COFFS HARBOUR SPORTZ CENTRAL UPGRADE

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





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

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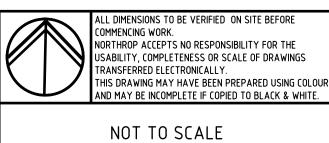
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REVISION DESCRIPTION

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JK KS RJ 11.02.22

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ABN 81 094 433 100

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

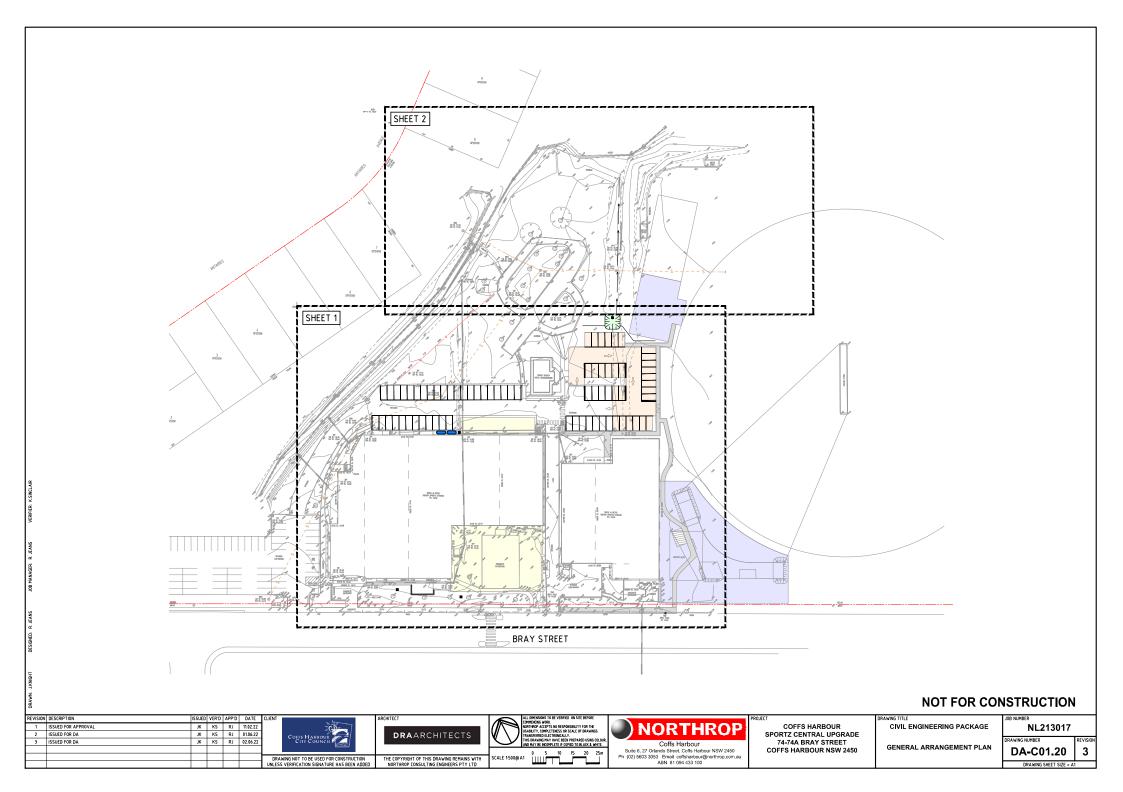
CIVIL ENGINEERING PACKAGE

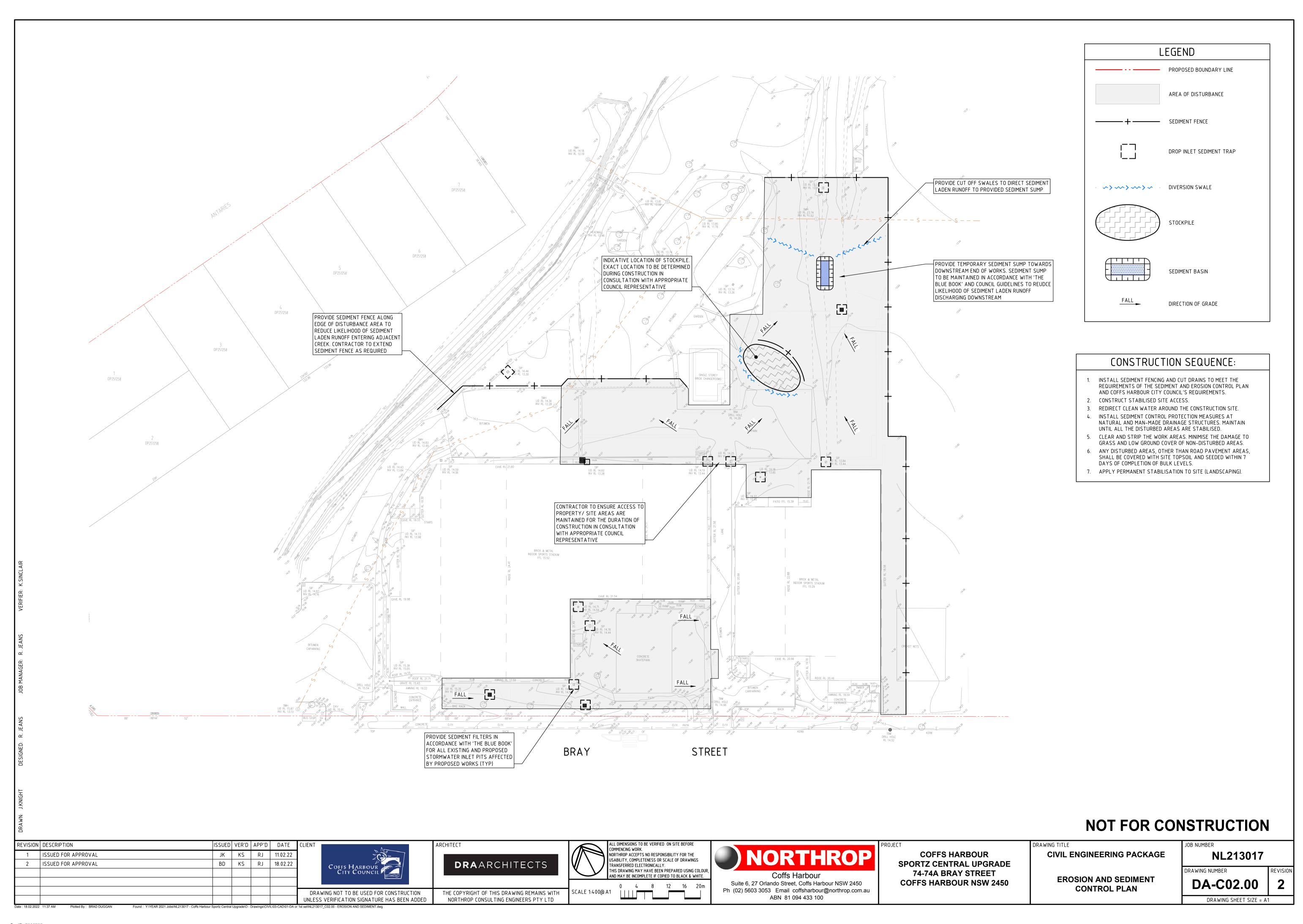
COVER SHEET, DRAWING LIST AND LOCALITY PLAN

