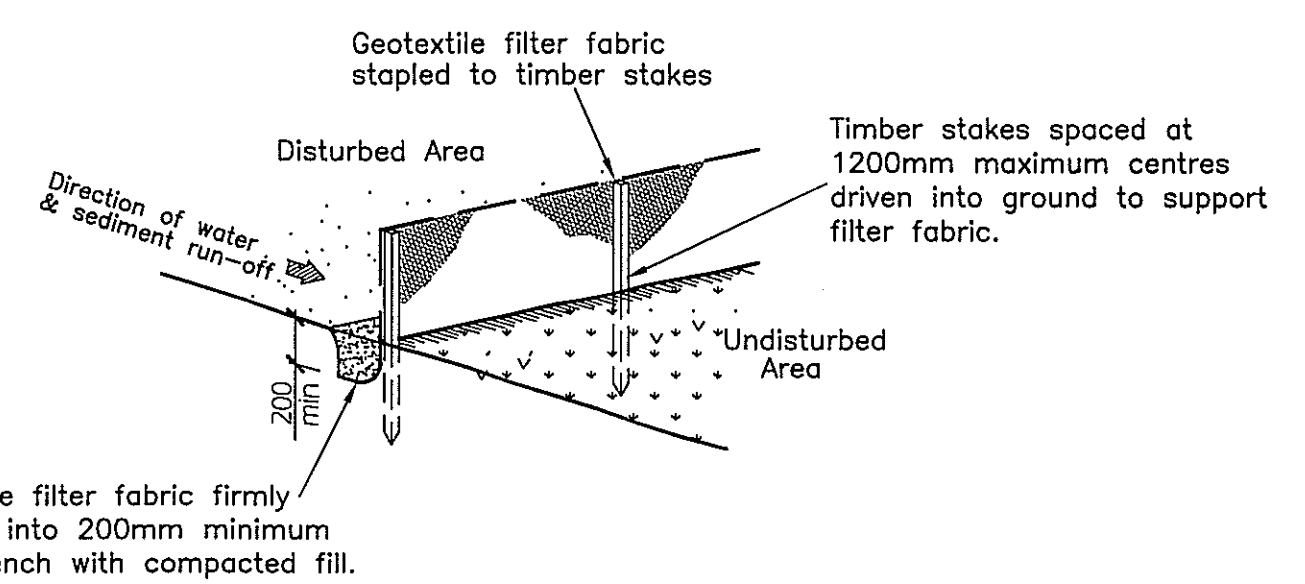


- STORMWATER DRAINAGE NOTES:**
- This drawing to be read in conjunction with the Architectural drawings, specifications and the remainder of the engineers drawings. Refer any discrepancies to the Architect before proceeding with construction.
  - ALL LEVELS SHOWN ON DRAWING ARE TO BE CHECKED ON SITE BEFORE EXCAVATION OF INSTALLATION OF PIPEWORK TO ENSURE CORRECT COVER AND FALL.
  - All levels as detailed on Architectural drawing and are to be confirmed on site before the commencement of any work.
  - All pipes and discharge have been calculated on the following design parameters:  
 20 Year Recurrence Interval  
 6 minute storm duration.  
 Rainfall Intensity 156mm/hour
  - Pits 1 & 2 to be 600mm square with heavy duty metal grates.
  - Do not cover or conceal from view under ground or enclosed work until it has been inspected and approved by council.
  - Concrete in pits and elsewhere in the drainage system to have a characteristic compressive strength in accordance with AS3600 of 20MPa.
  - Trenches for drain pipes shall be of sufficient width to allow for backfilling firmly around pipes.
  - Pipes shall be laid true to grade and alignment on firm, well rammed and compacted foundation.
  - Any pipe which is not true alignment or grade or which shows any settlement after laying or which is damaged during laying or the operation of rolling the formation shall be taken up and replaced.
  - Pits shall be formed at the depths indicated on the drawings or as necessary to give the required grades and falls to the drainage system. All soft, yielding and unsuitable material shall be removed from under the pits and the bed thoroughly compacted and finished to a firm surface of uniform bearing value.

