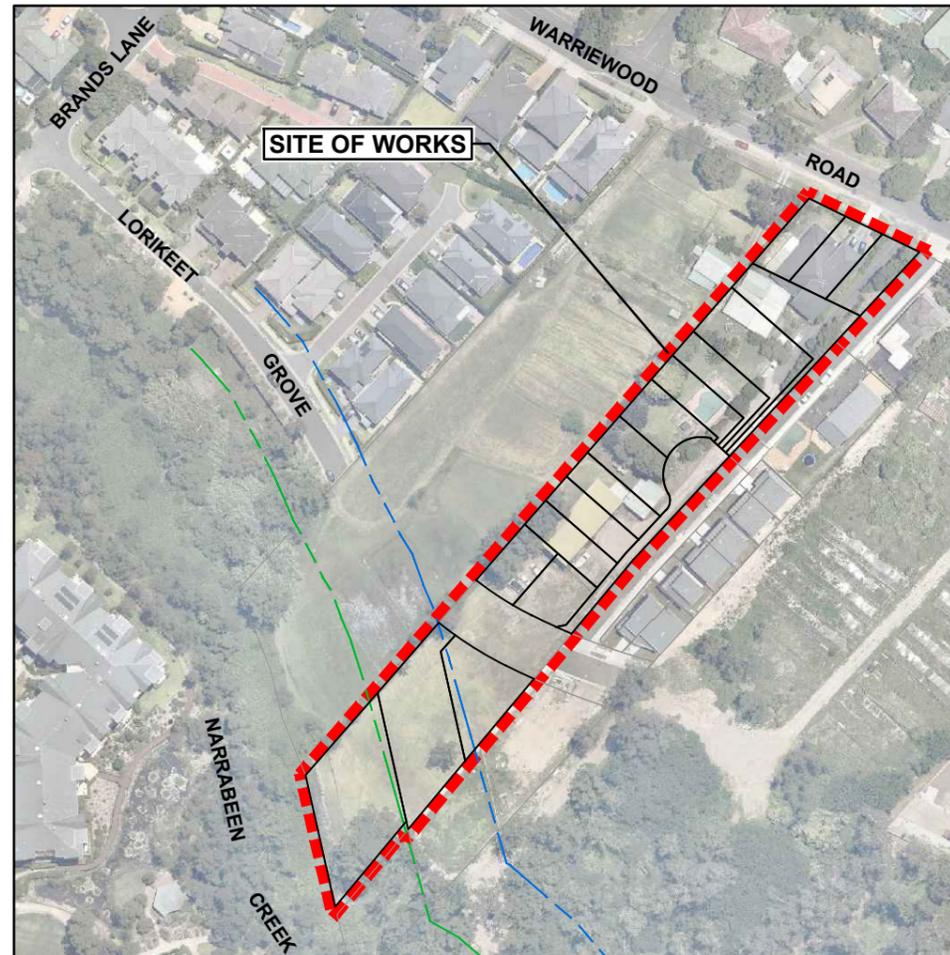


PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 53A & 53B WARRIEWOOD ROAD, WARRIEWOOD

CIVIL WORKS DEVELOPMENT APPLICATION



LOCALITY PLAN
NOT TO SCALE
(SOURCE: NEARMAP 2019)

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

DEVELOPMENT APPLICATION

REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS

Authorised for issue by:
MINH VU
Signature: _____

Principal:
LEGENDWAY PTY. LTD.
LGA:
NORTHERN BEACHES COUNCIL
Scale:
AS SHOWN
Datum:
AHD

Project:
PROPOSED SUBDIVISION OF
LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319
CIVIL AND SUBDIVISION WORKS



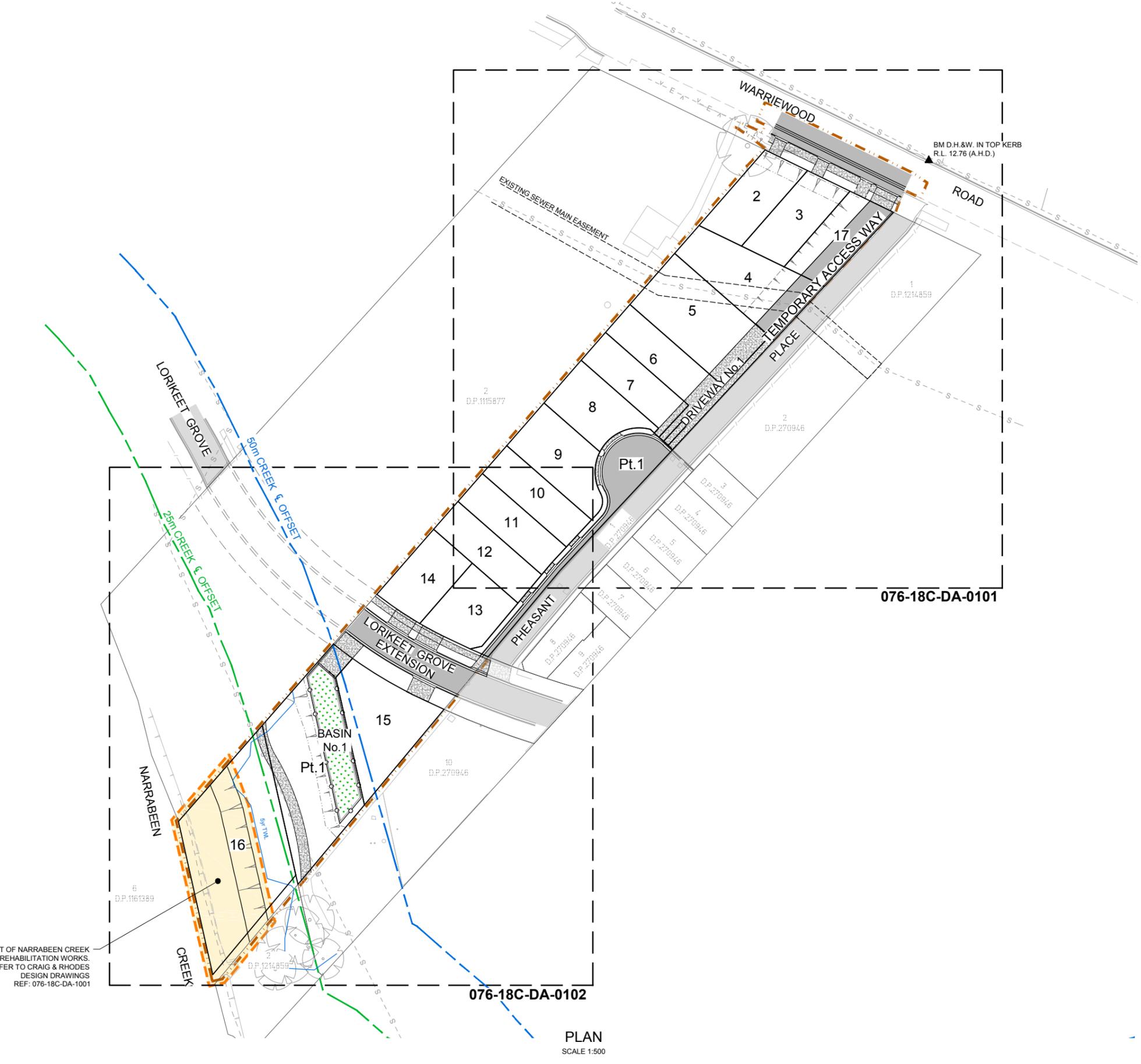
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Drawing Title	C&R Ref.	Drawing Ref.	Revision
COVER SHEET, LOCALITY PLAN AND DRAWING INDEX	076-18	076-18C-DA-0001	A

0mm	A	50mm	B	100mm	C	150mm	D	200mm	E	250mm	F	300mm	G	350mm	H	400mm	I	450mm	J	500mm	K	550mm	L	600mm	M	650mm	N	700mm	O	750mm	P													
A1	GENERAL NOTES																																											
11	<ol style="list-style-type: none"> ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH NORTHERN BEACHES COUNCIL ENGINEERING DESIGN SPECIFICATION AND ENGINEERING CONSTRUCTION SPECIFICATION. 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 WITH THE RELEVANT SERVICE PROVIDERS TO RELOCATE OR ADJUST AS FOUND NECESSARY. UTILITY ADJUSTMENTS ARE TO BE AT THE DEVELOPER'S EXPENSE. CONDUITS SHALL BE PLACED WHERE REQUIRED BY THE RELEVANT AUTHORITIES. THE CONTRACTOR SHALL NOT ENTER UPON OR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT PRIOR WRITTEN PERMISSION OF THE LAND OWNER. 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 MARKS SHOWN THUS ▲ △ ▢ SHALL BE MAINTAINED AT ALL TIMES. WHERE RETENTION IS NOT POSSIBLE THE SUPERINTENDENT SHALL BE NOTIFIED AND CONSENT RECEIVED PRIOR TO THEIR REMOVAL. BENCHMARK, SSM'S PERMANENT MARKS TO BE AHD. 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 TO BE CARRIED OUT ON SUNDAYS OR PUBLIC HOLIDAYS UNLESS OTHERWISE APPROVED BY NORTHERN BEACHES COUNCIL. PLANT, GOODS & MATERIALS SHALL NOT BE DELIVERED ON THE SITE OUTSIDE THE APPROVED HOURS OF OPERATION. 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 BEACHES COUNCIL. 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. 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 APPROVED BY THE SUPERINTENDENT. ALL SOIL AND WATER MANAGEMENT DEVICES SHALL BE INSTALLED AND APPROVED PRIOR TO WORKS PROCEEDING. ALL EROSION AND POLLUTION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD WORKING 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. TEMPORARY REHABILITATION MUST BE APPLIED AND ESTABLISHED TO DISTURBED AREAS AS SOON AS PRACTICAL AFTER COMPLETION OF EARTHWORKS. 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 TOPSOIL SHALL BE DISPOSED OF AS DIRECTED BY THE SUPERINTENDENT. 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. 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. 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 LABORATORY. 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. 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 SPRAYING. ALL GRASSED AREAS SHALL BE REGULARLY WATERED AND MAINTAINED UNTIL EXPIRATION OF THE MAINTENANCE PERIOD. THE CONTRACTOR SHALL MAINTAIN DUST CONTROL THROUGHOUT THE DURATION OF THE PROJECT. CATCH DRAINS TO BE CONSTRUCTED AS REQUIRED BY THE SITE SUPERINTENDENT AND/OR COUNCIL'S ENGINEER. 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. SUB-GRADE IN ROCK IS TO BE RIPPED, SCARIFIED, SPREAD AND COMPACTED TO A MINIMUM DEPTH OF 300mm BELOW THE FINISHED SUB-GRADE LEVEL. DETAILS OF ALL SOIL TESTS AND THE PAVEMENT DESIGN ARE TO BE SUBMITTED TO PRINCIPAL CERTIFYING AUTHORITY (PCA) PRIOR TO INSPECTION OF SUBGRADE. 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. ALL NEW WORKS SHALL MAKE SMOOTH JUNCTION WITH EXISTING CONDITIONS. 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. 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. ALL TRAFFIC CONTROL DEVICES SHALL REMAIN ERECTED OUTSIDE WORKING HOURS WITH FLASHING YELLOW LIGHTS ON BARRIER BOARDS TO BE IN OPERATION AFTER DARK. ROADS ADJOINING THE SITE MUST BE KEPT CLEAN AND FREE OF ALL EXCAVATED/TRANSPORTED SPOIL MATERIAL. SITE FILLING AND COMPACTION IS TO BE CARRIED OUT UNDER THE SUPERVISION OF A CHARTERED GEOTECHNICAL ENGINEER AND SHALL BE IN ACCORDANCE WITH NORTHERN 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. RESIDENTIAL LOTS TO BE INDIVIDUALLY CLASSIFIED. AGRICULTURAL LINES TO BE PLACED AS DIRECTED STRUCTURAL CERTIFICATION IS REQUIRED FOR CONSTRUCTION OF MAJOR AND NON-STANDARD STRUCTURES 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 FROM KERB-RETURN TANGENT POINTS VEHICULAR CROSSINGS ARE TO BE 4.0 METERS WIDE AT KERB AND GUTTER. 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 LOW SPOTS, WHERE REQUIRED BY THE PAVEMENT DESIGN REPORT, AND WHERE DIRECTED BY COUNCIL'S ENGINEER. 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 THESE LIGHT POLES WILL COMPLY WITH COUNCIL SPECIFICATIONS. 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). UNLESS SPECIFIED ALL DRAINAGE GRATES TO BE CLASS 'C' GALVANISED MILD STEEL TO AS 3996 (LATEST EDITION). UPVC PIPES SHALL BE SUPPLIED WITH SUFFICIENT QUANTITIES OF SOLVENT FOR MAKING OF THE PIPE JOINTS. UPVC PIPES SHALL BE TRANSPORTED, HANDLED AND STACKED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. UPVC PIPE LAYING SHALL BEGIN AT THE DOWNSTREAM END OF THE LINE WITH THE SOCKET END OF THE PIPE FACING UPSTREAM. WHEN THE PIPES ARE LAID, THE BARREL OF EACH PIPE SHALL BE IN CONTACT WITH THE BEDDING MATERIAL THROUGHOUT ITS FULL LENGTH. 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. 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 DEVELOPMENT. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE LOCATED ON EXISTING ACCESS TRACKS OR ROADWAYS SO AS NOT TO ENCRONCH ON TRAFFIC. 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. PROVIDE 150mm TOPSOIL WITH TURF OR GRASS SEEDING ON ALL BATTERS & DISTURBED AREAS. TURFED AREAS ADJACENT TO CONSTRUCTION AREA ARE TO BE MAINTAINED TO PROVIDE A VEGETATED BUFFER STRIP. THE CONTRACTOR SHALL STRIP AND STOCKPILE TOPSOIL PRIOR TO EXCAVATION OR FILLING. TOPSOIL SHALL BE RESPREAD ON THE COMPLETION OF EARTHWORKS. THE CONTRACTOR SHALL STABILISE ALL DISTURBED AREAS AND STOCKPILES WITHIN 14 DAYS. THE CONTRACTOR SHALL INSTALL A MIN. 300mm WIDE STRIP OF TURF BEHIND THE KERB. THE CONTRACTOR SHALL PROVIDE A MIN. 1m WIDE TURFING AROUND ALL SURFACE INLET PITS. 																																											
10	<h3>TOPSOIL</h3> <ol style="list-style-type: none"> PRIOR TO SPREADING, STOCKPILED SITE SUBGRADE MATERIAL AND/OR IMPORTED TOPSOIL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT. 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. AFTER PREPARATION OF THE SUBGRADE SURFACE, PLACE TOPSOIL AS APPROPRIATE FOR THE SPECIFIED LANDSCAPE TREATMENTS AND AS INDICATED BY THE DRAWINGS. 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. 																																											
9	<h3>SALINITY MANAGEMENT</h3> <ol style="list-style-type: none"> 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 EXCAVATIONS IN EXCESS OF 1.0m SHALL BE COVERED AND RETAINED BY RETAINING WALLS. EXCAVATION DEEPER THAN 1.0m SHALL BE AVOIDED AND IF CARRIED OUT, SHOULD BE 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 FINISHED LEVEL. BUILDING PLATFORM IN CUT AREAS GREATER THAN 1.0m SHALL BE MONITORED FOR SALINITY BY SOIL SAMPLING AND LABORATORY TESTING BY THE CONTRACTOR. APPROPRIATE BATTER SLOPES FOR EXCAVATIONS SHALL BE ADOPTED BY THE CONTRACTOR TO PREVENT EROSION AND SCOURING. UNDER GOOD DRAINAGE CONDITIONS, THE FOLLOWING BATTER SLOPES OR LESS SHALL BE ADOPTED; <table border="1" data-bbox="1528 745 1944 808"> <tr> <td>MATERIAL RECOMMENDED</td> <td>MINIMUM BATTER SLOPES</td> </tr> <tr> <td>-COMPACTED FILL</td> <td>2.5 HORIZONTAL : 1 VERTICAL</td> </tr> <tr> <td>-VERY STIFF RESIDUAL CLAY</td> <td>2 HORIZONTAL : 1 VERTICAL</td> </tr> <tr> <td>-WEATHERED SHALES/SILTSTONE</td> <td>0.5 HORIZONTAL : 1 VERTICAL</td> </tr> </table> 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 EROSION AND LOCALISED INSTABILITY PROBLEM. TO MINIMISE THE EFFECTS OF EROSION, ALL ROAD BATTERS, WHETHER IN CUT OR FILL TO BE STABILISED BY PLANTING (OR THE APPLICATION OF SPRAYED-ON MULCH) WITH APPROPRIATE SPECIES OF VEGETATION AS SOON AS PRACTICAL AFTER CONSTRUCTION. THE CONTRACTOR SHALL CONSIDER THE DESIGN, BEDDING OF PIPEWORK FOR STORMWATER 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 SHALL INCLUDE ADEQUATE COMPACTION OF SERVICE TRENCHES AND CONSTRUCTION OF CUT-OFF WALLS TO PREVENT MIGRATION OF FINES. PREVENTION OF SOIL EROSION, TUNNELING AND SALT SCALDS SHALL BE TREATED BY THE CONTRACTOR USING GYPSUM OR LIME. 																										MATERIAL RECOMMENDED	MINIMUM BATTER SLOPES	-COMPACTED FILL	2.5 HORIZONTAL : 1 VERTICAL	-VERY STIFF RESIDUAL CLAY	2 HORIZONTAL : 1 VERTICAL	-WEATHERED SHALES/SILTSTONE	0.5 HORIZONTAL : 1 VERTICAL										
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8	<h3>STORMWATER DRAINAGE</h3> <ol style="list-style-type: none"> ALL STORMWATER WORKS ARE TO BE UNDERTAKEN GENERALLY IN ACCORDANCE WITH AS 3500 (LATEST EDITION) STORMWATER DRAINAGE. 100 YEAR FLOW PATHS TO BE FORMED AT TIME OF CONSTRUCTION. 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 CENTRALLY WITHIN THE EXCAVATED TRENCH. ALL PIPEWORK SHALL BE BEDDED ON A CONTINUOUS UNDERLAY OF SAND, NOT LESS THAN 75mm 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 THE PIPELINE. IN WET OR UNSTABLE GROUND CONDITIONS WHERE THE TRENCH BOTTOM REQUIRES FURTHER 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 APPROVED FILTER FABRIC SHALL BE USED IN CONJUNCTION WITH THE ADDITIONAL BEDDING. 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 SATISFACTION OF THE SUPERINTENDENT. CHASES SHALL BE FORMED WHERE NECESSARY TO PREVENT SOCKETS, FLANGES OR THE LIKE FROM BEARING ON THE TRENCH BOTTOM OR THE UNDERLAY. 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 THE CONTRACTOR MUST LEAVE ALL STORMWATER DRAINAGE WORKS UNCOVERED UNTIL ANY TESTING DEEMED NECESSARY BY THE SUPERINTENDENT HAS BEEN PERFORMED. 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. FOR RUBBER RING JOINTS THE PIPE ENDS SHALL BE THOROUGHLY CLEANED BEFORE THE JOINT IS MADE. THE TWO PIPE SECTIONS SHALL THEN BE TIGHTLY JOINED WITH THEIR INNER SURFACES AT THE MANUFACTURER'S NOMINATED LAYING GAP. 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. CUTTING OPERATIONS FOR CONCRETE PIPE AND BOX CULVERTS SHALL PROVIDE NEAT END SURFACES. THE CUT SURFACES SHALL BE GIVEN TWO COATS OF A SUPERINTENDENT APPROVED EPOXY PAINT. 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. COMPLETED CEMENT MORTAR JOINTS SHALL BE KEPT DAMP AND PROTECTED FROM THE DIRECT RAYS OF SUN UNTIL BACKFILLING TAKES PLACE. 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. BACKFILL MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO PLACING AND COMPACTION. 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. 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). 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. STEP IRONS ARE TO BE PROVIDED IN DRAINAGE PITS MORE THAN 1.2m DEEP. PROVIDE A MINIMUM OF 3.0m LENGTH OF 100 DIA. SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK AT UPSTREAM END OF EACH COUNCIL PIT. 																																											
7	<h3>TURF AND PLANTING</h3> <ol style="list-style-type: none"> ALL TURF AND OTHER MATERIALS SPECIFIED SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE SUPERINTENDENT. SUBSTITUTION OF SPECIES SHALL ONLY OCCUR WITH THE PRIOR APPROVAL OF THE SUPERINTENDENT. 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. ALLOW FOR MAKING OVER AND RE-TURFING ALL AREAS WHERE THE GRASS FAILS TO GROW WITHIN ONE MONTH FROM THE DATE OF ORIGINAL PLANTING. 																																											
6	<h3>SURVEY NOTES</h3> <ol style="list-style-type: none"> SURVEY CALC PLAN REF: CRAIG & RHODES PLAN076-18G L01 [01]-PLAN (DATED 13/03/2019) 																																											
5	<h3>ABBREVIATIONS</h3> <table border="1"> <tr><td>K&G</td><td>KERB AND GUTTER</td></tr> <tr><td>DG</td><td>DISH GUTTER</td></tr> <tr><td>VC</td><td>VEHICULAR CROSSING</td></tr> <tr><td>RW</td><td>RETAINING WALL</td></tr> <tr><td>SGGP</td><td>STANDARD GRATED GULLY PIT</td></tr> <tr><td>GSIP</td><td>GRATED SURFACE INLET PIT</td></tr> <tr><td>JP</td><td>JUNCTION PIT</td></tr> <tr><td>HW</td><td>HEADWALL</td></tr> <tr><td>GPT</td><td>GROSS POLLUTANT TRAP</td></tr> </table>																										K&G	KERB AND GUTTER	DG	DISH GUTTER	VC	VEHICULAR CROSSING	RW	RETAINING WALL	SGGP	STANDARD GRATED GULLY PIT	GSIP	GRATED SURFACE INLET PIT	JP	JUNCTION PIT	HW	HEADWALL	GPT	GROSS POLLUTANT TRAP
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HW	HEADWALL																																											
GPT	GROSS POLLUTANT TRAP																																											
4	<h3>SEDIMENT AND EROSION CONTROL</h3> <ol style="list-style-type: none"> THESE NOTES ARE TO BE READ IN CONJUNCTION WITH LANDCOM'S SOILS AND CONSTRUCTION 'MANAGING URBAN STORMWATER'. SEDIMENT AND EROSION CONTROL SHALL BE IMPLEMENTED PRIOR TO AND MAINTAINED DURING AND AFTER THE CONSTRUCTION WORKS. SOIL AND SEDIMENT CONTROL DEVICES SHALL BE AS SHOWN IN THE DRAWINGS. THE CONTRACTOR SHALL REGULARLY MAINTAIN ALL SEDIMENT AND EROSION CONTROL DEVICES AND REMOVE ACCUMULATED SEDIMENT FROM SUCH DEVICES BEFORE 50% CAPACITY IS USED. 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 CONDITION SATISFACTORY TO THE SUPERINTENDENT. NO DISTURBANCE OF SITE PERMITTED OTHER THAN THE IMMEDIATE AREA OF THE WORKS. COUNCIL TO RE-INSPECT TREES PRIOR TO THE CONSTRUCTION WORKS COMMENCING. NO TREES ARE TO BE REMOVED WITHOUT PRIOR COUNCIL CONSENT. VEHICULAR ACCESS TO THE SITE SHALL BE CONTROLLED THROUGH THE ACCESS POINTS 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. THESE PLANS ARE SUPPLEMENTARY TO THE CONTRACTORS EMP FOR CONSTRUCTION AND SHALL BE READ IN CONJUNCTION WITH THE BUILDING CONTRACTORS E&SC PLANS THE CONTRACTOR SHALL ENSURE TEMPORARY CONTROLS DO NOT DAMAGE EXISTING STRUCTURES. 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. THE CONTRACTOR SHALL INFORM ALL SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END OF THE DAYS ACTIVITIES. THE CONTRACTOR MUST ENSURE THE SUITABILITY AND INTEGRITY OF ALL WORKS AT THE END OF EACH DAYS WORK. NOMINATED UNDISTURBED AREAS SHALL BE BARRICADED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. PUBLIC ROADS ARE TO BE SWEEP FREE OF DEBRIS RESULTING FROM CONSTRUCTION ACTIVITIES. SWEEPING SHALL BE UNDERTAKEN AT A MINIMUM TWICE WEEKLY. 																																											
3	<table border="1"> <tr> <td>APPROVED COMPANY</td> <td>ASINZS 4801 QMS Management System</td> <td>APPROVED COMPANY</td> <td>ISO 14001 Environmental Management System</td> <td>APPROVED COMPANY</td> <td>ISO 9001 Quality Management System</td> <td></td> </tr> </table>																										APPROVED COMPANY	ASINZS 4801 QMS Management System	APPROVED COMPANY	ISO 14001 Environmental Management System	APPROVED COMPANY	ISO 9001 Quality Management System												
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2	<table border="1"> <tr> <td>Authorised for issue by:</td> <td>MINH VU</td> <td>Principal:</td> <td>LEGENDWAY PTY. LTD.</td> <td>Project:</td> <td>PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 CIVIL AND SUBDIVISION WORKS</td> </tr> <tr> <td>Signature:</td> <td></td> <td>Scale:</td> <td>AS SHOWN</td> <td>Date:</td> <td>AHD</td> </tr> </table>																										Authorised for issue by:	MINH VU	Principal:	LEGENDWAY PTY. LTD.	Project:	PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 CIVIL AND SUBDIVISION WORKS	Signature:		Scale:	AS SHOWN	Date:	AHD						
Authorised for issue by:	MINH VU	Principal:	LEGENDWAY PTY. LTD.	Project:	PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 CIVIL AND SUBDIVISION WORKS																																							
Signature:		Scale:	AS SHOWN	Date:	AHD																																							
1	<table border="1"> <tr> <td>REV.</td> <td>DATE</td> <td>AMENDMENT DESCRIPTION</td> <td>DES.</td> <td>DRN.</td> <td> </td> <td> 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. 9669-1855 reception@craighrhodes.com.au www.craighrhodes.com.au © Craig & Rhodes Pty Ltd </td> <td> Drawing Title GENERAL NOTES </td> <td> Drawing Ref. 076-18 </td> <td> Drawing Ref. 076-18C-DA-0002 </td> <td> Revision A </td> </tr> </table>																										REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.		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. 9669-1855 reception@craighrhodes.com.au www.craighrhodes.com.au © Craig & Rhodes Pty Ltd	Drawing Title GENERAL NOTES	Drawing Ref. 076-18	Drawing Ref. 076-18C-DA-0002	Revision A							
REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.		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. 9669-1855 reception@craighrhodes.com.au www.craighrhodes.com.au © Craig & Rhodes Pty Ltd	Drawing Title GENERAL NOTES	Drawing Ref. 076-18	Drawing Ref. 076-18C-DA-0002	Revision A																																		

