ST PHILLIPS CHRISTIAN COLLEGE - JUNIOR BUILDING

182 SALAMANDER WAY, SALAMANDER BAY, NSW, 2317
DEVELOPMENT APPLICATION

LOCALITY PLAN

IMAGE SOURCE : SIXMAPS

DRAWING LIST

DWG NO	DRAWING TITLE
DA-C01.01	COVER SHEET, DRAWING LIST AND LOCALITY PLAN
DA-C02.01	EROSION AND SEDIMENT CONTROL PLAN
DA-C02.02	EROSION AND SEDIMENT CONTROL DETAILS
DA-C04.01	STORMWATER MANAGEMENT PLAN
DA-C09.01	CIVIL DETAILS SHEET 1

DRAWN: B. DUGGAN DESIGNED: T. VAN KOEVERDEN JOB MANAGER: K. SINCLAIR VERIFIER: K. SINCLAIR

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR INFORMATION	BD		TVK	13.09.21
A	ISSUED FOR APPROVAL	BD	KS	TVK	08.10.21

CLIENT
SAINT PHILLIP'S CHRISTIAN COLLEGE

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ARCHITECT
SHAC

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PROJECT
ST PHILLIP'S CHRISTIAN COLLEGE JUNIOR BUILDING

182 SALAMANDER WAY SALAMANDER BAY, NSW, 2317

DRAWING TITLE
DEVELOPMENT APPLICATION

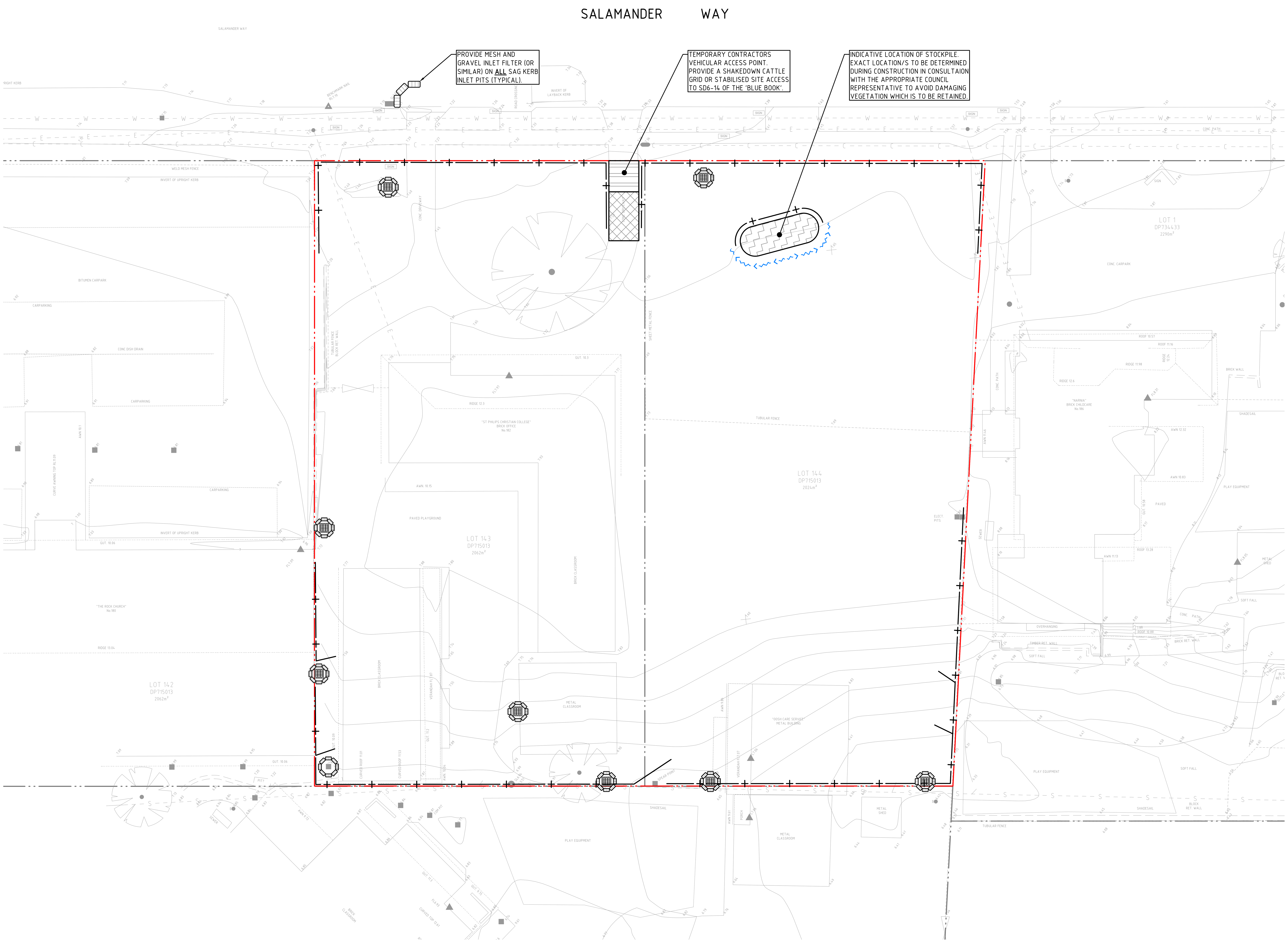
COVER SHEET, DRAWING LIST AND LOCALITY PLAN

