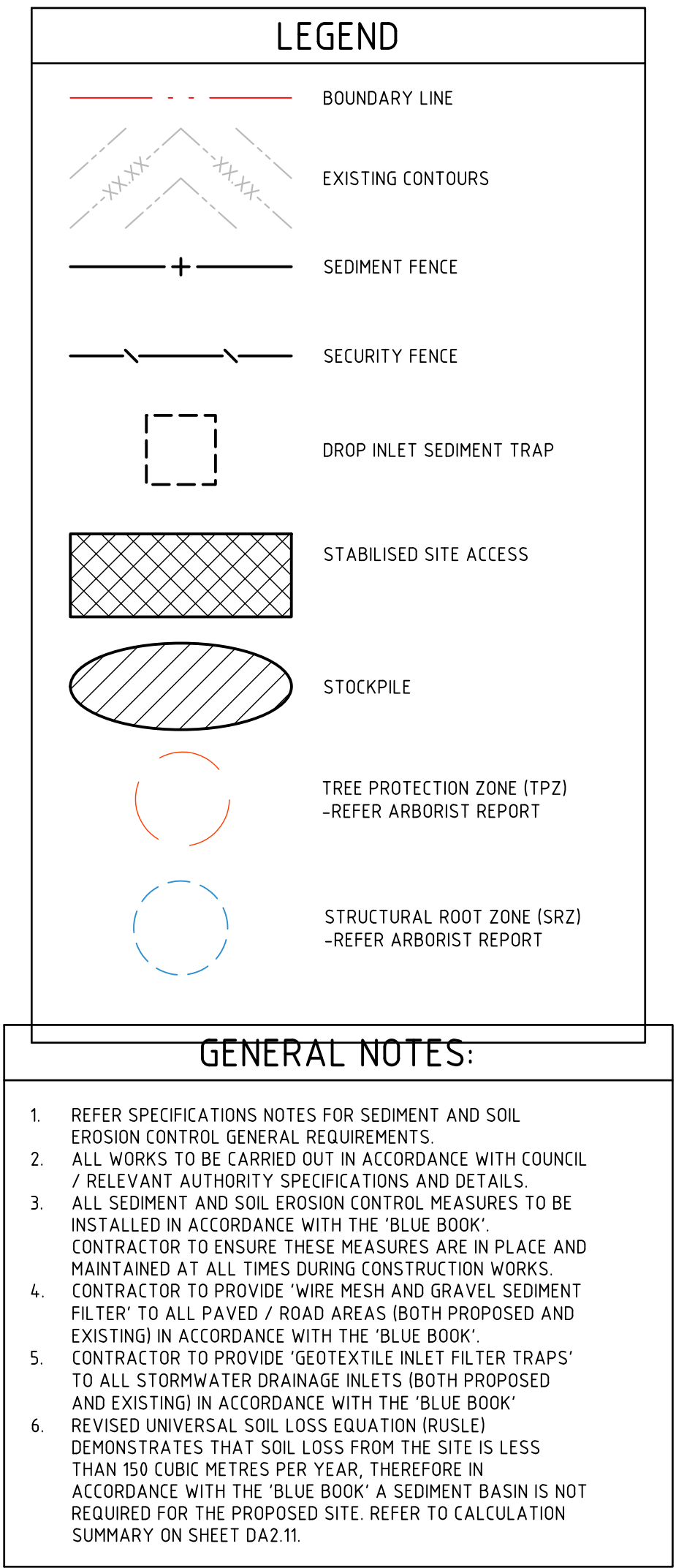




**NOT FOR CONSTRUCTION**

| REVISION | DESCRIPTION                              | ISSUED | VER'D | APP'D | DATE     |
|----------|------------------------------------------|--------|-------|-------|----------|
| 1        | ISSUED FOR DRAFT DEVELOPMENT APPLICATION | L.M    | -     | E.F   | 27.04.21 |
| 2        | ISSUED FOR DEVELOPMENT APPLICATION       | J.P    | -     | E.F   | 30.04.21 |
| 3        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | L.M    | -     | E.F   | 10.06.21 |
| 4        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | N.J.   |       | B.S.  | 02.11.21 |
|          |                                          |        |       |       |          |

CLIENT



DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT

**JDH**architects

THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP  
CONSULTING ENGINEERS PTY LTD.

ALL SETOUT TO ARCHITECT'S DRAWINGS,  
DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT  
AND ON SITE BEFORE MAKING SHOP DRAWINGS OR  
COMMENCING WORK.  
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE  
USABILITY, COMPLETENESS OR SCALE OF DRAWINGS  
TRANSFERRED ELECTRONICALLY.

0 2 4 6 8 10m

SCALE 1:200@ A1



# NORTHROP

**Wollongong**

Level 1, 57 Kembla Street, Wollongong NSW 2500

Ph (02) 4226 3333 Fax (02) 4226 3666

P.O. Box 863, Wollongong, NSW 2500

Email [southcoast@northrop.com.au](mailto:southcoast@northrop.com.au) ABN 81 094 433 100

