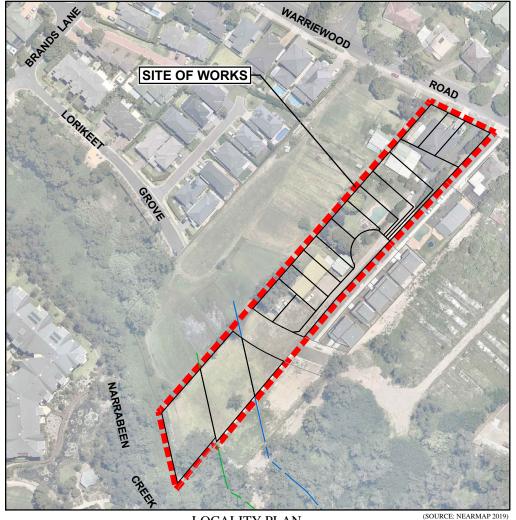
PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 53 & 53B WARRIEWOOD ROAD, WARRIEWOOD

CIVIL WORKS DEVELOPMENT APPLICATION



LOCALITY PLAN
NOT TO SCALE

DRAWING No.	DRAWING TITLE	REV.
076-18C-DA-0001	COVER SHEET, LOCALITY PLAN AND DRAWING INDEX	В
076-18C-DA-0002	GENERAL NOTES	В
076-18C-DA-0003	KEY PLAN	В
076-18C-DA-0021	DEMOLITION PLAN	В
076-18C-DA-0051	BULK EARTHWORKS PLAN	В
076-18C-DA-0101	ROAD AND DRAINAGE PLAN SHEET 1 OF 2	В
076-18C-DA-0102	ROAD AND DRAINAGE PLAN SHEET 2 OF 2	В
076-18C-DA-0151	TYPICAL ROAD CROSS SECTIONS	В
076-18C-DA-0201	ROAD LONGITUDINAL SECTION SHEET 1 OF 2	В
076-18C-DA-0202	ROAD LONGITUDINAL SECTION SHEET 2 OF 2	В
076-18C-DA-0301	ROAD CROSS SECTIONS SHEET 1 OF 2	В
076-18C-DA-0302	ROAD CROSS SECTIONS SHEET 2 OF 2	В
076-18C-DA-0451	GARBAGE TRUCK TURNING PATH	В
076-18C-DA-0701	EXTERNAL CATCHMENT PLAN	В
076-18C-DA-0702	INTERNAL CATCHMENT PLAN	В
076-18C-DA-0711	STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 1 OF 2	В
076-18C-DA-0712	STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 2 OF 2	В
076-18C-DA-0721	OVERLAND FLOW PATH ROAD CROSS SECTIONS	В
076-18C-DA-0751	BASIN PLAN	В
076-18C-DA-0752	BASIN SECTIONS	В
076-18C-DA-0753	BASIN DETAILS	В
076-18C-DA-0801	RETAINING WALL PLAN	В
076-18C-DA-0802	RETAINING WALL DETAILS	В
076-18C-DA-0901	SEDIMENT AND EROSION CONTROL PLAN	В
076-18C-DA-0902	SEDIMENT AND EROSION CONTROL DETAILS	В

-				APPROVIED COMPANY AS/NZS 4801	APPROVED COMPANY ISO 14001	APPROVED COMPANY ISO 9001	8	Authorised for issue by: MINH. VU	Principat: LEGENDWAY PTY. LTD.	PROPOSED SUBDIVISION OF	QQUI CR/
	3 DRAFT	ISSUED FOR DEVELOPMENT APPLICATION	AH KS	OH&S Management System	Environmental Management System	Quality Management Systems	DIALTIC		NORTHERN BEACHES COUNCIL	LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319	【報報】》~~ RH(
u mu	X 18.03.19 EV. DATE		ES. DRN.	QMAS HA	QMIS ###	QNS		Signature:	AS SHOWN AHD	CIVIL AND SUBDIVISION WORKS	



ABN 77 050 209 991 ACN 050 209 991 Suite 7.01, Level 7, 3 Rider Boulevard, Rhodes, NSW, 2138 PO Box 3220, Rhodes NSW 2138 Tel. 9869-1855 reception@crhodes.com.au	COVE A	R SHEET, LOCALITY PL AND DRAWING INDEX	_AN
www.craigandrhodes.com.au	C&R Ref.	Drawing Ref.	Revision
© Craig & Rhodes Pty Ltd		076-18C-DA-0001	B

A1	GENERAL NOTES	33. ALL TRAFFIC CONTROL DEVICES SHALL REMAIN ERECTED OUTSIDE WORKING HOURS WITH	
	ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH NORTHERN BEACHES COUNCIL ENGINEERING DESIGN SPECIFICATION AND ENGINEERING CONSTRUCTION SPECIFICATION.	FLASHING YELLOW LIGHTS ON BARRIER BOARDS TO BE IN OPERATION AFTER DARK. 34. ROADS ADJOINING THE SITE MUST BE KEPT CLEAN AND FREE OF ALL EXCAVATED/TRANSPORTED SPOIL MATERIAL.	23. UNLESS SPECIFIED OTHERWISE ALL DRAINAGE PITS TO BE CAST INSITU, THE GRADE OF CONCRETE TO BE USED SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 32MPA. STEEL REINFORCING BARS SHALL COMPLY WITH THE REQUIREMENTS OF AS1302 (LATEST EDITION). WELDED WIRE REINFORCING SHALL COMPLY WITH AS1304 (LATEST EDITION).
	 SERVICES SHOWN ON THESE PLAN ARE NOT GUARANTEED COMPLETE OR CORRECT AND HAVE BEEN LOCATED FROM INFORMATION SUPPLIED BY THE RELEVANT SERVICE PROVIDERS AND FIELD INVESTIGATIONS. THE CONTRACTOR SHALL LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION AND SHALL MAKE ALL NECESSARY ARRANGEMENTS 	35. SITE FILLING AND COMPACTION IS TO BE CARRIED OUT UNDER THE SUPERVISION OF A CHARTERED GEOTECHNICAL ENGINEER AND SHALL BE IN ACCORDANCE WITH NORTHERN	 UNLESS SPECIFIED ALL DRAINAGE GRATES TO BE CLASS 'C' GALVANISED MILD STEEL TO AS 3996 (LATEST EDITION).
	WITH THE RELEVANT SERVICE PROVIDERS TO RELOCATE OR ADJUST AS FOUND NECESSARY. 3. UTILITY ADJUSTMENTS ARE TO BE AT THE DEVELOPER'S EXPENSE.	BEACHES COUNCIL. "WORKS SPECIFICATION - CIVIL (CURRENT REVISION)". MINIMUM STANDARD COMPACTION OF 95% MUST BE ACHIEVED AND CERTIFIED BY "NATA" REGISTERED LAB AND DETAILS SUBMITTED TO COUNCIL.	 uPVC PIPES SHALL BE SUPPLIED WITH SUFFICIENT QUANTITIES OF SOLVENT FOR MAKING OF THE PIPE JOINTS.
	CONDUITS SHALL BE PLACED WHERE REQUIRED BY THE RELEVANT AUTHORITIES.	36. RESIDENTIAL LOTS TO BE INDIVIDUALLY CLASSIFIED.	26. 27. UPVC PIPES SHALL BE TRANSPORTED, HANDLED AND STACKED IN ACCORDANCE WITH
	5. THE CONTRACTOR SHALL NOT ENTER UPON OR DO ANY WORK WITHIN ADJACENT LANDS	37. AGRICULTURAL LINES TO BE PLACED AS DIRECTED	MANUFACTURER'S RECOMMENDATIONS. 28. UPVC PIPE LAYING SHALL BEGIN AT THE DOWNSTREAM END OF THE LINE WITH THE SOCKET END
	MITHOUT PRIOR WRITTEN PERMISSION OF THE LAND OWNER. THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO THE	38. STRUCTURAL CERTIFICATION IS REQUIRED FOR CONSTRUCTION OF MAJOR AND NON-STANDARD STRUCTURES	26. UP VC FIPE LATING SHALL BEGIN AT THE DOWNSTREAM END OF THE LINE WITH THE SOCKET END OF THE PIPE FACING UPSTREAM. WHEN THE PIPES ARE LID, THE BARREL OF FACH PIPE SHALL BE IN CONTACT WITH THE BEDDING MATERIAL THROUGHOUT ITS FULL LENGTH.
	THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO THE PUBLIC FOOTWAYS, ROADWAYS AND PROPERTIES ADJACENT TO THE SITE IN A SAFE CONDITION TO THE SATISFACTION OF COUNCIL'S ENGINEER. THE CONTRACTOR SHALL OBTAIN ALL LEVELS FROM ESTABLISHED BENCH MARKS. SURVEY	39. DRIVEWAYS/LAYBACKS TO HAVE MINIMUM 1.0m CLEARANCE FROM ANY PROPOSED & EXISTING UTILITIES, INCLUDING: ELECTRICAL TURRETS, LIGHT POLES, TELECOMMUNICATION PITS, STORMWATER GULLY PITS & STREET TREES. DRIVEWAYS/LAYBACKS TO HAVE A 6.0m CLEARANCE FOOD WEAP DRIVENT ANOTHER DOILING.	29. THE uPVC PIPE ENDS SHALL BE THOROUGHLY CLEANED BEFORE THE JOINT IS MADE. JOINTING SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DIRECTIONS USING JOINTING SOLVENT AND PRIMER.
		FROM KERB-RETURN TANGENT POINTS 40. VEHICULAR CROSSINGS ARE TO BE 4.0 METERS WIDE AT KERB AND GUTTER.	30. PROVISION OF A ROOF-WATER OUTLET TO KERB FOR EACH PROPOSED LOT THAT DRAINS TO PUBLIC ROAD IS TO BE IN ACCORDANCE WITH COUNCIL CURRENT ENGINEERING GUIDE FOR
	8. BENCHMARK, SSM'S PERMANENT MARKS TO BE AHD.	41. SUBSOIL DRAINAGE SHALL BE PROVIDED ALONG THE CUT SIDE OF ALL NEW ROADS WHERE NO DRAINAGE IS PROVIDED, ALONG THE CENTRE LINE OF HALF ROAD CONSTRUCTION WORKS, AT	
	 CONSTRUCTION/CIVIL WORK MAY ONLY BE CARRIED OUT ON THE SITE BETWEEN THE HOURS OF 7.00am TO 5.00pm MONDAY TO FRIDAY AND 8.00am to 1.00pm ON SATURDAY. NO WORK PERMITTED 	LOW SPOTS, WHERE REQUIRED BY THE PAVEMENT DESIGN REPORT, AND WHERE DIRECTED BY COUNCIL'S ENGINEER.	SALINITY MANAGEMENT 1. CONTRACTOR TO AVOID EXPOSURE AND DISTURBANCE OF SODIC SOIL BY MINIMISING CUT AND FILL. IN GENERAL EXCAVATION SHOULD BE KEPT UNDER 1.0m IF POSSIBLE. DEEPER
	TO BE CARRIED OUT ON SUNDAYS OR PUBLIC HOLIDAYS UNLESS OTHERWISE APPROVED BY NORTHERN BEACHES COUNCIL.	42. LIGHT POLES STREET NAMES POLES AND BUS SHELTERS IN THIS SUBDIVISION WILL BE BLACK POWDER COATED TO THE SATISFACTION OF NORTHERN BEACHES COUNCIL. FURTHER THAT	EXCAVATIONS IN EXCESS OF 1.0m SHALL BE COVERED AND RETAINED BY RETAINING WALLS. 2. EXCAVATION DEEPER THAN 1.0m SHALL BE AVOIDED AND IF CARRIED OUT, SHOULD BE
	 PLANT, GOODS & MATERIALS SHALL NOT BE DELIVERED ON THE SITE OUTSIDE THE APPROVED HOURS OF OPERATION. 	THESE LIGHT POLES WILL COMPLY WITH COUNCIL SPECIFICATIONS. STORMWATER DRAINAGE	BACKFILLED IN THE SAME ORDER. ALTERNATIVELY THE MODERATELY TO HIGH SALINE MATERIAL SHALL BE TREATED BY USING LIME AND/OR USED IN FILL AT DEPTHS MORE THAN 1.0m FROM
	11. THE CONTRACTOR SHALL CLEAR AND DISPOSE OF ONLY THOSE TREES THAT HAVE BEEN APPROVED TO BE REMOVED. TREES THAT ARE NOT TO BE REMOVED SHALL BE PRESERVED. NO TREE SHALL BE FELLED, LOPPED OR REMOVED WITHOUT PRIOR APPROVAL FROM NORTHERN	 ALL STORMWATER WORKS ARE TO BE UNDERTAKEN GENERALLY IN ACCORDANCE WITH AS 3500 (LATEST EDITION) STORMWATER DRAINAGE. 	FINISHED LEVEL. 3. BUILDING PLATFORM IN CUT AREAS GREATER THAN 1.0m SHALL BE MONITORED FOR SALINITY BY SOIL SAMPLING AND LABORATORY TESTING BY THE CONTRACTOR.
	BEACHES COUNCIL.	2. 100 YEAR FLOW PATHS TO BE FORMED AT TIME OF CONSTRUCTION.	4. APPROPRIATE BATTER SLOPES FOR EXCAVATIONS SHALL BE ADOPTED BY THE CONTRACTOR TO
	 FELLED TREES SHALL BE SALVAGED FOR REUSE AS WOODCHIP MULCH OR LOG FORM FOR SITE REHABILITATION, NON-SALVAGEABLE MATERIAL SUCH AS STUMPS AND ROOTS SHALL BE DISPOSED OFF SITE AS NOMINATED BY THE SUPERINTENDENT. 	 UNLESS NOTED OTHERWISE, ALL REINFORCED CONCRETE PIPES ARE TO BE CLASS 2 AND RUBBER RING JOINTED. RUBBER RINGS SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH AS1646 (LATEST EDITION). THE EXCAVATED TRENCH WIDTH FOR PIPE LAYING MUST BE AT LEAST 400mm WIDER THAN THE OUTER DIAMETER OF THE PIPE. PIPES ARE TO BE LAID 	PREVENT EROSION AND SCOURING. UNDER GOOD DRAINAGE CONDITIONS, THE FOLLOWING BATTER SLOPES OR LESS SHALL BE ADOPTED; MATERIAL RECOMMENDED MINIMUM BATTER SLOPES
	13. SITE SHEDS, STOCKPILES, MATERIALS AND VEHICLE PARKING SHALL BE LOCATED AWAY FROM TREES ON THE SITE TO PREVENT SOIL COMPACTION. STOCKPILING OF MATERIALS SHALL NOT BE PERMITTED WITHIN TREE PROTECTION AREAS. ALL AREAS FOR STOCKPILING SHALL BE	LEAST ADDITING THE OFFICE OF AND THE FIRE FIRE OF AND TO BE DATE CENTRALLY WITHIN THE EXCAVATED TRENCH. ALL PIPEWORK SHALL BE BEDDED ON A CONTINUOUS UNDERLAY OF SAND, NOT LESS THAN 75mm	-COMPACTED FILL -COMPACTED FILL -VERY STIFF RESIDUAL CLAY -VERY STIFF RESIDUAL CLAY -VERY THERED SHALE/SILTSTONE -SI-BORIZONTAL: 1 VERTICAL -VERTICAL -VERY
	APPROVED BY THE SUPERINTENDENT. 14. ALL SOIL AND WATER MANAGEMENT DEVICES SHALL BE INSTALLED AND APPROVED PRIOR TO	THICK IN OTHER THAN ROCK AND 200mm THICK IN ROCK AFTER COMPACTION. THE SAND SHALL BE GRADED IN ACCORDANCE WITH AS3500 (LATEST EDITION) AND COMPACTED TO AT LEAST 90% OF THE MAXIMUM DRY DENSITY AND SHALL BE GRADED EVENLY TO THE REQUIRED GRADIENT OF	 SITE ROADWORKS BY THE CONTRACTOR SHALL BE PLANNED TO REDUCE CUTTING AND FILLING TO THE ABSOLUTE MINIMUM AND THE EARTHWORKS UNDERTAKEN IN STAGES TO ALLEVIATE
	WORKS PROCEEDING. 15. ALL EROSION AND POLLUTION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD WORKING	THE PIPELINE. 5. IN WET OR UNSTABLE GROUND CONDITIONS WHERE THE TRENCH BOTTOM REQUIRES FURTHER	EROSION AND LOCALISED INSTABILITY PROBLEM. TO MINIMISE THE EFFECTS OF EROSION, ALL ROAD BATTERS, WHETHER IN CUT OR FILLT DE ESTABILISED BY PLAINTING (OR THE APPLICATION OF SPRAYED-ON MULCH) WITH APPROPRIATE SPECIES OF VEGETATION AS SOON AS PRACTICAL
	ORDER AND REPAIR THROUGHOUT THE COURSE OF BUILDING CONSTRUCTION OR DEVELOPMENT WORK ON THE SITE AND UNTIL THE WORKS HAVE BEEN COMPLETED TO THE SATISFACTION OF COUNCIL.	STABILIZING, ADDITIONAL BEDDING OF 20mm AND/OR 30mm NOMINAL SIZE AGGREGATE (AS DIRECTED BY THE SUPERINTENDENT), SHALL BE PLACED BELOW THE STANDARD BEDDING TO A DEPTH DETERMINED BY THE SUPERINTENDENT, WHERE ORDERED BY THE SUPERINTENDENT AN	AFTER CONSTRUCTION. 6. THE CONTRACTOR SHALL CONSIDER THE DESIGN, BEDDING OF PIPEWORK FOR STORMWATER INFO STUFFOR STUFFOR A DO THE DESIGN, BEDDING OF PIPEWORK FOR STORMWATER
	 TEMPORARY REHABILITATION MUST BE APPLIED AND ESTABLISHED TO DISTURBED AREAS AS SOON AS PRACTICAL AFTER COMPLETION OF EARTHWORKS. 	APPROVED FILTER FABRIC SHALL BE USED IN CONJUNCTION WITH THE ADDITIONAL BEDDING. 6. THE BED AND HAUNCH MATERIAL SHALL BE COMPACTED FOR THE FULL WIDTH OF THE TRENCH BY A MINIMUM OF TWO PASSES OF A VIBRATING PLATE OR HAND TAMPING METHOD TO THE	AND OTHER SERVICES, AS THE SOILS WITHIN THESE AREAS ARE GENERALLY 'ERODIBLE' OR 'DISPERSIVE'. RUBBER-RING JOINTED PIPES SHALL BE USED. SPECIAL TYPES OF 'PIPE-BEDDING' (E.G. CLEAN COARSE SAND) SHALL ALSO BE REQUIRED. AS THE SOIL IS POTENTIALLY UNSTABLE IN THE PRESENCE OF WATER RESULTING IN TUNNELING, CONSTRUCTION OF INFRASTRUCTURES
	 TOPSOIL IS TO BE STRIPPED AND STOCKPILED ON THE SITE WITH EROSION CONTROL MEASURES PROVIDED AS DETAILED. UPON COMPLETION OF WORKS, MINIMUM 150mm THICK TOPSOIL SHALL BE SPREAD ON ALL FOOTPATHS, BERMS, BATTERS AND SITE REGRADED AREAS. EXCESS 	B I A MINIMUM OF I'V OF PASSES OF A DISKAINS FLATE OK HAND TAMPING METHOD TO THE SATISFACTION OF THE SUPERINTENDENT. 7. CHASES SHALL BE FORMED WHERE NECESSARY TO PREVENT SOCKETS, FLANGES OR THE LIKE	SHALL INCLUDE ADEQUATE COMPACTION OF SERVICE TRENCHES AND CONSTRUCTION OF CUT-OFF WALLS TO PREVENT MIGRATION OF FINES.
	TOPSOIL SHALL BE DISPOSED OF AS DIRECTED BY THE SUPERINTENDENT.	FROM BEARING ON THE TRENCH BOTTOM OR THE UNDERLAY.	 PREVENTION OF SOIL EROSION, TUNNELING AND SALT SCALDS SHALL BE TREATED BY THE CONTRACTOR USING GYPSUM OR LIME.
	 ALL EARTHWORKS TO BE IN ACCORDANCE WITH A.S.3798 & TO BE CARRIED OUT TO THE SATISFACTION OF SUPERINTENDENT. UNSOUND MATERIALS ARE TO BE REMOVED FROM ROADS AND LOTS PRIOR TO FILLING. 	 THE CONTRACTOR SHALL ENSURE THAT ANY EXISTING STRUCTURES LOCATED ADJACENT TO EXCAVATED TRENCHES ARE SUPPORTED OR PROTECTED TO PREVENT DAMAGE TO OR MOVEMENT OF THESE STRUCTURES 	SEDIMENT AND EROSION CONTROL 1. THESE NOTES ARE TO BE READ IN CONJUNCTION WITH LANDCOM'S SOILS AND CONSTRUCTION
	 SURPLUS EXCAVATED MATERIAL SHALL BE DISPOSED OF IN CONSULTATION WITH SUPERINTENDENT. DOCUMENTATION OF THE DISPOSAL SITE SHALL BE PROVIDED TO COUNCIL PRIOR TO COMMENCEMENT OF WORKS. 	 THE CONTRACTOR MUST LEAVE ALL STORMWATER DRAINAGE WORKS UNCOVERED UNTIL ANY TESTING DEEMED NECESSARY BY THE SUPERINTENDENT HAS BEEN PERFORMED. 	'MANAGING URBAN STORMWATER'. 2. SEDIMENT AND EROSION CONTROL SHALL BE IMPLEMENTED PRIOR TO AND MAINTAINED DURING
	20. ALL SITE FILLING SHALL BE PLACED IN LAYERS NOT EXCEEDING 300mm AND COMPACTED TO 95% STANDARD COMPACTION AND SHALL BE CONTROLLED BY AN APPROVED N.A.T.A. SOILS	10. PIPE LAYING SHALL BEGIN AT THE DOWNSTREAM END OF THE LINE WITH THE SOCKET ENDS OF THE PIPE FACING UPSTREAM. THE BARREL OF EACH PIPE SHALL BE IN CONTACT WITH THE BEDDING MATERIAL THROUGHOUT ITS FULL LENGTH.	AND AFTER THE CONSTRUCTION WORKS. 3. SOIL AND SEDIMENT CONTROL DEVICES SHALL BE AS SHOWN IN THE DRAWINGS. THE
	LABORATORY.	11. FOR RUBBER RING JOINTS THE PIPE ENDS SHALL BE THOROUGHLY CLEANED BEFORE THE JOINT	CONTRACTOR SHALL REGULARLY MAINTAIN ALL SEDIMENT AND EROSION CONTROL DEVICES AND REMOVE ACCUMULATED SEDIMENT FROM SUCH DEVICES BEFORE 50% CAPACITY IS USED.
	21. WHERE LOT FILLING IN EXCESS OF 300mm IS PROPOSED, LEVELS ARE TO BE TAKEN ON THE STRIPPED SURFACE PRIOR TO THE COMMENCEMENT OF FILLING AND ON THE FINISHED SURFACE. SUCH LEVELS ARE TO BE SHOWN ON THE WORK-AS-EXECUTED PLAN.	IS MADE. THE TWO PIPE SECTIONS SHALL THEN BE TIGHTLY JOINED WITH THEIR INNER SURFACES AT THE MANUFACTURER'S NOMINATED LAYING GAP.	ALL THE ACCUMULATED SEDIMENT SHALL BE RE-SPREAD OR REMOVED IN ACCORDANCE WITH THE SUPERINTENDENTS INSTRUCTIONS. THE DEVICES SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL SUCH TIME AS THE DISTURBED AREAS HAVE BEEN REHABILITATED TO A
	22. ALL LAND DISTURBED BY EARTHWORKS SHALL BE SPRAY-GRASSED, OR SIMILARLY TREATED TO ESTABLISH GRASS COVER. SEED MIXTURES ARE TO BE APPROVED BY COUNCIL PRIOR TO	 LIFTING HOLES IN PIPES AND CULVERTS SHALL BE PLUGGED WITH MORTAR, PRECAST TAPERED PLUGS, OR TAPE SURROUNDS OR OTHER APPROVED MEANS PRIOR TO BACKFILL MATERIAL BEING PLACED. 	CONDITION SATISFACTORY TO THE SUPERINTENDENT. 4. NO DISTURBANCE OF SITE PERMITTED OTHER THAN THE IMMEDIATE AREA OF THE WORKS.
	SPRAYING. ALL GRASSED AREAS SHALL BE REGULARLY WATERED AND MAINTAINED UNTIL EXPIRATION OF THE MAINTENANCE PERIOD.	13. CUTTING OPERATIONS FOR CONCRETE PIPE AND BOX CULVERTS SHALL PROVIDE NEAT END	5. COUNCIL TO RE-INSPECT TREES PRIOR TO THE CONSTRUCTION WORKS COMMENCING.
	23. THE CONTRACTOR SHALL MAINTAIN DUST CONTROL THROUGHOUT THE DURATION OF THE	SURFACES. THE CUT SURFACES SHALL BE GIVEN TWO COATS OF A SUPERINTENDENT APPROVED EPOXY PAINT.	6. NO TREES ARE TO BE REMOVED WITHOUT PRIOR COUNCIL CONSENT.