**NOTE:**  
 Location of Sydney Water's sewer main, sewer connection lines, water pipes, stormwater drains, underground electricity lines and other services must be obtained prior to commencement of any work on site.  
**DIAL BEFORE YOU DIG 1100**



**DETAIL - GEOTEXTILE FILTER FABRIC FENCE. Not to Scale**

**PLAN - STORMWATER DRAINAGE.**

Issue	Date	App'd	DESCRIPTION
REVISIONS			

**KNEEBONE, BERETTA & HALL** PTY LTD  
 CONSULTING STRUCTURAL & CIVIL ENGINEERS  
 4 MACQUARIE AVENUE, PENRITH NSW 2750  
 PHONE: (02) 4731 3833 FACSIMILE: (02) 4721 5442  
 WEBSITE: www.kneeboneandberetta.com  
 E-MAIL ADDRESS: kneebone@pnc.com.au

Member of:  
**CONSULT AUSTRALIA**

Directors:  
 Trevor B. HALL, B.Sc (Eng), P.E. Aust., C.P. Eng.  
 Peter R. ANDRESEN, B.E. M.A.E. Aust., C.P. Eng.

SCALE	1:100
DATE	27-5-15
DRAWN	P.Martin.
DESIGNED	P.Andresen.
APPROVED	<i>P. Andresen</i>

CLIENT: AUSTRALIAN ARMS HOTEL	DRAWING NUMBER
PROPOSED ADDITIONS AT AUSTRALIAN ARMS HOTEL 351 HIGH STREET, PENRITH	101947-1
CARPARK STORMWATER DRAINAGE DETAILS	ISSUE



- NOTES:
- \* The position of features are indicative only.
  - \* Services shown hereon have been located where possible by field survey. Prior to any excavation or construction on the site, the relevant authority should be contacted for possible location of any other services including those which may be underground.
  - \* 34.50 indicates natural surface level.
  - \* Contours shown depict the general topography. They do not represent exact levels other than at spot levels shown.
  - \* Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further survey.
  - \* Bearings and distances are by title only. No boundary investigation has been carried out.
  - \* The shapes, sizes, position, heights and species of trees are approximate only. Further field inspection should be carried out where tree details are considered to critically affect design.

LEVELS BASED ON SSM 10985 RL 31.241 AHD



Client: PETER & MATT McCOY	Project: PLAN SHOWING DETAIL, LEVELS & CONTOURS OVER LOT 4 IN DP 192127, PART OF LOT 2 IN DP 513015 AND ADJOINING KNOWN AS N° 351 HIGH STREET & N° 18 LAWSON STREET, PENRITH	FREEBURN SURVEYING	MATTHEW FREEBURN LAND, ENGINEERING & MINING SURVEYOR SUITE 2, FIRST FLOOR, "SURVEYOR HOUSE" 2 CASTLEREAGH STREET PENRITH 2750	Telephone 02 4721 2289 Fax 02 4721 5646 email matthew@freeburnsurveyors.com	Date: 22/09/2014 Scale 1: 150 Surveyor: TB/NI SERVER DATA\34594\CIVILCAD\34594 DETAIL.mjo	Ref: 34594 Datum: AHD Drawn By: ML	Sheet 1 of 1 Contour: N/A Checked: MF A2 SHEET
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Treatment Train Effectiveness - Receiving Node

	Sources	Residual Load	% Reduction
<b>Flow (ML/yr)</b>	0.247	0.247	0
<b>Total Suspended Solids (kg/yr)</b>	88.5	8.11	90.8
<b>Total Phosphorus (kg/yr)</b>	0.145	0.0412	71.6
<b>Total Nitrogen (kg/yr)</b>	0.594	0.321	46
<b>Gross Pollutants (kg/yr)</b>	6.79	0	100