DEVELOPMENT APPLICATION

REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS



LIMIT OF NARRABEEN CREEK REHABILITATION WORKS. REFER TO CRAIG & RHODES DESIGN DRAWINGS REF: 076-18C-DA-1001

076-18C-DA-0102

076-18C-DA-0101

PLAN
SCALE 1:500



DEVELOPMENT APPLICATION

APPROVED COMPANY	ASINZS 4801	OH&S Management System	APPROVED COMPANY	ISO 14001	Environmental Management System	APPROVED COMPANY	ISO 9001	Quality Management Systems	DIAL 1199
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Authorized for issue by:
MINH VU
Signature: _____

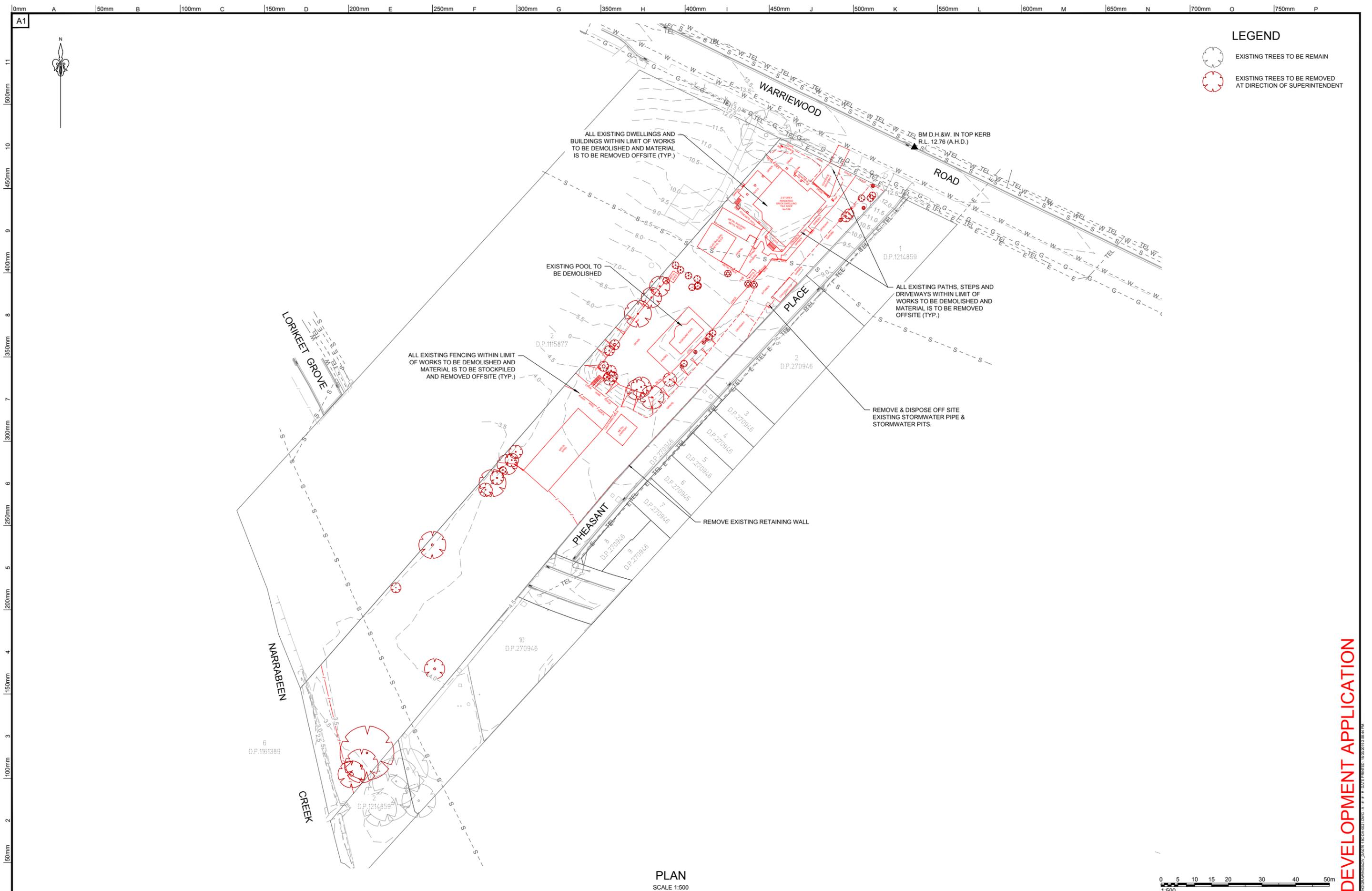
Principal:
LEGENDWAY PTY. LTD.
LGA:
NORTHERN BEACHES COUNCIL
Scale:
AS SHOWN
Datum:
AHD

Project:
PROPOSED SUBDIVISION OF
LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319
CIVIL AND SUBDIVISION WORKS



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Drawing Title	KEY PLAN
C&R Ref.	076-18
Drawing Ref.	076-18C-DA-0003
Revision	A



LEGEND

EXISTING TREES TO BE REMAIN

EXISTING TREES TO BE REMOVED AT DIRECTION OF SUPERINTENDENT

PLAN
SCALE 1:500



REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS

APPROVED COMPANY
AS/NZS 4801
OH&S Management System
QMS

APPROVED COMPANY
ISO 14001
Environmental Management System
QMS

APPROVED COMPANY
ISO 9001
Quality Management Systems
QMS

Authorised for issue by:
MINH VU

Principal:
LEGENDWAY PTY. LTD.

LGA:
NORTHERN BEACHES COUNCIL

Scale:
AS SHOWN

Datum:
AHD

Signature: _____

Project:
**PROPOSED SUBDIVISION OF
LOT 3, D.P. 1115877 AND PART LOT 3 D.P. 942319
CIVIL AND SUBDIVISION WORKS**

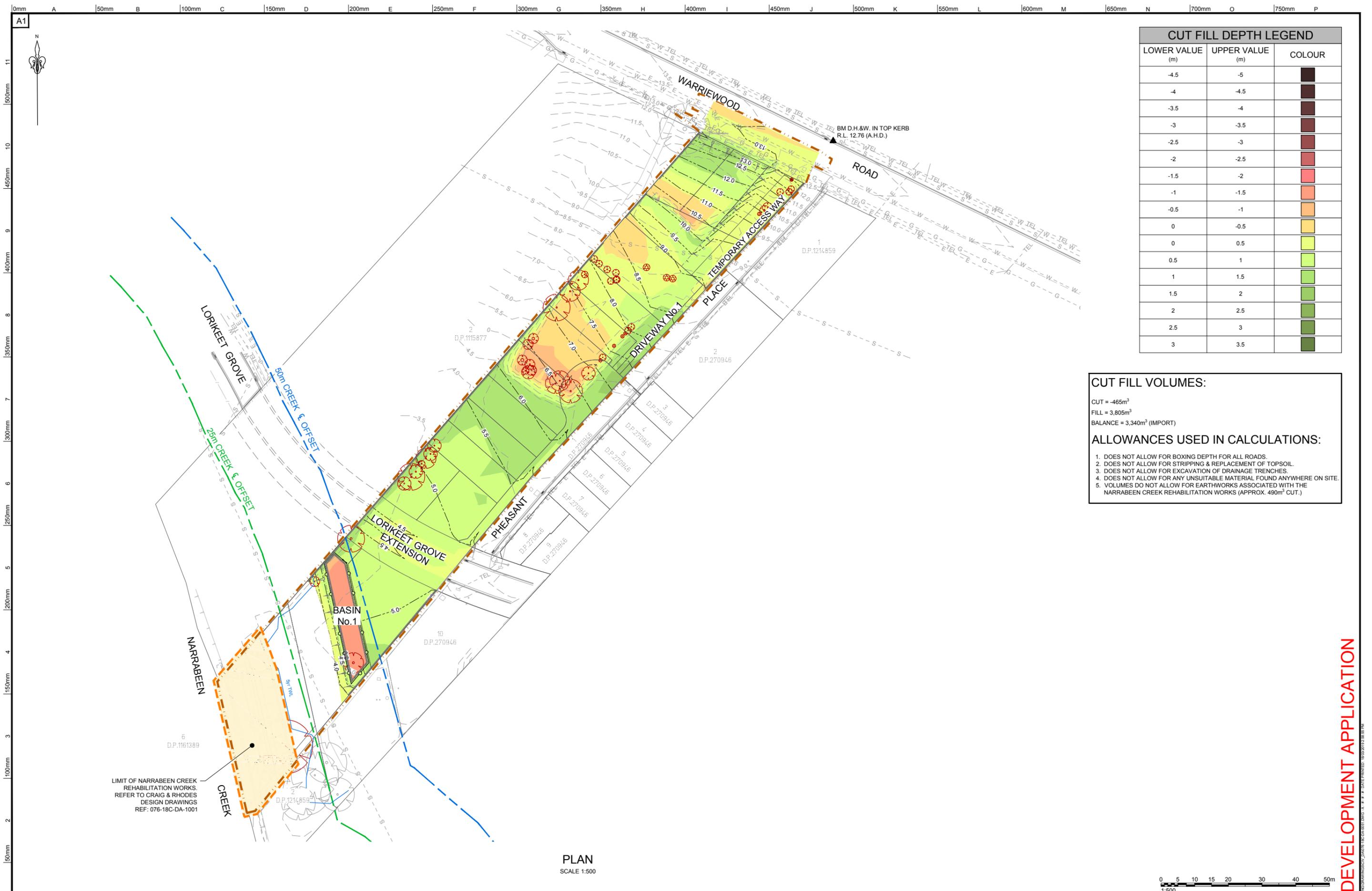


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Drawing Title
DEMOLITION PLAN

C&R Ref. 076-18
Drawing Ref. 076-18C-DA-0021
Revision A

DEVELOPMENT APPLICATION



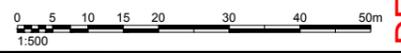
CUT FILL DEPTH LEGEND		
LOWER VALUE (m)	UPPER VALUE (m)	COLOUR
-4.5	-5	Dark Brown
-4	-4.5	Brown
-3.5	-4	Dark Red
-3	-3.5	Red
-2.5	-3	Dark Orange
-2	-2.5	Orange
-1.5	-2	Light Orange
-1	-1.5	Yellow-Orange
-0.5	-1	Yellow
0	-0.5	Light Yellow
0	0.5	Light Green
0.5	1	Green
1	1.5	Light Green
1.5	2	Green
2	2.5	Dark Green
2.5	3	Dark Green
3	3.5	Dark Green

CUT FILL VOLUMES:
 CUT = -465m³
 FILL = 3,805m³
 BALANCE = 3,340m³ (IMPORT)

ALLOWANCES USED IN CALCULATIONS:

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

PLAN
SCALE 1:500



DEVELOPMENT APPLICATION

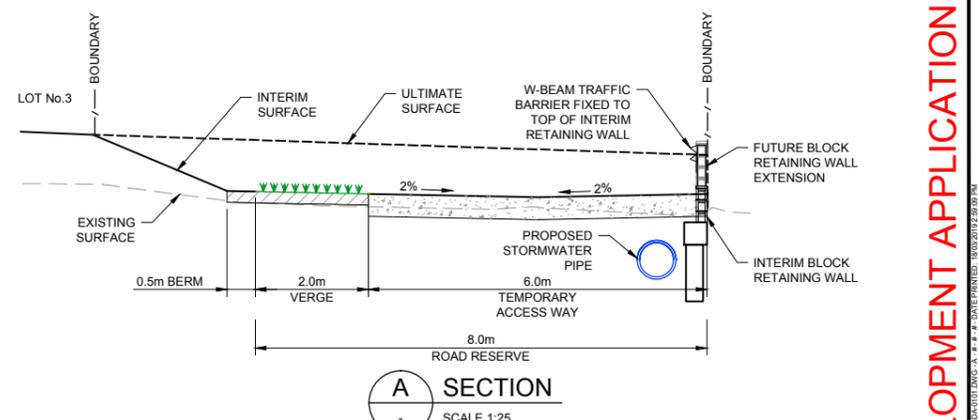
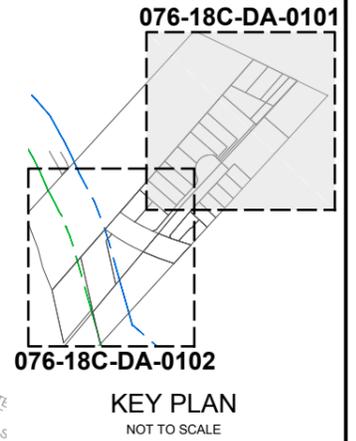
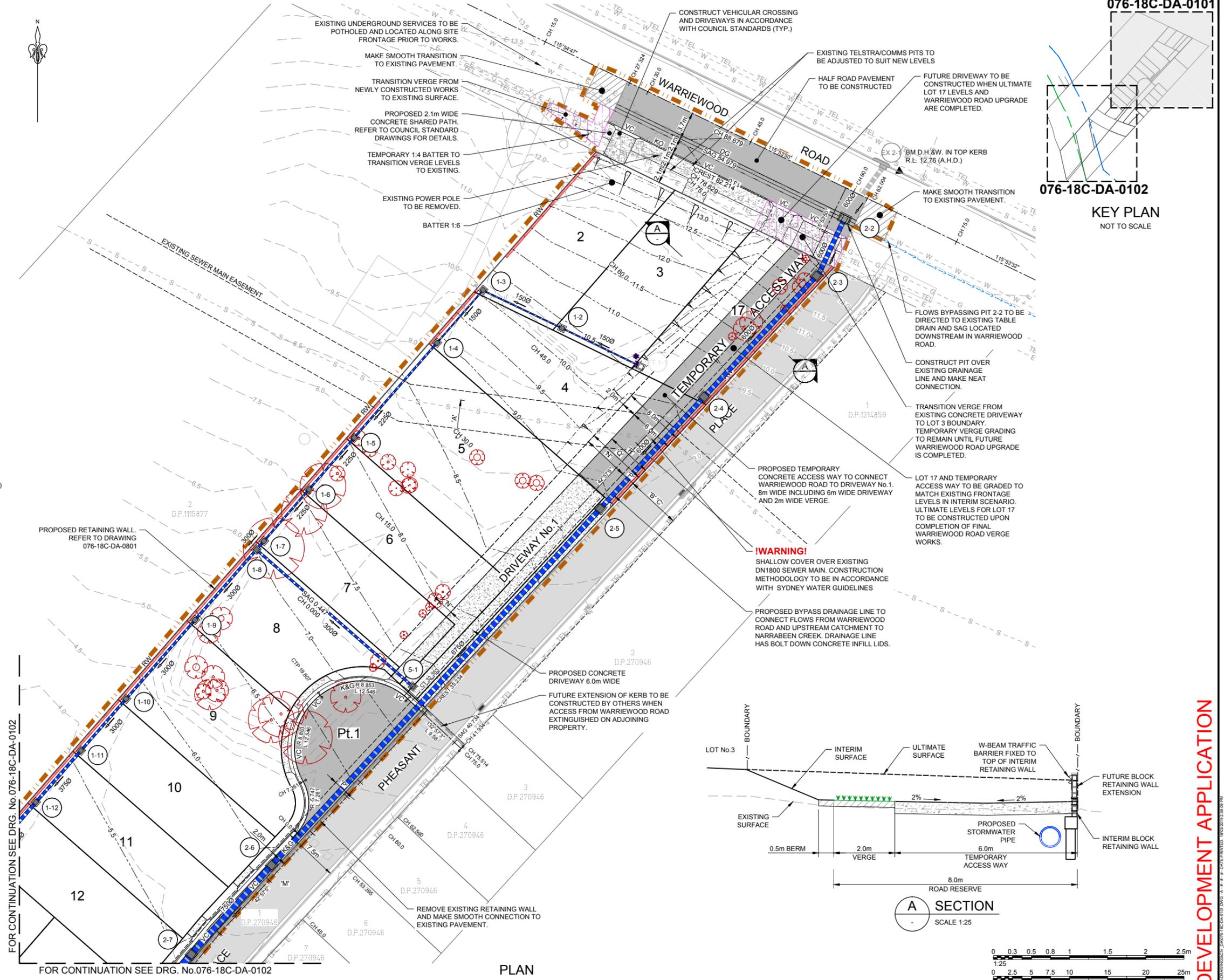
APPROVED COMPANY AS/NZS 4801 QMS 		APPROVED COMPANY ISO 14001 Environmental Management System 		APPROVED COMPANY ISO 9001 Quality Management Systems 		APPROVED COMPANY DIAL 1199 		Authorised for issue by: MINH VU Signature: _____	Principal: LEGENDWAY PTY. LTD. LGA: NORTHERN BEACHES COUNCIL	Project: PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 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. 9669-1855 reception@craigandrhodes.com.au www.craigandrhodes.com.au © Craig & Rhodes Pty Ltd	Drawing Title: BULK EARTHWORKS PLAN	Drawing Ref: 076-18 076-18C-DA-0051	Revision: A
REV. DATE AMENDMENT DESCRIPTION DES. DRN.	18.03.19 ISSUED FOR DEVELOPMENT APPLICATION AH KS															

LEGEND

- E-A --- E-A --- EXISTING OH ELECTRICAL LINE
- E --- E --- EXISTING ELECTRICAL LINE
- W --- W --- EXISTING WATER LINE
- TEL --- TEL --- EXISTING TELECOMS LINE
- C --- C --- EXISTING COMMUNICATION LINE
- G --- G --- EXISTING GAS LINE
- S --- S --- EXISTING SEWER LINE
- (Blue dashed line with asterisk) --- PROPOSED STORMWATER DRAINAGE LINE
- (Blue dashed line with asterisk) --- STUB, CAP AND BURY FOR FUTURE CONNECTION
- (Grey dashed line) --- FUTURE STORMWATER DRAINAGE LINE
- (Grey dashed line) --- EXISTING DRAINAGE LINE
- (Black square) --- PROPOSED STORMWATER PITS
- (Black square) --- FUTURE STORMWATER PITS
- (Black square) --- EXISTING STORMWATER PITS
- (Black trapezoid) --- CONCRETE HEADWALL OUTLET
- (Black trapezoid) --- STACKED ROCK HEADWALL OUTLET
- (Dashed line) --- DESIGN CONTOUR
- (Dashed line) --- EXISTING CONTOUR
- (Red dashed line) --- CIVIL SITE BOUNDARY
- (Red dashed line) --- RETAINING WALL
- (Arrow) --- FLOW DIRECTION
- (Circle with 00-00) --- PIT LABEL (DRAINAGE LINE No. - DRAINAGE PIT No.)
- (Green circle) --- EXISTING TREES TO BE REMAIN
- (Red circle) --- EXISTING TREES TO BE REMOVED AT DIRECTION OF SUPERINTENDENT
- (Grey rectangle) --- EXISTING PAVEMENT(AC)
- (Grey rectangle) --- PROPOSED PAVEMENT(AC)
- (Grey rectangle) --- PROPOSED PAVEMENT(CONCRETE)
- (Pink rectangle) --- TEMPORARY GRADING

NOTE:

- ALL DRIVEWAY LOCATIONS SHOWN ARE INDICATIVE ONLY.
- EASEMENTS:
 - 'A' = EASEMENT FOR SEWAGE PURPOSES 5m WIDE VIDE 6771995
 - 'B' = EASEMENT FOR ACCESS 7.2m WIDE VIDE D.P.1214859
 - 'C' = EASEMENT FOR ACCESS 7.2m WIDE VIDE D.P.1214859
 - 'N' = PROPOSED RIGHT OF ACCESS 8m WIDE & VARIABLE (TEMPORARY)
 - 'P' = PROPOSED EASEMENT TO DRAIN WATER 1.825m
 - 'Q' = PROPOSED EASEMENT FOR SERVICES 8m WIDE
 - 'R' = RIGHT OF ACCESS 6m WIDE



FOR CONTINUATION SEE DRG. No.076-18C-DA-0102

FOR CONTINUATION SEE DRG. No.076-18C-DA-0102

PLAN
SCALE 1:250

SECTION A
SCALE 1:25

0 0.3 0.5 0.8 1 1.5 2 2.5m
1:25

0 2.5 5 7.5 10 15 20 25m
1:250

APPROVED COMPANY ASINZS 4801 QH&S Management System CRAIG & RHODES	APPROVED COMPANY ISO 14001 Environmental Management System CRAIG & RHODES	APPROVED COMPANY ISO 9001 Quality Management System CRAIG & RHODES	DIAL 1199 NATIONAL COMPLAINTS LINE
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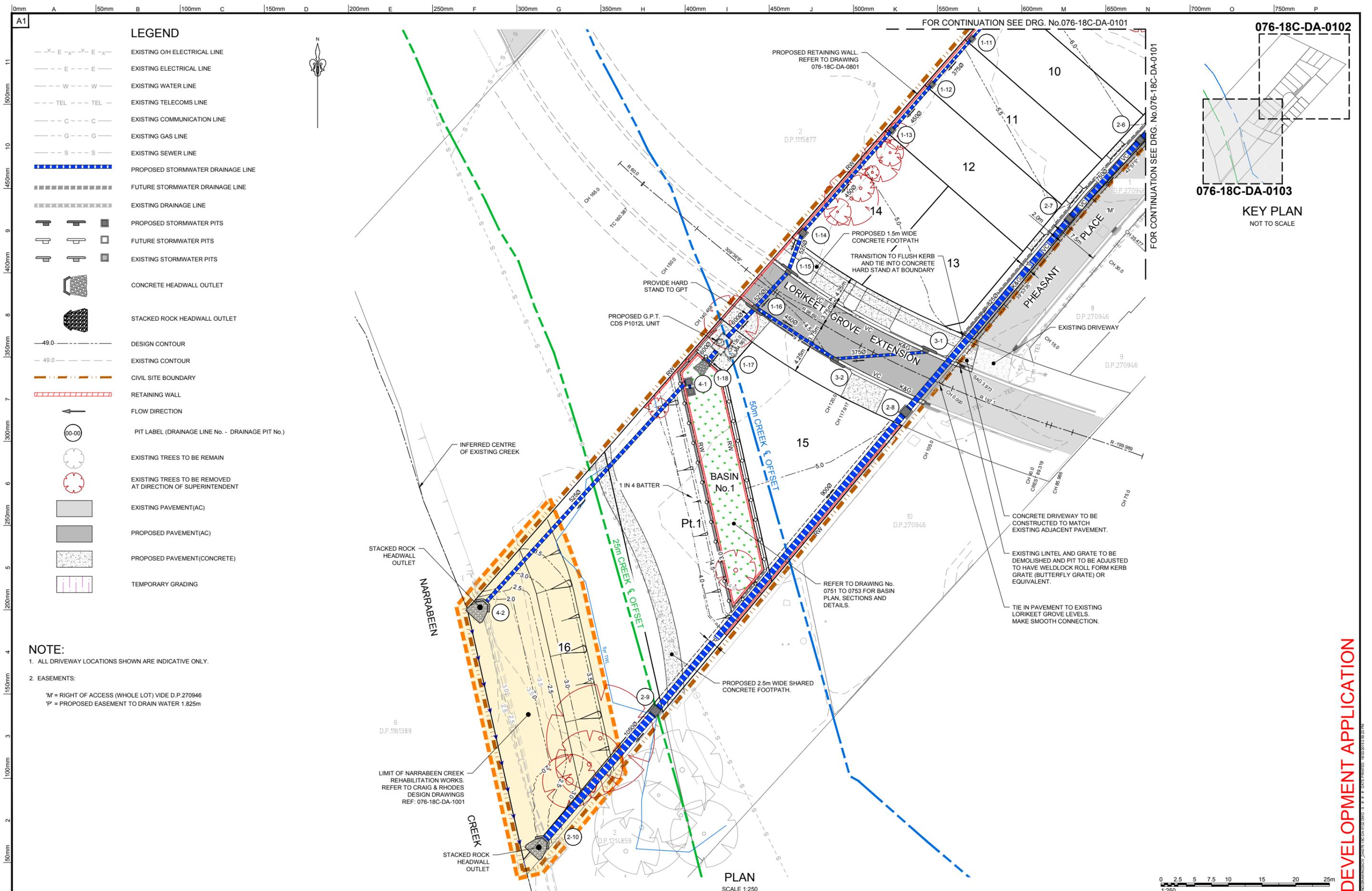
Authorised for issue by: MINH VU
Principal: LEGENDWAY PTY. LTD.
LGA: NORTHERN BEACHES COUNCIL
Project: PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 CIVIL AND SUBDIVISION WORKS

Scale: AS SHOWN Datum: AHD

ABN 77 050 209 991 ACN 050 209 991
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Drawing Title: ROAD AND DRAINAGE PLAN SHEET 1 OF 2
Drawing Ref: 076-18 076-18C-DA-0101
Revision: A

DEVELOPMENT APPLICATION



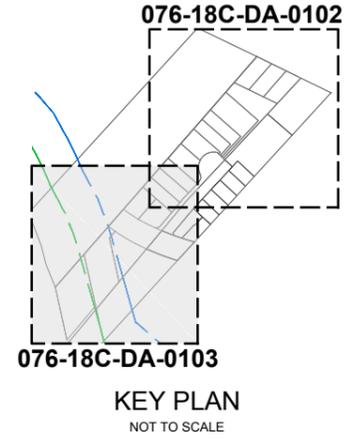
LEGEND

- E - E --- EXISTING OH ELECTRICAL LINE
- E --- EXISTING ELECTRICAL LINE
- W --- W --- EXISTING WATER LINE
- TEL --- TEL --- EXISTING TELECOMS LINE
- C --- C --- EXISTING COMMUNICATION LINE
- G --- G --- EXISTING GAS LINE
- S --- S --- EXISTING SEWER LINE
- PROPOSED STORMWATER DRAINAGE LINE
- FUTURE STORMWATER DRAINAGE LINE
- EXISTING DRAINAGE LINE
- PROPOSED STORMWATER PITS
- FUTURE STORMWATER PITS
- EXISTING STORMWATER PITS
- CONCRETE HEADWALL OUTLET
- STACKED ROCK HEADWALL OUTLET
- DESIGN CONTOUR
- EXISTING CONTOUR
- CIVIL SITE BOUNDARY
- RETAINING WALL
- FLOW DIRECTION
- PIT LABEL (DRAINAGE LINE No. - DRAINAGE PIT No.)
- EXISTING TREES TO BE REMAIN
- EXISTING TREES TO BE REMOVED AT DIRECTION OF SUPERINTENDENT
- EXISTING PAVEMENT(AC)
- PROPOSED PAVEMENT(AC)
- PROPOSED PAVEMENT(CONCRETE)
- TEMPORARY GRADING

NOTE:

- ALL DRIVEWAY LOCATIONS SHOWN ARE INDICATIVE ONLY.
- EASEMENTS:
 'M' = RIGHT OF ACCESS (WHOLE LOT) VIDE D.P.270946
 'P' = PROPOSED EASEMENT TO DRAIN WATER 1.825m

PLAN
SCALE 1:250



REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS

APPROVED COMPANY
 AS/NZS 4801
 QMS

APPROVED COMPANY
 ISO 14001
 QMS

APPROVED COMPANY
 ISO 9001
 QMS

DIAL 1199
 24 HOURS

Authorised for issue by:
 MINH VU

Principal:
 LEGENDWAY PTY. LTD.

