Civil & Structural Engineering Design Services Pty. Ltd.

ABN: 62 051 307 852
3 Wanniti Road BELROSE NSW 2085
Email: hited@bigpond.net.au
Tel: 02 9975 3899 Fax: 02 99751943
Web: www.civilandstructural.com.au

13th March 2020

Missionary Sisters of Blessed Mary
140 Ocean Street
NARRABEEN NSW 2101

D-11-267490

Dear Sir/Madam,

Re: Stormwater Drainage Details at 140 Ocean St, Narrabeen

With reference to the development application for the above property, please find enclosed four copies of the site Stormwater Management Plans Drawing No. M-11-267490A dated 13/03/2020.

It is proposed to direct all roof and paved area runoff for the new development to a stormwater absorption tank located towards the rear of the site. The tank is designed to dispose of collected paved area runoff on the site associated with the 100yr ARI storm event. As such, no on-site detention of stormwater has been provided.

An absorption rate of 0.5 l/s/m² was used for the sizing of the absorption tanks and a copy of computation to determine this figure is attached for your records.

Should you require any further information please contact the undersigned.

Yours faithfully,

E.A. Bennett M.I.E. Aust. Cp Eng. NPER 198230, Member AGS, BPB 0820, RPEQ 4541

ABSORPTION TRENCH DESIGN CALCULATION SHEET

Site Details

Address	140 Ocean St, Narrabeen	
Site Area	950	m2
Impervious Area	627	m2
Nominal Absorption Rate (ARn)	0.5	l/m2/sec
Reduction Factor	0.75	

Design Details

Design Imprevious Area	752.4	m2
Design Absorption Rate (ARd)	0.375	l/m2/sec
Base Area of Absorption Tank (BA)	32.5	m2
Absorption Tank Cross Section	2.5	m2
Tank Length	13	m

Required Absorption System Volume Calculation for 50 Year ARI Storm

Time (T)	**Rainfall Intensity (mm/hr) (I)**	**Runoff (l/s) (R)**	**Runoff Volume(m3) (RV)**	**Infiltration Volume(m3) (IV)**	**Req. Absorption System Volume (m3) (RV-IV)**
		I x DA/3600	RxTX60/1000	BAxARdxTx60 /1000	
5	262	54.758	16.427	3.66	12.77
6	246	51.414	18.509	4.39	14.12
10	205	42.845	25.707	7.31	18.39
20	156	32.604	39.125	14.63	24.50
30	130	27.170	48.906	21.94	26.97
60	90.4	18.894	68.017	43.88	24.14
Maximum Required Absorption System Volume (MRASV) (m3)					**26.97**

Proposed Absorption System Volume Calculation Sheet

Total Volume of Pit(above top of base level)(m3)	32.5
Total Proposed Absorption System Volume (TPASV) (m3)	**32.5**

TPASV is greater than MRASV	OK