

The preliminary calculations by Northrop indicate a rainwater-harvesting tank of approx. 350 m³ will provide sufficient storage for 80% of the non-potable demand modeled. 80% is considered to be the optimal target when considering cost-benefit of the tank. That is, significant increases in storage volume (and therefore cost of tank construction) lead to minimal increases in demand being met - when projecting beyond the 80% target.

2.2 Development Site - Managing Stormwater Discharge and Stormwater Quality

Proposed Site Discharge System

The development site is intended to discharge via a new pipe connection from the property to the Parramatta River. This is based on advice from SOPA indicating the existing stormwater system has insufficient capacity to accommodate flows from the subject site – in conjunction with the upstream site flows. The proposed location of the new outlet is adjacent the existing 1800mm-diameter outlet pipe - northwest of the site.

The proposed site discharge system will be designed to accommodate flows from the development site to suit the design for roof drainage and runoff collection on-site (e.g. 20-year ARI). The system will also serve to drain most of the proposed perimeter road. No provisions for on-site stormwater detention (OSD) are proposed because:

- The new site discharge pipe will be designed to accommodate full pipe flow from the site – i.e. proposed site flows will not reduce existing downstream pipe capacity;
- The site is directly adjacent the receiving watercourse - there is no benefit in incorporating OSD to delay the peak runoff from the site.

Managing Site Runoff

The site stormwater drainage system will include roof water downpipes, surface drainage pits and a conventional pipe conveyance system. Subsurface drainage systems will also connect to this network, to drain landscaped areas (particularly on podium levels).

The following stormwater drainage components are features of the development that are currently proposed to respond to the principles of the SOPA 'SMWSUD Policy'. The final provisions will be subject to detailed design.

- The roof water drainage system will be designed to discharge to the rainwater harvesting tank (located along the northern frontage of the site). The overflow from this tank will combine with the site surface runoff system, to discharge to Parramatta River (via the proposed site discharge system).
- The total area of proposed planting and lawn is approx. 2760m². This translates to a percentage site impervious area of 26%. Where planting permits, surface drainage pits will be located within the on-grade landscaped areas to drain impervious areas – to promote infiltration to soil and root zones.
- The roof water drainage system will discharge via a first flush pollution control device prior to draining to the rainwater tank.
- Our current calculations indicate a CDS 0506 gross pollutant trap (or equal), rainwater harvesting tank and Stormwater 360 Stormfilter system (or equal) will adequately treat site runoff prior to leaving the site and draining via the proposed site discharge system. Preliminary considerations for rain gardens / bio-retention treatment zones consider that their design principles (e.g. ponded / retained runoff, depth of specific substrate, etc.) conflict with the use of the landscaped spaces and construction / implementation on (predominantly) podium areas.
- The stormwater pollution treatment train (incorporating rainwater harvesting tank and pollution control devices) achieves the following pollution reduction figures for the development site:

- 49% reduction in the mean annual load of Total Nitrogen
 - 65% reduction in the mean annual load of Total Phosphorous
 - 85% reduction in the mean annual load of Total Suspended Solids
 - 90% reduction in the mean annual load of hydrocarbons (approx.)
 - 99% reduction in the mean annual load of gross pollutants
- It is anticipated drainage of the basement car park will incorporate provisions for separating oil and grease – prior to pumping for drainage to the proposed site discharge system.

Monitoring and Maintenance Plan

The proposed stormwater treatment devices will require on-going monitoring for maintenance. In general, it is recommended each of the devices be inspected after rainfall events (or at least every three (3) months) in the first eighteen (18) months. It is expected the outcomes of these inspections will enable a more regular monitoring regime to be developed – specific to the catchment conditions and device.

Each device will need to be cleaned and maintained in accordance with manufacturer requirements – this should extend to include the type of equipment, frequency, method of disposal and maximum level of waste permitted before emptying.

2.3 Proposed Public Road - Managing Stormwater Discharge and Stormwater Quality

The proposed public road will service vehicles accessing the development and adjoining Wentworth Point Ferry Wharf. This will include delivery vehicles and bus services.

Conventional stormwater drainage pits and pipes are proposed to manage runoff within the Road Reserve. The drainage system will be designed to convey runoff from the 20-year ARI event. The road levels necessitate runoff discharging via two (2) new pipe connections to Parramatta River – north-west (i.e. the proposed site discharge point) and the north-east.

It is considered the nature of the road, as a (relatively) high-use road experiencing frequent use by heavy vehicles, somewhat limits the opportunity for incorporating WSUD initiatives within its corridor – without compromising its primary function. For example, the landscaping areas within on-street car park areas could be converted to rain gardens for stormwater treatment, however the area is insufficient and the planning for parking spaces does not necessarily correlate with the preferred low-points for drainage of the road.

At this stage, Northrop suggests any specific requirements for stormwater management / treatment of the Public Road runoff needs to be prescribed by the Road Authority (as custodians of the infrastructure). For example:

- Permeable paving can decrease the overall impervious area, however it would require close attention to subgrade conditions - to maintain its structural integrity, and minimise on-going maintenance by the Authority;
- Rain Gardens can be effective in removing nutrients from stormwater runoff - subject to achieving the required landscape area, and not compromising the accessibility and parking functions of the road.