JOB NUMBER **NL211843**

DRAWING NUMBER **DA-C01.01**

REVISION **A**

DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED BOUNDARY LINE
- EXISTING BOUNDARY LINE
- EXISTING CONTOURS
- APPROXIMATE LOCATION OF EXISTING SERVICE
- SEDIMENT FENCE
- SANDBAG SEDIMENT FILTER
- DIVERSION DRAIN (CLEAN)
- STABILISED SITE ACCESS (GRATED)
- STOCKPILE

NOT FOR CONSTRUCTION

DRAWN: B. DUGGAN DESIGNED: T. VAN KOEVERDEN JOB MANAGER: K. SINCLAIR VERIFIER: K. SINCLAIR

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SCALE 1:200@ A1 — 0 2 4 6 8 10m

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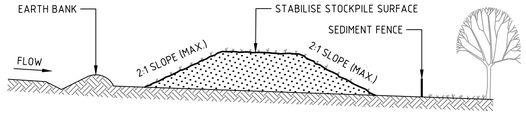
PROJECT
ST PHILLIP'S CHRISTIAN COLLEGE JUNIOR BUILDING
182 SALAMANDER WAY SALAMANDER BAY, NSW, 2317

DRAWING TITLE
DEVELOPMENT APPLICATION
EROSION AND SEDIMENT CONTROL PLAN

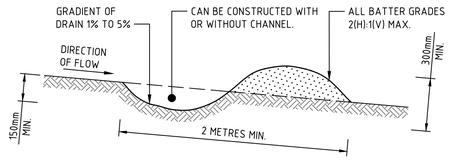
JOB NUMBER **NL211843**
DRAWING NUMBER **DA-C02.01**
REVISION **A**
DRAWING SHEET SIZE = A1



CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) 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 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

STOCKPILES (SD 4-1)

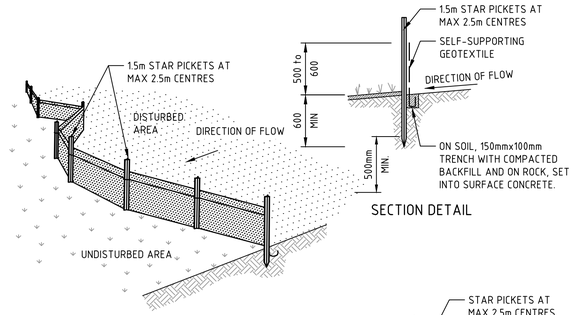


CONSTRUCTION NOTES

1. BUILD WITH GRADIENTS BETWEEN 1 AND 5 PERCENT.
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 THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

NOTE: ONLY TO BE USED AS TEMPORARY BANK
WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.

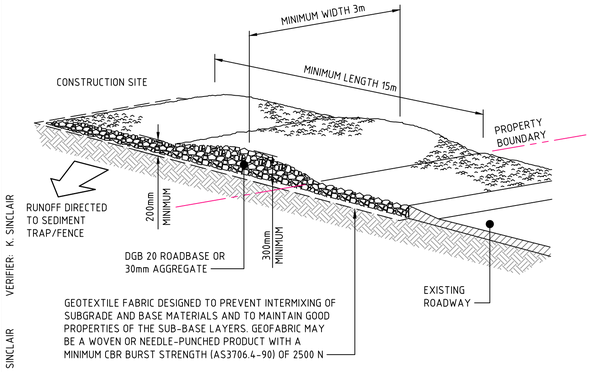
EARTH BANK - LOW FLOW (SD 5-5)



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 BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE 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.