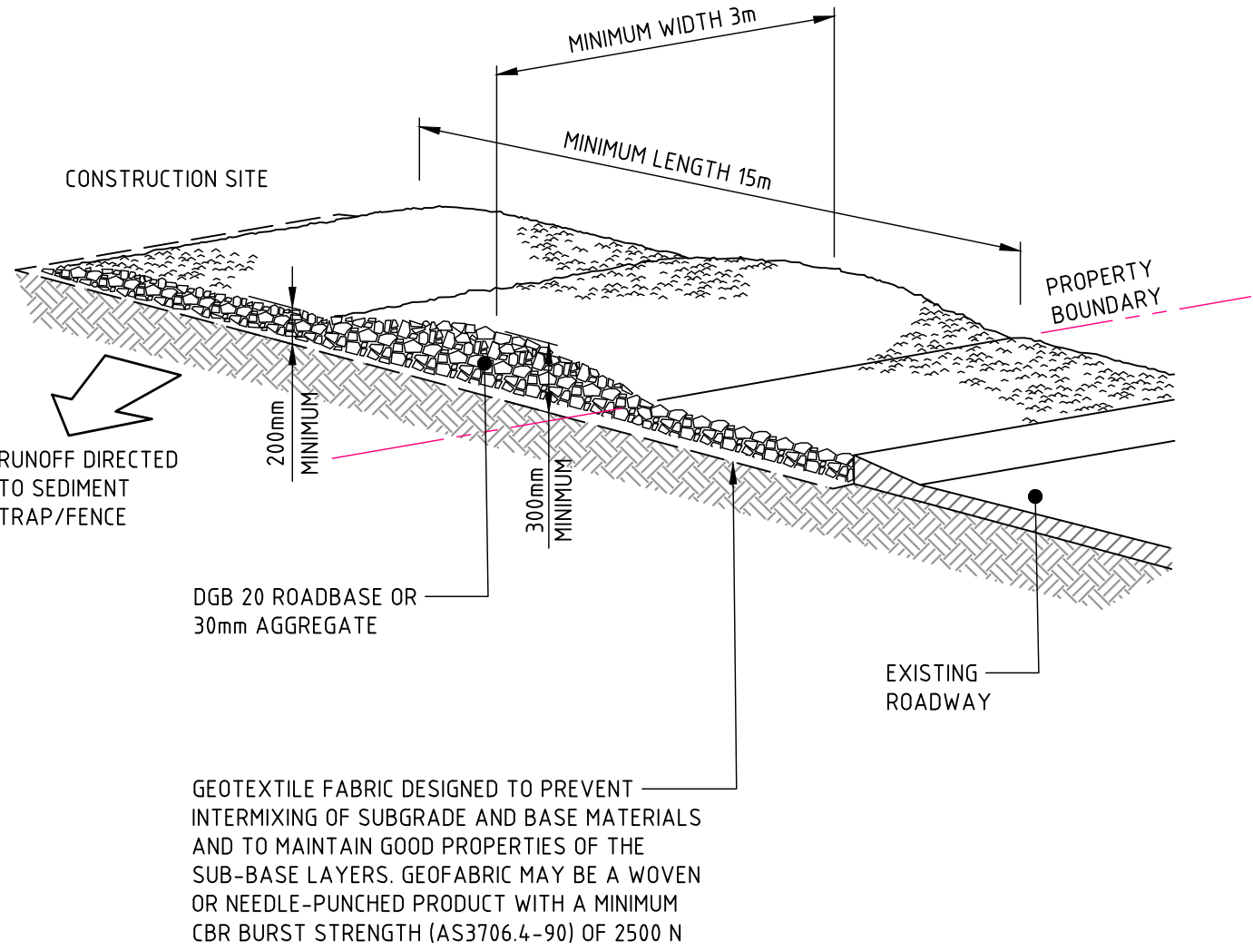
**PROJECT**  
**ST IVES INDOOR SPORTS COMPLEX**  
**60-70 HORACE STREET ST IVES**

DRAWING TITLE

**CONCEPT SEDIMENT AND EROSION  
CONTROL PLAN**

|                         |  |               |  |
|-------------------------|--|---------------|--|
| JOB NUMBER              |  | <b>190145</b> |  |
| DRAWING NUMBER          |  | REVISION      |  |
| <b>DA2.01</b>           |  | <b>4</b>      |  |
| DRAWING SHEET SIZE = A1 |  |               |  |

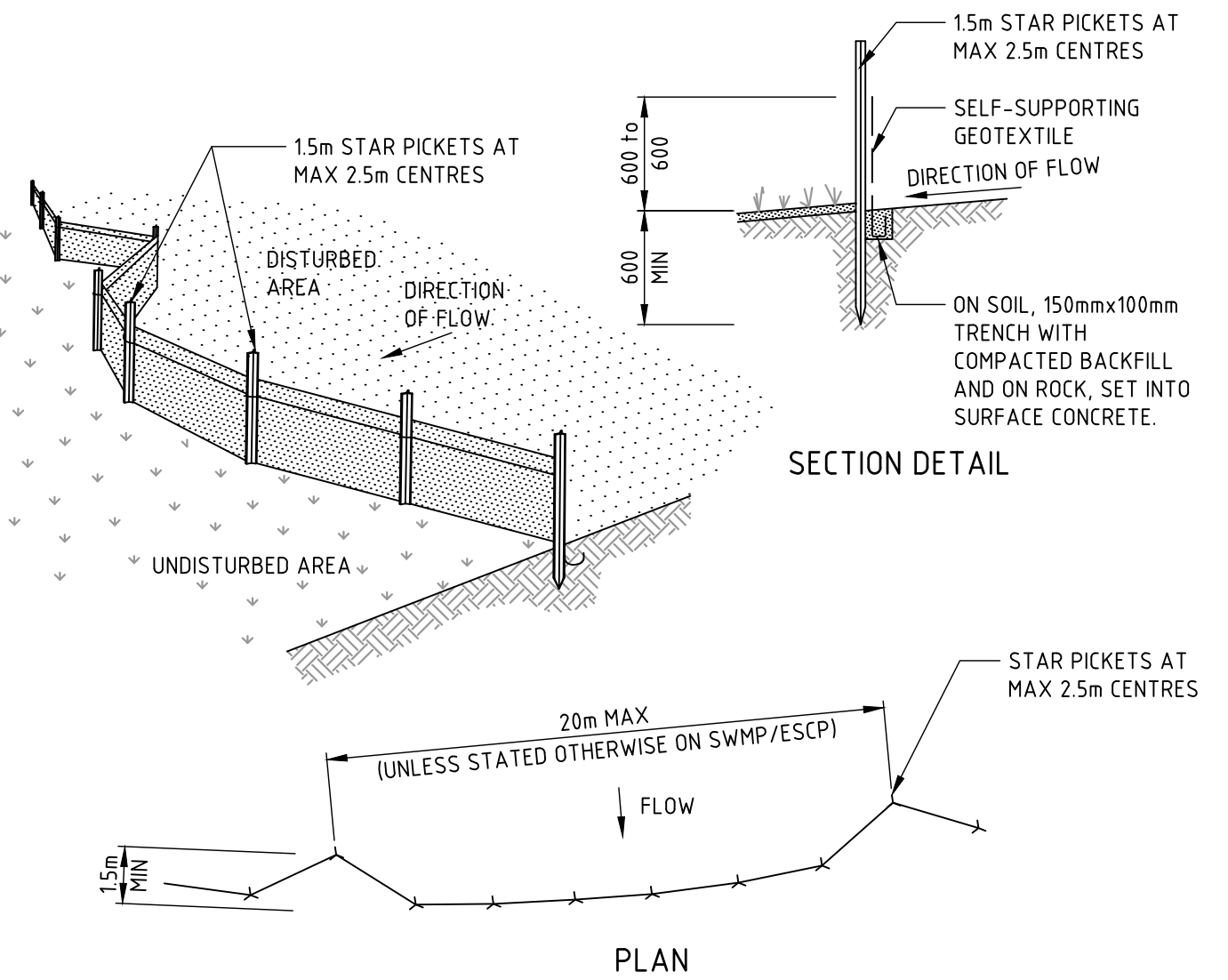
VERIFIER -  
JOB MANAGER: EFLACK  
DESIGNED: EFLACK  
DRAWN: L.MARTIN



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.