LGA:
 NORTHERN BEACHES COUNCIL

Scale:
 AS SHOWN

Datum:
 AHD

Project:
 PROPOSED SUBDIVISION OF
 LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319
 CIVIL AND SUBDIVISION WORKS

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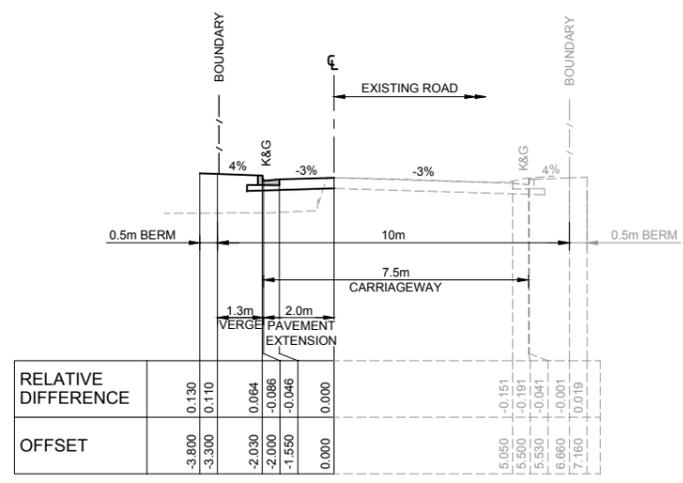
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 ROAD AND DRAINAGE PLAN
 SHEET 2 OF 2

C&R Ref:
 076-18

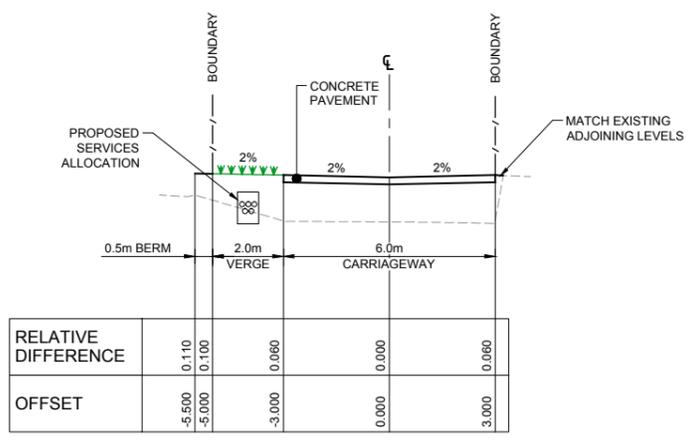
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Revision:
 A

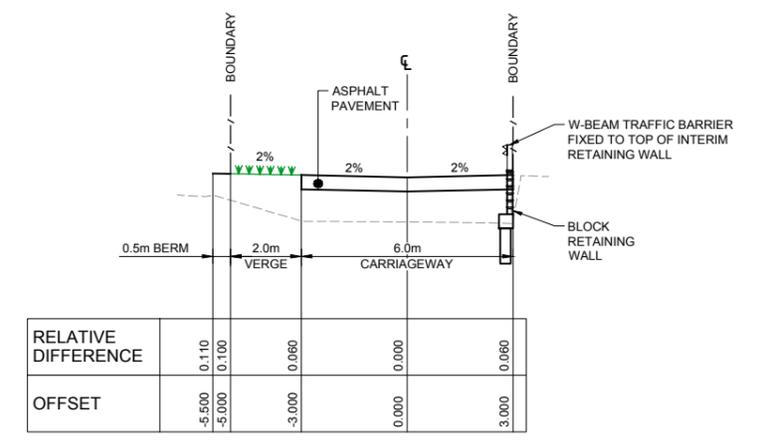
DEVELOPMENT APPLICATION



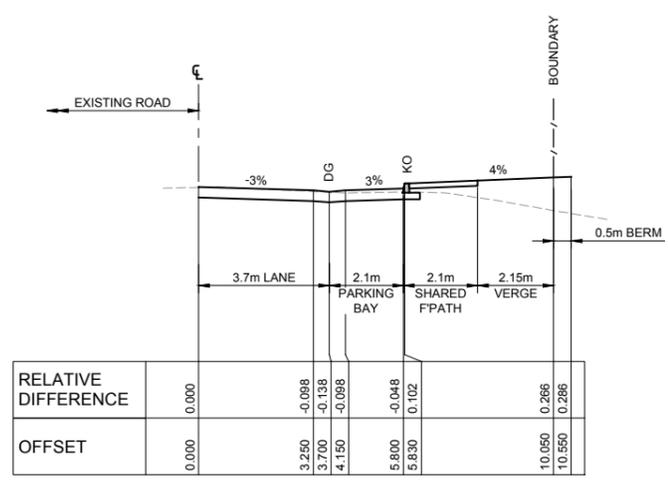
PHEASANT PLACE
SCALE 1:100



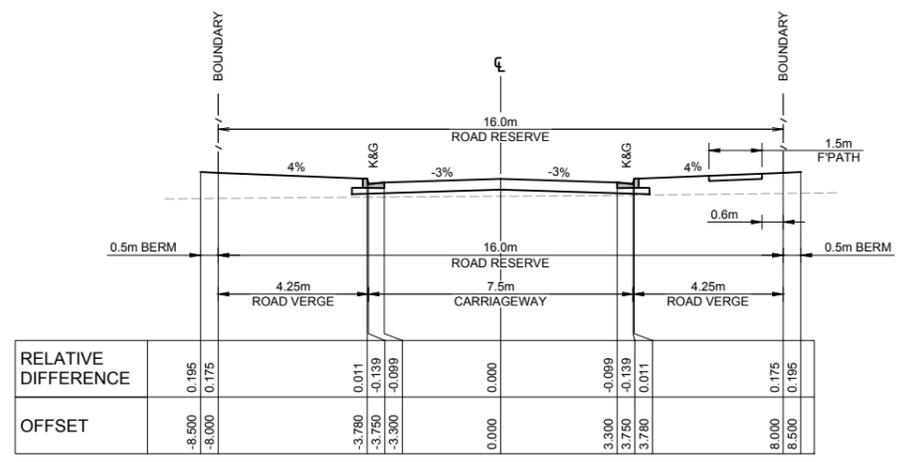
DRIVEWAY No.1
SCALE 1:100



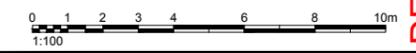
TEMPORARY ACCESS WAY
SCALE 1:100



WARRIEWOOD ROAD
SCALE 1:100



LORIKEET GROVE
SCALE 1:100



REV	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS

APPROVED COMPANY
ASINZS 4801
QH&S Management System

APPROVED COMPANY
ISO 14001
Environmental Management System

APPROVED COMPANY
ISO 9001
Quality Management System

DIAL 1198
FOR TOWNSHIP

Authorised for issue by: MINH VU
Principal: LEGENDWAY PTY. LTD.
LGA: NORTHERN BEACHES COUNCIL
Scale: AS SHOWN
Datum: AHD

Project: PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 CIVIL AND SUBDIVISION WORKS

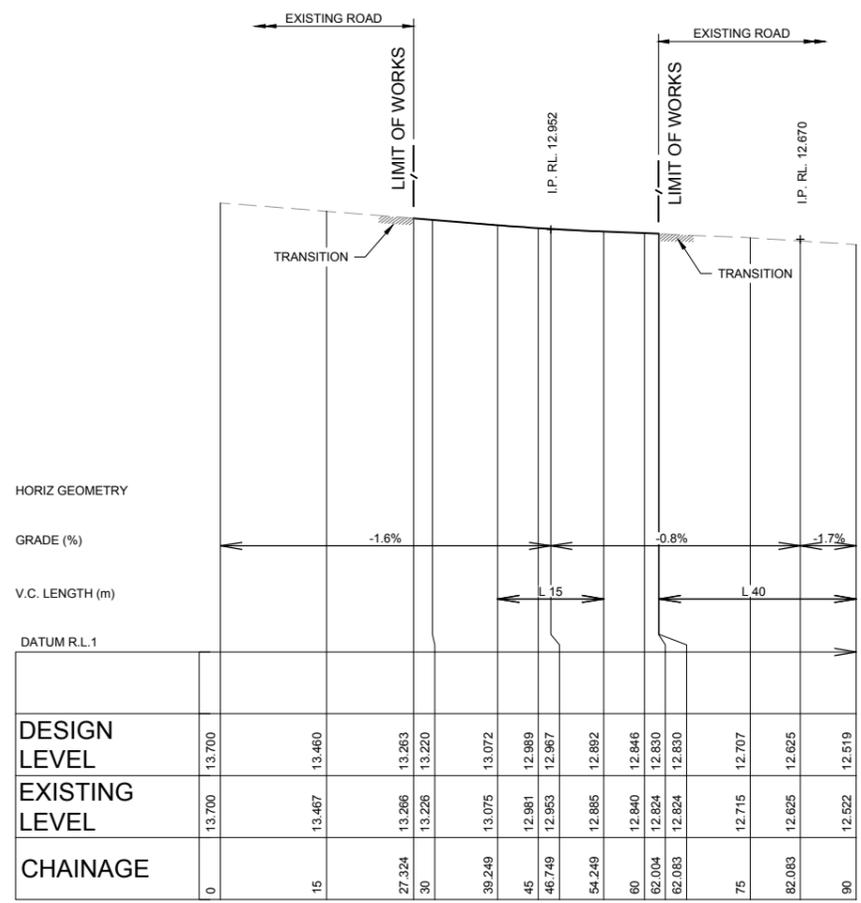


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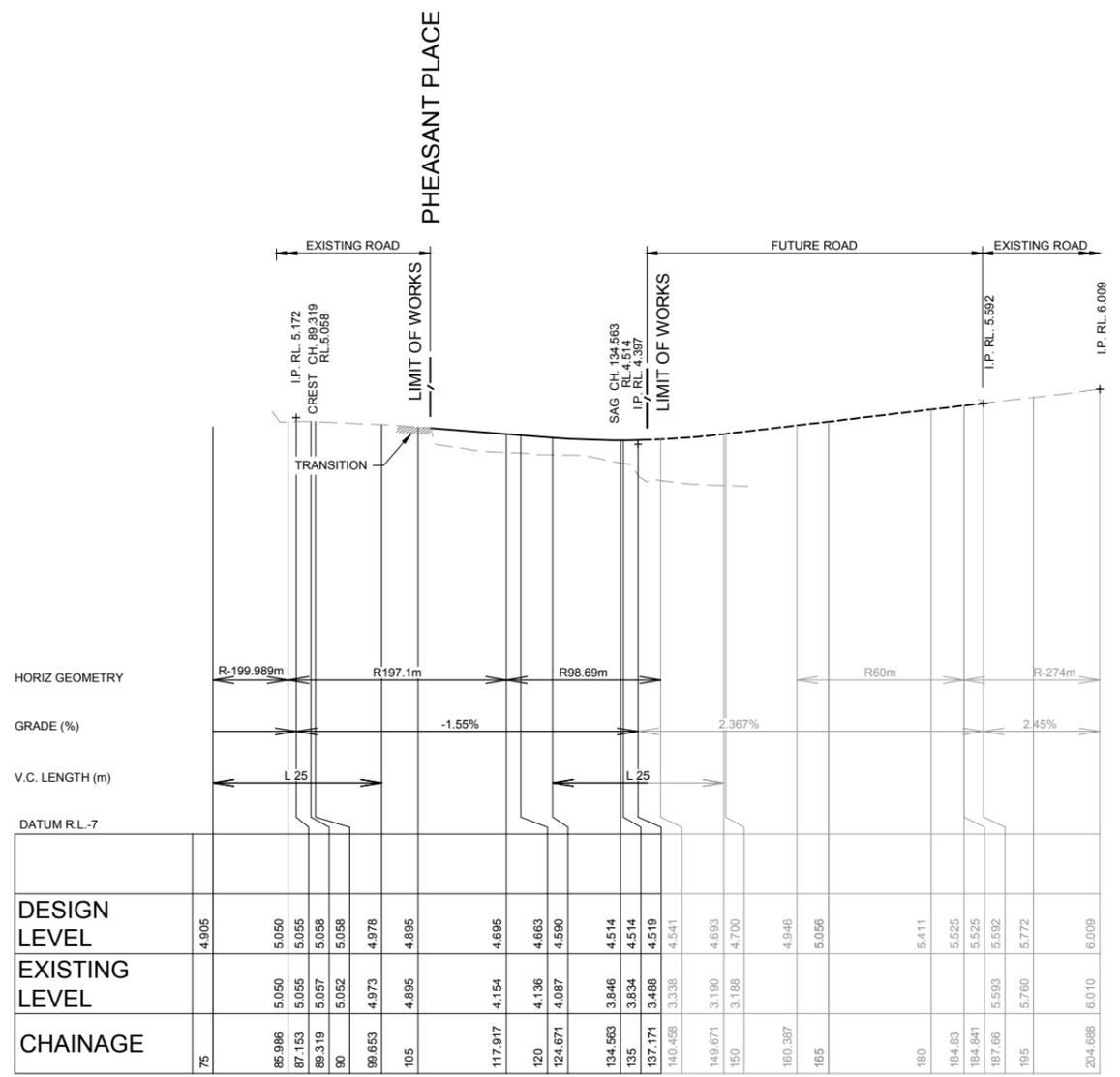
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Drawing Ref: 076-18 076-18C-DA-0151
Revision: A

DEVELOPMENT APPLICATION

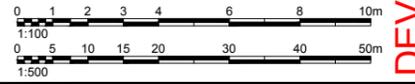
LEGEND
 ——— DESIGN SURFACE
 - - - - - FUTURE SURFACE
 - - - - - EXISTING SURFACE



WARRIEWOOD ROAD - LONGITUDINAL SECTION
 HORIZONTAL SCALE - 1:500
 VERTICAL SCALE - 1:100

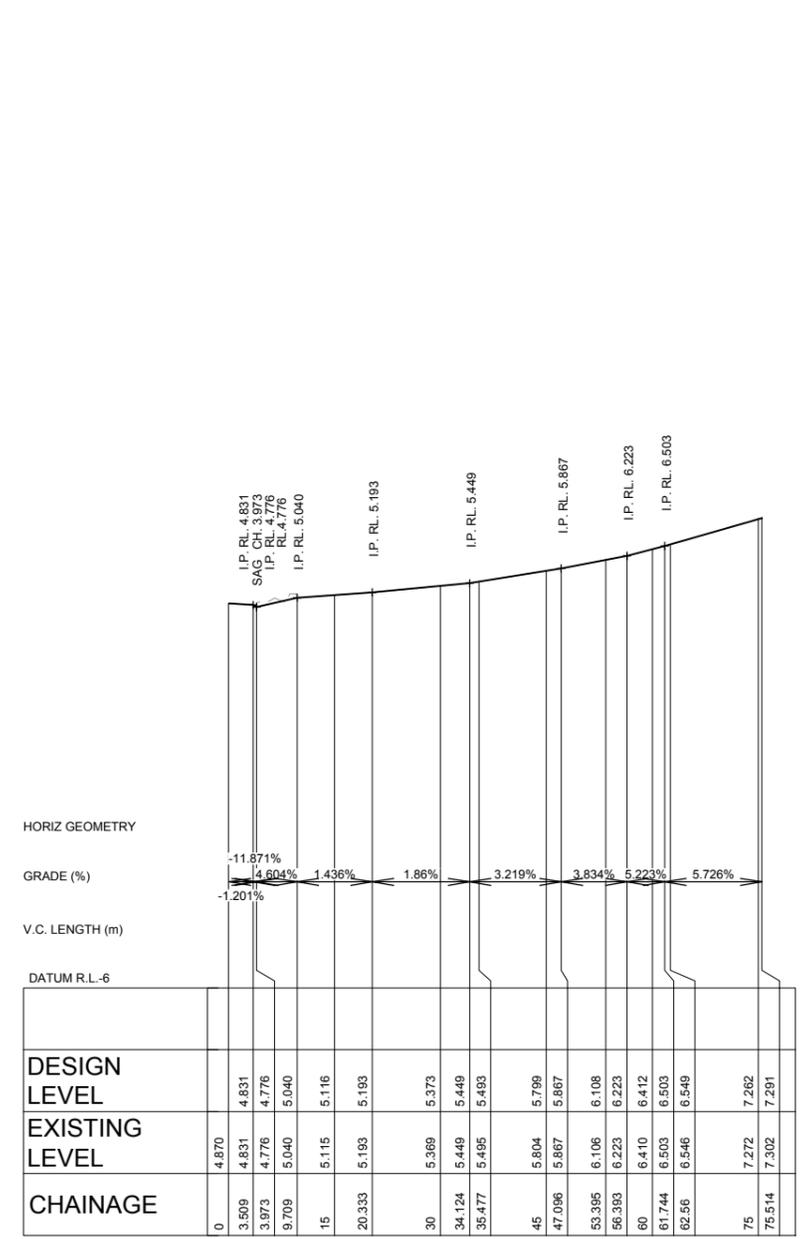


LORIKEET GROVE EXTENSION - LONGITUDINAL SECTION
 HORIZONTAL SCALE - 1:500
 VERTICAL SCALE - 1:100

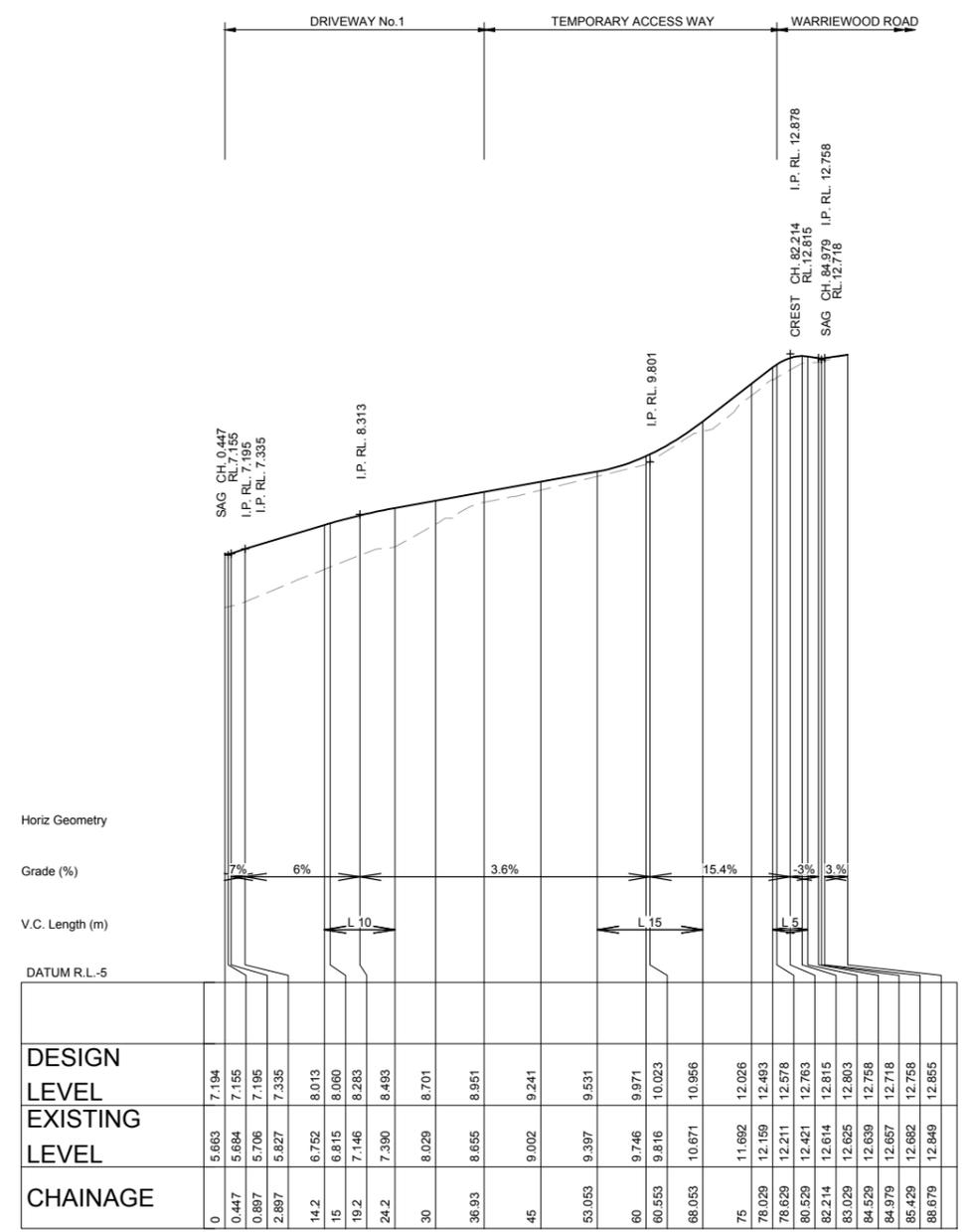


DEVELOPMENT APPLICATION

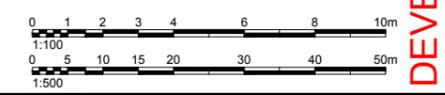
LEGEND
 ——— DESIGN SURFACE
 - - - - - FUTURE SURFACE
 - · - · - EXISTING SURFACE



PHEASANT PLACE - LONGITUDINAL SECTION
 HORIZONTAL SCALE - 1:500
 VERTICAL SCALE - 1:100



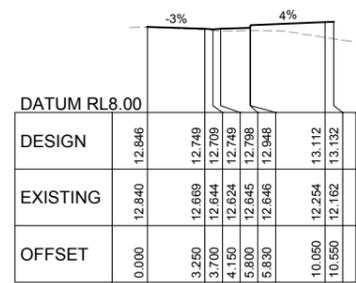
DRIVEWAY No. 1 - LONGITUDINAL SECTION
 HORIZONTAL SCALE - 1:500
 VERTICAL SCALE - 1:100



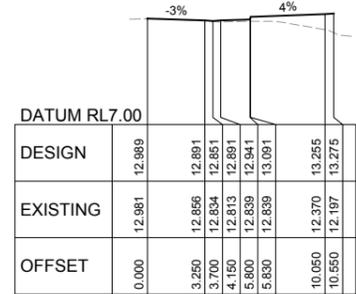
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DEVELOPMENT APPLICATION

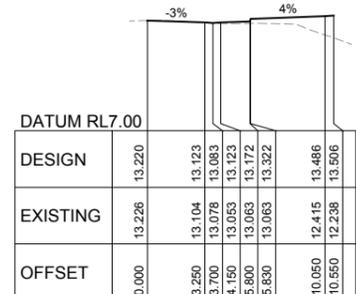
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 _____ DESIGN SURFACE
 - - - - - FUTURE SURFACE
 - - - - - EXISTING SURFACE



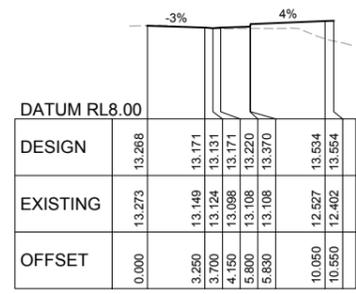
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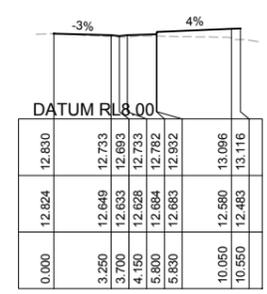
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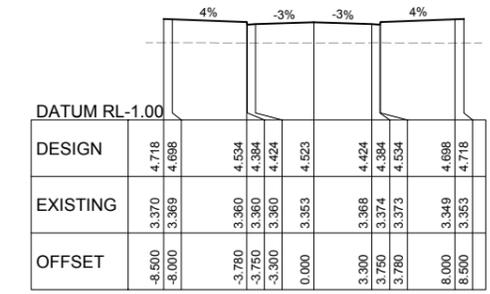


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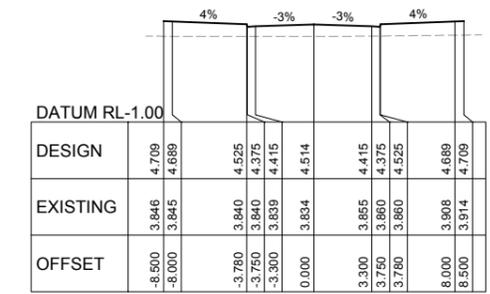


