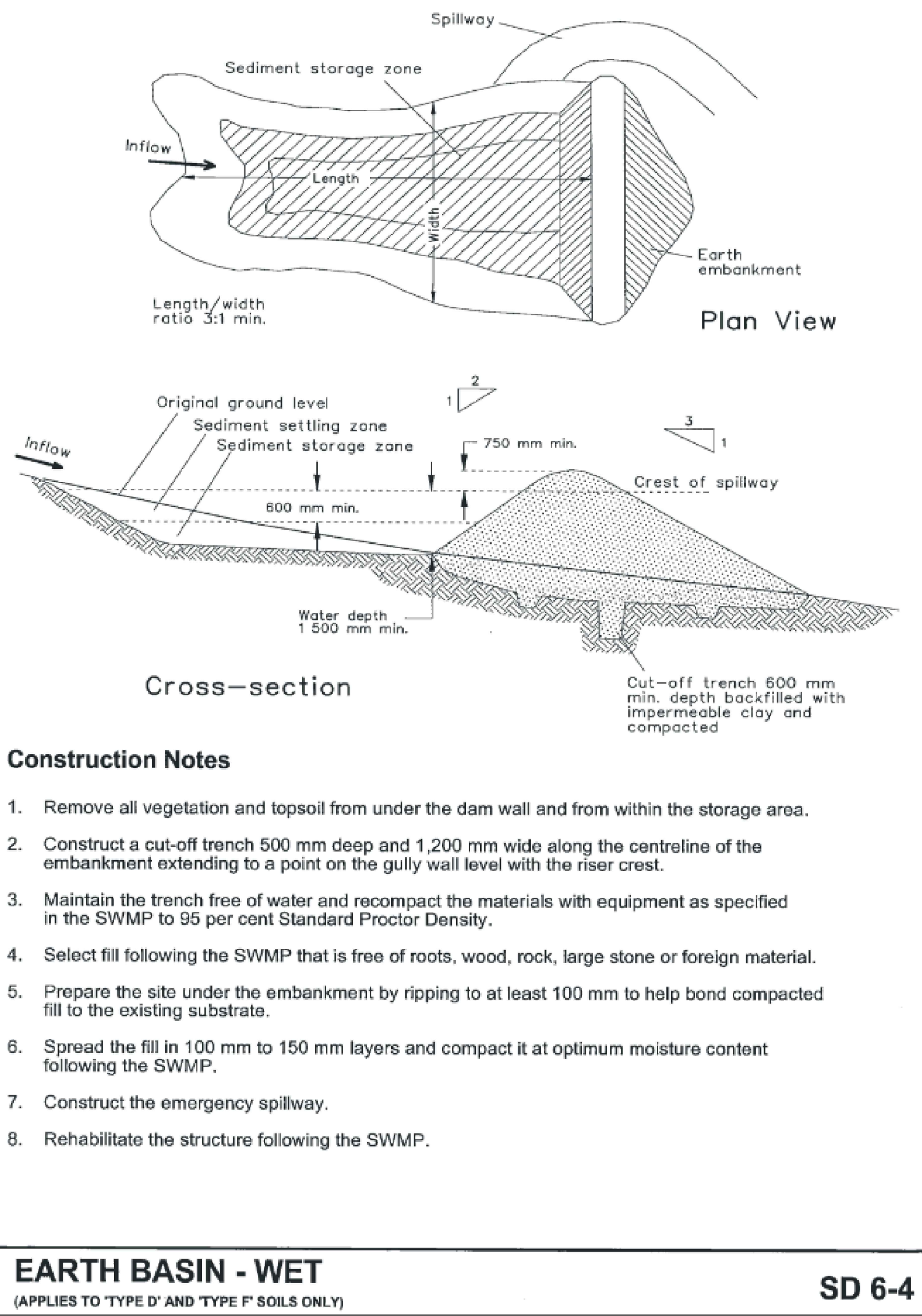


PUMPED SYSTEM OPTION GRAVITY PIPE OPTION
INSTREAM WORKS COFFERDAM ARRANGEMENT

SITE PREPARATION NOTES:

- ALL EARTHWORKS SHALL BE COMPLETED GENERALLY IN ACCORDANCE WITH THE GUIDELINES SPECIFIED BY THE GEOTECHNICAL REPORT #5204.00 & 73624.03 PROVIDED BY DOUGLAS PARTNERS DATED DEC 2015 & MAY 2017.
- EXISTING LEVELS ARE BASED ON INFORMATION PROVIDE BY THE FOLLOW SOURCE:
 - G&B SURVEY SOLUTIONS DRG No. 5288-001 DATED 08.09.25
 - MNG LANDPARTNERS DRG No. SY075733.001 DATED 24.01.25
 - 75733.00 COMBINED ANNOTATION DTM DATED 28.03.23
 - DEGOTARDI SMITH & PARTNERS #28431a02 DATED 10.08.01
- STRIP ANY TOP SOIL OR DELETERIOUS MATERIAL AND DISPOSE OF FROM SITE OR STORE AS DIRECTED. TOPSOIL BLENDING IS NOT ACCEPTABLE. ANY BLENDING PROPOSAL IS TO BE REFERRED TO THE ENGINEER.
- 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/-210mm ELSEWHERE.
- PREPARE STEEP BATTERS TO RECEIVE FILL BY CONSTRUCTING BENCHING TO FACILITATE FILL PLACEMENT AND COMPACTION. WHERE EXPOSED ROCK (WEATHERED SHALE OR SANDSTONE) IS ENCOUNTERED AT CUT SUBGRADE LEVEL, THE EARTHWORKS CONTRACTOR IS TO ALLOW TO RIP THE SURFACE TO A NOMINAL 0.3-0.4m DEPTH AND RECOMPACT (PER THE ENGINEERING SPEC) AS REQUIRED.
- 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.
- 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
- ALL EARTHWORKS SHALL BE COMPLETED UNDER LEVEL 1 CONTROL IN ACCORDANCE WITH AS 3798-2007.
- PRIOR TO ANY EARTHWORKS, EROSION CONTROL AS OUTLINED IN THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE COMPLETED.
- EXISTING ROCK, IF ANY, SHALL BE REMOVED BY HEAVY ROCK BREAKING OR RIPPING.
- MATCH EXISTING LEVELS AT BATTER INTERFACE.
- 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.
- 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.

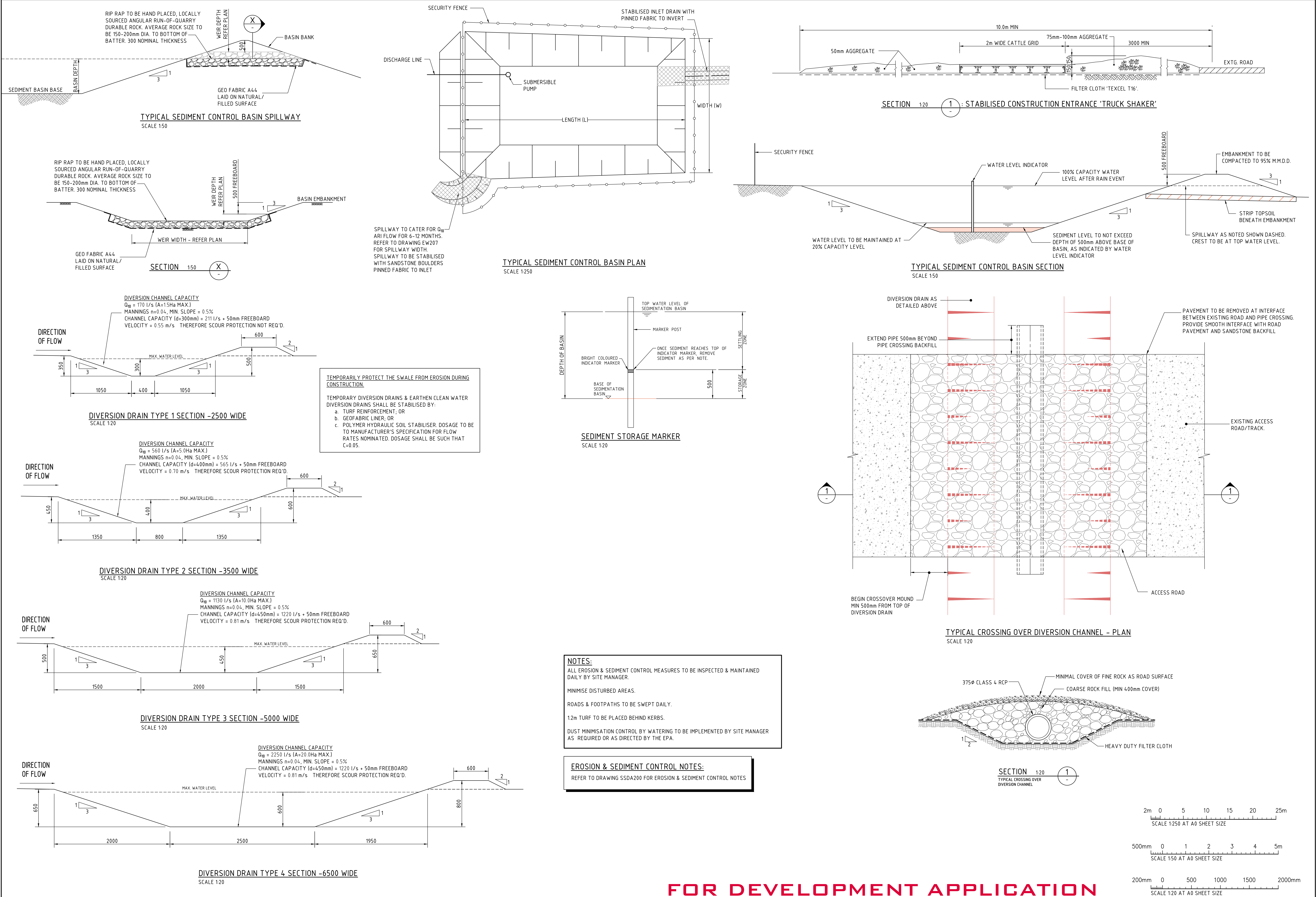
TABLE 2 – LIMITATIONS TO ACCESS DURING CONSTRUCTION		
LAND USE	LIMITATION	REMARKS
CONSTRUCTION AREAS	LIMITED TO 5 (PREFERABLE 2) METRES FROM THE EDGE OF ANY ESSENTIAL CONSTRUCTION ACTIVITY AS SHOWN ON ENGINEERING PLANS	ALL SITE WORKERS SHOULD CLEARLY RECOGNISE THESE AREAS THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCE (DOWNSLOPE) OR SIMILAR MATERIALS.
ACCESS CORRIDORS	LIMITED TO A MAXIMUM WIDTH OF 7 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 EFFICIENT WORKS ACTIVITIES. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE BOUNDARIES.
REMAINING LANDS, INCLUDING REVEGETATION AREA	ENTRY PROHIBITED EXCEPT FOR ESSENTIAL MANAGEMENT WORKS	THINNING OF GROWTH MIGHT BE NECESSARY, FOR EXAMPLE, FOR FIRE REDUCTION OR WEED REMOVAL.