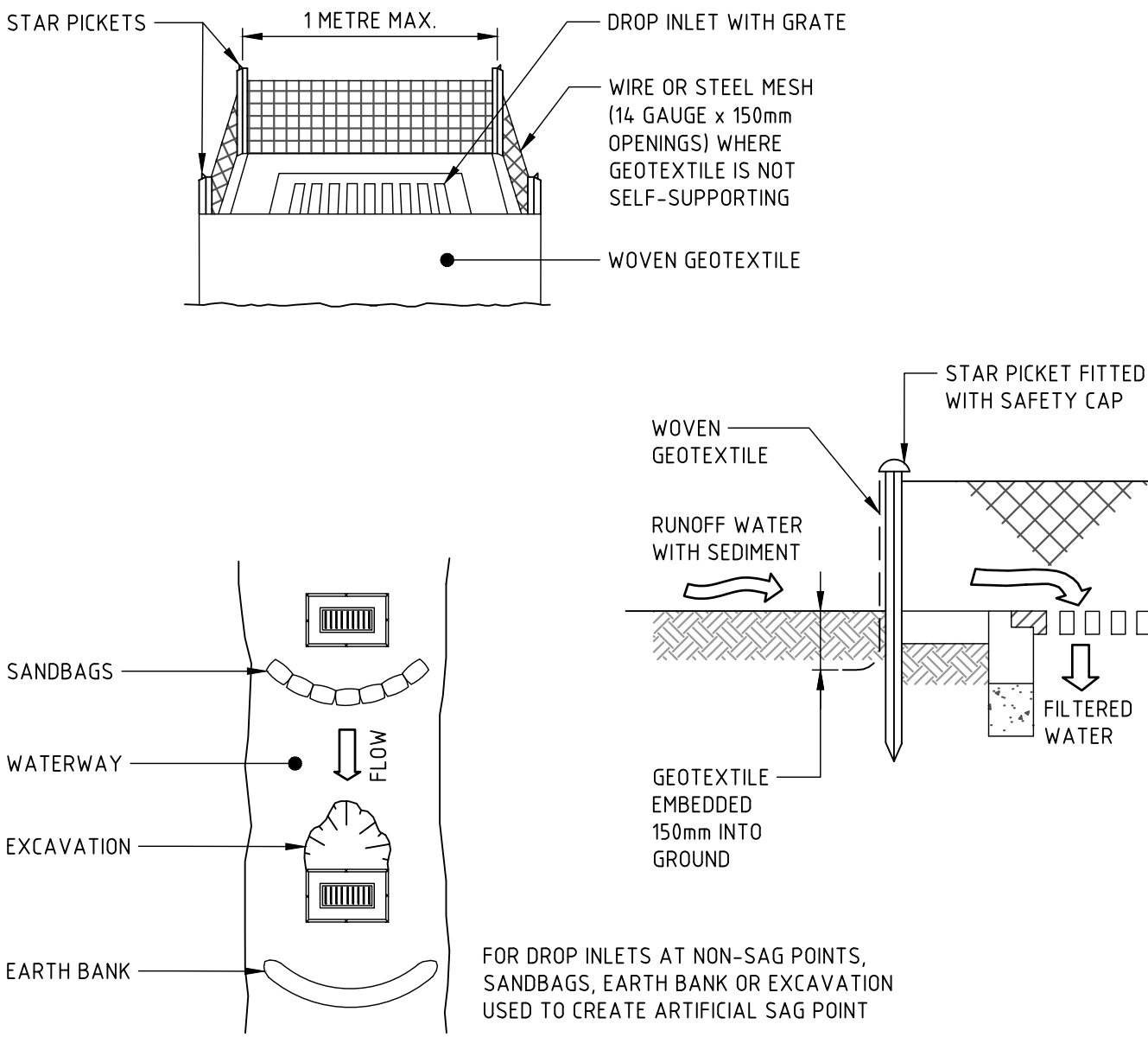
STABILISED SITE ACCESS



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.

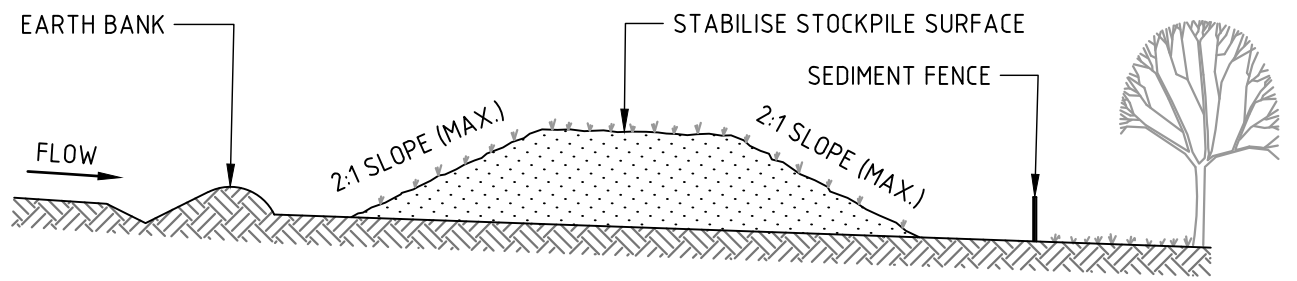
SEDIMENT FENCE



CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 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 TRAPS



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.

STOCKPILE

SWMP Commentary, Detailed Calculations

Note: These "Detailed Calculation" spreadsheets relate only to high erosion hazard lands as identified in figure 4.6 or where the designer chooses to use the RUSLE to size sediment basins. The "Standard Calculation" spreadsheets should be used on low erosion hazard lands as identified by figure 4.6 and where the designer chooses not to run the RUSLE in calculations.