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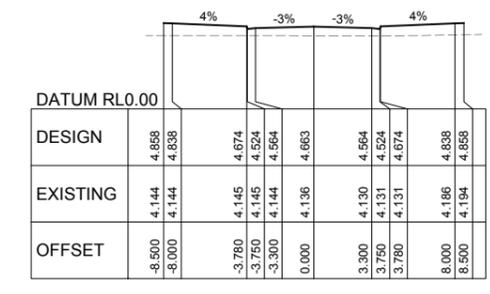
WARRIWOOD ROAD - CROSS SECTIONS
SCALE - 1:200



CHAINAGE 138.000

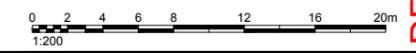


CHAINAGE 135.000



CHAINAGE 120.000

LORIKEET GROVE - CROSS SECTIONS
SCALE - 1:200



REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
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 ISO 14001
 Environmental Management System
 QMS

APPROVED COMPANY
 ISO 9001
 Quality Management System
 QMS

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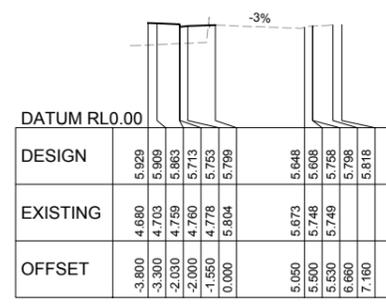
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Drawing Title
ROAD CROSS SECTIONS
 SHEET 1 OF 2

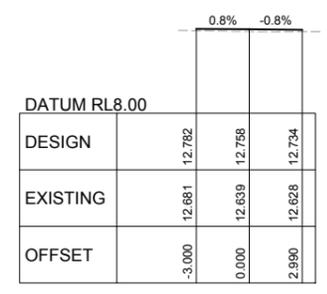
C&R Ref. 076-18
 Drawing Ref. 076-18C-DA-0301
 Revision A

DEVELOPMENT APPLICATION

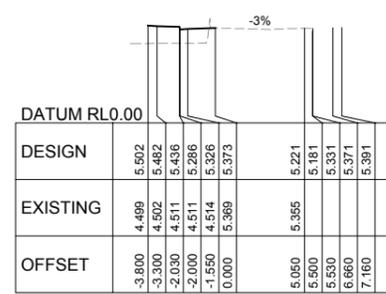
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 ——— DESIGN SURFACE
 - - - - - FUTURE SURFACE
 - - - - - EXISTING SURFACE



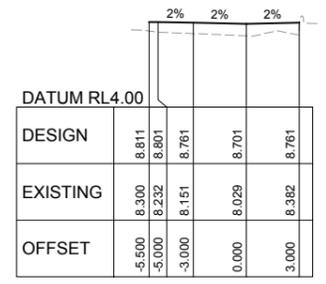
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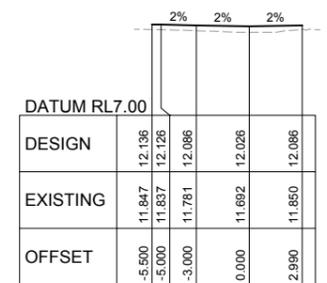
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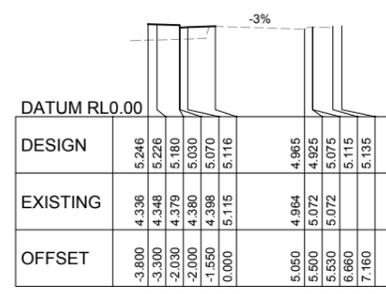
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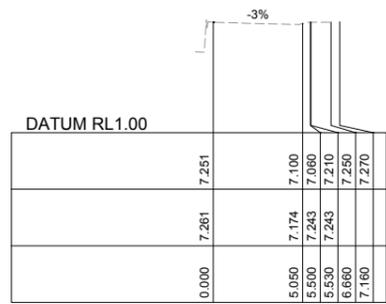
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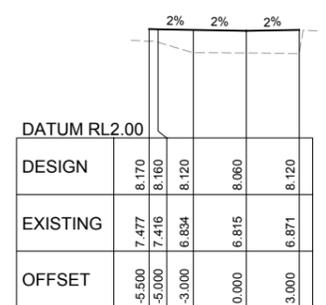
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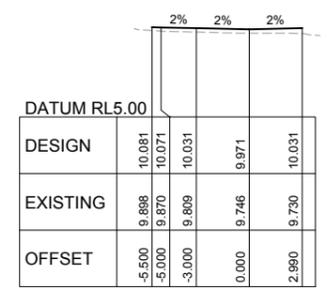
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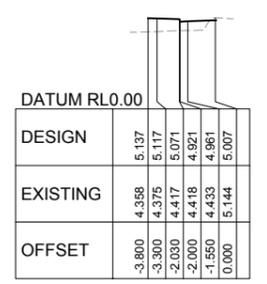
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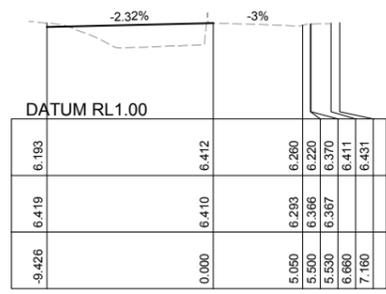
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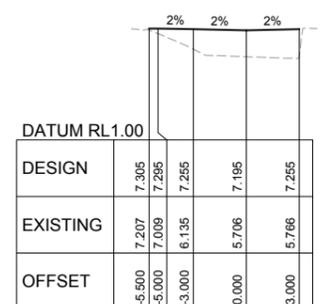
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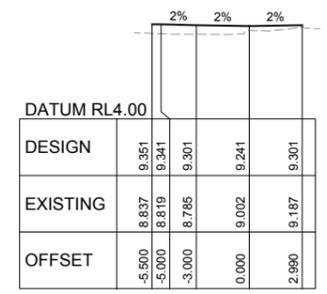
CHAINAGE 9.000



CHAINAGE 60.000



CHAINAGE 0.900



CHAINAGE 45.000

PHEASANT PLACE - CROSS SECTIONS
SCALE - 1:200

DRIVEWAY No.1 - CROSS SECTIONS
SCALE - 1:200

TEMPORARY ACCESS WAY - CROSS SECTIONS
SCALE - 1:200



REV.	DATE	AMENDMENT DESCRIPTION	AH	KS
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS

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 ASINZS 4801
 QMS
 Environmental Management System

APPROVED COMPANY
 ISO 14001
 QMS
 Environmental Management System

APPROVED COMPANY
 ISO 9001
 QMS
 Quality Management Systems

DIAL 1199
 TOLL FREE

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Project:
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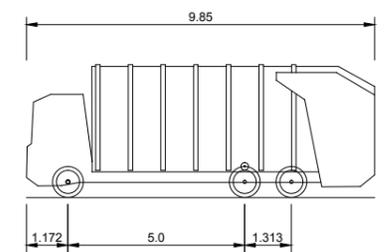
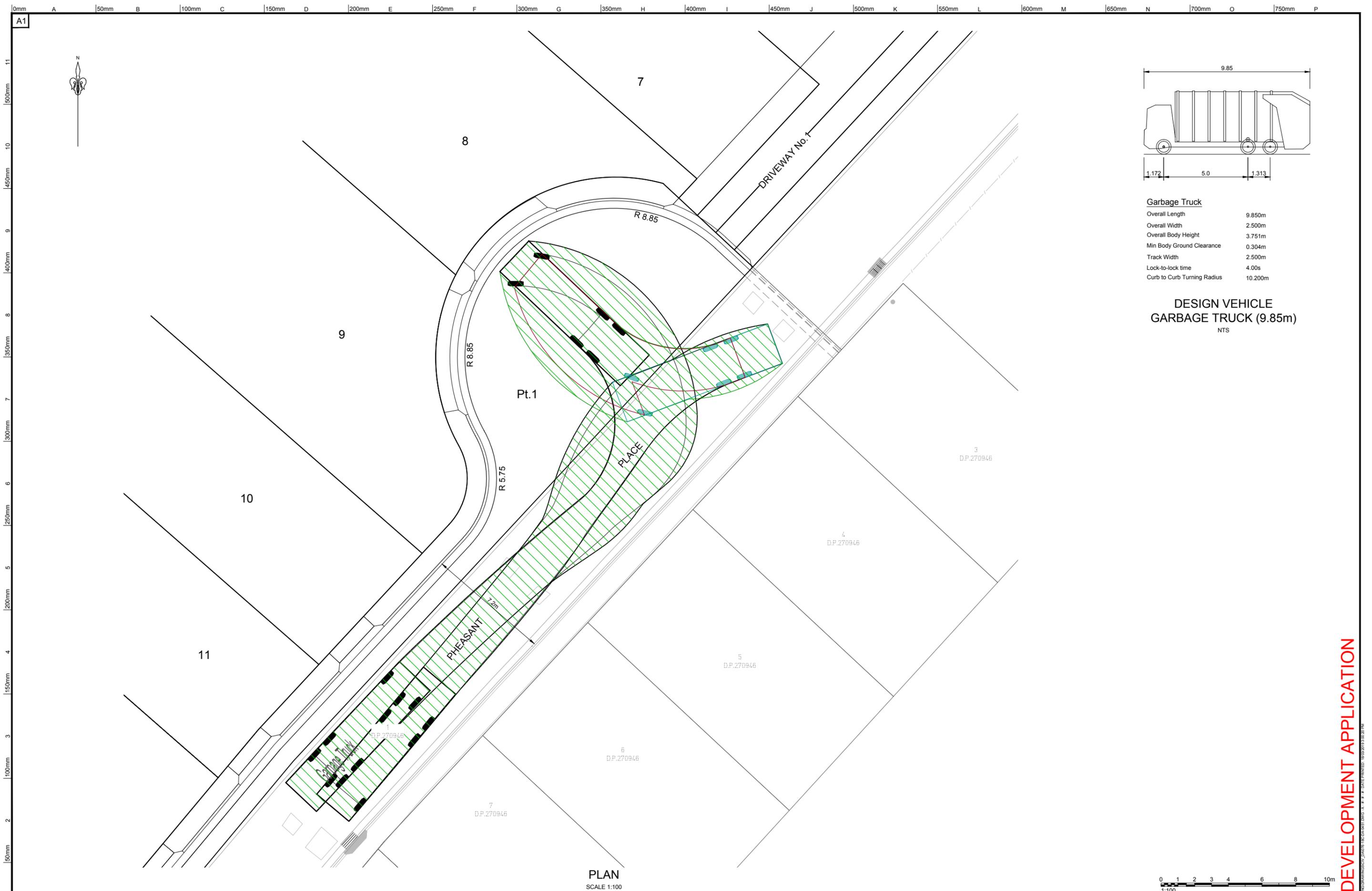


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Drawing Title
 ROAD CROSS SECTIONS
 SHEET 2 OF 2

C&R Ref. 076-18
 Drawing Ref. 076-18C-DA-0302
 Revision A

DEVELOPMENT APPLICATION



Garbage Truck

Overall Length	9.850m
Overall Width	2.500m
Overall Body Height	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.200m

DESIGN VEHICLE
GARBAGE TRUCK (9.85m)
 NTS

PLAN
 SCALE 1:100



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 QMS

APPROVED COMPANY
 ISO 14001
 Environmental Management System
 QMS

APPROVED COMPANY
 ISO 9001
 Quality Management Systems
 QMS

DIAL 1199
 REPORT A PROBLEM

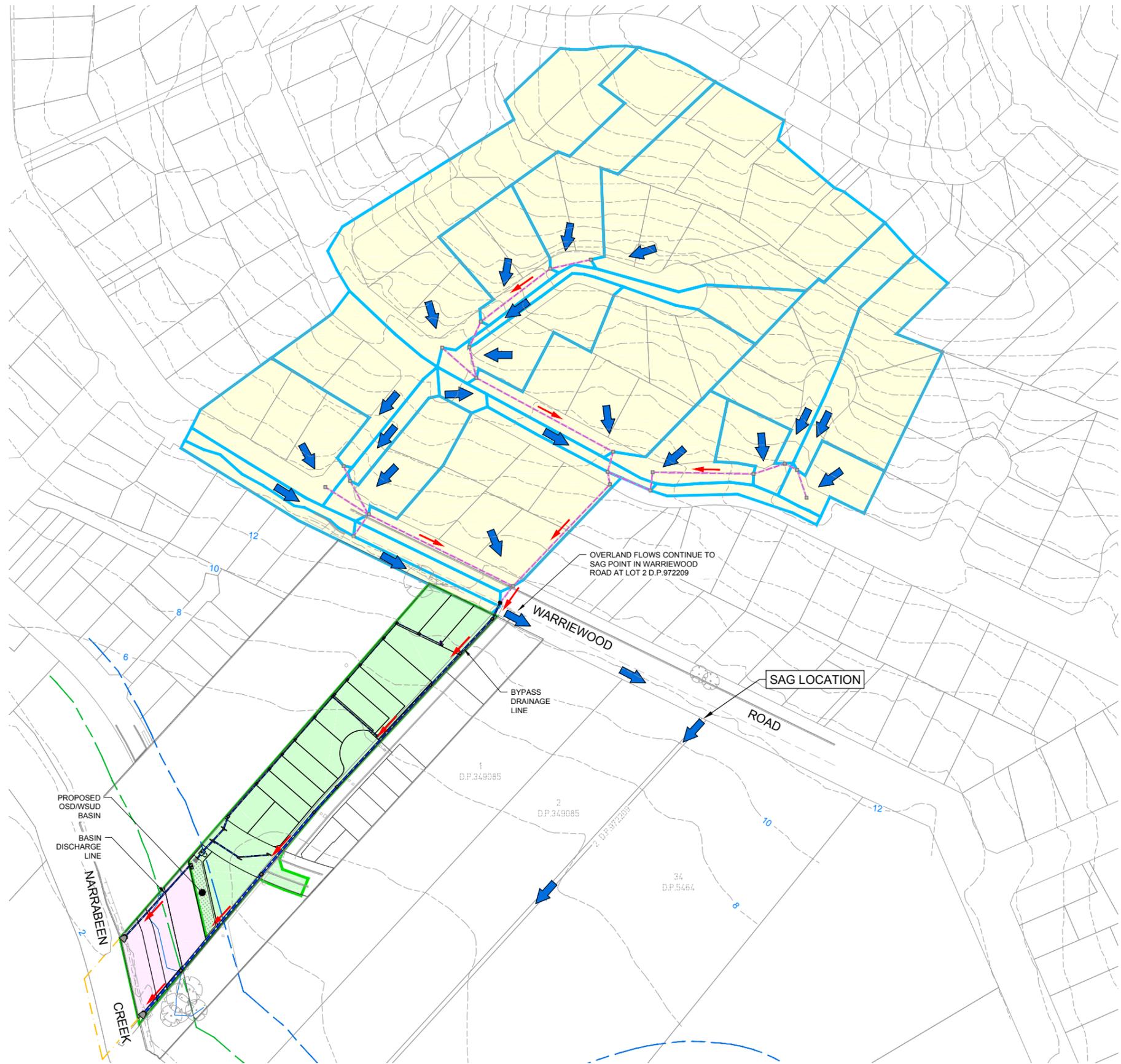
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Drawing Title: GARBAGE TRUCK TURNING PATH	C&R Ref: 076-18	Drawing Ref: 076-18C-DA-0451	Revision: A
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DEVELOPMENT APPLICATION



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

PLAN
SCALE 1:1000



REV.	DATE	AMENDMENT DESCRIPTION	AH	KS	DES.	DRN.
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ASINZS 4801
QH&S
Management System
QMS

APPROVED COMPANY
ISO 14001
Environmental
Management System
QMS

APPROVED COMPANY
ISO 9001
Quality
Management System
QMS

DIAL 1100
FOR ALL
EMERGENCIES

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LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319
CIVIL AND SUBDIVISION WORKS

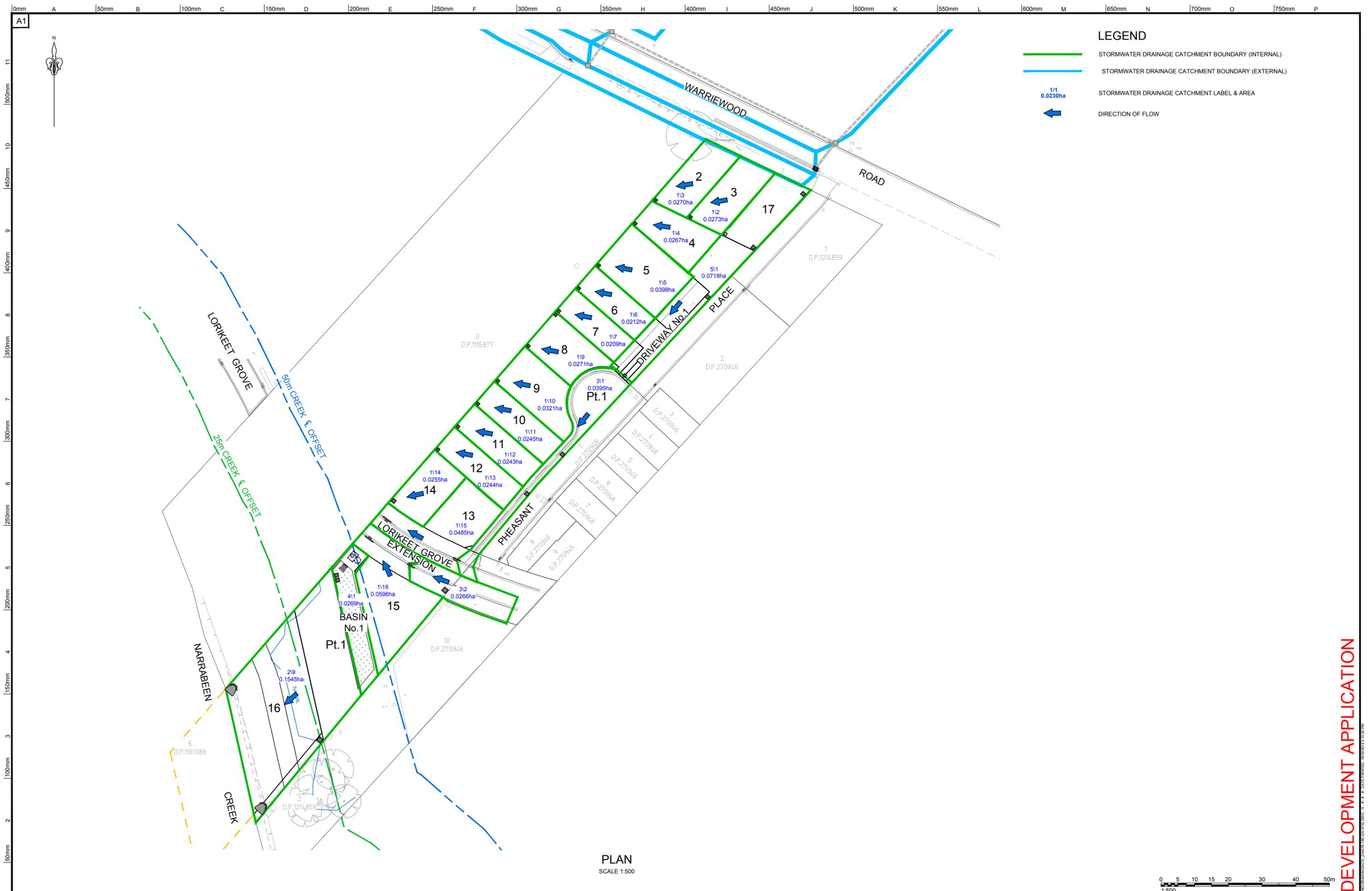


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Drawing Title:
EXTERNAL CATCHMENT PLAN

C&R Ref: 076-18
Drawing Ref: 076-18C-DA-0701
Revision: A

DEVELOPMENT APPLICATION



PLAN
SCALE 1:500

LEGEND

- STORMWATER DRAINAGE CATCHMENT BOUNDARY (INTERNAL)
- STORMWATER DRAINAGE CATCHMENT BOUNDARY (EXTERNAL)
- 1/1
0.0230ha STORMWATER DRAINAGE CATCHMENT LABEL & AREA
- ← DIRECTION OF FLOW



DEVELOPMENT APPLICATION

REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS

APPROVED COMPANY
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QMS

APPROVED COMPANY
ISO 14001
Environmental Management System
QMS

APPROVED COMPANY
ISO 9001
Quality Management System
QMS

DIAL 1100
FOR HELP

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Drawing Title: INTERNAL CATCHMENT PLAN	C&R Ref: 076-18	Drawing Ref: 076-18C-DA-0702	Revision: A
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LEGEND

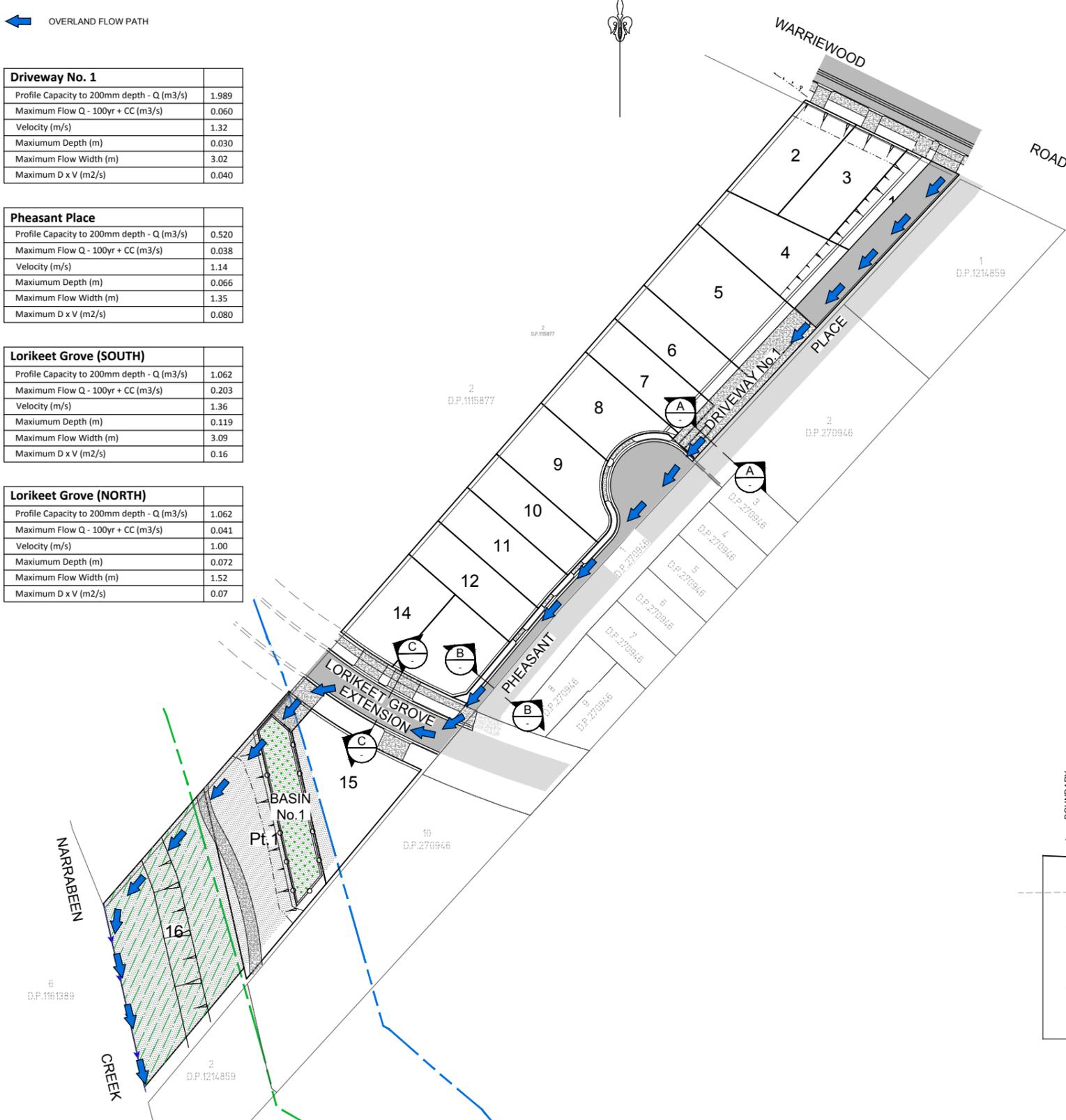
← OVERLAND FLOW PATH

Driveway No. 1	
Profile Capacity to 200mm depth - Q (m3/s)	1.989
Maximum Flow Q - 100yr + CC (m3/s)	0.060
Velocity (m/s)	1.32
Maximum Depth (m)	0.030
Maximum Flow Width (m)	3.02
Maximum D x V (m2/s)	0.040

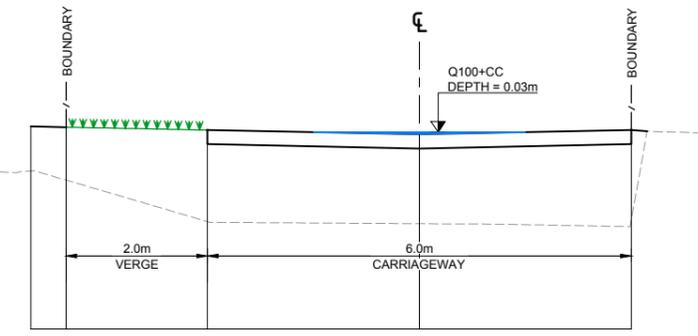
Pheasant Place	
Profile Capacity to 200mm depth - Q (m3/s)	0.520
Maximum Flow Q - 100yr + CC (m3/s)	0.038
Velocity (m/s)	1.14
Maximum Depth (m)	0.066
Maximum Flow Width (m)	1.35
Maximum D x V (m2/s)	0.080

Lorikeet Grove (SOUTH)	
Profile Capacity to 200mm depth - Q (m3/s)	1.062
Maximum Flow Q - 100yr + CC (m3/s)	0.203
Velocity (m/s)	1.36
Maximum Depth (m)	0.119
Maximum Flow Width (m)	3.09
Maximum D x V (m2/s)	0.16