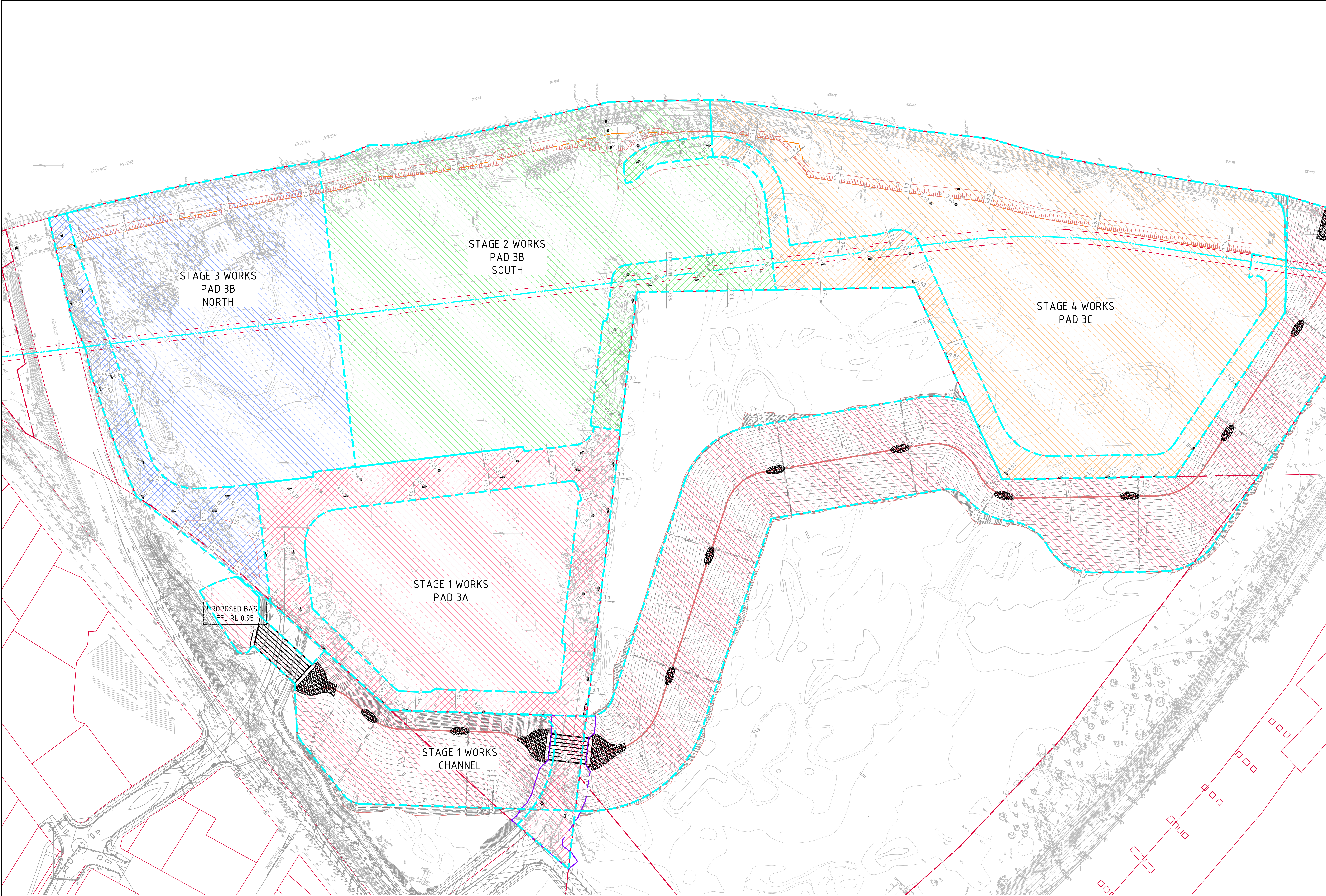


EROSION & SEDIMENT CONTROL NOTES:
REFER TO DRAWING SSDA200 FOR EROSION & SEDIMENT CONTROL NOTES

FOR DEVELOPMENT APPLICATION

									ARCHITECT			CLIENT			PROJECT			CONSULT AUSTRALIA			Costin Roe Consulting Pty Ltd. ABN 50 003 696 446			CRC COSTIN ROE CONSULTING			CIVIL & STRUCTURAL ENGINEERS			DRAWING TITLE EROSION & SEDIMENT CONTROL DETAILS - SHEET 1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
ISSUED FOR DEVELOPMENT APPLICATION			10.04.26			B						GRIMSHAW			Stockland			KOGARAH GOLF CLUB DEVELOPMENT PROPOSED WAREHOUSE DISTRIBUTION & OFFICE MARSH STREET, ARNCLEIFFE, NSW 2205			CONSULT AUSTRALIA			PO Box N449 Sydney NSW 1220 Level 4, 8 Windmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au			w: costinroe.com.au			COSTIN ROE CONSULTING			CIVIL & STRUCTURAL ENGINEERS			DRAWING NO C09916.06 - SSDA250																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
ISSUED FOR DEVELOPMENT APPLICATION			08.12.25			A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

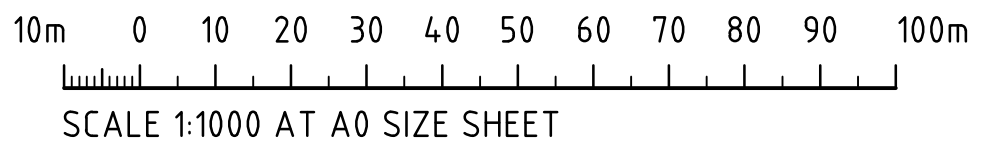




 **BULK EARTHWORKS STAGING PLAN**
SCALE 1:1000

EARTHWORK ESTIMATES -STAGED PLAN			
STAGE 1 PAD		STAGE 3 PAD	
WORKS AREA	= 1.87 Ha	WORKS AREA	= 2.50 Ha
TOPSOIL STRIP (TO BE EXPORTED/REUSED) (150mm OVER 1.87 Ha)	=(-2,805m³)	TOPSOIL STRIP (TO BE EXPORTED/REUSED) (150mm OVER 2.50 Ha)	=(-3,750m³)
DELETERIOUS MATERIAL STRIP (TO BE EXPORTED) (150mm OVER 1.87 Ha)	=(-2,805m³)	DELETERIOUS MATERIAL STRIP (TO BE EXPORTED) (150mm OVER 2.50 Ha)	=(-3,750m³)
CUT	= -0m³	CUT	= -26,150m³
FILL	= +9,950m³	FILL	= +3,850m³
ALLOWANCES DETAILED EXCAVATION (1,500m³/Ha)	= -2,800m³	ALLOWANCES DETAILED EXCAVATION (1,500m³/Ha)	= -3,750m³
DIFFERENCE	= +7,150m³ (i.e. FILL OVER CUT)	DIFFERENCE	= -26,050m³ (i.e. CUT OVER FILL)
STAGE 1 ROAD		STAGE 3 ROAD	
WORKS AREA	= 1.05 Ha	WORKS AREA	= 0.65 Ha
TOPSOIL STRIP (TO BE EXPORTED/REUSED) (150mm OVER 1.05 Ha)	=(-1,575m³)	TOPSOIL STRIP (TO BE EXPORTED/REUSED) (150mm OVER 0.65 Ha)	=(-975m³)
DELETERIOUS MATERIAL STRIP (TO BE EXPORTED) (150mm OVER 1.05 Ha)	=(-1,575m³)	DELETERIOUS MATERIAL STRIP (TO BE EXPORTED) (150mm OVER 0.65 Ha)	=(-975m³)
CUT	= -0m³	CUT	= -1,400m³
FILL	= +16,650m³	FILL	= +7,200m³
ALLOWANCES DETAILED EXCAVATION (1,500m³/Ha)	= -1,575m³	ALLOWANCES DETAILED EXCAVATION (1,500m³/Ha)	= -975m³
DIFFERENCE	= +15,075m³ (i.e. FILL OVER CUT)	DIFFERENCE	= +4,825m³ (i.e. FILL OVER CUT)
STAGE 2 PAD		STAGE 4 PAD	
WORKS AREA	= 3.79 Ha	WORKS AREA	= 3.00 Ha
TOPSOIL STRIP (TO BE EXPORTED/REUSED) (150mm OVER 3.79 Ha)	=(-5,685m³)	TOPSOIL STRIP (TO BE EXPORTED/REUSED) (150mm OVER 3.00 Ha)	=(-4,500m³)
DELETERIOUS MATERIAL STRIP (TO BE EXPORTED) (150mm OVER 3.79 Ha)	=(-5,685m³)	DELETERIOUS MATERIAL STRIP (TO BE EXPORTED) (150mm OVER 3.00 Ha)	=(-4,500m³)
CUT	= -750m³	CUT	= -2,100m³
FILL	= +27,050m³	FILL	= +11,500m³
ALLOWANCES DETAILED EXCAVATION (1,500m³/Ha)	= -5,685m³	ALLOWANCES DETAILED EXCAVATION (1,500m³/Ha)	= -4,500m³
DIFFERENCE	= +20,615m³ (i.e. FILL OVER CUT)	DIFFERENCE	= +4,900m³ (i.e. FILL OVER CUT)
STAGE 2 ROAD		STAGE 4 ROAD	
WORKS AREA	= 0.77 Ha	WORKS AREA	= 0.93 Ha
TOPSOIL STRIP (TO BE EXPORTED/REUSED) (150mm OVER 0.77 Ha)	=(-1,155m³)	TOPSOIL STRIP (TO BE EXPORTED/REUSED) (150mm OVER 0.93 Ha)	=(-1,395m³)
DELETERIOUS MATERIAL STRIP (TO BE EXPORTED) (150mm OVER 0.77 Ha)	=(-1,155m³)	DELETERIOUS MATERIAL STRIP (TO BE EXPORTED) (150mm OVER 0.93 Ha)	=(-1,395m³)
CUT	= -50m³	CUT	= -300m³
FILL	= +12,300m³	FILL	= +12,400m³
ALLOWANCES DETAILED EXCAVATION (1,500m³/Ha)	= -1,155m³	ALLOWANCES DETAILED EXCAVATION (1,500m³/Ha)	= -1,395m³
DIFFERENCE	= +11,095m³ (i.e. FILL OVER CUT)	DIFFERENCE	= +10,705m³ (i.e. FILL OVER CUT)
NOTE: VOLUMES BASED ON 150mm TOPSOIL STRIP AND 150mm DELETERIOUS MATERIAL STRIP OVER THE NOMINATED AREA. EARTHWORKS VOLUMES ARE APPROXIMATE ONLY. NO ALLOWANCE HAS BEEN MADE FOR DELETERIOUS MATERIAL, EROSION AND SEDIMENT CONTROL, BULKING OR COMPACTION OF FILLED SOILS, THE REMOVAL OF UNCONTROLLED OR CONTAMINATED MATERIAL OR ANY OTHER UNSPECIFIED EXCAVATION RELATED TO CONSTRUCTION ACTIVITIES. DETAILED EXCAVATION ALLOWANCE IS APPROXIMATE ONLY AND ACCOUNTS FOR STORMWATER/SERVICES TRENCHING AND FOUNDATIONS. THE DETAILED EXCAVATION VOLUMES ARE TO BE CONFIRMED BY THE CONTRACTOR. REFER ANY CONCERNS TO ENGINEER.			