1. Site Data Sheet

Site Name: St Ives High School

Site Location: Horace Street, St Ives

Precinct: Council Sport Complex

Description of Site:

| Site area                     | Sub-catchments |  |  |  |  |  | Remarks |
|-------------------------------|----------------|--|--|--|--|--|---------|
|                               | Total          |  |  |  |  |  |         |
| Total catchment area (ha)     | 0.381          |  |  |  |  |  |         |
| Disturbed catchment area (ha) | 0.381          |  |  |  |  |  |         |

Soil analysis (enter sediment type if known, or laboratory particle size data)

|                                       |   |  |  |  |  |  |                                                                                                                        |
|---------------------------------------|---|--|--|--|--|--|------------------------------------------------------------------------------------------------------------------------|
| Sediment Type (C, F or D) if known:   | d |  |  |  |  |  | From Appendix C                                                                                                        |
| % sand (fraction 0.02 to 2.00 mm)     |   |  |  |  |  |  | Soil texture should be assessed through mechanical dispersion only. Dispersing agents (e.g. Calgon) should not be used |
| % silt (fraction 0.002 to 0.02 mm)    |   |  |  |  |  |  |                                                                                                                        |
| % clay (fraction finer than 0.002 mm) |   |  |  |  |  |  |                                                                                                                        |
| Dispersion percentage                 |   |  |  |  |  |  | E.g. enter 10 for dispersion of 10%                                                                                    |
| % of whole soil dispersible           |   |  |  |  |  |  | See Section 6.3.3(e). Auto-calculated                                                                                  |
| Soil Texture Group                    | d |  |  |  |  |  | Automatic calculation from above                                                                                       |

Rainfall data

|                                      |      |  |  |  |  |  |                                |
|--------------------------------------|------|--|--|--|--|--|--------------------------------|
| Design rainfall depth (days)         | 5    |  |  |  |  |  | See Sections 6.3.4 (d) and (e) |
| Design rainfall depth (percentile)   | 85   |  |  |  |  |  | See Sections 6.3.4 (f) and (g) |
| x-day, y-percentile rainfall event   | 43.3 |  |  |  |  |  | See Section 6.3.4 (h)          |
| Rainfall R-factor (if known)         | 4000 |  |  |  |  |  | See Appendix B                 |
| IFD: 2-year, 6-hour storm (if known) | 11.4 |  |  |  |  |  | See IFD chart for the site     |

RUSLE Factors

|                                     |       |     |     |     |     |     |                                                             |
|-------------------------------------|-------|-----|-----|-----|-----|-----|-------------------------------------------------------------|
| Rainfall erosivity (R-factor)       | 4000  |     |     |     |     |     | Auto-filled from above                                      |
| Soil erodibility (K-factor)         | 0.017 |     |     |     |     |     |                                                             |
| Slope length (m)                    | 77    |     |     |     |     |     | RUSLE LS factor calculated for a high rill/interrill ratio. |
| Slope gradient (%)                  | 6.81  |     |     |     |     |     |                                                             |
| Length/gradient (LS-factor)         | 1.66  |     |     |     |     |     |                                                             |
| Erosion control practice (P-factor) | 1.3   | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |                                                             |
| Ground cover (C-factor)             | 1     | 1   | 1   | 1   | 1   | 1   |                                                             |

Calculations

|                                               |     |  |  |  |  |  |                                     |
|-----------------------------------------------|-----|--|--|--|--|--|-------------------------------------|
| Soil loss (t/ha/yr)                           | 147 |  |  |  |  |  |                                     |
| Soil Loss Class                               | 1   |  |  |  |  |  | See Section 4.4.2(b)                |
| Soil loss (m <sup>3</sup> /ha/yr)             | 113 |  |  |  |  |  |                                     |
| Sediment basin storage volume, m <sup>3</sup> | 7   |  |  |  |  |  | See Sections 6.3.4(i) and 6.3.5 (e) |

Sediment\_Basin\_Design\_Detailed\_V6

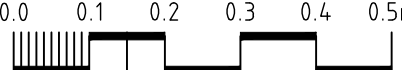
1

NOT FOR CONSTRUCTION

| REVISION | DESCRIPTION                              | ISSUED | VER'D | APP'D | DATE     |
|----------|------------------------------------------|--------|-------|-------|----------|
| 1        | ISSUED FOR DRAFT DEVELOPMENT APPLICATION | L.M.   | -     | E.F.  | 27.04.21 |
| 2        | ISSUED FOR DEVELOPMENT APPLICATION       | J.P.   | -     | E.F.  | 30.04.21 |
| 3        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | L.M.   | -     | E.F.  | 10.06.21 |
| 4        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | N.J.   | -     | B.S.  | 02.11.21 |

|                                                                                      |
|--------------------------------------------------------------------------------------|
|   |
| DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED |

|                                                                                   |
|-----------------------------------------------------------------------------------|
| ARCHITECT                                                                         |
| <b>JDH</b> architects                                                             |
| THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD. |

|                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. |
| SCALE 1:10 @ A1                                                                                                                                                                                                                                                  |
|                                                                                                                                                                             |

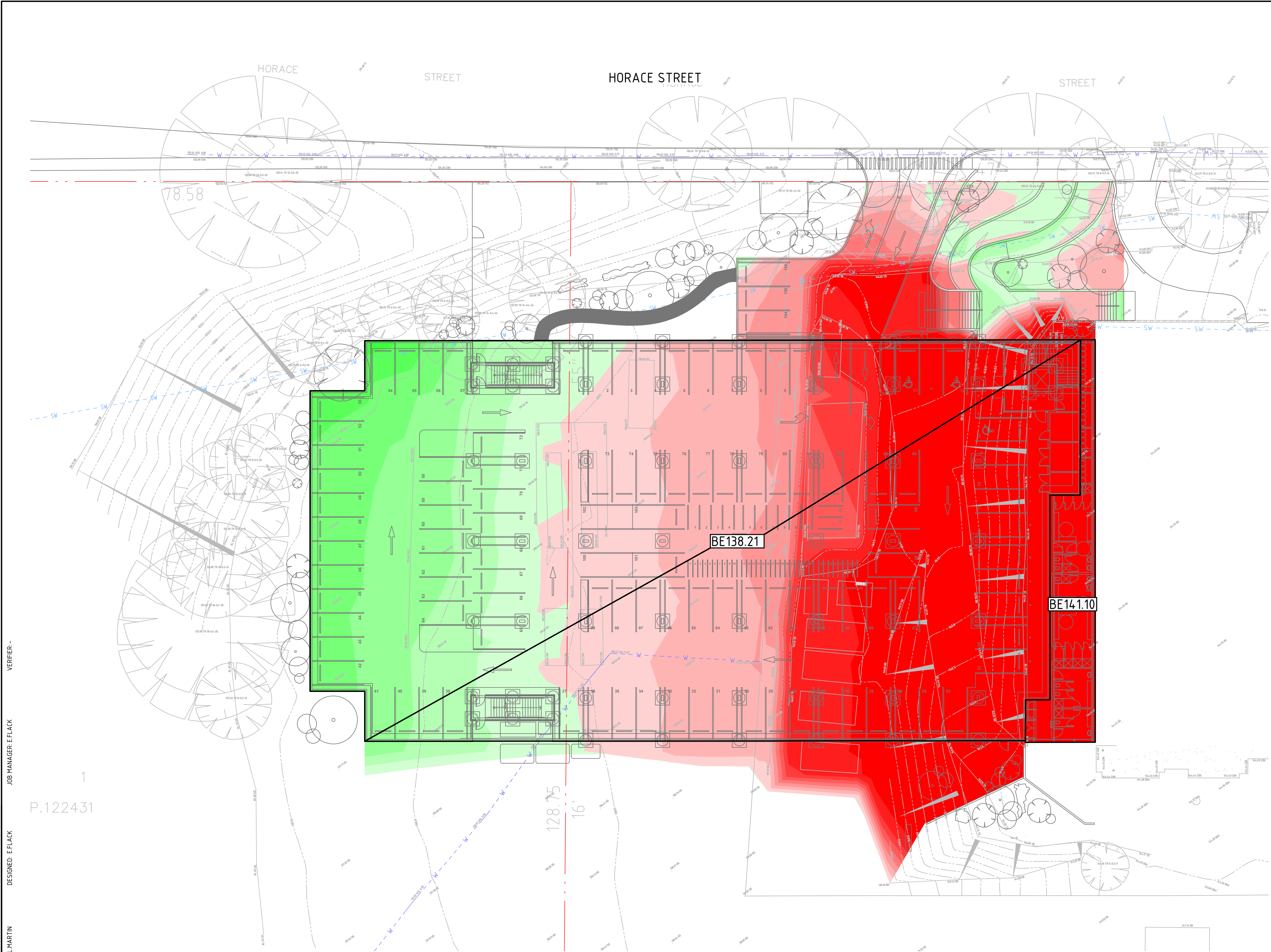
|                                                                                       |
|---------------------------------------------------------------------------------------|
|  |
| Wollongong                                                                            |
| Level 1, 57 Kembla Street, Wollongong NSW 2500                                        |
| Ph (02) 4226 3333 Fax (02) 4226 3666                                                  |
| P.O. Box 863, Wollongong, NSW 2500                                                    |
| Email southcoast@northrop.com.au ABRN 61 094 433 100                                  |

