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Dredging & Marine Experts

Environmental Monitoring Report August-November 2020

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

The aim of the Project is to extend the land mass at Gulhifalhu, as part of the master plan for the international port development in Greater Malé Area. This will be achieved by reclaiming land and protecting the reclamation with revetment.

The total area of additional land to be reclaimed is approximately 190 ha at Gulhifalhu. Figure 1-1 shows the location of the subject atolls and islands. Figure 1-2 shows North Malé Atoll and Gulhifalhu island location. Figure 1-3 shows the updated survey of the design for Stage 1 of the reclamation.

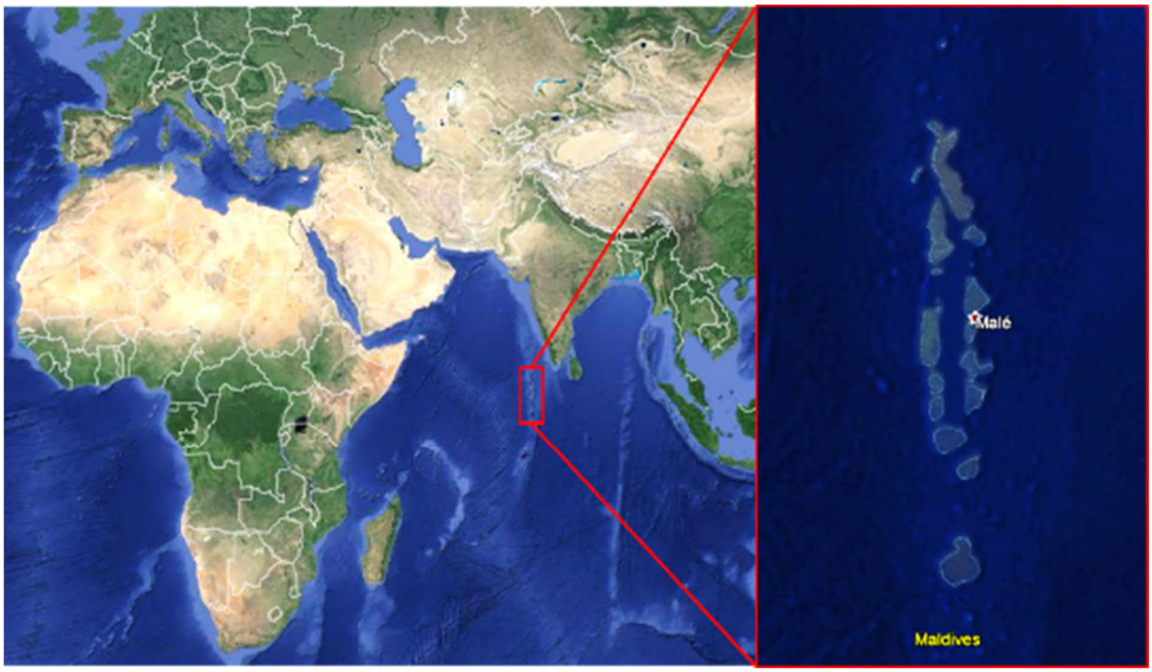

Figure 1-1 - Location of Maldives.

Figure 1-2 - Location of Gulhifalhu.