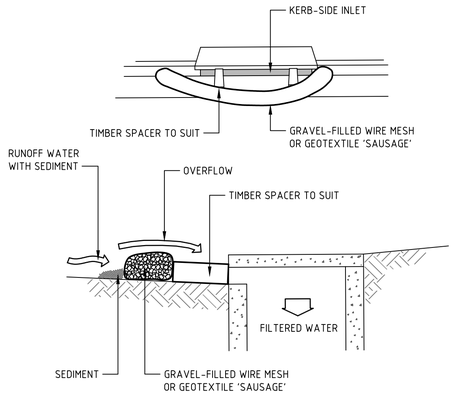
SEDIMENT FENCE (SD 6-8)



CONSTRUCTION NOTES

1. 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 WIDE.
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)



NOTE:THIS PRACTICE ONLY TO BE USED
WHERE SPECIFIED IN APPROVED SWMP/ESCP.

CONSTRUCTION NOTES

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. 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.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH AND GRAVEL INLET FILTER (SD 6-11)

DESIGNED: T. VAN KOEVERDEN
DRAWN: B. DUGGAN
VERIFIER: K. SINCLAIR
JOB MANAGER: K. SINCLAIR

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ARCHITECT: SHAC

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PROJECT: **ST PHILLIP'S CHRISTIAN COLLEGE JUNIOR BUILDING**

182 SALAMANDER WAY SALAMANDER BAY, NSW, 2317

DRAWING TITLE: **DEVELOPMENT APPLICATION**

EROSION AND SEDIMENT CONTROL DETAILS

JOB NUMBER: **NL211843**

DRAWING NUMBER: **DA-C02.02**

REVISION: **A**

DRAWING SHEET SIZE = A1

SALAMANDER WAY

CONNECT TO EXISTING KIP IN SALAMANDER WAY.

US IL.6.11
DS IL.6.03

SHAPE AREA INTO LANDSCAED SWALE

STORMWATER PIT WITH 'SPEL STORMSTACK' PIT INSERT

SHAPE AREA INTO LANDSCAED SWALE

SW PIT
CL.7.45

CL.7.12

BIOFILTRATION BASIN 1
FILTER AREA = 58m²
EXTENDED DETENTION = 0.2m

RAMP 1:14

RAMP 1:14

RAMP 1:20

RAMP AREA TO GRADE TO NORTHERN SWALE

GTD
CL 8.19

OSD

RE-USE TANK

A
C09.01

FFL 8.25

FFL 8.25

GTD
CL 8.03

GTD
CL 8.03

PROVIDE FALL TO GRATED TRENCH DRAINS TO COLLECT WIND BLOW RAIN. CONNECT GRATED TRENCH DRAINS TO OSD TANK.

COMBINED BELOW GROUND OSD AND REUSE TANK WITH 39kL OSD AND 15kL REUSE. TANK INVERT AT RL 7.02m. ALL DOWNPIPES TO CONNECT TO RE-USE CHAMBER. RAINWATER TO BE RETICULATED FOR INTERNAL TOILET FLUSHING AND EXTERNAL IRRIGATION.

SHAPE AREA INTO LANDSCAED SWALE

SW PIT
CL.7.45

FOOTPATH MAX 1:20

SW PIT
CL.7.20

BATTER TO SWALE MAX 1:6

SHAPE AREA INTO LANDSCAED SWALE

SW PIT
CL.7.20

SW PIT
CL.6.80

SW PIT
CL.6.75

SW PIT
CL.6.38

GTD
CL 6.92

PROVIDE RIDGE TO PROMOTE WATER FLOW TO SW PIT.