FOR DEVELOPMENT APPLICATION



<table><tr><td>ISSUED FOR DEVELOPMENT APPLICATION</td><td>17.04.26</td><td>D</td><td></td></tr><tr><td>ISSUED FOR DEVELOPMENT APPLICATION</td><td>10.04.25</td><td>C</td><td></td></tr><tr><td>ISSUED FOR DEVELOPMENT APPLICATION</td><td>23.02.26</td><td>B</td><td></td></tr><tr><td>ISSUED FOR DEVELOPMENT APPLICATION</td><td>15.12.25</td><td>A</td><td></td></tr><tr><td>AMENDMENTS</td><td>DATE</td><td>ISSUE</td><td>AMENDMENTS</td></tr></table>				ISSUED FOR DEVELOPMENT APPLICATION	17.04.26	D		ISSUED FOR DEVELOPMENT APPLICATION	10.04.25	C		ISSUED FOR DEVELOPMENT APPLICATION	23.02.26	B		ISSUED FOR DEVELOPMENT APPLICATION	15.12.25	A		AMENDMENTS	DATE	ISSUE	AMENDMENTS	<table><tr><td>ARCHITECT</td><td>CLIENT</td><td>PROJECT</td><td>DRAWING TITLE</td></tr><tr><td rowspan="2">GRIMSHAW</td><td rowspan="2"> Stockland</td><td>PROJECT</td><td>BULK EARTHWORKS</td></tr><tr><td>KOGARAH GOLF CLUB DEVELOPMENT</td><td>INDICATIVE STAGING PLAN</td></tr><tr><td colspan="2"></td><td>PROPOSED WAREHOUSE DISTRIBUTION & OFFICE</td><td></td></tr><tr><td colspan="2"></td><td>MARSH STREET, ARNCLIFFE, NSW 2205</td><td></td></tr></table>				ARCHITECT	CLIENT	PROJECT	DRAWING TITLE	GRIMSHAW	 Stockland	PROJECT	BULK EARTHWORKS	KOGARAH GOLF CLUB DEVELOPMENT	INDICATIVE STAGING PLAN			PROPOSED WAREHOUSE DISTRIBUTION & OFFICE				MARSH STREET, ARNCLIFFE, NSW 2205		<table><tr><td colspan="2"> CONSULT AUSTRALIA</td><td colspan="2"> CIVIL & STRUCTURAL ENGINEERS</td></tr><tr><td colspan="2">Costin Roe Consulting Pty Ltd. ABN 50 003 696 446</td><td colspan="2">COSTIN ROE CONSULTING</td></tr><tr><td colspan="2">PO Box 2419 Sydney NSW 1220 Level 4 & 9 Windmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au</td><td colspan="2">w: costinroe.com.au</td></tr></table>				 CONSULT AUSTRALIA		 CIVIL & STRUCTURAL ENGINEERS		Costin Roe Consulting Pty Ltd. ABN 50 003 696 446		COSTIN ROE CONSULTING		PO Box 2419 Sydney NSW 1220 Level 4 & 9 Windmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au		w: costinroe.com.au		<table><tr><td>DRAWING No</td><td>C09916.06-SSDA300</td><td>ISSUE</td><td>D</td></tr></table>				DRAWING No	C09916.06-SSDA300	ISSUE	D
ISSUED FOR DEVELOPMENT APPLICATION	17.04.26	D																																																																			
ISSUED FOR DEVELOPMENT APPLICATION	10.04.25	C																																																																			
ISSUED FOR DEVELOPMENT APPLICATION	23.02.26	B																																																																			
ISSUED FOR DEVELOPMENT APPLICATION	15.12.25	A																																																																			
AMENDMENTS	DATE	ISSUE	AMENDMENTS																																																																		
ARCHITECT	CLIENT	PROJECT	DRAWING TITLE																																																																		
GRIMSHAW	 Stockland	PROJECT	BULK EARTHWORKS																																																																		
		KOGARAH GOLF CLUB DEVELOPMENT	INDICATIVE STAGING PLAN																																																																		
		PROPOSED WAREHOUSE DISTRIBUTION & OFFICE																																																																			
		MARSH STREET, ARNCLIFFE, NSW 2205																																																																			
 CONSULT AUSTRALIA		 CIVIL & STRUCTURAL ENGINEERS																																																																			
Costin Roe Consulting Pty Ltd. ABN 50 003 696 446		COSTIN ROE CONSULTING																																																																			
PO Box 2419 Sydney NSW 1220 Level 4 & 9 Windmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au		w: costinroe.com.au																																																																			
DRAWING No	C09916.06-SSDA300	ISSUE	D																																																																		

SITE PREPARATION NOTES:

- ALL EARTHWORKS SHALL BE COMPLETED GENERALLY IN ACCORDANCE WITH THE GUIDELINES SPECIFIED BY THE GEOTECHNICAL REPORT 85204.00 & 73624.03 PROVIDED BY DOUGLAS PARTNERS DATED DEC 2015 & MAY 2017.
- EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY THE FOLLOW SOURCE:
 - G&B SURVEY SOLUTIONS DRG No. 5288-001 DATED 08.09.25
 - MNG LANDPARTNERS DRG No. SY075733.001 DATED 24.01.25
 - 75733.00 COMBINED ANNOTATION DTM DATED 28.03.23
 - DEGOTARDI SMITH & PARTNERS #28431a02 DATED 10.08.01
- STRIP ANY TOP SOIL OR DELETERIOUS MATERIAL AND DISPOSE OF FROM SITE OR STORE AS DIRECTED. TOPSOIL BLENDING IS NOT ACCEPTABLE. ANY BLENDING PROPOSAL IS TO BE REFERRED TO THE ENGINEER.
- 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. WHERE EXPOSED ROCK (WEATHERED SHALE OR SANDSTONE) IS ENCOUNTERED AT CUT SUBGRADE LEVEL, THE EARTHWORKS CONTRACTOR IS TO ALLOW TO RIP THE SURFACE TO A NOMINAL 0.3-0.4m DEPTH AND RECOMPACT (PER THE ENGINEERING SPEC) AS REQUIRED. AREAS TO RECEIVE FILL (THAT ARE NOT ON BENCHMARK 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.
- 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.
- ALL EARTHWORKS SHALL BE COMPLETED UNDER LEVEL 1 CONTROL IN ACCORDANCE WITH AS 3798-2007.
- PRIOR TO ANY EARTHWORKS, EROSION CONTROL AS OUTLINED IN THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE COMPLETED.
- EXISTING ROCK, IF ANY, SHALL BE REMOVED BY HEAVY ROCK BREAKING OR RIPPING.
- MATCH EXISTING LEVELS AT BATTER INTERFACE.
- 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.
- 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.

EARTHWORK ESTIMATES - ROADS AND PADS

WORKS AREA	= 14.83 Ha
SITE STRIP	=(-4.4,4.90m³) (TO BE EXPORTED/REUSED) (300mm OVER 14.83 Ha)
CUT	= -30,850m³
FILL	= +104,450m³
ALLOWANCES	
DETAILED EXCAVATION	= -22,300m³ (1,500m³/Ha)
DIFFERENCE	= +51,300m³ (i.e. FILL OVER CUT)

NOTE:
VOLUMES BASED ON 300mm SITE STRIP OVER THE NOMINATED AREA. EARTHWORKS VOLUMES ARE APPROXIMATE ONLY. NO ALLOWANCE HAS BEEN MADE FOR DELETERIOUS MATERIAL, EROSION AND SEDIMENT CONTROL, BULKING OR COMPACTION OF FILLED SOILS, THE REMOVAL OF UNCONTROLLED OR CONTAMINATED MATERIAL OR ANY OTHER UNSPECIFIED EXCAVATION RELATED TO CONSTRUCTION ACTIVITIES. DETAILED EXCAVATION ALLOWANCE IS APPROXIMATE ONLY AND ACCOUNTS FOR STORMWATER/SERVICES TRENCHING AND FOUNDATIONS. THE DETAILED EXCAVATION VOLUMES ARE TO BE CONFIRMED BY THE CONTRACTOR. REFER ANY CONCERNS TO ENGINEER.

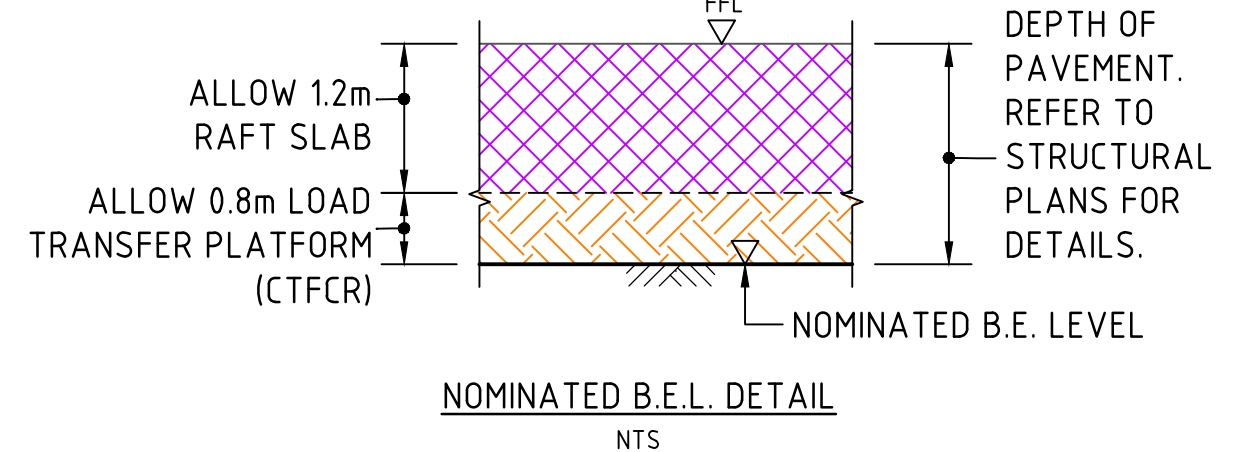
EARTHWORK ESTIMATES - CHANNEL

WORKS AREA	= 5.36 Ha
SITE STRIP	=(-16,080m³) (TO BE EXPORTED/REUSED) (300mm OVER 5.36 Ha)
CUT	= -22,100m³
FILL	= +8,500m³
DIFFERENCE	= -13,600m³ (i.e. CUT OVER FILL)