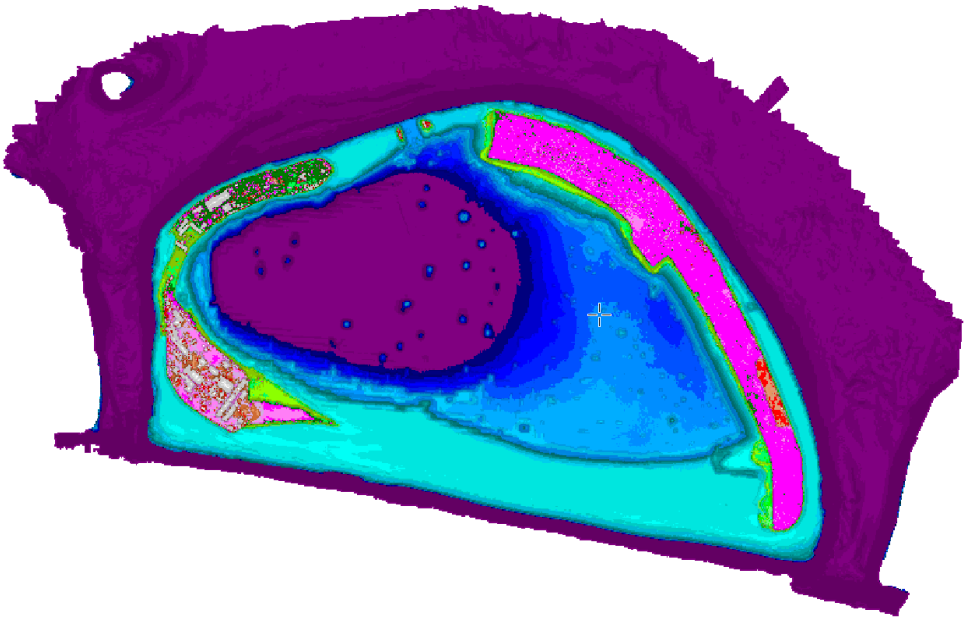

Figure 1-3 - Reclamation design – Stage 1.

1.2 SCOPE OF WORK

The Project involves the land reclamation of Gulhifalhu. The overall project can be divided into the following components:

- Pre-dredging and reclamation works
  - Sand search
  - Deployment of mitigation measures
- Dredging and Reclamation
  - Equipment and material mobilization
  - Dredging new entrance channel
  - Dredging and reclamation works
- Construction of shore protection works
  - Equipment and material mobilization
  - Shore protection construction
- Demobilization
  - Handover and demobilize equipment

The Stage 1 reclamation was created using approximately 6 million m^3 of sand, which were sourced from inside North Malé Atoll. The reclamation was made to a height of +2.0 m MSL. The revetment is being made by Sub-contractor CIFL. The revetment of this phase has a length of approximately 1.3 km of permanent rock revetment and approximately 1.1 km of temporary revetment made with geobags.

The two main dredgers used for the Project are BHD Colbart and TSHD Fairway. The Colbart was used to construct a sand bund before starting reclamation works, to contain the sediment and any sediment plumes and to dredge the new entrance channel. The Fairway was used for the dredging and reclamation. Sand was sourced from the Primary Borrow Area (Figure 1-4).