GENERALLY GRADE AREA TOWARDS STORMWATER PIT

GRADE SURROUNDING AREA TOWARDS SW INLET PIT

GRADE SURROUNDING AREA TOWARDS SW INLET PIT

GRADE SURROUNDING AREA TOWARDS SW INLET PIT

INFILTRATION TRENCH TO INFILTRATE RUNOFF UP TO 1% AEP STORM EVENT.
SIZE TO BE FINALISED AT CC STAGE FOLLOWING DETAILED GEOTECHNICAL INVESTIGATION TO CONFIRM INFILTRATION PARAMETERS

LEGEND

- PROPOSED BOUNDARY LINE
- EXISTING BOUNDARY LINE
- EXISTING ELECTRICITY
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER
- EXISTING SEWER
- EXISTING CONTOURS
- CONCRETE PAVEMENT DETAILS TO BE PROVIDED AT CC STAGE
- PAVER FOOTPATH DETAILS TO BE PROVIDED AT CC STAGE
- Ø150 STORMWATER PIPE
- GRATED INLET PIT (NEW / EXTG)
- KERB INLET PIT (NEW / EXTG)
- JUNCTION PIT (NEW / EXTG)
- GTD GRATED TRENCH DRAIN
- CONCRETE HEADWALL
- BIO FILTRATION BASIN
- DRAINAGE SWALE
- OSD ON-SITE DETENTION TANK
- RW1 RETAINING WALL DETAILS TO BE PROVIDED AT C.C. STAGE
- RL8.25 PROPOSED SPOT HEIGHT
- FALL DIRECTION OF GRADE
- DENOTES EXTENT OF INFILTRATION TRENCH. DETAILS TO BE PROVIDED AT CC STAGE
- FFL 8.25 PROPOSED FINISHED FLOOR LEVEL

DRAWN: B. DUGGAN
DESIGNED: T. VAN KOEVERDEN
JOB MANAGER: K. SINCLAIR
VERIFIER: K. SINCLAIR

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SCALE 1:200@ A1 — 0 2 4 6 8 10m

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PROJECT
ST PHILLIP'S CHRISTIAN COLLEGE JUNIOR BUILDING

182 SALAMANDER WAY SALAMANDER BAY, NSW, 2317

DRAWING TITLE
DEVELOPMENT APPLICATION

STORMWATER MANAGEMENT PLAN

JOB NUMBER **NL211843**

DRAWING NUMBER **DA-C04.01**

REVISION **A**

DRAWING SHEET SIZE = A1

PROPOSED STORMWATER MANAGEMENT SUMMARY

LGA:PORT STEPHENS COUNCIL (PSC)

NORTHROP CONSULTING ENGINEERS HAVE PREPARED A CONCEPT STORMWATER DRAINAGE DESIGN FOR THE PROPOSED DEVELOPMENT AT ST PHILLIPS CHRISTIAN COLLEGE, 182 SALAMANDER WAY, SALAMANDER BAY. THE DEVELOPMENT INCLUDES THE CONSTRUCTION OF A MULTI STORY SCHOOL BUILDING, STORMWATER INFRASTRUCTURE AND LANDSCAPING. THIS DESIGN HAS BEEN UNDERTAKEN IN ACCORDANCE WITH THE PSC'S DEVELOPMENT CONTROL PLAN, AND AS3500.3:2015 PLUMBING AND DRAINAGE - STORMWATER DRAINAGE.

ONSITE DETENTION STORAGE REQUIREMENTS

NORTHROP HAVE DESIGNED THE OSD TO LIMIT POST-DEVELOPMENT FLOWS LEAVING THE SITE TO THE PRE-DEVELOPMENT FLOWS - WHERE THE PRE-DEVELOPMENT CONDITION IS TO BE ASSUMED A 100% PERVIOUS SITE. AN OSD OF MINIMUM 39m^3 IS PROPOSED IN AN UNDERGROUND TANK, WHICH WILL DETAIN THE ROOF CATCHMENT. IN ADDITION TO THIS AN INFILTRATION TRENCH IS PROPOSED ON THE SOUTHERN SIDE OF THE SITE, SIZED TO INFILTRATE RUNOFF FOR ALL STORMS UP TO AND INCLUDING THE 1% AEP EVENT. SIZE TO BE CONFIRMED AT CC STAGE FOLLOWING DETAILED GEOTECHNICAL INVESTIGATION TO CONFIRM INFILTRATION PARAMETERS. PRELIMINARY CALCULATIONS ASSUMING AN INFILTRATION RATE OF 3mm/HR INDICATES AN APPROXIMATE VOLUME OF 113m^3 REQUIRED. THE VOLUME HAS BEEN DETERMINED USING DRAINS MODELLING SOFTWARE, WITH A ILSAX HYDROLOGICAL MODEL. ARR2019 PROCEDURES WERE USED WITH RAINFALL DATA FROM THE ARR DATAHUB. A RANGE OF ANNUAL EXCEEDANCE PROBABILITIES (AEP) MODELLED UP TO THE 1% AEP (MAJOR EVENT). THE RESULTS ARE PROVIDED BELOW, WHERE THE DESIGNED STORAGE VOLUME LIMITS POST DEVELOPMENT FLOWS TO PRE-DEVELOPMENT FLOWRATES (OR LESS).