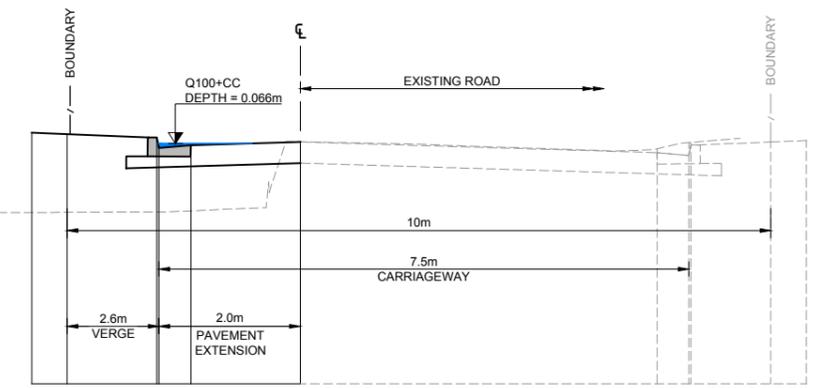
Lorikeet Grove (NORTH)	
Profile Capacity to 200mm depth - Q (m3/s)	1.062
Maximum Flow Q - 100yr + CC (m3/s)	0.041
Velocity (m/s)	1.00
Maximum Depth (m)	0.072
Maximum Flow Width (m)	1.52
Maximum D x V (m2/s)	0.07



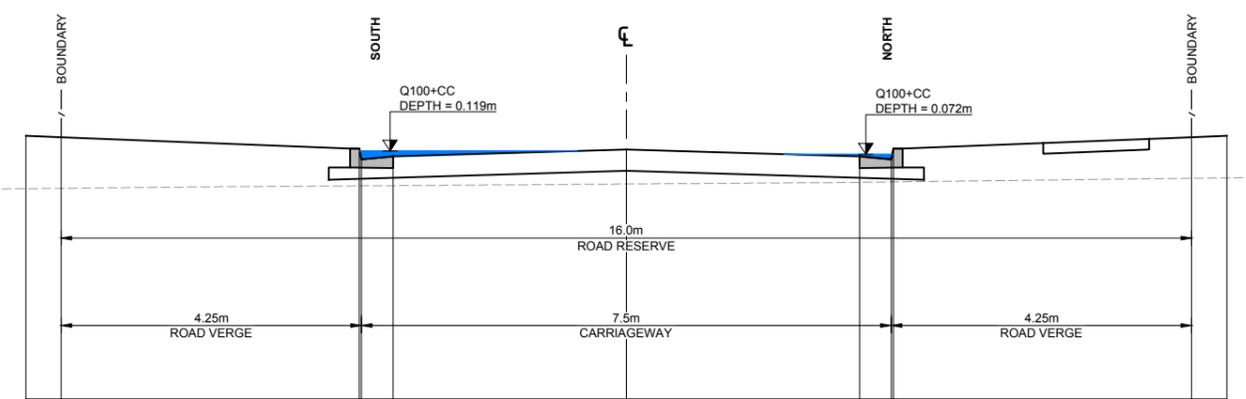
PLAN
SCALE 1:500



A SECTION - DRIVEWAY No.1
SCALE: 1:50



B SECTION - PHEASANT PLACE
SCALE: 1:50



C SECTION - LORIKEET GROVE
SCALE: 1:50



REV	DATE	DESCRIPTION	DES.	DRN.
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS
B		AMENDMENT DESCRIPTION		

APPROVED COMPANY
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APPROVED COMPANY
ISO 14001
Environmental Management System
QMS

APPROVED COMPANY
ISO 9001
Quality Management System
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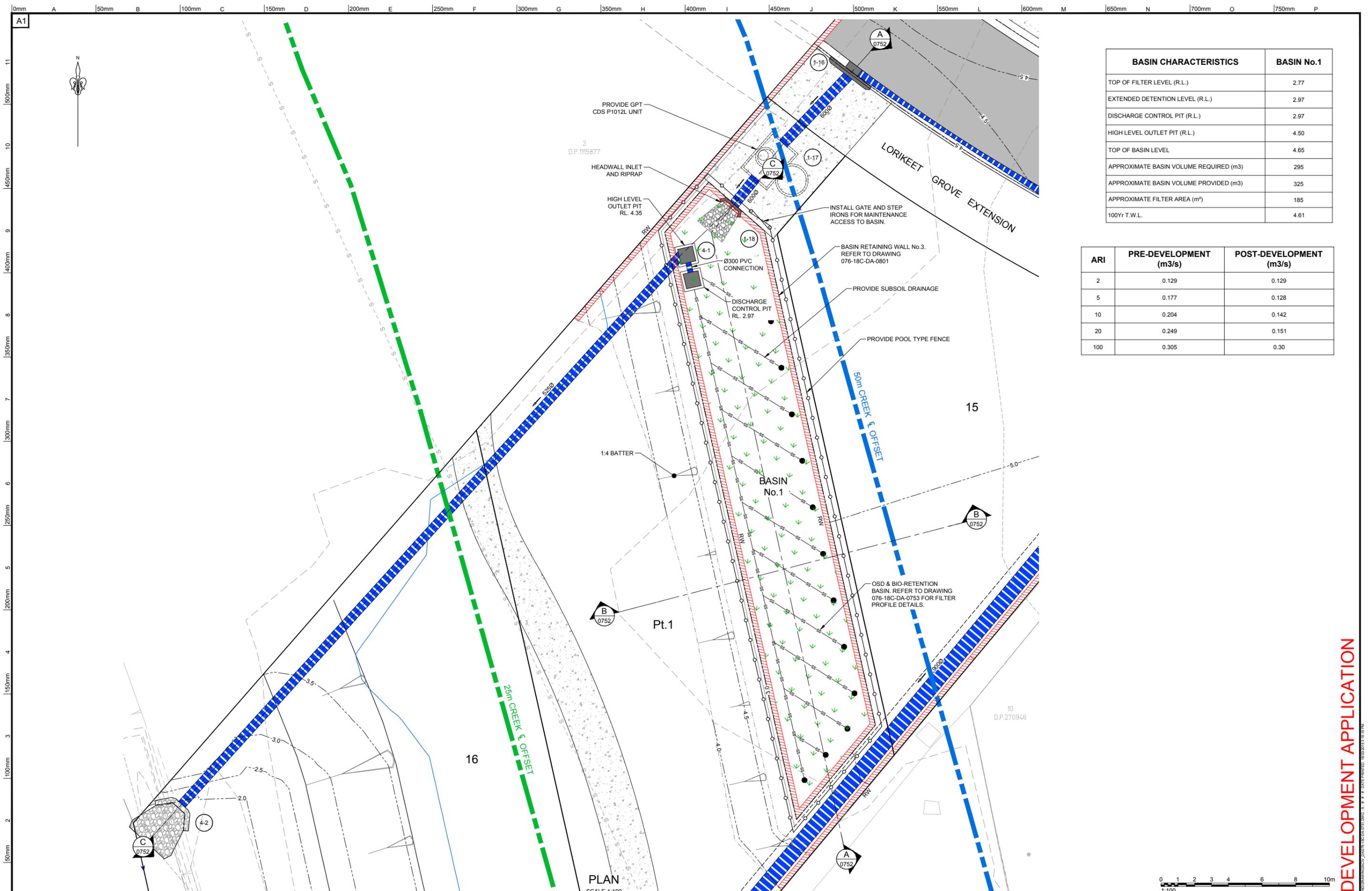
Project: **PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 CIVIL AND SUBDIVISION WORKS**

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Drawing title: **OVERLAND FLOW PATH ROAD CROSS SECTIONS**

C&R Ref: **076-18** Drawing Ref: **076-18C-DA-0721** Revision: **A**

DEVELOPMENT APPLICATION



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.)	4.50
TOP OF BASIN LEVEL	4.65
APPROXIMATE BASIN VOLUME REQUIRED (m ³)	295
APPROXIMATE BASIN VOLUME PROVIDED (m ³)	325
APPROXIMATE FILTER AREA (m ²)	185
100Yr T.W.L.	4.61

ARI	PRE-DEVELOPMENT (m ³ /s)	POST-DEVELOPMENT (m ³ /s)
2	0.129	0.129
5	0.177	0.128
10	0.204	0.142
20	0.249	0.151
100	0.305	0.30

PLAN SCALE 1:100



REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.	AH	KS
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 Principal: **LEGENDWAY PTY. LTD.**
 L.G.A. **NORTHERN BEACHES COUNCIL**
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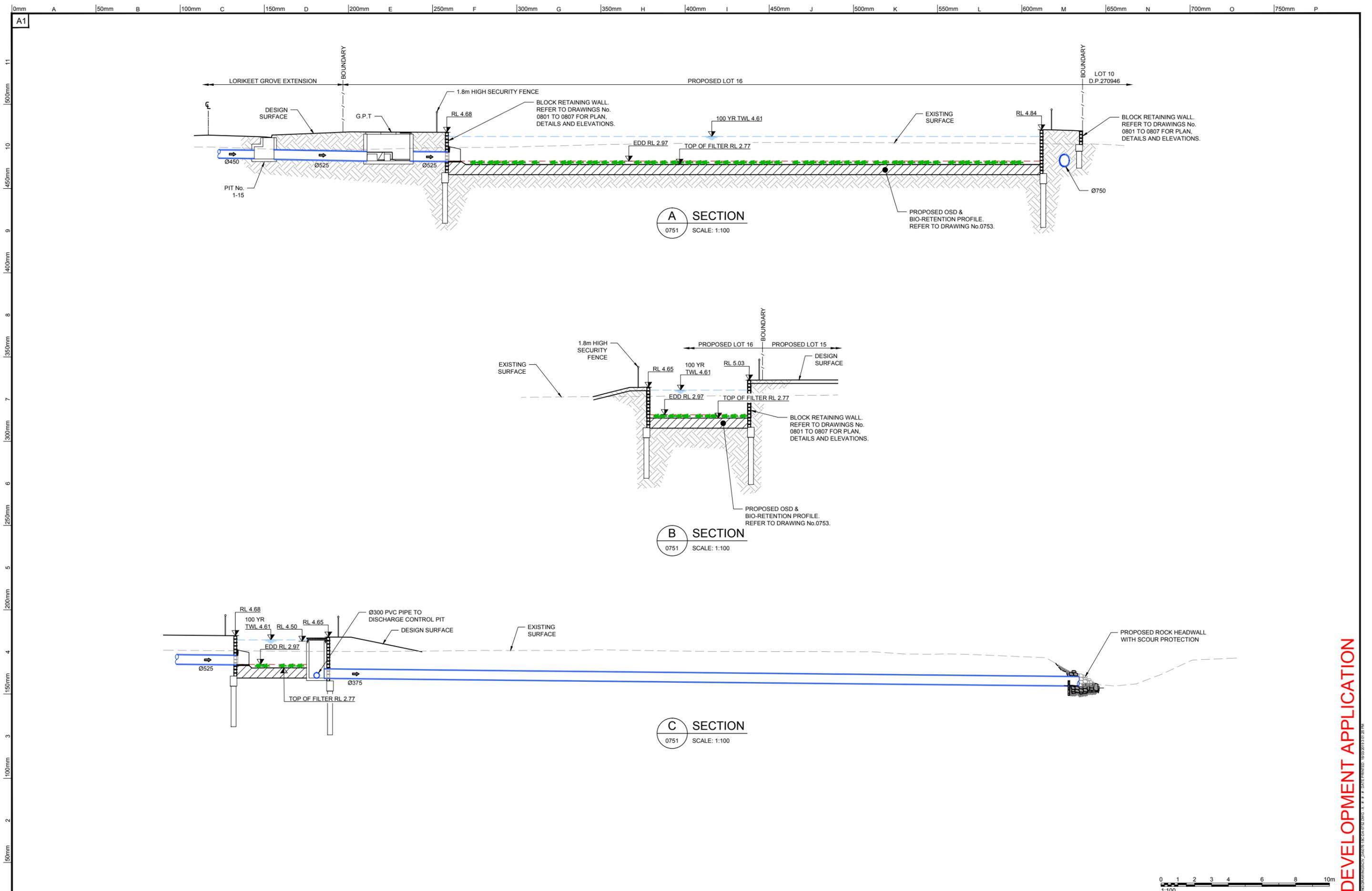
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Drawing Title: **BASIN PLAN**
 Drawing Ref: **076-18 076-18C-DA-0751**
 Revision: **A**

DEVELOPMENT APPLICATION



A SECTION
0751 SCALE: 1:100

B SECTION
0751 SCALE: 1:100

C SECTION
0751 SCALE: 1:100



REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
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QMS

APPROVED COMPANY
ISO 14001
Environmental Management System
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APPROVED COMPANY
ISO 9001
Quality Management System
QMS

DIAL 1100
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Project:
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LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319
CIVIL AND SUBDIVISION WORKS

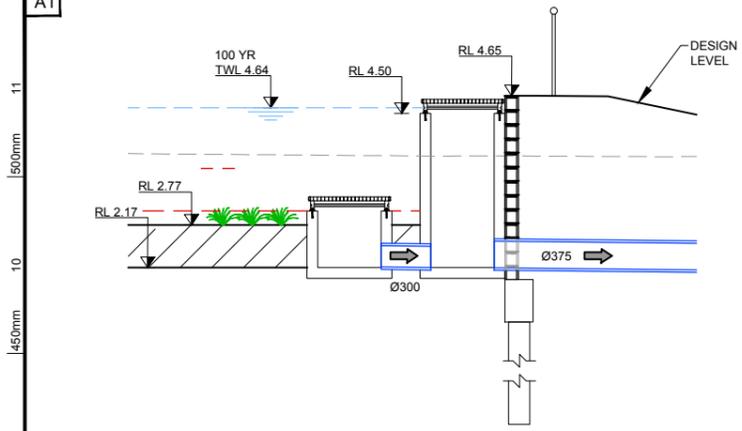


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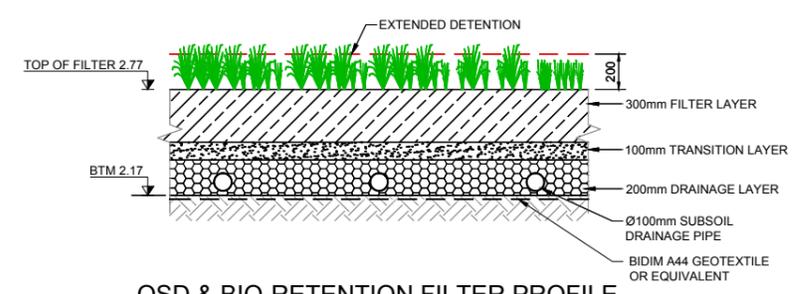
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Drawing Title BASIN SECTIONS	C&R Ref. 076-18	Drawing Ref. 076-18C-DA-0752	Revision A
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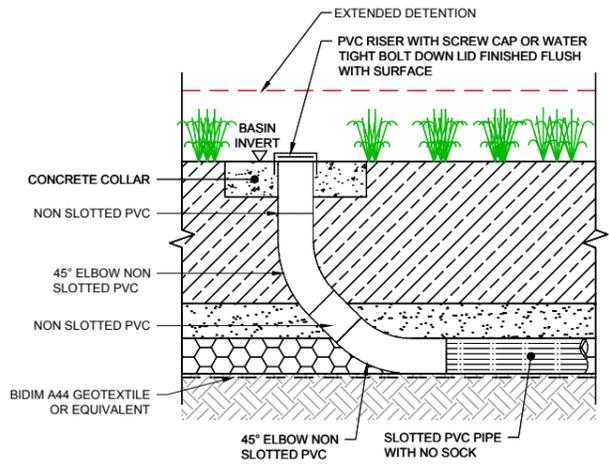
DEVELOPMENT APPLICATION



OSD & BIO-RETENTION BASIN OUTLET DETAIL
NOT TO SCALE



OSD & BIO-RETENTION FILTER PROFILE
(AFTER 80% OF UPSTREAM DWELLINGS CONSTRUCTED)
NOT TO SCALE



FLUSHING POINT DETAIL
NOT TO SCALE

BIORETENTION NOTES

A 100mm THICK COARSE SAND TRANSITION LAYER IS TO BE INSTALLED OVER THE GRAVEL DRAINAGE LAYER TO COMPLY WITH THE FOLLOWING PARTICLE SIZE DISTRIBUTION:

- 1.4mm - 100% PASSING
- 1.0mm - 80% PASSING
- 0.7mm - 44% PASSING
- 0.5mm 8.5% PASSING

1. FILTER MEDIA IS TO BE FREE OF RUBBISH AND DELETERIOUS MATERIAL AND LIGHTLY COMPACTED ONLY (TO 90% STANDARD COMPACTION)
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)
3. FILTER MEDIA PARTICLE SIZE DISTRIBUTION IS TO BE AS FOLLOWS:

- CLAY 2-4% (<0.002 mm)
- 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)

THE COMBINED PERCENTAGE OF CLAY & SILT MAY NOT EXCEED 12% UNDER ANY CIRCUMSTANCES.

5. FILTER MEDIA IS TO COMPLY WITH A.S.4419 (LATEST EDITION), INCLUDING TESTING REQUIREMENTS AND THE FOLLOWING:

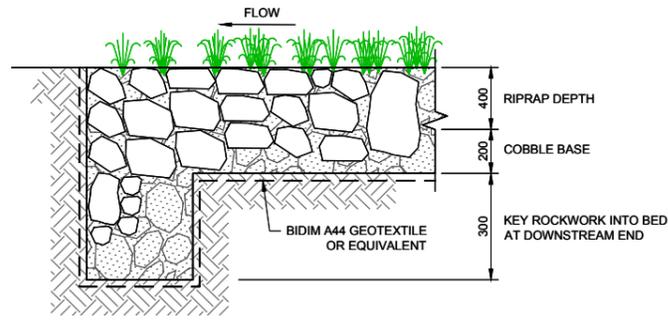
- a. BULK DENSITY - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' > 0.7 kg/L
 - b. ORGANIC MATTER CONTENT - BETWEEN 3 AND 10%
 - c. WETTABILITY - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' > 5 mm MIN
 - d. pH - 5.5 - 7.5 (pH 1:5 IN WATER)
 - e. ELECTRICAL CONDUCTIVITY (EC) AS SPECIFIED FOR 'NATURAL 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 AND 150
 - h. TOXICITY - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS'
 - i. DISPERSIBILITY - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' CATEGORY 1 OR 2
 - j. PERMEABILITY - SATURATED HYDRAULIC CONDUCTIVITY 80mm/hr ±20% AT 90% STANDARD COMPACTION
 - k. TEXTURE - SANDY LOAM
 - l. LARGE PARTICLES - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS'
6. ESTABLISHMENT OF BIO-RETENTION SYSTEM IN ACCORDANCE WITH CONSTRUCTION & ESTABLISHMENT GUIDELINES: SWALES, BIO-RETENTION SYSTEMS & WETLANDS (WATER BY DESIGN 2010).
7. BASIN/FILTER MEDIA TO BE CONSTRUCTED WHEN 80% OF DWELLINGS ARE CONSTRUCTED.

ROCK RIPRAP SPECIFICATIONS

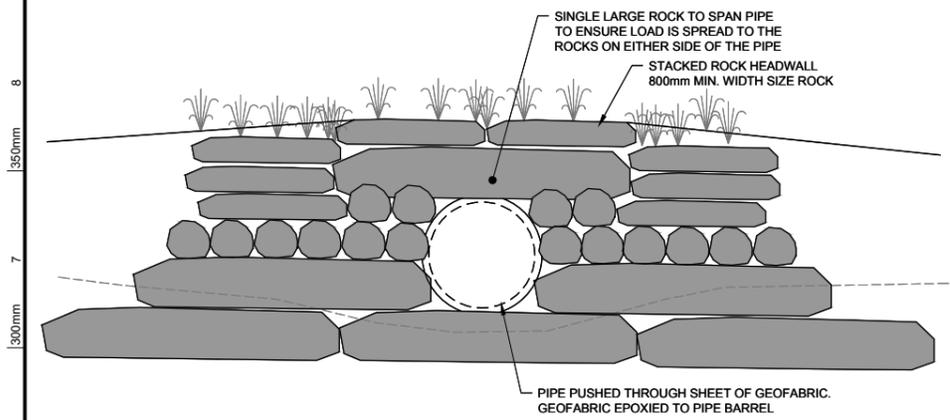
1. ALL RIPRAP MUST CONSIST OF ANGULAR RUN-OF-QUARRY DURABLE ROCK PLACED OVER A 200mm LAYER OF ANGULAR COBBLES D₅₀=200mm MIXED WITH GRAVEL D₅₀=10mm.
2. ALL ROCK IS TO BE A HARD DURABLE ROCK WITH A POINT INDEX LOAD IS50 GREATER THAN 1.0MPa AS DETERMINED IN ACCORDANCE WITH AS4133.4.1 - 2007
3. RIPRAP IS TO BE PLACED BY HAND AND CROW-BARRED INTO PLACE TO ENSURE FIT WITH MINIMUM VOIDS.
4. ALL ROCK AND COBBLES TO BE PACKED WITH TOPSOIL. GAPS IN RIPRAP TO BE PLANTED.
5. BASE OF RIPRAP TO BE LINED WITH GEOTEXTILE FABRIC (BIDIM A44)
6. ROCK SIZE D₅₀ = 250mm. D_{max} = 400mm

STACKED ROCK HEADWALLS

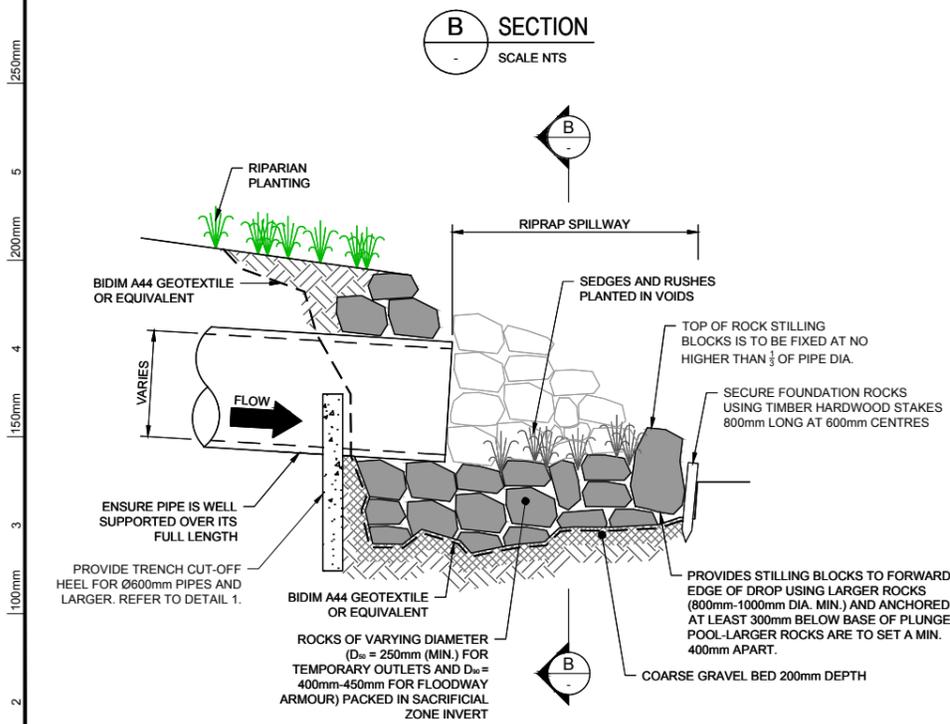
1. BACKFILL IS TO BE GRANULAR, FREE DRAINING AND COMPACTED TO 95% MAXIMUM DRY DENSITY.
2. FOUNDATION TO BE APPROVED FOR 200 kPa BEARING CAPACITY.
3. ROCK IS TO BE SOUND DURABLE BASALT OR OTHER MATERIAL APPROVED BY COUNCIL ENGINEER.
4. ROCKS SHALL BE PLACED IN SUCH A MANNER THAT THEY ARE STABLE AND INTERLOCKING AND LAID ROUGHLY COURSED AND BEDDED ON THEIR BROADEST BASE.
5. EACH ROCK SHALL BE:
 - ELONGATED TO ALLOW STACKING ON THE LONGEST AXIS.
 - ANGULAR IN SHAPE (PROMOTES INTERLOCKING)
 - FREE FROM OVERBURDEN, SPOIL, SHALE AND ORGANIC MATERIAL.
6. WALL CONSTRUCTION TO BE SUPERVISED BY A SUITABLY QUALIFIED PERSON.
7. AIR VOIDS SHALL NOT EXCEED 30% VOLUME.
8. THE TOP COURSE OF ROCKS ON EMBANKMENT AND ADJACENT TO PIPE SHALL BE MORTARED INTO POSITION.



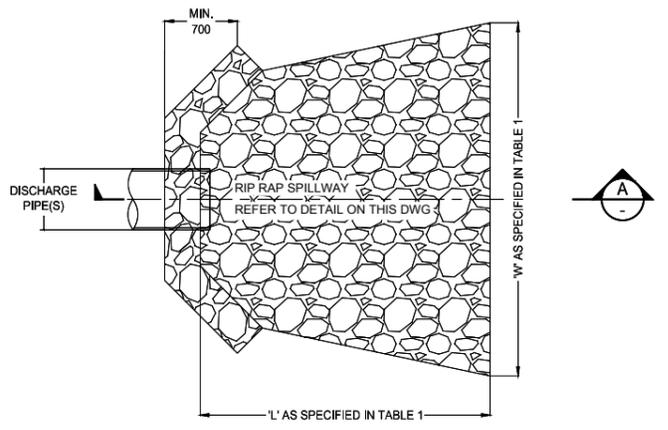
RIPRAP DETAIL
SCALE NTS



B SECTION
SCALE NTS



A SECTION
SCALE NTS

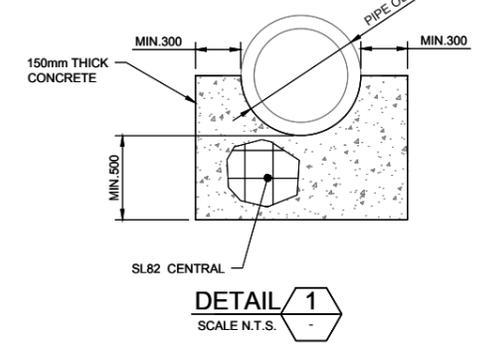


TYPICAL HEADWALL TREATMENT
SCALE NTS

TABLE 1

Pit	Pipe Size	ARI*	V(m/s)	L(m)	W(m)	D50 (mm)
4/2	450	2	1.8	1.8	1.8	200
2/9	675	100	2.6	4.05	2.9	200

* WORST CASE VELOCITY FOR ALL STORMS



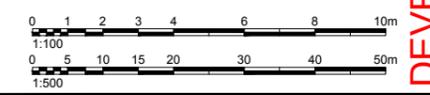
DETAIL 1
SCALE N.T.S.

