

Appendix B

Drawings by Costin Roe Consulting

Y WEST PROPOSED DEVELOPMENT CIVIL MASTERPLAN DRAWINGS

RECONCILIATION ROAD, PEMULWUY NSW 2145

LIST OF DRAWINGS

CO10529.22 - DA 10	DRAWING LIST AND GENERAL NOTES
CO10529.22 - DA 20	EROSION & SEDIMENT CONTROL PLAN
CO10529.22 - DA 25	EROSION & SEDIMENT CONTROL DETAILS
CO10529.22 - DA 40	SITE MASTERPLAN
CO10529.22 - DA 41	CIVIL WORKS PLAN - SHEET 1
CO10529.22 - DA 42	CIVIL WORKS PLAN - SHEET 2
CO10529.22 - DA 43	CIVIL WORKS PLAN - SHEET 3
CO10529.22 - DA 46	STORMWATER MANAGEMENT /WATER QUALITY STRATEGY
CO10529.22 - DA 51	CIVIL WORKS DETAILS - SHEET 1
CO10529.22 - DA 52	CIVIL WORKS DETAILS - SHEET 2

GENERAL NOTES:

- G1 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- G2 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT STANDARDS AUSTRALIA CODES AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
- G3 ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEER'S DRAWINGS 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.
- G4 DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.
- G5 UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.
- G6 ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH ACCEPTABLE SAFETY STANDARDS & APPROPRIATE SAFETY SIGNS SHALL BE INSTALLED AT ALL TIMES DURING THE PROGRESS OF THE JOB.

ELECTRONIC INFORMATION NOTES:

1. THE ISSUED DRAWINGS IN HARD COPY OR PDF FORMAT TAKE PRECEDENCE OVER ANY ELECTRONICALLY ISSUED INFORMATION, LAYOUTS OR DESIGN MODELS.
2. 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.
3. 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.
4. 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.



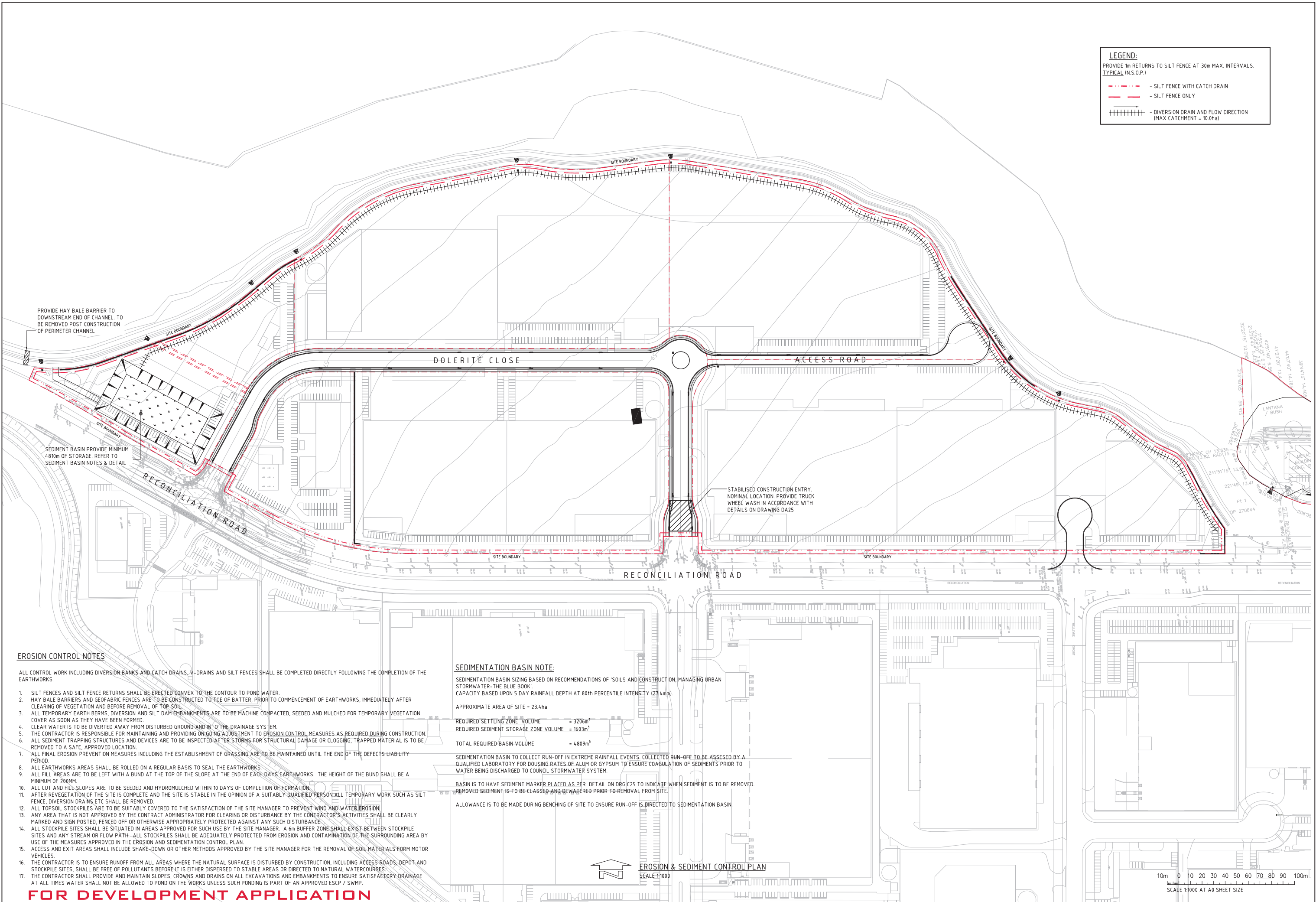
SITE LOCALITY PLAN
N.T.S.

FOR DEVELOPMENT APPLICATION

																				ARCHITECT										CLIENT										PROJECT										 Costin Roe Consulting Pty Ltd. Consulting Engineers										DRAWING TITLE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			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LEGEND:
PROVIDE 1m RETURNS TO SILT FENCE AT 30m MAX. INTERVALS. TYPICAL (N.S.O.P.)

--- SILT FENCE WITH CATCH DRAIN
--- SILT FENCE ONLY
+++++ DIVERSION DRAIN AND FLOW DIRECTION (MAX CATCHMENT = 10.0ha)



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.

1. SILT FENCES AND SILT FENCE RETURNS SHALL BE ERECTED CONVEX TO THE CONTOUR TO POND WATER.
2. HAY BALE BARRIERS AND GEOFABRIC 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.
3. 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.
4. CLEAR WATER IS TO BE DIVERTED AWAY FROM DISTURBED GROUND AND INTO THE DRAINAGE SYSTEM.
5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND PROVIDING ON GOING ADJUSTMENT TO EROSION CONTROL MEASURES AS REQUIRED DURING CONSTRUCTION.
6. 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.
7. ALL FINAL EROSION PREVENTION MEASURES INCLUDING THE ESTABLISHMENT OF GRASSING ARE TO BE MAINTAINED UNTIL THE END OF THE DEFECTS LIABILITY PERIOD.
8. ALL EARTHWORKS AREAS SHALL BE ROLLED ON A REGULAR BASIS TO SEAL THE EARTHWORKS.
9. ALL FILL AREAS ARE TO BE LEFT WITH A BUND AT THE TOP OF THE SLOPE AT THE END OF EACH DAY'S EARTHWORKS. THE HEIGHT OF THE BUND SHALL BE A MINIMUM OF 200MM.
10. ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND HYDROMULCHED WITHIN 10 DAYS OF COMPLETION OF FORMATION.
11. 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.
12. ALL TOPSOIL STOCKPILES ARE TO BE SUITABLY COVERED TO THE SATISFACTION OF THE SITE MANAGER TO PREVENT WIND AND WATER EROSION.
13. 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.
14. 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.
15. ACCESS AND EXIT AREAS SHALL INCLUDE SHAKE-DOWN OR OTHER METHODS APPROVED BY THE SITE MANAGER FOR THE REMOVAL OF SOIL MATERIALS FROM MOTOR VEHICLES.
16. 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.
17. 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.

SEDIMENTATION BASIN NOTE:

SEDIMENTATION BASIN SIZING BASED ON RECOMMENDATIONS OF 'SOILS AND CONSTRUCTION, MANAGING URBAN STORMWATER-THE BLUE BOOK'
CAPACITY BASED UPON 5 DAY RAINFALL DEPTH AT 80th PERCENTILE INTENSITY (27.4mm).

APPROXIMATE AREA OF SITE = 23.4ha

REQUIRED SETTLING ZONE VOLUME = 3206m³
REQUIRED SEDIMENT STORAGE ZONE VOLUME = 1603m³

TOTAL REQUIRED BASIN VOLUME = 4809m³

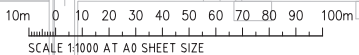
SEDIMENTATION BASIN TO COLLECT RUN-OFF IN EXTREME RAINFALL EVENTS. COLLECTED RUN-OFF TO BE ASSESSED BY A QUALIFIED LABORATORY FOR DOUSING RATES OF ALUM OR GYPSUM TO ENSURE COAGULATION OF SEDIMENTS PRIOR TO WATER BEING DISCHARGED TO COUNCIL STORMWATER SYSTEM.