- ## 2.4 Adjoining Sites

Similarly, it is expected that future development sites (upstream) will incorporate stormwater management measures / provisions to deter excess runoff impacting Burroway Road, and / or the SOPA Wentworth Point site (e.g. Billbergia site – opposite).

Northrop has prepared a Concept Erosion and Sediment Control Plan to support the Development Application submission (refer attached). This provides a guide as to how measures could be implemented by Contractors to address the potential impacts of construction works on the receiving stormwater system, watercourse and general surrounds. The Plan has been prepared with reference to the SOPA 'SMWSUD Policy' and Landcom 'Blue Book'.

Yours faithfully,

Mathew Richards

Principal – Civil Engineer

Electrical Environmental Civil Hydraulic Mechanical Structural Electrical Environmental Civil Hydraulic Mechanical Structural Environmental Civil Hydraulic Mechanical Structural
Civil Hydraulic Mechanical Structural Electrical Environmental Civil Hydraulic Mechanical Structural Electrical Environmental Civil Hydraulic Mechanical Structural
Structural Mechanical Structural Electrical Environmental Civil Hydraulic Mechanical Structural Electrical Environmental Civil Hydraulic Mechanical Structural



SOURCE : MAPS.GOOGLE.COM (©2013)

DRAWING SCHEDULE	
DRG No.	DRAWING TITLE
C1.01	COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN
C2.01	CONCEPT SEDIMENT AND EROSION CONTROL PLAN
C2.11	CONCEPT SEDIMENT AND EROSION CONTROL DETAILS
C6.01	ROAD AND CONCEPT DRAINAGE LAYOUT - SHEET 1
C6.02	ROAD AND CONCEPT DRAINAGE LAYOUT - SHEET 2
C4.11	LONGITUDINAL SECTION
C4.21	TYPICAL CROSS SECTIONS

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 TEAM 2, DRAWING DATED 18TH
FEBRUARY 2009.

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 THE DRAWINGS 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.

THE FOLLOWING DRAWINGS SHOULD BE REVIEWED IN CONJUNCTION WITH THE INTEGRATED WATER CYCLE MANAGEMENT REPORT PREPARED BY NORTHROP ENGINEERS

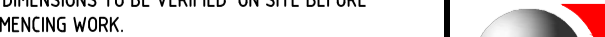

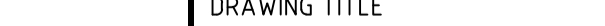
STORMWATER DRAINAGE

1. ALL DRAINAGE LINES SHALL BE UPVC (CLASS SN4) SEWER GRADE DRAINAGE PIPE, U.N.O.
2. ALL DRAINAGE LINES SHALL BE LAID AT 1% MIN. FALL, UNO.
3. ALL LEVELS ARE AUSTRALIAN HEIGHT DATUM (AHD).
4. ALL DOWNPIPES GUTTERS TO BE DESIGNED IN ACCORDANCE WITH AS/NZS 3500.3.2 - 2003 'STORMWATER' DRAINAGE.
5. THE STORMWATER DRAINAGE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH AS/NZS 3500.3.2-2003 'STORMWATER' DRAINAGE.
6. ANY VARIATIONS TO THE NOMINATED LEVELS SHALL BE REFERRED TO ENGINEER IMMEDIATELY.
7. SUBSOIL DRAINAGE SHALL BE PROVIDED TO ALL RETAINING WALLS & EMBANKMENTS, WITH THE LINES FEEDING INTO THE STORMWATER DRAINAGE SYSTEM.
8. ALL GRATES TO BE GALVANISED STEEL WITH HINGES AND CHILD PROOF LOCK.

RAINWATER RE-USE

1. PROVIDE RAINWATER RE-USE SYSTEM TO SUPPLY WATER FOR IRRIGATION AND TOILET FLUSHING.
2. GUTTER GUARD TO BE INSTALLED ON ALL LEAVES GUTTERS.
3. A PERMANENT SIGN IS TO BE LOCATED IN THE VICINITY OF THE TANK STATING THE WATER IS "NON POTABLE WATER" WITH APPROPRIATE HAZARD IDENTIFICATION.
4. PIPEWORK USED FOR RAINWATER SERVICES SHALL BE COLOURED LLAC IN ACCORDANCE WITH AS1345.
5. ALL VALVES AND APERTURES SHALL BE CLEARLY AND PERMANENTLY LABELLED WITH SAFETY SIGNS TO COMPLY WITH AS1319
6. RAINWATER TANK RETICULATION SYSTEM AND MAINS WATER BYPASS ARRANGEMENT TO BE INSTALLED IN ACCORDANCE WITH AS/NZS 3500.12-2003 AND THE NSW CODE OF PRACTICE - PLUMBING AND DRAINING
7. A FIRST FLUSH FILTRATION DEVICE IS TO BE PROVIDED AT RAINWATER TANK.