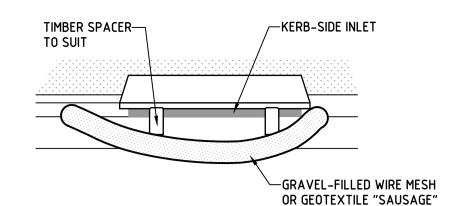
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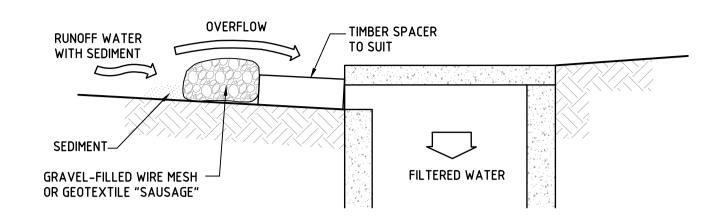
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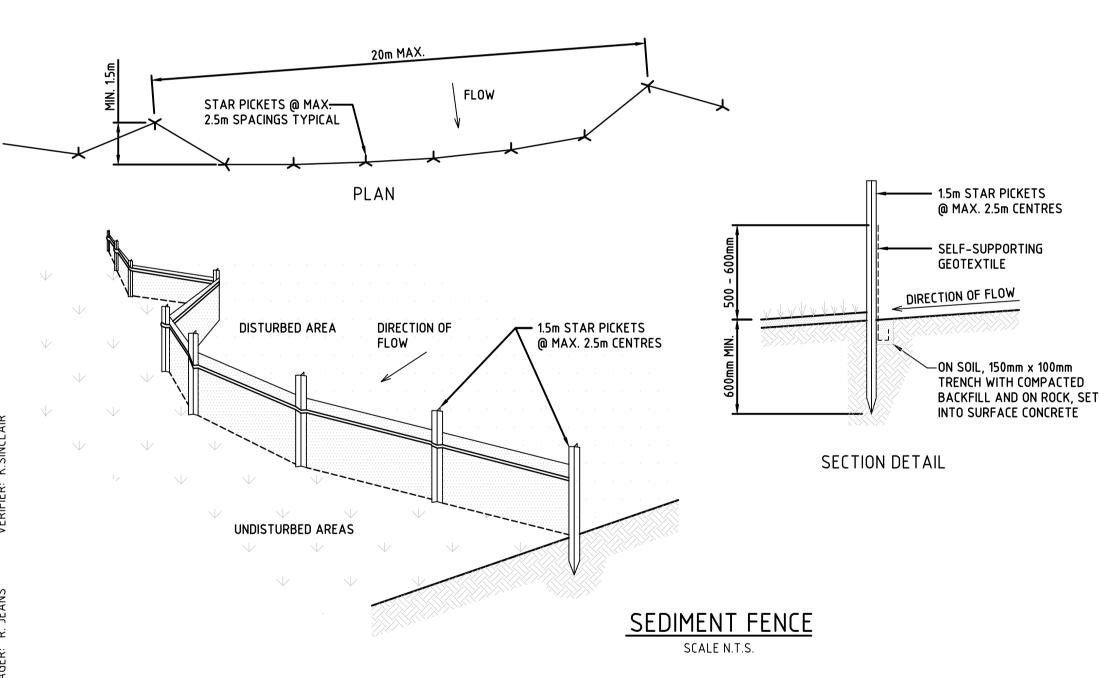
MESH AND GRAVEL INLET FILTER CONSTRUCTION NOTES:

- 1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND
- FILL IT WITH 25mm TO 50mm GRAVEL. 2. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
- 3. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET.
- MAINTAIN THE OPENING WITH SPACER BLOCKS.

BETWEEN.

4. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER. 5. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY CAN FIRMLY ABUT EACH OTHER AND SEDIMENT / LADEN WATERS CANNOT PASS

MESH AND GRAVEL INLET FILTER



SEDIMENT FENCE CONSTRUCTION NOTES:

- 1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING 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 PER SECOND 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
- 3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND @ 2.5m 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.

