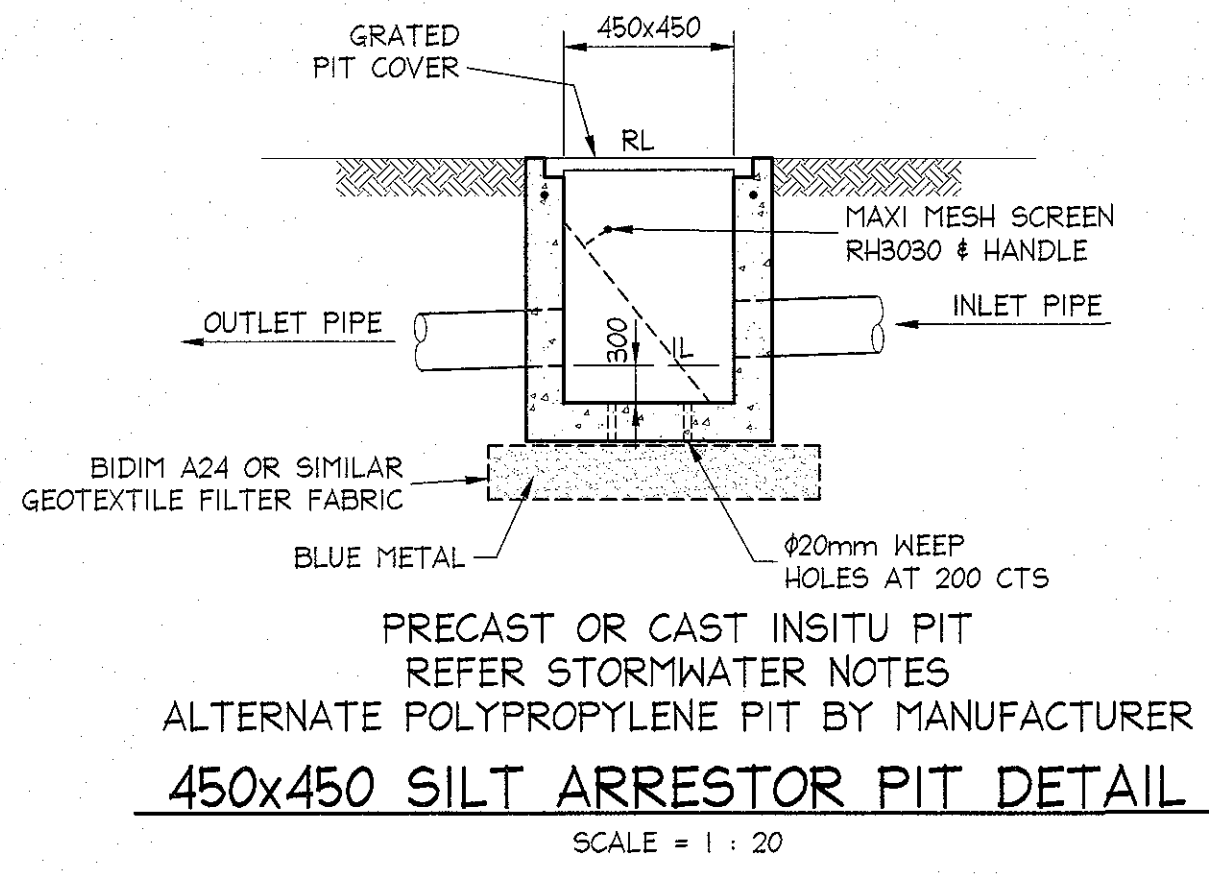


**LOWER LEVEL DRAINAGE PLAN**  
SCALE = 1 : 100

**STORMWATER NOTES:**

- 1 - ALL PIPES TO BE 100mm  $\phi$  UNLESS NOTED OTHERWISE.
- 2 - ALL PIPES TO BE uPVC TO AS 1254-2002 UNLESS NOTED OTHERWISE.
- 3 - ALL PIPES TO BE LAYED AT 1% MINIMUM GRADE UNLESS NOTED OTHERWISE.
- 4 - ALL PIPES SHALL BE LAID ON A 75mm SAND BED, COMPACTED TO 100% S.M.D.D. BELOW PAVEMENTS.  
( NO COMPACTION REQUIRED BELOW LANDSCAPING )  
COVER TO SURFACE FROM TOP OF PIPE TO BE 300mm MINIMUM. BACKFILL TO BE ADEQUATELY CONSOLIDATED AROUND PIPES BY METHOD OF RAMMING AND WATERING IN. TRENCHES TO BE FILLED WITH GRANULAR MATERIAL AS SPECIFIED.
- 5 - ALL DOWN PIPES TO BE 100mm  $\phi$  UNLESS NOTED OTHERWISE.
- 6 - DOWN PIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT WITH WORK.
- 7 - PROVIDE CLEANING EYES AT ALL DOWNPIPES.
- 8 - ALL PITS TO BE CAST INSITU OR, IF PRECAST, APPROVED BY ENGINEER. CAST INSITU PITS TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH 1 N12 TOP TIE UNLESS NOTED OTHERWISE. CAST INSITU PITS GREATER THAN 1000 DEEP TO BE MINIMUM 900x600 AND TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH N12 AT 300 EACH WAY UNLESS NOTED OTHERWISE.
- 9 - ALL PITS GREATER THAN 1000mm DEEP SHALL HAVE STEP IRONS AS PER COUNCIL STANDARDS.
- 10 - ALL WORK TO BE IN ACCORDANCE WITH LOCAL COUNCIL STANDARDS AND SPECIFICATIONS.
- 11 - PRIOR TO COMMENCING ANY SITE WORKS THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL MEASURES TO APPROVED SEDIMENT AND EROSION CONTROL PLAN, EPA GUIDELINES AND COUNCIL SPECIFICATIONS. ALL MEASURES TO REMAIN IN PLACE UNTIL COMPLETION AND STABILIZATION OF THE SITE TO COUNCIL SATISFACTION.