BASIN IS TO HAVE SEDIMENT MARKER PLACED AS PER DETAIL ON DRG C25 TO INDICATE WHEN SEDIMENT IS TO BE REMOVED. REMOVED SEDIMENT IS TO BE CLASSED AND DEWATERED PRIOR TO REMOVAL FROM SITE.

ALLOWANCE IS TO BE MADE DURING BENCHING OF SITE TO ENSURE RUN-OFF IS DIRECTED TO SEDIMENTATION BASIN.

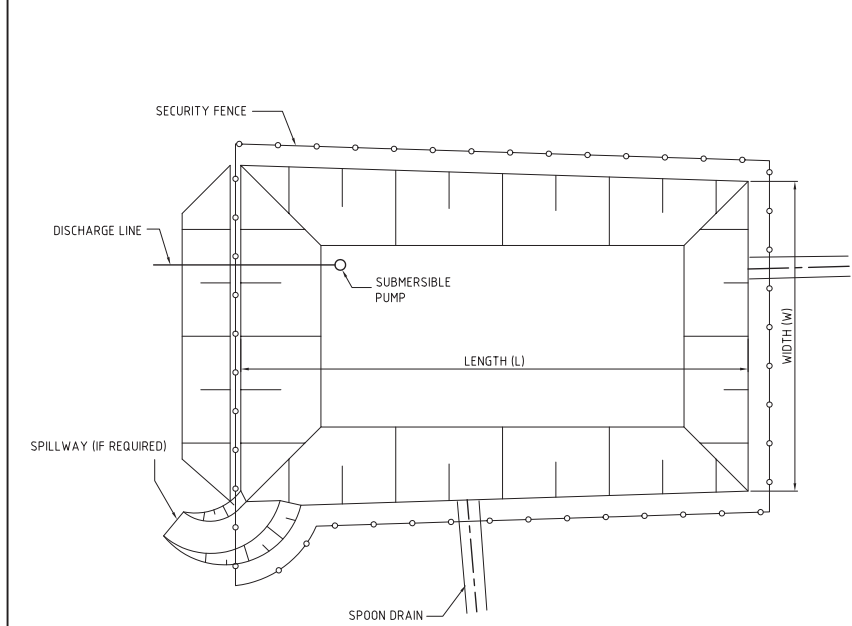
EROSION & SEDIMENT CONTROL PLAN

SCALE 1:1000

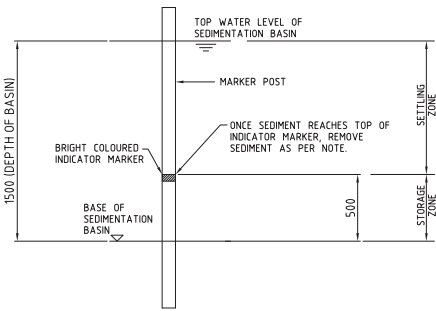


FOR DEVELOPMENT APPLICATION

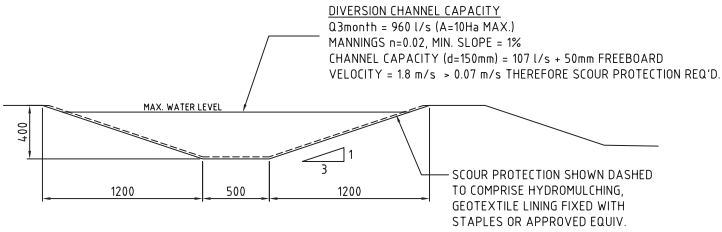
ISSUED FOR DEVELOPMENT APPLICATION			20.03.15			C			ARCHITECT			CLIENT			PROJECT			Costin Roe Consulting Pty Ltd.			DRAWING TITLE		
ISSUED FOR DEVELOPMENT APPLICATION			11.12.14			B			D			DEXUS			QUARRY WEST			Consulting Engineers			EROSION & SEDIMENT		
ISSUED FOR REVIEW			28.11.14			A			E			PROPERTY GROUP			RECONCILIATION DRIVE			Level 1, 8 Windmill Street			CONTROL PLAN		
AMENDMENTS			DATE	ISSUE	AMENDMENTS	DATE	ISSUE	AMENDMENTS	DATE	ISSUE	AMENDMENTS	DATE	ISSUE	AMENDMENTS	DESIGNED	DRAWN	CHECKED	SIZE	SCALE	CAD REF	Value in Engineering and Management		
															M.W.	M.C.	06.05.14	A0	AS SHOWN	C010529.22-DA20	C010529.22-DA20		



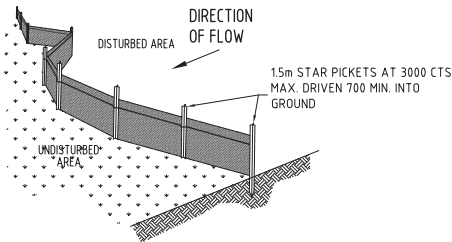
TYPICAL SEDIMENT CONTROL POND PLAN
SCALE 1:250



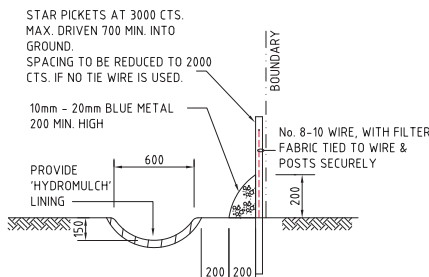
SEDIMENT STORAGE MARKER
SCALE 1:20



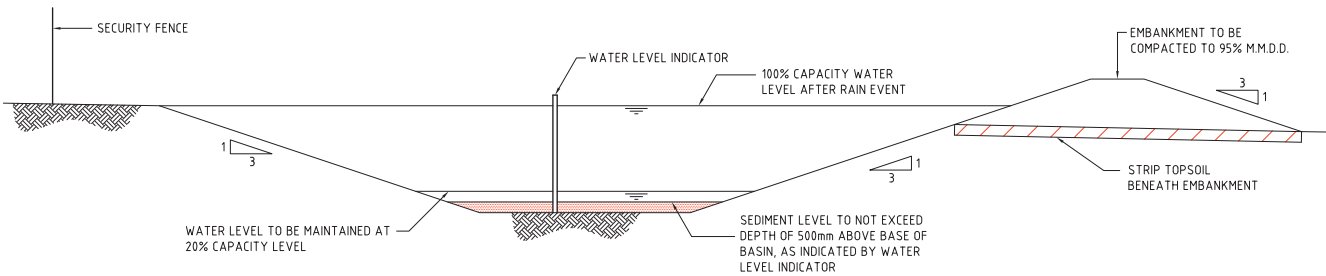
TYPICAL DIVERSION DRAIN SECTION
SCALE 1:20



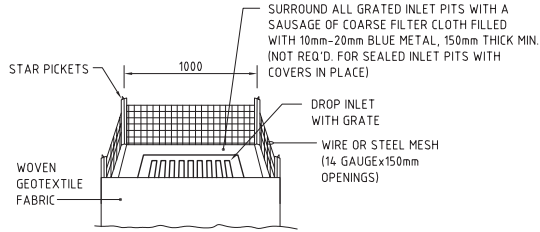
TYPICAL SILT FENCE DETAIL
N.T.S.
PROVIDE 1m RETURNS AT 30m INTERVALS.
TYPICAL



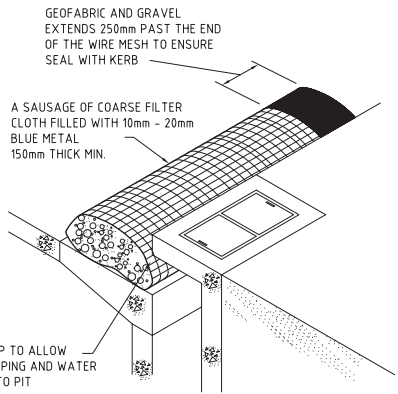
TYPICAL OPEN DRAIN & SILT FENCE
SCALE 1:20



TYPICAL SEDIMENT CONTROL BASIN SECTION
SCALE 1:50

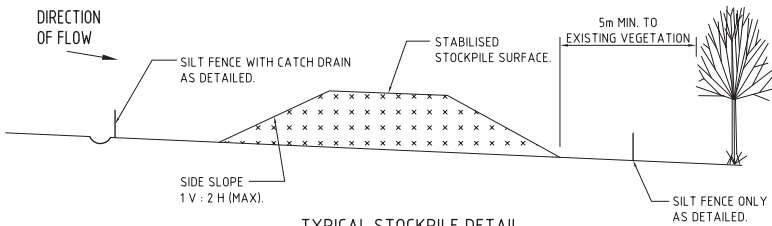


GRATED INLET PIT FILTER DETAIL
N.T.S.



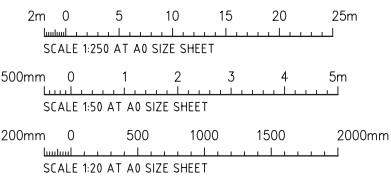
KERB INLET PIT CONTROL
N.T.S.