|                                      |
|--------------------------------------|
| PROJECT                              |
| <b>ST IVES INDOOR SPORTS COMPLEX</b> |
| <b>60-70 HORACE STREET ST IVES</b>   |

|                                     |
|-------------------------------------|
| DRAWING TITLE                       |
| <b>SEDIMENT AND EROSION CONTROL</b> |
| <b>DETAILS</b>                      |

|                         |
|-------------------------|
| JOB NUMBER              |
| <b>190145</b>           |
| DRAWING NUMBER          |
| <b>DA2.11</b>           |
| REVISION                |
| <b>4</b>                |
| DRAWING SHEET SIZE = A1 |

Found: W:\IP\as\1059\N0145 - St Ives High School - Council Sport Complex\A0-Drawings\0-Northrop\LC-ENV\12-CURRENT CAD FILES\N0145\_DA2.11\_SEDIMENT AND EROSION CONTROL DETAILS.dwg  
Plotted By: njones  
Date: 02-11-21 15:06pm



LEGEND

BOUNDARY LINE

EXISTING CONTOURS  
(0.5m INTERVALS)

BEXX.XX

BULK EARTHWORKS PAD LEVEL

DEPTH OF CUT

- 6.0m TO - 2.0m

- 2.0m TO - 1.5m

- 1.5m TO - 1.25m

- 1.25m TO - 1.0m

- 1.0m TO - 0.75m

- 0.75m TO - 0.5m

- 0.5m TO - 0.25m

- 0.25m TO - 0.0m

DEPTH OF FILL

0.0m TO 0.25m

0.25m TO 0.5m

0.5m TO 0.75m

0.75m TO 1.0m

1.0m TO 1.25m

GENERAL NOTES:

1. APPROXIMATE BULK EARTHWORK VALUES AS FOLLOWS;

1.1. CUT -5450 cu.m

1.2. FILL 554cu.m

1.3. BALANCE -4896 cu.m CUT

1.4. NOTE: SITE STRIPPING VOLUMES HAVE NOT BEEN INCLUDED IN ABOVE CALCULATIONS.

2. 150mm STRUCTURAL SLAB HAS BEEN ALLOWED FOR ABOVE, HOWEVER EXTERNAL PAVEMENTS AND LANDSCAPING AREAS HAVE NOT BEEN CONSIDERED.

DRAWN: L.MARTIN  
DESIGNED: E.FLACK  
JOB MANAGER: E.FLACK  
VERIFIER: -

1  
P.122431

| REVISION | DESCRIPTION                              | ISSUED | VER'D | APP'D | DATE     | CLIENT |
|----------|------------------------------------------|--------|-------|-------|----------|--------|
| 1        | ISSUED FOR DRAFT DEVELOPMENT APPLICATION | L.M.   | -     | E.F.  | 27.04.21 |        |
| 2        | ISSUED FOR DEVELOPMENT APPLICATION       | J.P.   | -     | E.F.  | 30.04.21 |        |
| 3        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | L.M.   | -     | E.F.  | 07.05.21 |        |
| 4        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | L.M.   | -     | E.F.  | 10.06.21 |        |
| 5        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | N.J.   | -     | B.S.  | 02.11.21 |        |

Kur-ring-gai Council

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT

JDHarchitects

THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD.

ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

SCALE 1:200@A1

0 2 4 6 8 10m

NORTHROP

Wollongong

Level 1, 57 Kembla Street, Wollongong NSW 2500

Ph (02) 4226 3333 Fax (02) 4226 3666

P.O. Box 863, Wollongong, NSW 2500

Email southcoast@northrop.com.au ABRN 61 094 433 100

PROJECT

ST IVES INDOOR SPORTS COMPLEX

60-70 HORACE STREET ST IVES

DRAWING TITLE

BULK EARTHWORKS PLAN

JOB NUMBER

190145

DRAWING NUMBER

DA3.01

REVISION

5

DRAWING SHEET SIZE = A1

NOT FOR CONSTRUCTION

Found: W:\P\pss\109519\0145 - St Ives High School - Council Sport Complex\3D Drawings\0-Northrop\1-C-ENL\12-CURRENT CAD FILES\190145\_DIA.01\_BULK EARTHWORKS.dwg  
Plotted By: njones  
Date: 02-11-21 15:29pm

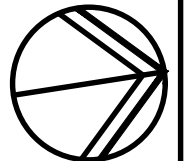
VERIFIER -  
JOB MANAGER EFLACK  
DESIGNED EFLACK  
DRAWN L MARTIN

| REVISION | DESCRIPTION                              | ISSUED | VER'D | APP'D | DATE     | CLIENT                                                                                                                                                                      |
|----------|------------------------------------------|--------|-------|-------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | ISSUED FOR DRAFT DEVELOPMENT APPLICATION | L.M.   | -     | E.F.  | 27.04.21 | <br>DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED |
| 2        | ISSUED FOR DEVELOPMENT APPLICATION       | J.P.   | -     | E.F.  | 30.04.21 |                                                                                                                                                                             |
| 3        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | L.M.   | -     | E.F.  | 07.05.21 |                                                                                                                                                                             |
| 4        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | L.M.   | -     | E.F.  | 14.05.21 |                                                                                                                                                                             |
| 5        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | L.M.   | -     | E.F.  | 10.06.21 |                                                                                                                                                                             |
| 6        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | N.J.   | -     | B.S.  | 02.11.21 |                                                                                                                                                                             |



ARCHITECT  
**JDH**architects

THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD.



ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

SCALE 1:200@A1



**NORTHROP**  
Wollongong  
Level 1, 57 Kembla Street, Wollongong NSW 2500  
Ph (02) 4226 3333 Fax (02) 4226 3666  
P.O. Box 863, Wollongong, NSW 2500  
Email southcoast@northrop.com.au ABRN 61 094 433 100

PROJECT  
**ST IVES INDOOR SPORTS COMPLEX**  
**60-70 HORACE STREET ST IVES**

DRAWING TITLE  
**SITWORKS AND STORMWATER**  
**MANAGEMENT PLAN**

|                         |        |          |
|-------------------------|--------|----------|
| JOB NUMBER              | 190145 |          |
| DRAWING NUMBER          | DA4.01 | REVISION |
|                         |        | 6        |
| DRAWING SHEET SIZE = A1 |        |          |

**NOT FOR CONSTRUCTION**

## GENERAL NOTES

THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METRES, UNO (UNLESS NOTED OTHERWISE).

NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.

ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORK.

DETAIL SURVEY DATA WAS SUPPLIED BY C.M.S. SURVEYORS, DRAWING DATED 17/06/2020.

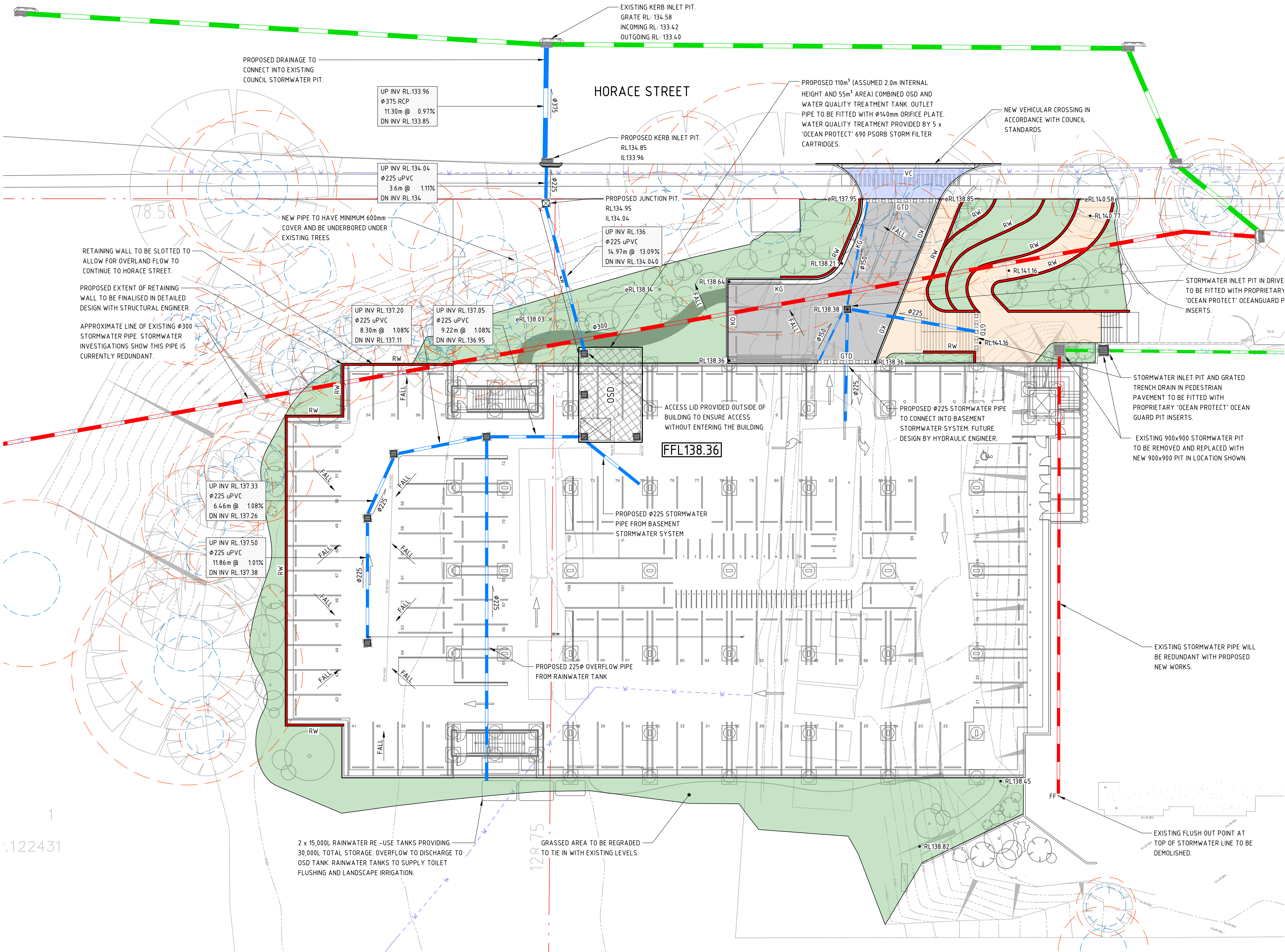
EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.

ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.