DRAWN: R. GRIEVE

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT		PROJECT	DRAWING TITLE	JOB NUMBER					
1	ISSUED FOR DA APPROVAL	RG		SN	07.02.14		 RICE DAUBNEY	 Sydney The Grafton Bond Store, 60 Hickson Road, Sydney NSW 2000 Ph (02) 9241 4188 Fax (02) 9241 4324 P.O. Box 11711 Australia Square, NSW 1215 Email sydney@northrop.com.au ABN 81 094 433 100	SOPA FERRY WHARF	CIVIL DESIGN COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN	130648					
															DRAWING NUMBER C1.01	REVISION 1
																DRAWING SHEET SIZE = A1
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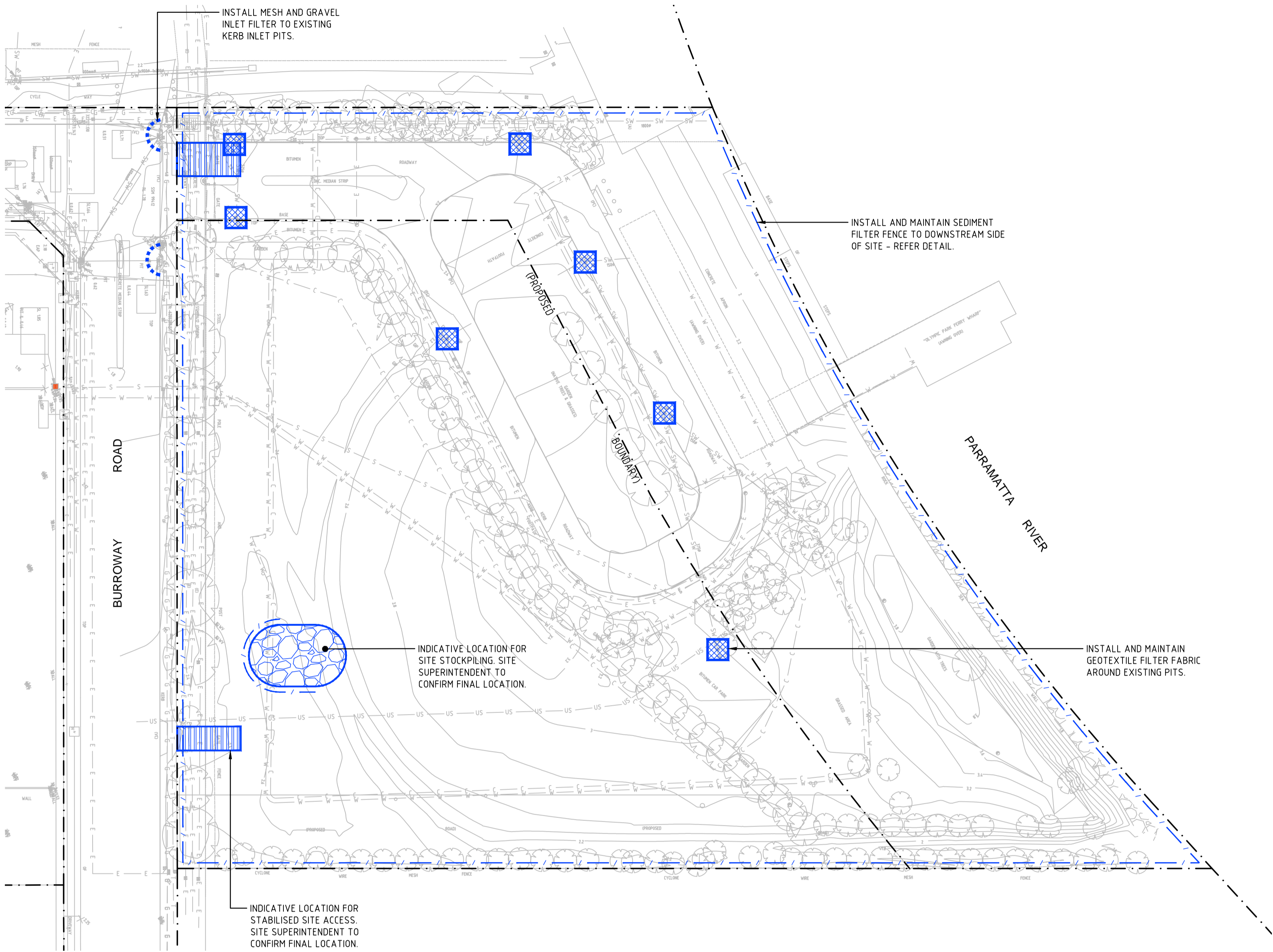
Date : 07-2-14 12:37pm Plotted By Robert.Grieve Found : O:\2013 jobs\130648 - sopa ferry wharf, wentworth point - mixed use development\c-civil\3-CURRENT CAD FILES\130648_C1.01.dwg

VERIFIER

JOB MANAGER: ----

DESIGNED: S. NAUMOSKI

DRAWN: R. GRIEVE



LEGEND

- DENOTES SEDIMENT FILTER FENCE
- DENOTES MESH AND GRAVEL FILTER ROLL
- DENOTES GEOTEXTILE FILTER DROP INLET SEDIMENT TRAP
- DENOTES STRAW BALE FILTER
- DENOTES STABILISED SITE ACCESS / GRID
- DENOTES SITE STOCKPILE

1. ALL SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE 'BLUE BOOK' MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION.

