

COFFS HARBOUR SPORTZ CENTRAL UPGRADE

74-74A BRAY STREET, COFFS HARBOUR NSW, 2450
CIVIL ENGINEERING PACKAGE






LOCALITY PLAN

DRAWING LIST

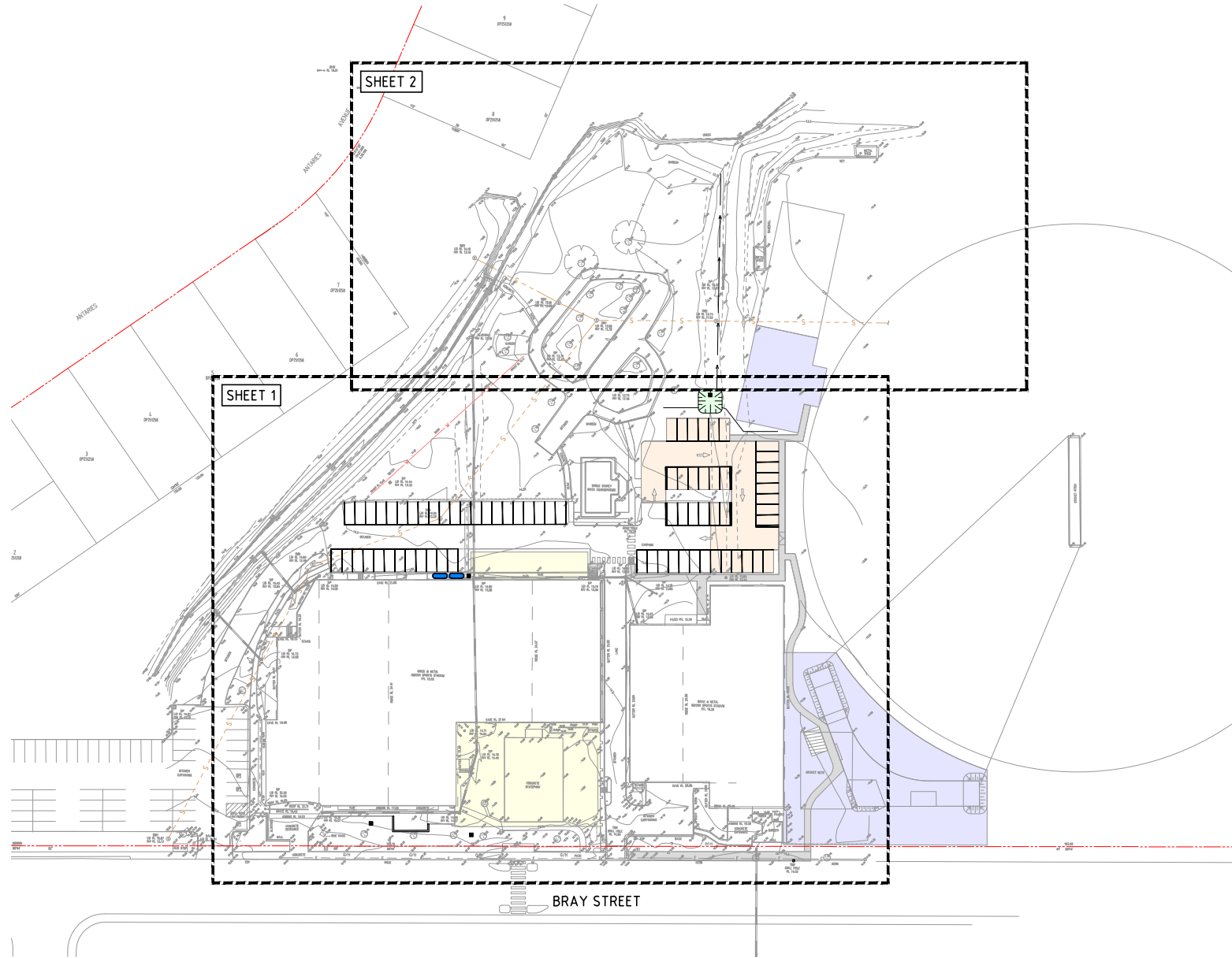
DRAWING NUMBER	DRAWING TITLE
DA-C01.00	COVER SHEET, DRAWING LIST AND LOCALITY PLAN
DA-C01.20	GENERAL ARRANGEMENT PLAN
DA-C02.00	EROSION AND SEDIMENT CONTROL PLAN
DA-C02.10	EROSION AND SEDIMENT CONTROL DETAILS
DA-C04.00	CIVIL WORKS PLAN - SHEET 1
DA-C04.10	CIVIL WORKS PLAN - SHEET 2
DA-C09.00	CIVIL DETAILS AND STORMWATER PHILOSOPHY

