

Appendix 10.2 – Screened Surface Water and Groundwater Analytical Results – Tables 1, 2 and 3.

Project Ref: 5214419
Project Title: Harbour Point SHD - Coastal Quarter EIAR
Project Site: Ballymore, Bray
Client: Shankill Property Investments Ltd.
Table 1: Surface Water Analytical Results

Laboratory Reference:			530707	530708
Date Sampled:			03/09/2020	03/09/2020
Parameter	Units	Surface Water Regulations - S.I. No. 272 of 2009 as amended – S.I. No. 327 of 2012, S.I. No. 386 of 2015 and S.I. No. 77 of 2019	SW01 (River Dargle - upstream)	SW02 (River Dargle - downstream)
Conductivity @ 20°C	uS/cm @20°C	-	329	585
pH	pH Unit	6.0<pH<9.0*	8.08	7.90
Ammonia as N	mg/l	0.065	0.061	0.030
BOD	mg/l O2	-	< 2	< 2
Dissolved Inorganic Nitrogen	mg/l	-	0.847	0.862
Orthophosphate as P	mg/l	0.06	< 0.025	< 0.025
Phosphorus, Total as P	mg/l	-	< 0.050	< 0.050
Total Dissolved Solids	mg/l	-	161	287
Total Suspended Solids	mg/l	-	< 2	3
Coliforms	MPN/100ml	-	5540	5830
E.coli	MPN/100ml	-	727	866
Faecal Coliforms	cfu/100ml	-	870	900
Dissolved Arsenic	ug/l	20	3	<2.5
Dissolved Cadmium	ug/l	0.45	<0.5	<0.5
Total Dissolved Chromium	ug/l	-	<1.5	<1.5
Dissolved Copper	ug/l	5	<7	<7
Dissolved Mercury	ug/l	0.07	<1	<1
Dissolved Nickel	ug/l	34	<2	<2
Dissolved Zinc	ug/l	-	4	6
Total Arsenic	ug/l	-	<2.5	<2.5
Total Cadmium	ug/l	-	<0.5	<0.5
Total Chromium	ug/l	-	<1.5	<1.5
Total Copper	ug/l	-	<7	<7
Total Mercury	ug/l	-	<1	<1
Total Nickel	ug/l	-	<2	<2
Total Phosphorus	ug/l	-	38	44
Total Zinc	ug/l	-	6	8
PAH MS				
Naphthalene	ug/l	130	<0.1	<0.1
Acenaphthylene	ug/l	-	<0.013	<0.013
Acenaphthene	ug/l	-	<0.013	<0.013
Fluorene	ug/l	-	<0.014	<0.014
Phenanthrene	ug/l	-	<0.011	<0.011
Anthracene	ug/l	0.1	<0.013	<0.013
Fluoranthene	ug/l	0.12	<0.012	<0.012
Pyrene	ug/l	-	<0.013	<0.013
Benzo(a)anthracene	ug/l	-	<0.015	<0.015
Chrysene	ug/l	-	<0.011	<0.011
Benzo(bk)fluoranthene	ug/l	-	<0.018	<0.018
Benzo(a)pyrene	ug/l	0.027	<0.016	<0.016
Indeno(123cd)pyrene	ug/l	-	<0.011	<0.011
Dibenzo(ah)anthracene	ug/l	-	<0.01	<0.01
Benzo(ghi)perylene	ug/l	8.2 x 10 ⁻⁴	<0.011	<0.011
PAH 16 Total	ug/l	-	<0.195	<0.195
Benzo(b)fluoranthene	ug/l	0.017	<0.01	<0.01
Benzo(k)fluoranthene	ug/l	0.017	<0.01	<0.01
Methyl Tertiary Butyl Ether				
Methyl Tertiary Butyl Ether	ug/l	-	<0.1	<0.1
Benzene				
Benzene	ug/l	50	<0.5	<0.5
Toluene				
Toluene	ug/l	10	<5	<5
Ethylbenzene				
Ethylbenzene	ug/l	-	<1	<1
m/p-Xylene				
m/p-Xylene	ug/l	10	<2	<2
o-Xylene				
o-Xylene	ug/l	10	<1	<1
TPH CWG				
Aliphatics				
>C5-C6	ug/l	-	<10	<10
>C6-C8	ug/l	-	<10	<10
>C8-C10	ug/l	-	<10	<10
>C10-C12	ug/l	-	<5	<5
>C12-C16	ug/l	-	<10	<10
>C16-C21	ug/l	-	<10	<10
>C21-C35	ug/l	-	<10	<10
Total aliphatics C5-35	ug/l	-	<10	<10
Aromatics				
>C5-EC7	ug/l	-	<10	<10
>EC7-EC8	ug/l	-	<10	<10
>EC8-EC10	ug/l	-	<10	<10
>EC10-EC12	ug/l	-	<5	<5
>EC12-EC16	ug/l	-	<10	<10
>EC16-EC21	ug/l	-	<10	<10
>EC21-EC35	ug/l	-	<10	<10
Total aromatics C5-35	ug/l	-	<10	<10
Total aliphatics and aromatics(C5-35)	ug/l	-	<10	<10
Total Phenols HPLC				
Total Phenols HPLC	mg/l	-	<0.15	<0.15
Fluoride				
Fluoride	mg/l	1.5	<0.3	<0.3