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1	ISSUED FOR DA APPROVAL	RG		SN	07.02.14

CLIENT

PAYCE

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ARCHITECT

HDR | **RICE DAUBNEY**

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PROJECT

SOPA FERRY WHARF

DRAWING TITLE

CIVIL DESIGN

CONCEPT SEDIMENT AND EROSION CONTROL PLAN

JOB NUMBER

130648

DRAWING NUMBER

C2.01

REVISION

1

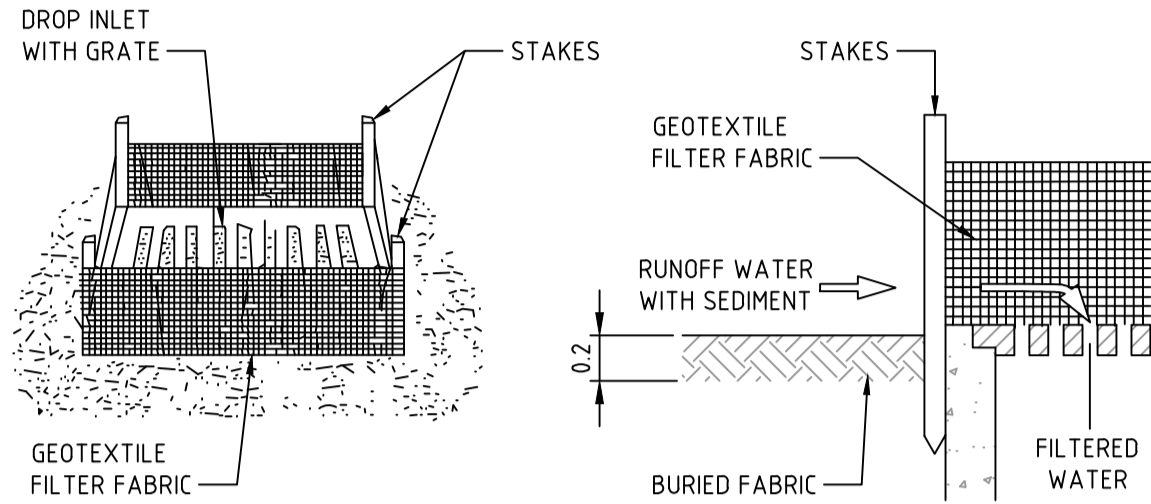
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VERIFIER

JOB MANAGER: ----

DESIGNED: S. NAUMOSKI

DRAWN: R. GRIEVE

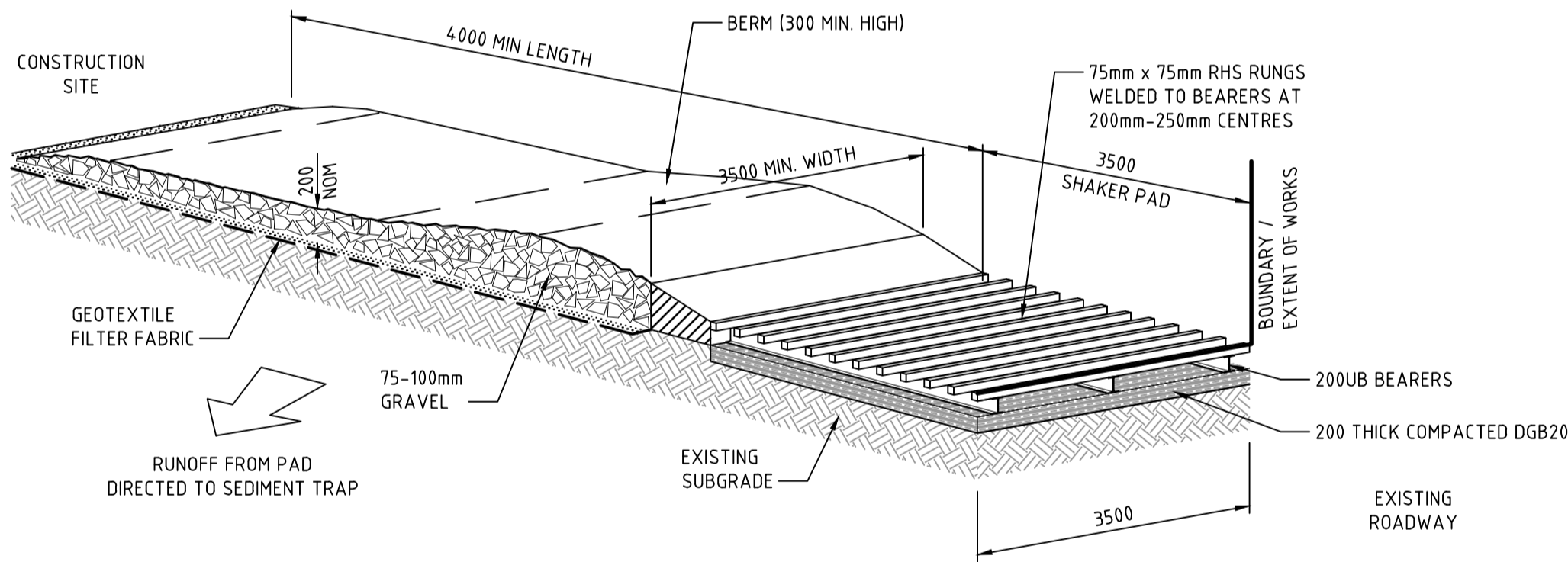


GEOTEXTILE INLET FILTER DROP INLET SEDIMENT TRAP

NOT TO SCALE

NOTES:

- FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
- CUT A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
- DRIVE 10m LONG STAR PICKETS INTO GROUND AT THE FOUR CORNERS OF PIT WALLS. 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.