VERIFIER: K SINCLAIR
JOB MANAGER: R. JEANS
DESIGNED: R. JEANS
DRAWN: J. KNIGHT





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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	PROJECT	DRAWING TITLE	JOB NUMBER				
1	ISSUED FOR APPROVAL	JK	KS	RJ	11.02.22	 COFFS HARBOUR CITY COUNCIL	 DRAARCHITECTS	 Coffs Harbour Suite 6, 27 Orlando Street, Coffs Harbour NSW 2450 Ph (02) 5603 3053 Email coffsharbour@northrop.com.au ABN 81 094 433 100	CIVIL ENGINEERING PACKAGE COVER SHEET, DRAWING LIST AND LOCALITY PLAN	NL213017 DA-C01.00				
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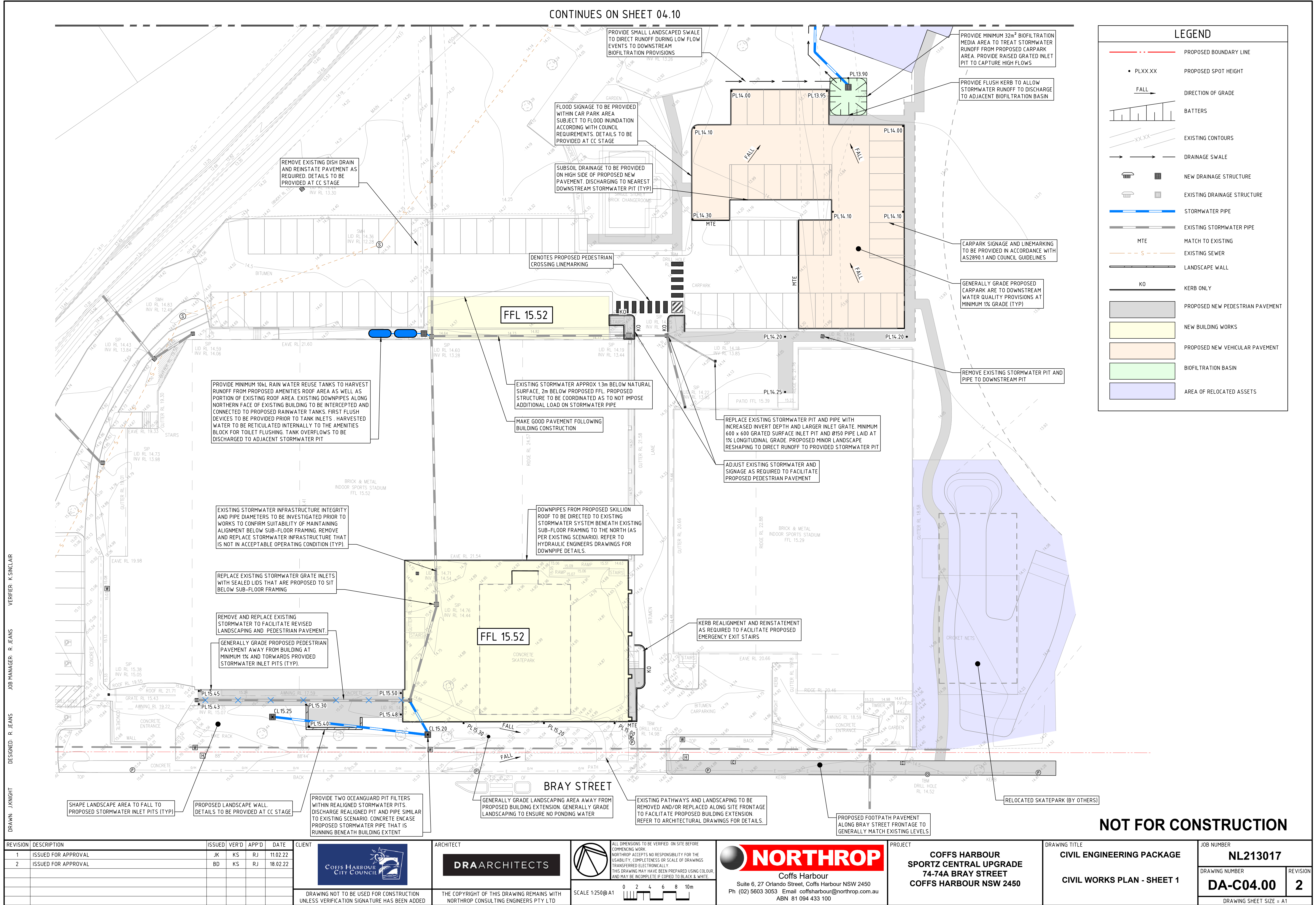
DRAWN: J. KNIGHT
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VERIFIER: K. SNICLAR