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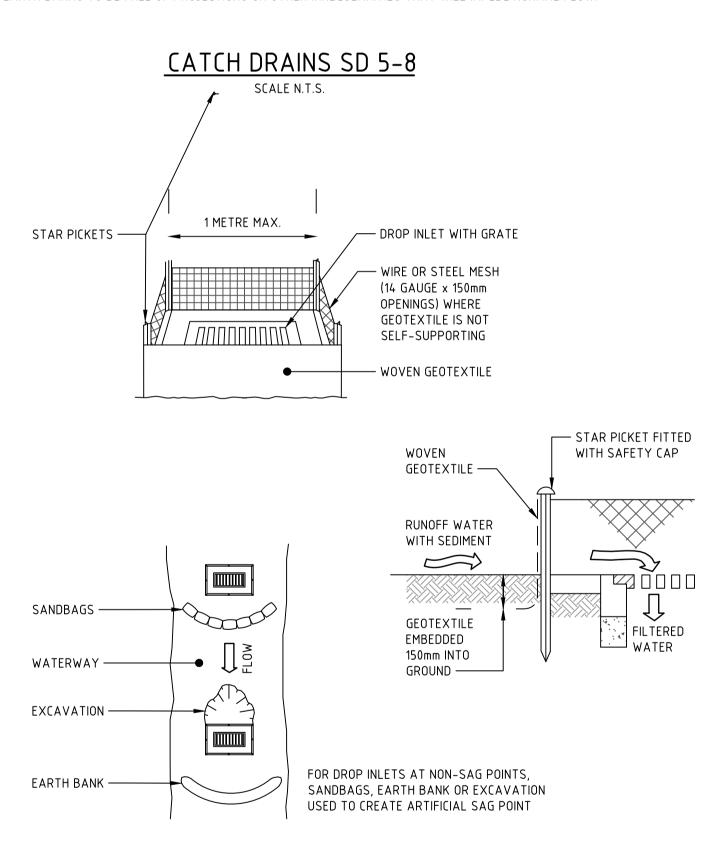
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5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP. 6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAC.UPSLOPE LENGTH IS 80 METERS.

CATCH DRAIN CONSTRUCTION NOTES:

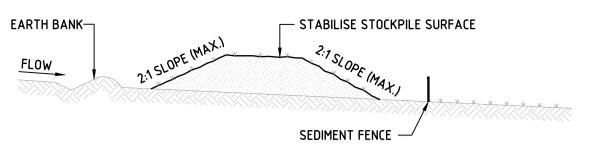
- 1. CONSTRUCT ALONG GRADIENT AS SPECIFIED.
- 2. MAXIMUM SPACING BETWEEN BANKS SHALL BE 80 METRES.
- 3. DRAINS TO BE OF PARABOLIC OR TRAPEZOIDAL CROSS SECTION NOT V-SHAPED. 4. EARTH BANKS TO BE ADEQUATELY COMPACTED IN ORDER TO PREVENT FAILURE.
- 5. CONSTRUCTION IS OF A TEMPORARY NATURE AND SHALL BE COMPACTED AT THE END A DAYS WORK OR
- IMMEDIATELY PRIOR RAIN. 6. ALL OUTLETS FROM DISTURBED LANDS ARE TO FEED INTO SEDIMENT BASIN OR SIMILAR.
- 7. DISCHARGE RUNOFF COLLECTED FROM UNDISTURBED LANDS ONTO EITHER A STABILISED OR AN UNDISTURBED
- DISPOSAL AISLE WITHIN THE SAME SUBCATCHMENT AREA FROM WHICH THE WATER ORIGINATED. 8. COMPACT WITH A SUITABLE IMPLEMENT IN SITUATIONS WHERE THEY ARE REQUIRED TO FUNCTION FOR MORE
- 9. EARTH BANKS TO BE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT WILL IMPEDE NORMAL FLOW.



CONSTRUCTION NOTES

- 1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
- 2. PICKET SPACING TO BE 1 METRE 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.