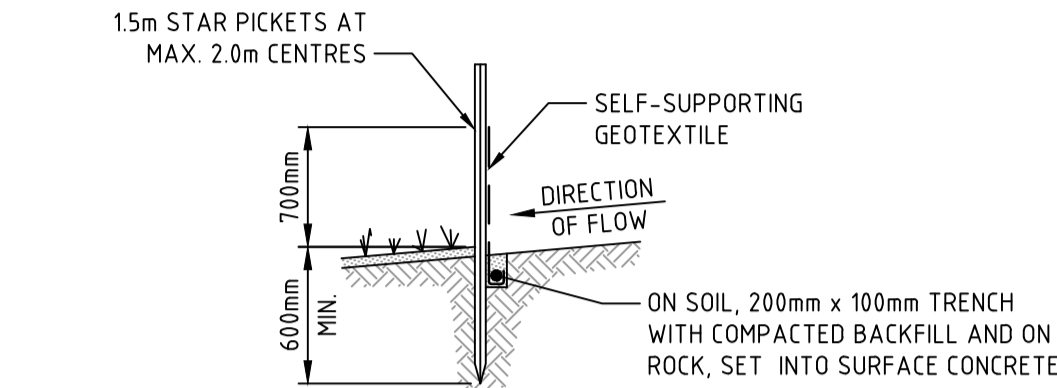


STABILISED SITE ACCESS

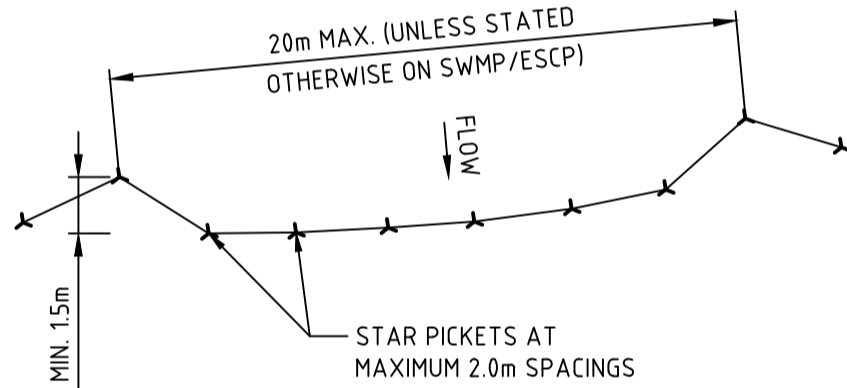
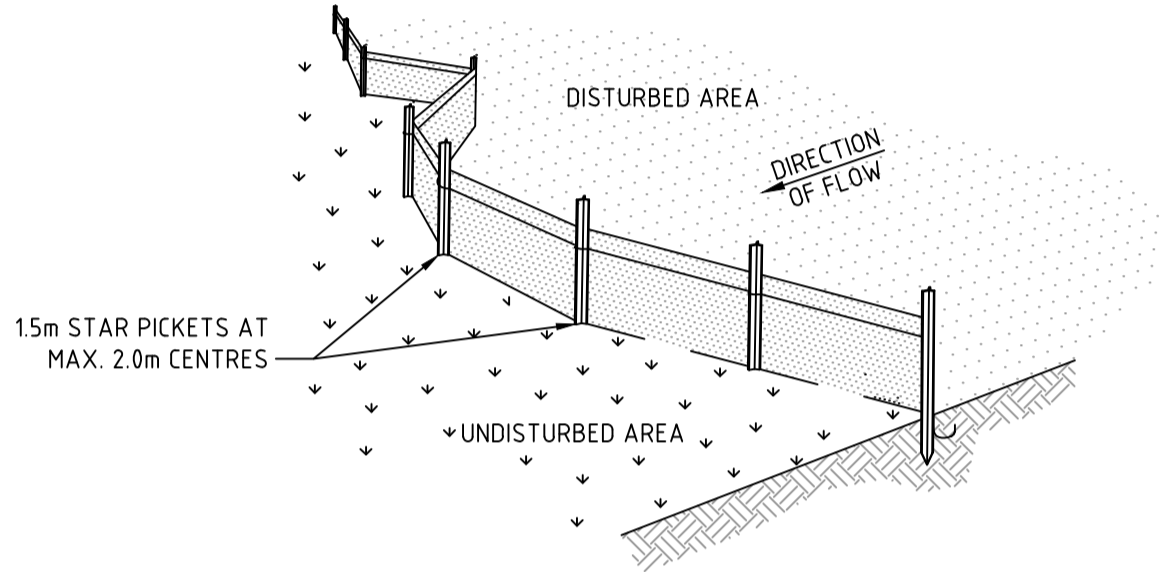
NOT TO SCALE

MAINTENANCE

- THE TEMPORARY ACCESS SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY.
- THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.
- INSTALL BARRIER ON EITHER SIDE OF SHAKER PAD TO ENSURE VEHICLES ARE GUIDED ON TO THE PAD.
- INVERT OF SHAKER PAD TO BE DRAINED VIA AGRICULTURAL PIPE WRAPPED IN GEOTEXTILE FABRIC.