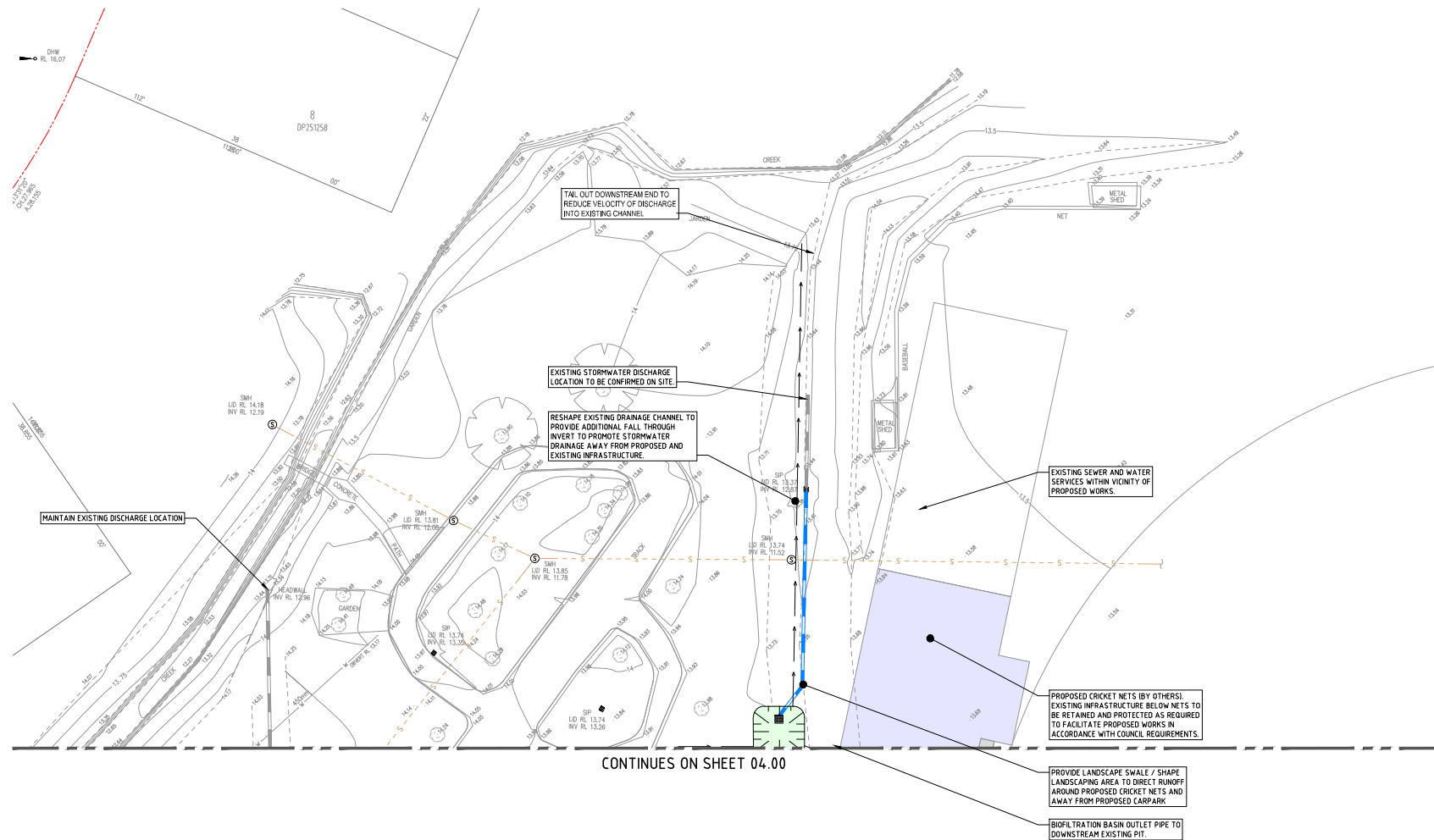






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2	ISSUED FOR DA	JK	KS	RJ	01.06.22							
3	ISSUED FOR DA	JK	KS	RJ	02.06.22							
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CONTINUES ON SHEET 04.10



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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	PROJECT	DRAWING TITLE	JOB NUMBER
1	ISSUED FOR APPROVAL	JK	KS	RJ	11.02.22			 <p>COFFS HARBOUR SPORTS CENTRAL UPGRADE 74-74A BRAY STREET COFFS HARBOUR NSW 2450</p>	CIVIL ENGINEERING PACKAGE	NL213017
2	ISSUED FOR APPROVAL	BD	KS	RJ	18.02.22					
3	ISSUED FOR DA	JK	KS	RJ	01.06.22					
4	ISSUED FOR DA	JK	KS	RJ	02.06.22					
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CONCEPT STORMWATER MANAGEMENT SUMMARY

LGA: COFFS HARBOUR CITY COUNCIL (CHCC)

NORTHROP CONSULTING ENGINEERS HAVE PREPARED A CONCEPT STORMWATER DRAINAGE DESIGN FOR THE PROPOSED DEVELOPMENT AT 74-74A BRAY STREET, COFFS HARBOUR (LOT 1000 D.P.871662). THE PROPOSED MANAGEMENT PLAN HAS BEEN DEVELOPED GENERALLY IN ACCORDANCE WITH THE CHCC'S DEVELOPMENT CONTROL PLAN, CHCC'S WATER SENSITIVE URBAN DESIGN GUIDELINE AND AS3500.3:2015 PLUMBING AND DRAINAGE - STORMWATER DRAINAGE. THE SITE HAS A TOTAL AREA OF 73.45ha WHICH GENERALLY FALLS TO THE NORTHEAST WITH A 1% AVERAGE SLOPE. THE