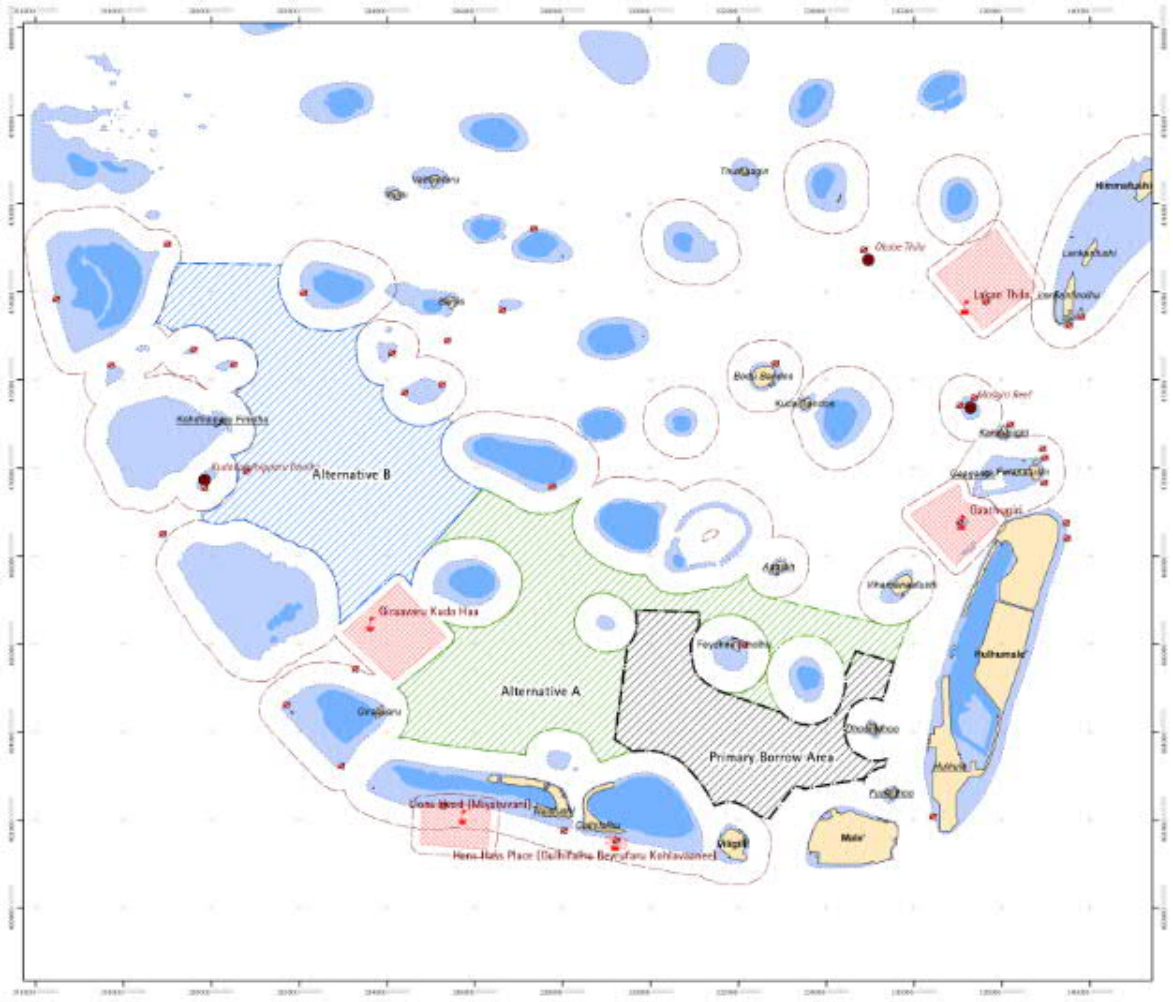

Figure 1-4 - Sand Borrow Areas.

1.3 DOCUMENT SCOPE

This environmental monitoring report presents the results of the environmental monitoring conducted during week 35 to 49 2020, from the 22nd August 2020 until 30th November 2020.

No dredging operations were carried out during the reporting period. The project activity during the monitoring period was installation of permanent revetment on the reclaimed area.

For further detail on the dredging and reclamation works conducted in this period reference is made to the Daily and Weekly Progress Reports

Each day before conducting monitoring an assessment of predicted wind speeds, swell and wave heights and maximum wave heights is made to determine whether safe operations offshore are possible. In general, wind speeds over 15 knots are limiting for activities related to physicochemical analysis of seawater, swell heights over 0.5m are limiting to all monitoring and maintenance activities and max wave heights over 2.0m are generally limiting to all monitoring and maintenance activities.

The environmental monitoring presented in this report contains:

- Water quality monitoring (Chapter 2);
- Sedimentation (3);
- Coral reef health survey (4);
- Noise monitoring (0);
- Erosion and coastal changes (6).

For more detail on the environmental monitoring and management strategy, reference is made to the Project Environmental and Social Management Plan.

2 WATER QUALITY MONITORING

During this reporting period, CDE Consulting have been commissioned by Boskalis for the purpose of meeting EPA requirement for monitoring water quality within the impact area of the Phase I - Gulhifalhu Port development Project (Dredging, Reclamation and Revetment works).

For the Dredging, Land Reclamation and Revetment Works at Gulhifalhu project, turbidity limit holds at 10mg/l, (converted to 5.2 NTU) at all reefs within the atoll lagoon in proximity to the dredging site. Exceptions shall be made where background rates exceeded the threshold level and in reefs where extensive reclamation work has been undertaken (including e.g. Thilafushi, Gulhifalhu, Villigili, Malé, Hulhumalé). Considerations also shall be made to account for naturally elevated levels of turbidity which may occur during storm events or bad weather.

2.1 METHOD

In-situ water quality measurements for physiochemical analysis are taken from a vessel, using a handheld multi-parameter probe, a laptop, and the vessel's navigation equipment.
Parameters measured are:

- Turbidity;
- Temperature;
- Conductivity;
- pH; and
- Depth.

2.2 LOCATIONS

In-situ measurements were taken daily at the reclamation area (yellow mark) whilst in-situ measurements at the borrow area (pink mark) were stopped on the 24th August 2020 as the TSHD Fairway competed its dredging operations on the 20th August 2020. In total, eighteen monitoring locations were being monitored including two background locations (W19 and W27) until the 24th August 2020. As from the 25th August 2020, in-situ measurement continued at eight monitoring locations around the reclamation area as presented in Figure 2-1.