AEP	PRE-FLOWRATE (m^3/S)	POST-FLOWRATE (m^3/S)
20%	0.105	0.086
10%	0.138	0.104
5%	0.176	0.121
2%	0.225	0.186
1%	0.269	0.230

THE OSD IS DESIGNED AS AN UNDERGROUND TANK WITH APPROXIMATELY 0.7m STORAGE DEPTH, A SINGLE 230mm ORIFICE AT THE BASE OF THE TANK AND A 1.8m WEIR WALL. IT IS NOTED THE OSD TANK HAS BEEN SIZED TO ENSURE MATCH PRE TO POST FLOWS WHEN DISCHARGING TO SALAMANDER WAY, AS WELL AS CONSIDERING THE OVERALL SITE RUNOFF. THE DRAINS MODEL CAN BE PROVIDED TO COUNCIL UPON REQUEST.

A SUMMARY OF THE SITE PARAMETERS CAN BE SEEN BELOW:

TOTAL SITE AREA	= 4085 m^2
POST DEVELOPED IMPERVIOUS AREA	= 2846 m^2
POST DEVELOPED ROOF AREA	= 2330 m^2
POST DEVELOPED PAVED AREA	= 516 m^2
POST DEVELOPED LANDSCAPED PERVIOUS AREA	= 1239 m^2
POST DEVELOPED % IMPERVIOUS	= 69%

WATER QUALITY

TO MINIMISE ANY ADVERSE IMPACTS ON THE DOWNSTREAM WATERCOURSES, STORMWATER TREATMENT DEVICES HAVE BEEN INCLUDED IN THE DESIGN FOR THE PROPOSED DEVELOPMENT. A MUSIC MODEL WAS DEVELOPED, TO DETERMINE THE EFFECTIVE TREATMENT PROVIDED BY THE PROPOSED STORMWATER TREATMENT DEVICES.

ALL RUNOFF FROM THE ROOF IS TO BE CONVEYED VIA A PIPE NETWORK TO THE UNDERGROUND 15KL REUSE TANK ADJACENT TO THE OSD TANK. THE NORTH EASTERN GRASSED AREA IS CONVEYED TO A LANDSCAPED SWALE THAT DISCHARGES INTO A STORMWATER PIT CONTAINING A SPEL STORMSTACK AND PIPED TO THE BIO-FILTRATION BASIN TO THE NORTH WEST OF THE SITE. THE NORTH WESTERN GRASSED AREA IS CONVEYED TO THE BIO-FILTRATION BASIN VIA A LANDSCAPED SWALE. THE BIO FILTRATION BASIN DRAINS TO AN EXISTING KERB INLET PIT IN SALAMANDER WAY.

THE WESTERN SITE AREAS ARE CONVEYED VIA TWO LANDSCAPED SWALES INTO A PIT AND PIPE NETWORK TO THE SOUTHERN INFILTRATION TRENCH. THE SOUTH WESTERLY CORNER OF THE SITE IS CONVEYED VIA SWALE TO THE EXISTING STORMWATER PIT AND THEN DISCHARGED INTO THE EXISTING STORMWATER NETWORK. THE SOUTH EASTERN CORNER OF THE SITE IS GRADED TOWARDS AN INLET PIT FOR THE INFILTRATION TRENCH. THE EMERGENCY OVERFLOW ROUTE FOLLOWS THE EXISTING DRAINAGE REGIME.