- PROJECT
- 24. CATCH DRAINS TO BE CONSTRUCTED AS REQUIRED BY THE SITE SUPERINTENDENT AND/OR COUNCIL'S ENGINEER.
- 25. CONDUIT TRENCHES, SUB-SOIL DRAINS AND STORMWATER DRAINAGE LINES TO BE BACKFILLED WITH APPROVED WASHED RIVER SAND, FLOODED AND VIBRATED. CONDUIT TRENCHES TO BE GRADED AT A MINIMUM ONE PERCENT (1%). GRADE TO EITHER SUB-SOIL OR STORMWATER DRAINAGE LINES.
- 26. SUB-GRADE IN ROCK IS TO BE RIPPED, SCARIFIED, SPREAD AND COMPACTED TO A MINIMUM DEPTH OF 300mm BELOW THE FINISHED SUB-GRADE LEVEL
- 27. DETAILS OF ALL SOIL TESTS AND THE PAVEMENT DESIGN ARE TO BE SUBMITTED TO PRINCIPAL CERTIFYING AUTHORITY (PCA) PRIOR TO INSPECTION OF SUBGRADE.
- 28. NO BUILDING MATERIALS, MACHINERY OR THE LIKE ARE TO BE STORED ON THE ROAD OR FOOTPATH. THE PATHWAY IS TO BE KEPT IN A CLEAN, TIDY & SAFE CONDITION DURING THE CONSTRUCTION PERIOD.
- 29. ALL NEW WORKS SHALL MAKE SMOOTH JUNCTION WITH EXISTING CONDITIONS.

DRAFT ISSUED FOR DEVELOPMENT APPLICATION 18.03.19 ISSUED FOR DEVELOPMENT APPLICATION

DATE

AMENDMENT DESCRIPTION

- 30. THE SITE IS TO BE SURROUNDED BY A SECURITY FENCE & THE GATE MUST BE LOCKED OUTSIDE THE OPERATING HOURS, NOTICES COMPLYING WITH AS 1319-1994 AND DISPLAYING THE WORDS "DANGER - DEMOLITION IN PROGRESS", OR SIMILAR MESSAGE SHALL BE FIXED TO THE FENCING AT APPROPRIATE PLACES TO WARN THE PUBLIC.
- THE CONTRACTOR SHALL PROVIDE A MINIMUM 24 HOURS NOTICE TO SUPERINTENDENT OR COUNCIL'S ENGINEER FOR ALL INSPECTIONS.
- 32. THE CONTRACTOR SHALL UNDERTAKE TRAFFIC CONTROL MEASURES IN ACCORDANCE WITH COUNCIL'S TRAFFIC MANAGEMENT POLICY AND SHALL DISPLAY ALL APPROPRIATE WARNING SIGNS THROUGHOUT THE DURATION OF CONSTRUCTION.

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- 14. JOINTS SHALL NOT BE MADE UNDERWATER. THE TRENCH SHALL BE DEWATERED TO FACILITATE JOINT MAKING AND INSPECTION. PRECAUTIONS SHALL BE TAKEN TO PREVENT EROSION OF JOINT MATERIAL BY MOVING CURRENTS OF WATER.
- 15. COMPLETED CEMENT MORTAR JOINTS SHALL BE KEPT DAMP AND PROTECTED FROM THE DIRECT RAYS OF SUN UNTIL BACKFILLING TAKES PLACE.
- 16. DRAINAGE LINES SHALL BE CONSTRUCTED TO THE TOLERANCES AS FOLLOWS:
- FINISHED LEVEL AT ANY INVERT ±15mm PROVIDED THAT NO POINT IS LEVEL OR AT A HIGHER LEVEL THAN CORRESPONDING POINT OF STREAM. GRADING ±0.2% AT ANY POINT.

NOT WITHSTANDING THE TOLERANCES ABOVE EACH PIPE SHALL HAVE A MINIMUM FALL (APPROVED BY THE SUPERINTENDENT) IN THE DIRECTION OF FLOW.

- 17. BACKFILL MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO PLACING AND COMPACTION
- 18. ALL BACKFILL FOR STORMWATER DRAINAGE WORKS IS TO BE COMPACTED IN LAYERS NOT EXCEEDING 300mm LOOSE THICKNESS AND COMPACTED WITHOUT DAMAGING OR DISPLACING THE PIPEWORK
- 19. BACKFILL FOR STORMWATER PITS AND PIPES SHALL BE COMPACTED TO AT LEAST 95% (98% UNDER ROADS) OF THE MAXIMUM DRY DENSITY AT -2% TO +2% OF OPTIMAL MOISTURE CONTENT AND GRADED IN ACCORDANCE WITH AS 3500.3 (LATEST EDITION)
- 20. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL CEMENT RENDERED WITH AN EPOXY GROUT TO ENSURE A SMOOTH FINISH.
- 21. STEP IRONS ARE TO BE PROVIDED IN DRAINAGE PITS MORE THAN 1.2m DEEP

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22. PROVIDE A MINIMUM OF 3.0m LENGTH OF 100 DIA. SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK AT UPSTREAM END OF EACH COUNCIL PIT

LEGENDWAY PTY. LTD.

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	PROPOSED SUBDIVISION OF	- 県駅門・ ジ CRAIG&
NCIL	LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 CIVIL AND SUBDIVISION WORKS	

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- RKS.
- VEHICULAR ACCESS TO THE SITE SHALL BE CONTROLLED THROUGH THE ACCESS POINTS 7. IDENTIFIED ON THE DRAWINGS. VEHICLES NOT REQUIRED IN THE PERFORMANCE OF THE WORKS SHALL BE PARKED OFF SITE AWAY FROM DISTURBED AREAS.
- A VEHICLE WASHDOWN BAY INCLUDING A 25mmØ HOSE SHALL BE PROVIDED.
- 9. THESE PLANS ARE SUPPLEMENTARY TO THE CONTRACTORS EMP FOR CONSTRUCTION AND SHALL BE READ IN CONJUNCTION WITH THE BUILDING CONTRACTORS E&SC PLANS
- 10. THE CONTRACTOR SHALL ENSURE TEMPORARY CONTROLS DO NOT DAMAGE EXISTING STRUCTURES.
- 11. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED PRIOR TO SITE
- ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED PRIOR TO SITE DISTURBANCE.
 ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED FOLLOWING EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO A NOMINATED SITE.
- 13. THE CONTRACTOR SHALL INFORM ALL SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN
- 14. ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END OF THE DAYS ACTIVITIES.
- 15. THE CONTRACTOR MUST ENSURE THE SUITABILITY AND INTEGRITY OF ALL WORKS AT THE END OF EACH DAYS WORK
- 16. NOMINATED UNDISTURBED AREAS SHALL BE BARRICADED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- 17. PUBLIC ROADS ARE TO BE SWEPT FREE OF DEBRIS RESULTING FROM CONSTRUCTION ACTIVITIES. SWEEPING SHALL BE UNDERTAKEN AT A MINIMUM TWICE WEEKLY.