Figure 2-1 : Location turbidity monitoring stations.

Turbidity is measured in Nephelometric Turbidity Units (NTU) which is a measure of the relative clarity of water and is linearly correlated to the suspended particles in the water. By taking water samples and determining the SSC (Suspended Sediments Concentration in mg/l) and the turbidity (NTU) a correlation factor is established. A relationship has been established based on measurements taken during previous projects from Contractor in the Maldives, resulting in the following relationship: 1 NTU = 1.92 mg/l.

2.3 TIME AND FREQUENCY

Weather permitting, in-situ measurements are taken once daily and during daylight hours only. The EIA requires measurements and water sampling at the surface, at approximately 1 meter depth. For completeness, in-situ parameters are measured at two additional depths; 'bottom' and 'mid-water'. ‘Bottom’ is defined as the maximum depth the probe will go to on a 30m cable (dependent on currents), or 90% of the water column if water depth is < 30m. The ‘mid-water’ measurement is taken at approximately 0.5 * the ‘bottom’ depth. Data recording is set to every second on an average of 1 minute per depth.

2.4 INSTRUMENTS

A Manta Eureka multi-parameter probe is used for the in-situ water quality measurements, capable of measuring the required physiochemical parameters (specifications see Appendix 2). The turbidity probe has a wiper to reduce biofouling of the sensor surface. The probes use 90° optics and infrared light in accordance with ISO7027. The probe uses a unique modulation technique to ensure almost complete rejection of ambient light conditions.

The Eureka turbidity probes are factory calibrated, and the calibration is verified monthly per Manufacturer’s specification. Log sheets of calibration verifications are kept by the Environmental Monitoring Engineer for each probe.

2.5 RESULTS

Results of the in-situ water quality measurements at the locations of the monitoring stations taken from calendar week 34 to week 49 are as follows:
Figure 2-2 to Figure 2-4 for Temperature (°C);
Figure 2-5 to Figure 2-7 for pH;
Figure 2-8 to Figure 2-10 for Conductivity (µS/cm);
Figure 2-11 to Figure 2-13 for Turbidity at Reclamation area (NTU);
Figure 2-14 to Figure 2-16 for Turbidity at the Borrow area (NTU).

2.5.1 Temperature: 22nd August until 30th November 2020

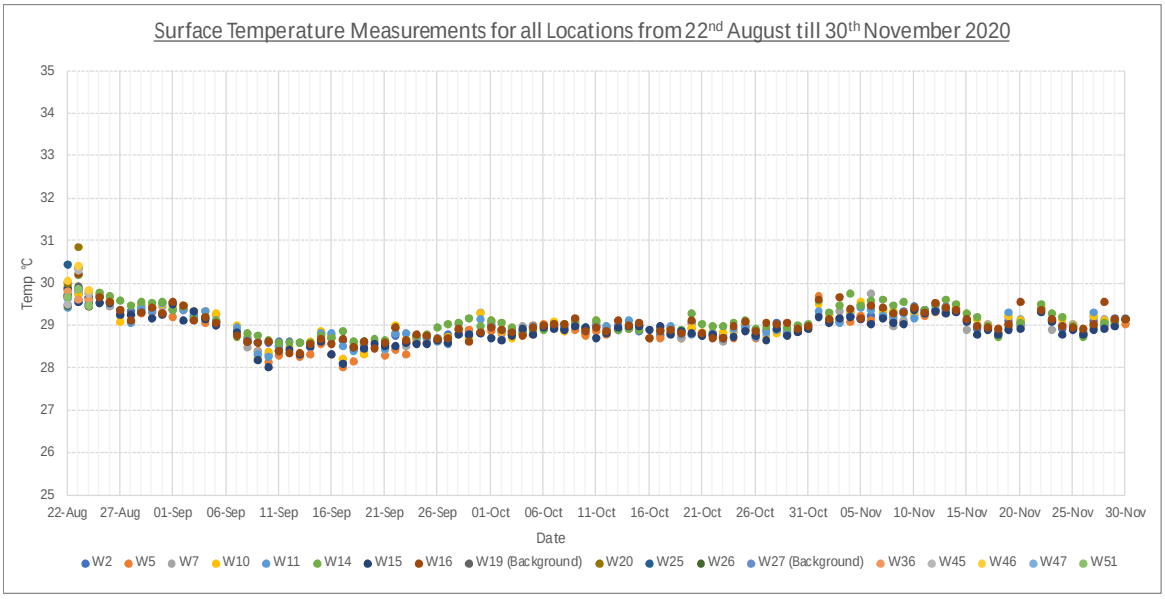

Figure 2-2: Surface Temperature Measurements for all Locations from 22nd Aug until 30th Nov 2020.