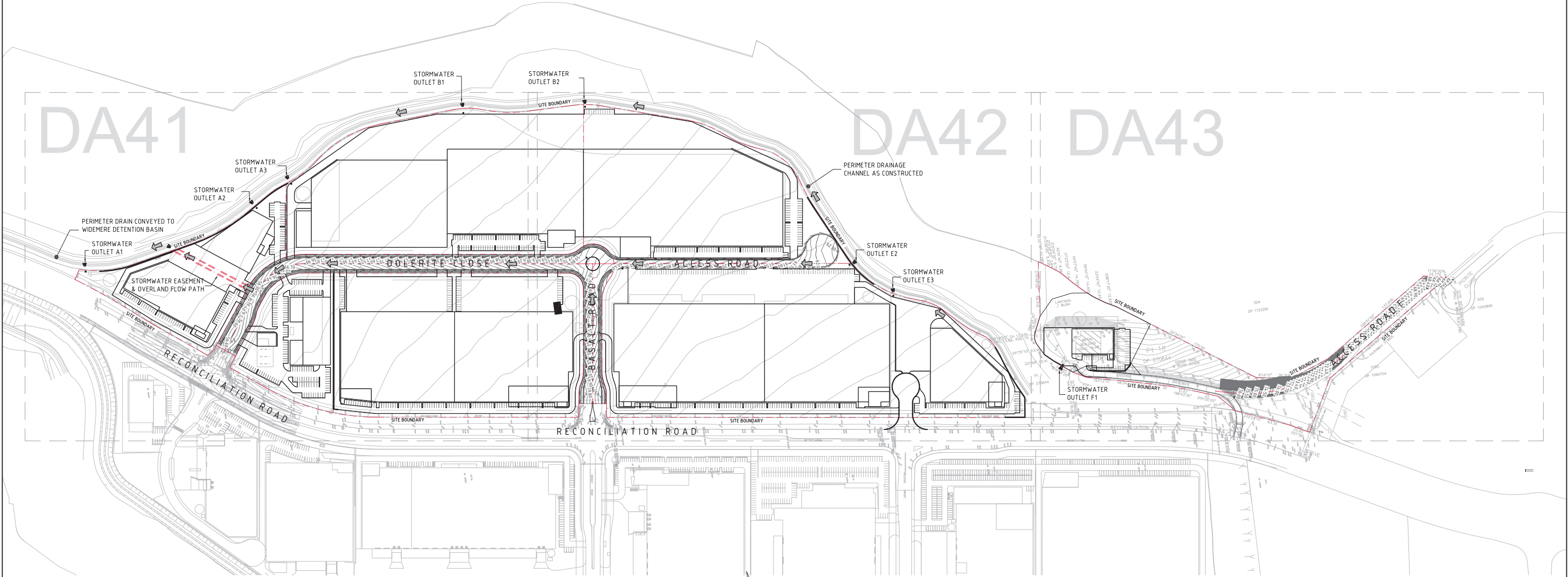
NOTE: ADOPT ABOVE DETAILS AROUND ALL PITS WITHIN AREA ENCOMPASSED BY SILT FENCE & TO PITS ON THE ROAD ADJACENT TO SITE BOUNDARY.



TYPICAL STOCKPILE DETAIL
N.T.S.

- STOCKPILE NOTES**
1. PLACE ALL STOCKPILES IN LOCATIONS MORE THAN 5m FROM EXISTING VEGETATION, ROADS & HAZARD AREAS.
 2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT ELONGATED MOUNDS. SIDE SLOPE TO BE 1 V: 2 H MAX.
 3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
 4. WHERE STOCKPILES ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE USING WOOD CHIP MULCH - 16 TONNE/Ha.
 5. CONSTRUCT SILT FENCE WITH CATCH DRAIN ON UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES & SILT FENCE ONLY 1 TO 2m DOWNSLOPE AS SHOWN.





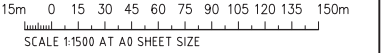
SITE MASTERPLAN
SCALE 1:1500

LEGEND:
LEVELS DATUM IS AHD.

EXISTING SITE LEVELS AND DETAILS BASED ON SURVEY
INFORMATION PROVIDED BY LAND PARTNERS DATED 11.05.14

- SGGP, SINGLE GRATED GULLY PIT
- S.J.P, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- DRAINAGE LINE
- FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS

WATER QUALITY NOTE:
ALL DEVELOPMENT SITES TO PROVIDE AN END-OF-LINE GROSS POLLUTANT TRAP PRIOR TO CONNECTION TO ESTATE INFRASTRUCTURE SYSTEM OR TO PERIMETER DRAINAGE CHANNELS.



FOR DEVELOPMENT APPLICATION

ISSUED FOR DEVELOPMENT APPLICATION				20.03.15				C			
ISSUED FOR DEVELOPMENT APPLICATION				11.12.14				B			
ISSUED FOR REVIEW				28.11.14				A			
AMENDMENTS				DATE	ISSUE	AMENDMENTS	DATE	ISSUE	AMENDMENTS	DATE	ISSUE
ARCHITECT				CLIENT				PROJECT			
DEXUS				QUARRY WEST				RECONCILIATION DRIVE			
PROPERTY GROUP				PEMULWUY, NSW				DESIGNED			
								DRAWN			
								DATE			
								06.05.14			
								CHECKED			
								SIZE			
								A0			
								SCALE			
								AS SHOWN			
								CNO. REF.			
								C010529.22- DA40			
								COSTIN ROE CONSULTING PTY LTD.			
								CONSULTING ENGINEERS			
								LEVEL 1, 8 WINDMILL STREET			
								WALAH BEACH, SYDNEY NSW 2000			
								TEL: (02) 8551-7889 FAX: (02) 8541-3721			
								EMAIL: mail@costinroe.com.au			
								DRAWING TITLE			
								SITE MASTERPLAN			
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PIT SCHEDULE

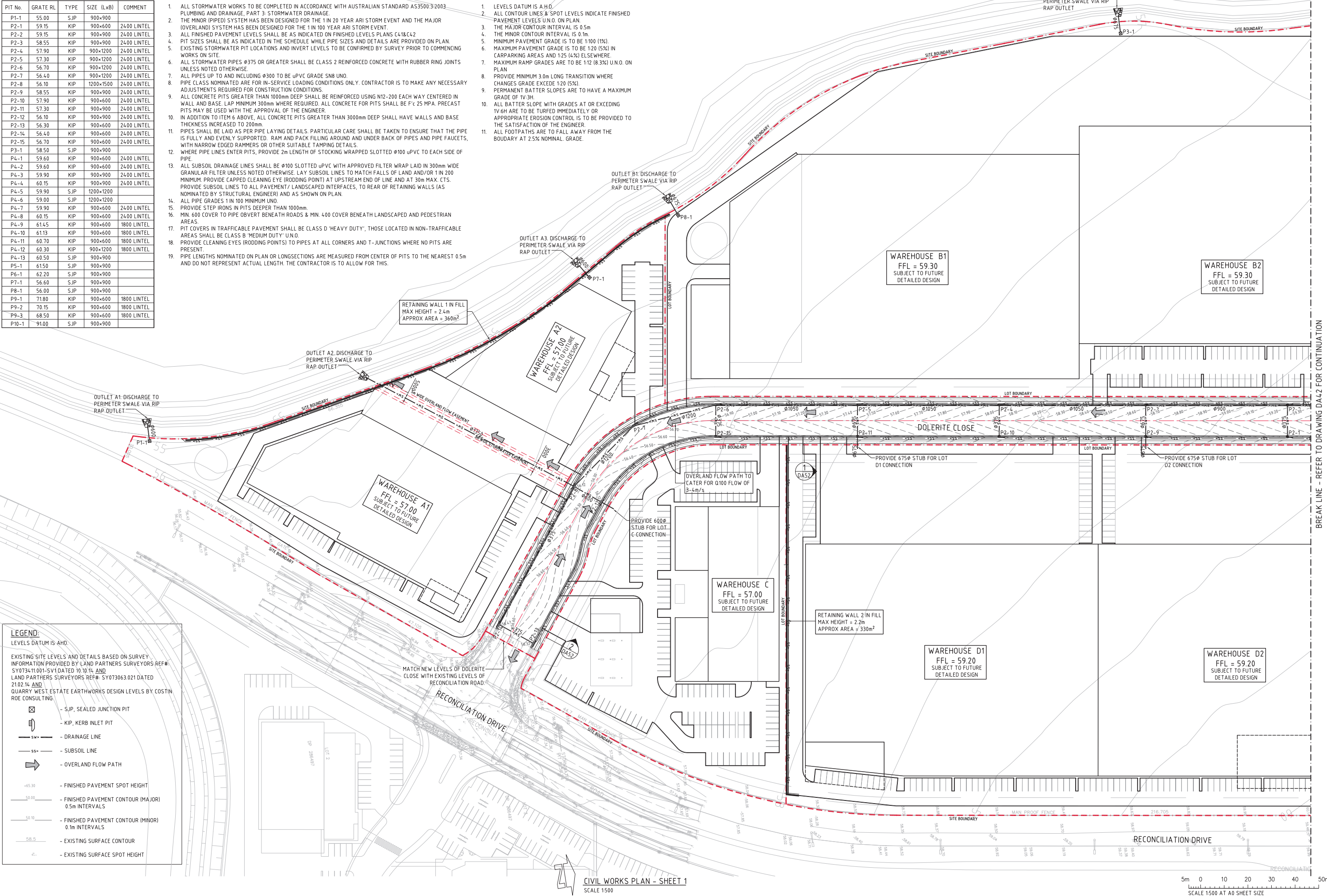
PIT No.	GRATE RL	TYPE	SIZE (LxB)	COMMENT
P1-1	55.00	SJP	900x900	
P2-1	59.15	KIP	900x600	2400 LINTEL
P2-2	59.15	KIP	900x900	2400 LINTEL
P2-3	58.55	KIP	900x900	2400 LINTEL
P2-4	57.90	KIP	900x1200	2400 LINTEL
P2-5	57.30	KIP	900x1200	2400 LINTEL
P2-6	56.70	KIP	900x1200	2400 LINTEL
P2-7	56.40	KIP	900x1200	2400 LINTEL
P2-8	56.10	KIP	1200x1500	2400 LINTEL
P2-9	58.55	KIP	900x900	2400 LINTEL
P2-10	57.90	KIP	900x600	2400 LINTEL
P2-11	57.30	KIP	900x900	2400 LINTEL
P2-12	56.10	KIP	900x900	2400 LINTEL
P2-13	56.30	KIP	900x600	2400 LINTEL
P2-14	56.40	KIP	900x600	2400 LINTEL
P2-15	56.70	KIP	900x600	2400 LINTEL
P3-1	58.50	SJP	900x900	
P4-1	59.60	KIP	900x600	2400 LINTEL
P4-2	59.60	KIP	900x600	2400 LINTEL
P4-3	59.90	KIP	900x900	2400 LINTEL
P4-4	60.15	KIP	900x900	2400 LINTEL
P4-5	59.90	SJP	1200x1200	
P4-6	59.00	SJP	1200x1200	
P4-7	59.90	KIP	900x600	2400 LINTEL
P4-8	60.15	KIP	900x600	2400 LINTEL
P4-9	61.45	KIP	900x600	1800 LINTEL
P4-10	61.13	KIP	900x600	1800 LINTEL
P4-11	60.70	KIP	900x600	1800 LINTEL
P4-12	60.30	KIP	900x1200	1800 LINTEL
P4-13	60.50	SJP	900x900	
P5-1	61.50	SJP	900x900	
P6-1	62.20	SJP	900x900	
P7-1	56.60	SJP	900x900	
P8-1	56.00	SJP	900x900	
P9-1	71.80	KIP	900x600	1800 LINTEL
P9-2	70.15	KIP	900x600	1800 LINTEL
P9-3	68.50	KIP	900x600	1800 LINTEL
P10-1	91.00	SJP	900x900	

