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Our Ref: 24278

24 April 2025

James Campbell
JDC Architects

Dear James

90 Harbord Road, Freshwater (Project)
Certificate of Compliance for Hydraulic Services

I, Paul McDonald, on behalf of Inline Hydraulic Services Pty Ltd, Professional and Qualified Hydraulic Engineers, write in response to the letter issued by Northern Beaches Council dated 22/04/2025.

We write in relation to the stormwater system and the request for amended plans. Amended plans have been provided (HAD01-HDA05 P5 dated 23.04.25). The site is being split into 2 lots. Lot 1 being the existing house with existing roof and existing hard surface area which will discharge to Harbord Road. The site area here is 356m2.

The new lot, lot 2, will discharge to Wyndora Avenue via an OAS tank. Calculations have been provided using Councils DCP, these calculations have bene included on the plans. The site area discharging through the OSD tank is 355m2 with an impervious area of 169m2 (or 47%).

We have based the calculations on a site size of 350m2. Based on councils DCP we require a minimum 8.5m3 of OSD, 12l/s discharge and an orifice plate of 86mm. Note the size of the tank is showing to be 9.1m3 providing a 0.6m3 buffer within the tank.

The calculations are based on using the below information based on clause 9.3.2.4 (simplified method), Appendix 13 (for design methods), Appendix A8.1 for sizing the OSD and PSD (less than 60% impervious area) and appendix 9 for sizing the orifice plate (see snapshots below)

If you have any further questions, please do not hesitate to contact me to discuss.

Yours faithfully

Paul McDonald
Director
Inline Hydraulic Services Pty Ltd
HCAA Full Member
Dip. Hydraulic Engineering #90967NSW

9.3.2.4 Simplified Methods

The Simplified Method as given in Appendix 13 involves the use of tables to size the OSD system. The whole of the site area must be considered in the calculation of the SSR and the PSD, as predetermined by Council.

It is recommended that the Simplified Method be used only where the site conditions have similar parameters to those given in Appendix 13, in the derivation of the tables.

The Simplified Method can only be used for developments other than single residential developments when the whole of the site can be collected by the OSD system. That is, all runoff from the site is routed through the OSD system prior to discharging to the receiving external drainage system. A maximum of 30 m^2 of the site area, which cannot be physically drained to the OSD system, is permitted to bypass. However, where more than 30 m^2 of the site cannot be collected by the OSD system, then the Full Computation Method must be used.

Where there is more than one OSD system on the site, it is possible to calculate the required volume and discharge rate from each OSD system by determining the percentage of the site area draining to each OSD unit and then distributing the total calculated SSR and PSD (calculated from the total site area) to each OSD system.

The Simplified Method cannot be used for sites where its area exceeds 1200 m^2 in size. The derived tables were not intended for extrapolation.

Appendix 13 – Simplified Method

The Simplified Method approach is set out below:

a) The minimum SSR and the maximum PSD values are read from Tables A8-1 or A8-2 (Appendix 8).

   Example: Site area = 600 m^2 and the total post-development impervious percentage is 80%, therefore from Table A8-2 gives PSD = 18 litres per second and SSR = 19.0 m^3.

b) The size of the outlet and orifice is read from Appendix 9.

   The top line of the table refers to the maximum depth that the water will pond above the centre of the orifice. Knowing the PSD and depth of ponding, the size of the orifice and the size of the minimum outlet pipe can be obtained.

   Example: PSD = 18 litres per second and the design maximum depth of ponding is 0.5 m, gives orifice size of 110 mm diameter with a 225 mm diameter outlet pipe. Outlet pipe size based on the greater of the minimum grade of 1% or 3 times the orifice outlet.

c) Detention storage volume will be achieved by the use of a properly designed and constructed above ground storage or below ground tank.

   The dimensions of an underground tank will be dependent upon the maximum depth of ponding that the site will allow.