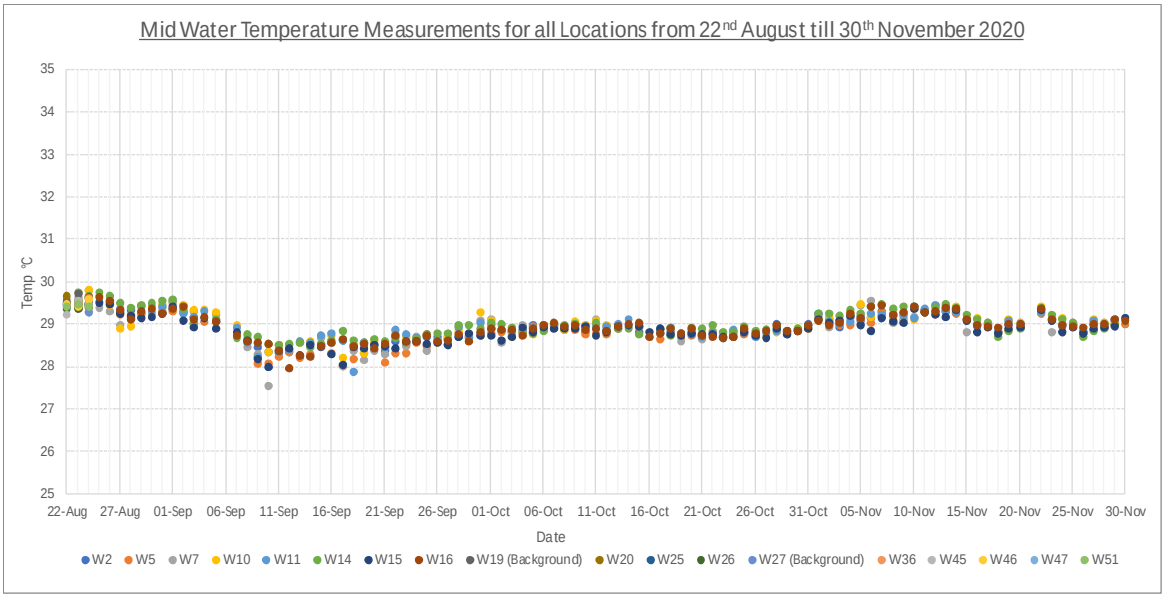

Figure 2-3: Mid Water Temperature Measurements for all Locations from 22nd Aug until 30th Nov 2020.