STORMWATER DRAINAGE NOTES:

- ALL STORMWATER WORKS TO BE COMPLETED IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3500.3:2003 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 C4&C4.2
- 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 REINFORCED CONCRETE WITH RUBBER RING JOINTS UNLESS NOTED OTHERWISE.
- ALL PIPES UP TO AND INCLUDING Ø300 TO BE uPVC GRADE SN8 UNO.
- 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'c 25 MPA. PRECAST PITS MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
- IN ADDITION TO ITEM 6 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 EGED RAMMERS OR OTHER SUITABLE TAMPING DETAILS.
- 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.
- ALL PIPE GRADES 1 IN 100 MINIMUM UNO.
- PROVIDE STEP IRONS IN PITS DEEPER THAN 1000mm.
- MIN. 600 COVER TO PIPE OBVERT BENEATH ROADS & MIN. 400 COVER BENEATH LANDSCAPED AND PEDESTRIAN AREAS.
- PIT COVERS IN TRAFFICABLE PAVEMENT SHALL BE CLASS D 'HEAVY DUTY', THOSE LOCATED IN NON-TRAFFICABLE AREAS SHALL BE CLASS B 'MEDIUM DUTY' UNO.
- PROVIDE CLEANING EYES (RODDING POINTS) TO PIPES AT ALL CORNERS AND T-JUNCTIONS WHERE NO PITS ARE PRESENT.
- PIPE LENGTHS NOMINATED ON PLAN OR LONGSECTIONS ARE MEASURED FROM CENTER OF PITS TO THE NEAREST 0.5m AND DO NOT REPRESENT ACTUAL LENGTH. THE CONTRACTOR IS TO ALLOW FOR THIS.

FINISHED LEVELS PLAN NOTES:

- LEVELS DATUM IS A.H.D.
- ALL CONTOUR LINES & SPOT LEVELS INDICATE FINISHED PAVEMENT LEVELS U.N.O. ON PLAN.
- THE MAJOR CONTOUR INTERVAL IS 0.5m.
- THE MINOR CONTOUR INTERVAL IS 0.1m.
- MINIMUM PAVEMENT GRADE IS TO BE 1:100 (1%).
- MAXIMUM PAVEMENT GRADE IS TO BE 1:20 (5%) IN CARPARKING AREAS AND 1:25 (4%) ELSEWHERE.
- MAXIMUM RAMP GRADES ARE TO BE 1:12 (8.3%) U.N.O. ON PLAN.
- PROVIDE MINIMUM 3.0m LONG TRANSITION WHERE CHANGES GRADE EXCEED 1:20 (5%).
- PERMANENT BATTER SLOPES ARE TO HAVE A MAXIMUM GRADE OF 1V:3H.
- 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 BOUDARY AT 2.5% NOMINAL GRADE.



LEGEND:
LEVELS DATUM IS A.H.D.

EXISTING SITE LEVELS AND DETAILS BASED ON SURVEY INFORMATION PROVIDED BY LAND PARTNERS SURVEYORS REF# SY0734.11.001-SV1 DATED 10.10.14 AND LAND PARTNERS SURVEYORS REF# SY073063.021 DATED 21.02.14 AND QUARRY WEST ESTATE EARTHWORKS DESIGN LEVELS BY COSTIN ROE CONSULTING

- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- SW, DRAINAGE LINE
- SS, SUBSOIL LINE
- OVERLAND FLOW PATH

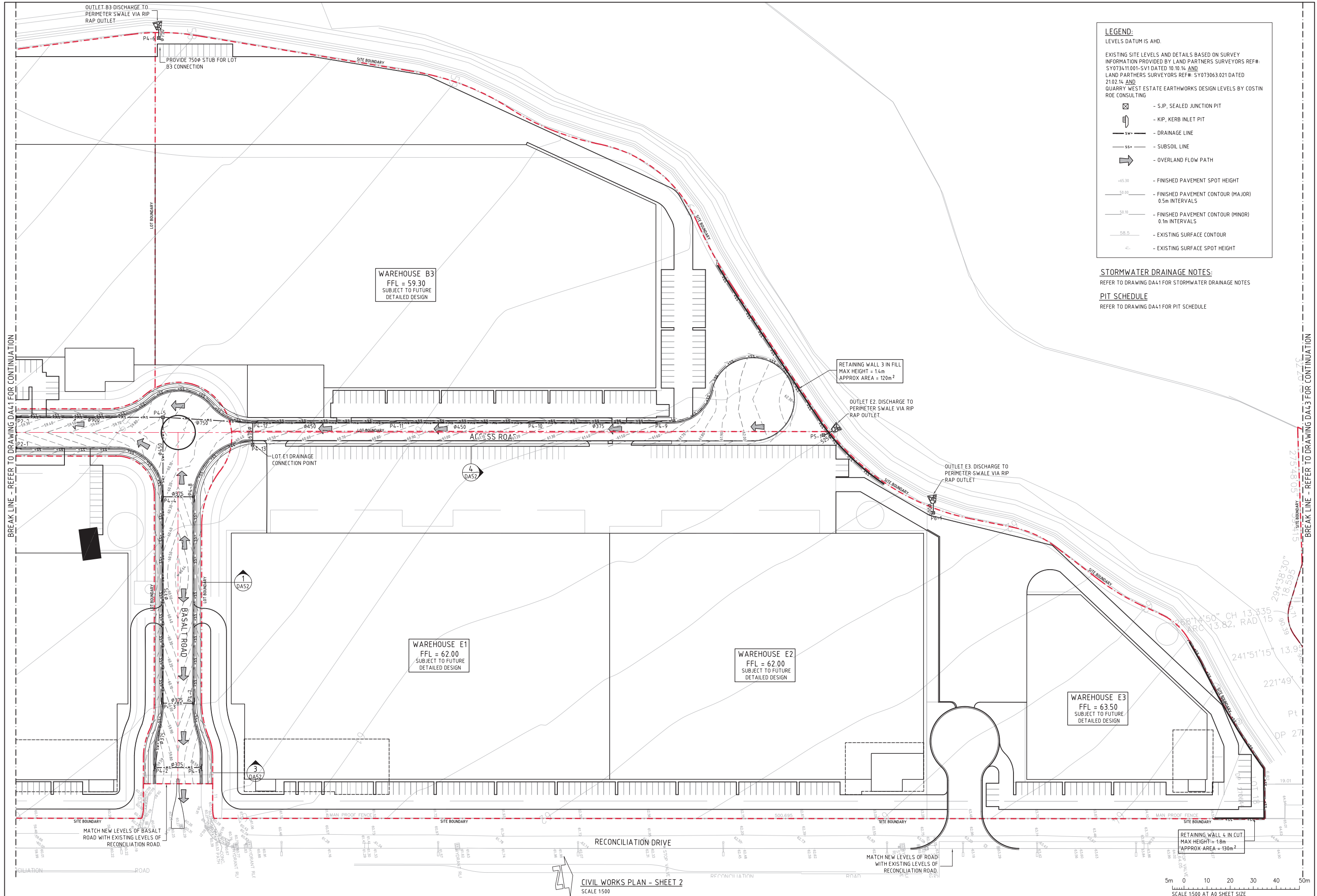
+65.30 - FINISHED PAVEMENT SPOT HEIGHT

50.00 - FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS

50.10 - FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS

58.5 - EXISTING SURFACE CONTOUR

61.5 - EXISTING SURFACE SPOT HEIGHT



LEGEND:

LEVELS DATUM IS AHD.