SECTION DETAIL



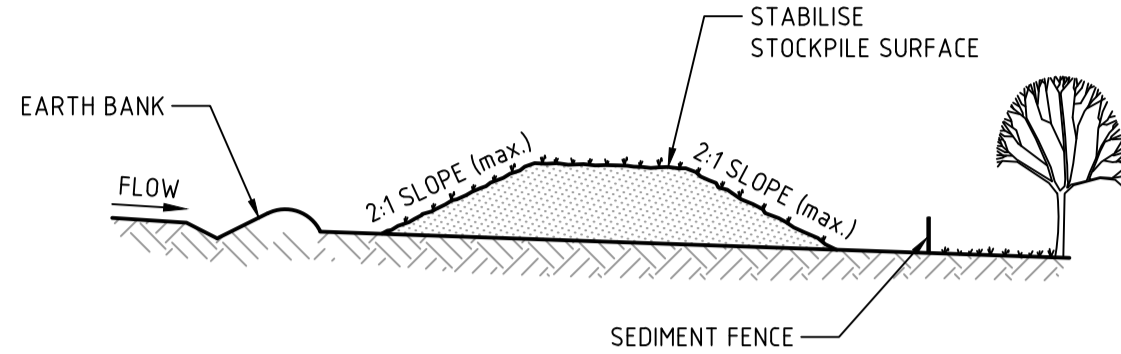
PLAN

SEDIMENT FENCE

NOT TO SCALE

NOTES:

- 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 50L/s IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
- CUT A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
- DRIVE 15m LONG STAR PICKETS INTO GROUND AT 2.0m 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.

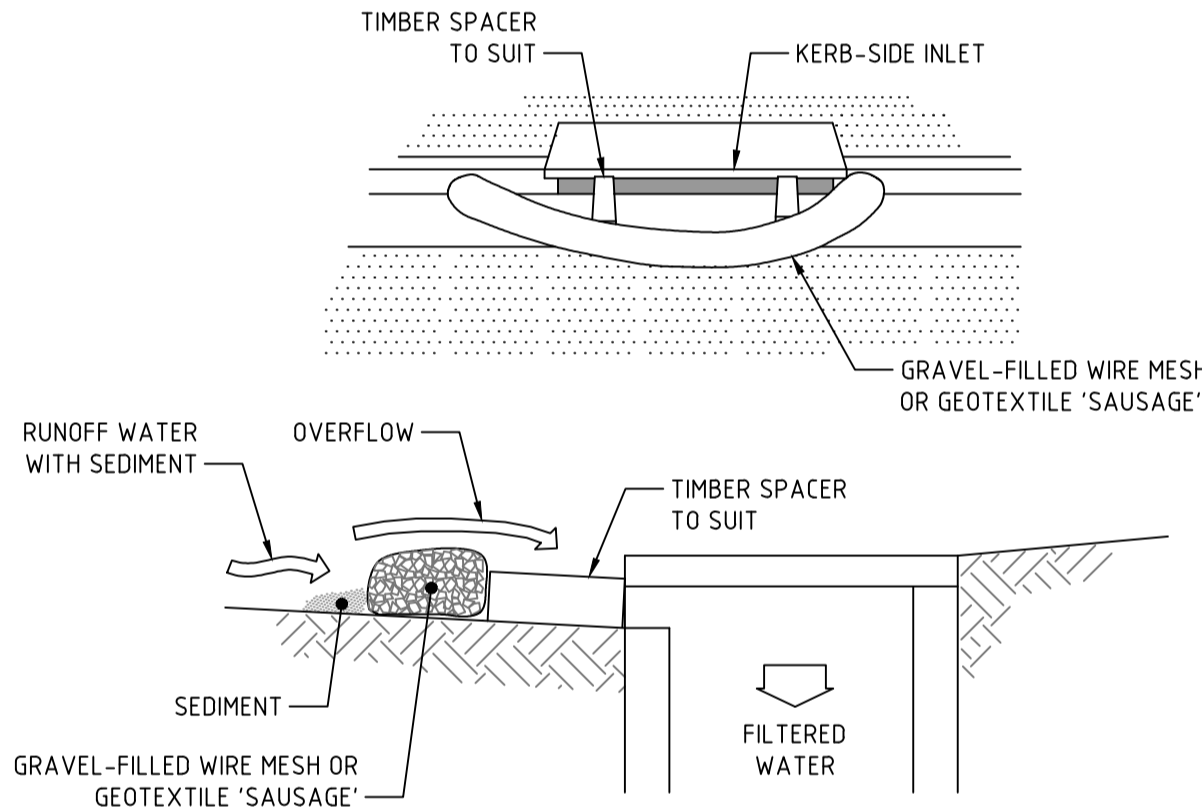


STOCKPILE

NOT TO SCALE

NOTES:

- PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
- CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
- WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
- 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.
- CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.