- 12 - ALL LEVELS SHOWN ARE TO AHD
- 13 - ENSURE THAT ALL PITS AND STORMWATER PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS.
- 14 - ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO uPVC.
- 15 - ALL WORKS TO BE IN ACCORDANCE WITH AS 3500-2003 NATIONAL PLUMBING DRAINAGE CODE PART 3 - STORMWATER DRAINAGE.
- 16 - UNLESS NOTED OTHERWISE, SUB-SOIL DRAINS ARE TO BE INSTALLED IN ACCORDANCE WITH AS3500.3 ALONGSIDE WALLS THAT IMPEDE THE NATURAL FLOW OF GROUNDWATER. THIS MAY ALSO INVOLVE TRENCHING INTO THE CLAY OR ROCK SUBGRADE TO DIRECT GROUNDWATER AWAY FROM STRUCTURES.
- 17 - IF NOT INDICATED ON PLANS, PROVIDE LEAF CATCHERS TO ALL DOWNPIPES.



**PRECAST OR CAST INSITU PIT REFER STORMWATER NOTES**  
**ALTERNATE POLYPROPYLENE PIT BY MANUFACTURER**  
**450x450 SILT ARRESTOR PIT DETAIL**  
SCALE = 1 : 20

**LEGEND**

- 100mm  $\phi$  DOWNPIPE
- NEW STORMWATER PIPE
- STORMWATER PIPE FLOW DIRECTION
- PIT
- STORMWATER PIT
- GRATED DRAIN
- GDI - 150 MIN DEPTH x 150 WIDE GRATED DRAIN

**NOTE: ALL DRAINAGE LINES ARE INDICATIVE ONLY. LOCATION MAY VARY DUE TO CONSTRAINTS.**

**ONSITE DETENTION CALCULATIONS ACCORDING TO PITTWATER 21 DCP**

TOTAL SITE AREA	=	1466 m <sup>2</sup>
PRE DEVELOPED IMPERVIOUS AREA	=	584 m <sup>2</sup> ( 40 % )
PROPOSED IMPERVIOUS AREA	=	566 m <sup>2</sup> ( 39 % )
FROM "PITTWATER 21 DCP"		
IMPERVIOUS AREA INCREASE IS < 50m <sup>2</sup>		
THEREFORE OSD IS NOT REQUIRED		



NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE.