SITE CURRENTLY CONTAINS AN EXISTING INDOOR SPORTS STADIUM, PCYC BUILDING, SKATEPARK, CRICKETS NETS AND CRICKET OVAL. THE DEVELOPMENT PROPOSES THE CONSTRUCTION OF ADDITIONAL INDOOR BASKETBALL COURT AND AMENITIES BLOCK WITH ASSOCIATED LANDSCAPING AND HARDSTAND SURROUNDING. VEHICLE ACCESS IS PROPOSED TO REMAIN SIMILAR TO THE EXISTING SCENARIO, WITH ONE ENTRY/EXIT ON EACH OF BRAY STREET AND APOLLO DRIVE AND AN ADDITIONAL ENTRY ONLY OFF BRAY STREET TO THE EAST. PEDESTRIAN ACCESS IS ALSO PROPOSED TO REMAIN AS PER THE EXISTING SCENARIO, MAINTAINING PEDESTRIAN ACCESS FROM BRAY STREET. STORMWATER RUNOFF FROM THE PROPOSED AMENITIES ROOF AREA, AS WELL AS APPROXIMATELY 650m2 OF THE EXISTING ROOF AREA IS PROPOSED TO BE CONVEYED TO ABOVE GROUND RAINWATER HARVESTING TANKS (RWT) LOCATED AT THE REAR OF THE INDOOR SPORTS STADIUM. RUNOFF FROM THE PROPOSED ROOF EXTENSION FRONTING BRAY STREET IS PROPOSED TO BE CONVEYED TO THE EXISTING INGROUND STORMWATER SYSTEM AS PER THE EXISTING SCENARIO. RUNOFF FROM THE PROPOSED LANDSCAPING AND HARDSTAND AREAS ARE PROPOSED TO BE CONVEYED TO THE PROVIDED PIT AND PIPE NETWORK, WITH THE REAR CARPARKING AREA TO BE CONVEYED TO A BIOFILTRATION BASIN. ULTIMATELY ALL RUNOFF FROM THE DEVELOPMENT IS PROPOSED TO BE DISCHARGED TO THE EXISTING CREEK TO THE NORTH, AS PER THE EXISTING FLOW REGIMES.