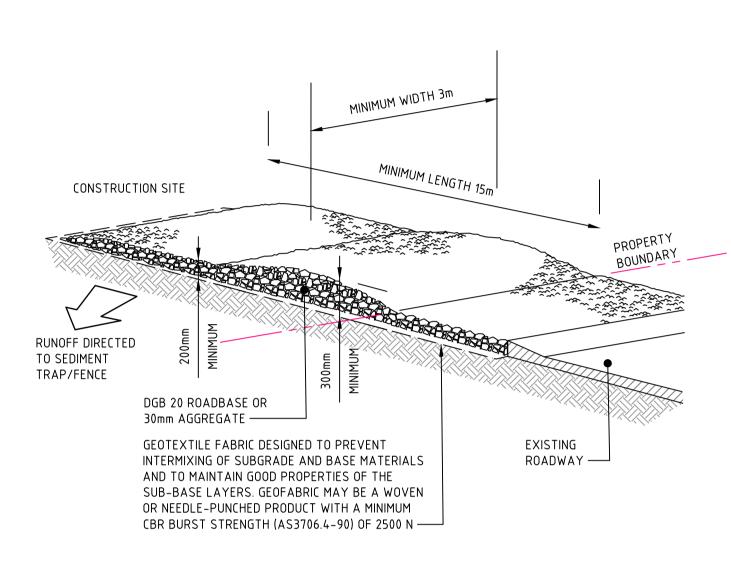
GEOTEXTILE INLET FILTER



STOCKPILE CONSTRUCTION NOTES:

- 1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED
- WATER FLOW, ROADS AND HAZARD AREAS.
- 2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
- 3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT. WHERE THEY ARE TO BE PLACED FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED E.S.C.P. OR S.W.M.P. TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
- 4. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.

STOCKPILES SCALE N.T.S.



CONSTRUCTION NOTES

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

STABILISED SITE ACCESS (SD 6-14)

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ARCHITECT **DRA**ARCHITECTS

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COFFS HARBOUR 74-74A BRAY STREET