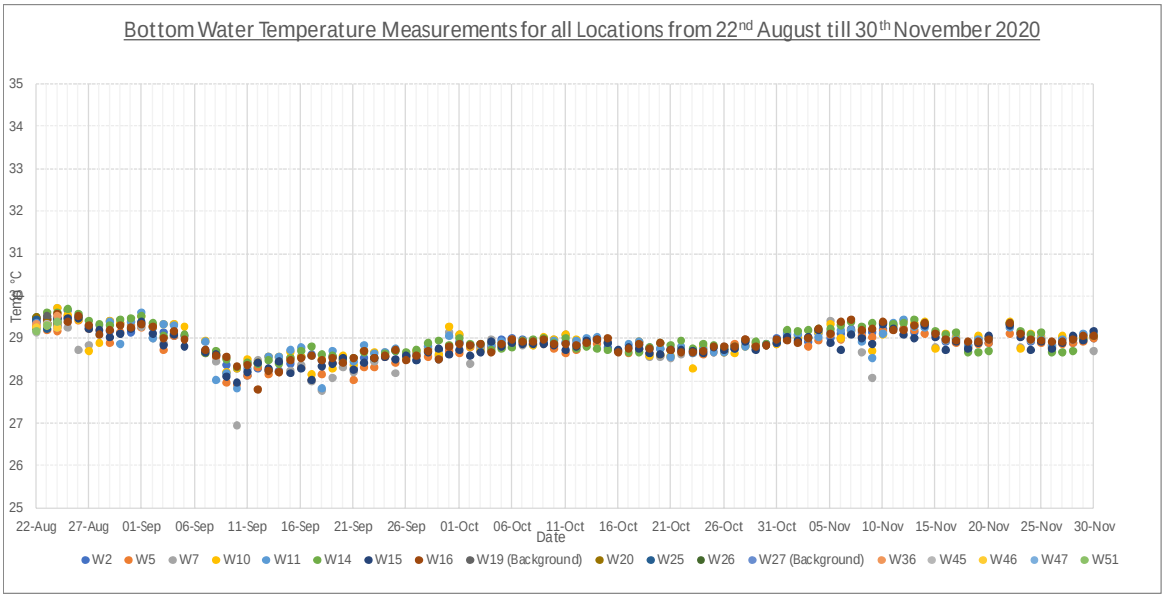

Figure 2-4: Bottom Temperature Measurements for all Locations from 22nd Aug until 30th Nov 2020.

2.5.2 pH: 22nd August until 30th November 2020

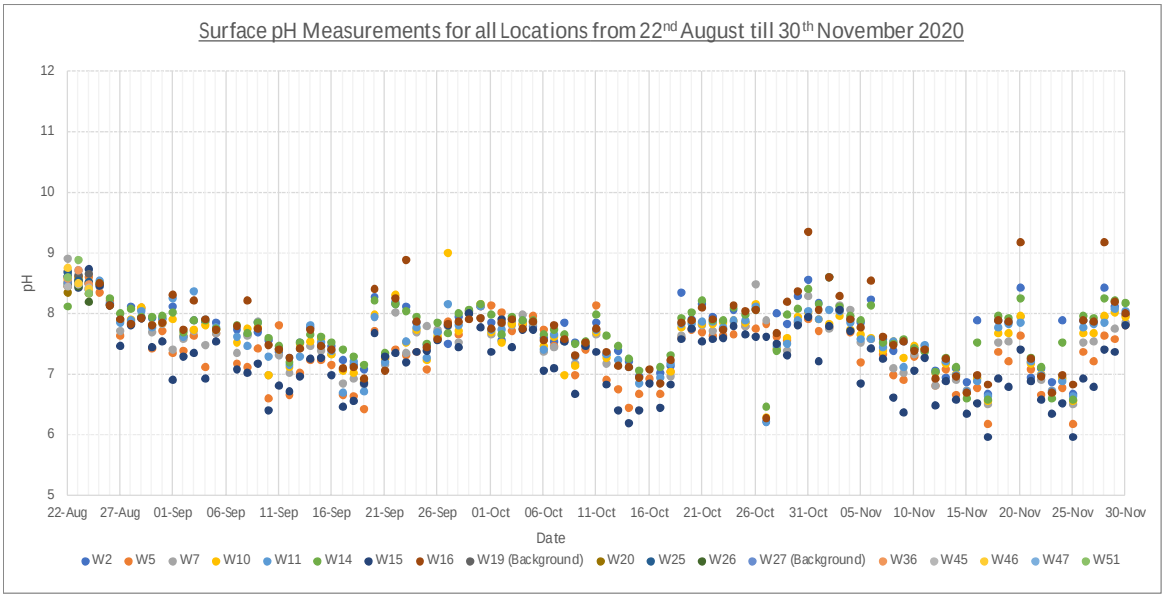

Figure 2-5: Surface pH Measurements for all Locations from 22nd Aug until 30th Nov 2020.