MESH AND GRAVEL INLET FILTER

NOT TO SCALE

NOTES:

- THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN AN APPROVED SWMP/ESCP.
- INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
- 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.
- FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
- PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100-mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACE BLOCKS.
- FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
- 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.

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1	ISSUED FOR DA APPROVAL	RG		SN	07.02.14

CLIENT
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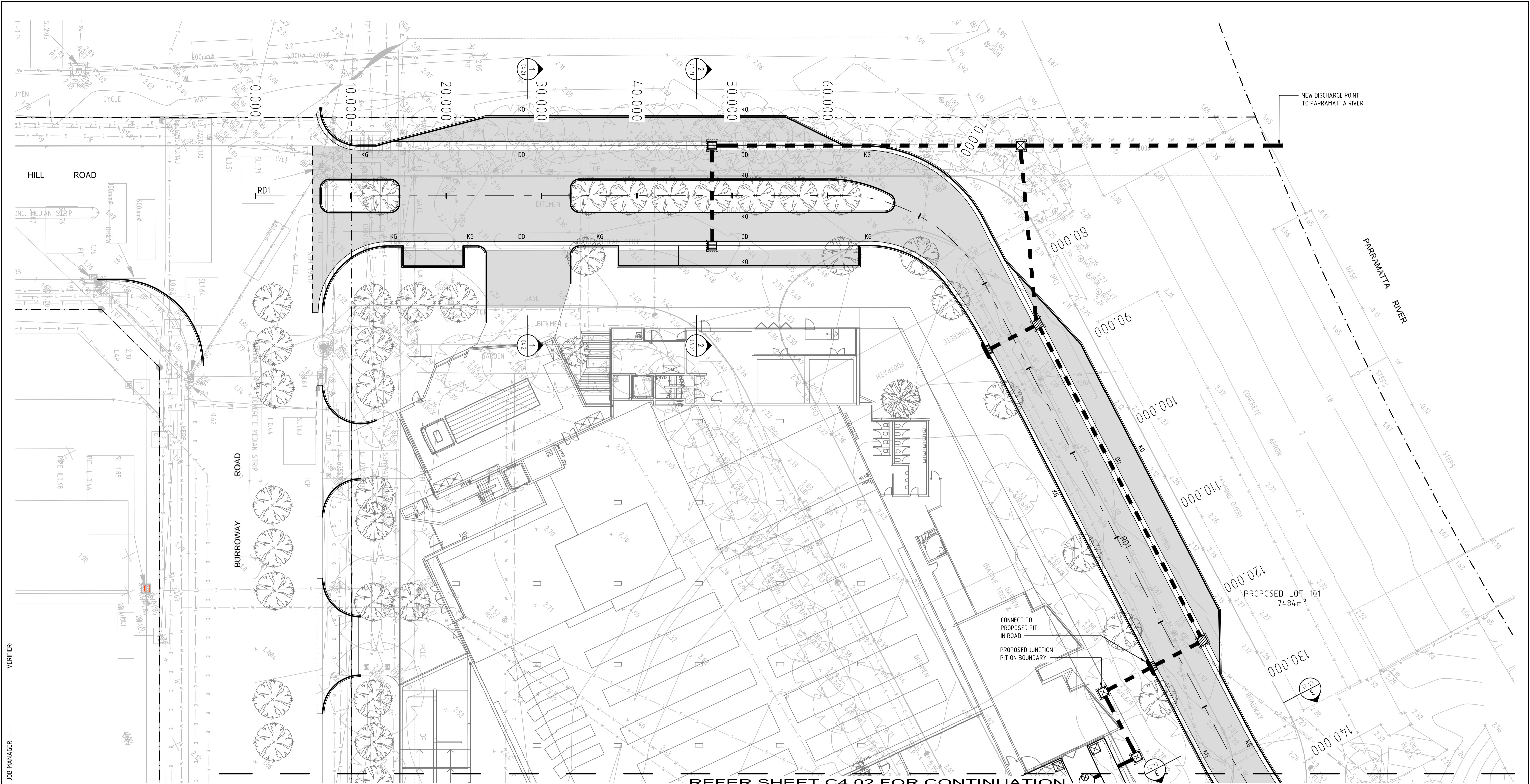
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PROJECT
SOPA FERRY WHARF

DRAWING TITLE
CIVIL DESIGN
CONCEPT SEDIMENT AND EROSION CONTROL DETAILS

JOB NUMBER
130648
DRAWING NUMBER
C2.11
REVISION
1
DRAWING SHEET SIZE = A1



REFER SHEET C4.02 FOR CONTINUATION

LEGEND

- DENOTES PROPOSED SITE BOUNDARY LOCATION
- KG DENOTES PROPOSED KERB & GUTTER - REFER KERB DETAIL 'KG'
- KO DENOTES PROPOSED KERB ONLY - REFER KERB DETAIL 'KO'
- DD DENOTES PROPOSED 900mm WIDE DISH DRAIN - REFER KERB DETAIL 'DD'
- DENOTES PROPOSED ROAD PAVEMENT