1. SITE AREAS

TOTAL SITE AREA	= 734,500 m ²
TOTAL ROOF AREA	= 1036m ²
TOTAL HARDSTAND AREA	= 1035 m ²
TOTAL IMPERVIOUS AREA	= 2071m ²
SITE IMPERVIOUS PERCENTAGE	= 0.3%

2. ONSITE HARVESTING/REUSE

3. RAINWATER HARVESTING TANKS HAVE BEEN PROPOSED TO COLLECT THE PROPOSED AMENITIES ROOF AREA RUNOFF, AS WELL AS A PORTION OF THE EXISTING ROOF AREA. EXISTING DOWNPIPES DISCHARGING TO THE INGROUND STORMWATER SYSTEM ARE PROPOSED TO BE INTERCEPTED AND CONVEYED TO THE PROPOSED TANKS AT THE REAR OF THE BUILDING. 10kL REUSE VOLUME HAS BEEN PROPOSED. THE HARVESTED WATER IS TO BE RETICULATED INTERNALLY FOR TOILET FLUSHING WITHIN THE NEW AMENITIES EXTENSION. ALL DOWN PIPES ARE TO BE CONNECTED TO A FIRST FLUSH DEVICE LOCATED PRIOR TO THE TANK INLET. OVERFLOWS FROM THE REUSE TANKS ARE PROPOSED TO BE CONVEYED TO THE ADJACENT INGROUND STORMWATER SYSTEM.

3. STORMWATER QUALITY

WATER SENSITIVE URBAN DESIGN PROVISIONS HAVE BEEN PROVIDED AS PART OF THE DEVELOPMENT IN ORDER TO PROTECT DOWNSTREAM RECEIVING WATER BODIES. THE TARGETS ARE PROPOSED TO BE MET BY UTILISING THE FOLLOWING TREATMENT TRAIN:

- TOTAL 10kL RAINWATER RE-USE VOLUME TO HARVEST RUNOFF FROM A COMBINATION OF PROPOSED AND EXISTING ROOF AREAS.
- 3 X OCEANPROTECT PIT FILTERS (OR SIMILAR) INSTALLED TO INLET PITS TO POLISH RUNOFF FROM THE LANDSCAPING, HARDSTAND AND ANY OVERFLOW FROM THE RE-USE TANKS.
- 1 X BIOFILTRATION BASIN WITH MINIMUM 32m2 FILTER AREA TO PROVIDE TREATMENT TO THE PROPOSED REAR CARPARKING AREA.
- 1 X GRASS LINED SWALE TO CONVEY STORMWATER RUNOFF TO THE PROVIDED BIOFILTRATION BASIN AS WELL AS TO PROVIDE PRIMARY TREATMENT OF RUNOFF.

THE PROPOSED TREATMENT TRAIN WAS ASSESSED IN THE CONCEPTUAL SOFTWARE MUSIC (VERSION 6.3.0) AGAINST COUNCIL'S WATER QUALITY TARGETS. RESULTS ARE SHOWN IN TABLE 1 BELOW.

Table 1 – MUSIC Model Result Summary

	PERCENTAGE REDUCTION	TARGET OBJECTIVES
TOTAL SUSPENDED SOLIDS (TSS)	94%	85%
TOTAL PHOSPHOROUS (TP)	76%	60%
TOTAL NITROGEN (TN)	47%	45%
GROSS POLLUTANTS	90%	90%

TABLE 1 SHOWS THAT THE PROPOSED STORMWATER MANAGEMENT STRATEGY IS PREDICTED TO ACHIEVE THE LOAD REDUCTION TARGETS SET OUT IN THE CHCC DCP, AS ESTIMATED BY MUSIC. A MUSIC-LINK REPORT HAS BEEN PROVIDED AS PART OF THIS SUBMISSION.