EARTHWORKS - BASINS

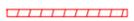
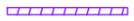
1. THE CONTRACTOR SHALL PROVIDE PROPER FENCING, GUARDING & LIGHTING AND OBSERVATION OF ALL EARTHWORKS, TEMPORARY ROADWAYS, FOOTWAYS, GUARDS & FENCES AS MAY BE RENDERED NECESSARY FOR THE ACCOMMODATION AND PROTECTION OF PEDESTRIANS, VEHICLES, ANIMALS & THE PUBLIC
2. ALL EARTHWORKS SHALL BE CARRIED OUT IN THE LOCATIONS SHOWN AND TO THE LEVELS, WIDTHS AND BATTER SLOPES INDICATED ON THE DRAWINGS
3. EXCAVATED MATERIAL NOT MEETING THE SPECIFICATIONS FOR FILL MATERIAL SHALL BE DISPOSED OFF SITE IN AN APPROPRIATE MANNER
4. WHERE EARTHWORKS ARE REQUIRED IN THE VICINITY OF EXISTING SERVICES, THE CONTRACTOR SHALL SUPPORT ALL SERVICES DURING THE WORKS
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 DEWATERED DURING THE TIMES THE WORKS ARE IN PROGRESS. ANY WORK OR MATERIAL DAMAGED BY WATER SHALL BE MADE GOOD 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
7. MATERIAL SHALL BE INSPECTED & APPROVED BY THE SUPERINTENDENT PRIOR TO USE. RELEVANT MATERIAL SPECIFICATION SHEETS ARE TO BE PROVIDED BY THE CONTRACTOR.
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.

EXCAVATIONS - BASINS

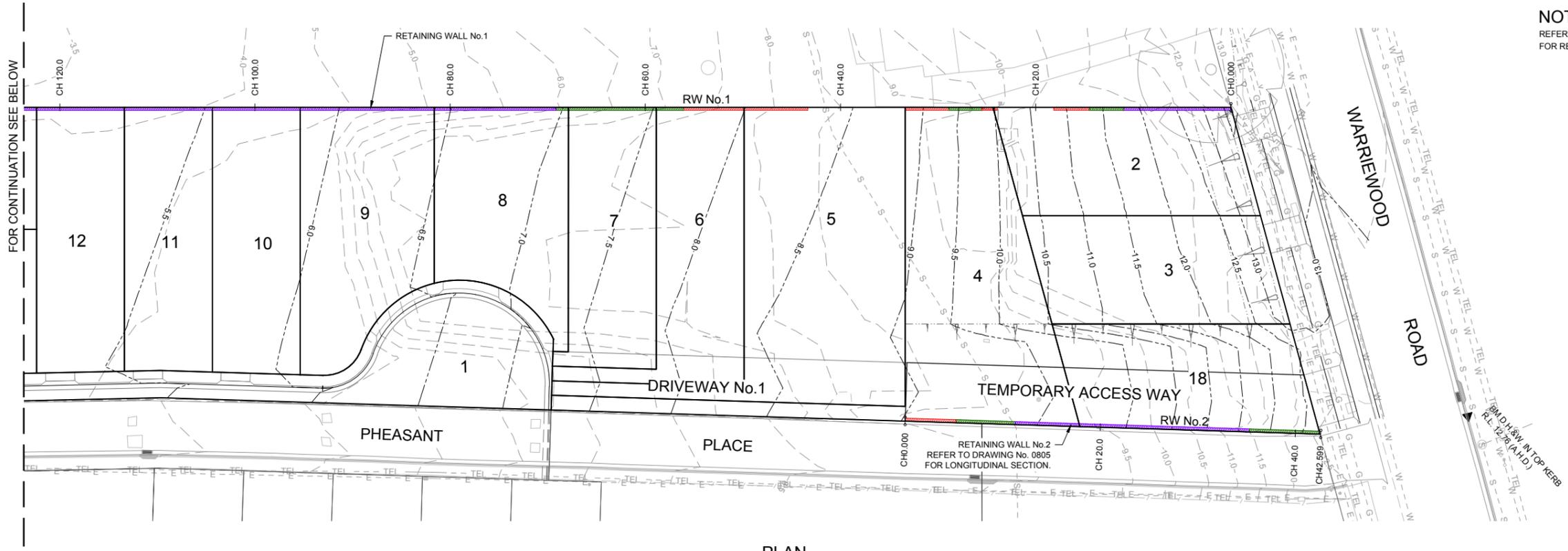
1. ALL TOPSOIL TO BE STRIPPED AND STOCKPILED FOR FUTURE USE. STRIPPED SURFACES ARE TO BE ROLLED AND INSPECTED BY A GEOTECHNICAL ENGINEER PRIOR TO CONTINUING WORKS. DEPTH OF TOPSOIL STRIPPING TO BE BETWEEN 125mm AND 200mm (TO BE CONFIRMED BY THE SUPERINTENDENT PRIOR TO CONSTRUCTION)
2. WHERE ROCK IS EXPOSED 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.



DEVELOPMENT APPLICATION

LEGEND
 RETAINING WALL (0.0m-0.5m HEIGHT)
 RETAINING WALL (0.5m-1.0m HEIGHT)
 RETAINING WALL (1.0m-1.5m HEIGHT)

NOTE
 REFER TO DRAWING No.0802
 FOR RETAINING WALL DETAILS



PLAN
SCALE 1:250



PLAN
SCALE 1:250

REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS

APPROVED COMPANY
ASINZS 4801
QH&S Management System

APPROVED COMPANY
ISO 14001
Environmental Management System

APPROVED COMPANY
ISO 9001
Quality Management System

DIAL 1199
FOR HELP

Authorised for issue by:
MINH VU

Principal:
LEGENDWAY PTY. LTD.

LGA:
NORTHERN BEACHES COUNCIL

Scale:
AS SHOWN

Datum:
AHD

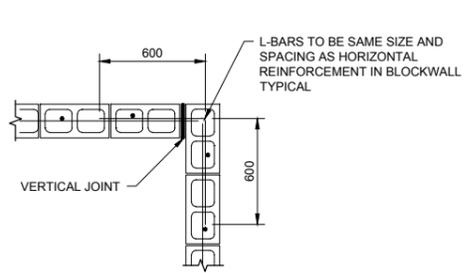
Project:
PROPOSED SUBDIVISION OF
LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319
CIVIL AND SUBDIVISION WORKS



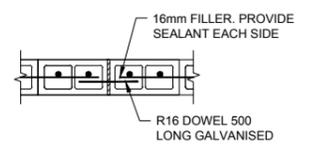
ABN 77 050 209 991 ACN 050 209 991
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Drawing Title	C&R Ref.	Drawing Ref.	Revision
RETAINING WALL PLAN	076-18	076-18C-DA-0801	A

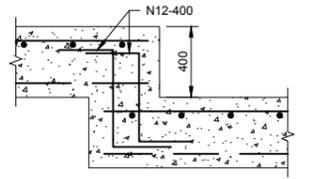
DEVELOPMENT APPLICATION



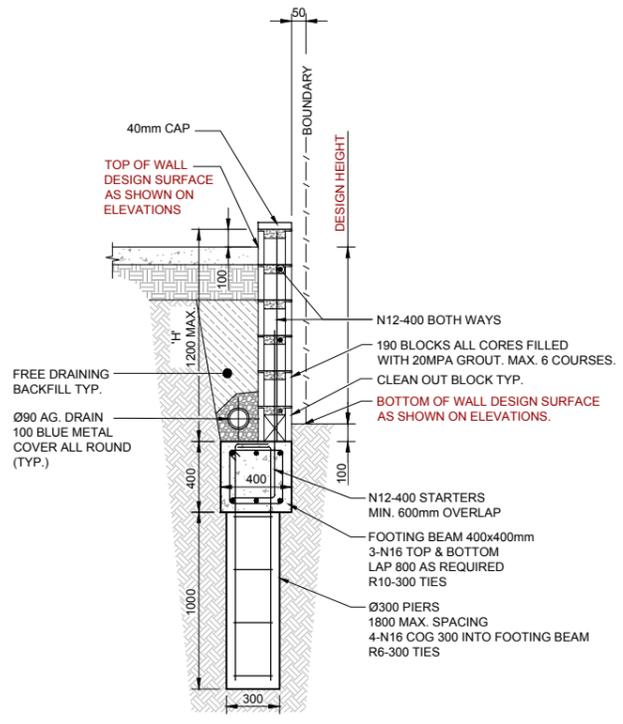
BLOCK RETAINING WALL CORNER DETAILS
SCALE 1:20



BLOCK WALL JOINT DETAILS
SCALE 1:20



STEPPED FOOTING DETAILS
SCALE 1:20



BLOCK RETAINING WALL - TYPICAL
SCALE 1:20



REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS

APPROVED COMPANY
AS/NZS 4801
OH&S Management System

APPROVED COMPANY
ISO 14001
Environmental Management System

APPROVED COMPANY
ISO 9001
Quality Management Systems

DIAL 1100
FOR HELP

Authorised for issue by:
MINH VU

Principal:
LEGENDWAY PTY. LTD.

LGA:
NORTHERN BEACHES COUNCIL

Scale:
AS SHOWN

Datum:
AHD

Signature: _____

Project:
PROPOSED SUBDIVISION OF
LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319
CIVIL AND SUBDIVISION WORKS

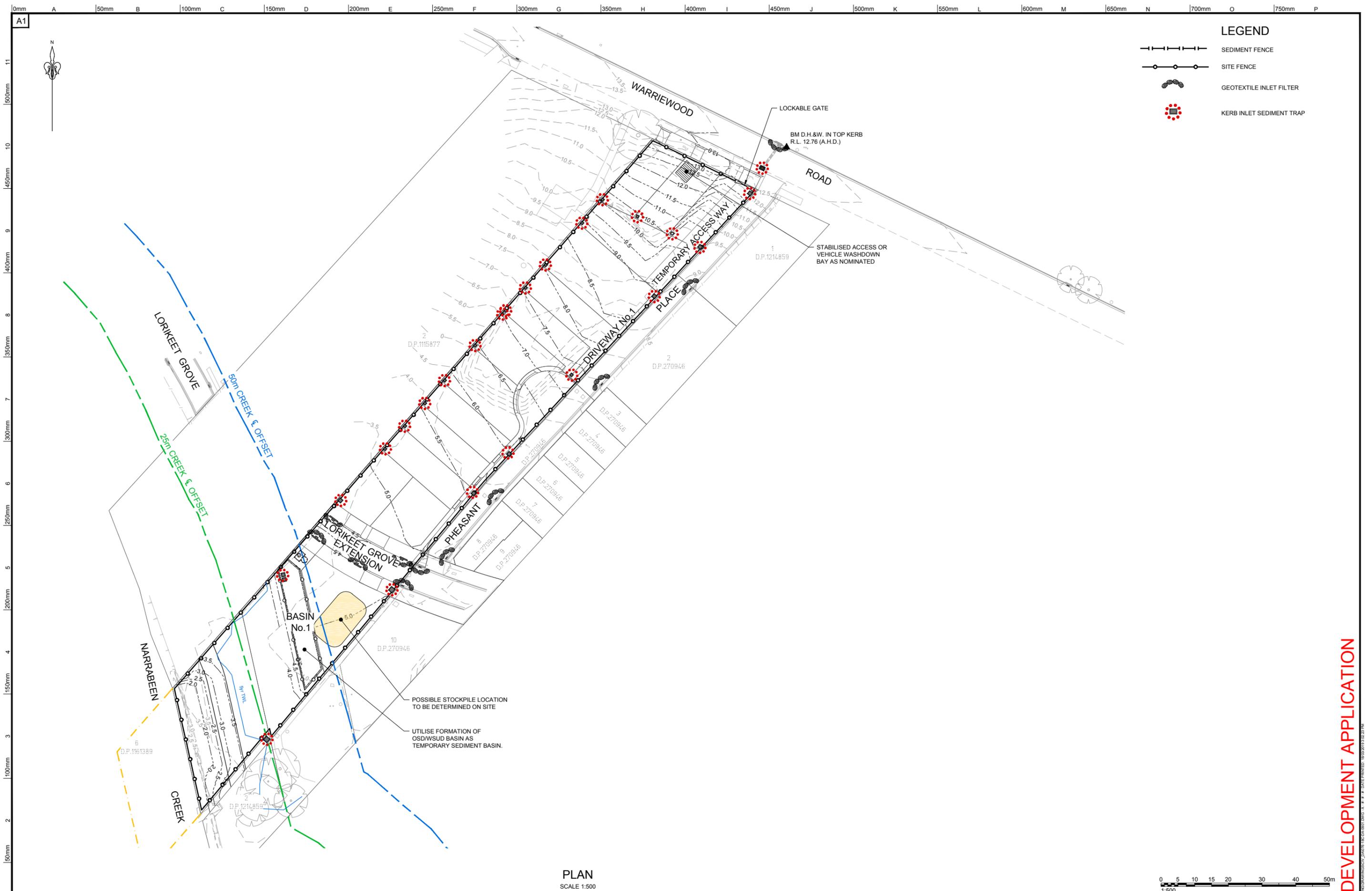


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Drawing Title	Revision
RETAINING WALL DETAILS	A
C&R Ref: 076-18	Drawing Ref: 076-18C-DA-0802

DEVELOPMENT APPLICATION



PLAN
SCALE 1:500



DEVELOPMENT APPLICATION

REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	18.03.19	ISSUED FOR DEVELOPMENT APPLICATION	AH	KS

APPROVED COMPANY
ASINZS 4801
QH&S Management System
QMS

APPROVED COMPANY
ISO 14001
Environmental Management System
QMS

APPROVED COMPANY
ISO 9001
Quality Management Systems
QMS

DIAL 1100
FOR HELP

Authorised for issue by:
MINH VU
Signature: _____

Principal:
LEGENDWAY PTY. LTD.
LGA:
NORTHERN BEACHES COUNCIL

Scale:
AS SHOWN

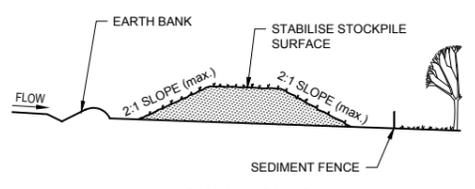
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Project:
PROPOSED SUBDIVISION OF
LOT 3, D.P. 1115877 AND PART LOT 3 D.P. 942319
CIVIL AND SUBDIVISION WORKS



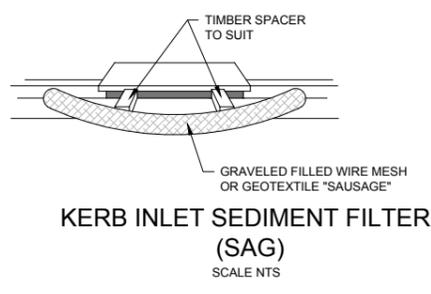
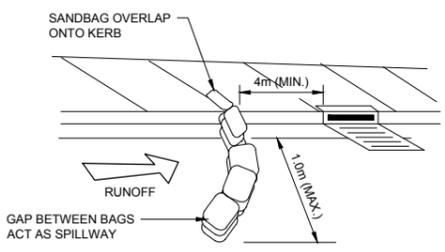
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Drawing Title: SEDIMENT AND EROSION CONTROL PLAN	C&R Ref: 076-18	Drawing Ref: 076-18C-DA-0901	Revision: A
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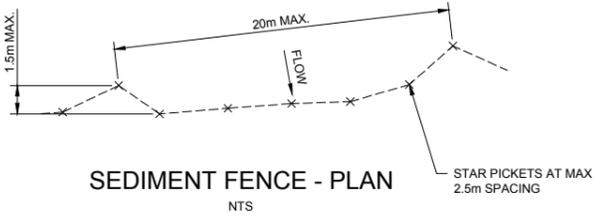
STOCKPILE
SCALE NTS

- STOCKPILE**
1. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95% STANDARD PROCTOR DENSITY.
 2. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK LARGE STONE OR FOREIGN MATERIAL.
 3. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.



KERB INLET SEDIMENT FILTER (SAG)
SCALE NTS

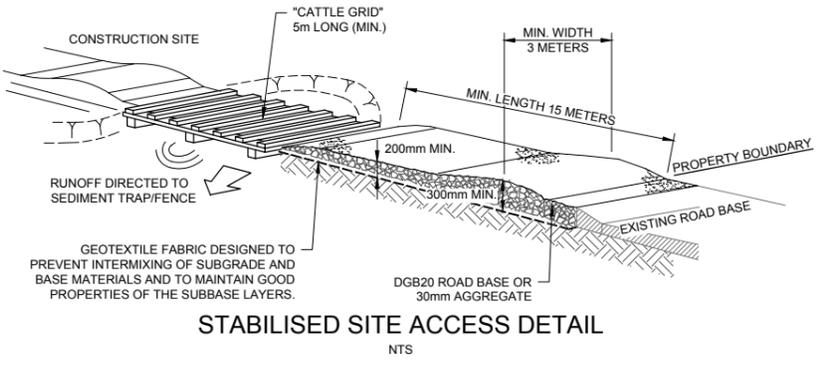
- KERB INLET SEDIMENT FILTER**
1. REFER TO APPROVED PLANS FOR LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
 2. ENSURE THAT THE INSTALLATION OF THE SEDIMENT TRAP WILL NOT CAUSE UNDESIRABLE SAFETY OR FLOODING ISSUES.
 3. INSTALL SEDIMENT TRAP IN ACCORDANCE WITH STANDARD DRAWING SUPPLIED WITH THE APPROVED PLAN, OR AS DIRECTED BY THE SITE SUPERVISOR.
 4. ENSURE THE SEDIMENT TRAP IS CONSTRUCTED UP-SLOPE OF AN ON-GRADE KERB INLET. THE SEDIMENT TRAP MUST NOT SURROUND THE KERB INLET UNLESS SPECIFICALLY DIRECTED BY THE SITE SUPERVISOR.
 5. ENSURE THE SEDIMENT TRAP FULLY ENCLOSES THE KERB INLET. USE APPROPRIATE SPACERS TO ENSURE THE SEDIMENT TRAP DOES NOT BLOCK THE SIDE-ENTRY INLET.
 6. TAKE ALL NECESSARY MEASURE TO MINIMISE THE SAFETY RISK CAUSED BY THE STRUCTURE



SEDIMENT FENCE - PLAN
NTS

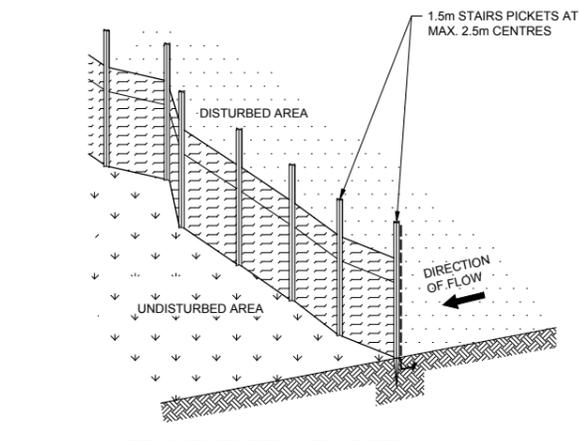
- SEDIMENT FENCE**
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BE PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING. TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION, THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 litres/sec IN THE DESIGN STORM EVENT, USUALLY THE 10 YEAR EVENT.
 2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
 3. DRIVE 1.5 METER LONG STAR PICKETS INTO GROUND AT 2.5 METER INTERVALS (MAX.) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
 4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS, ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES, OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
 5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
 6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

KERB INLET SEDIMENT FILTER (ON GRADE)
SCALE NTS

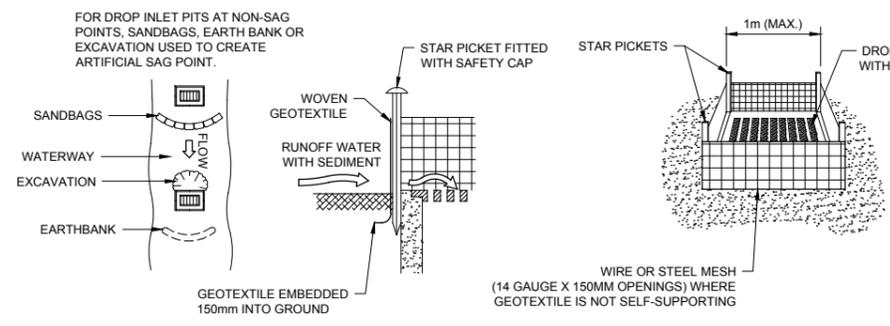
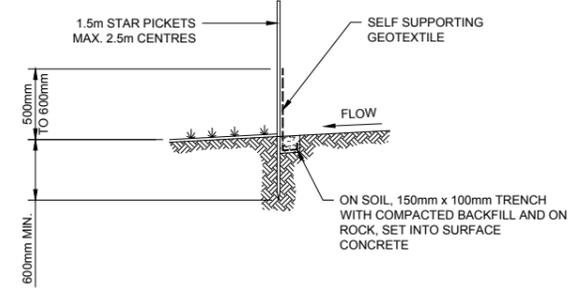


STABILISED SITE ACCESS DETAIL
NTS

- STABILISED SITE ACCESS**
1. COVER THE EXISTING SANDSTONE SUBGRADE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
 2. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
 3. ENSURE THE STRUCTURE IS AT LEAST 15 METERS LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METERS WIDE.
 4. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT

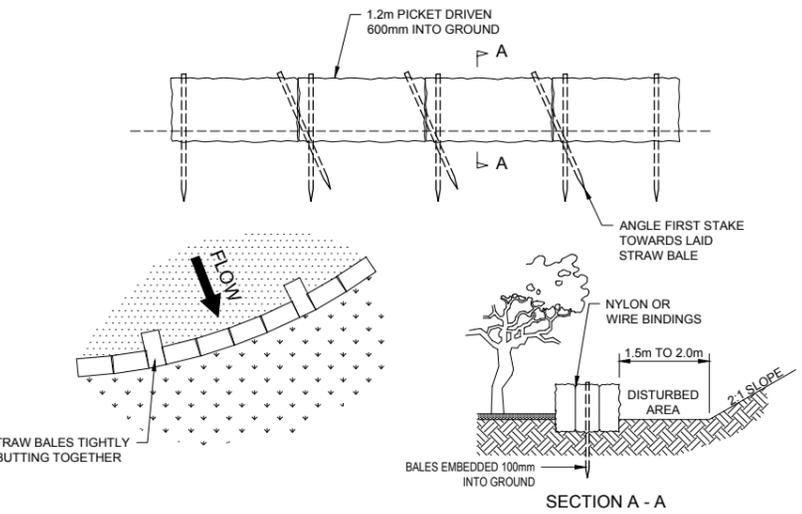


SEDIMENT FENCE - DETAIL
NTS



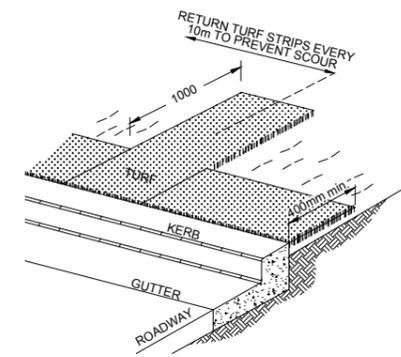
DROP INLET FILTER
NTS

- DROP INLET FILTERS**
1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OF STRAW BALES.
 2. FOLLOW STANDARD DRAWINGS OF STRAW BALE FILTERS AND SEDIMENT FENCES FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1m CENTRES.
 3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
 4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.



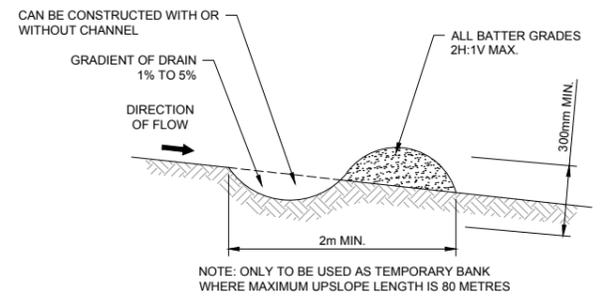
STRAW BALE FILTERS
NTS

- STRAW BALE FILTERS**
1. CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DIAGRAM TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION.
 2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN THE BALES. THE STRAWS IN EACH BALE ATE TO BE ALIGNED PARALLEL TO THE GROUND.
 3. ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
 4. EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH 1.2m STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.
 5. WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE BALES ARE PLACED 1m TO 2m DOWNSLOPE FROM THE TOE.
 6. ESTABLISH A MAINTENANCE PROGRAM THE ENSURES THE INTEGRITY OF THE BALES IS RETAINED - THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.



KERBSIDE TURF STRIP

1. INSTALL A 400mm MINIMUM WIDE ROLL OF TURF ON THE FOOTPATH NEXT TO THE KERB AND AT THE SAME LEVEL AS THE TOP OF THE KERB.
2. LAY 1.4m LONG TURF STRIPS NORMAL TO THE KERB EVERY 10m.
3. REHABILITATE DISTURBED SOIL BEHIND THE TURF STRIP FOLLOWING THE ESCP/SWMP.



