

ANNEXURE 7C: BASELINE CONDITIONS

(Information provided by the City of Cape Town)

5.1.1.1.1. Topography and Bathymetry

A preliminary topographic survey of the inter-tidal areas surrounding the tidal pool was undertaken by Neil Woodin. The levels, referenced to Land Levelling Datum (LLD) are shown in drawing C00686-0Z-GE-DAL-0001-001.

Detailed LIDAR data of the intertidal area along the Harmony Park coastline is presently being collected and will be provided in a Tender Addendum.

A single beam bathymetric survey for the area offshore of Harmony Park, was undertaken by the Council of Geosciences. The measured seabed levels, referenced to Chart Datum (CD) are shown in drawing C0068-0z-MA-DAL-0002-001.

The height of Chart Datum (CD) relative to Land Levelling Datum (LLD) for Simon's Town¹ is -0.843 m.

5.1.1.1.2. Wind Data

A wind rose for Gordons Bay, obtained from www.meteoblue.com, is shown in Figure 1. The strongest winds are predominantly from the north-west and south-east.

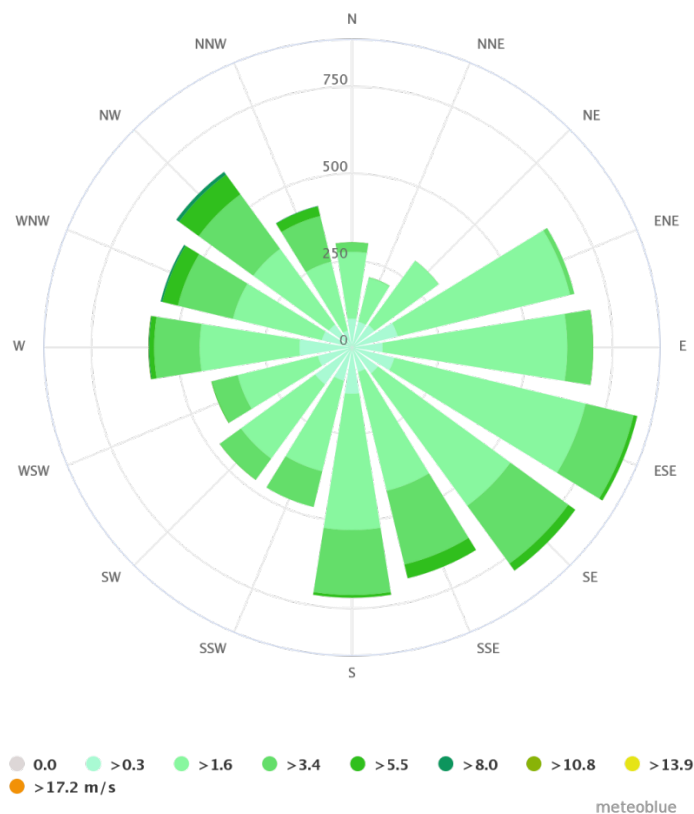


Figure 1: Annual Wind Rose for Gordons Bay (Source: www.meteoblue.com)

¹ SAN HO-02 (2017). South African Tide Tables, The Hydrographer South African Navy. Report nr ISBN 978-0-9869717-8-5.

No further wind measurements are available at present.

5.1.1.1.3. Sea Water Temperature and Salinity

The yearly average surface seawater temperature of False Bay water is about 17.8°C. The temperatures vary between 13.8°C and 21.1°C. The salinity for False Bay varies between 34.2 -36 ppt².

5.1.1.1.4. Sea Water Sampling

Sea water sampling was undertaken at four locations as shown in Figure 2 near Harmony Park on 14th August 2017 by Lwandle³. The coordinates of the four locations are listed in Table 1. The results are presented in the Table 2.