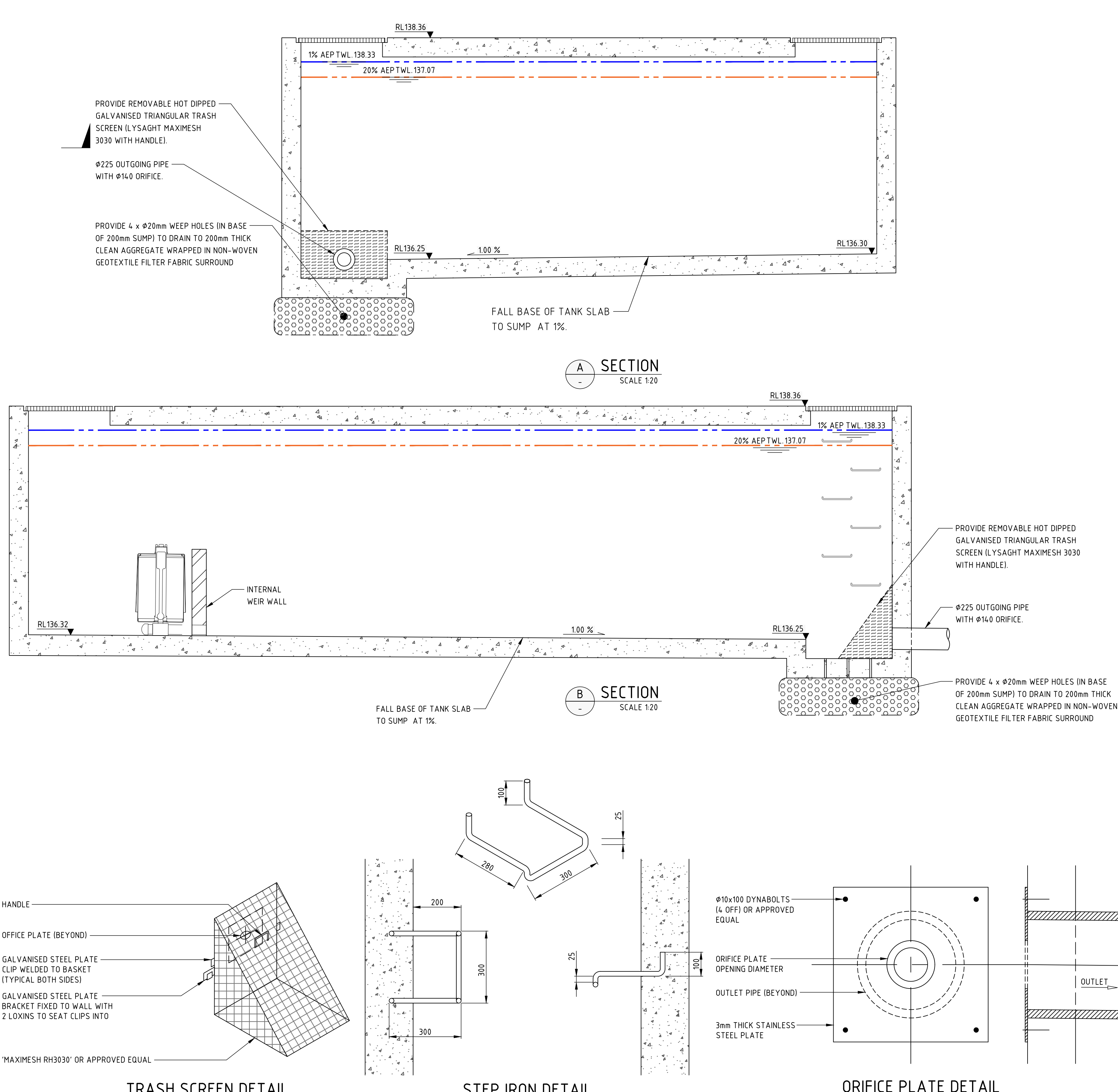
ALL STORMWATER MANAGEMENT MEASURES SHOWN ON THIS DRAWING HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION PURPOSES TO DEMONSTRATE FEASIBILITY. ALL MEASURES WILL BE SUBJECT TO DETAIL DESIGN AT THE CONSTRUCTION CERTIFICATE STAGE AND MAY BE SUBJECT TO VARIATION PROVIDED THAT THE DESIGN INTENT IS MAINTAINED.

## LEGEND

|  |                                      |
|--|--------------------------------------|
|  | BOUNDARY LINE                        |
|  | EXISTING CONTOURS (0.5m INTERVALS)   |
|  | PROPOSED CONTOURS (0.1m INTERVALS)   |
|  | EXISTING STORMWATER PIPE             |
|  | REDUNDANT STORMWATER PIPE            |
|  | PROPOSED STORMWATER PIPE             |
|  | GRATED INLET PIT EXISTING/NEW        |
|  | PROPOSED KERB INLET PIT EXISTING/NEW |
|  | GRATED TRENCH DRAIN                  |
|  | ON-SITE DETENTION TANK               |
|  | OVERLAND FLOW                        |
|  | PROPOSED KERB AND GUTTER             |
|  | PROPOSED KERB                        |
|  | VEHICULAR CROSSING                   |
|  | PROPOSED SPOT HEIGHT                 |
|  | EXISTING SPOT HEIGHT                 |
|  | DIRECTION OF GRADE                   |
|  | RETAINING WALL                       |
|  | TPZ/SRZ - REFER TO LANDSCAPE PLANS   |
|  | PROPOSED ASPHALT - PAVEMENT TYPE 1   |
|  | PROPOSED CONCRETE - PAVEMENT TYPE 2  |
|  | PROPOSED VEHICULAR CROSSING          |
|  | PROPOSED LANDSCAPING                 |



1  
122431



### ORIFICE PLATE DETAIL

- ORIFICE PLATE No 1 -  $\phi$  124mm

**NOT FOR CONSTRUCTION**

| REVISION | DESCRIPTION                              | ISSUED | VER'D | APP'D | DATE     | CLIENT                                                                                                              | ARCHITECT                                                                                                      | ALL SETOUT TO ARCHITECT'S DRAWINGS, DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK.<br>NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. |                                      | <br><b>Wollongong</b><br>Level 1, 57 Kembla Street, Wollongong NSW 2500<br>Ph (02) 4226 3333 Fax (02) 4226 3666<br>P.O. Box 863, Wollongong, NSW 2500<br>Email southcoast@northrop.com.au ABN 81 094 433 100 | PROJECT            | DRAWING TITLE | JOB NUMBER |
|----------|------------------------------------------|--------|-------|-------|----------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|------------|
| 1        | ISSUED FOR DRAFT DEVELOPMENT APPLICATION | L.M    | -     | E.F   | 27.04.21 | <br><b>Ku-ring-gai Council</b> | <br><b>JDH architects</b> | SCALE 1:20@A1<br>                                                                                                                                                              | <b>ST IVES INDOOR SPORTS COMPLEX</b> |                                                                                                                                                                                                                                                                                                   | <b>OSD DETAILS</b> | <b>190145</b> |            |
| 2        | ISSUED FOR DEVELOPMENT APPLICATION       | J.P    | -     | E.F   | 30.04.21 |                                                                                                                     |                                                                                                                |                                                                                                                                                                                                                                                                     | DRAWING NUMBER                       |                                                                                                                                                                                                                                                                                                   | REVISION           |               |            |
| 3        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | L.M    | -     | E.F   | 10.06.21 |                                                                                                                     |                                                                                                                |                                                                                                                                                                                                                                                                     | <b>DA5.01</b>                        |                                                                                                                                                                                                                                                                                                   | <b>4</b>           |               |            |
| 4        | RE-ISSUED FOR DEVELOPMENT APPLICATION    | N.J.   | -     | B.S.  | 02.11.21 |                                                                                                                     |                                                                                                                |                                                                                                                                                                                                                                                                     |                                      |                                                                                                                                                                                                                                                                                                   |                    |               |            |
|          |                                          |        |       |       |          | DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED                                | THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD.                              |                                                                                                                                                                                                                                                                     |                                      | DRAWING SHEET SIZE = A1                                                                                                                                                                                                                                                                           |                    |               |            |