   The dimensions of the tank, depth (D) x width (W) x length (L) should be equal to the minimum SSR determined.

   Example: SSR = 19.0 m^3 and depth = 0.5 m, Therefore W x L x 0.5 = 19.0 m^3 or W x L = 38.0 m^2

d) Values of W and L are independent. However, as the width approaches 3 m or more, the covering slab may become expensive to construct on site and pre-cast commercial tanks may be more economical. A suitably qualified professional Engineer will be required to design the covering slab.

e) The minimum information required, as set out in Section 3, is to be supplied with the Application to Council.

f) Design Rainfall Intensity Table Diagram (Appendix 12) applies only to the total area of the site. Dividing the original site area into smaller allotments and then using the tables in Appendix 8, is not acceptable. PSD and SSR values shall be determined on the original lot size, which can be proportioned down to the new allotment size.

Appendix 8 - SSR and PSD Tables

Table A8-1: SSR and PSD for various site areas with equal to or less than 60% impervious

total area of site	min. size of basin (SSR)	max. Q5 from existing site (PSD from basin)	max. Q100 from existing site	Max. overflow from basin
m^2	m^3	l/s	l/s	l/s
200	5.0	7	13	6
250	6.1	9	16	7
300	7.4	11	19	8
350	8.5	12	22	10
400	9.8	14	25	11
450	11.6	15	28	13
500	13.5	16	30	14
550	15.2	17	33	15
600	17.0	18	36	18
650	18.9	20	39	19
700	20.9	21	41	20
750	22.8	22	43	21
800	24.7	23	45	22
850	26.1	24	47	23
900	28.6	25	49	24
950	29.1	26	51	25
1000	30.5	27	53	26
1050	32.0	29	56	27
1100	33.5	30	58	28
1150	35.1	32	61	29
1200	36.6	33	63	30

Note: Maximum concentrated discharge to kerb and gutter is 20 l/s

650	18.9	20	39	19
700	22.9	20	41	21
750	25.8	20	43	23
800	28.6	20	45	25
850	31.7	20	47	27
900	34.7	20	49	29
950	37.8	20	51	31
1000	40.8	20	53	33
1050	44.2	20	56	36
1100	47.6	20	58	38
1150	50.9	20	61	41
1200	54.3	20	63	43

Appendix 9 – Orifice Plate Table (Table 3)