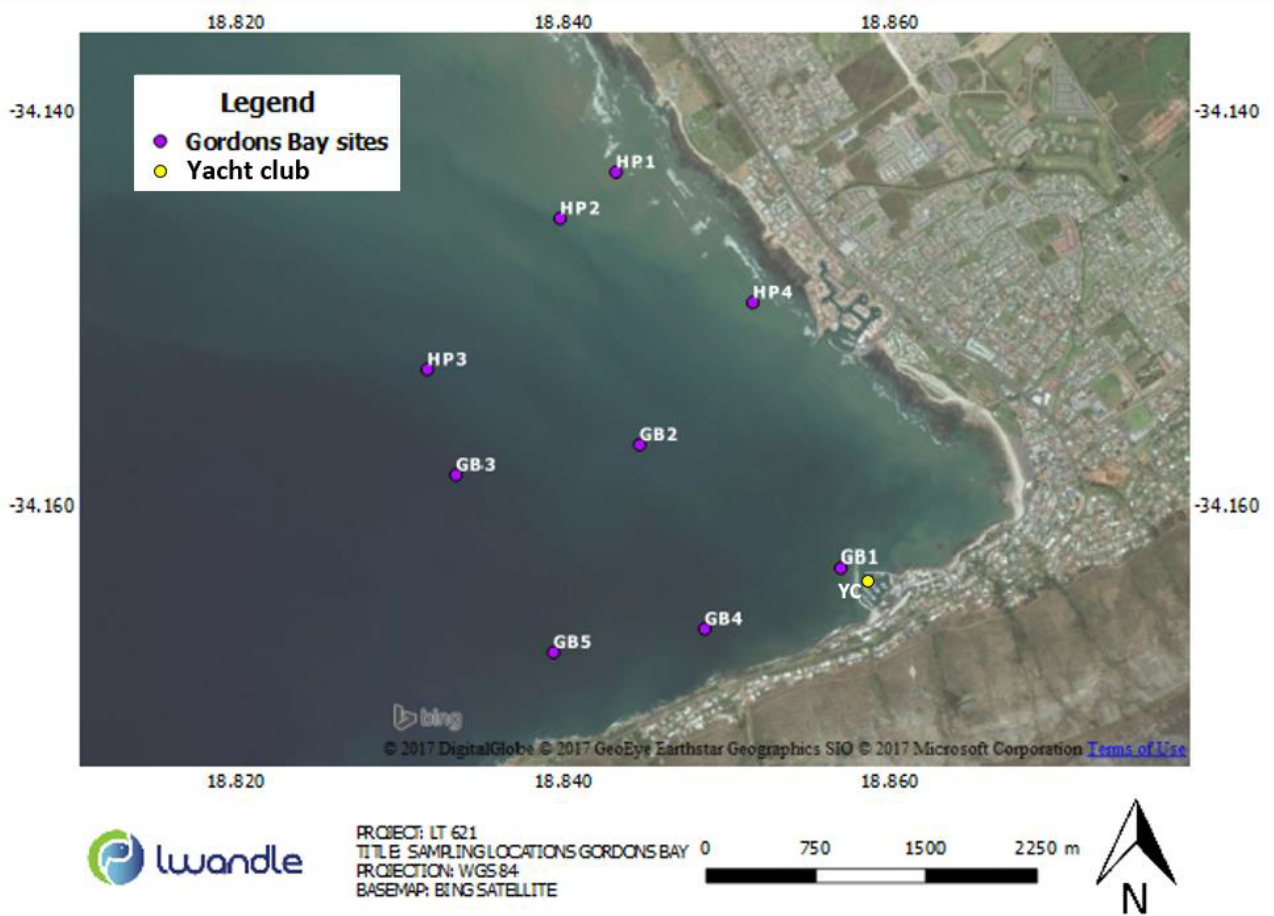


Figure 2: Water sampling locations near Harmony Park

2 CSIR. (1991). Ocean Outfall Studies in False Bay Report No.2 MEC-C 9117. Stellenbosch: CSIR

3 Lwandle (2017). Report Ref: LT-621 Field and Data Report V1 Gordon's Bay.

Table 1: Coordinates of water sample collection points

Location	Water Depth (m)	Lat (deg S)	Lon (deg E)
HP1	4	-34.1432	18.8431
HP2	9.5	-34.1455	18.83967
HP3	15.2	-34.1532	18.83172
HP4	2.2	-34.1498	18.8515

Table 2: Mean values for parameters measured at Harmony Park on 14 August 2017. Source Lwandle (2017)²

Location	Water Depth (m)	Temp (C)	Salinity (PSU)	Turb (NTU)	Diss. O ₂ %	Diss.O ₂ (mg/l)
HP1	1.99	13.40	35.00	31.72	101.23	5.95
HP2	4.91	13.83	35.21	25.88	100.22	5.83
HP3	7.44	13.92	35.25	4.90	103.48	6.01
HP4	1.62	13.16	35.00	16.95	102.43	6.05

5.1.1.1.5. Water Levels

The tidal levels, related to Chart Datum (CD) at Cape Town and Simon's Town is given in Table 3 below.