EXISTING SITE LEVELS AND DETAILS BASED ON SURVEY INFORMATION PROVIDED BY LAND PARTNERS SURVEYORS REF#: SY073411.001-SV1 DATED 10.10.14 AND LAND PARTNERS SURVEYORS REF#: SY073063.021 DATED 21.02.14 AND QUARRY WEST ESTATE EARTHWORKS DESIGN LEVELS BY COSTIN ROE CONSULTING

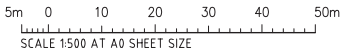
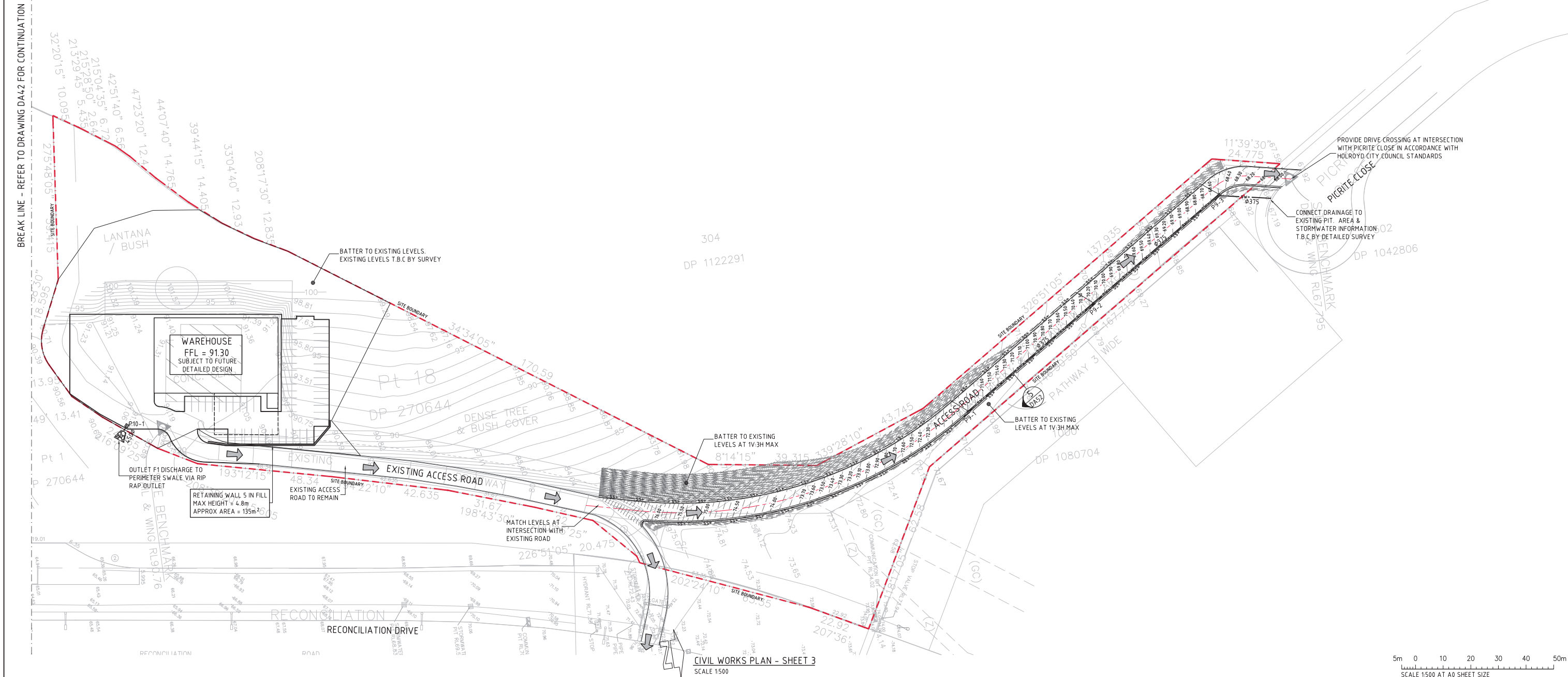
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- DRAINAGE LINE
- SUBSOIL LINE
- OVERLAND FLOW PATH
- FINISHED PAVEMENT SPOT HEIGHT
- FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS
- EXISTING SURFACE CONTOUR
- EXISTING SURFACE SPOT HEIGHT

STORMWATER DRAINAGE NOTES:

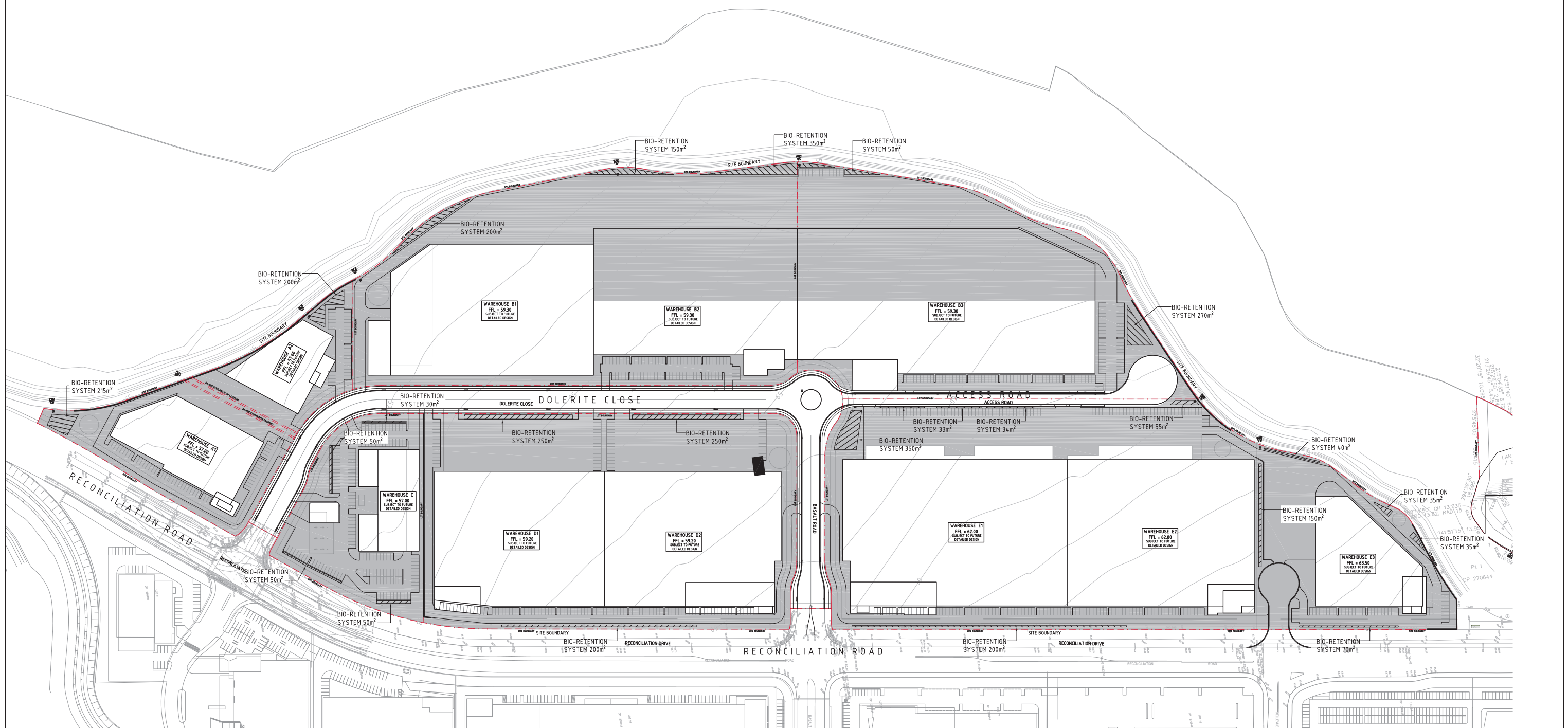
REFER TO DRAWING DA41 FOR STORMWATER DRAINAGE NOTES

PIT SCHEDULE

REFER TO DRAWING DA41 FOR PIT SCHEDULE



ISSUED FOR DEVELOPMENT APPLICATION			20.03.15	C	ARCHITECT			CLIENT			PROJECT			COSTIN ROE CONSULTING PTY LTD.			DRAWING TITLE		
ISSUED FOR DEVELOPMENT APPLICATION			11.12.14	B	DEXUS			QUARRY WEST			RECONCILIATION DRIVE			Level 1, 8 Windmill Street			CIVIL WORKS PLAN		
ISSUED FOR REVIEW			28.11.14	A	PROPERTY GROUP			PEMULWUY, NSW			DESIGNED			Tel: (02) 8551-7899 Fax: (02) 8541-3721			SHEET 3		
AMENDMENTS			DATE	ISSUE	AMENDMENTS			DATE			M.W.			email: mail@costinroe.com.au			DRAWING No		
											C010529.22-DA43						C010529.22-DA43		
																	C		



WATER QUALITY STRATEGY NOTES:

- WATER QUALITY STRATEGY HAS BEEN COMPLETED IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED STORMWATER MANAGEMENT STRATEGY COMPLETED BY GHD DURING 2009. THE APPROVED STRATEGY INVOLVED TREATMENT OF A 11.30Ha CATCHMENT VIA BIO RETENTION BASINS OR SWALES.
- THE PROPOSED STRATEGY TREATS 11.32Ha VIA BIO RETENTION BASINS OR SWALES INTERSPERSED THROUGHOUT THE DEVELOPMENT FOOTPRINT.
- FINAL DETAILS & EXACT LOCATION OF BIO RETENTION SYSTEMS IN INDIVIDUAL DEVELOPMENT LOTS WILL BE SUBJECT TO SEPARATE FUTURE DEVELOPMENT APPLICATIONS.
- THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ENGINEERING REPORT C010529.22-02a.rpt BY COSTIN ROE CONSULTING PTY LTD.