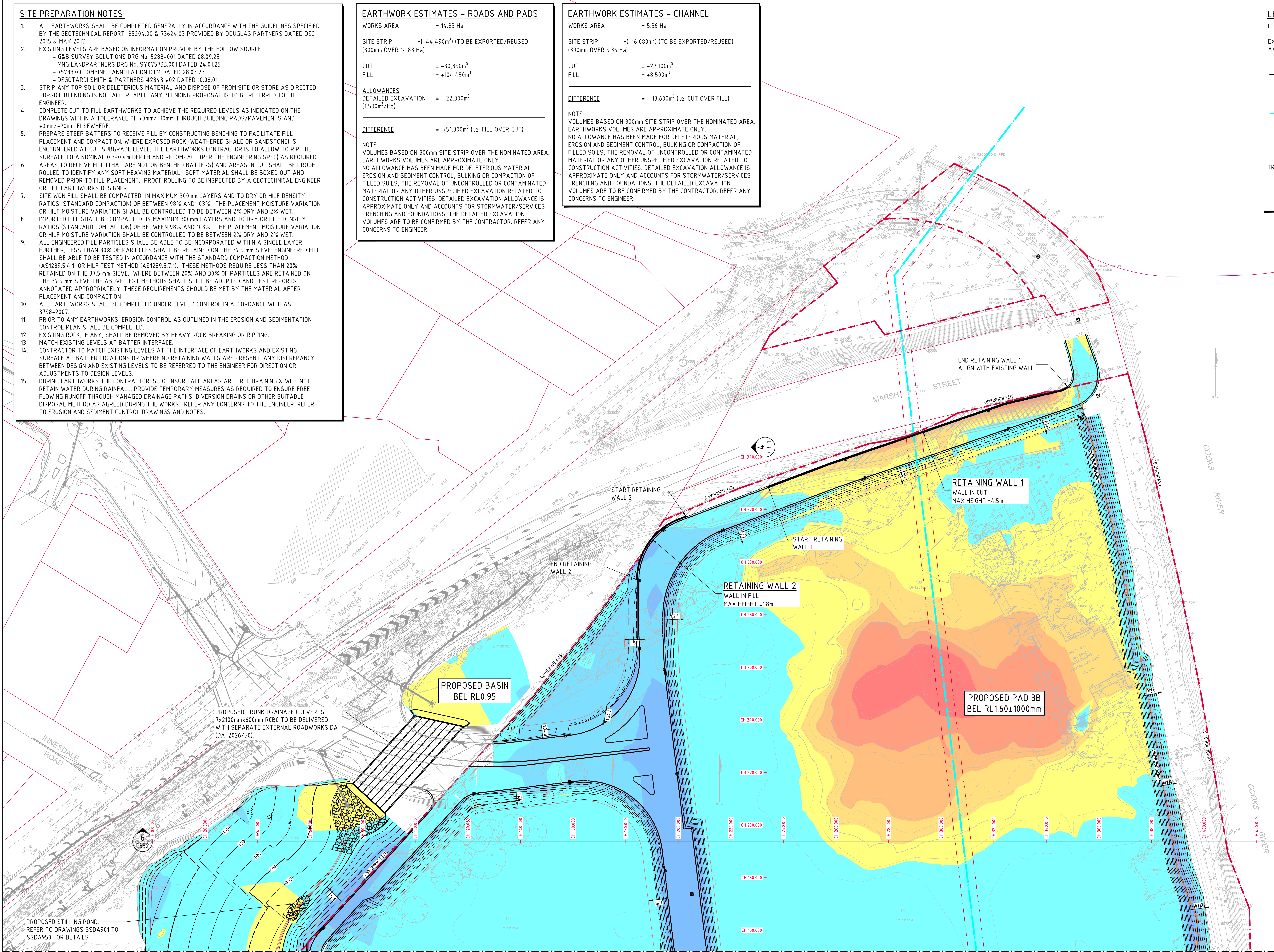
NOTE:
VOLUMES BASED ON 300mm SITE STRIP OVER THE NOMINATED AREA. EARTHWORKS VOLUMES ARE APPROXIMATE ONLY. NO ALLOWANCE HAS BEEN MADE FOR DELETERIOUS MATERIAL, EROSION AND SEDIMENT CONTROL, BULKING OR COMPACTION OF FILLED SOILS, THE REMOVAL OF UNCONTROLLED OR CONTAMINATED MATERIAL OR ANY OTHER UNSPECIFIED EXCAVATION RELATED TO CONSTRUCTION ACTIVITIES. DETAILED EXCAVATION ALLOWANCE IS APPROXIMATE ONLY AND ACCOUNTS FOR STORMWATER/SERVICES TRENCHING AND FOUNDATIONS. THE DETAILED EXCAVATION VOLUMES ARE TO BE CONFIRMED BY THE CONTRACTOR. REFER ANY CONCERNS TO ENGINEER.

LEGEND:

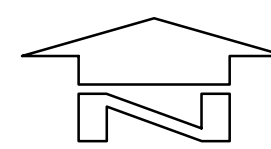
- LEVELS DATUM IS AHD.
- EXISTING CONTOURS ARE BASED ON SURVEY INFORMATION BY 'RPS AAP CONSULTING PTY LTD' DATED 10/10/2025.
- 50.00 - EXISTING CONTOUR (0.5m INTERVAL)
 - 50.00 - B.E.L. CONTOUR (MAJOR 1.0m)
 - 50.25 - B.E.L. CONTOUR (MINOR 0.25m)
 - 50.00 - B.E.L. SPOT LEVEL
 - DENOTES EXISTING WATER MAIN



DEPTH RANGE			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	-9.000	-8.000	Red
2	-8.000	-7.000	Red
3	-7.000	-6.000	Red
4	-6.000	-5.000	Red
5	-5.000	-4.000	Red
6	-4.000	-3.000	Orange
7	-3.000	-2.000	Orange
8	-2.000	-1.000	Yellow
9	-1.000	0.000	Yellow
10	0.000	1.000	Light Blue
11	1.000	2.000	Light Blue
12	2.000	3.000	Light Blue
13	3.000	4.000	Light Blue



BREAKLINE - REFER TO DRAWING SSDA302 FOR CONTINUATION



BULK EARTHWORKS PLAN - SHEET 2
SCALE 1:500

FOR DEVELOPMENT APPLICATION

5m 0 10 20 30 40 50m
SCALE 1:500 AT A0 SIZE SHEET

ISSUED FOR DEVELOPMENT APPLICATION	17.04.25	F
ISSUED FOR DEVELOPMENT APPLICATION	10.04.25	E
ISSUED FOR DEVELOPMENT APPLICATION	15.12.25	D
ISSUED FOR DEVELOPMENT APPLICATION	08.12.25	C
ISSUED FOR INFORMATION	17.11.25	B
ISSUED FOR INFORMATION	20.10.25	A
AMENDMENTS	DATE	ISSUE

AMENDMENTS	DATE	ISSUE
------------	------	-------

AMENDMENTS	DATE	ISSUE
------------	------	-------

ARCHITECT	GRIMSHAW
-----------	----------

CLIENT	Stockland
--------	-----------

PROJECT	KOGARAH GOLF CLUB DEVELOPMENT PROPOSED WAREHOUSE DISTRIBUTION & OFFICE MARSH STREET, ARNCLIFFE, NSW 2205
DESIGNED	MC
DRAWN	MC
DATE	OCT 2025
CHECKED	DS
SIZE	A0
SCALE	AS SHOWN
CAD REF.	C09916.06-SSDA301

CONSULT AUSTRALIA

Costin Roe Consulting Pty Ltd. ABN 50 003 696 446 PO Box 2419 Sydney NSW 1220 Level 4 & 8 Woodmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au	Costin Roe Consulting Pty Ltd. ABN 50 003 696 446 PO Box 2419 Sydney NSW 1220 Level 4 & 8 Woodmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au
--	--

CRC COSTIN ROE CONSULTING	CIVIL & STRUCTURAL ENGINEERS
---------------------------------	---------------------------------

DRAWING TITLE BULK EARTHWORKS PLAN - SHEET 1	ISSUE F
---	------------

BREAKLINE - REFER TO DRAWING SSDA303 FOR CONTINUATION

0 10 20 30 40 50m
SCALE 1:500 AT A0 SIZE SHEET

PROPOSED STILLING POND. ———
REFER TO DRAWINGS SSDA901 TO
SSDA950 FOR DETAILS

FOR DEVELOPMENT APPLICATION

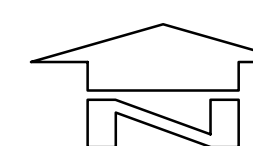
DRAWING TITLE		
BULK EARTHWORKS PLAN - SHEET 2		
DRAWING No	C09916.06-SSDA302	ISSU P

[illegible]

REFER TO DRAWING SSDA301 FOR SITE PREPARATION NOTES

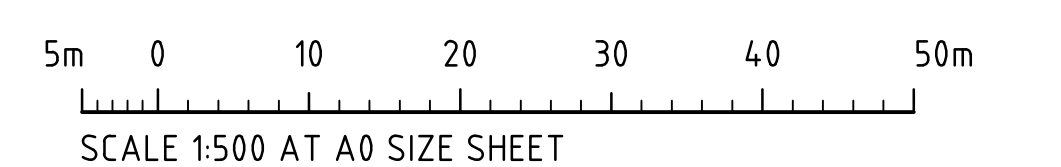
The diagram illustrates a cross-section of a pavement structure. At the top, a blue line represents the 'EXISTING WATER MAIN'. Below it is a 'RAFT SLAB' with a height of 'ALLOW 1.2m'. Underneath the raft slab is a 'TRANSFER PLATFORM (CTFCR)' with a height of 'ALLOW 0.8m LOAD'. The total height of the structure is labeled 'DEPTH OF PAVEMENT. REFER TO STRUCTURAL PLANS FOR DETAILS.' The 'F.F.L.' (Finished Floor Level) is indicated at the top of the raft slab. The 'NOMINATED B.E. LEVEL' (Nominated Base Earth Level) is indicated at the bottom of the transfer platform. The entire structure is labeled 'NOMINATED B.E.L. DETAIL' and 'NTS' (Not To Scale).