EARTH BANK (LOW FLOW)

1. BUILD WITH GRADIENTS BETWEEN 1% AND 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

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

NARRABEEN CREEK REHABILITATION WORKS DEVELOPMENT APPLICATION



LOCALITY PLAN (SOURCE: NEARMAP 2019)
NOT TO SCALE

DRAWING No.	DRAWING TITLE	REV.
076-18C-DA-1001	COVER SHEET, LOCALITY PLAN AND GENERAL NOTES	A
076-18C-DA-1003	KEY PLAN, TYPICAL CROSS SECTION AND LONGITUDINAL SECTION	A
076-18C-DA-1101	GENERAL ARRANGEMENT PLAN	A
076-18C-DA-1201	TYPICAL DETAILS	A
076-18C-DA-1301	NARRABEEN CREEK CROSS SECTIONS SHEET 1 OF 2	A
076-18C-DA-1302	NARRABEEN CREEK CROSS SECTIONS SHEET 2 OF 2	A
076-18C-DA-1901	SEDIMENT AND EROSION CONTROL PLAN AND DETAILS	A

CREEK WORK NOTES:

ROCK SCOUR PROTECTION

- ROCK USED IN THE SCOUR PROTECTION SHALL CONSIST OF MATERIAL WHICH COMPLIES WITH THESE NOTES AND THE DRAWINGS. THESE REQUIREMENTS APPLY TO BOTH IMPORTED ROCK AND IN-SITU ROCK WHICH IS REUSED.
- INDIVIDUAL ROCKS SHALL BE FREE FROM CRACKS, CLEAVAGE PLANES, SEAMS AND DEFECTS WHICH WOULD RESULT IN THE BREAKDOWN OF ROCK IN SERVICE
- ROCK UNITS SHALL BE EITHER SEDIMENTARY ROCK ONLY OR IGNEOUS ROCK ONLY AND, AS A MINIMUM, SHALL SATISFY THE FOLLOWING CRITERIA:
 - ROCK SHALL BE BOTH ROUGH AND ANGULAR
 - ROCK SHALL HAVE A MINIMUM DRY DENSITY OF 2200 kg/m³
 - IGNEOUS ROCK SHALL NOT HAVE MORE THAN 10% (BY VOLUME) OLIVINE MATERIAL AND SHALL EXHIBIT NO ZONES OF SECONDARY ALTERATION SUCH AS CHLORITISATION.
 - SEDIMENTARY ROCK SHALL HAVE A SODIUM SULPHATE SOUNDNESS WEIGHT LOSS NOT EXCEEDING 25%
- ROCK SHALL HAVE A SATURATED POINT LOAD STRENGTH INDEX (15SO) NO LESS THAN 5.0MPa FOR IGNEOUS ROCK AND 1.5MPa FOR SEDIMENTARY ROCK
- THE RATIO OF THE MAXIMUM DIMENSION TO THE MINIMUM DIMENSION, MEASURED AT RIGHT ANGLES TO THE MAXIMUM DIMENSION, SHALL NOT EXCEED 2.5x
- THE ROCK UNITS SHALL BE PLACED SUCH THAT THE SPECIFIED REQUIREMENTS FOR SIZE, FINISHED SURFACE SIDE SLOPES, TOP AND TOE LEVELS AND DENSITY REQUIREMENTS ARE SATISFIED. IN ADDITION, ROCKS SHALL BE WEDGED AND LOCKED TOGETHER SUCH THAT THEY ARE NOT FREE TO MOVE. ROCK UNITS SHALL NOT BE ROLLED OR DROPPED IN TO POSITION, THEY SHALL BE PLACED.
- THE METHOD OF ROCK PLACEMENT SHALL BE SUCH AS TO MINIMISE ITS BREAKDOWN ON HANDLING AND THE PRODUCTION OF FINES.
- A NON-WOVEN SHALL BE PLACED UNDERNEATH AND BEHIND ALL ROCK ARMOUR AND EXTEND 0.5m ABOVE THE EXTENT OF THE WORKS, OR AS OTHERWISE SHOWN ON THE DRAWINGS. THE GEOTEXTILE IS TO BE LAID ON A HEAVILY TRIMMED BATTER THAT IS FREE OF HOLLOWES OR SHARP OBJECTS
- GEOTEXTILE LAYERS SHALL EITHER OVERLAP ONE ANOTHER BY 1000mm OR BE SEWN TOGETHER (WITH A NON-BIODEGRADABLE THREAD) WITH AN OVERLAP OF 100mm
- ROCK AND SUB-ARMOUR SHALL BE PLACED UPON THE GEOTEXTILE IN A LAYER NO LESS THAN 150mm THICK U.N.O. ON DRAWINGS
- ROCK ARMOUR SHALL BE SELECTIVELY HAND PLACED UPON THE SUB-ARMOUR TO ENSURE A SNUG FIT SUCH THAT INDIVIDUAL ROCKS ARE NOT FREE TO MOVE. THE PLACING OF ANY ARMOUR ROCK SHALL BE COMPLETED IN SUCH A MANNER AS TO MINIMISE THE DISTURBANCE OR DISLODGEEMENT OF THE SUB-ARMOUR.
- THE ARMOUR ROCK AND SUB-ARMOUR ROCK SHALL BE PLACED TO THE CONSTRUCTION TOLERANCES SHOWN ON THE DRAWINGS
- AT LEAST FOURTEEN (14) DAYS PRIOR TO THE SUPPLY OF ANY ROCK, THE CONTRACTOR SHALL PROVIDE DOCUMENTATION TO DEMONSTRATE THAT THE ROCK TO BE SUPPLIED COMPLIES WITH THE REQUIREMENTS OF THIS SPECIFICATION

EARTH WORKS

- 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 PROTECTION OF PEDESTRIANS, VEHICLES, ANIMALS & THE PUBLIC
- ALL EARTHWORKS SHALL BE CARRIED OUT IN THE LOCATIONS SHOWN AND TO THE 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
- WHERE EARTHWORKS ARE REQUIRED IN THE VICINITY OF EXISTING SERVICES, THE CONTRACTOR SHALL SUPPORT ALL SERVICES DURING THE WORKS
- 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 DEWATERED DURING THE TIMES THE WORKS ARE IN PROGRESS. ANY WORK OR MATERIAL DAMAGED BY WATER SHALL BE MADE GOOD BY THE CONTRACTOR.
- 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

EXCAVATIONS

- 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)
- 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

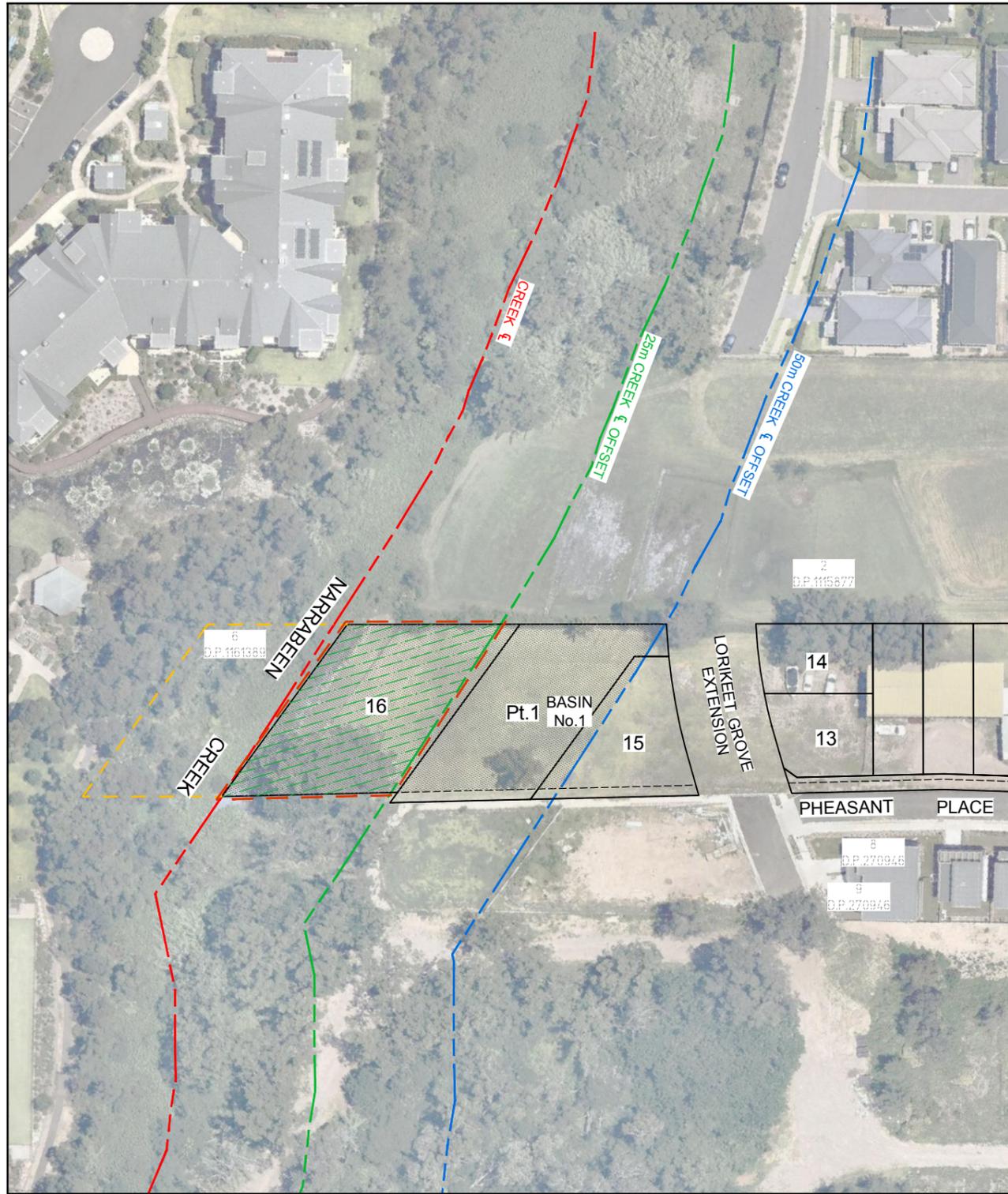
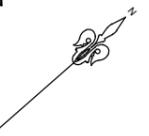
FILL

- FOUNDATION MATERIAL DEEMED BY THE SUPERINTENDENT AS UNSUITABLE TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LIST BELOW
- UNLESS OTHERWISE APPROVED OR SPECIFIED, ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING:-
 - FREE FROM ORGANIC & PERISHABLE MATTER
 - MAXIMUM PARTICLE SIZE 75mm
 - PLASTICITY INDEX BETWEEN 2% AND 20%
 - CBR > 10
- SELECT FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200MM LOOSE THICK LAYERS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (±2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289E3.1 (LATEST EDITION) OF NOT LESS THAN THE STANDARD DRY DENSITY ON ACCORDANCE WITH AS1289E3.1 (LATEST EDITION) SHOWN ON THE DRAWING
- COMPACTION CONTROL TESTING SHALL BE CARRIED OUT BY & AT THE COST OF THE CONTRACTOR TO CONFORM WITH LEVEL 1 AS DEFINED IN AS3798 (LATEST EDITION)
- REPLACEMENT SUBGRADE MATERIAL MAY COMPRISE GRANULAR FILL MATERIAL & SHOULD HAVE A CBR OF AT LEAST 10% REPLACEMENT. SUBGRADE SHALL BE PLACED ON PROOF ROLLED SUBGRADE IN HORIZONTAL LAYERS OF 200mm TO 250mm MAXIMUM LOOSE THICKNESS DEPENDING ON THE SIZE OF EQUIPMENT) AND COMPACTED TO A MINIMUM DRY DENSITY OF (MDDR) OF 98% STANDARD, AT MOISTURE CONTENT WITHIN 2% OF OPTIMUM MOISTURE CONTENT
- WHERE EXCAVATED MATERIAL IS TO BE USED FOR FILLING, THE MATERIAL SHALL BE INSPECTED & APPROVED BY THE SUPERINTENDENT PRIOR TO USE.

TIE IN WORKS

- ALL CREEK WORKS TO TIE INTO EXISTING LOW FLOW CHANNEL AT BOTH UPSTREAM AND DOWNSTREAM LIMIT OF WORKS. TRANSITION TIE IN OVER 5m.

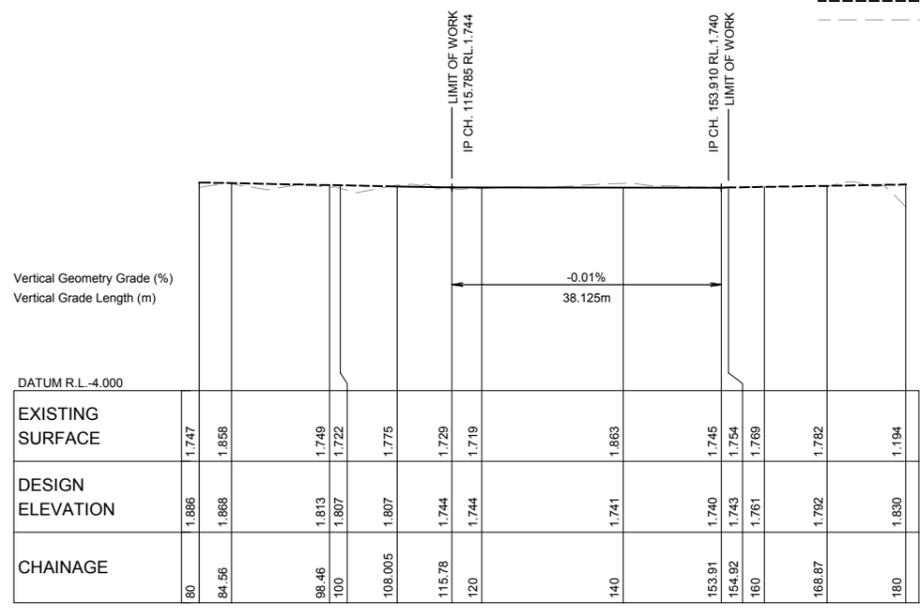
DEVELOPMENT APPLICATION



PLAN
SCALE 1:500

LEGEND

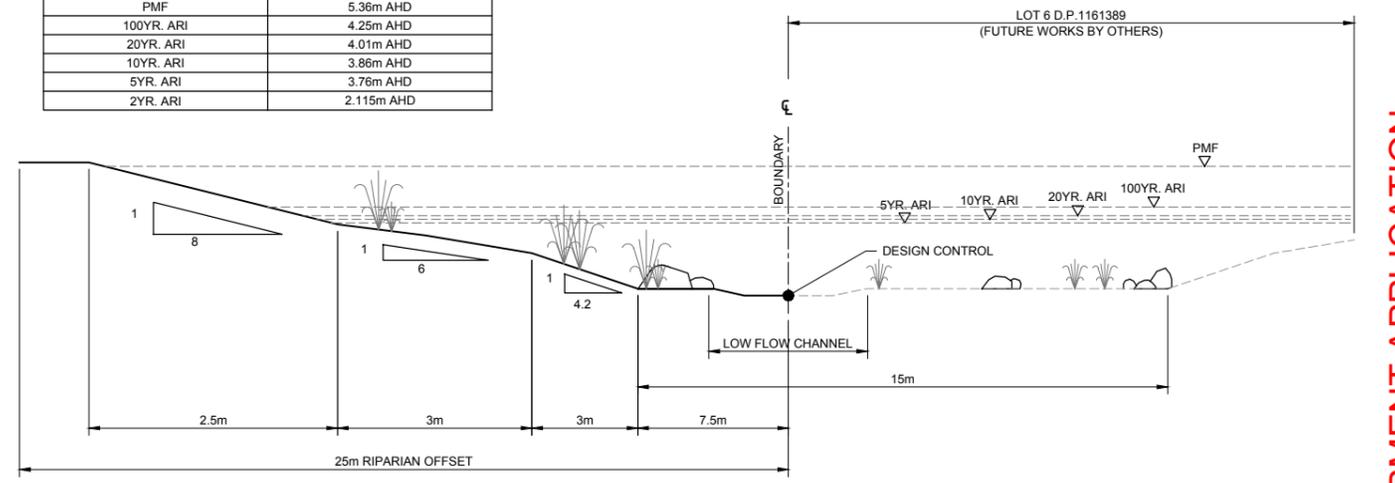
- PROPOSED 50m RIPARIAN CORRIDOR
- PROPOSED 25m RIPARIAN CORRIDOR
- LIMIT OF WORKS
- FUTURE WORKS BY OTHERS
- 25m CREEK OFFSET
- 50m CREEK OFFSET
- DESIGN SURFACE
- FUTURE SURFACE
- EXISTING SURFACE



NARRABEEN CREEK - LONGITUDINAL SECTION

HORIZONTAL SCALE - 1:500
VERTICAL SCALE - 1:100

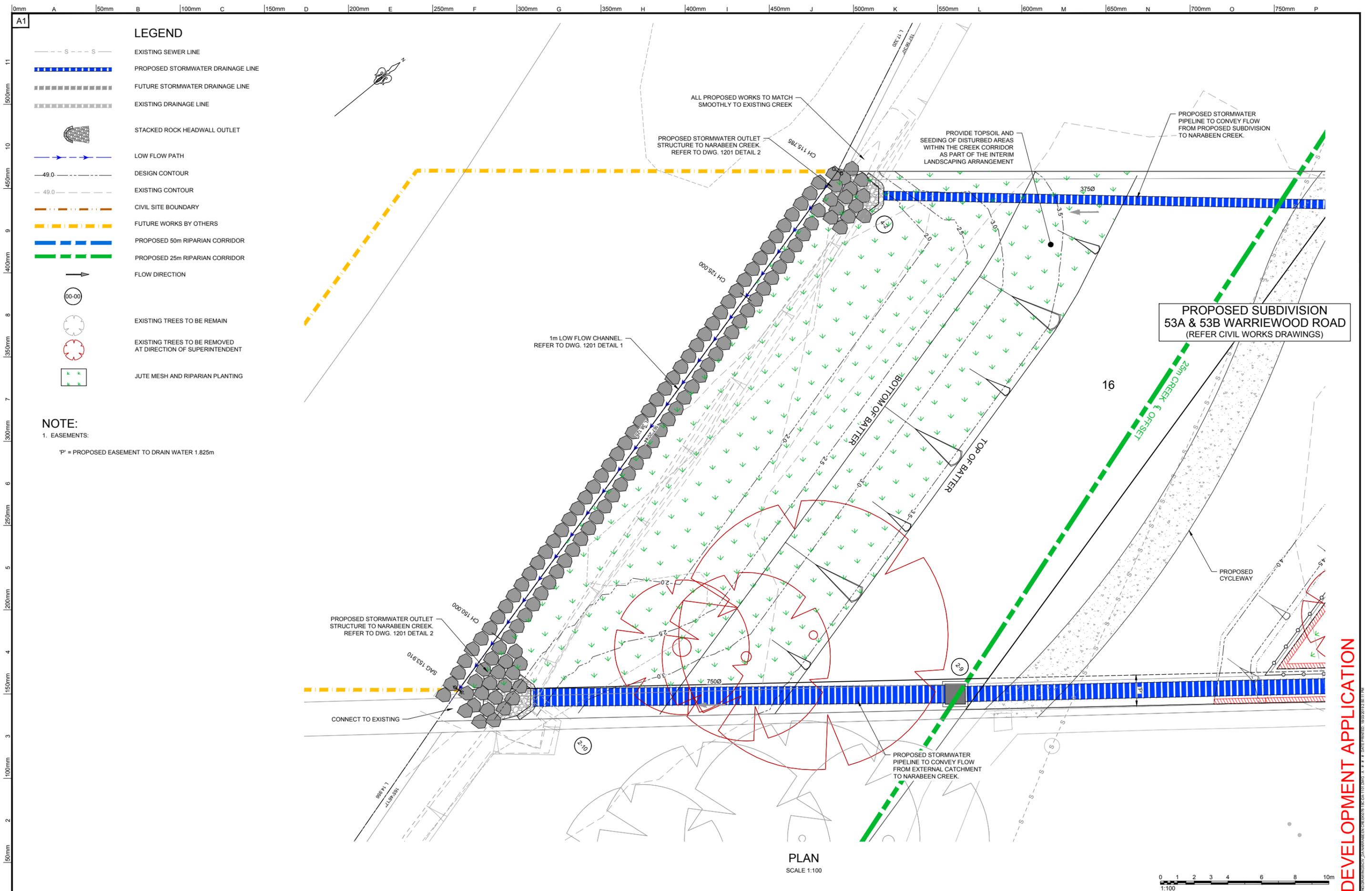
FLOOD LEVELS CENTRE OF SITE	
PMF	5.36m AHD
100YR. ARI	4.25m AHD
20YR. ARI	4.01m AHD
10YR. ARI	3.86m AHD
5YR. ARI	3.76m AHD
2YR. ARI	2.115m AHD



TYPICAL CREEK REHABILITATION SECTION
NOT TO SCALE



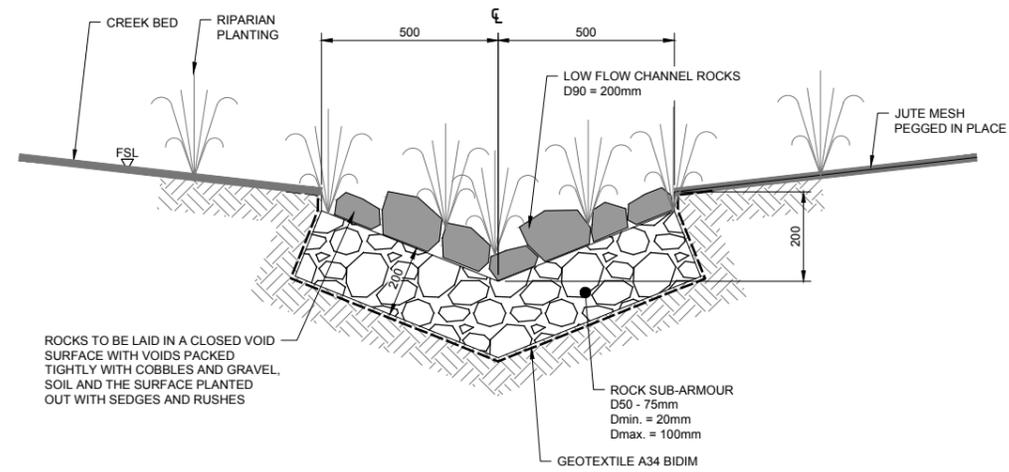
DEVELOPMENT APPLICATION



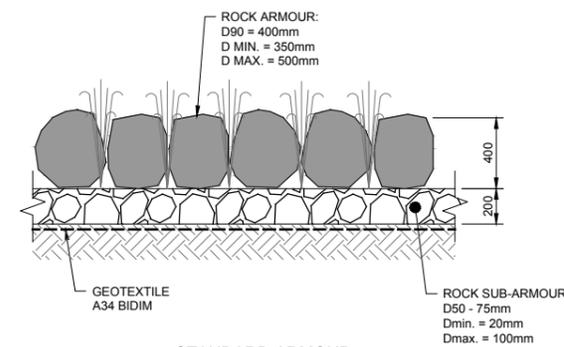
DEVELOPMENT APPLICATION

<p>APPROVED COMPANY AS/NZS 4801 QH&S Management System</p>		<p>APPROVED COMPANY ISO 14001 Environmental Management System</p>		<p>APPROVED COMPANY ISO 9001 Quality Management Systems</p>		<p>DIAL TAG NO TOXIC WASTE</p>		<p>Authorised for issue by: MINH. VU</p>		<p>Principal: LEGENDWAY PTY. LTD.</p>		<p>Project: PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 NARRABEEN CREEK REHABILITATION WORKS</p>		<p>Scale: AS SHOWN</p>		<p>Datum: AHD</p>		<p>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. 9669-1855 reception@craigandrhodes.com.au www.craigandrhodes.com.au © Craig & Rhodes Pty Ltd</p>		<p>Drawing Title: GENERAL ARRANGEMENT PLAN</p>		<p>C&R Ref: 076-18</p>		<p>Drawing Ref: 076-18C-DA-1101</p>		<p>Revision: A</p>	
REV.	DATE	AMENDMENT DESCRIPTION						DES.	DRN.	D.Y.	D.Yoo.																
A	14.03.19	ISSUED FOR DEVELOPMENT APPLICATION																									

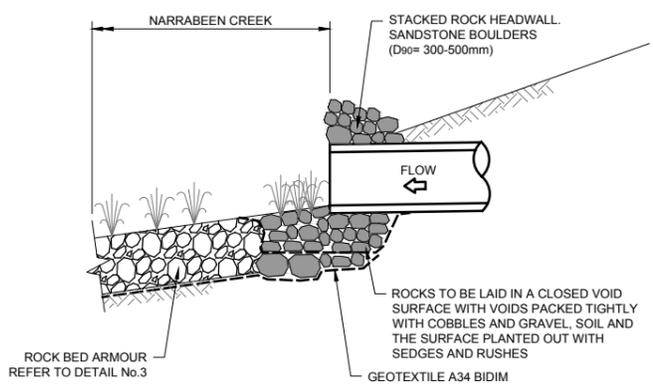
NOTE
STORMWATER OUTLETS TO BE ORIENTATED IN THE DIRECTION OF NATURAL FLOW OF THE RECEIVING WATER COURSE AND NOT OBSTRUCTING FLOW FROM UPSTREAM. OUTLETS TO BE INSTALLED IN ACCORDANCE WITH NSW OFFICE OF WATER REQUIREMENTS



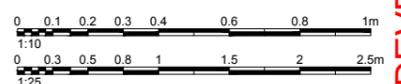
LOW FLOW CHANNEL
DETAIL 1
SCALE 1:10



STANDARD ARMOUR
DETAIL 3
NTS



STORMWATER OUTLET
DETAIL 2
SCALE 1:25



REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	14.03.19	ISSUED FOR DEVELOPMENT APPLICATION	D.Y.	D.Yoo.

APPROVED COMPANY
AS/NZS 4801
QH&S Management System

APPROVED COMPANY
ISO 14001
Environmental Management System

APPROVED COMPANY
ISO 9001
Quality Management Systems

DIAL 1100
FOR HELP

Authorised for issue by:
MINH. VU

Principal:
LEGENDWAY PTY. LTD.