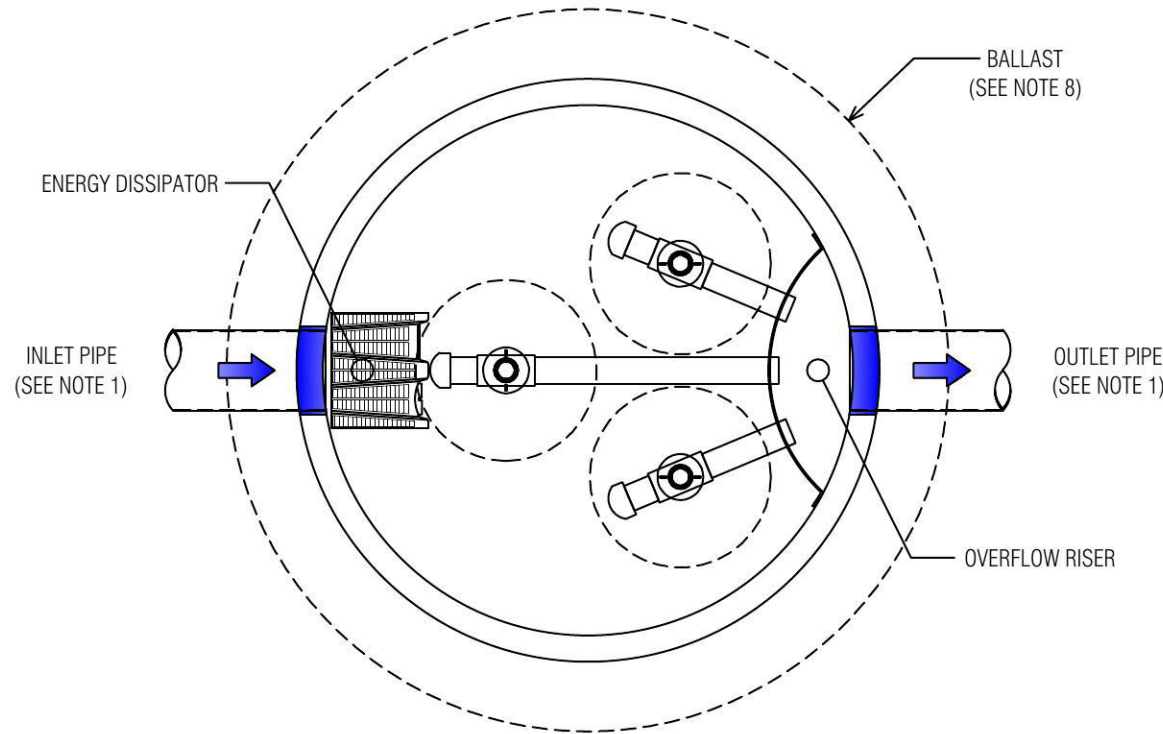
### STORMFILTER DESIGN TABLE

- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED AND BY REGION SPECIFIC INTERNAL FLOW CONTROLS. CONVEYANCE CAPACITY IS RATED AT 80L/S.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CIVIL ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- ALL PARTS PROVIDED AND INTERNAL ASSEMBLY BY STORMWATER360 AUSTRALIA UNLESS OTHERWISE NOTED.

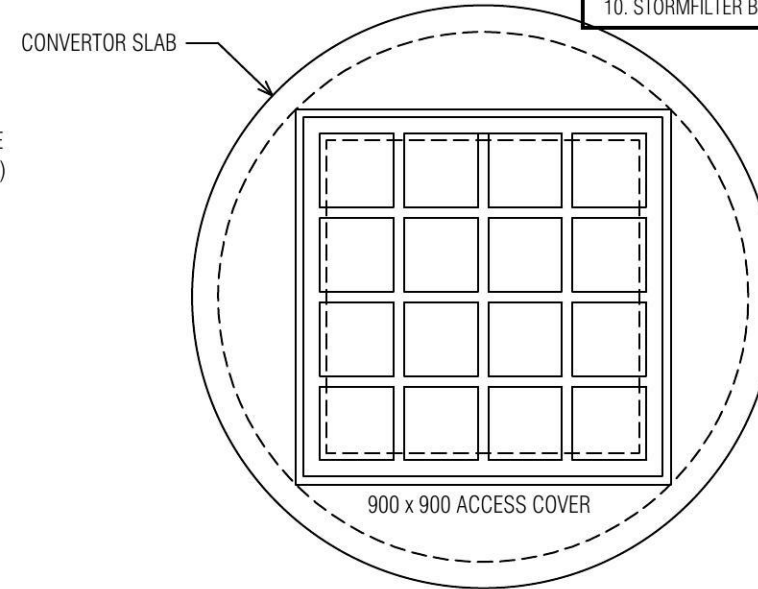
CARTRIDGE HEIGHT	690		460		310	
SYSTEM HYDRAULIC DROP (H - REQ'D. MIN.)	930		700		550	
TREATMENT BY MEDIA SURFACE AREA L/S/m <sup>2</sup>	1.4	0.7	1.4	0.7	1.4	0.7
CARTRIDGE FLOW RATE (L/s)	1.42	0.71	0.95	0.71	0.63	0.32