SPORTZ CENTRAL UPGRADE **COFFS HARBOUR NSW 2450**

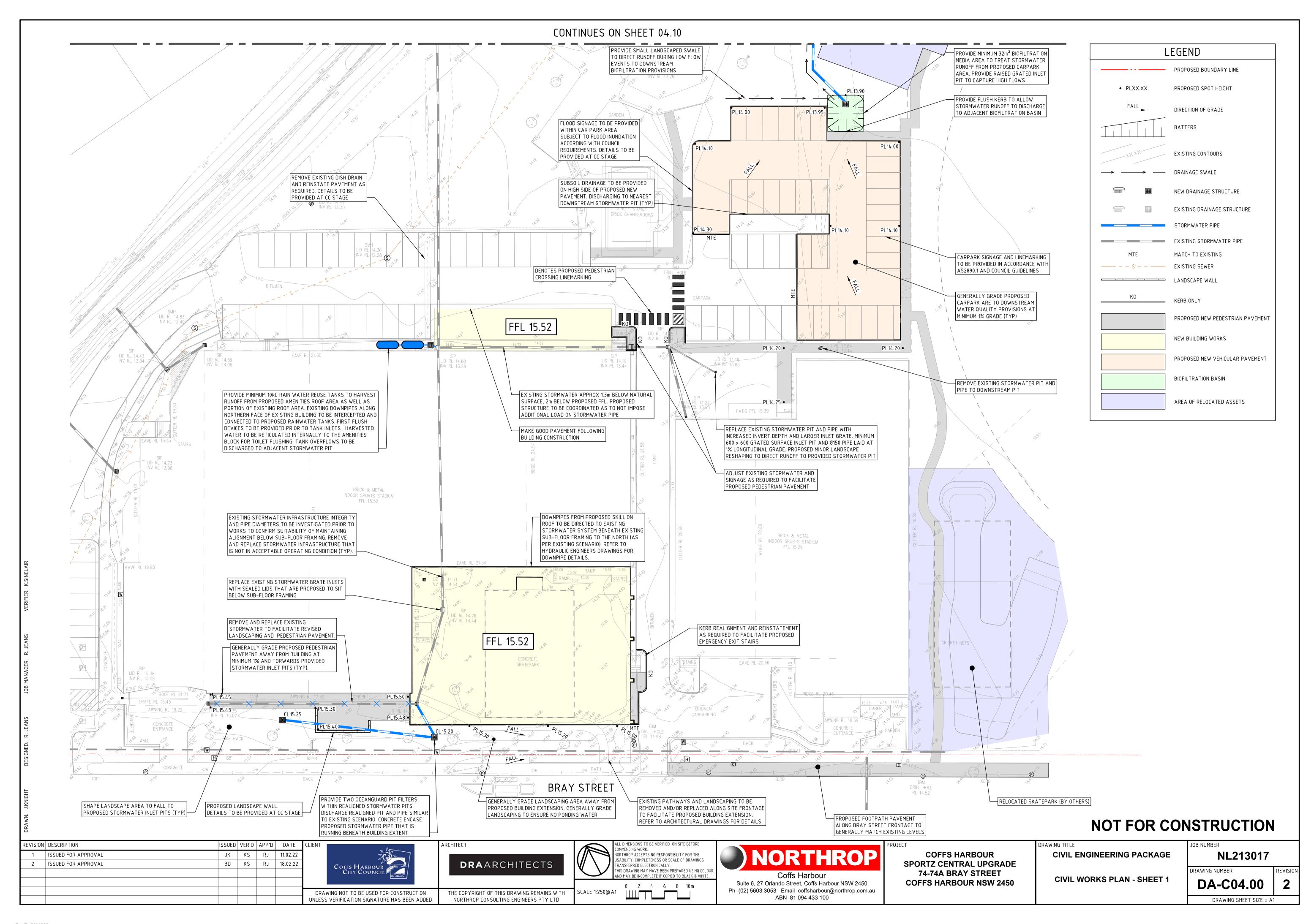
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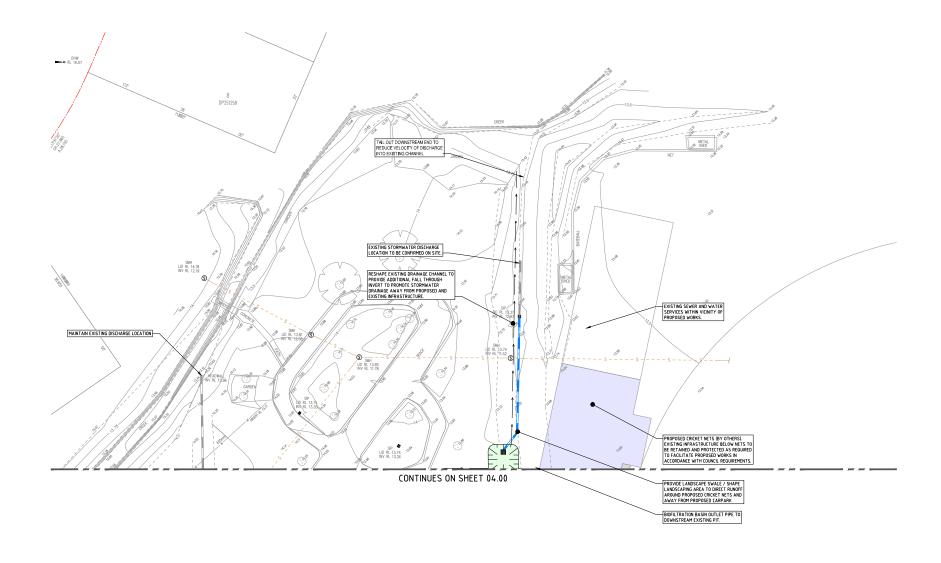
EROSION AND SEDIMENT CONTROL DETAILS