Table 3: Tidal Levels of Simon's Town and Cape Town (Source: SANHO, 2017)⁴

Location	LAT	MLWS	MLWN	ML	MHWN	MHWS	HAT
Cape Town	0	0.25	0.7	0.98	1.26	1.74	2.02
Simon's Town	0	0.24	0.73	1	1.29	1.79	2.09

5.1.1.1.6. Waves

Indicative wave conditions at the project site were estimated at Position 1 (301015 m E, 6220030 m S; UTM 34S) and Position 2 (301168 m E, 6219990 m S; UTM 34S) shown in Figure 3 through numerical modelling.

⁴ The Hydrographer, S. N. (2017, July 31). Tide Information. Retrieved from South African Navy Hydrographic Office: http://www.sanho.co.za/tides/tide_index.htm

It should be noted that the annual conditions and derived extreme estimated have not been validated and are provided as an indication only. It is incumbent on the contractor to ascertain wave conditions at the site to the level required for any design or operational procedure.

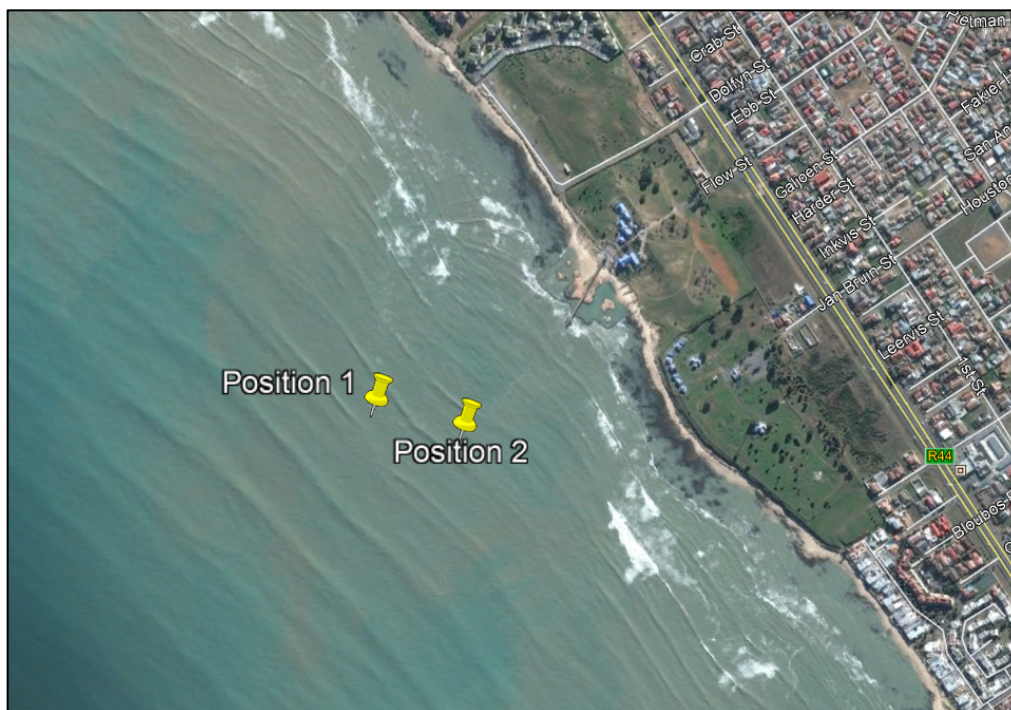


Figure 3: Wave extraction locations near Harmony Park

Indicative Annual Wave Climate

Indicative annual wave roses for the extraction points are presented in Figure 4 and Figure 5. The wave parameters are summarised in Table 4.

Table 4: Indicative Wave Climate Parameters

Parameter	Position 1	Position 2
Sea bed level	-1.9 m CD	-0.9 m CD
Spectral wave height (H_{m0})		
Annual Maximum	2.4 m	1.7 m
Annual Average	1.0 m	0.9 m
Peak Wave Period (T_p)		
Annual Maximum	18 s	18 s
Annual Average	10 s	10 s



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Project name: CoCT Desalination Project
Location: Harmony Park Intake
Data source: Delft3D -WAVE (3 hourly average)