LGA:
NORTHERN BEACHES COUNCIL

Scale:
AS SHOWN

Datum:
AHD

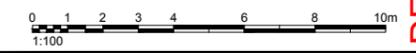
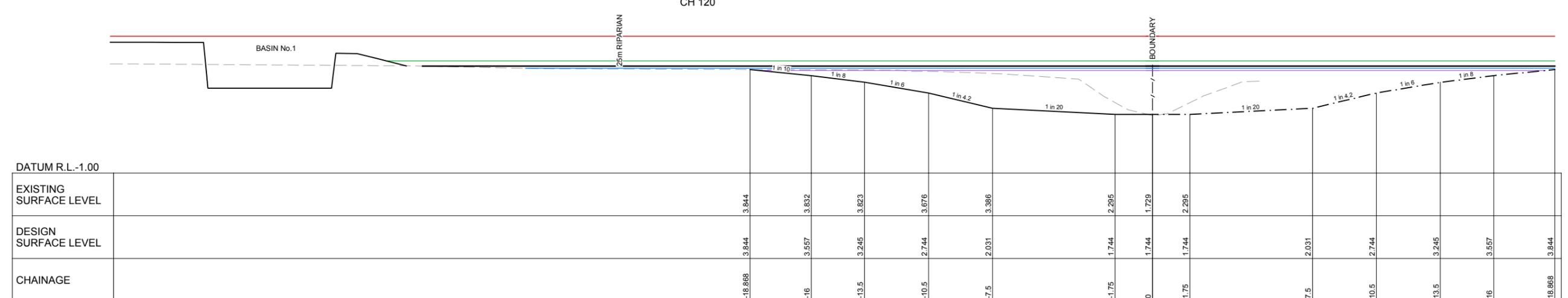
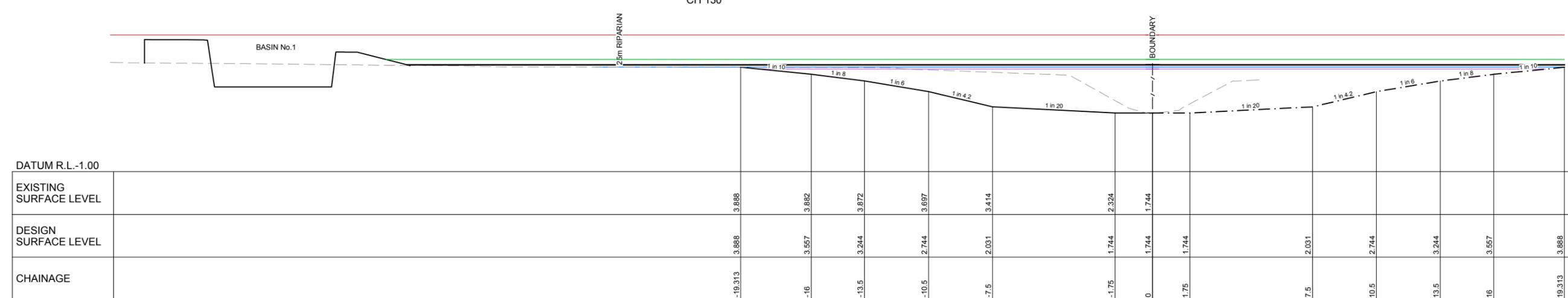
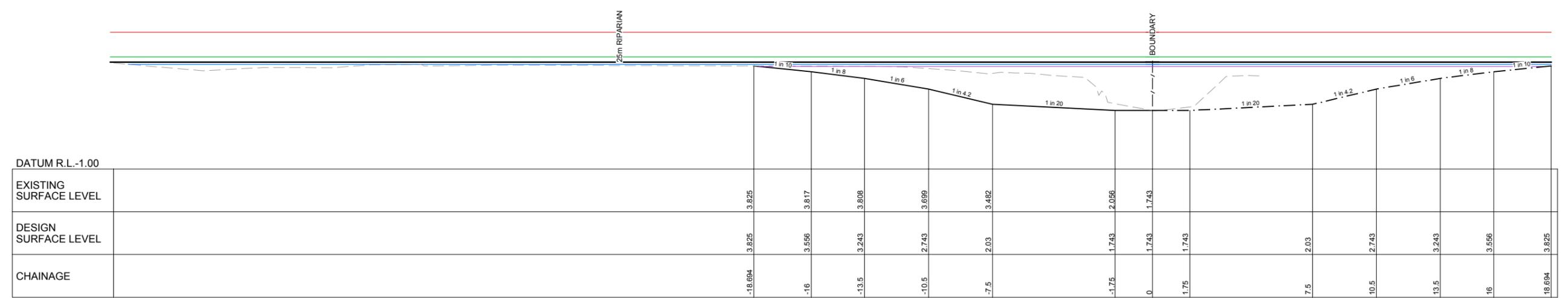
Project:
PROPOSED SUBDIVISION OF
LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319
NARRABEEN CREEK REHABILITATION WORKS

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DEVELOPMENT APPLICATION

LEGEND

- INTERIM DESIGN SURFACE
- - - FUTURE DESIGN SURFACE
- - - EXISTING SURFACE
- TWL 5Yr A.R.I.
- TWL 10Yr A.R.I.
- TWL 20Yr A.R.I.
- TWL 100Yr A.R.I.
- TWL PMF



REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	14.03.19	ISSUED FOR DEVELOPMENT APPLICATION	D.Y.	D.Yoo.

APPROVED COMPANY
AS/NZS 4801
QH&S Management System

APPROVED COMPANY
ISO 14001
Environmental Management System

APPROVED COMPANY
ISO 9001
Quality Management Systems

DIAL 1199
FOR HELP

Authorised for issue by:
MINH. VU

Principal:
LEGENDWAY PTY. LTD.

LGA:
NORTHERN BEACHES COUNCIL

Scale:
AS SHOWN

Datum:
AHD

Project:
PROPOSED SUBDIVISION OF
LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319
NARRABEEN CREEK REHABILITATION WORKS



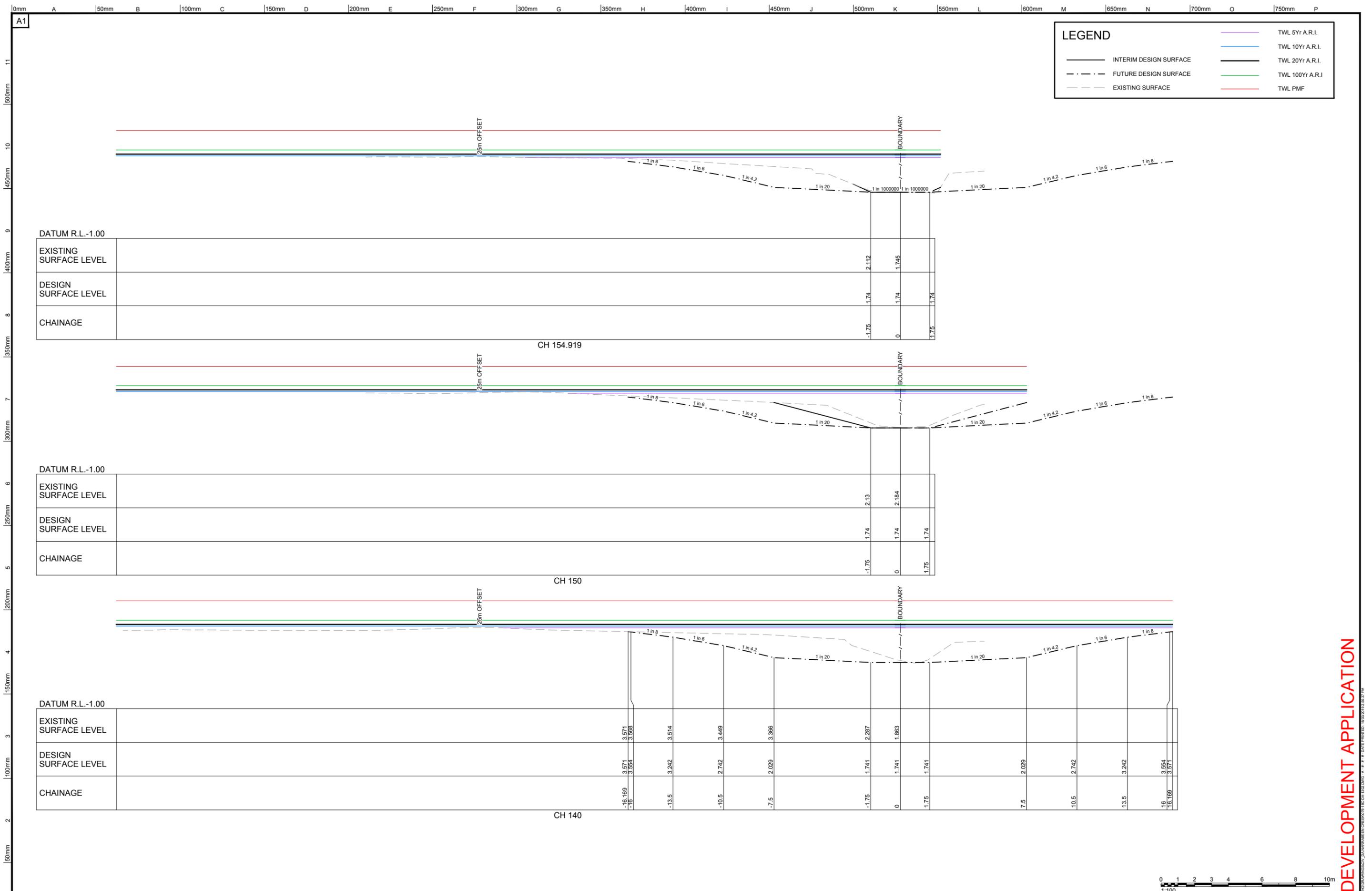
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Drawing Title
NARRABEEN CREEK
CROSS SECTIONS
SHEET 1 OF 2

C&R Ref. 076-18 Drawing Ref. 076-18C-DA-1301

Revision
A

DEVELOPMENT APPLICATION



LEGEND	
	TWL 5Yr A.R.I.
	TWL 10Yr A.R.I.
	TWL 20Yr A.R.I.
	TWL 100Yr A.R.I.
	TWL PMF
	INTERIM DESIGN SURFACE
	FUTURE DESIGN SURFACE
	EXISTING SURFACE

REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	14.03.19	ISSUED FOR DEVELOPMENT APPLICATION	D.Y.	D.Yoo.

Authorised for issue by: **MINH. VU**
 Signature: _____
 Principal: **LEGENDWAY PTY. LTD.**
 LGA: **NORTHERN BEACHES COUNCIL**
 Scale: **AS SHOWN** Datum: **AHD**

Project: **PROPOSED SUBDIVISION OF LOT 3, D.P.1115877 AND PART LOT 3 D.P.942319 NARRABEEN CREEK REHABILITATION WORKS**



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Drawing Title NARRABEEN CREEK CROSS SECTIONS SHEET 2 OF 2	Drawing Ref. 076-18 076-18C-DA-1302	Revision A
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DEVELOPMENT APPLICATION



SEDIMENT AND EROSION CONTROL

- THIS PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS AND ANY WRITTEN INSTRUCTIONS THAT MAY BE ISSUED.
- THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO DISTURBANCE OF THE RELATED CATCHMENT AREA AND TO THE STANDARDS OF 'MANAGING URBAN STORMWATER, SOILS & CONSTRUCTION' & PITTSBURGH COUNCIL SPECIFICATIONS.
- ALL SUBCONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWN SLOPE AREAS.
- LAND DISTURBANCE SHALL BE LIMITED TO THAT NECESSARY FOR IMPLEMENTATION OF THE PLANS OF WORKS. BUFFER ZONES AND LANDS NOT TO BE DISTURBED SHALL BE CLEARLY MARKED WITH BARRIER FENCES. "SILT" FENCES OR STRAW BALE SEDIMENT TRAPS SHALL BE PLACED AT REGULAR INTERVALS IMMEDIATELY DOWNSLOPE OF ALL UNPROTECTED DISTURBED LANDS.
- THE LOCATION OF "SILT" FENCES, BARRIER FENCES, SEDIMENT TRAPS AND OTHER DEVICES ARE INDICATIVE ONLY AND FINAL LOCATIONS ARE TO BE DECIDED ON SITE. VARIATIONS WILL BE PERMITTED TO BEST SUIT THE CIRCUMSTANCES. CONTRACTOR TO PREPARE DETAILED CONSTRUCTION SEDIMENT AND EROSION CONTROL PLAN FOR APPROVAL BY THE SUPERINTENDENT.
- ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED BY THE CONTRACTOR FOLLOWING EACH STORM EVENT AND ANY NECESSARY MAINTENANCE WORK SHALL BE UNDERTAKEN TO ENSURE THEIR CONTINUED PROPER OPERATION. SEDIMENT SHALL BE REMOVED FROM THE THE SOIL EROSION & SEDIMENT CONTROL STRUCTURES WHEN NO MORE THAN 40% CAPACITY HAS BEEN REACHED. THESE STRUCTURES SHALL CONTINUE IN PROPER OPERATION UNTIL ALL DEVELOPMENT ACTIVITIES HAVE BEEN COMPLETED AND THE SITE FULLY STABILISED.
- TEMPORARY REHABILITATION SHALL BE UNDERTAKEN WITHIN 14 WORKING DAYS ON DISTURBED AREAS WHERE WORKS HAVE STOPPED AND SOILS ARE EXPECTED TO REMAIN EXPOSED FOR MORE THAN 14 DAYS BEFORE EITHER WORKS CONTINUE OR PERMANENT REHABILITATION IS UNDERTAKEN.
- AT LEAST WEEKLY, THE CONTRACTOR WILL INSPECT THE SITE, PROVIDING PARTICULAR ATTENTION TO THE FOLLOWING MATTERS :
 - ENSURE DRAINS OPERATE EFFECTIVELY AND INITIATE REPAIR AS REQUIRED.
 - REMOVE SPILLED SAND (OR OTHER MATERIALS) FROM HAZARD AREAS, INCLUDING LANDS.
 - REMOVE TRAPPED SEDIMENT WHENEVER LESS THAN DESIGN CAPACITY REMAINS
 - ENSURE REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND INITIATE UPGRADING OR REPAIR AS APPROPRIATE
 - CONSTRUCT ADDITIONAL EROSION AND/OR SEDIMENT CONTROL WORKS AS MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS, i.e. MAKE ONGOING CHANGES TO THE PLAN.
 - MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN A FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.
 - REMOVE TEMPORARY SOIL CONSERVATION STRUCTURES AS A LAST ACTIVITY IN THE REHABILITATION PROGRAM
- THE CONTRACTOR WILL KEEP A LOG BOOK, MAKING ENTRIES AT LEAST WEEKLY AND IMMEDIATELY PRIOR TO FORECAST RAINFALL AND/OR SITE CLOSURE. RECORD:
 - THE VOLUME OF ANY RAINFALL EVENTS;
 - THE CONDITION OF ANY SOIL AND WATER MANAGEMENT WORKS;
 - APPLICATIONS OF FLOCCULATING AGENTS TO SEDIMENT RETENTION SYSTEMS;
 - VOLUMES OF WATER DISCHARGED FROM SEDIMENT RETENTION SYSTEMS; AND
 - REMEDIAL WORKS.

THE BOOK WILL BE KEPT ON-SITE AND MADE AVAILABLE TO ANY AUTHORISED PERSON ON REQUEST. IT WILL BE GIVEN TO THE PROJECT MANAGER AT THE CONCLUSION OF WORKS. COPIES OF MONTHLY ENTRIES ARE TO BE PROVIDED WITH PROGRESS CLAIMS.
- DO NOT TAINT CLEAN CATCHMENT WATER WITH SILT FROM THE WORKS.
- FACILITIES AND/OR EQUIPMENT MUST BE PROVIDED FOR THE APPLICATION OF WATER TO DISTURBED AREAS TO MINIMISE THE GENERATION OF AIRBORNE DUST FROM ANY AREA DISTURBED BY CONSTRUCTION ACTIVITIES. DUST CONTROL MEASURES SHALL BE IMPLEMENTED CONTINUOUSLY DURING CONSTRUCTION WORKS TO THE SATISFACTION OF THE SUPERINTENDENT AND COUNCIL.
- MATERIAL REMOVED FROM SEDIMENT CONTROL STRUCTURES MUST BE DISPOSED OF IN A WAY THAT DOES NOT POLLUTE WATERS OR BUSHLAND AND DISPOSED OF TO AN APPROVED DUMP SITE.
- RUNOFF FROM VEHICLE OR CONSTRUCTION PLANT MAINTENANCE AND CLEANING AREAS SHALL BE COLLECTED AND DISPOSED OF IN A MANNER THAT DOES NOT POLLUTE.
- CONFORMITY WITH THIS PLAN SHALL IN NO WAY REDUCE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT AGAINST WATER DAMAGE DURING THE COURSE OF THE CONTRACT.

15. ALL POSITIONS SHOWN ARE APPROXIMATE AND ARE BEST DETERMINED ON SITE IN CONJUNCTION WITH THE SUPERINTENDENT.

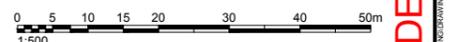
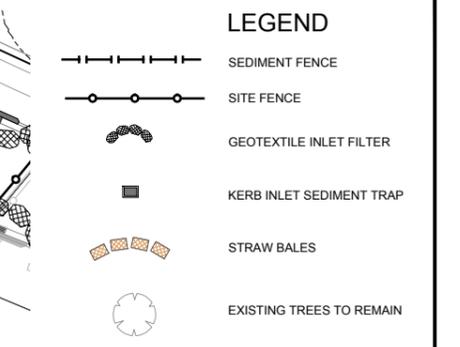
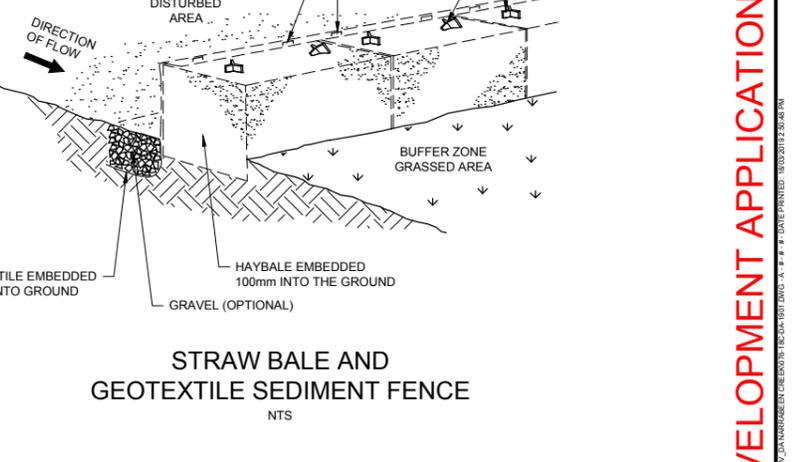
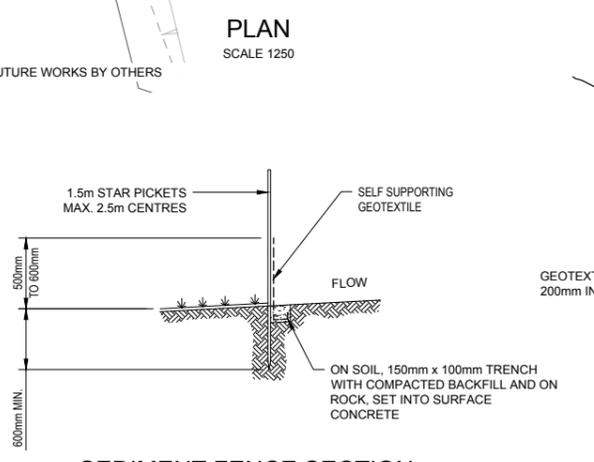
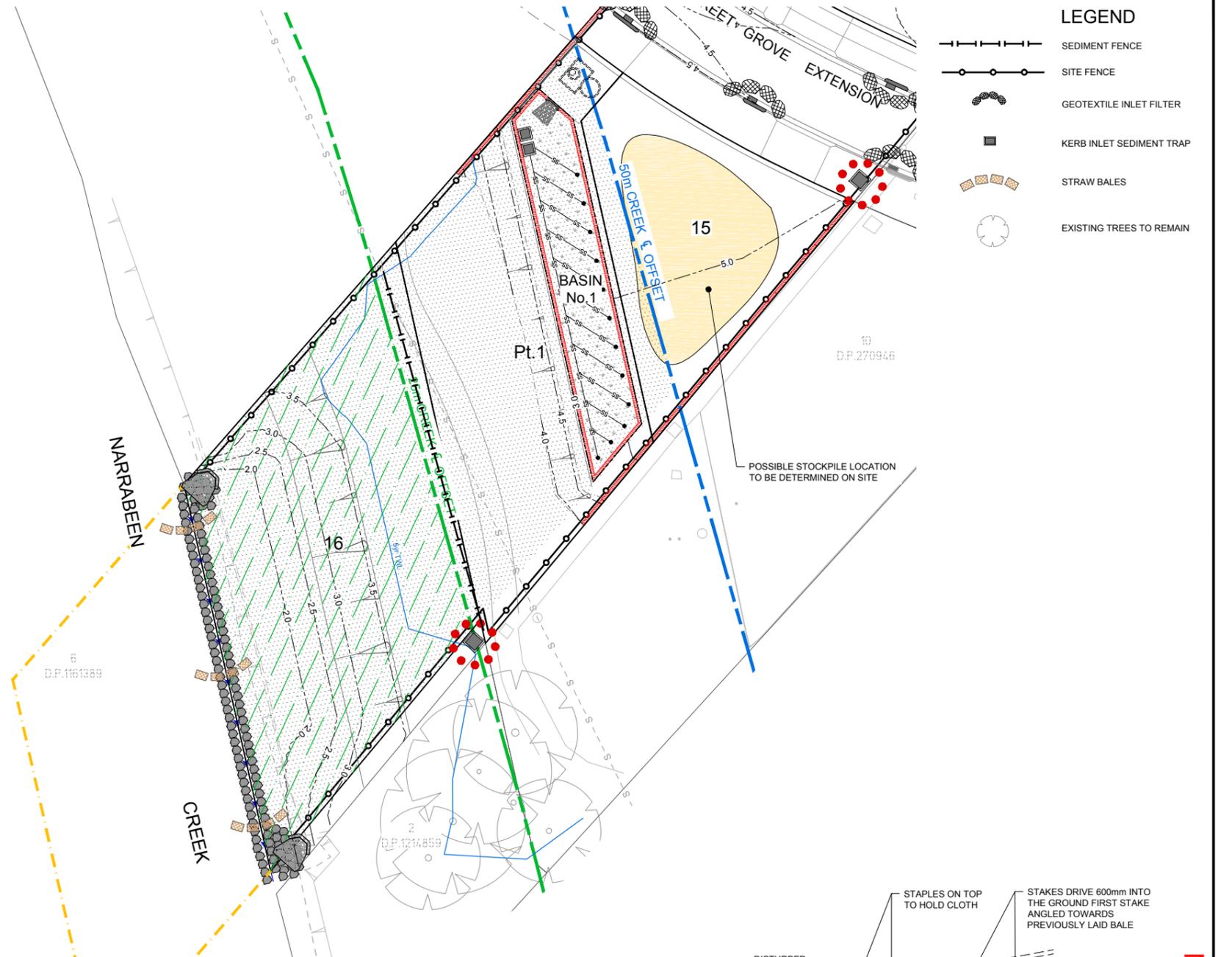
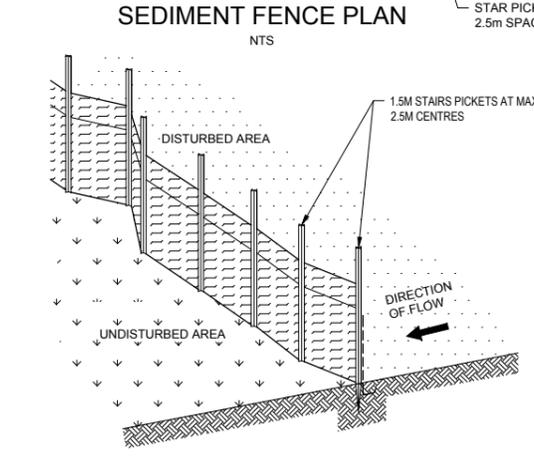
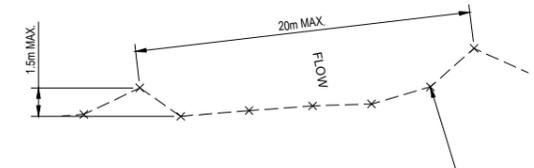
16. DUST SCREENS ARE TO BE ERECTED AROUND THE PERIMETER OF THE WORK SITE DURING LAND CLEARING, EXCAVATIONS & CONSTRUCTIONS AS DIRECTED BY THE SITE SUPERVISOR.

SEDIMENT FENCE

- CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BE PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING, TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 litres/sec IN THE DESIGN STORM EVENT, USUALLY THE 10 YEAR EVENT.
- CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
- DRIVE 1.5 METER LONG STAR PICKETS INTO GROUND AT 2.5 METER INTERVALS (MAX.) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
- FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS, ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES, OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
- JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
- BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

STRAW BALE FILTERS

- CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DIAGRAM TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION.
- PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN THE BALES. THE STRAWS IN EACH BALE ARE TO BE ALIGNED PARALLEL TO THE GROUND.
- ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
- EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH 1.2m STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.
- WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE BALES ARE PLACED 1m TO 2m DOWNSLOPE FROM THE TOE.
- ESTABLISH A MAINTENANCE PROGRAM THE ENSURES THE INTEGRITY OF THE BALES IS RETAINED - THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.



APPROVED COMPANY
AS/NZS 4501 OHS Management System
APPROVED COMPANY
ISO 14001 Environmental Management System
APPROVED COMPANY
ISO 9001 Quality Management System
DIAL 1100

REV.	DATE	AMENDMENT DESCRIPTION	DES.	DRN.
A	14.03.19	ISSUED FOR DEVELOPMENT APPLICATION	D.Y.	D.Yoo.

Authorised for issue by: **MINH.VU**

Principal: **LEGENDWAY PTY. LTD.**

LGA: **NORTHERN BEACHES COUNCIL**

Scale: **AS SHOWN** Datum: **AHD**

Project: **PROPOSED SUBDIVISION OF LOT 3, D.P.115877 AND PART LOT 3 D.P.942319 NARRABEEN CREEK REHABILITATION WORKS**

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Drawing Title: **SEDIMENT AND EROSION CONTROL PLAN AND DETAILS**

C&R Ref: **076-18** Drawing Ref: **076-18C-DA-1901** Revision: **A**

DEVELOPMENT APPLICATION