NOTE:

BIO RETENTION CONFIGURATIONS SHOWN ARE INDICATIVE ONLY AND NOT DRAWN TO SCALE. REFERENCE IS TO BE MADE TO TEXT CALL UP FOR BIO RETENTION AREAS. CAD LINWORK IS NOT TO BE USED FOR DETAILED CONFIGURATIONS.



STORMWATER MANAGEMENT/WATER QUALITY STRATEGY
SCALE 1:1000

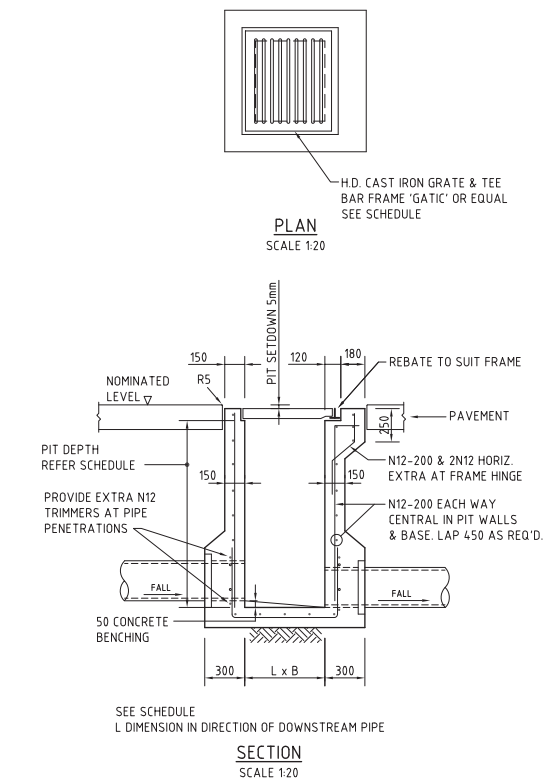
LEGEND:

- HATCHED AREA DENOTES CATCHMENT TO BE CONVEYED TO BIO RETENTION SYSTEMS FOR TREATMENT

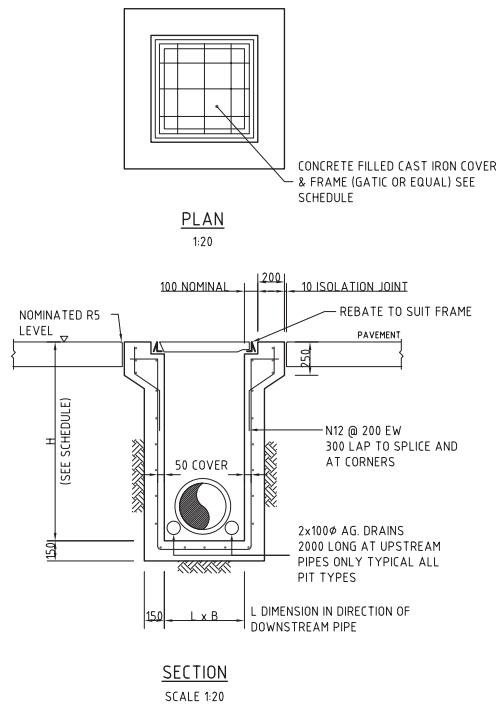
10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A0 SHEET SIZE

FOR DEVELOPMENT APPLICATION

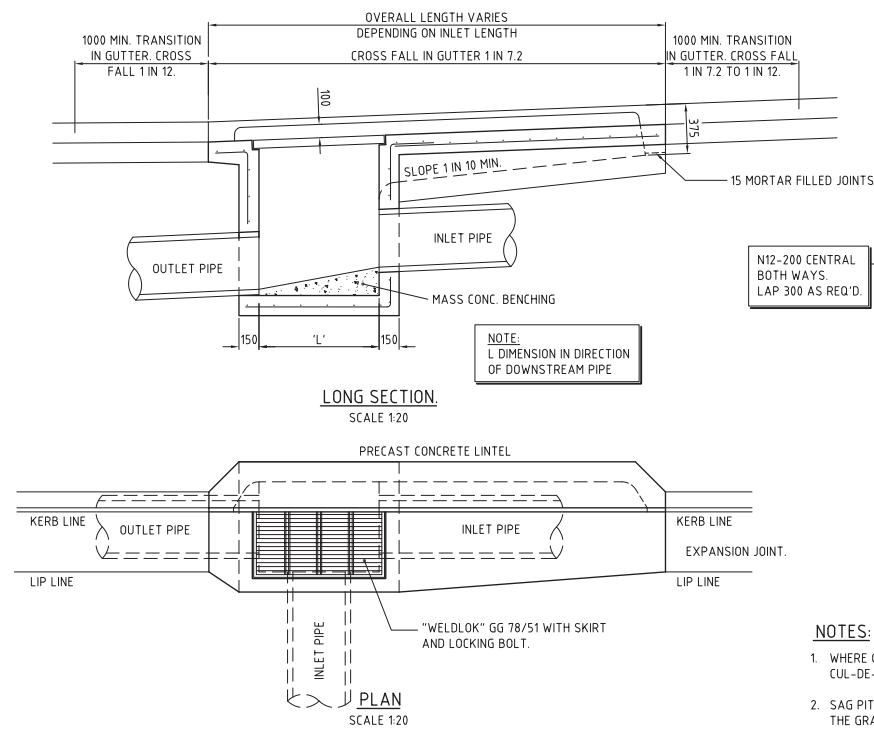
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BIO-RETENTION AREAS REVISED										16.03.15		D																								COSTIN ROE CONSULTING		QUARRY WEST RECONCILIATION DRIVE PEMULWUY, NSW										 Costin Roe Consulting Pty Ltd. Consulting Engineers Level 1, 8 Windmill Street Walsh Bay, Sydney NSW 2000 Tel: (02) 9251-7999 Fax: (02) 9241-3721 email: mail@costinroe.com.au ©										STORMWATER MANAGEMENT/ WATER QUALITY STRATEGY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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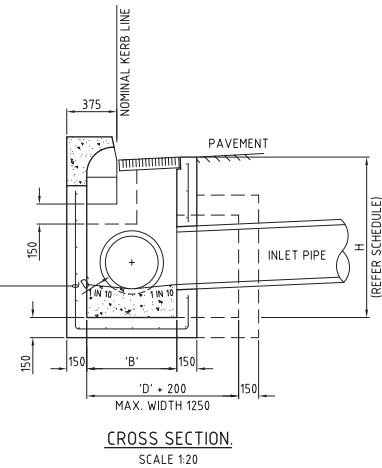
SINGLE GRATED GULLY PIT - SGGP



SEALED PIT - SP



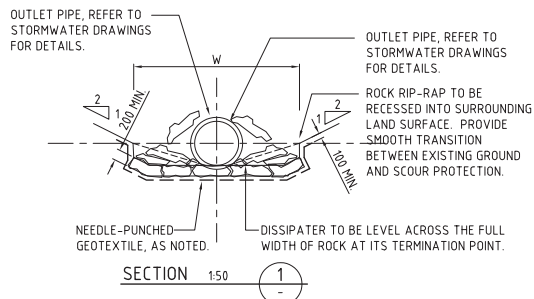
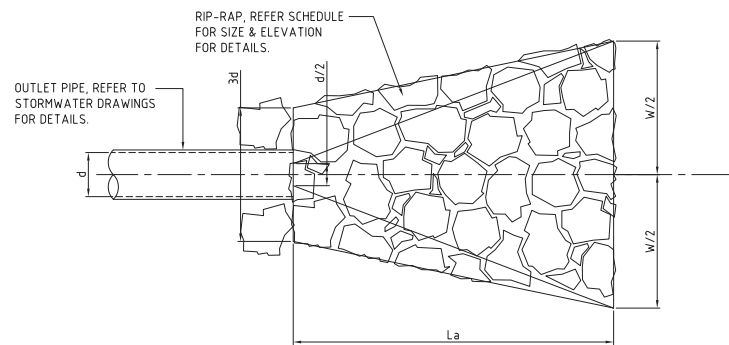
KERB INLET PIT - KIP



CONCRETE QUALITY					
ELEMENT	SLUMP	AGGREGATE (MAX SIZE)	CEMENT TYPE	ADDMIXTURE	F _{cu} (MPa)
PIT	80	20	GP	NIL	32

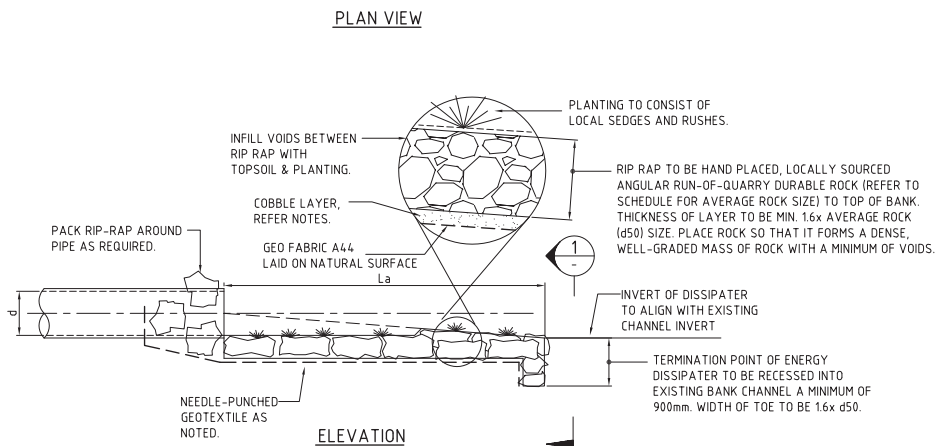
NOTES:

- WHERE GULLY PIT IS LOCATED ON KERB RETURNS OR BULB OF CUL-DE-SACS PROVIDE CURVED PRECAST CONCRETE LINTELS.
- SAG PITS SHALL HAVE LINTEL PLACED CENTRALLY ABOUT THE GRATE.
- ALL REINFORCING TO HAVE 30 MIN. CLAR CONCRETE COVER.
- FOR PITS DEEPER THAN 1200mm CLIMB RAILS SHALL BE PROVIDED.