4. STORMWATER QUANTITY

IN ACCORDANCE WITH CORRESPONDANCE WITH COUNCIL'S SENIOR WATERWAYS ENGINEER SIMON PIEROTTI AND TECHNICAL LIASION MEETING HELD ON 18TH NOVEMBER 2021, PROVIDING ONSITE DETENTION (OSD) STORAGE IS SEEN TO DERIVE LITTLE BENEFIT TO DOWNSTREAM FLOODING DUE TO:

- THE SITE DISCHARGING DIRECTLY TO THE ADJACENT RECEIVING WATER BODY (CREEK)
- FLOOD INUNDATION FREQUENCY OF THE SITE
- SMALL INCREASE IN TOTAL SITE AREA IMPERVIOUS PERCENTAGE DUE TO PROPOSED WORKS.

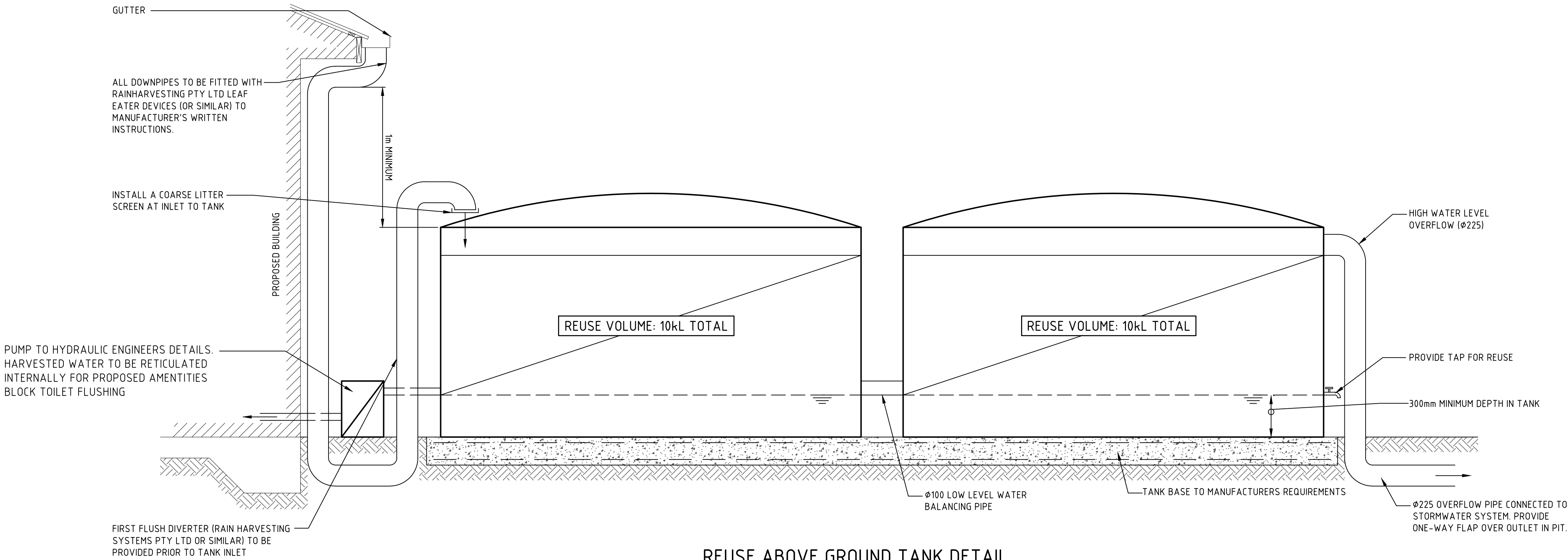
IT IS THEREFORE PROPOSED TO NOT PROVIDE OSD STORAGE AS PART OF THIS DEVELOPMENT.