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18. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE LOCATED ON EXISTING ACCESS TRACKS OR ROADWAYS SO AS NOT TO ENCROACH ON TRAFTIC. ALL EROSION CONTROL MEASURES PLACED SHALL BE CLEARLY IDENTIFIABLE DURING BOTH DAY AND NIGHT. EROSION CONTROL MEASURES SHALL BE COORDINATED WITH THE CONTRACTORS TRAFFIC MANAGEMENT PLANS IN ORDER TO LIMIT 'CLUTTERING' OF THE EXISTING TRAFFICABLE AREAS.

750mm

19. PROVIDE 150mm TOPSOIL WITH TURF OR GRASS SEEDING ON ALL BATTERS & DISTURBED AREAS.

20. TURFED AREAS ADJACENT TO CONSTRUCTION AREA ARE TO BE MAINTAINED TO PROVIDE A VEGETATED BUFFER STRIP.

21. THE CONTRACTOR SHALL STRIP AND STOCKPILE TOPSOIL PRIOR TO EXCAVATION OR FILLING. TOPSOIL SHALL BE RESPREAD ON THE COMPLETION OF EARTHWORKS.

22. THE CONTRACTOR SHALL STABILISE ALL DISTURBED AREAS AND STOCKPILES WITHIN 14 DAYS.

23. THE CONTRACTOR SHALL INSTALL A MIN. 300mm WIDE STRIP OF TURF BEHIND THE KERB.

24. THE CONTRACTOR SHALL PROVIDE A MIN. 1m WIDE TURFING AROUND ALL SURFACE INLET PITS.

TOPSOIL PRIOR TO SPREADING, STOCKPILED SITE SUBGRADE MATERIAL AND/OR IMPORTED TOPSOIL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT.

2. UNLESS NOTED OTHERWISE, ALLOW FOR CLEARING AND REMOVING STONES EXCEEDING 25 mm AND ANY RUBBISH BROUGHT TO THE SURFACE DURING THE CULTIVATION OF THE SUBGRADE.

3. AFTER PREPARATION OF THE SUBGRADE SURFACE, PLACE TOPSOIL AS APPROPRIATE FOR THE SPECIFIED LANDSCAPE TREATMENTS AND AS INDICATED BY THE DRAWINGS.

4. THE FINISHED SURFACE OF THE TOPSOIL SHALL BE SMOOTH, FREE OF LUMPS OF SOIL AND LEFT READY FOR CULTIVATING AND PLANTING

WHERE TOPSOILING IS CARRIED OUT ADJACENT TO KERBS, FOOTPATHS, MOWING STRIPS OR OTHER HARD PAVED SURFACES, THE TOPSOIL SHALL BE FINISHED FLUSH WITH THOSE SURFACES UNLESS OTHERWISE SPECIFIED.

TURF AND PLANTING

1. ALL TURF AND OTHER MATERIALS SPECIFIED SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE SUPERINTENDENT.

2. SUBSTITUTION OF SPECIES SHALL ONLY OCCUR WITH THE PRIOR APPROVAL OF THE SUPERINTENDENT.

3. PROTECT THE NEWLY PLANTED AREAS AGAINST TRESPASS AND TRAFFIC UNTIL THE GRASS IS WELL ESTABLISHED. FENCING, WHERE USED, SHALL BE 1.2m HIGH STAR PICKET TYPE, WITH MAXIMUM POST SPACING OF 5m.

4. ALLOW FOR MAKING OVER AND RE-TURFING ALL AREAS WHERE THE GRASS FAILS TO GROW WITHIN ONE MONTH FROM THE DATE OF ORIGINAL PLANTING.

SURVEY NOTES

SURVEY CALC PLAN REF: CRAIG & RHODES PLAN076-18G L01 [01]-PLAN (DATED 13/03/2019)

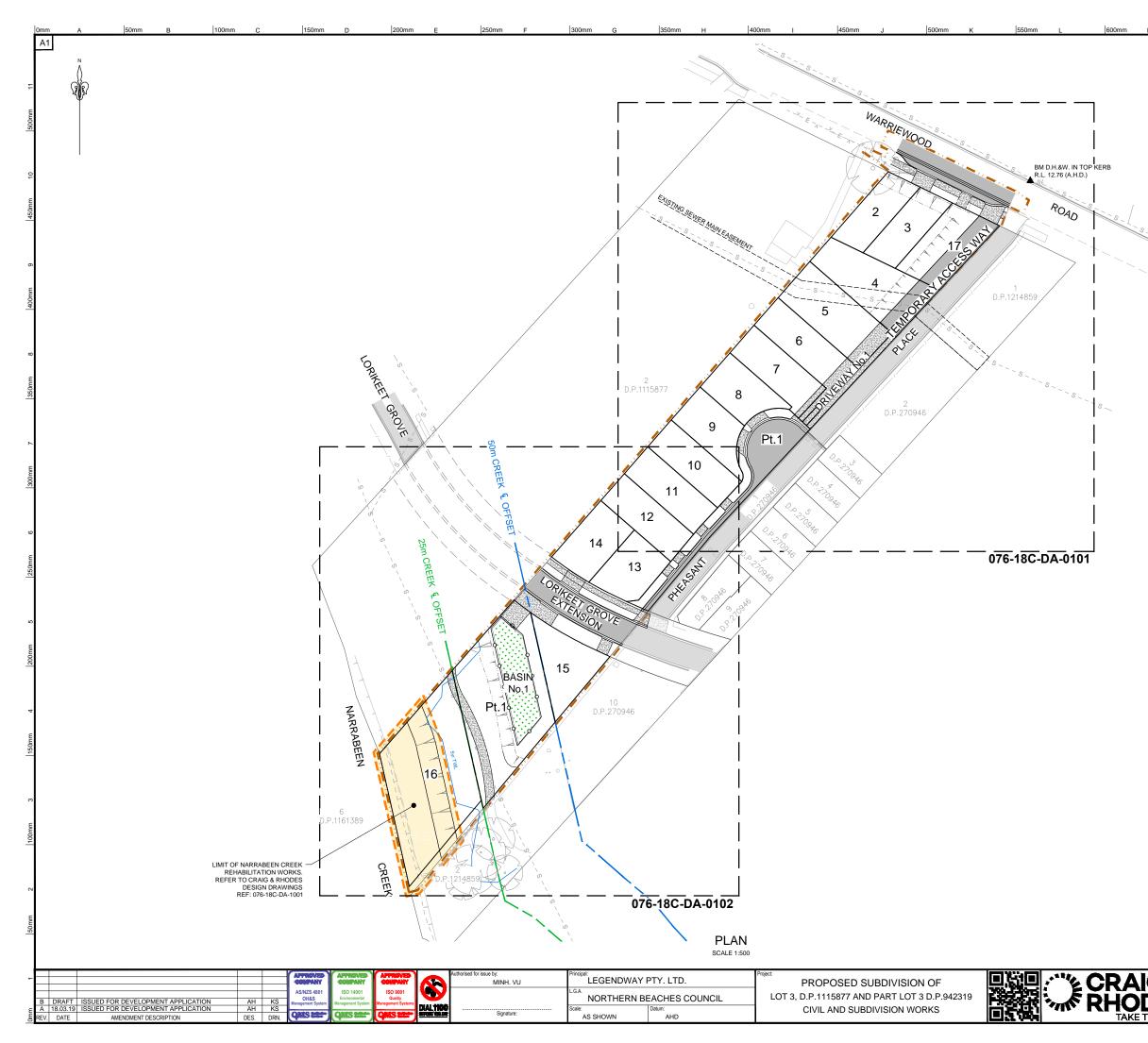
ABBREVIATIONS

KERB AND GUTTER DISH GUTTER VEHICULAR CROSSING RETAINING WALL STANDARD GRATED GULLY PIT GRATED SURFACE INLET PIT JUNCTION PIT HEADWALL GROSS POLLUTANT TRAP

> **APPLICATION** ELOPMENT >ĹШ \cap

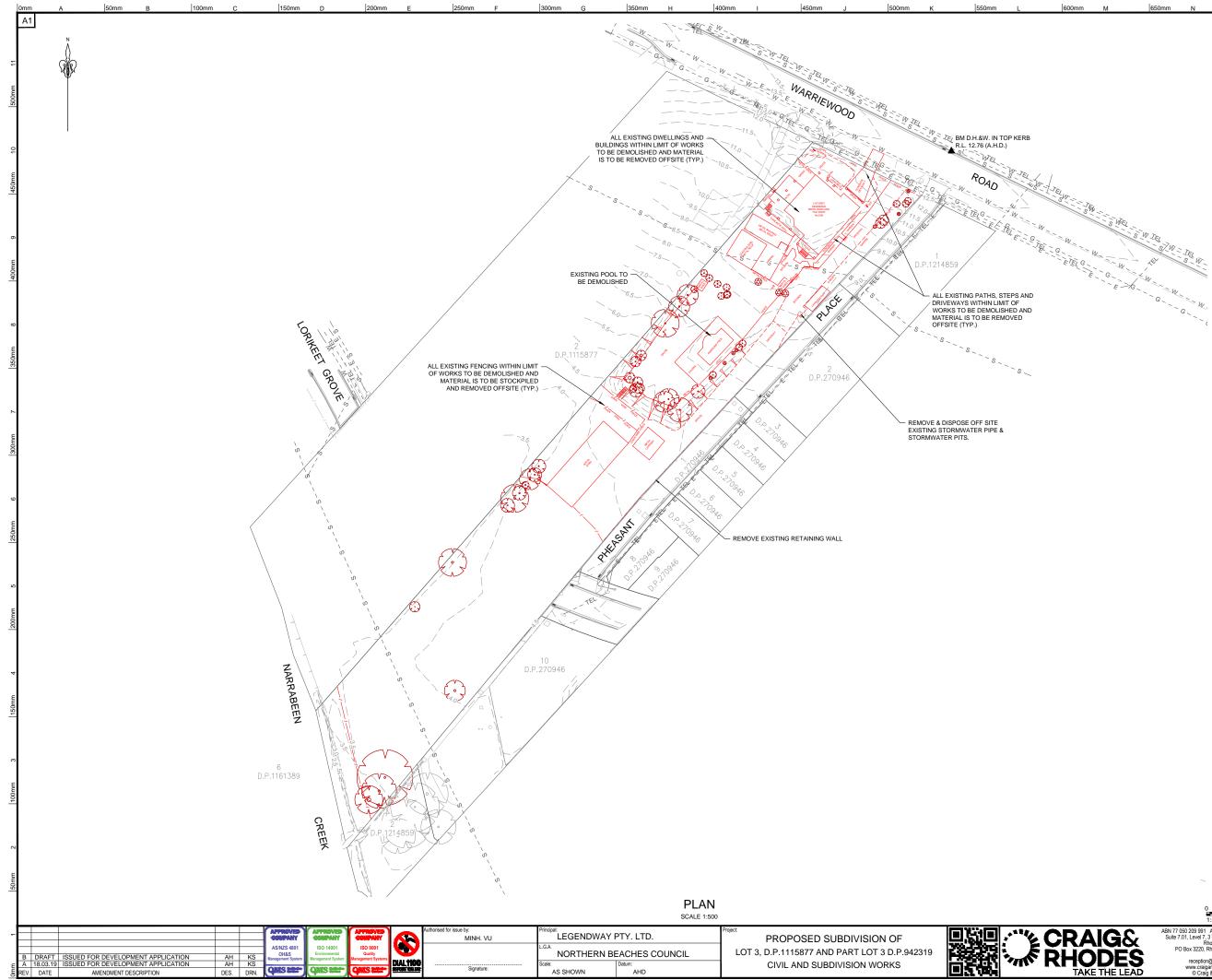


ABN 77 050 209 991 ACN 050 209 991 Suite 7.01, Level 7, 3 Rider Boulevard, Rhodes, NSW, 2138 PO Box 3220, Rhodes NSW 2138 Tel. 9869-1855 reception@crhodes.com.au		GENERAL NOTES	
www.craigandrhodes.com.au	C&R Ref.	Drawing Ref.	Revision
© Craig & Rhodes Pty Ltd		076-18C-DA-0002	B





	0 <u>5 10 15 20 30 40</u> 1:500	<u>50</u> m	DEVELOPMENT APPLICATION
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LEGEND



EXISTING TREES TO BE REMAIN

EXISTING TREES TO BE REMOVED AT DIRECTION OF SUPERINTENDENT

	1:500			
	ABN 77 050 209 991 ACN 050 209 991 Suite 7.01, Level 7, 3 Rider Boulevard, Rhodes, NSW, 2138 PO Box 3220, Rhodes NSW 2138 Tel. 9869-1855 reception@crhodes.com.au		DEMOLITION PLAN	
5	www.craigandrhodes.com.au © Craig & Rhodes Pty Ltd	C&R Ref.	Drawing Ref. 076-18C-DA-0021	Revisio



700mm

750mm

CUT FILL DEPTH LEGEND				
LOWER VALUE	UPPER VALUE (m)	COLOUR		
-4.5	-5			
-4	-4.5			
-3.5	-4			
-3	-3.5			
-2.5	-3			
-2	-2.5			
-1.5	-2			
-1	-1.5			
-0.5	-1			
0	-0.5			
0	0.5			
0.5	1			
1	1.5			
1.5	2			
2	2.5			
2.5	3			
3	3.5			

CUT FILL VOLUMES:

CUT = -510m³ FILL = 3,875m³

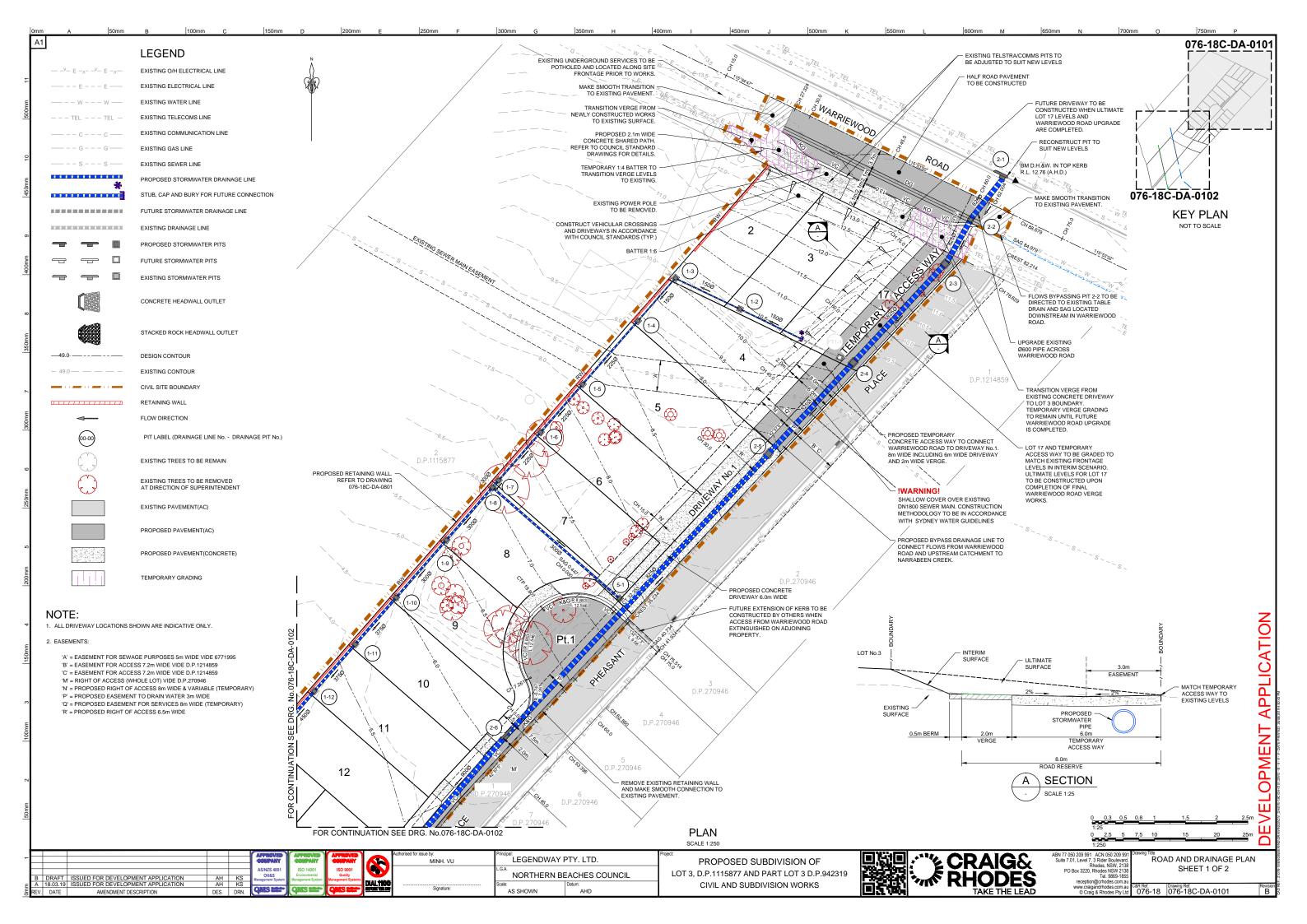
BALANCE = 3,365m³ (IMPORT)

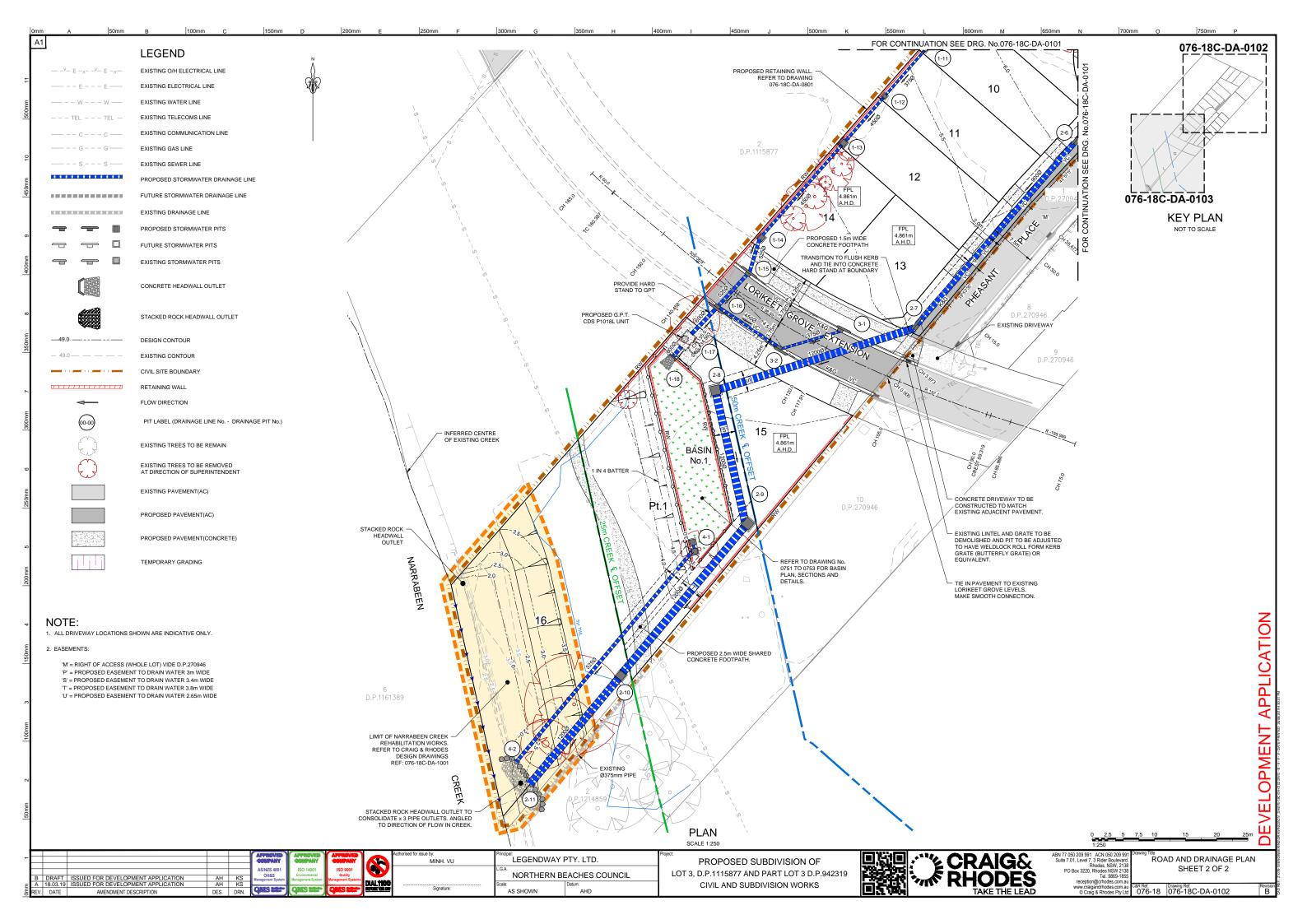
ALLOWANCES USED IN CALCULATIONS:

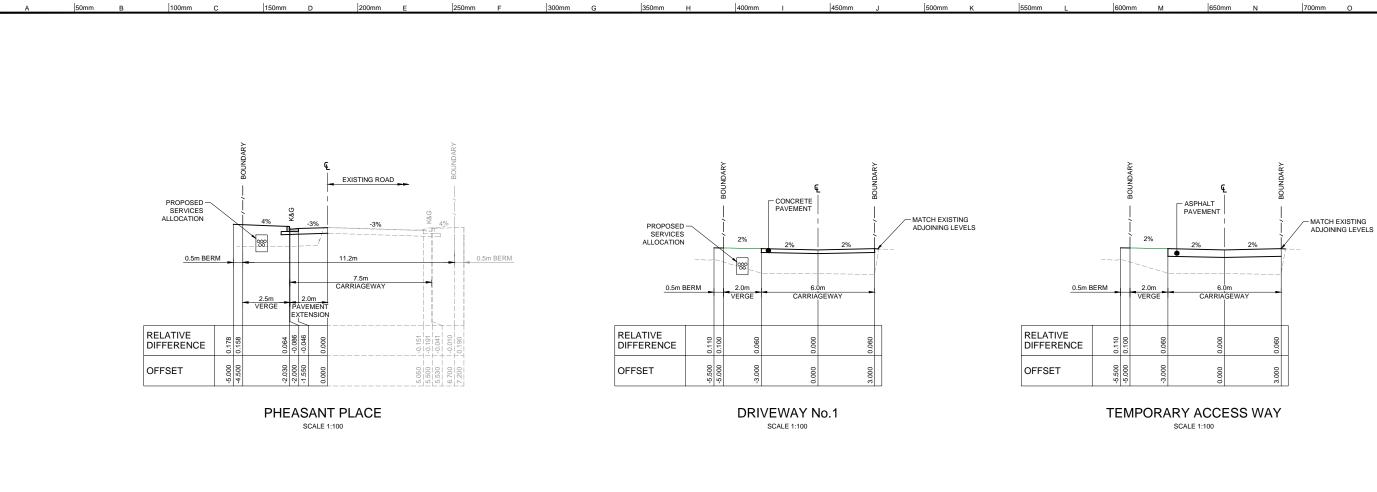
- DOES NOT ALLOW FOR BOXING DEPTH FOR ALL ROADS.
 DOES NOT ALLOW FOR STRIPPING & REPLACEMENT OF TOPSOIL.
 DOES NOT ALLOW FOR EXCAVATION OF DRAINAGE TRENCHES.
 DOES NOT ALLOW FOR ANY UNSUITABLE MATERIAL FOUND ANYWHERE ON SITE.
 VOLUMES DO NOT ALLOW FOR EARTHWORKS ASSOCIATED WITH THE NARRABEEN CREEK REHABILITATION WORKS (APPROX. 490m³ CUT.)

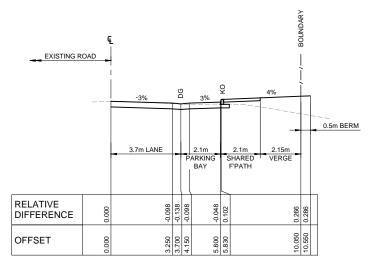
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www.c	raigand	rhodes.o rhodes.o Rhodes	com.au	C&R Re 07	ք. 6-18	Drawing Ref. 076-18C-I	DA-0051		Revision B



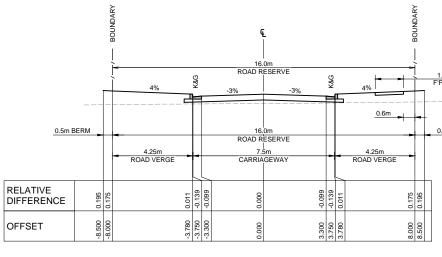






A1

WARRIEWOOD ROAD SCALE 1:100



LORIKEET GROVE SCALE 1:100

					APPROVED	APPROVED	APPROVED		Authorised for issue by:	Principal:		Project:	
-					COMPANY	COMPANY	CONTANY		MINH. VU	LEGENDWAY	PTY. LTD.	PROPOSED SUBDIVISION OF	
					AC/N/7C 4004	100 44004	100 0004			LGA			
					AS/NZS 4801	Fouringmental	Ouslity		·		EACHES COUNCIL	LOT 3. D.P.1115877 AND PART LOT 3 D.P.942319	
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۶A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS				DIALTIC		Scale:	Datum:	CIVIL AND SUBDIVISION WORKS	
ERE	V DATE	AMENDMENT DESCRIPTION	DES.	DRN.	QU/S mm	QUISTIN	QUAS TIME		Signature:	AS SHOWN	AHD		TAKE

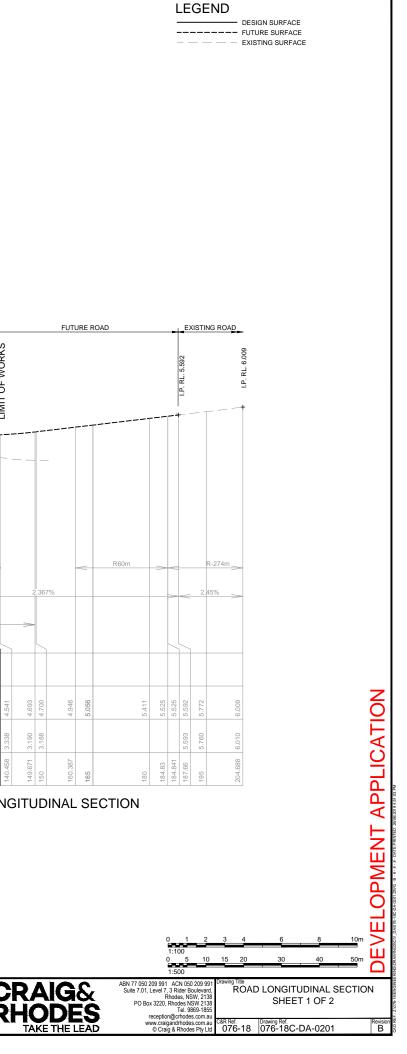


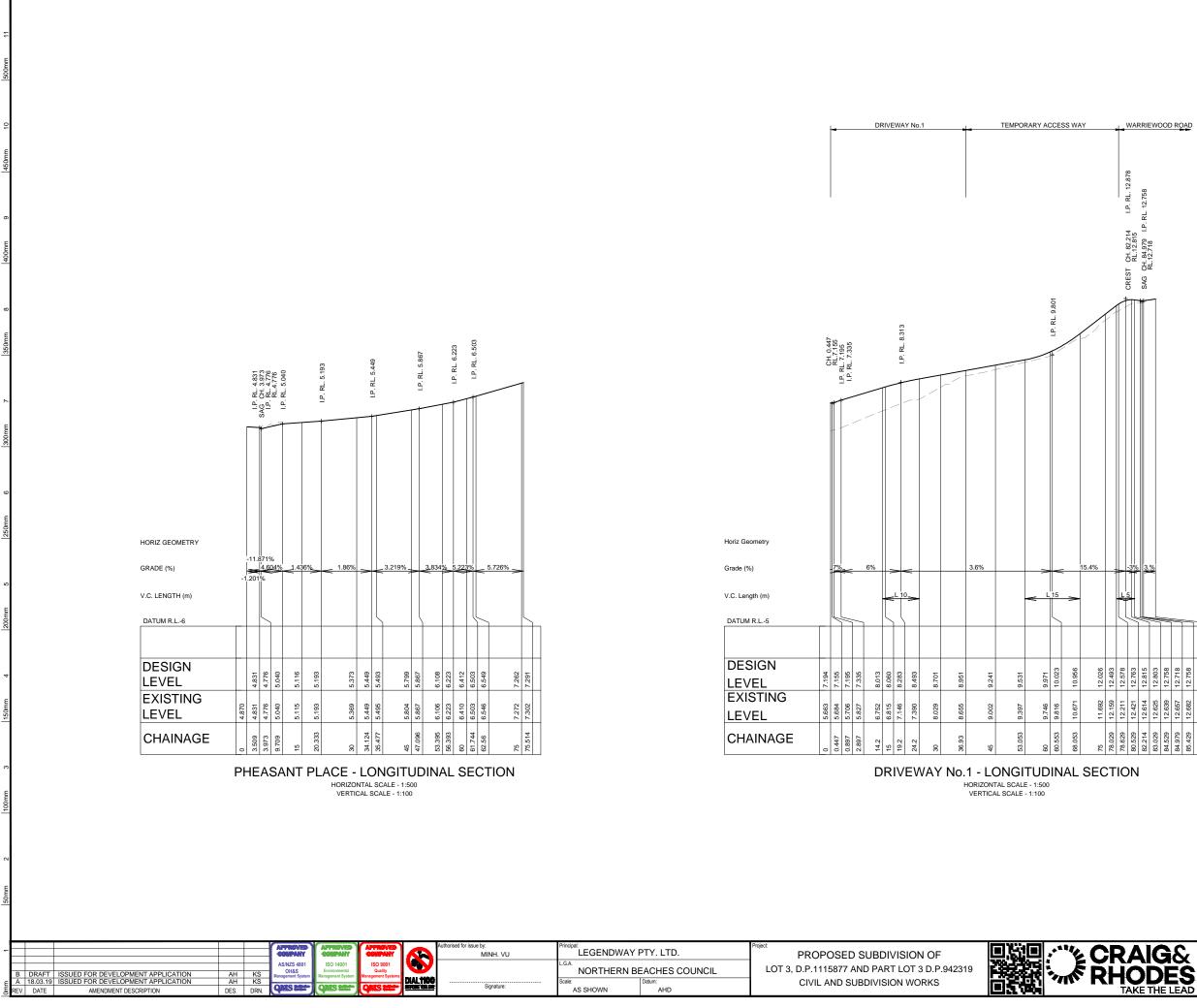
1.5m F'PATH

0.5m BERM

0 <u>1</u> 2 1:100	3_4 Drawing Title	6	8	
ABN 77 050 209 991 ACN 050 209 991 Suite 7.01, Level 7, 3 Rider Boulevard, Rhodes, NSW, 2138 PO Box 3220, Rhodes NSW 2138 Tel. 9869-1855 reception@crhodes.com.au	TYPIC	AL ROAD (CROSS SE	CTIONS
www.craigandrhodes.com.au © Craig & Rhodes Pty Ltd	C&R Ref. 076-18	Drawing Ref. 076-18C-I	DA-0151	Revision B