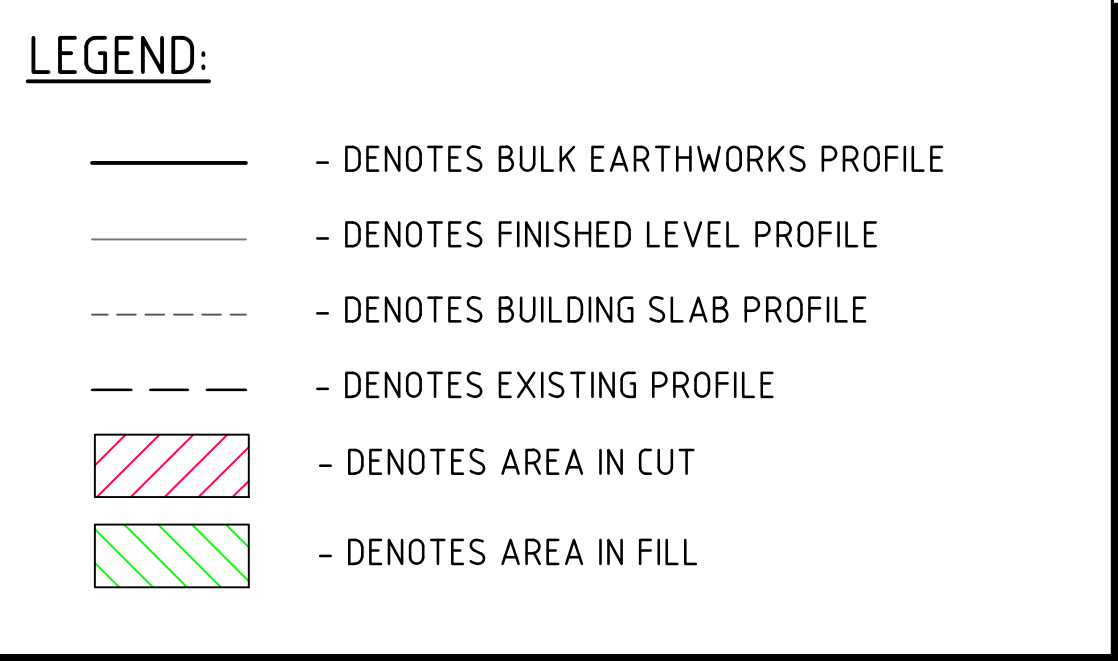
DEPTH RANGE			
No.	FROM DEPTH	TO DEPTH	COLOR
1	-9.000	-8.000	
2	-8.000	-7.000	
3	-7.000	-6.000	
4	-6.000	-5.000	
5	-5.000	-4.000	
6	-4.000	-3.000	
7	-3.000	-2.000	
8	-2.000	-1.000	
9	-1.000	0.000	
10	0.000	1.000	
11	1.000	2.000	
12	2.000	3.000	
13	3.000	4.000	



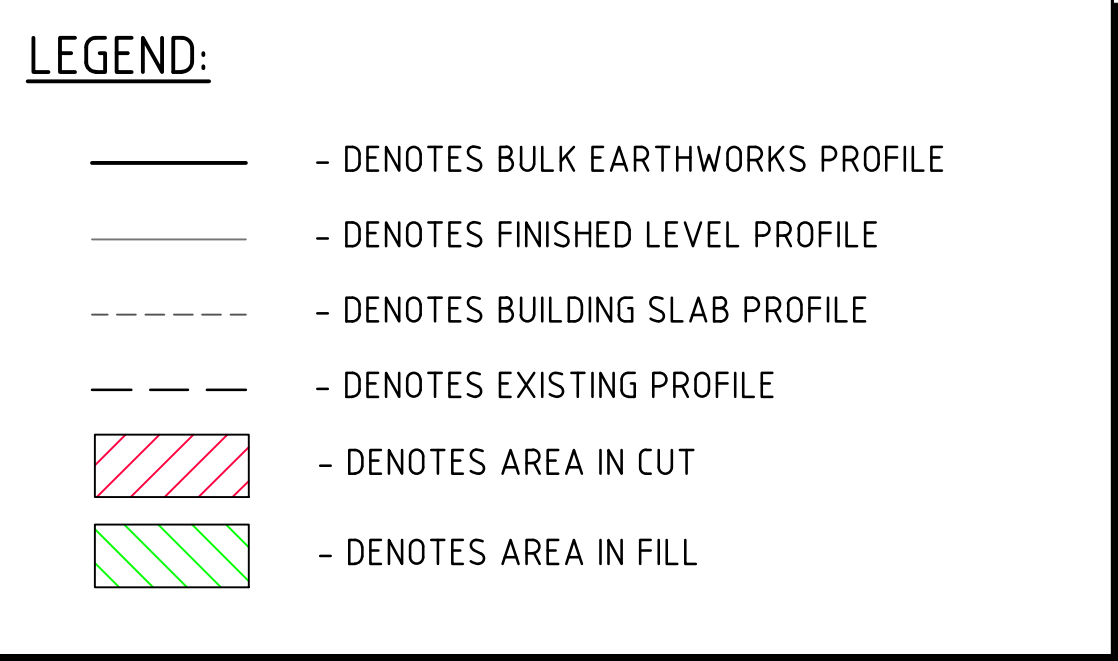
BULK EARTHWORKS PLAN - SHEET 3
SCALE 1:500

FOR DEVELOPMENT APPLICATION

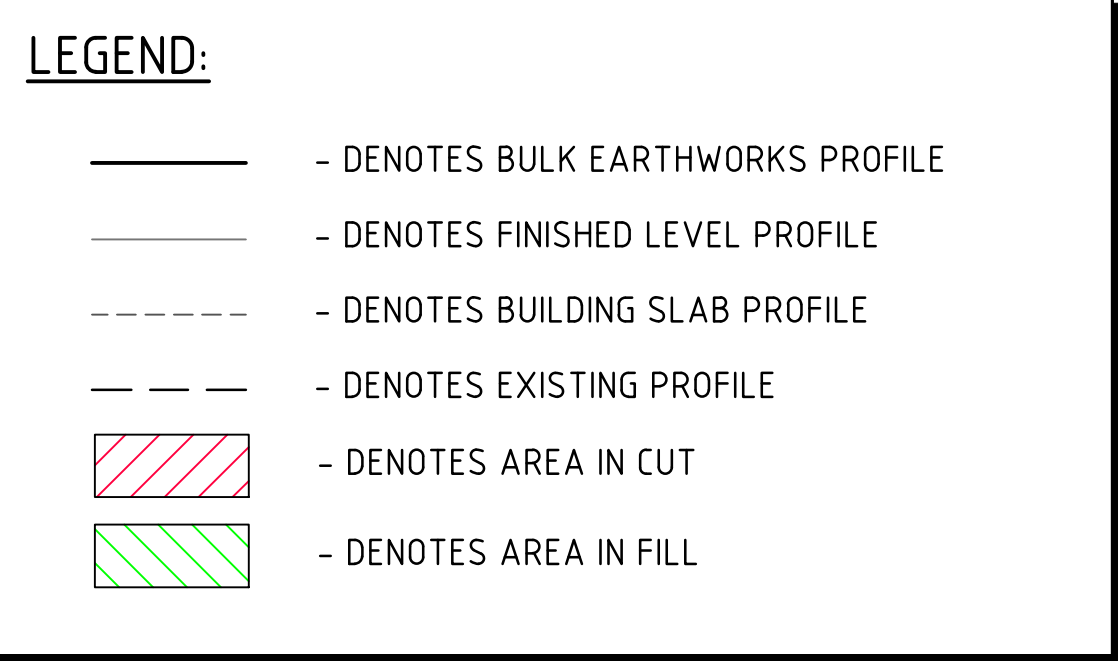
[illegible]



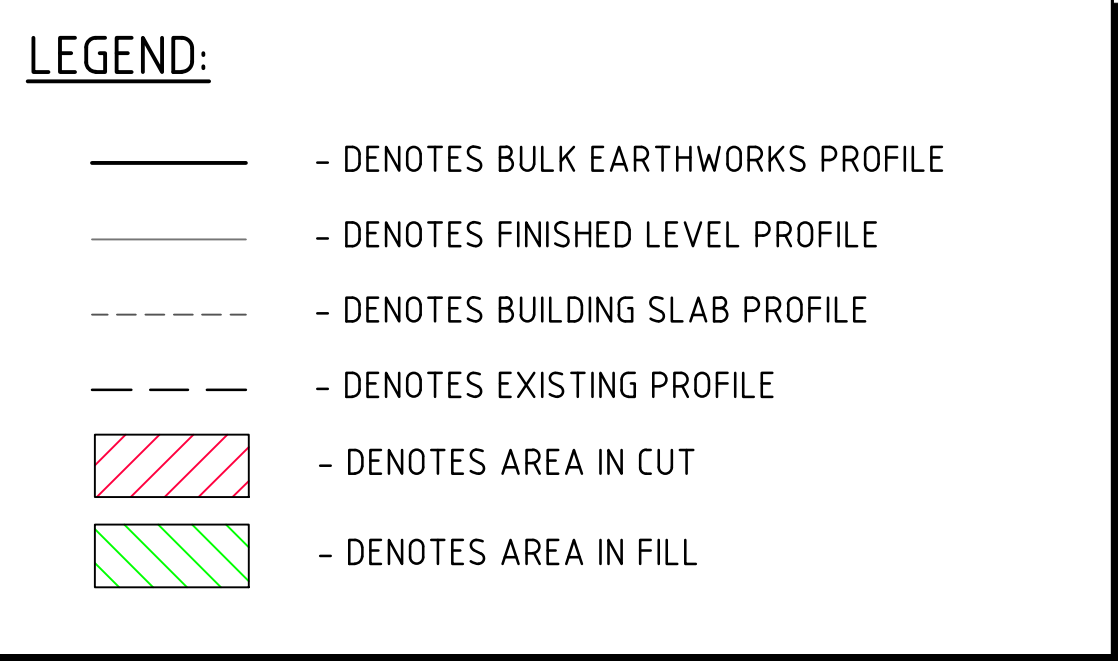
SECTION 1
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100