### GENERAL NOTES

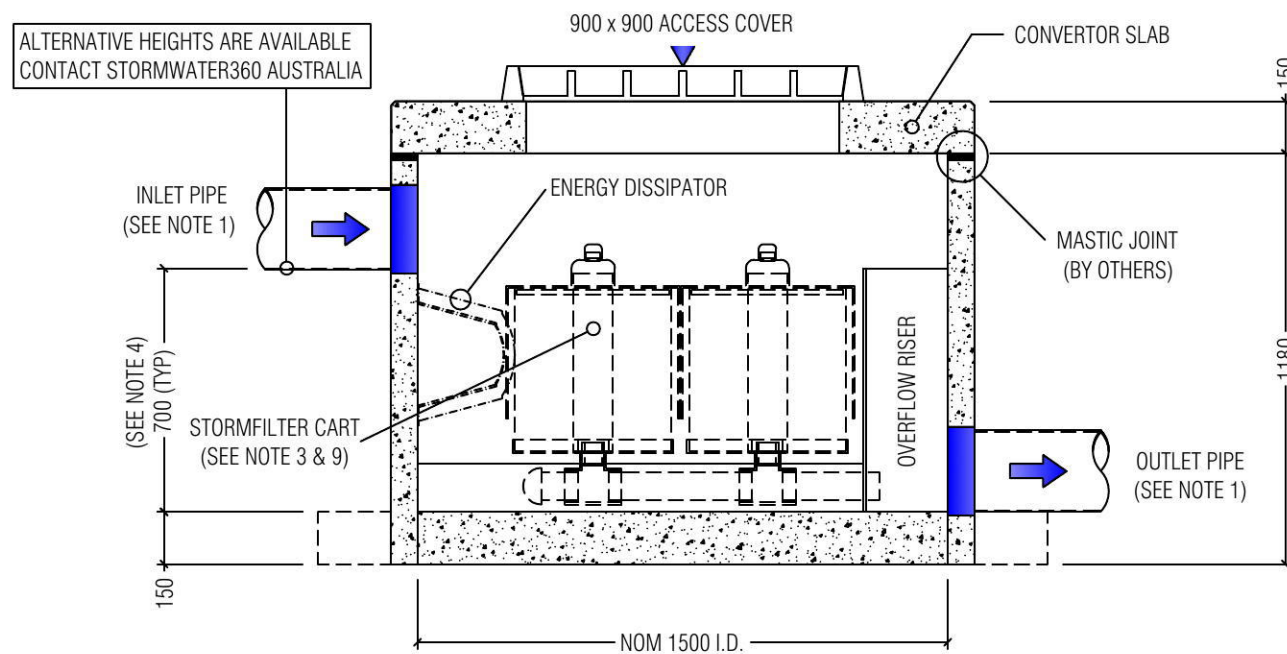
1. INLET AND OUTLET PIPING SHALL BE SPECIFIED BY SITE CIVIL ENGINEER (SEE PLANS) AND PROVIDED BY CONTRACTOR. STORMFILTER IS PROVIDED WITH OPENINGS AT INLET AND OUTLET LOCATIONS.
2. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CIVIL ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE PRODUCT, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. PLEASE CONTACT STORMWATER360 AUSTRALIA FOR OPTIONS.
3. THE FILTER CARTRIDGE(S) ARE SIPHON-ACTUATED AND SELF-CLEANING. THE ACTUAL NUMBER SHALL BE SPECIFIED BY THE SITE CIVIL ENGINEER ON SITE PLANS OR IN DATA TABLE BELOW. PRECAST STRUCTURE TO BE CONSTRUCTED BY STORMWATER360 AUSTRALIA IN ACCORDANCE WITH AS3600.
4. SEE STORMFILTER DESIGN TABLE FOR REQUIRED HYDRAULIC DROP. FOR SHALLOW, LOW DROP OR SPECIAL DESIGN CONSTRAINTS, CONTACT STORMWATER360 AUSTRALIA FOR DESIGN OPTIONS.
5. ALL WATER QUALITY PRODUCTS REQUIRE PERIODIC MAINTENANCE AS OUTLINED IN THE O&M GUIDELINES. PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS.
6. STRUCTURE AND ACCESS COVERS DESIGNED TO MEET AUSTRROADS T44 LOAD RATING WITH 0.0m TO 2.0m FILL MAXIMUM (CLASS D).
7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES AND VARY REGIONALLY.
8. ANY BACKFILL DEPTH, SUB-BASE, AND OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY SITE CIVIL ENGINEER.
9. CARTRIDGE HEIGHT IS 460mm (SHOWN). CARTRIDGE HEIGHT AND ASSOCIATED DESIGN PARAMETERS PER STORMFILTER DESIGN TABLE.
10. STORMFILTER BY STORMWATER360 AUSTRALIA: PHONE: 1300 354 722 OR [www.stormwater360.com.au](http://www.stormwater360.com.au)