TABLE 2 – SITE DISCHARGE FLOW RATES

AEP (%)	EQUIVALENT ARI	PRE-DEVELOPED SITE DISCHARGE Q (m³/s)	POST-DEVELOPED SITE DISCHARGE Q (m³/s)
0.2 EY	5	0.038	0.037
10	9.5	0.050	0.043
5	20	0.061	0.049
2	50	0.072	0.069
1	100	0.084	0.084

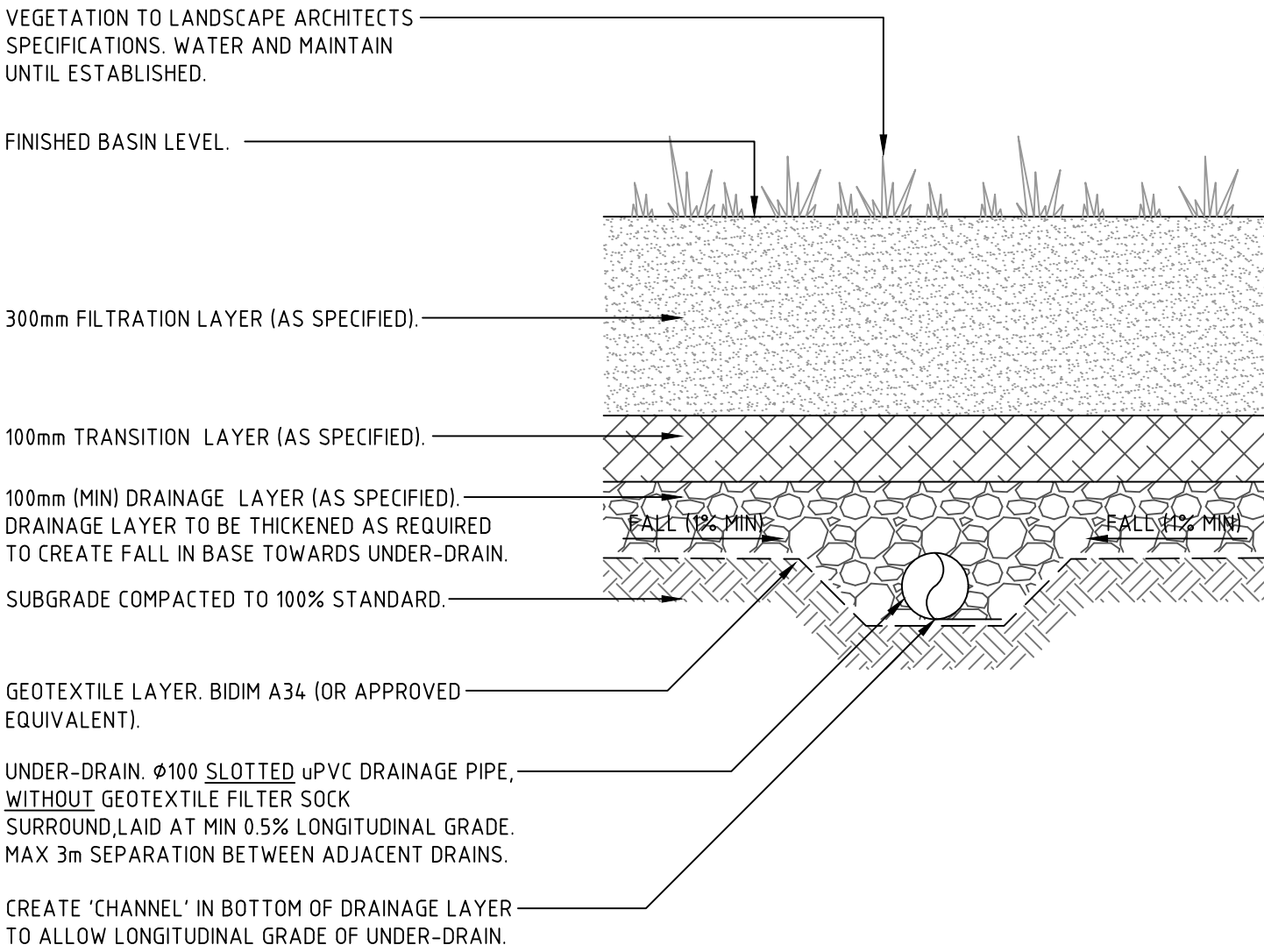
5. FLOODING

IN ACCORDANCE WITH DISCUSSIONS HELD AT THE TECHNICAL LIASION MEETING AND COUNCIL FLOOD MAPPING THE SITE IS LOCATED WITHIN COUNCIL'S FLOOD PLANNING AREA AND IS SUBJECT TO FLOOD INUNDATION. IN ACCORDANCE WITH DISCUSSIONS HELD WITH COUNCIL AND CHCC'S DCP PART 4 - FLOODING, NEW CARPARKING AREAS HAVE BEEN LOCATED AWAY FROM THE EXISTING FLOODWAY AND HIGHER HAZARD CATEGORIES WHERE POSSIBLE. ADDITIONALLY, THE PROPOSED CARPARKING AREA HAS GENERALLY BEEN RAISED 100mm FROM EXISTING LEVELS IN ORDER TO POTENTIALLY REDUCE FLOOD RISK ONSITE. THE PROPOSED MINOR FILLING OF THE CARPARK AREA IS NOT ANTICIPATED TO HAVE SIGNIFICANT IMPACT ON FLOOD LEVELS OR CONVEYANCE IN THE LOCAL VICINITY. NOTE THE EXISTING CARPARKING LEVELS ARE PROPOSED TO BE MAINTAINED. COUNCIL APPROVED FLOOD SIGNAGE IS TO BE PROVIDED THROUGHOUT THE CARPARKING AREA. PROPOSED BUILDING EXTENSIONS ARE TO MAINTAIN CURRENT BUILDING FINISHED FLOOR LEVEL.



REUSE ABOVE GROUND TANK DETAIL

NOTE: THE ENTIRE PRESSURISED DOWNPIPE SYSTEM SHALL BE AIR TIGHT AND BE ABLE TO WITHSTAND ATMOSPHERIC PRESSURE. THE PIPING SYSTEM SHALL BE MINIMUM SN6 AND FITTINGS WITH INTERNAL ULTRA VIOLET STABILISING (OR APPROVED EQUIVALENT).