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Date Sampled:			03/09/2020	03/09/2020
Parameter	Units	Surface Water Regulations - S.I. No. 272 of 2009 as amended – S.I. No. 327 of 2012, S.I. No. 386 of 2015 and S.I. No. 77 of 2019	SW01 (River Dargle - upstream)	SW02 (River Dargle - downstream)
Nitrate as NO3	mg/l	-	2.8	3
Nitrite as NO2	mg/l	-	<0.02	<0.02
MRP Ortho Phosphate as P	mg/l	0.06	<0.03	<0.03
Inorganic Nitrogen	mg/l	-	0.64	0.68
Total Cyanide	mg/l	0.01	<0.01	<0.01
Ammoniacal Nitrogen as N	mg/l	0.065	<0.03	<0.03
Hexavalent Chromium	mg/l	0.032	<0.006	<0.006
Total Ammonia as N	mg/l	0.065	<0.03	<0.03
Total Dissolved Chromium III	ug/l	-	<6	<6

Notes:

* in the absence of CaCO3 / water hardness value, the most conservative pH limit has been used.
 Relevant Surface Water Regulation Value (for MAC - EQS - Other Surface Waters) applied as generic assessment criteria.

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Table 2: Groundwater & Perched Water Level Monitoring Results

Location ID	Ground Level (m OD)	Round 1 (02/10/2020)		Round 2 (20/10/2020)		Round 3 (03/11/2020)		Round 4 (12/11/2020)		Round 5 (25/11/2020)		Round 6 (17/12/2020)	
		Static groundwater level (m bgl)	Static groundwater level (m OD)	Static groundwater level (m bgl)	Static groundwater level (m OD)	Static groundwater level (m bgl)	Static groundwater level (m OD)	Static groundwater level (m bgl)	Static groundwater level (m OD)	Static groundwater level (m bgl)	Static groundwater level (m OD)	Static groundwater level (m bgl)	Static groundwater level (m OD)
ROH01	10.81	4.81	6	4.79	6.02	4.86	5.95	4.98	5.83	4.49	6.32	4.69	6.12
ROH02	4.47	3.3	1.17	3.31	1.16	3.29	1.18	3.15	1.32	3.33	1.14	3.16	1.31
ROH04	1.43	0.3	1.13	0.2	1.23	0.35	1.08	0.48	0.95	0.87	0.56	0.54	0.89
WS01A	9.45	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-
WS01B	9.09	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-
WS02A	10.81	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-
WS02B	10.49	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-
WS03A	8	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-
WS03B	7.51	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-	DRY	-
WS04A	6.86	DRY	-	1.3	5.56	1.17	5.69	1	5.86	1.15	5.71	1.13	5.73
WS04B	7.46	DRY	-	1.44	6.02	1.32	6.14	1.5	5.96	1.15	6.31	1.21	6.25
WS05A	3.73	DRY	-	DRY	-	Access Gate Locked		Access Gate Locked		Access Gate Locked		DRY	-

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Table 3: Perched Water / Groundwater Analytical Results

Laboratory Report Job No.:				20-30578	20-31304	20-30578	20-31304	20-30578	20-31304	20-30578	20-31304
Sample ID.:				1094940	1098217	1094941	1098218	1094942	1098219	1094943	1098220
Sample Location:				ROH01		ROH02		ROH04		WS04B	
Sample Type:				Groundwater (Clay/ Sand)		Groundwater (Clay / Gravel)		Groundwater (Silt / Gravelly Silt / Clay)		Perched Water (Made Ground)	
Date Sampled:				08-Nov-2020	13-Nov-2020	08-Nov-2020	13-Nov-2020	08-Nov-2020	13-Nov-2020	08-Nov-2020	13-Nov-2020
Parameter	Units	Groundwater Regulation Value (Sl. No. 9 of 2010 as amended - Sl. No. 366 of 2016) Overall Threshold Range	Interim Guidelines Value (IGV) (EPA 2003)								
Bromobenzene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	µg/l	-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	µg/l	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	-	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	µg/l	-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	µg/l	-	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	-	0.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	-	-	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	µg/l	10	30	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	µg/l	-	0.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	µg/l	-	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	µg/l	-	10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	µg/l	-	0.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	µg/l	-	0.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	µg/l	-	200	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	µg/l	6	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	µg/l	-	0.03	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	µg/l	-	2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo fluoranthene	µg/l	-	0.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	µg/l	-	0.05	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	µg/l	0.0075	0.01	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	µg/l	-	0.05	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	µg/l	-	0.05	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	µg/l	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
SVOC TIC	µg/l	-	-	None Detected	None Detected	None Detected	None Detected	None Detected	None Detected	None Detected	None Detected
VOC TIC	µg/l	-	-	None Detected	None Detected	None Detected	None Detected	None Detected	None Detected	None Detected	None Detected

Notes

Shaded values denote concentrations which exceed the relevant generic assessment criteria i.e. Relevant Groundwater Regulation Value (where available) or, in the absence of an available Groundwater Regulation Value, the relevant IGV

Bold values denote exceedence of the relevant Lower Groundwater Regulation Value Threshold

Note 1 - Lower Groundwater Regulation Value Threshold 'Test: Assessment for the presence of saline or other intrusions'

Note 2 - Upper Groundwater Regulation Value Threshold 'Test: Assessment of the general quality of groundwater in a groundwater body in terms of whether its ability to support human uses has been significantly impaired by pollution'

Note 3 - Lower Groundwater Regulation Value Threshold 'Test: Assessment of adverse impacts of chemical inputs from groundwater on associated surface water bodies'