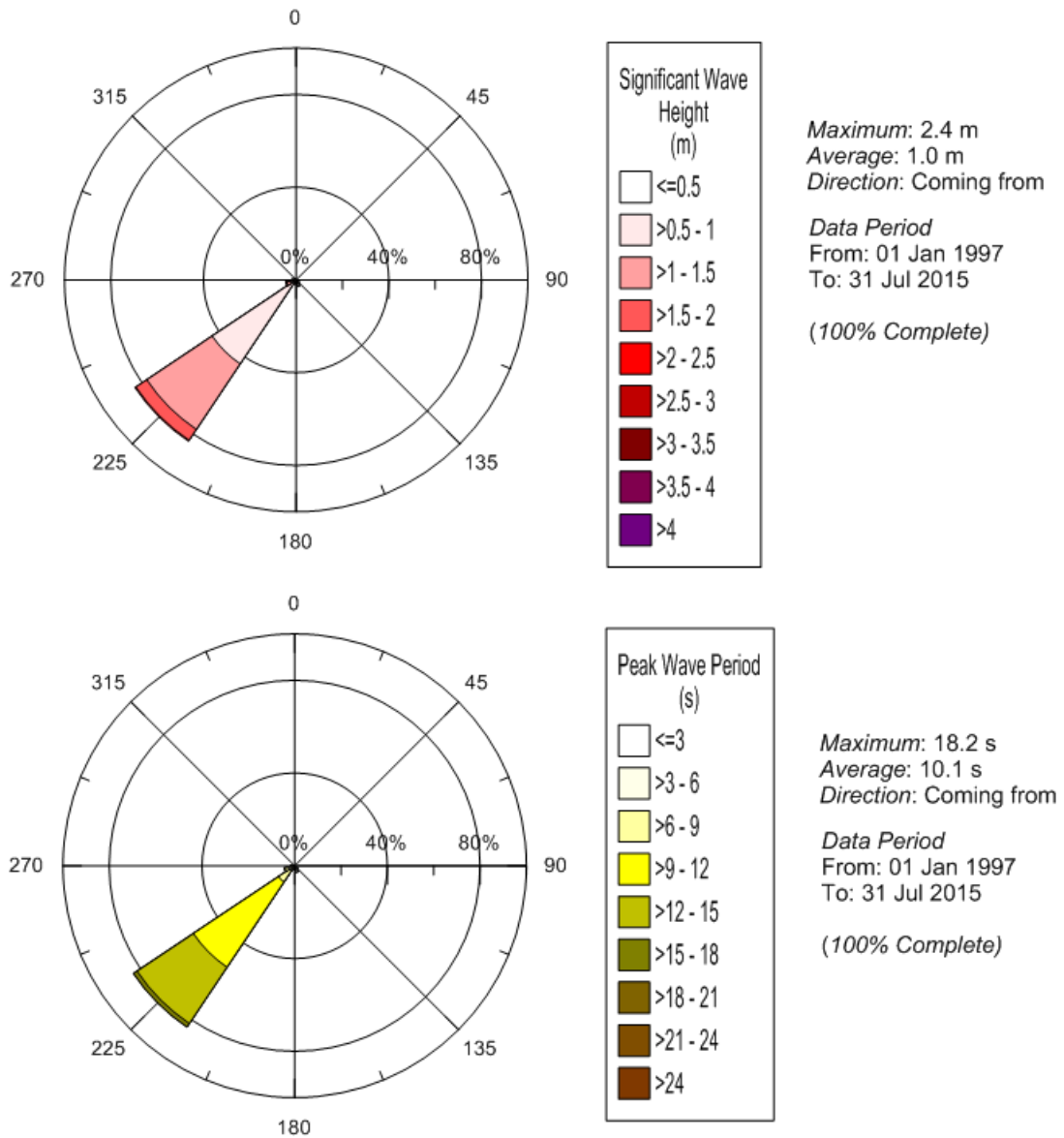


Figure 4: Indicative annual wave rose for Position 1, Harmony Park

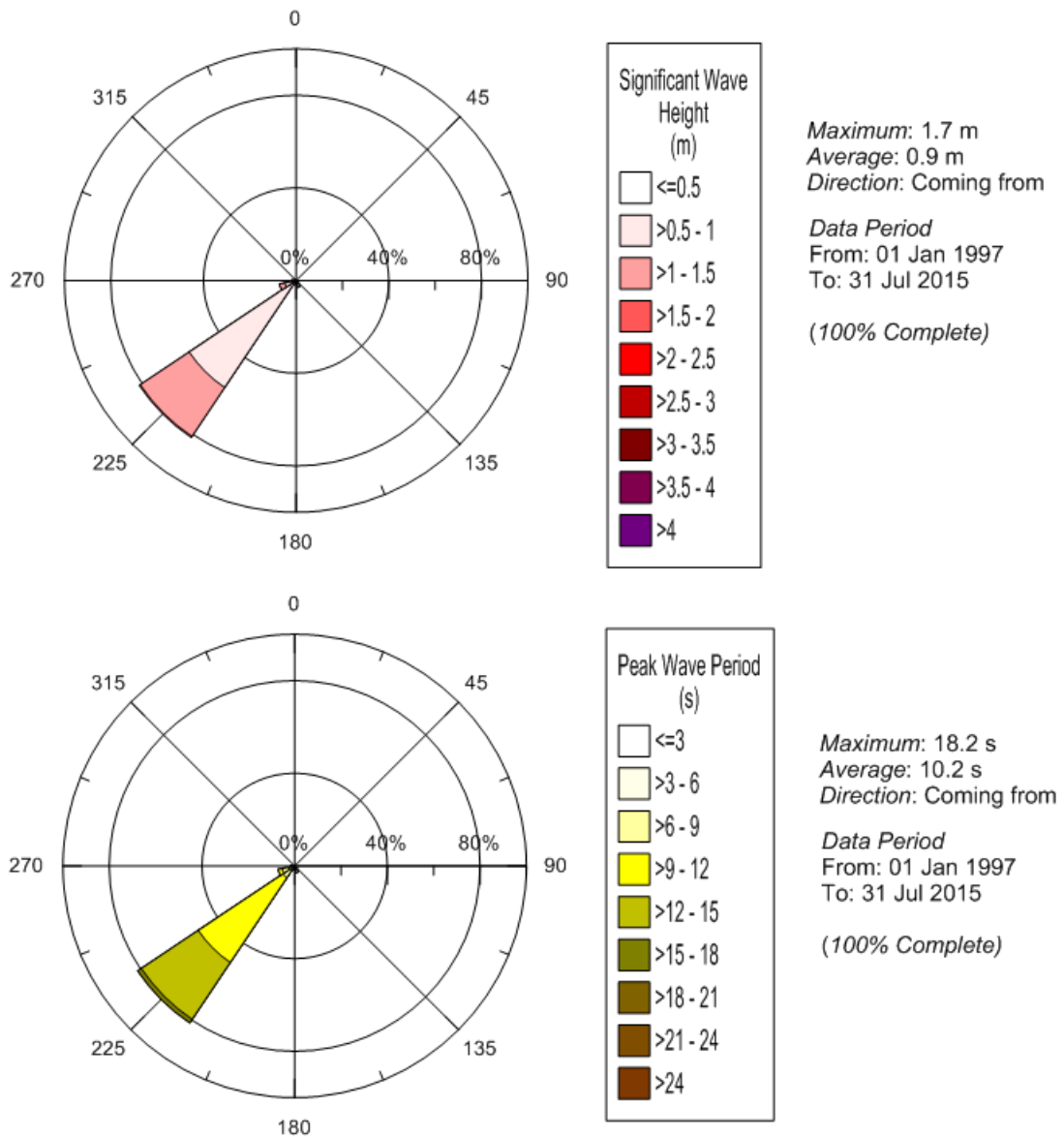


Figure 5: Indicative annual wave rose for Position 2, Harmony Park

Indicative Extreme Waves

Estimated extreme waves with their associated average return intervals (ARI) are presented in Table 5 for Position 1 and Table 6 for Position 2.

Table 5: Extreme waves for various ARI at Position 1

ARI (yr)	Wave Direction SW			
	Wave characteristics		95% Confidence Interval	
	H _s (m)	T _P (s)	Lower Limit	Upper Limit
1	2.0	10.7	1.9	2.1
5	2.5	12.2	2.3	2.7
10	2.7	12.7	2.4	2.9
25	2.9	13.3	2.6	3.1
50	3.0	13.7	2.7	3.3
100	3.2	14.0	2.8	3.5

Table 6: Extreme waves for various ARI at Position 2

ARI (yr)	Wave Direction SW			
	Wave characteristics		95% Confidence Interval	
	H _s (m)	T _P (s)	H _s (m)	Upper Limit
1	1.5	1	1.5	1
5	1.8	5	1.8	5
10	1.9	10	1.9	10
25	2.0	25	2.0	25
50	2.1	50	2.1	50
100	2.1	100	2.1	100

5.1.1.1.7. Currents

No current data is available at present.