BIOFILTRATION SYSTEM TYPICAL SECTION

BIOFILTRATION MATERIAL SPECIFICATION

FILTRATION LAYER	
HYDRAULIC CONDUCTIVITY	~ 200-300mm/hr

PARTICLE SIZE DISTRIBUTION	
CLAY AND SILT	~ 3% (<0.05mm)
VERY FINE SAND	~ 5-30% (0.05-0.15mm)
FINE SAND	~ 10-30% (0.15-0.25mm)
MEDIUM TO COARSE SAND	~ 40-60% (0.25-1.0mm)
COARSE SAND	~ 7-10% (1.0-2.0mm)
FINE GRAVEL	~ <3% (2.0-3.4mm)

SOIL-BASED FILTER MEDIA PROPERTIES	
TOTAL NITROGEN (TN) CONTENT	~ <400 mg/kg
ORTHOPHOSPHATE (PO ₄ ³⁻) CONTENT	~ <40 mg/kg
ORGANIC MATTER CONTENT	~ <3%
pH	~ 5.5-7.5
ELECTRICAL CONDUCTIVITY (EC)	~ <1.2 dS/m

TRANSITION LAYER	
CLEAN, WELL-GRADED SAND / COARSE SAND MATERIAL.	
% PASSING	~ 1.4mm 100% ~ 1.0mm 80% ~ 0.7mm 44% ~ 0.5mm 8.4%

DRAINAGE LAYER	
CLEAN, FINE GRAVEL (2-5mm WASHED SCREENINGS)	

(REF: GUIDELINE SPECIFICATIONS FOR FILTER MEDIA IN BIORETENTION SYSTEMS, FACILITY FOR ADVANCING WATER BIOFILTRATION (2009))

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SCALE VARIES



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PROJECT

COFFS HARBOUR
SPORTZ CENTRAL UPGRADE
74-74A BRAY STREET
COFFS HARBOUR NSW 2450

DRAWING TITLE

CIVIL ENGINEERING PACKAGE

CIVIL DETAILS AND STORMWATER PHILOSOPHY

JOB NUMBER

NL213017

DRAWING NUMBER	REVISION
DA-C09.00	1

DRAWING SHEET SIZE = A1