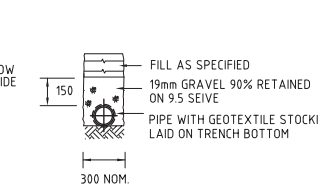
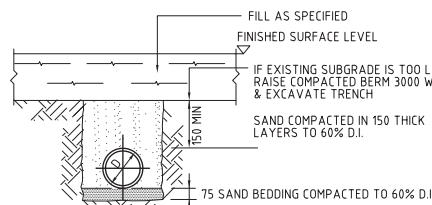
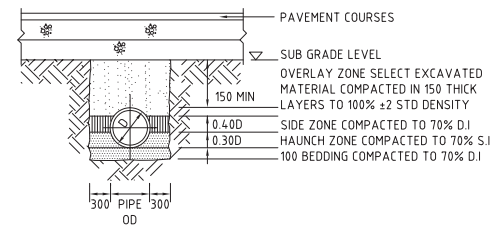
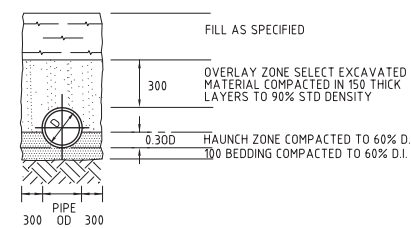
DISSIPATER NOTES:

- ALIGN STRUCTURE EVENLY WITH BANK.
- LOCATE STRUCTURE AT INVERT LEVEL OF STREAM AND POINT IN A DOWNSTREAM DIRECTION.
- PIPE TO REST ON, AND BE PACKED IN, BY RIP-RAP (SIZE AS NOTED).
- DISCHARGE INTO STREAM WHERE BEDROCK IS PRESENT, OTHERWISE SCOUR PROTECT AS REQUIRED.
- SCOUR PROTECT THE OPPOSITE BANK AS REQUIRED. SCOUR PROTECTION TO BE PROVIDED WHERE OPPOSITE BANK IS WITHIN 12-14 TIMES THE PIPE DIAMETER.
- RIP-RAP TO CONSIST OF ANGULAR RUN-OF-QUARRY ROCK (d50=150mm MINIMUM) AS NOTED IN THE SCHEDULE. RIP-RAP TO BE MINIMUM THICKNESS OF RIP-RAP LAYER TO BE 1.6x AVERAGE ROCK SIZE (d50).
- RIP-RAP IS TO BE PLACED OVER A 200mm LAYER OF 140mm COBBLES OVER NEEDLE-PUNCHED GEOFAB A44.
- 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.
- 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.
- ENSURE THE FINISHED ROCK SURFACE BLENDS WITH THE SURROUNDING GROUND LEVELS. NO OVERFALL OR PROTRUSION OF ROCK SHOULD BE APPARENT.
- ENSURE THAT STORMWATER FROM SURROUNDING GROUND IS FREE TO ENTER THE STRUCTURE WITHOUT CAUSING UNDESIRABLE PONDING OR SCOUR.



STORMWATER OUTLET DISSIPATER

SCALE 1:50



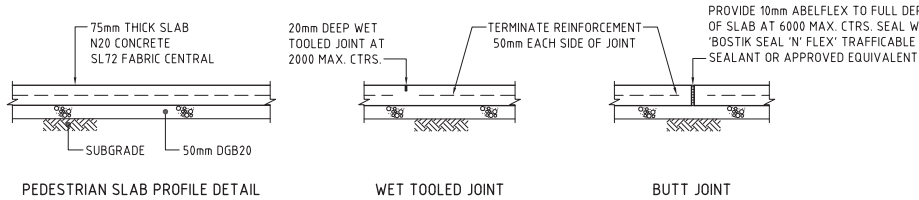
BEDDING & HAUNCH MATERIAL GRADING	
SIEVE SIZE	WEIGHT PASSING(%)
19	100
2.36	100 TO 50
0.60	90 TO 50
0.30	60 TO 10
0.15	25 TO 0
0.075	10 TO 0