SECTION 2
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

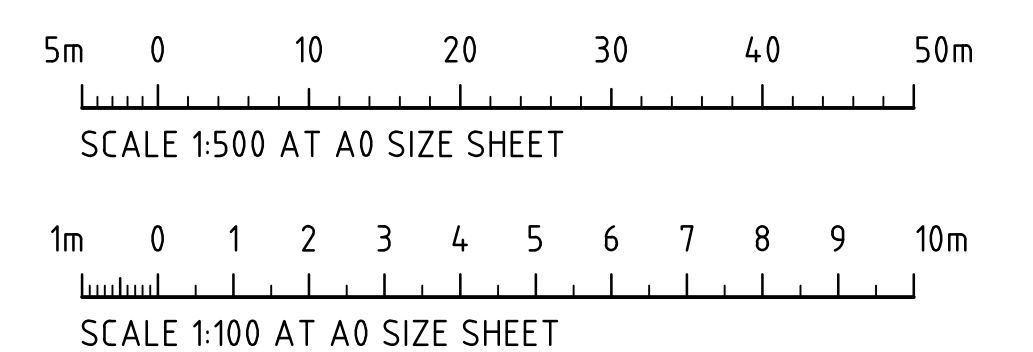


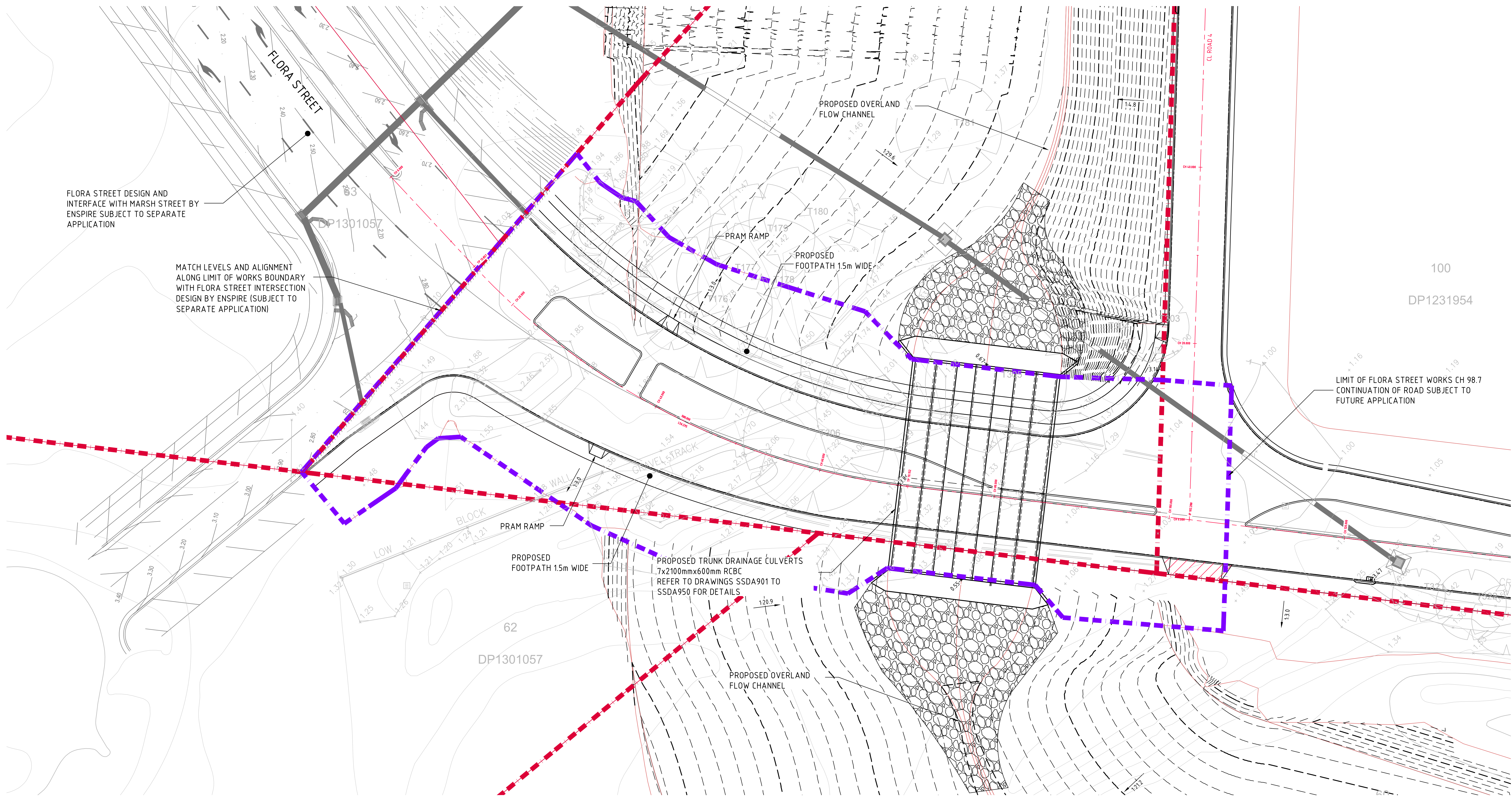
SECTION 3
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100



SECTION 4
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

FOR DEVELOPMENT APPLICATION

[illegible]

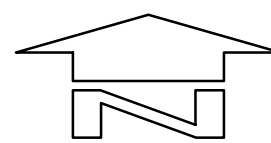


LEGEND:
LEVELS DATUM IS AHD.

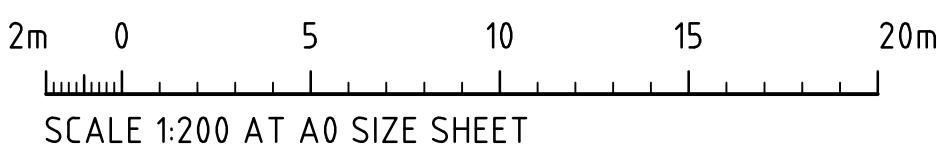
- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UND)
- 50.00 - FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 - FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS
- DENOTES EXISTING WATER MAIN

NOTES:

1. REFER TO DRAWING SSDA101 FOR FINISHED LEVELS PLAN NOTES.

 **CIVIL WORKS PLAN-FLORA STREET EAST**
SCALE 1:200

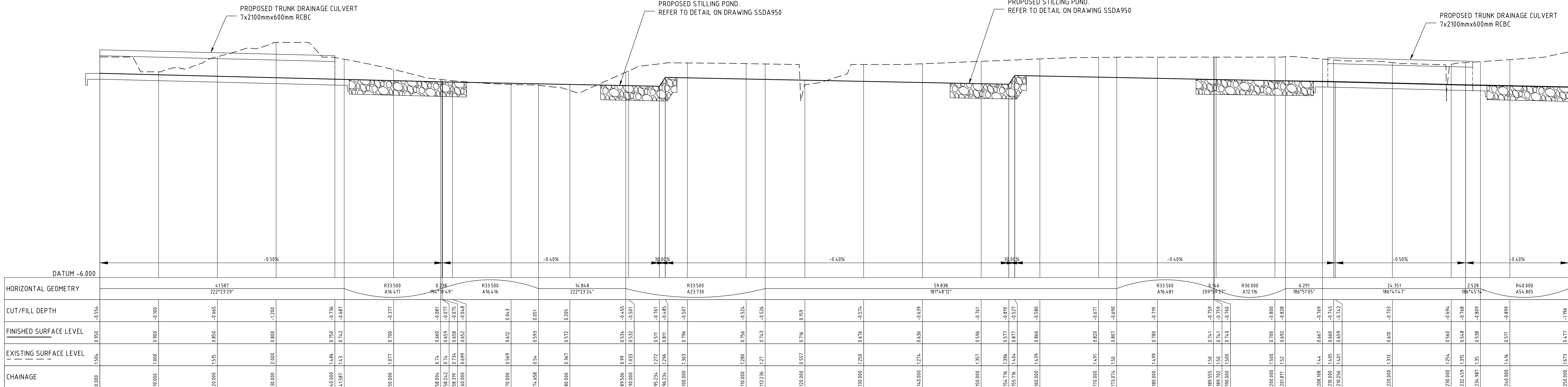
FOR DEVELOPMENT APPLICATION



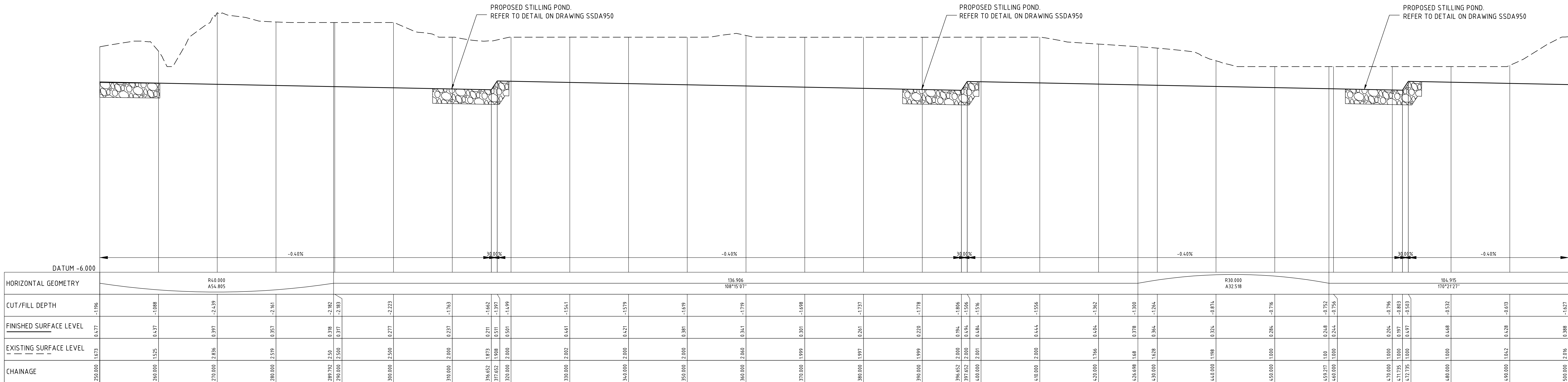
ISSUED FOR DEVELOPMENT APPLICATION				17.04.25				B			
ISSUED FOR DEVELOPMENT APPLICATION				10.04.25				A			
AMENDMENTS				DATE	ISSUE	AMENDMENTS	DATE	ISSUE	AMENDMENTS	DATE	ISSUE

ARCHITECT		CLIENT		PROJECT		CONSULT		DRAWING TITLE	
GRIMSHAW		Stockland		KOGARAH GOLF CLUB DEVELOPMENT PROPOSED WAREHOUSE DISTRIBUTION & OFFICE MARSH STREET, ARNCLIFFE, NSW 2205		AUSTRALIA		CIVIL WORKS PLAN-FLORA STREET EAST	
				DESIGNED: MC		DRAWN: MC		DRAWING No: C09916.06-SSDA500	
				DATE: OCT 2025		CHECKED: DS		ISSUE: B	
				SIZE: A0		SCALE: AS SHOWN			
				CAD REF: C09916.06-SSDA500					

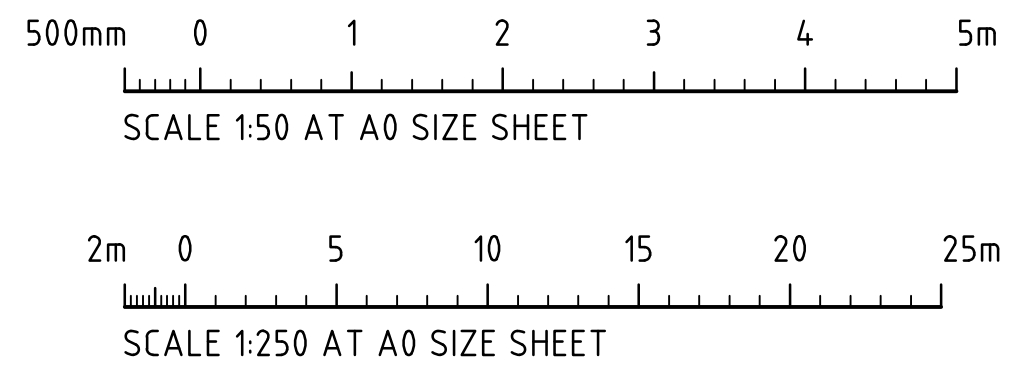
Costin Roe Consulting Pty Ltd. ABN 50 003 696 446		CRC COSTIN ROE CONSULTING		CIVIL & STRUCTURAL ENGINEERS	
PO Box 2419 Sydney NSW 1220 Level 4 & 9 Woodmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au					



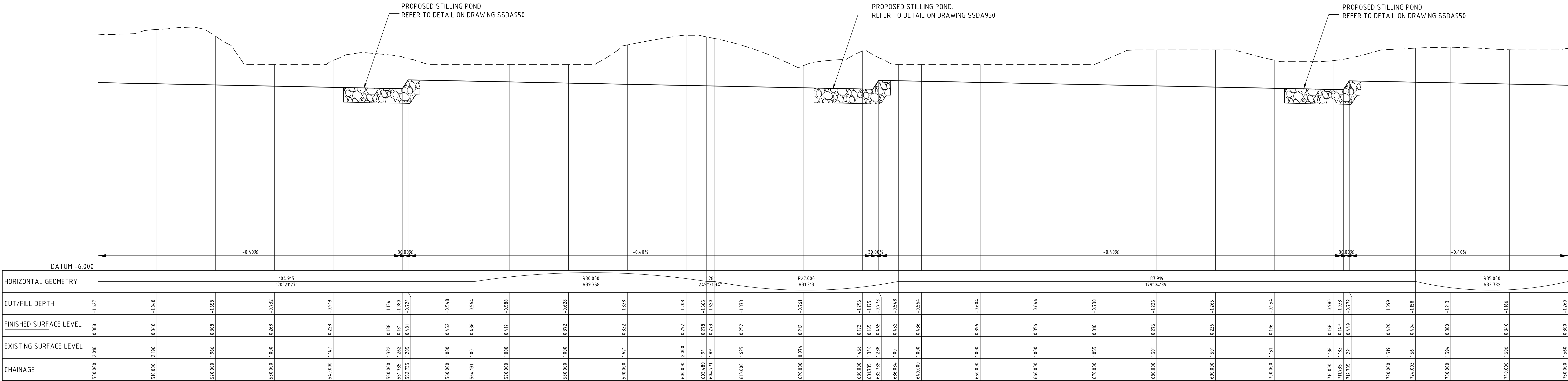
LONGITUDINAL SECTION - CL CHANNEL
HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:50