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LEGEND

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www.crainandrhodes.com.au. C&	&R Ref. Drawing Ref. 076-18 076-18C-DA-0202	evisio B

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DATUM RL	<u>B.00</u>		Ľ	_	Ŀ	-		L	_
DESIGN	12.846	12.749	12.709	12.749	12.798	12.948	13.112	13.132	
EXISTING	12.840	12.669	12.644	12.624	12.645	12.646	12.254	12.162	
OFFSET	0.000	3.250	3.700	4.150	5.800	5.830	10.050	10.550	

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CHAINAGE 60.000

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	DATUM RL	7.00			ų		5				Ц	-
[DESIGN	12.989		12.891	12.851	12.891	12.941	13.091		13.255	13.275	
E	EXISTING	12.981		12.856	12.834	12.813	12.839	12.839		12.370	12.197	
(OFFSET	0.000		3.250	3.700	4.150	5.800	5.830		10.050	10.550	

CHAINAGE 45.000

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DATUM RL	7.00		Ц		Ŀ	\geq		Ц	~
DESIGN	13.220	13.123	13.083	13.123	13.172	13.322	13.486	13.506	
EXISTING	13.226	13.104	13.078	13.053	13.063	13.063	12.415	12.238	
OFFSET	0.000	3.250	3.700	4.150	5.800	5.830	10.050	10.550	

CHAINAGE 30.000

		-3%					4%	_	
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DATUM RL	B.00		l	_	ļ	_		L	
DESIGN	13.268	13.171	13.131	13.171	13.220	13.370	13.534	13.554	
EXISTING	13.273	13.149	13.124	13.098	13.108	13.108	12.527	12.402	
OFFSET	0.000	3.250	3.700	4.150	5.800	5.830	10.050	10.550	
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AS/NZS 4801 OH&S

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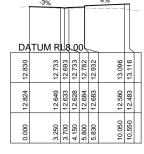
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DRAFT ISSUED FOR DEVELOPMENT APPLICATION 18.03.19 ISSUED FOR DEVELOPMENT APPLICATION

DATE

AMENDMENT DESCRIPTION

CHAINAGE 27.000



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CHAINAGE 62.000

400m

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DATUM RL	1.00	L			_			Ĺ	_	
DESIGN	4.718	4.698	4.534	4.384	4.424	4.523	4.424	4.384	4.534	4.698
EXISTING	3.370	3.369	3.360	3.360	3.360	3.353	3.368	3.374	3.373	3.349
OFFSET	-8.500	-8.000	-3.780	-3.750	-3.300	0.000	3.300	3.750	3.780	8.000

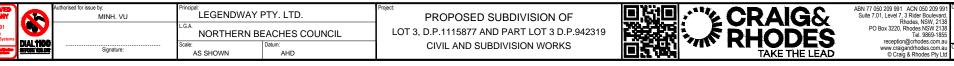
CHAINAGE 138.000

			4%	~	-3	8%	-3%	_		4%	-
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DATUM RL-	1.00	Ц		Ц	\sim			L	\sim		l
DESIGN	4.709	4.689	4.525	4.375	4.415	4.514	4.415	4.375	4.525	4.689	4.709
EXISTING	3.846	3.845	3.840	3.840	3.839	3.834	3.855	3.860	3.860	3.908	3.914
OFFSET	-8.500	-8.000	-3.780	-3.750	-3.300	000.0	3.300	3.750	3.780	8.000	8.500

CHAINAGE 135.000

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DATUM RL	0.00	L		Ц	_			Ļ	_		L
DESIGN	4.858	4.838	4.674	4.524	4.564	4.663	4.564	4.524	4.674	4.838	010 1
EXISTING	4.144	4.144	4.145	4.145	4.144	4.136	4.130	4.131	4.131	4.186	1 1 1 1
OFFSET	-8.500	-8.000	-3.780	-3.750	-3.300	0.000	3.300	3.750	3.780	8.000	

CHAINAGE 120.000



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DESIGN SURFACE





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www.craigandrhodes.com.au © Craig & Rhodes Pty Ltd	C&R Ref. Drawing Ref.

500mm					
۳ 10					
450mm	DESIGN 8280 9 920 9 940 9 <				
σ	EXISTING 3.300 4.780 4.600 4.780 OLELSEL 0.000 5.550 5.730 4.778 0.000 4.778 0.000 5.874 6.650 5.749 5.749 0.000 5.748				
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7 350mm 8	DATUM RL0.00 -3% DESIGN 232 2025 2325				
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100mm	CHAINAGE 9.000	CHAINAGE 60	.000		
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Somm					
-			d for issue by: MINH. VU	Principal: LEGENDWAY	PTY. LTD.
B DRAFT ISSUEI	D FOR DEVELOPMENT APPLICATION AH KS Management System	COMPANY ISO 14001 Environmental Management System		LGA. NORTHERN B	
E A 18.03.19 ISSUE	D FOR DEVELOPMENT APPLICATION AH KS AMENDMENT DESCRIPTION DES. DRN.		Signature:	Scale: AS SHOWN	Datum: AHD

200mr

A1

			2%	2%	2%	1_
DATUM RL	4.00	L				
DESIGN	8.811	8.801	8.761	8.701	8.761	
EXISTING	8.300	8.232	8.151	8.029	8.382	
OFFSET	-5.500	-5.000	-3.000	0.000	3.000	

400mm

450mm

500mm

300mm

350mm

CHAINAGE 30.000

			2%	2%	2%	_
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DATUM RL	2.00					
DESIGN	8.170	8.160	8.120	8.060	8.120	
EXISTING	7.477	7.416	6.834	6.815	6.871	
OFFSET	-5.500	-5.000	-3.000	0.000	3.000	

CHAINAGE 15.000

			2%	2%	2%	
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DATUM RL	1.00	l				
DESIGN	7.305	7.295	7.255	7.195	7.255	
EXISTING	7.207	7.009	6.135	5.706	5.766	
OFFSET	-5.500	-5.000	-3.000	0.000	3.000	
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CHAINAGE 0.900

DESIGN

OFFSET



		APPROVED COMPANY	APPROVED COMPANY	APPROVED COMPANY		Authorised for issue by: MINH. VU	Principal: LEGENDWAY PTY. LTD.	Project: PROPOSED SUBDIVISION OF	
 AH	KS	AS/NZS 4801 OH&S Management System	ISO 14001 Environmental Management System	ISO 9001 Quality Management Systems	$ \odot $		NORTHERN BEACHES COUNCIL	LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319	
 AH DES.	KS DRN.		QMS ###	QWS ##	DIAL TICC	Signature:	Scale: Datum: AS SHOWN AHD	CIVIL AND SUBDIVISION WORKS	

DESIGN

EXISTING

OFFSET

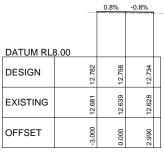
DESIGN EXISTING

EXISTING

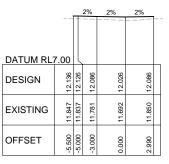
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LEGEND

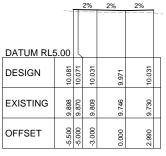
DESIGN SURFACE



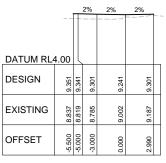
CHAINAGE 84.529



CHAINAGE 75.000

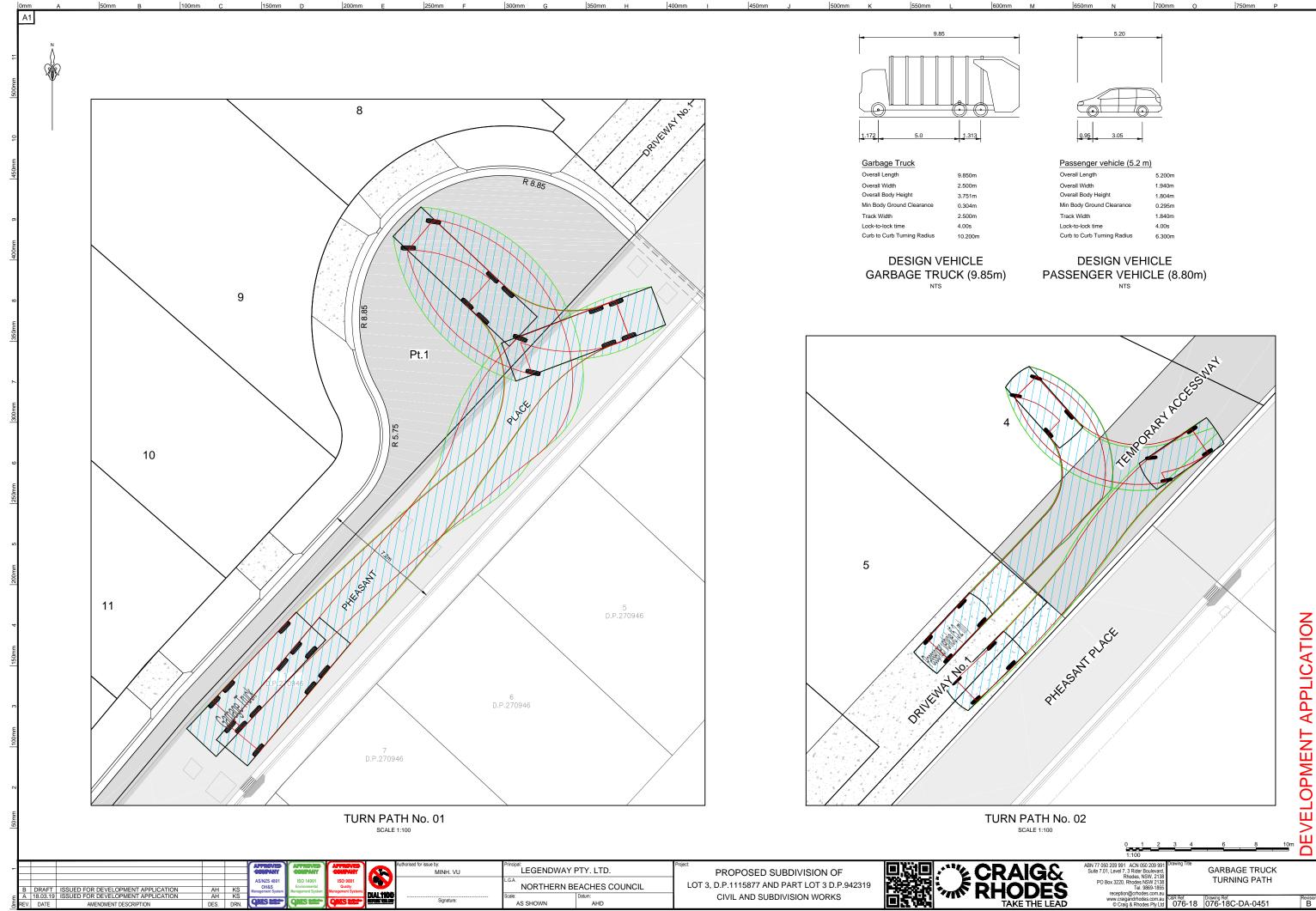


CHAINAGE 60.000

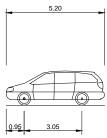


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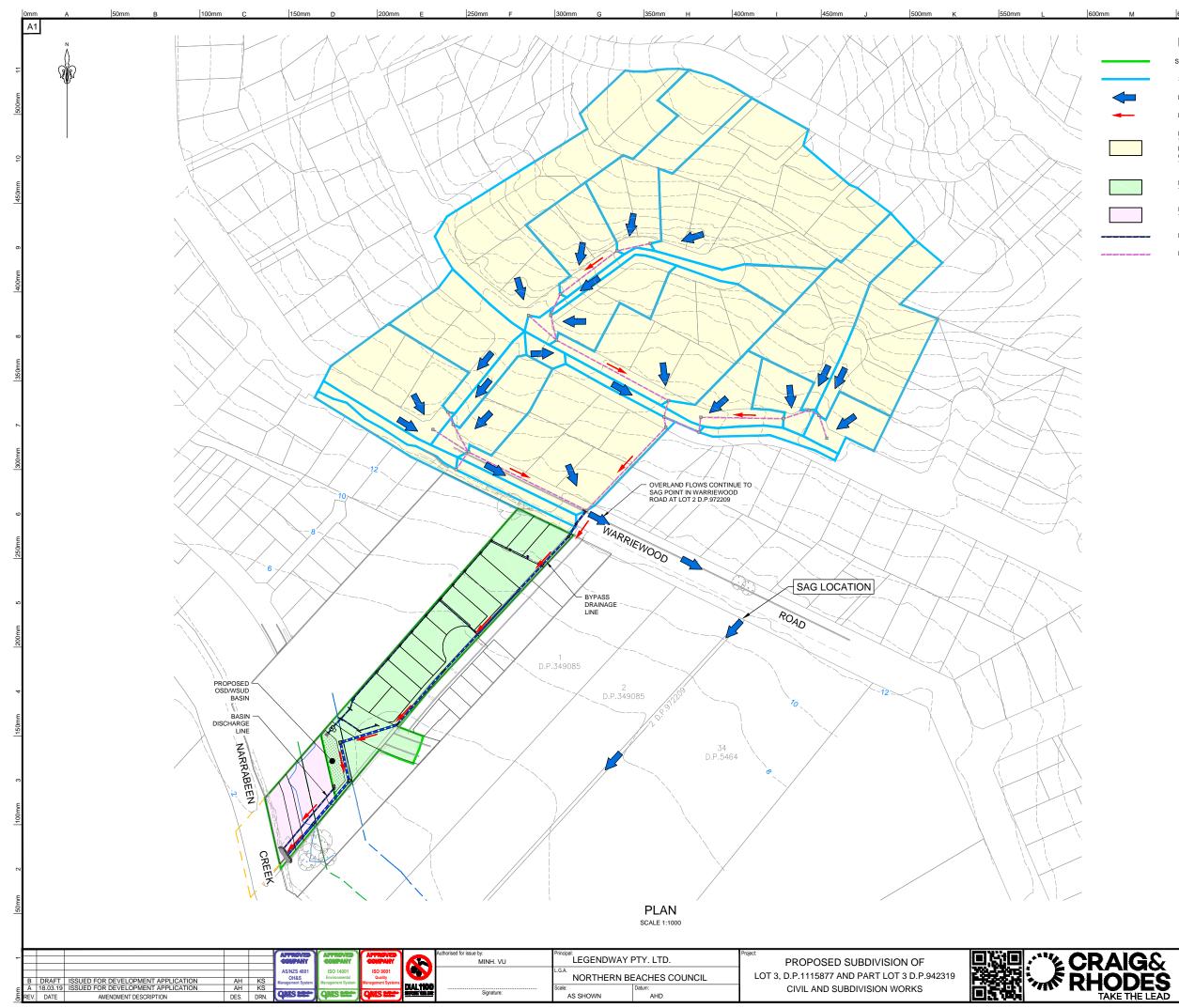
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0 0 1 0	8.819	8.785	9.002	9.187									Ž
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Passenger vehicle (5.2 m)	
Overall Length	5.200
Overall Width	1.940
Overall Body Height	1.804
Min Body Ground Clearance	0.295
Track Width	1.840
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.300