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

**CARELESS DIGGING CAN:**

- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED

MINIMISE YOUR RISK AND DIAL BEFORE YOU DIG. - TEL. 1100

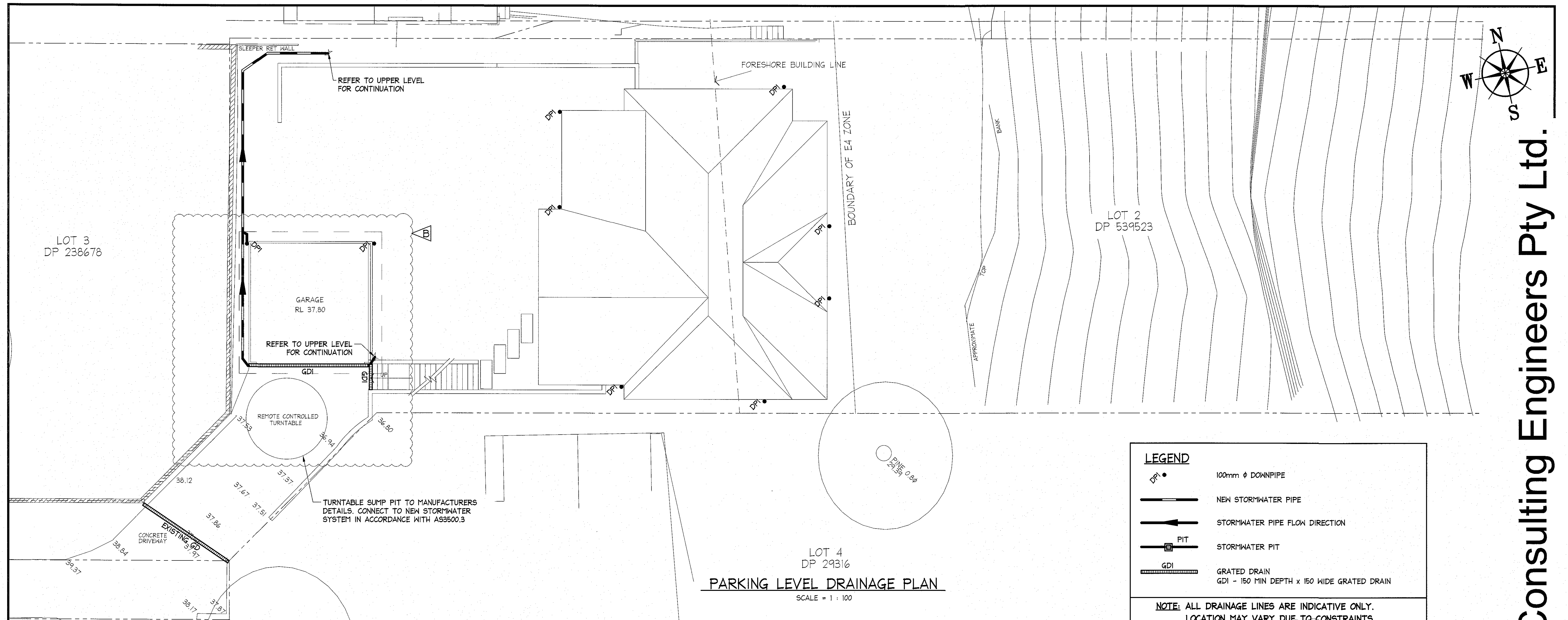
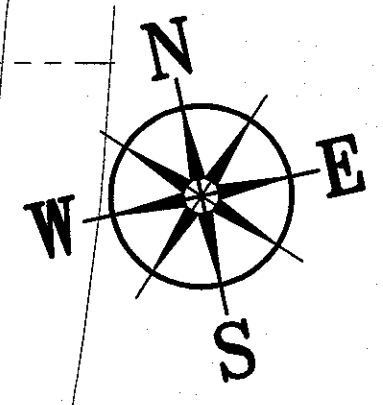
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**IF IN DOUBT ASK**

AI		<b>DOCUMENT CERTIFICATION</b>		<b>NORTHERN BEACHES Consulting Engineers P/L</b>		Architect:		Project: <b>ALTERATIONS &amp; ADDITIONS AT: 168A BARRENJOEY RD, BUNGAN BEACH</b>		Date:	Design:	Drawn:	Review:
12-02-16	C	HEADWALL LOCATION REVISED AS PER ARCHITECTS COMMENTS	TJ	Date:	<i>Stewart McGeady</i>	Client:		Drawing Title:		APRIL 2015	SS	TJ	
05-02-16	B	REVISED AS PER COUNCILS COMMENTS - DISPERSION WALL REMOVED, HEADWALL ADDED	TJ	Stewart McGeady (Director Northern Beaches Consulting Engineers)		MICHAEL & JO SLATER		LOWER LEVEL DRAINAGE PLAN					
18-05-15	A	ISSUE FOR DA	TJ	A.C.N. 076 121 618 ABN 24 076 121 618 Suite 207, 30 FISHER ROAD DEE WHY NSW 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nb@nbconsulting.com.au web page: www.nbconsulting.com.au		Drawing No:		Job No:					
Date:	Rev:	Amendment:	By:	The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L				150279		DO1		C	