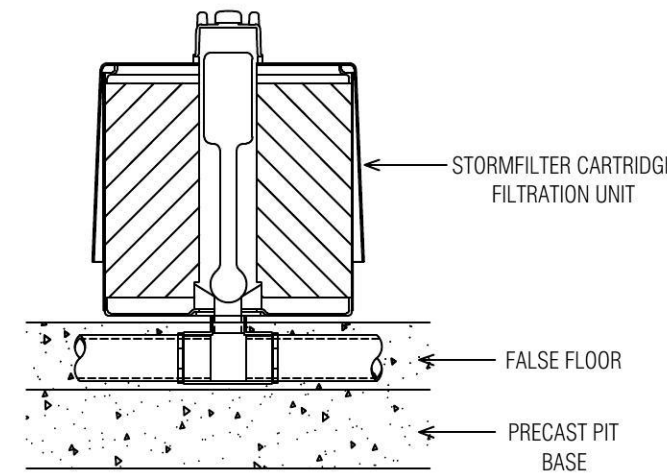
**MANHOLE STORMFILTER PLAN**



**MANHOLE STORMFILTER COVER PLAN**



**MANHOLE STORMFILTER SECTION**



**STORMFILTER CARTRIDGE DETAIL**

SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID	XXX		
WATER QUALITY FLOW RATE (L/S)	3.3		
PEAK FLOW RATE (L/S)	83		
RETURN PERIOD OF PEAK FLOW (yrs)	XXX		
# OF CARTRIDGES REQUIRED	3		
CARTRIDGE HEIGHT (310, 460 or 690mm)	460		
MEDIA TYPE (PERLITE, PERLITE/ZEOLITE OR ZPG)	ZPG		
CARTRIDGE SPECIFIC FLOW RATE	XXX		
PRECAST VAULT WEIGHT	2524 Kg		
PRECAST LID WEIGHT	547 Kg		
PIPE DATA:	I.L.	MATERIAL	DIAMETER
INLET PIPE #1	XXX	MATERIAL	XXX
INLET PIPE #2	XXX	MATERIAL	XXX
OUTLET PIPE	XXX	MATERIAL	XXX
PIPE ORIENTATION			
LADDER	YES/NO		
ANTI-FLOTATION BALLAST	XXX	XXX	XXX
NOTES/SPECIAL REQUIREMENTS:			

STORMWATER360 AUSTRALIA  
3 CARTRIDGE STORMFILTER SYSTEM  
NOM 1500 DIA PRECAST MANHOLE  
STANDARD PRODUCT DRAWING

DRAWING  
**1**  
A

DATE: 10.09.13 | SCALE: N.T.S. | FILE NAME: 3C460SFMH\_1A | DRN: F.M. | CHK: M.W.