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LEGEND

STORMWATER DRAINAGE CATCHMENT BOUNDARY (INTERNAL)

STORMWATER DRAINAGE CATCHMENT BOUNDARY (EXTERNAL)

DIRECTION OF OVERLAND FLOW

DIRECTION OF DRAINAGE PIPE SYSTEMS FLOW

EXTERNAL CATCHMENT (FLOWS IN PIPED SYSTEM ARE CARRIED THROUGH THE SUBJECT SITE VIA THE BYPASS DRAINAGE LINE RUNNING ALONG EASTERN BOUNDARY. OVERLAND FLOWS BYPASS THE SUBJECT SITE AND ARE CONVEYED OVERLAND IN WARRIEWOOD ROAD). TOTAL CATCHMENT AREA = 5.236HA

INTERNAL CATCHMENT (DISCHARGE TO OSD/WSUD BASIN) TOTAL CATCHMENT AREA = 0.592HA

INTERNAL CATCHMENT BYPASS (DISCHARGE DIRECT TO NARRABEEN CREEK) TOTAL CATCHMENT AREA = 0.147HA

PROPOSED STORMWATER DRAINAGE LINE

EXISTING DRAINAGE LINE

	0 10	20	30	40	60	80	<u>100</u> m	DEVELOPMENT AP
PO Box 3220,	3 Rider Bo thodes, NSV Rhodes NS	ulevard, N, 2138 W 2138 59-1855	Drawing	EXTI	ERNAL CA	TCHMEN	IT PLAN	
www.craig	gandrhodes g & Rhodes	.com.au	C&R R∉ 07	։ք 6-18	Drawing Ref. 076-18C-	DA-0701		B

PLICATION



LEGEND

STORMWATER DRAINAGE CATCHMENT BOUNDARY (INTERNAL)

STORMWATER DRAINAGE CATCHMENT BOUNDARY (EXTERNAL)

STORMWATER DRAINAGE CATCHMENT LABEL & AREA

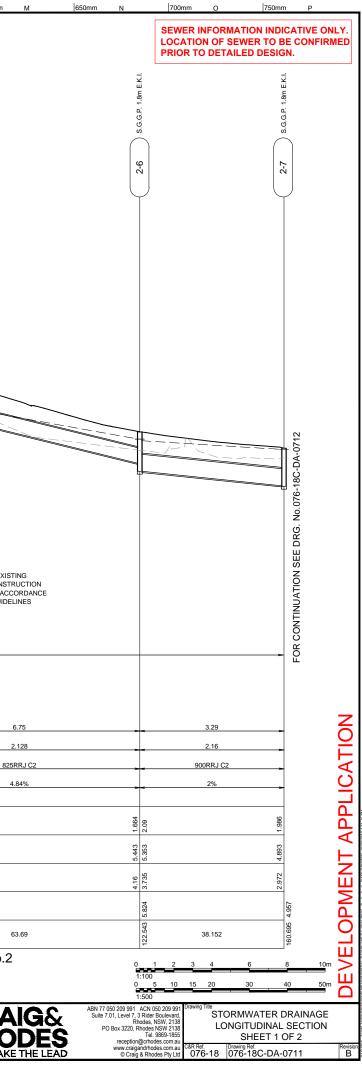
DIRECTION OF FLOW

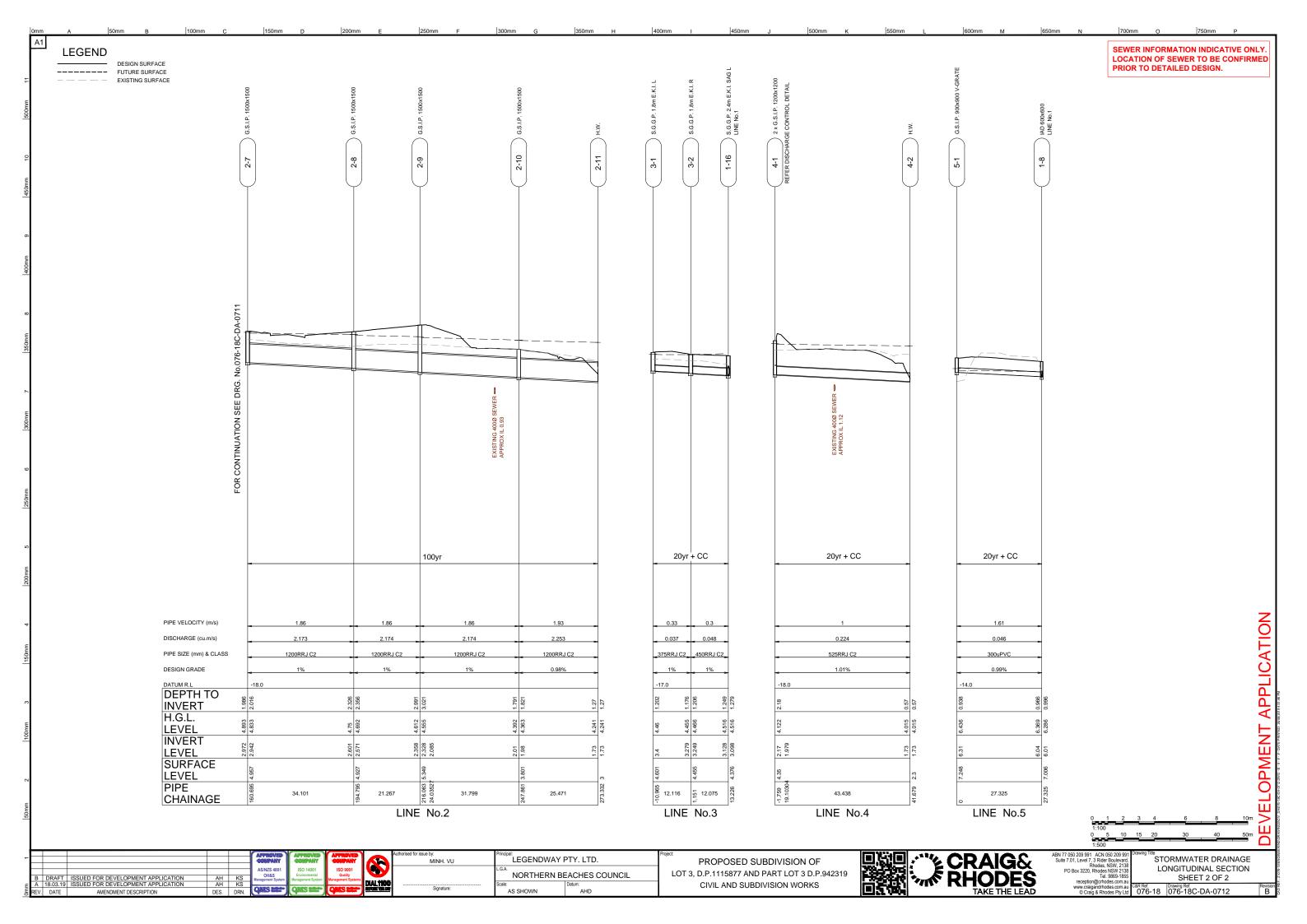
Name	Impervious Area (ha)	Total Area (ha)	Impervious %
C 1\2	0.0131	0.0235	56%
C 1\3	0.0131	0.0235	56%
C 1\4	0.01675	0.0292	57%
C 1\5	0.0151	0.0316	48%
C 1\6	0.01565	0.0236	66%
C 1\7	0.0153	0.0233	66%
C 1\9	0.0137	0.0229	60%
C 1\10	0.0143	0.0237	60%
C 1\11	0.0153	0.0256	60%
C 1\12	0.015	0.0253	59%
C 1\13	0.01495	0.0254	59%
C 1\14	0.016	0.0255	63%
C 1\15	0.0256	0.043	60%
C 1\16	0.0256	0.043	60%
C 2\6	0.0245	0.0303	81%
C 2\7	0.01	0.0179	56%
C 2\10	0.0095	0.1545	6%
C 3\1	0.0161	0.0196	82%
C 3\2	0.0145	0.0272	53%
C 4\1	0.002125	0.0425	5%
C 5\1	0.0475	0.0777	61%

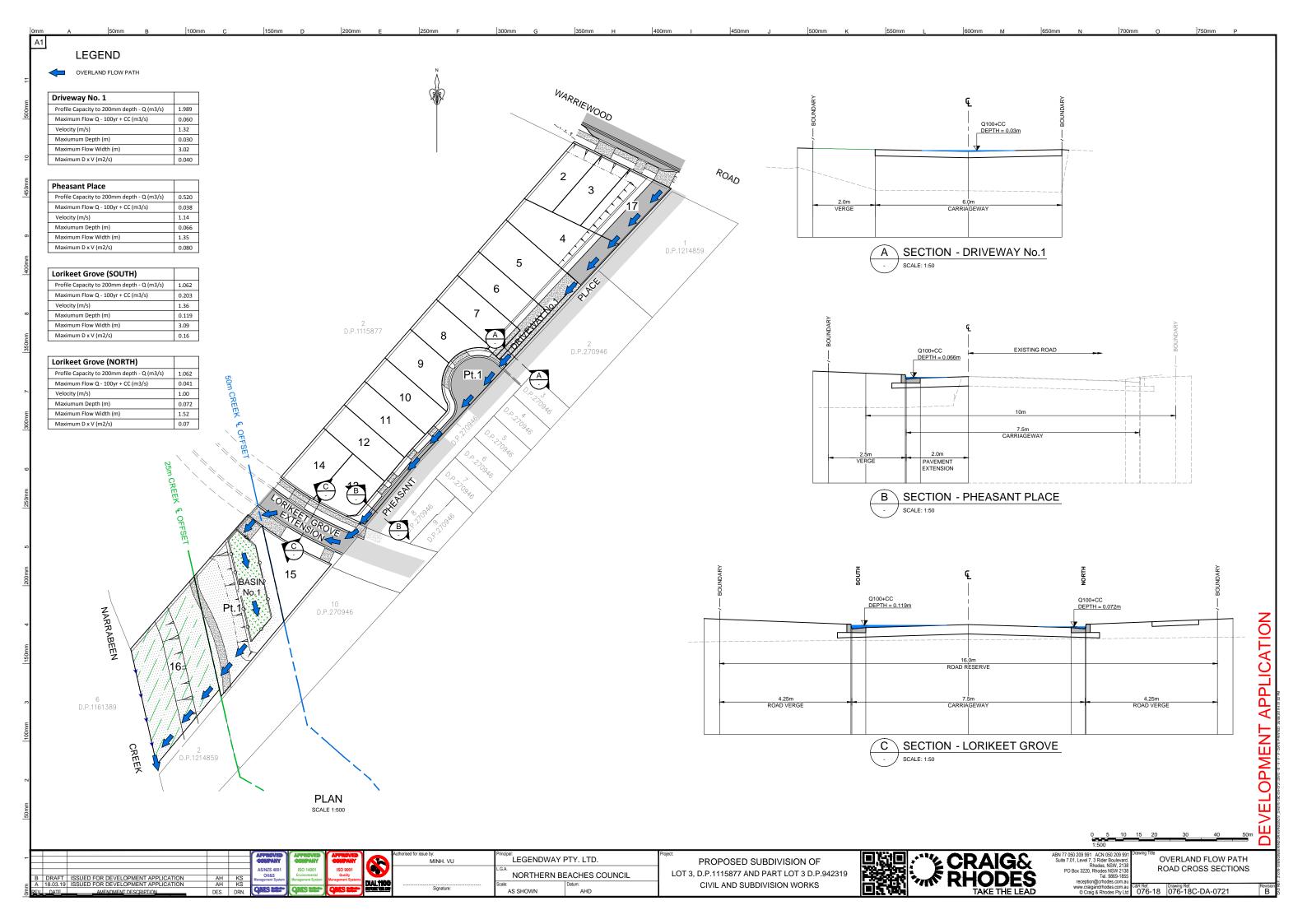
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ABN 77 050 209 991 ACN 050 209 991 Suite 7.01, Level 7, 3 Rider Boulevard, Rhodes, NSW, 2138 PO Box 3220, Rhodes NSW 2138 Tel. 9969-1855 reception@chodes.com.au	Drawing Title INTE	RNAL CATCHMENT	PLAN
www.craigandrhodes.com.au © Craig & Rhodes Pty Ltd	C&R Ref. 076-18	Drawing Ref. 076-18C-DA-0702	Revi