SIDE ZONE MATERIAL GRADING	
SIEVE SIZE	WEIGHT PASSING(%)
75	100
9.5	100 TO 50
2.36	100 TO 30
0.60	50 TO 15
0.075	25 TO 0

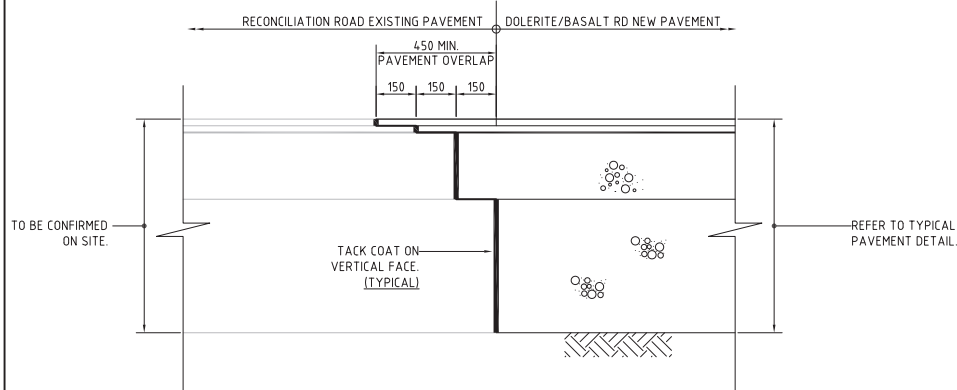
PIPE LAYING DETAILS

1:20

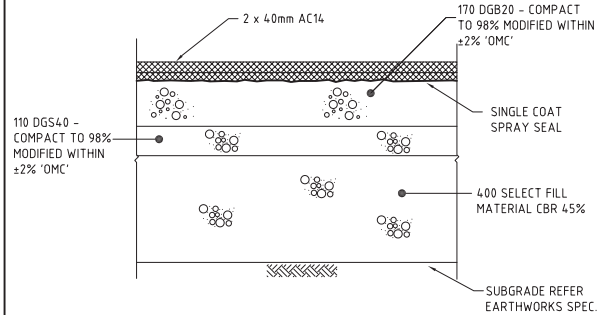
FOR DEVELOPMENT APPLICATION



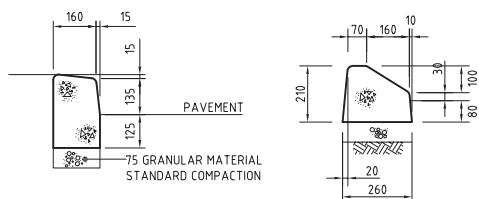
PEDESTRIAN SLAB DETAILS
SCALE 1:10



TYPICAL NEW / EXISTING
PAVEMENT INTERFACE DETAIL
SCALE 1:10

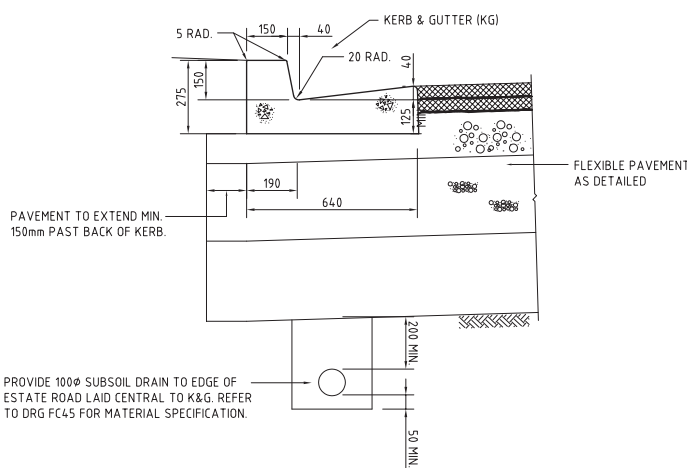


TYPICAL ROAD PAVEMENT DETAIL
SCALE 1:10
DESIGN TRAFFIC 1x10⁷ ESA's
DESIGN CBR VALUE OF 7%

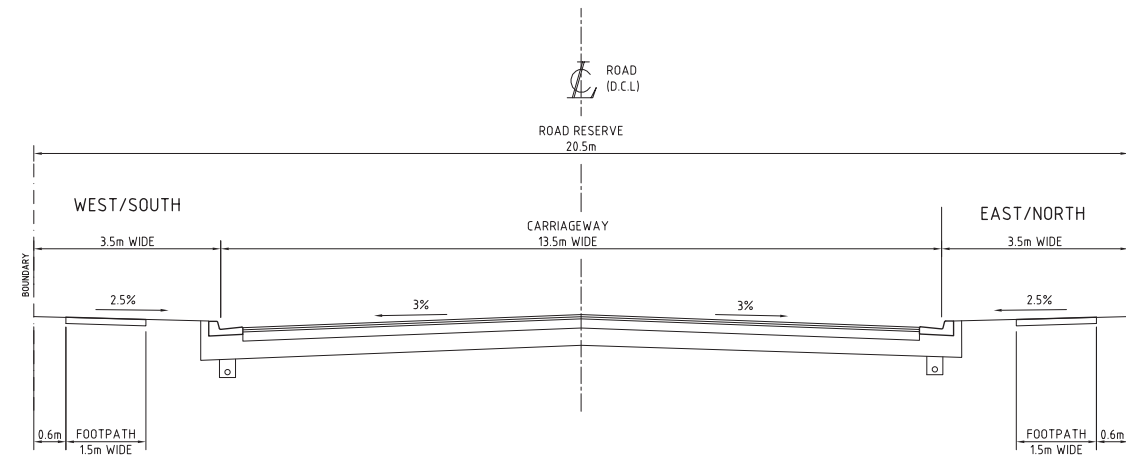


KERB ONLY - KO
SCALE 1:10
PROVIDE JOINTS IN KERB
AT 5m CENTRES MAX.

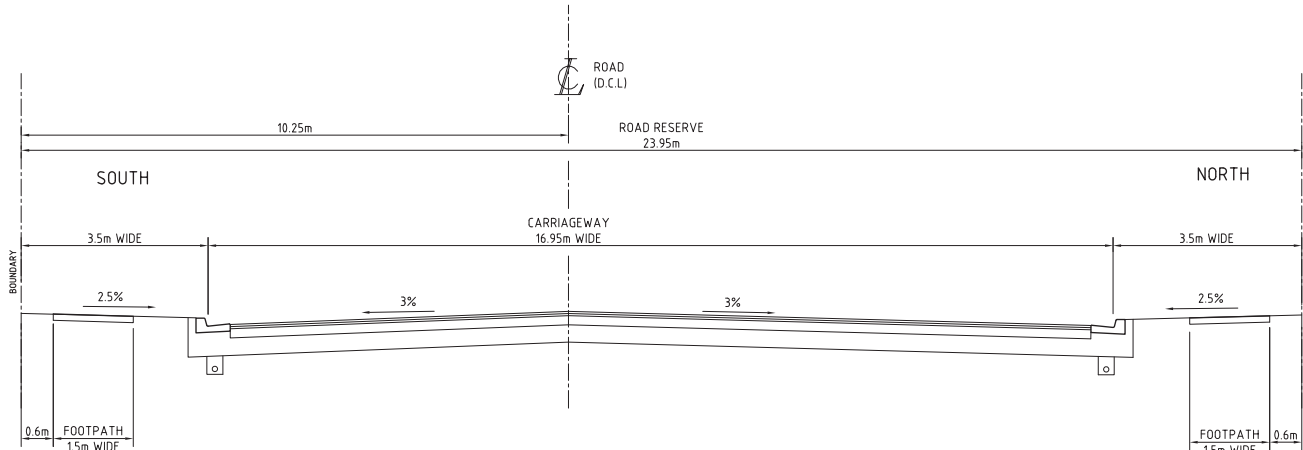
MEDIAN KERB
TYPE 'MK'
SCALE 1:10



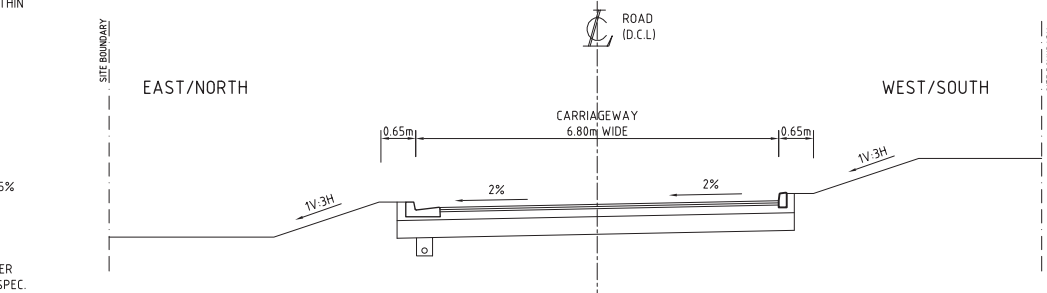
KERB & GUTTER (KG) & SUBSOIL DETAIL
SCALE 1:10
PROVIDE JOINTS IN KERB TO
MATCH JOINTS IN PAVEMENT



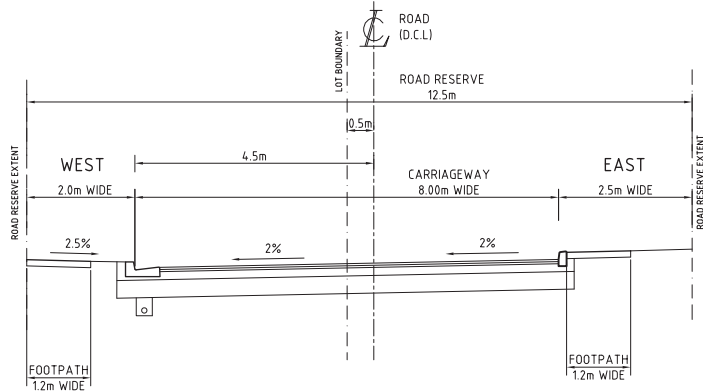
TYPICAL CROSS SECTION 1
BASALT/DOLERITE STANDARD



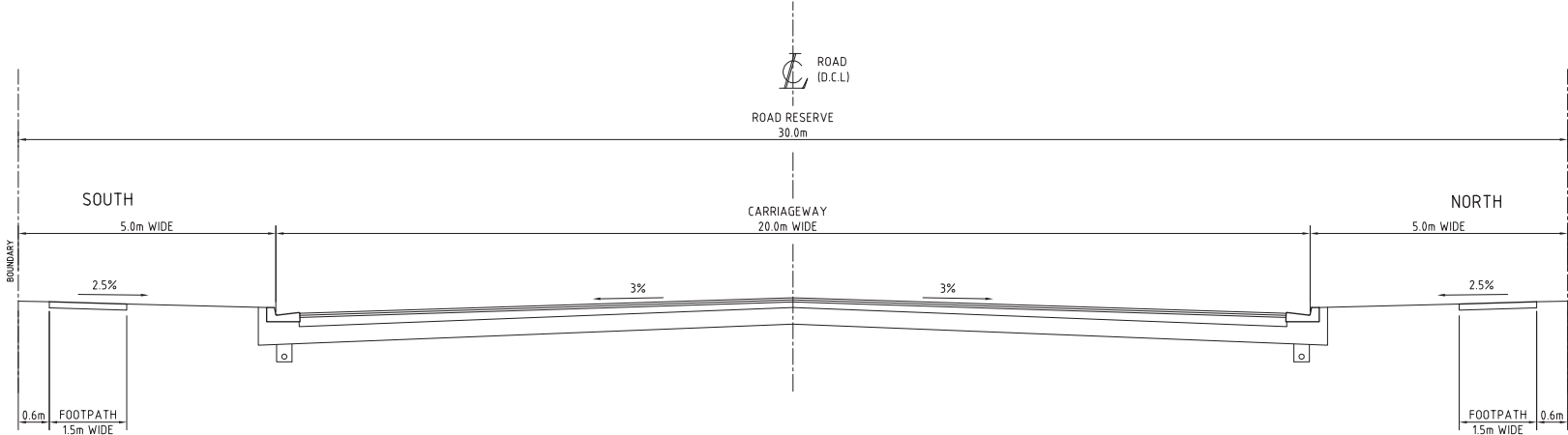
TYPICAL CROSS SECTION 2
DOLERITE CLOSE WIDENED



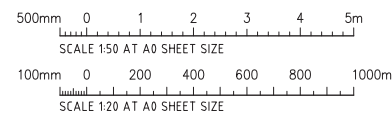
TYPICAL CROSS SECTION 3
ACCESS ROAD F



TYPICAL CROSS SECTION 4
ACCESS ROAD



TYPICAL CROSS SECTION 5
BASALT ROAD WIDENED



FOR DEVELOPMENT APPLICATION

ISSUED FOR DEVELOPMENT APPLICATION			20.03.15	C	ARCHITECT			CLIENT			PROJECT			Costin Roe Consulting Pty Ltd.			DRAWING TITLE		
ISSUED FOR DEVELOPMENT APPLICATION			11.12.14	B	DRAWING			DEXUS			QUARRY WEST			Consulting Engineers			CIVIL WORKS DETAILS		
ISSUED FOR REVIEW			28.11.14	A	CHECKED			PROPERTY GROUP			RECONCILIATION DRIVE			Level 1, 8 Windmill Street			SHEET 2		
AMENDMENTS			DATE	ISSUE	DATE			PEMULWUY, NSW			Tel: (02) 8551-7899 Fax: (02) 8541-3721			email: mail@costinroe.com.au			DRAWING No		
											C010529.22-DA52			Value in Engineering and Management			C010529.22-DA52		