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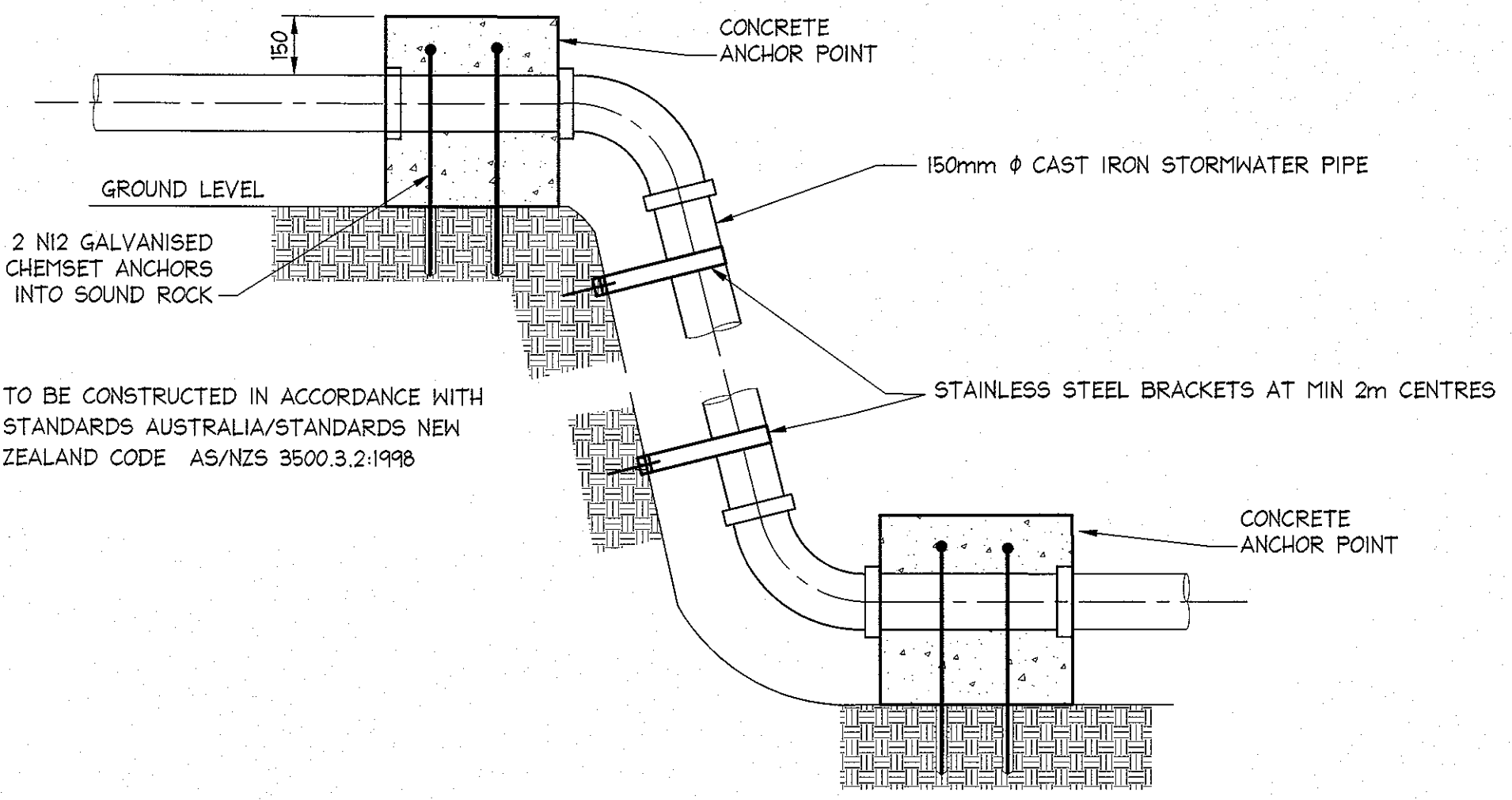