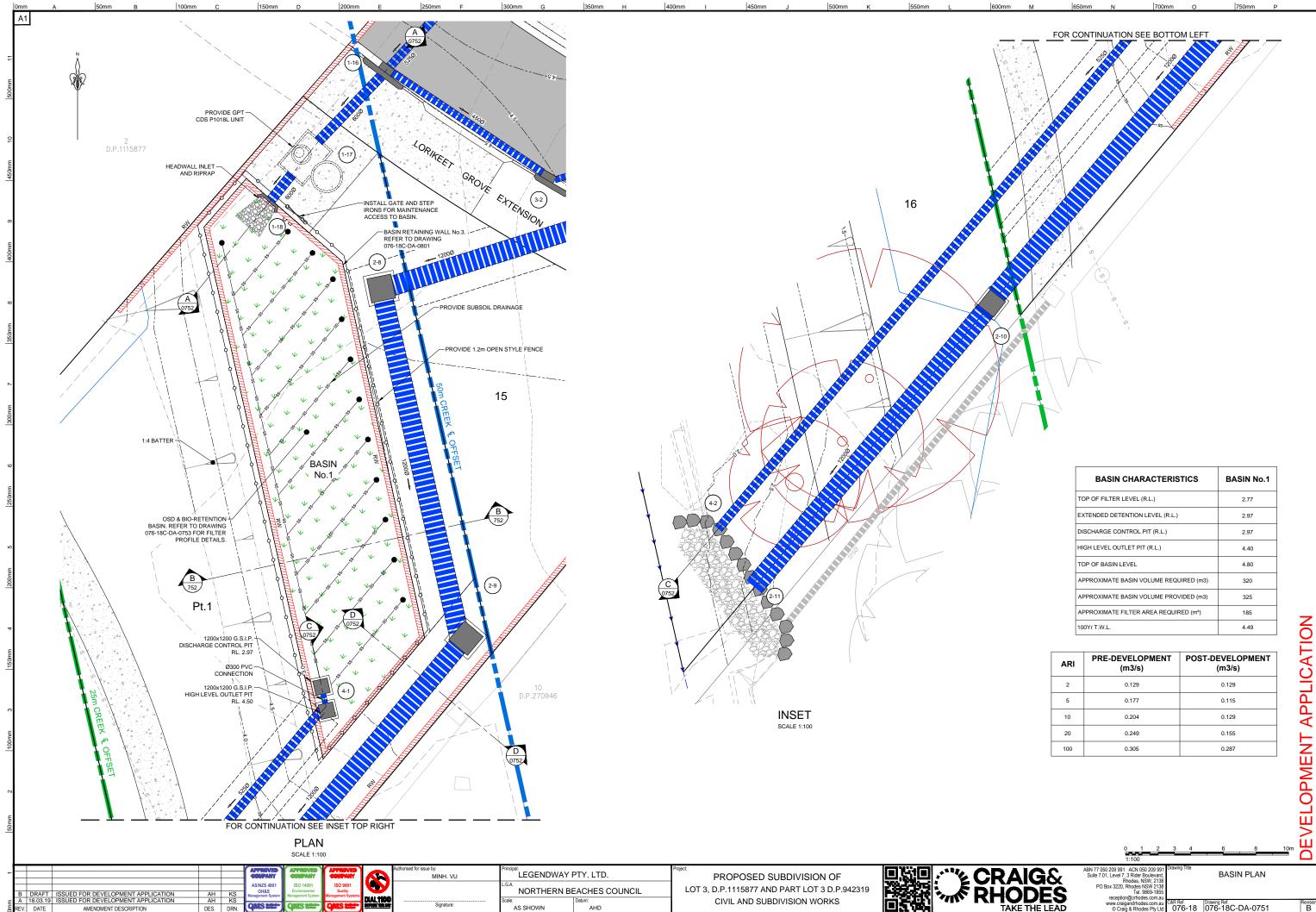
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nm A	50mm	В	100mm	С	150mr	n D	200mr	m E	250	mm F		300mm	G	350mm	н	400mm	I	450r	nm J	500	Imm K	55	Omm L	600mm
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	-							20yr + CC									-							100yr
	- 0	1.51	4.03	2.44	3.08	3.15	TT	<u>.44 3.43</u>	TT		1.46	1.56	- 1.19	T	T T	- 1.02	_	3.68	3.92	< <u>9.95</u>		5.84	+	
DISCHARGE (cu.m/s) PIPE SIZE (mm) & CLAS	= 0 SS 150uPVC	0.018 150uPVC	0.036 150uPVQ	0.054 225uPVC	0.075 225uPVC	0.093	T T	168 0.183	T 1		0.232	0.248 450RRJ C2	525RR	Т	0.297	0.297		2.032 _	2.128 825RRJ C2	2.128 825RRJ C2		2.128 825RRJ C2	+	
DESIGN GRADE	2.1%	2.26%	12.67%	4.37%	4.68%	5.07%	T T	59% 4.09%	T 1	- T	1.9%	1.69%	1.13		1%	1%		1.02%	1%	11.49%		3.05%		
DATUM R.L	-14.0										~~					~ ~	-	4.0			**			
DEPTH TO	669	0.781	0.807	0.756	0.858	0.862	0.996	0.896	0.898 1.348 1.324	1.364 1.314 1.424	1.413 1.443		1.395	1.135	1.249 1.279 1.754 1.778	1.784 0.525 0.525	2	1.905	2.115 2.247		.873	00	1.701	
H.G.L.																	49 1.							
LEVEL	9.88	6.692 6.692	9.375 9.375 8.276	8.218	7.447	6.949 6.949 6.47	6.367 6.367 6.369 6.286	5.879	5.33 5.251 5.234 5.134	5.044 4.906 4.852	4.736		4.578 4.546	4.514	4.516 4.516 4.534 4.534	4.534	12.149	11.853	11.501	10.£	8.696	101	2.696	
INVERT LEVEL	9.88 9.88 9.630	9.6	9.34	8.1	7.32	6.84 6.8	6.17 6.17 6.1 6.01	5.57	5.1 4.65 4.3	4.26 4.01 3.9	3.71		3.34	3.24	3.128 3.098 3.024 3	2.994 2.97 2.97	10.89	10.8	10.59	10.47	7.98 7.95 7.712	10.1	7.24	
SURFACE	549	.381	10.107	356	8.178	362	7.104 6	166	888	5.624 4	5.123		735	375		3.495	59		705	.754	323			
LEVEL PIPE	10.	9	-	155 8.6		33 7.6		.9 6.4		N .	0	2	43 4.7	i62 4.3			12		12	5	18 9.8 76		53 8.941	
CHAINAGE	11.5 o	ທຸ 11.512 ⊊	ັດ 9.232 ຕິ	32.243 8.72455 5.61	82.243 10.25	ອີ້ 10.25 ເຊ	2.001 8 8 8 8 8		91	111.2 111.2	10.003	20.101	141 ^{.343}	9 ³⁵ .7.548	11. 199 199	162.543 164.901	0	8.789	68.371 ∞	9. 21.678 21.678	38.838 7.91276	20.015	58.853	
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					APPROVE				Authorised for issue I			Principal:		T)/ 1		Projec								
					AS/NZS 480	COMPA				MINH. VU		LGA	NDWAY P				PROF LOT 3, D.P.11							<u>E CR</u>
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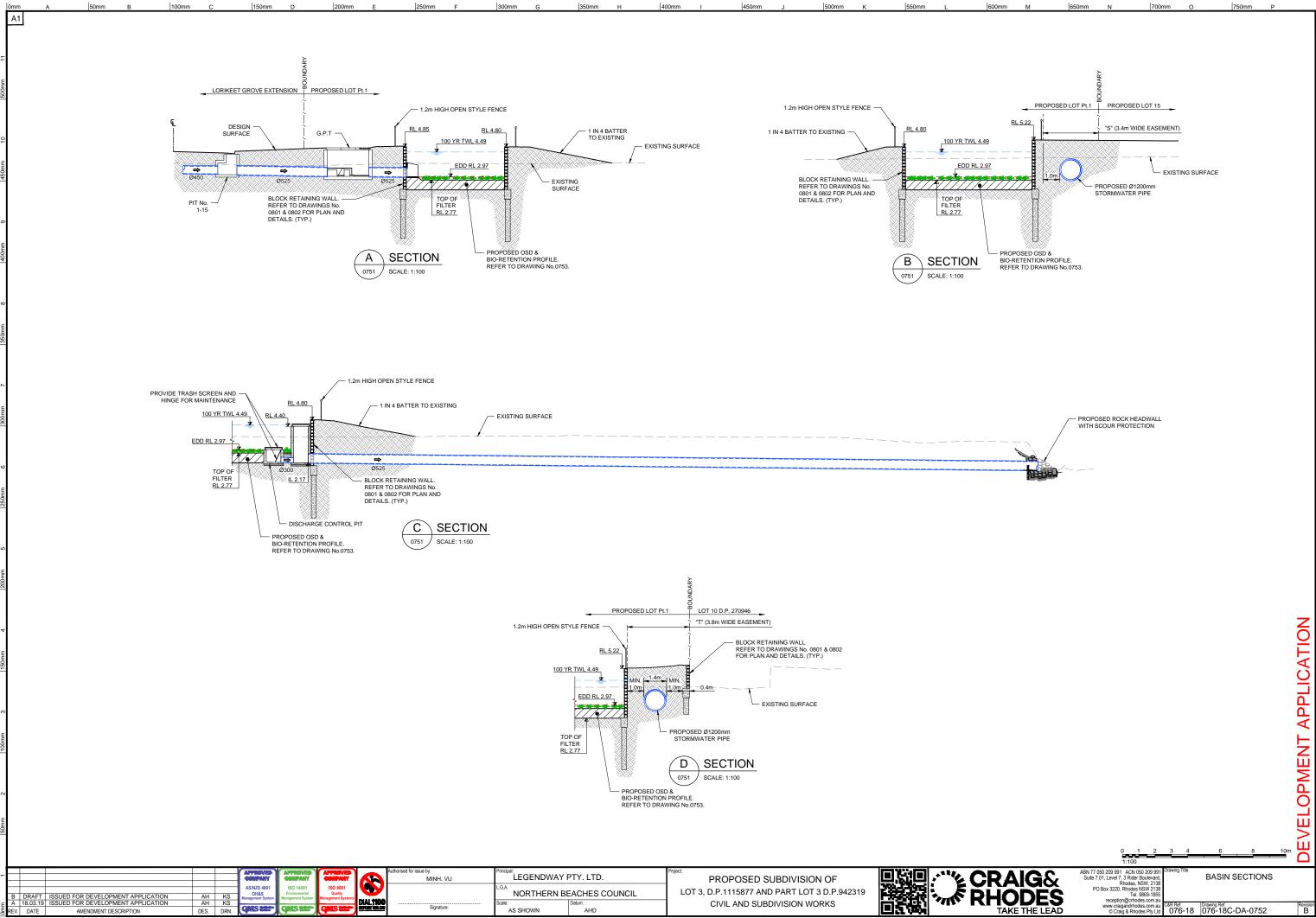


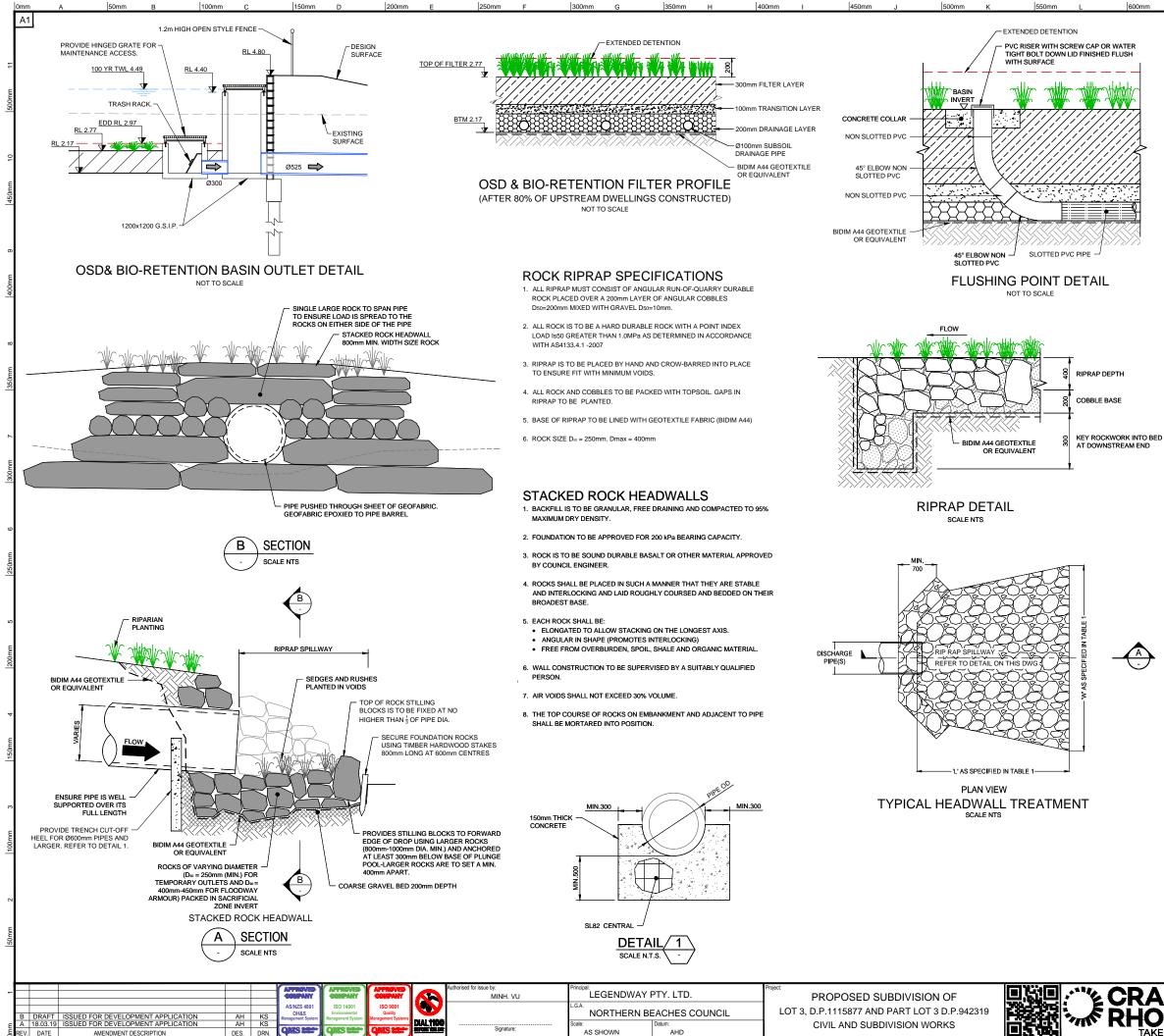


BASIN CHARACTERISTICS	BASIN No.1
TOP OF FILTER LEVEL (R.L.)	2.77
EXTENDED DETENTION LEVEL (R.L.)	2.97
DISCHARGE CONTROL PIT (R.L.)	2.97
HIGH LEVEL OUTLET PIT (R.L.)	4.40
TOP OF BASIN LEVEL	4.80
APPROXIMATE BASIN VOLUME REQUIRED (m3)	320
APPROXIMATE BASIN VOLUME PROVIDED (m3)	325
APPROXIMATE FILTER AREA REQUIRED (m ²)	185
100Yr T.W.L.	4.49

ARI	PRE-DEVELOPMENT (m3/s)	POST-DEVELOPMENT (m3/s)
2	0.129	0.129
5	0.177	0.115
10	0.204	0.129
20	0.249	0.155
100	0.305	0.287

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AIG& DES KE THE LEAD	ABN 77 050 209 991 ACN 050 209 Suite 7.01, Level 7, 3 Rider Boulev Rhodes, NSW, 2 PO Box 3220, Rhodes NSW 2 Tel. 9869-1 reception@crhodes.com www.craigandhodes.com © Craig & Rhodes Phy