PSD	Depth of tank above centreline of orifice																				
l/s	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	
2	55	46	42	39	37	35	34	33	32	31	30	30	29	28	28	28	27	27	26	26	
3	67	57	51	48	45	43	41	40	39	38	37	36	36	35	34	34	33	33	32	32	Min.
4	78	65	59	55	52	50	48	46	45	44	43	42	41	40	40	39	38	38	37	37	100 mm
5	87	73	66	62	58	56	54	52	50	49	48	47	46	45	44	44	43	42	42	41	diameter
6	95	80	72	67	64	61	59	57	55	54	52	51	50	49	48	48	47	46	46	45	outlet
7	103	87	78	73	69	66	63	61	59	58	57	55	54	53	52	51	51	50	49	49	pipe
8	110	93	84	78	74	70	68	65	64	62	60	59	58	57	56	55	54	53	53	52	
9	117	98	89	83	78	75	72	69	67	66	64	63	61	60	59	58	58	57	56	55	
10	123	104	94	87	82	79	76	73	71	69	68	66	65	64	63	62	61	60	59	58	
11	129	109	98	91	86	82	79	77	75	73	71	69	68	67	66	65	64	63	62	61	
12	135	113	102	95	90	86	83	80	78	76	74	72	71	70	69	67	66	65	65	64	
13	140	118	107	99	94	90	86	83	81	79	77	75	74	73	71	70	69	68	67	66	
14	146	122	111	103	97	93	90	87	84	82	80	78	77	75	74	73	72	71	70	69	Min.
15	151	127	115	107	101	96	93	90	87	85	83	81	79	78	77	75	74	73	72	71	150 mm
16	156	131	118	110	104	99	96	93	90	88	85	84	82	80	79	78	77	76	75	74	diameter
17	160	135	122	113	107	103	99	95	93	90	88	86	85	83	82	80	79	78	77	76	outlet
18	165	139	125	117	110	106	102	98	95	93	91	89	87	85	84	83	81	80	79	78	pipe
19	170	143	129	120	113	108	104	101	98	95	93	91	89	88	86	85	84	82	81	80	
20	174	146	132	123	116	111	107	104	100	98	96	94	92	90	88	87	86	85	83	82	
21	178	150	136	126	119	114	110	106	103	100	98	96	94	92	91	89	88	87	85	84	
22	183	154	139	129	122	117	112	109	105	103	100	98	96	94	93	91	90	89	87	86	
23	187	157	142	132	125	119	115	111	108	105	102	100	98	97	95	93	92	91	89	88	
24	191	160	145	135	128	122	117	113	110	107	105	102	100	99	97	95	94	93	91	90	
25	195	164	148	138	130	124	120	116	112	109	107	105	102	101	99	97	96	94	93	92	
26	198	167	151	140	133	127	122	118	115	112	109	107	105	103	101	99	98	96	95	94	
27		170	154	143	135	129	124	120	117	114	111	109	107	105	103	101	100	98	97	96	
28		173	156	146	138	132	127	122	119	116	113	111	108	106	105	103	101	100	99	97	
29		176	159	148	140	134	129	125	121	118	115	113	110	108	107	105	103	102	100	99	
30		179	162	151	143	136	131	127	123	120	117	115	112	110	108	107	105	104	102	101	
31		182	165	153	145	138	133	129	125	122	119	116	114	112	110	108	107	105	104	102	
32		185	167	156	147	141	135	131	127	124	121	118	116	114	112	110	108	107	105	104	
33		188	170	158	150	143	137	133	129	126	123	120	118	116	114	112	110	109	107	106	
34		191	172	160	152	145	140	135	131	128	125	122	120	117	115	113	112	110	109	107	Min.
35		194	175	163	154	147	142	137	133	129	126	124	121	119	117	115	113	112	110	109	225 mm
36		196	177	165	156	149	144	139	135	131	128	125	123	121	119	117	115	113	112	110	diameter
37		199	180	167	158	151	146	141	137	133	130	127	125	122	120	118	117	115	113	112	outlet
38		202	182	170	160	153	148	143	139	135	132	129	126	124	122	120	118	116	115	113	pipe
39		204	185	172	163	155	149	145	140	137	133	131	128	126	124	122	120	118	116	115	
40		207	187	174	165	157	151	146	142	138	135	132	130	127	125	123	121	120	118	116	
41		210	189	176	167	159	153	148	144	140	137	134	131	129	127	125	123	121	119	118	
42		212	192	178	169	161	155	150	146	142	139	136	133	130	128	126	124	122	121	119	
43		215	194	180	171	163	157	152	147	144	140	137	134	132	130	128	126	124	122	121	
44		217	196	183	173	165	159	154	149	145	142	139	136	133	131	129	127	125	124	122	
45		220	198	185	175	167	161	155	151	147	143	140	138	135	133	131	129	127	125	123	
46		222	201	187	177	169	162	157	152	148	145	142	139	136	134	132	130	128	126	125	
47		224	203	189	178	170	164	159	154	150	147	143	141	138	136	133	131	130	128	126	
48		227	205	191	180	172	166	160	156	152	148	145	142	139	137	135	133	131	129	128	
49		229	207	193	182	174	168	162	157	153	150	146	143	141	138	136	134	132	131	129	
50		231	209	195	184	176	169	164	159	155	151	148	145	142	140	138	136	134	132	130	

Min. 375 mm diameter outlet pipe

Min. 300 mm diameter outlet pipe