NL213017 DRAWING NUMBER

DA-C02.10 DRAWING SHEET SIZE = A1

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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 GENERALY 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, MAINTAING PEDESTRIAN ACCESS FROM BRAY STEET. STORMWATER RUNOFF FROM THE PROPOSED AMENITIES ROOF AREA, AS WELL AS APPROXIMATLY 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 m² TOTAL ROOF AREA = 1036m² TOTAL HARDSTAND AREA $= 1035 \text{ m}^2$ $= 2071 m^2$ TOTAL IMPERVIOUS AREA SITE IMPERVIOUS PERCENTAGE

ONSITE HARVESTING/REUSE

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.

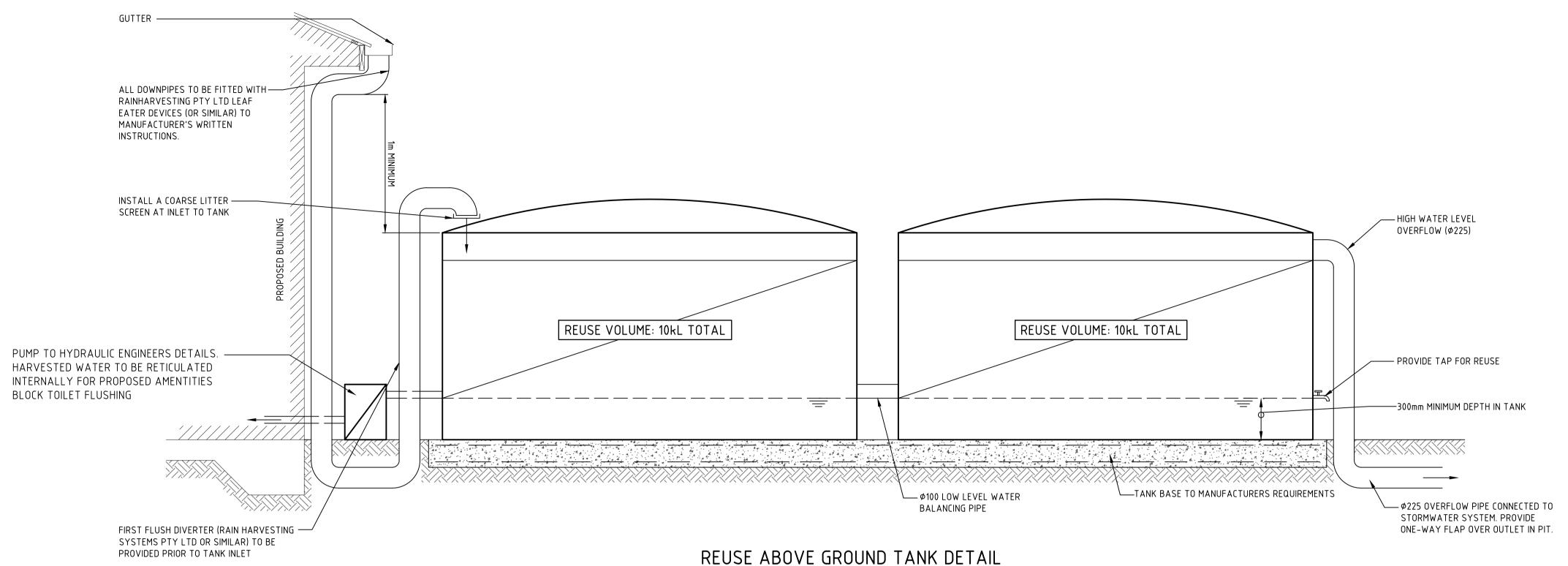
 1 X GRASS LINED SWALE TO CONVEY STORMWATER RUNOFF TO THE PROVIDED BIOFILTRATION BASIN AS WELL AS TO PROVIDE PRIMARY TREATMENT OF RUNOFF.