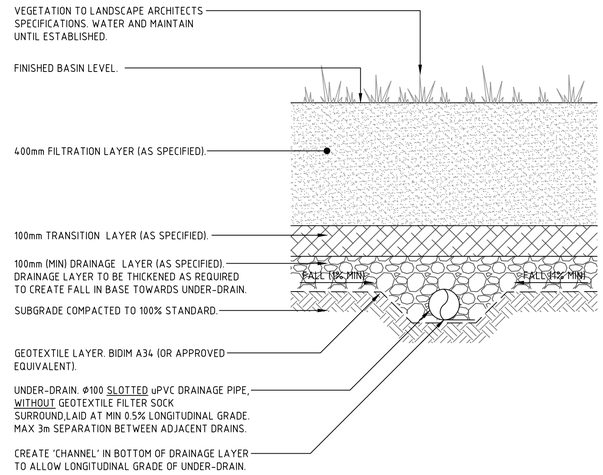
THE SOUTHERN AREA DRAINING TO THE INFILTRATION TRENCH WERE ASSUMED TO NOT NEED ANY WATER QUALITY MEASURES AS DISCUSSED WITH COUNCIL ENGINEER BRYN COTTERILL ON OCTOBER 1ST 2021. AS THE SOUTHERN INFILTRATION TRENCH IS DEEMED TO COMPLY SOLUTION FOR WATER QUALITY FOR COMPLETENESS THE INFILTRATION TRENCH WAS INCLUDED IN THE MUSIC MODEL TO PROVIDE THE RESULTS IN THE TABLE BELOW. HOWEVER THE MODEL WAS ALSO RUN WITH THE INFILTRATION TRENCH (AND CORRESPONDING CATCHMENT) REMOVED AND THE TREATMENT OBJECTIVES WERE SATISFIED.

THIS WATER TREATMENT NETWORK HAS BEEN MODELLED IN MUSIC AND MEETS THE STORMWATER TREATMENT OBJECTIVES OUTLINED IN THE PORT STEPHENS COUNCIL WATER SENSITIVE DEVELOPMENT STRATEGY GUIDELINES (PSWSDSG) FOR A DEFAULT CATCHMENT.

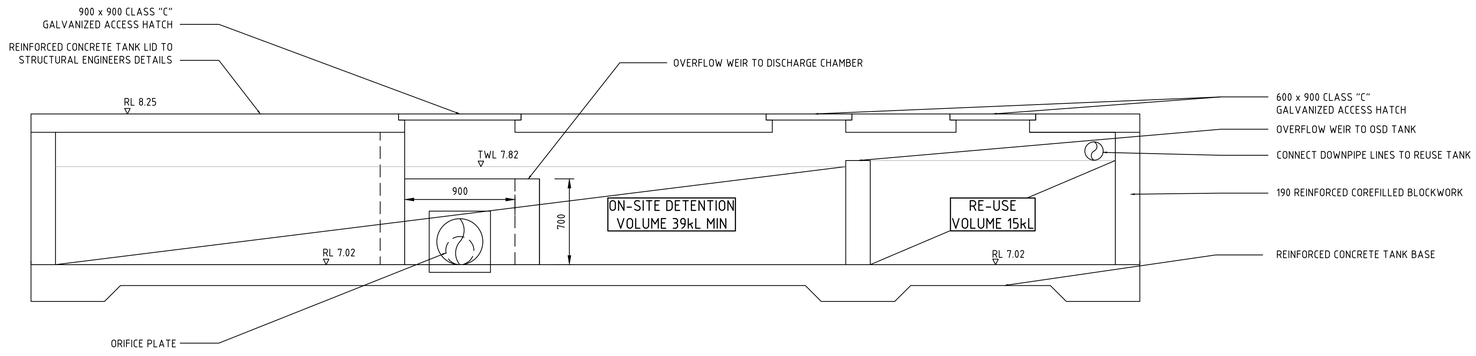
STORMWATER QUALITY RESULTS FROM MUSIC MODEL

	TREATMENT OBJECTIVES (%)	MODELLED TREATMENT RESULT (%)
SUSPENDED SOLIDS	80	92.100
TOTAL PHOSPHORUS	60	71.800
TOTAL NITROGEN	45	69.500

IT CAN BE SEEN IN THE ABOVE TABLE THE PROPOSED TREATMENT TRAIN WHEN MODELLED IN MUSIC USING A COMBINATION OF PROPRIETARY STORMWATER TREATMENT DEVICES WAS SUFFICIENT IN PROVIDING REMOVAL OF STORMWATER POLLUTANTS TO SUGGESTED REQUIREMENTS FROM PSWSDSG.



BIOFILTRATION SYSTEM TYPICAL SECTION



ON-SITE DETENTION AND RE-USE TANK

SECTION A (C04.01)
SCALE 1:25

NOT FOR CONSTRUCTION

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SCALE 1:10 @A1 0.0 0.1 0.2 0.3 0.4 0.5m
SCALE 1:20 @A1 0.0 0.2 0.4 0.6 0.8 1.0m

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CIVIL DETAILS SHEET 1

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