**PARKING LEVEL DRAINAGE PLAN**  
SCALE = 1 : 100

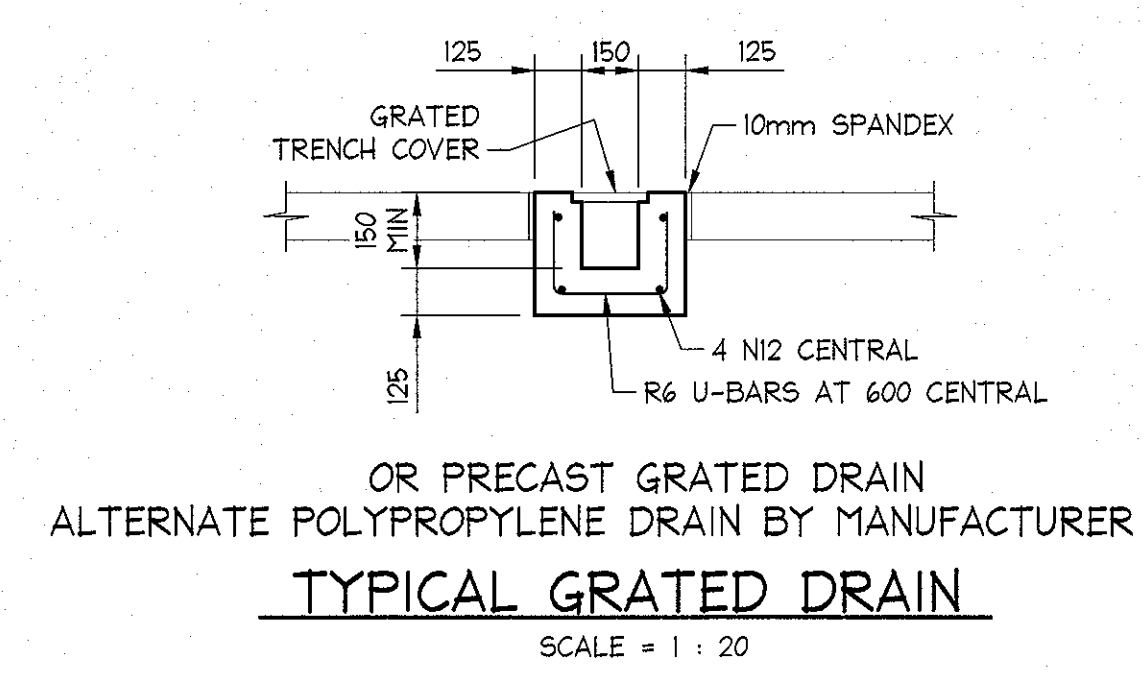
**LEGEND**

- 100mm  $\phi$  DOWNPIPE
- NEW STORMWATER PIPE
- STORMWATER PIPE FLOW DIRECTION
- PIT
- STORMWATER PIT
- GRATED DRAIN
- GDI - 150 MIN DEPTH x 150 WIDE GRATED DRAIN