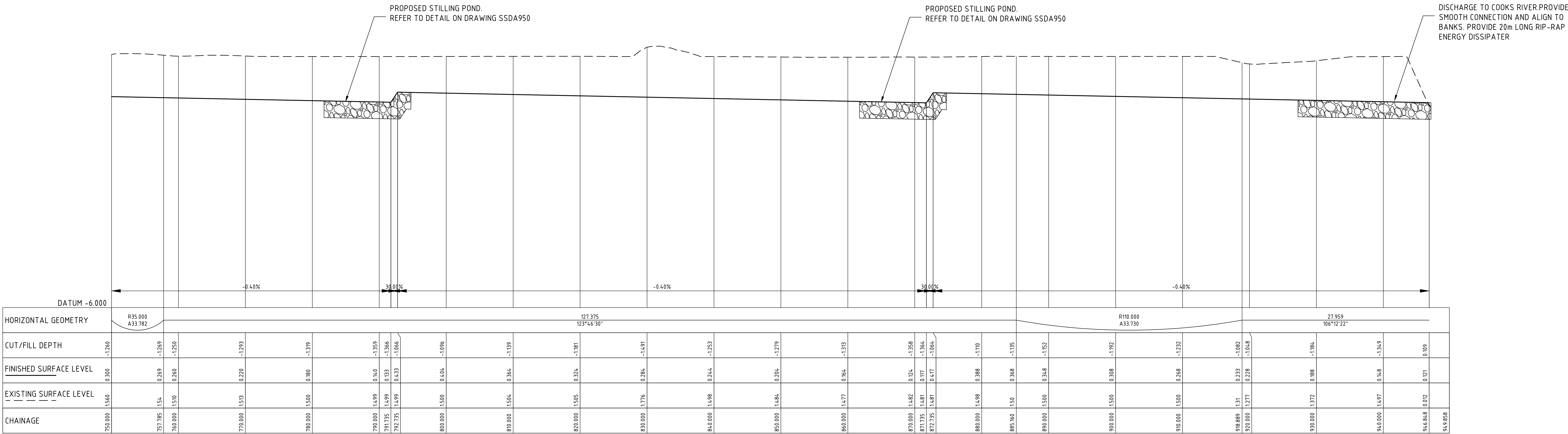
LONGITUDINAL SECTION - CL CHANNEL
HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:50



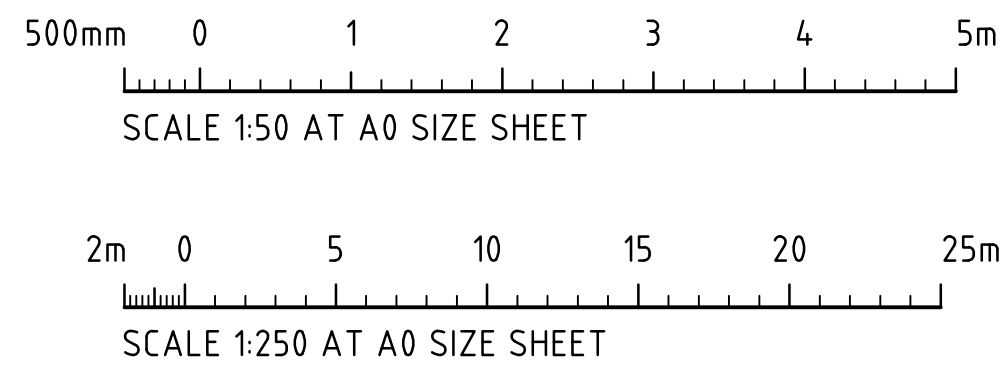
FOR DEVELOPMENT APPLICATION



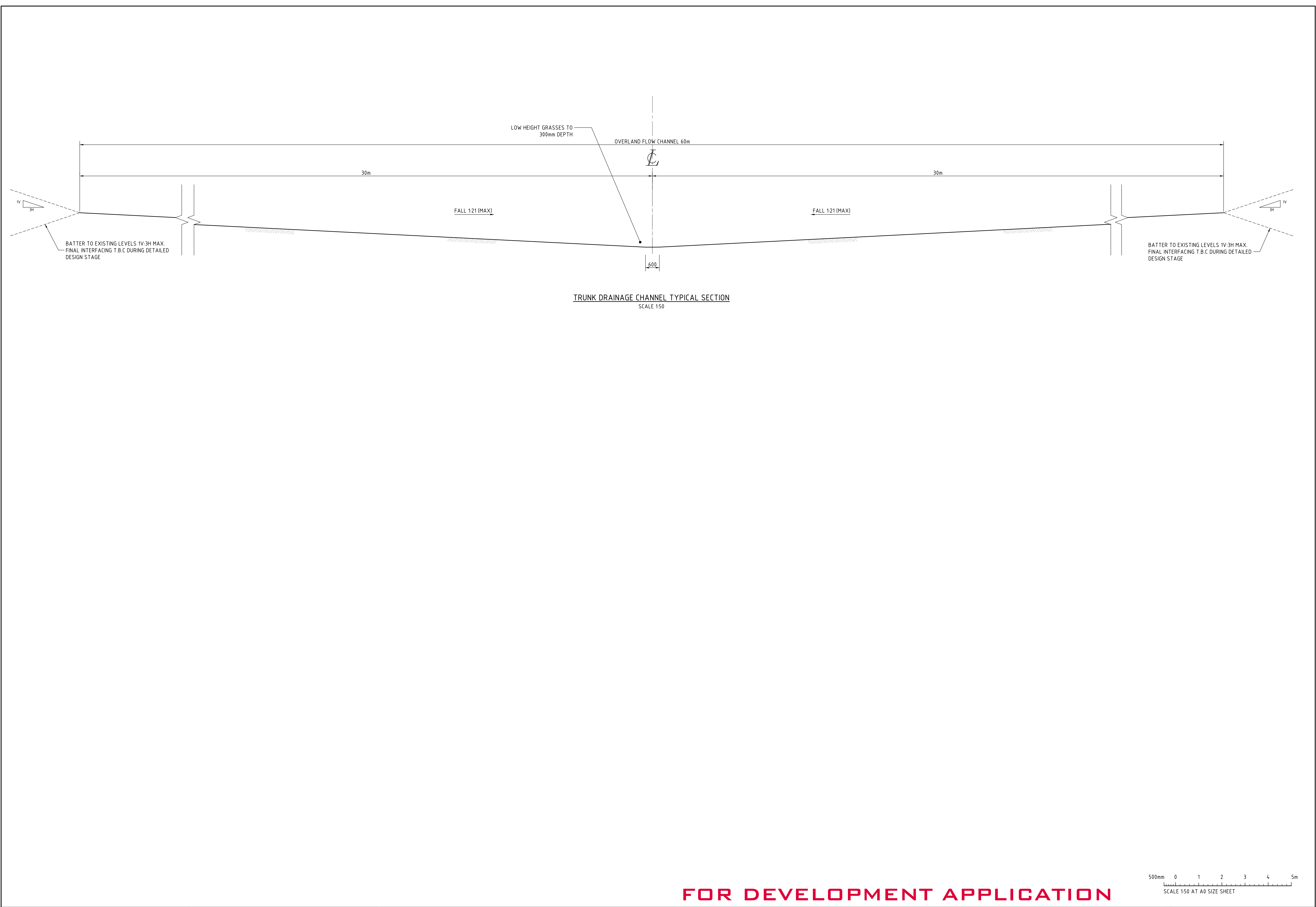
LONGITUDINAL SECTION - CL CHANNEL
HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:50



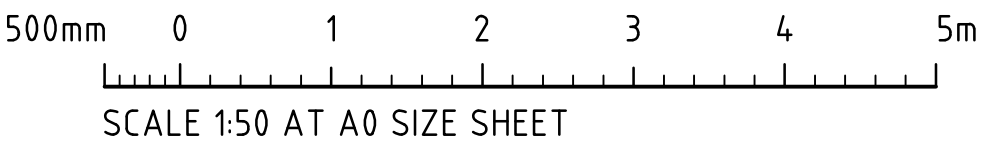
LONGITUDINAL SECTION - CL CHANNEL
HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:50



FOR DEVELOPMENT APPLICATION



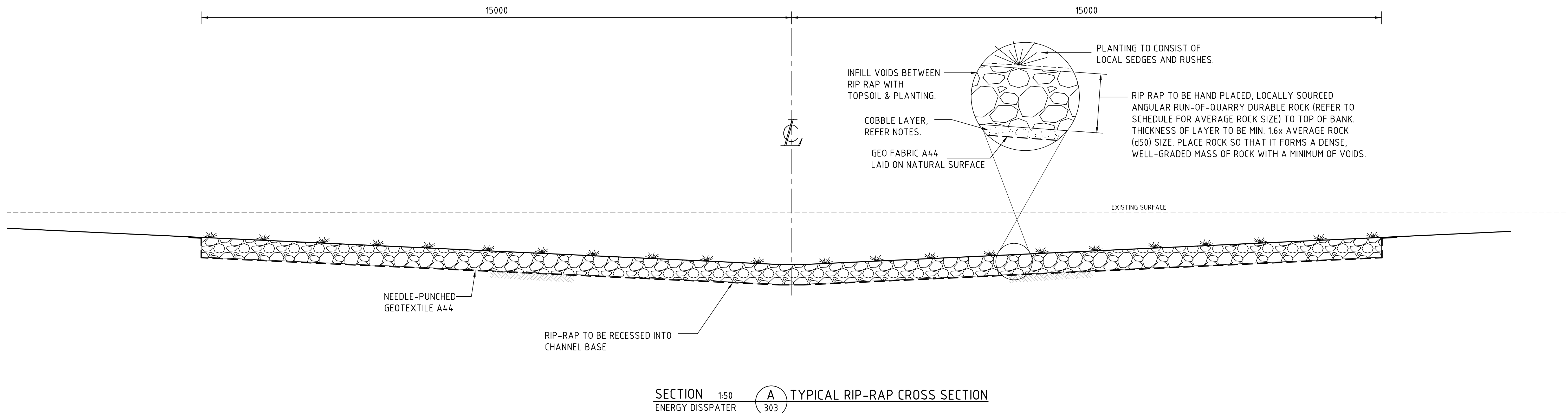
FOR DEVELOPMENT APPLICATION



ISSUED FOR DEVELOPMENT APPLICATION										17.04.26		D												ARCHITECT		CLIENT		PROJECT										CONSULT AUSTRALIA		Costin Roe Consulting Pty Ltd. ABN 50 005 091 445										COSTIN ROE CONSULTING										CIVIL & STRUCTURAL ENGINEERS										DRAWING TITLE									
ISSUED FOR DEVELOPMENT APPLICATION										10.04.26		C												GRIMSHAW		Stockland		KOGARAH GOLF CLUB DEVELOPMENT PROPOSED WAREHOUSE DISTRIBUTION & OFFICE MARSH STREET, ARNCLIFFE, NSW 2205												PO Box N419 Sydney NSW 1220 Level 4, 8 Woodmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au																						TRUNK DRAINAGE CHANNEL TYPICAL CROSS SECTION																	
ISSUED FOR DEVELOPMENT APPLICATION										08.12.25		B																												Level 4, 8 Woodmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au																																							
ISSUED FOR INFORMATION										05.12.25		A																												p: +61 2 9251 7699 e: mail@costinroe.com.au																																							
AMENDMENTS										DATE		ISSUE		AMENDMENTS										DATE		ISSUE		AMENDMENTS										DATE		ISSUE		C09916.06-SSDA903										ISSUE																											