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.



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).

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.

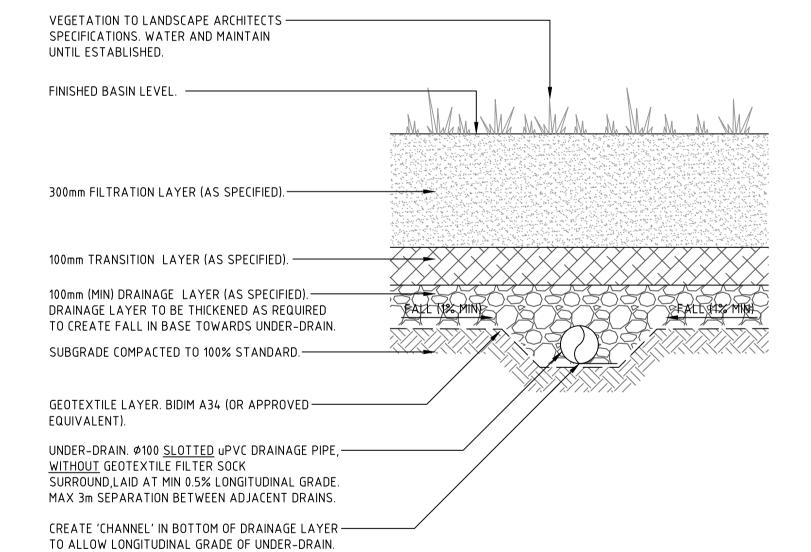
IT IS THEREFORE PROPOSED TO NOT PROVIDE OSD STORAGE AS PART OF THIS DEVELOPMENT.

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.



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% (0.25-1.0 mm)COARSE SAND - 7-10% (1.0-2.0mm) FINE GRAVEL - <3% (2.0-3.4 mm)

SOIL-BASED FILTER MEDIA PROPERTIES TOTAL NITROGEN (TN) CONTENT - <400 mg/kg ORTHOPHOSPHATE (PO_4^{3-}) CONTENT - <40 mg/kg

ORGANIC MATTER CONTENT - >3% - 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%

FACILITY FOR ADVANCING WATER BIOFILTRATION (2009))

DRAINAGE LAYER

CLEAN, FINE GRAVEL (2-5mm WASHED SCREENINGS) (REF: GUIDELINE SPECIFICATIONS FOR FILTER MEDIA IN BIORETENTION SYSTEMS,

- 0.5mm 8.4%

BIOFILTRATION SYSTEM TYPICAL SECTION

NOT FOR CONSTRUCTION

NL213017

DRAWING SHEET SIZE = A1

DA-C09.00

REVISION

DRAWING NUMBER

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE REVISION DESCRIPTION |ISSUED| VER'D | APP'D | DATE ARCHITECT OMMENCING WORK **COFFS HARBOUR CIVIL ENGINEERING PACKAGE** 1 ISSUED FOR APPROVAL JK KS RJ 11.02.22 NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS **DRA**ARCHITECTS SPORTZ CENTRAL UPGRADE Coffs Harbour City Council TRANSFERRED ELECTRONICALLY THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUF 74-74A BRAY STREET Coffs Harbour AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE. **CIVIL DETAILS AND STORMWATER COFFS HARBOUR NSW 2450** Suite 6, 27 Orlando Street, Coffs Harbour NSW 2450 **PHILOSOPHY** Ph (02) 5603 3053 Email coffsharbour@northrop.com.au SCALE VARIES DRAWING NOT TO BE USED FOR CONSTRUCTION THE COPYRIGHT OF THIS DRAWING REMAINS WITH ABN 81 094 433 100 NORTHROP CONSULTING ENGINEERS PTY LTD UNLESS VERIFICATION SIGNATURE HAS BEEN ADDEI