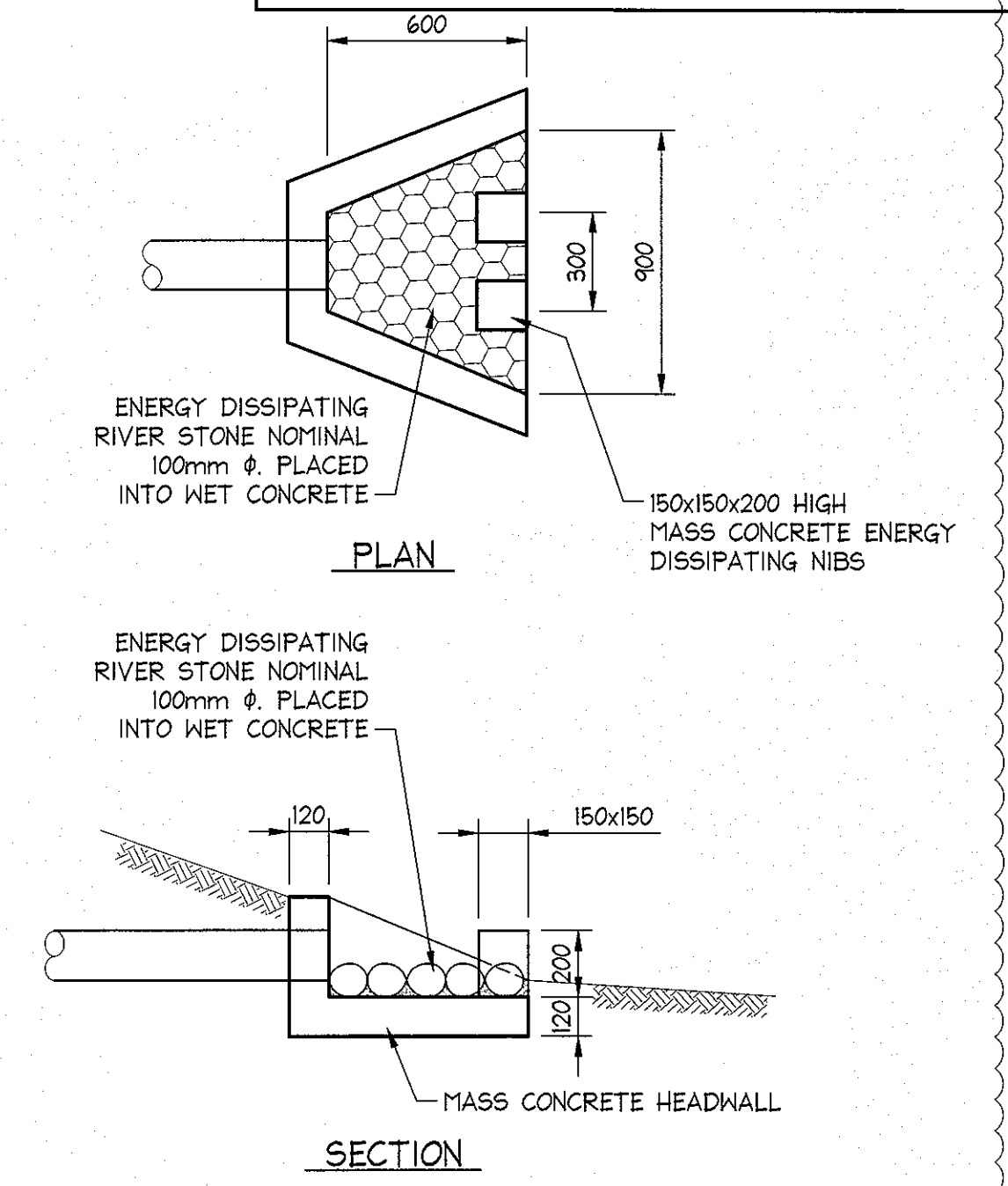
**NOTE: ALL DRAINAGE LINES ARE INDICATIVE ONLY. LOCATION MAY VARY DUE TO CONSTRAINTS.**



**CONCRETE ANCHOR POINT DETAIL**  
FOR EARTH SLOPE GREATER THAN 1 V. TO 3 H.  
SCALE = 1 : 20



**450x450 PIT DETAIL**  
SCALE = 1 : 20



**HEADWALL DETAILS**  
SCALE = 1 : 20

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**DIAL 1100**  
BEFORE YOU DIG

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Date: 05-02-16		Rev: C	Amendment: DISPERSION WALL DETAIL REMOVED, HEADWALL DETAIL ADDED	DOCUMENT CERTIFICATION		NORTHERN BEACHES Consulting Engineers P/L.		Architect: THE DESIGN SECTION	Project: ALTERATIONS & ADDITIONS AT: 168A BARRENJOEY RD, BUNGAN BEACH		Date: APRIL 2015	Design: SS	Drawn: TJ	Review:
Date: 19-06-15		Rev: B	Amendment: GARAGE RELOCATED TO MATCH LATEST ARCHITECTURAL PLANS	Date: 5/2/16		A.C.N. 076 121 616 A.B.N. 24 078 121 616		Client: MICHAEL & JO SLATER	Drawing Title: PARKING LEVEL DRAINAGE PLAN & TYPICAL DETAILS		Date: 150279	Design: SS	Drawn: TJ	Review:
Date: 18-05-15		Rev: A	Amendment: ISSUE FOR DA	By: Stewart McGeady		Suite 207, 30 FISHER ROAD			Drawing No: D03		Date: 150279	Design: SS	Drawn: TJ	Review: C
Date:		Rev:	Amendment:	By: B.E.(Civil), MIEAust, P.Eng		Ph: (02) 9984 7000 Fax: (02) 9984 7444			Drawing No: D03		Date: 150279	Design: SS	Drawn: TJ	Review: C
				By: (Director Northern Beaches Consulting Engineers)		e-mail: nb@nbconsulting.com.au			Drawing No: D03		Date: 150279	Design: SS	Drawn: TJ	Review: C
				By: The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.		web page: www.nbconsulting.com.au			Drawing No: D03		Date: 150279	Design: SS	Drawn: TJ	Review: C

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