DISSIPATER NOTES:

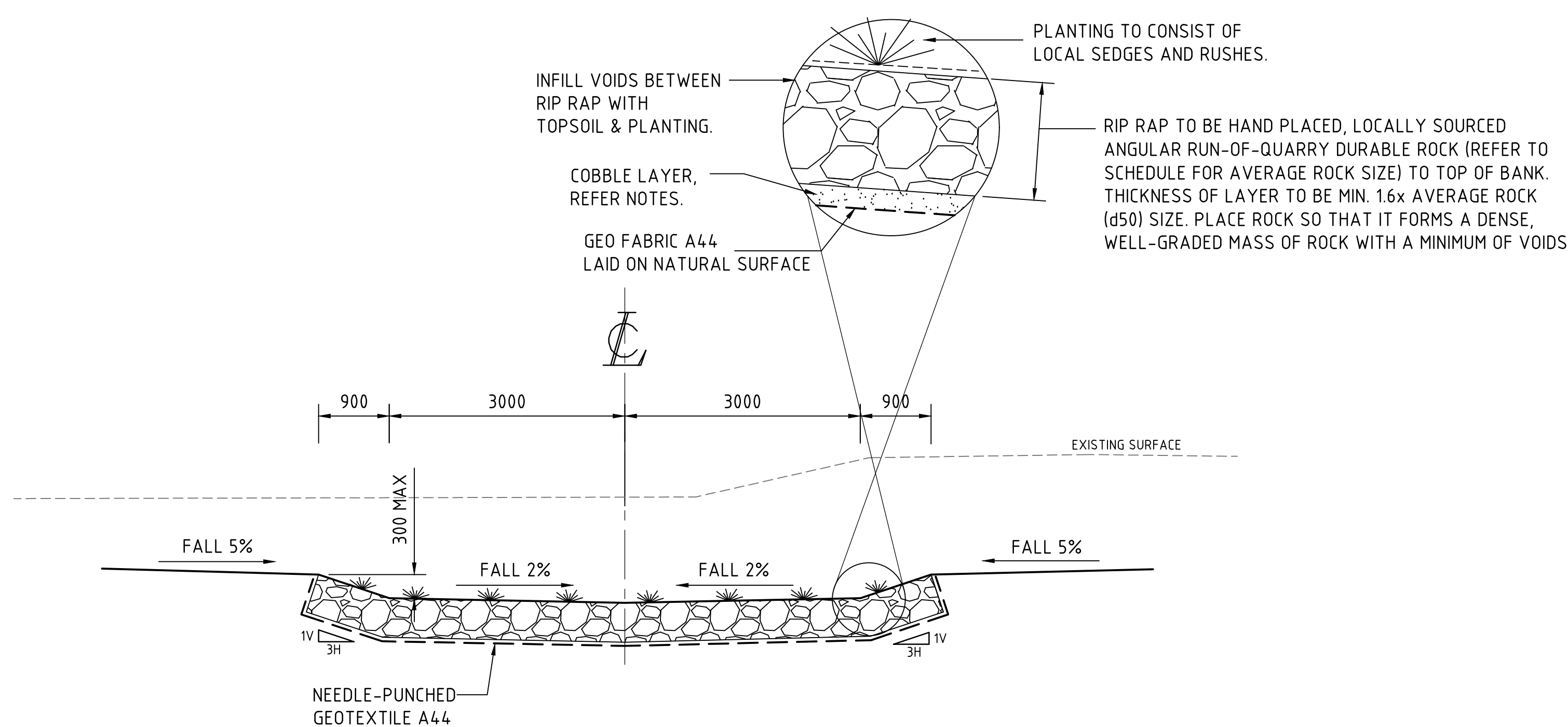
1. ALIGN STRUCTURE EVENLY WITH BANK.
2. LOCATE STRUCTURE AT INVERT LEVEL OF STREAM AND POINT IN A DOWNSTREAM DIRECTION.
3. PIPE TO REST ON, AND BE PACKED IN, BY RIP-RAP (SIZE AS NOTED).
4. DISCHARGE INTO STREAM WHERE BEDROCK IS PRESENT, OTHERWISE SCOUR PROTECT AS REQUIRED.
5. SCOUR PROTECT THE OPPOSITE BANK AS REQUIRED. SCOUR PROTECTION TO BE PROVIDED WHERE OPPOSITE BANK IS WITHIN 12-14 TIMES THE PIPE DIAMETER.
6. RIP-RAP TO CONSIST OF ANGULAR RUN-OF-QUARRY ROCK (d50= 300mm MINIMUM) AS NOTED IN THE SCHEDULE. RIP-RAP TO BE MINIMUM THICKNESS OF RIP-RAP LAYER TO BE 1.6x AVERAGE ROCK SIZE (d50).
7. 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.



SECTION 1:50
ENERGY DISSIPATER

A TYPICAL RIP-RAP CROSS SECTION

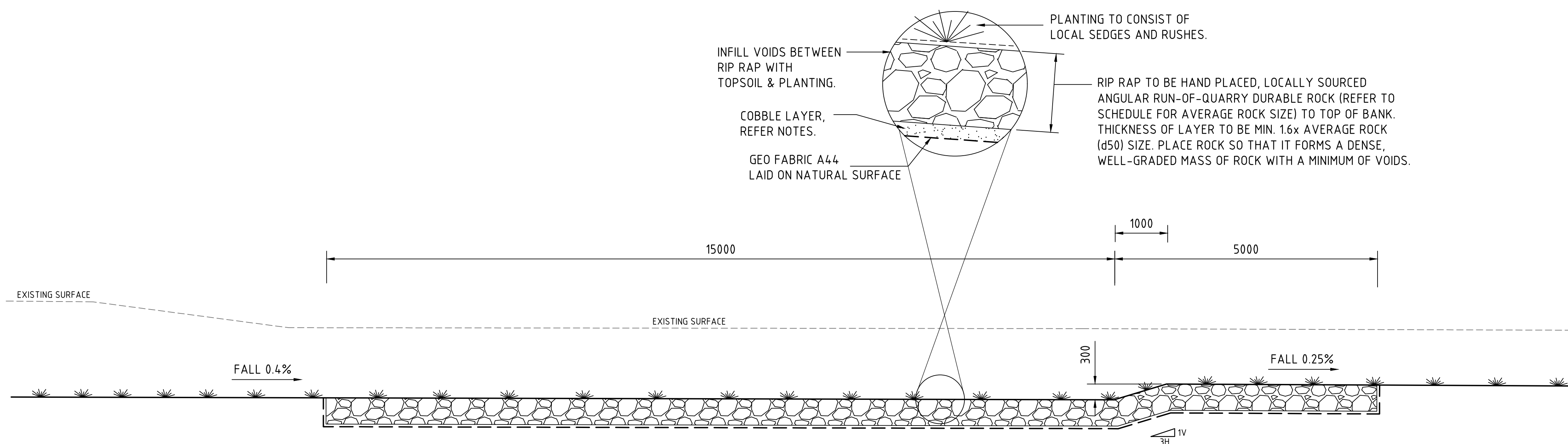
303



SECTION 1:50
STILLING POND

B TYPICAL RIP-RAP CROSS SECTION

303

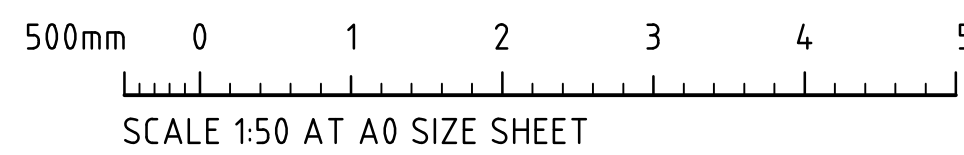


SECTION 1:50
STILLING POND

C TYPICAL RIP-RAP LONG SECTION

303

FOR DEVELOPMENT APPLICATION



										ARCHITECT										CLIENT										PROJECT										CONSULT										Costin Roe Consulting Pty Ltd. ABN 50 003 696 446										CIVIL & STRUCTURAL ENGINEERS										DRAWING TITLE TRUNK DRAINAGE CHANNEL DETAILS - SHEET 1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
ISSUED FOR DEVELOPMENT APPLICATION										10.04.26 C										GRIMSHAW										Stockland										KOGARAH GOLF CLUB DEVELOPMENT PROPOSED WAREHOUSE DISTRIBUTION & OFFICE MARSH STREET, ARNCLIFFE, NSW 2205										CONSULT AUSTRALIA										PO Box N419 Sydney NSW 1220 Level 4, 4 Woodmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 f: +61 2 9241 3731 e: mail@costinroe.com.au w: costinroe.com.au																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
ISSUED FOR DEVELOPMENT APPLICATION										08.12.25 B																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									



										ARCHITECT	CLIENT	PROJECT		Costin Roe Consulting Pty Ltd. ABN 50 003 696 446	 CIVIL & STRUCTURAL ENGINEERS	DRAWING TITLE TRUNK DRAINAGE CHANNEL DETAILS – SHEET 2
ISSUED FOR DEVELOPMENT APPLICATION 10.04.26 C ISSUED FOR DEVELOPMENT APPLICATION 08.12.25 B ISSUED FOR INFORMATION 05.12.25 A												PO Box N419 Sydney NSW 1220 Level 4, B Windsor Street, Millers Point NSW 2000 p: +61 2 9251 7699 f: +61 2 9241 3751 e: mail@costinroe.com.au w: costinroe.com.au				
AMENDMENTS DATE ISSUE AMENDMENTS DATE ISSUE AMENDMENTS DATE ISSUE AMENDMENTS												DESIGNED DRAWN DATE CHECKED SIZE SCALE MC MS DEC 2025 MS A3 A3 AS SHOWN CAD REF: C09916.06-SSDA952			DRAWING No C09916.06-SSDA952	ISSUE