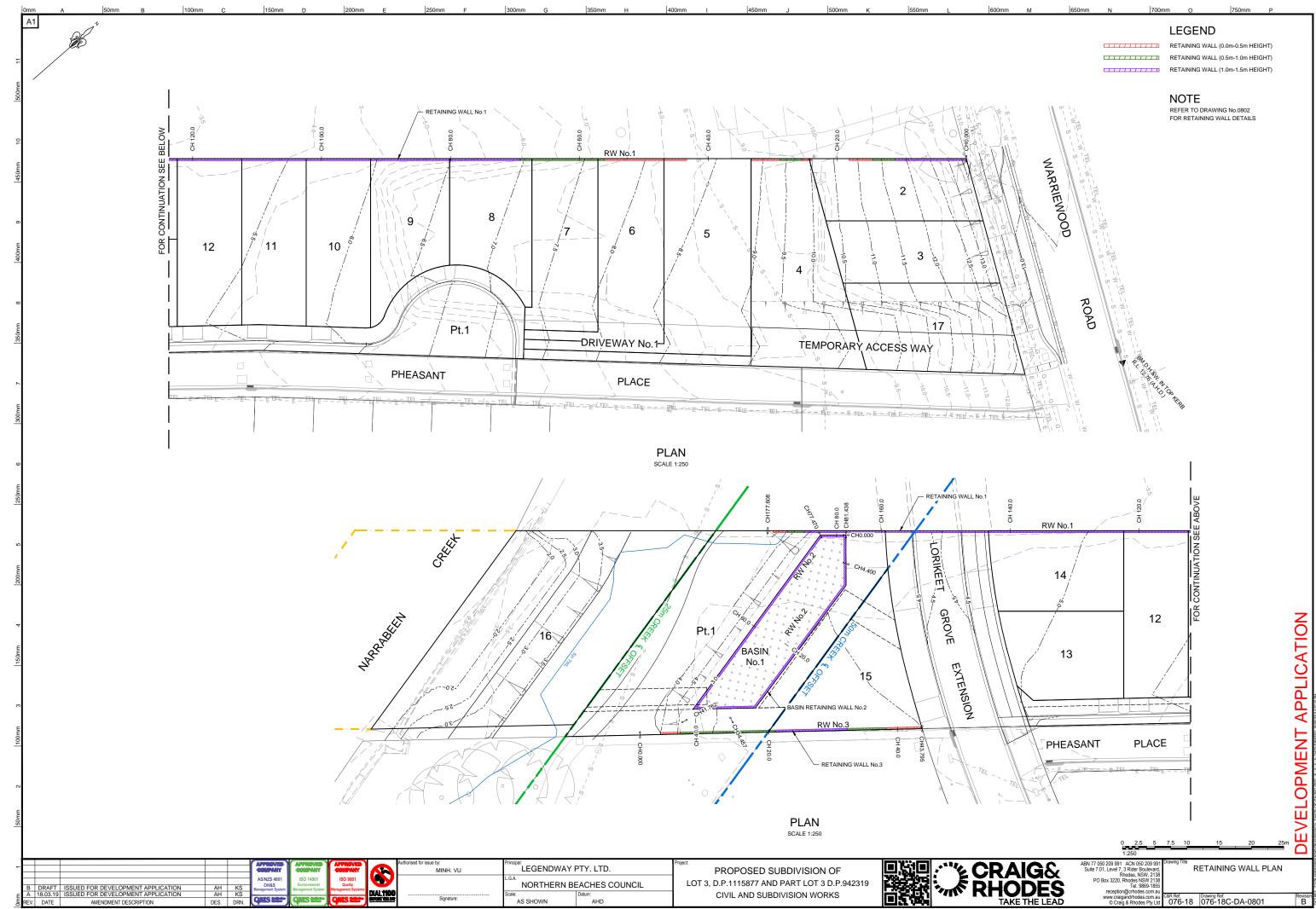




DIODETENTION NOTEO

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2.	WHERE ROCK IS EXPOSED DURING EXCAVATION, THE CONTRACTOR SHALL CEASE EXCAVATION AT THIS LOCATION AND CONTACT THE SUPERINTENDENT WHO WILL THEN ADVISE ON THE LEVEL TO WHICH THE EXCAVATION IS TAKEN.	
1.	XCAVATIONS - BASINS ALL TOPSOIL TO BE STRIPPED AND STOCKPILED FOR FUTURE USE. STRIPPED SURFACES ARE TO BE ROLLED AND INSPECTED BY A GEOTECHNICAL ENGINEER PRIOR TO CONTINUING WORKS. DEPTH OF TOPSOIL STRIPPING TO BE BETWEEN 125mm AND 200mm (TO BE CONFIRMED BY THE SUPERINTENDENT PRIOR TO CONSTRUCTION)	APPL
8.	SUBSOIL DRAINAGE PIPES WITHIN THE BIORETENTION SYSTEM ARE TO BE SLOTTED 100mm uPVC CONSISTENT WITH AS/NZS 1254. JOINTS ARE TO BE SOLVENT CEMENT GLUED AND BENDS ARE TO BE 45° TO MINIMISE BLOCKAGE.	CA
7.	MATERIAL SHALL BE INSPECTED & APPROVED BY THE SUPERINTENDENT PRIOR TO USE. RELEVANT MATERIAL SPECIFICATION SHEETS ARE TO BE PROVIDED BY THE CONTRACTOR.	
6.	WHERE DIRECTED BY THE SUPERINTENDENT THE BOTTOM OF TRENCHES OR EXCAVATIONS SHALL BE COMPACTED PRIOR TO THE PLACING OF ANY BEDDING OR CONCRETE MATERIALS. SHOULD, IN THE OPINION OF THE SUPERINTENDENT, THE FOUNDATION MATERIAL BE INCAPABLE OF EFFECTIVE COMPACTION, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROPRIATE MATERIAL	z
5.	THE CONTRACTOR SHALL, AT ITS OWN EXPENSE, DO ALL THINGS NECESSARY TO DIVERT ANY WATER INTERFERING WITH THE PROCESS OF WORKS, KEEP THE EXCAVATIONS AND TRENCHES FREE FROM WATER WHILE THE WORKS ARE IN PROGRESS AND PREVENT ANY DAMAGE TO THE WORKS BY WATER DUE TO FLOODS OR OTHER CAUSES. THE CONTRACTOR SHALL HAVE PUMPING EQUIPMENT FOR KEEPING THE EXCAVATION OR TRENCHES CONSTANTLY DEWATERDE DURING THE TIMES THE WORKS ARE IN PROGRESS. ANY WORK OR MATERIAL DAMAGED BY WATER SHALL BE MADE GOOD BY THE CONTRACTOR.	
4.	WHERE EARTHWORKS ARE REQUIRED IN THE VICINITY OF EXISTING SERVICES, THE CONTRACTOR SHALL SUPPORT ALL SERVICES DURING THE WORKS	
3.	LEVELS, WIDTHS AND BATTER SLOPES INDICATED ON THE DRAWINGS EXCAVATED MATERIAL NOT MEETING THE SPECIFICATIONS FOR FILL MATERIAL SHALL BE DISPOSED OFF SITE IN AN APPROPRIATE MANNER	
2.	PROTECTION OF PEDESTRIANS, VEHICLES, ANIMALS & THE PUBLIC ALL EARTHWORKS SHALL BE CARRIED OUT IN THE LOCATIONS SHOWN AND TO THE	
E. 1.	ARTHWORKS - BASINS THE CONTRACTOR SHALL PROVIDE PROPER FENCING, GUARDING & LIGHTING AND OBSERVATION OF ALL EARTHWORKS, TEMPORARY ROADWAYS, FOOTWAYS, GUARDS & FENCES AS MAY BE RENDERED NECESSARY FOR THE ACCOMMODATION AND	
7.	BY DESIGN 2010). BASIN/FILTER MEDIA TO BE CONSTRUCTED WHEN 80% OF DWELLINGS ARE CONSTRUCTED.	
6.	I. LARGE PARTICLES - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' ESTABLISHMENT OF BIO-RETENTION SYSTEM IN ACCORDANCE WITH CONSTRUCTION & ESTABLISHMENT GUIDELINES: SWALES, BIO-RETENTION SYSTEMS & WETLANDS (WATER	
	1 OR 2 j. PERMEABILITY - SATURATED HYDRAULIC CONDUCTIVITY 80mm/hr ±20% AT 90% STANDARD COMPACTION k. TEXTURE - SANDY LOAM LUDGE DADTED IS AN OPERATIONAL COLL AND SOULD LENDS:	
	 d. pH - 5.5 - 7.5 (pH 1:5 IN WATER) e. ELECTRICAL CONDUCTIVITY (EC) AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' < 1.20 dS/M f. PHOSPHOROUS - < 5 mg/kg g. NITROGEN DRAWDOWN (NDI) AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' > 0.5 NDI 150 h. TOXICITY - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' i. DISPERSIBILITY - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' CATEGORY 	
	REQUIREMENTS AND THE FOLLOWING: a. BULK DENSITY - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' > 0.7 kg/L b. ORGANIC MATTER CONTENT - BETWEN 3 AND 10% c. WETTABLITY - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' > 5 mm MIN	
5.	THE COMBINED PERCENTAGE OF CLAY & SILT MAY NOT EXCEED 12% UNDER ANY CIRCUMSTANCES. FILTER MEDIA IS TO COMPLY WITH A.S.4419 (LATEST EDITION), INCLUDING TESTING	
	 SILT 4-8% (0.002-0.05mm) VERY FINE SAND 5-10% (0.05-0.1mm) FINE SAND 10-30% (0.1-0.5mm) MEDIUM SAND 40-70% (0.5-1.0mm) COARSE SAND 7-10% (1.0-2.0mm) FINE GRAVEL <3% (2.0-3.4mm) 	
3.	FILTER MEDIA PARTICLE SIZE DISTRIBUTION IS TO BE AS FOLLOWS: • CLAY 2-4% (<0.002 mm)	
2.	FILTER MEDIA SATURATED HYDRAULIC CONDUCTIVITY TO BE 180mm/hr. PERMEABILITY IS TO BE TESTED USING THE A.S.4419 (LATEST EDITION) (SOILS FOR LANDSCAPING AND GARDEN USE) METHODS (APPENDIX H)	
1.	FILTER MEDIA IS TO BE FREE OF RUBBISH AND DELETERIOUS MATERIAL AND LIGHTLY COMPACTED ONLY (TO 90% STANDARD COMPACTION)	
	1-4mm - 100% PASSING 1.0mm - 80% PASSING 0.7mm - 44% PASSING 0.5mm 8.5% PASSING	

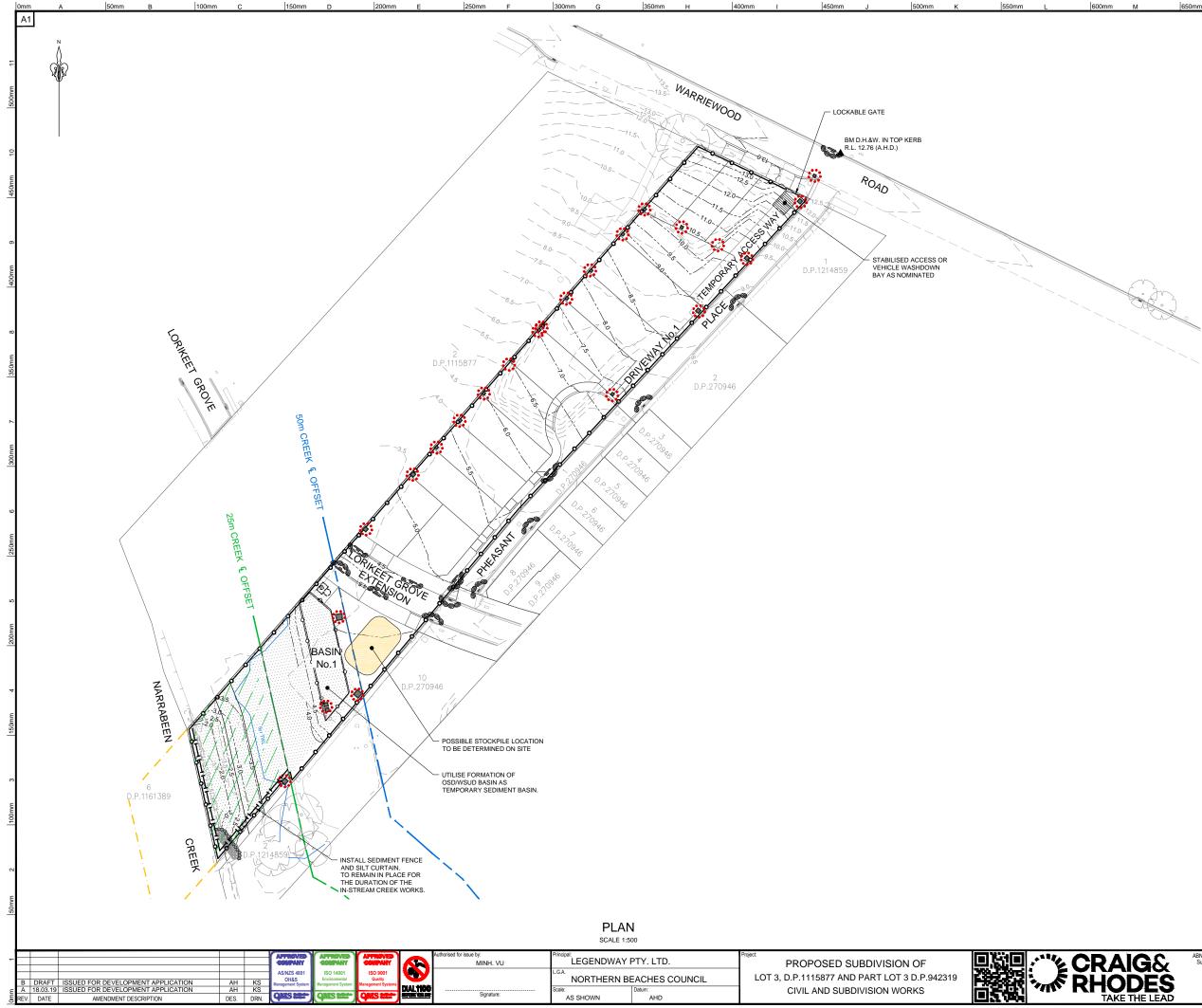
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DRAINING SILL TYP. 3. DRAIN UE METAL 3. ALL ROUND 0 0 0 0 0 0 0 0 0 0 0 0 0	SPACING AS HORIZONTAL REINFORCEMENT IN BLOCKWA TYPICAL OCK RETAINING WALL CORNER DETAILS SCALE 1:20	VER BLOCK RET BLOCK WAI)mm C 150mm D	1		100mm C 150mm D 200mm E 250mm F 300mm G 350mm H 400mm I 450mm J 500mm K 550mm L	FUNCTION OF THE PROVIDE THE
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THE LEAD	reception@crhodes.com.au www.craigandrhodes.com.au © Craig & Rhodes Pty Ltd	C&R Ref. 076-18	Drawing Ref. 076-18C-DA-0802	Revision B



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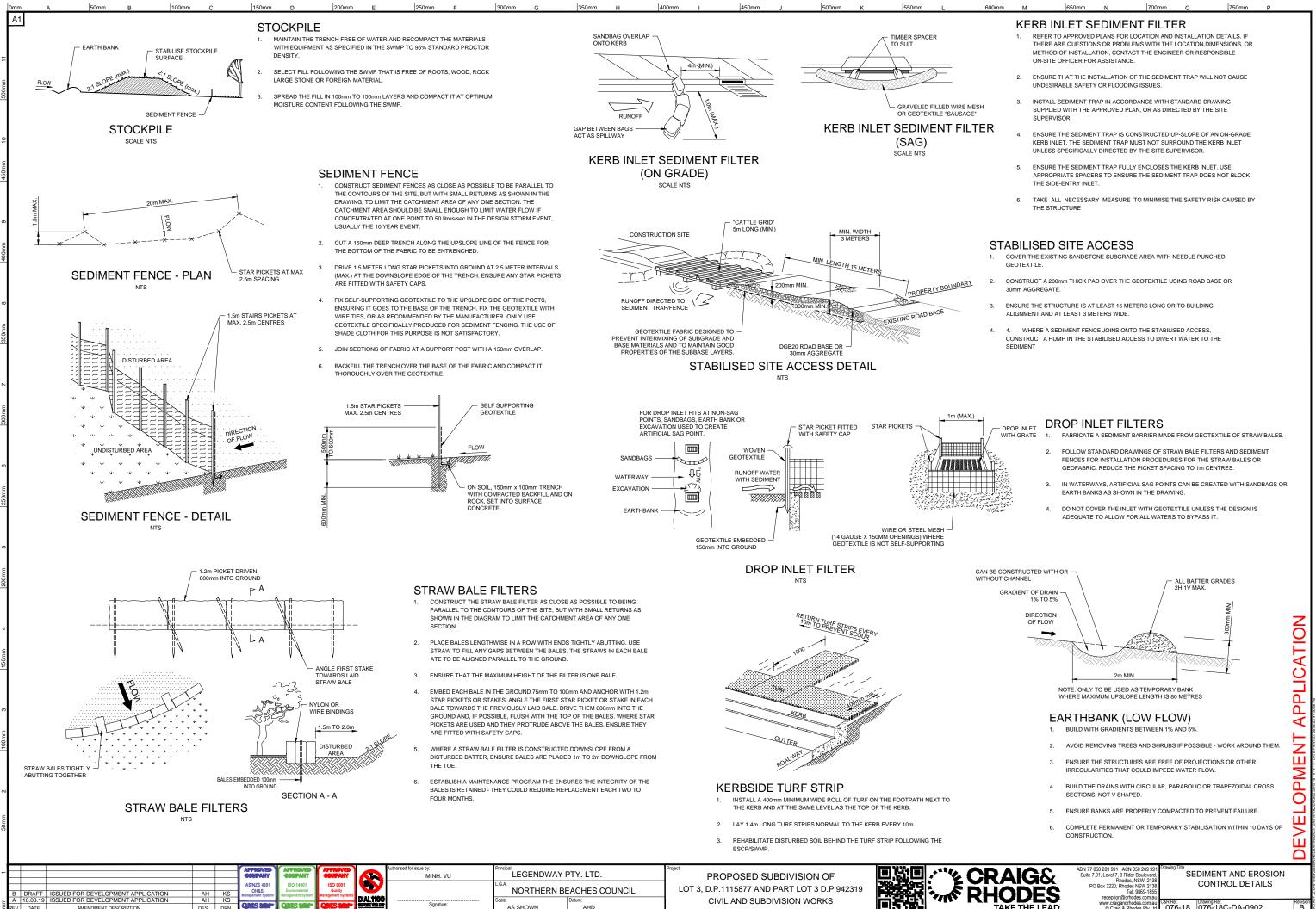


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DATE

AMENDMENT DESCRIPTION