- DENOTES PROPOSED STORMWATER DRAINAGE PIT(S)
- DENOTES PROPOSED STORMWATER DRAINAGE LINE
- RWT RAINWATER HARVESTING TANK
- GROSS POLLUTANT TRAP (CDS0506 OR APPROVED EQUIVALENT)

NOTES

- REFER C1.01 FOR DA AND STORMWATER NOTES.
- ROOF AREA TO DRAIN TO PROPOSED RAINWATER TANK. INTERNAL SITE DRAINAGE TO DRAIN VIA STORMWATER TREATMENT TRAIN (GPT AND STORMFILTERS) PRIOR TO LEAVING SITE.
- STORMWATER DRAINAGE AND ROADWORKS ARE TO BE IN ACCORDANCE WITH SOPA POLICY AND GUIDELINES.

DESIGNED: S. NAUMOSKI
DRAWN: R. GRIEVE
JOB MANAGER: ----
VERIFIER: ----

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0 2 4 6 8 10m SCALE 1:200

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PROJECT
SOPA FERRY WHARF

DRAWING TITLE
CIVIL DESIGN
ROAD AND CONCEPT
DRAINAGE LAYOUT - SHEET
1

JOB NUMBER
130648

DRAWING NUMBER
C4.01

REVISION
1

DRAWING SHEET SIZE = A1

NOT FOR CONSTRUCTION

DRAWN R. GRIEVE

DESIGNED S. NAUMOSKI

JOB MANAGER -----

VERIFIER

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SCALE 1:500

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PROJECT

SOPA FERRY WHARF

DRAWING TITLE

CIVIL DESIGN
LONGITUDINAL SECTION

JOB NUMBER

130648

DRAWING NUMBER

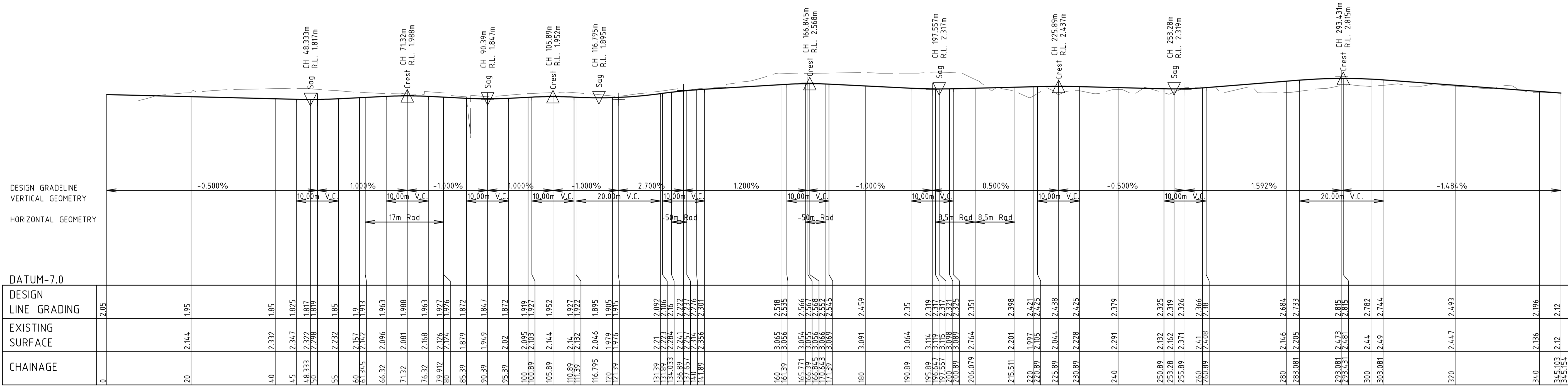
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REVISION

1


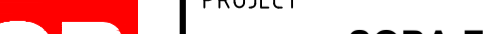



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NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	NOTES	PROJECT	DRAWING TITLE	JOB NUMBER
1	ISSUED FOR DA APPROVAL	RG		SN	07.02.14	 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	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE	 The Grafton Bond Store, 60 Hickson Road, Sydney NSW 2000 Ph: (02) 9241 4188 Fax: (02) 9241 4324 P.O. Box H171 Australia Square, NSW 1215 Email: sydney@northrop.com.au ABN 81 094 433 100	SOPA FERRY WHARF CIVIL DESIGN TYPICAL CROSS SECTIONS	130648
					 SCALE 1:40			DRAWING NUMBER C4.21			REVISION 1
DRAWING SHEET SIZE = A1											

Plotted By Robert.Grieve Found : O:2013 Jobs\130648 - sopra ferry wharf, wentworth point - mixed use development\c-drawings\4-northrop\C-CIVIL\3-CURRENT CAD FILES\130648_C4.21.dwg
Date : 07-2-14 12:38pm