DESIGNED: EFLACK  
DRAWN: L.MARTIN  
JOB MANAGER: EFLACK  
VERIFIER: -

24R.4 ON-SITE DETENTION CALCULATION SHEET

Address .....

Catchment Detail

1. Catchment Name RC2 - Rocky Creek

2. Catchment Discharge Rate 0.0166 l/sec/m<sup>2</sup> A

3. Catchment Storage Rate 0.0241 m<sup>3</sup>/m<sup>2</sup> B

Site Details

Impervious Area (3805) X 0.90 = C (Discount for Rainwater Tank)

4. Site Area 3425 m<sup>2</sup> ^ 60% of site area 2283 m<sup>2</sup> C

5. Area(s) not draining to the detention system 550 m<sup>2</sup>

6. Total impervious area (roofs, driveways, paving, etc.) 3255 m<sup>2</sup> D

7. Impervious area bypassing detention system 208 m<sup>2</sup> E

Permitted Site Discharge

8. C [ 3425 m<sup>2</sup> ] x A [ 0.0166 l/sec/m<sup>2</sup> ] = 56.85 l/sec Flow 1

9. Adjustment for any uncontrolled impervious flow E / D = 0.064 (<0.25) F

10. Flow 1 [ 56.84 l/sec ] x F [ 0.064 ] = 3.63 l/sec Flow 2

11. Flow 1 [ 56.85 ] – Flow 2 [ 3.63 ] = 53.21 l/sec PSD

Site Storage Requirement

12. C [ 3425 m<sup>2</sup> ] x B [ 0.0241 m<sup>3</sup>/m<sup>2</sup> ] = 82.54 m<sup>3</sup> SSR1

13. If the storage is in a landscaped basin, SSR1 x 1.2 = m<sup>3</sup> SSR2

Outlet Control

14. Height difference between top water surface level and the centre of the orifice 2 m G

15. Orifice Diameter 21.8 x  $\sqrt{\frac{PSD}{G}}$  140 mm OD

PSD = Permitted Site Discharge  
SSR1 = Site Storage Requirement (except for landscaped basins)  
SSR2 = Site Storage Requirement (landscaped basins) (Note: Use only SSR1 or SSR2)  
OD = Orifice Diameter

Signature..... Name.....  
Qualifications..... Date .....

Ku-ring-gai Development Control Plan

24R

REFERENCES

DESIGN SUMMARY

CATCHMENT NAME = RC2 - ROCKY CREEK

CATCHMENT CALCULATIONS:

|                 | PRE-DEVELOPMENT           | POST-DEVELOPMENT          |
|-----------------|---------------------------|---------------------------|
| TOTAL AREA      | 3425m <sup>2</sup>        | 3425m <sup>2</sup>        |
| IMPERVIOUS AREA | 0m <sup>2</sup> (0%)      | 3425m <sup>2</sup> (100%) |
| PERVIOUS AREA   | 3425m <sup>2</sup> (100%) | 0m <sup>2</sup> (0%)      |

SITE DISCHARGE CALCULATIONS AND ON-SITE DETENTION:

DESIGN BASIS:

- KU-RING-GAI COUNCIL DCP ON-SITE DETENTION CALCULATION SHEET

ON-SITE DETENTION SUMMARY:

- BELOW GROUND BLOCK WORK TANK

WATER QUALITY:

MUSIC MODEL SUMMARY (REFER NORTHROP REPORT FOR FURTHER DETAILS).

MUSIC MODEL SUMMARY:

| SOURCE NODE | CATCHMENT        | AREA               |
|-------------|------------------|--------------------|
| MIXED       | ROOF             | 2847m <sup>2</sup> |
| MIXED       | DRIVEWAY         | 438m <sup>2</sup>  |
| MIXED       | PEDESTRIAN PAVED | 140m <sup>2</sup>  |
|             | TOTAL            | 3425m <sup>2</sup> |

TREATMENT NODES:

- RAINWATER RE-USE TANK
- ON-SITE DETENTION TANK
- OCEAN PROTECT 'STORMFILTER' CARTRIDGE
- OCEAN PROTECT 'OCEAN GUARD' STORMWATER INLET PIT

TREATMENT STANDARDS:

| POLLUTANT              | REDUCTION STANDARDS | REDUCTION ACHIEVED |
|------------------------|---------------------|--------------------|
| GROSS POLLUTANTS       | 70%                 | 100%               |
| TOTAL SUSPENDED SOLIDS | 85%                 | 85.3%              |
| TOTAL PHOSPHORUS       | 65%                 | 67.3%              |
| TOTAL NITROGEN         | 45%                 | 50%                |

MUSIC MODEL PARAMETERS IN ACCORDANCE WITH KU-RING-GAI COUNCIL'S MUSIC MODELLING GUIDELINES.

NOT FOR CONSTRUCTION

| REVISION | DESCRIPTION | ISSUED | VER'D | APP'D | DATE | CLIENT | ARCHITECT |  | ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. | <div><div><div></div></div><div><div>NORTHROP</div></div><div>Wollongong<br/>Level 1, 57 Kembla Street, Wollongong NSW 2500<br/>Ph (02) 4226 3333 Fax (02) 4226 3666<br/>P.O. Box 863, Wollongong, NSW 2500<br/>Email southcoast@northrop.com.au ABRN 81 094 433 100</div></div> |
|----------|-------------|--------|-------|-------|------|--------|-----------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|----------|-------------|--------|-------|-------|------|--------|-----------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD.

NOT TO SCALE

Found: w:\p\p\1209\190145 - St Ives High School - Council Sport Complex\Drawings\0-Northrop\0-CIVIL\2-CURRENT CAD FILES\190145\_DAS.02 OSD DESIGN SUMMARY.dwg  
Plotted By: cbsrj Date: 02-11-21 5:07pm