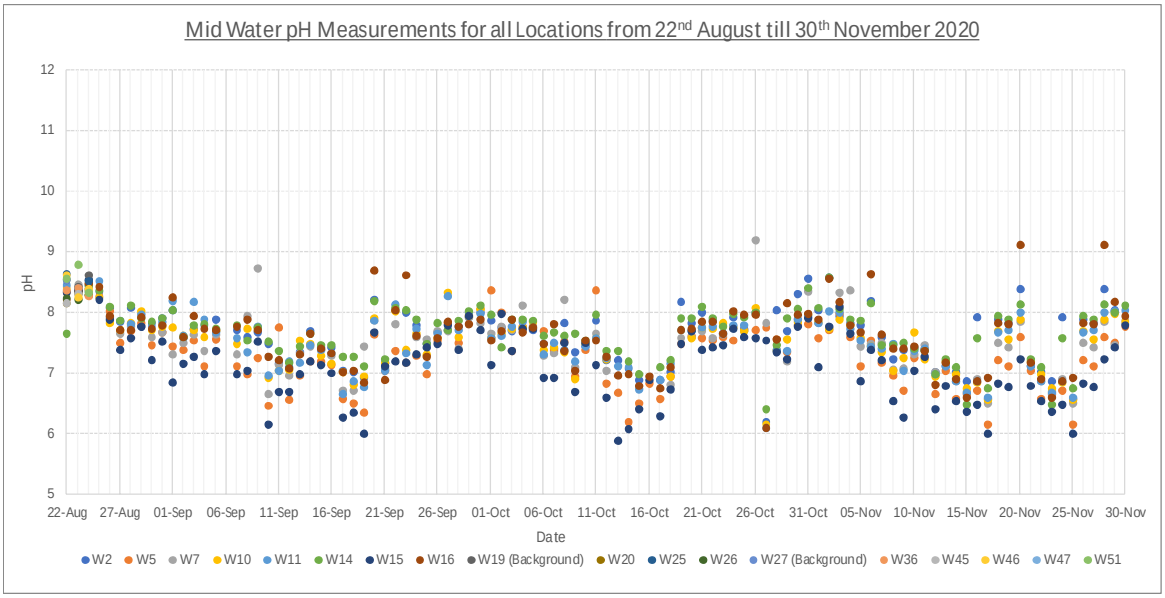

Figure 2-6: Mid Water pH Measurements for all Locations from 22nd Aug until 30th Nov 2020.

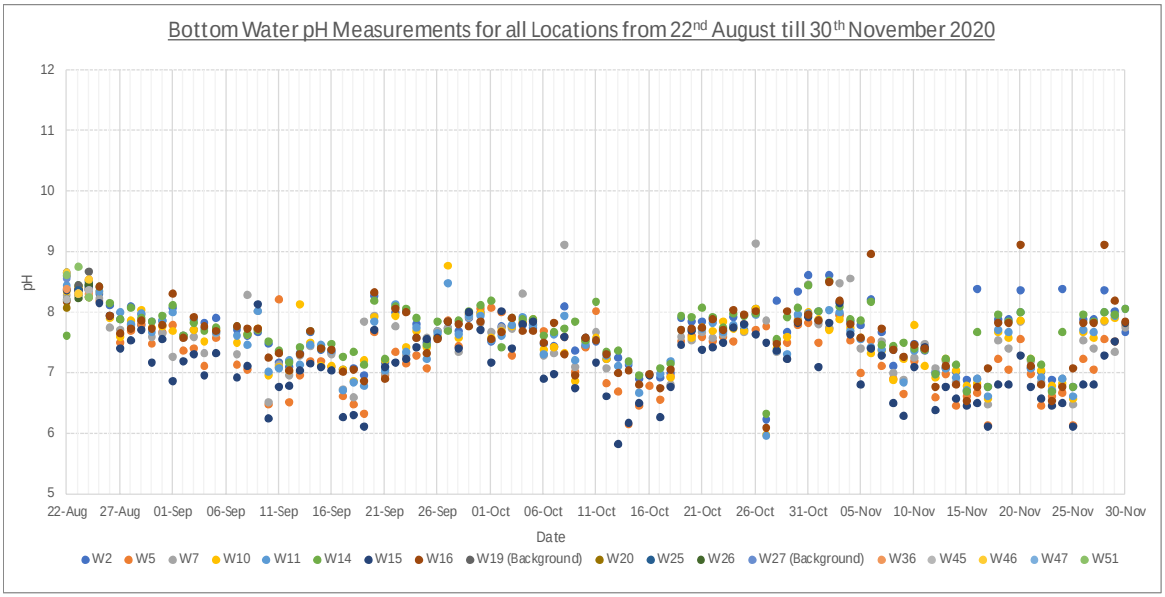

Figure 2-7: Bottom pH Measurements for all Locations from 22nd Aug until 30th Nov 2020.

2.5.3 Conductivity: 22nd August until 30th November 2020

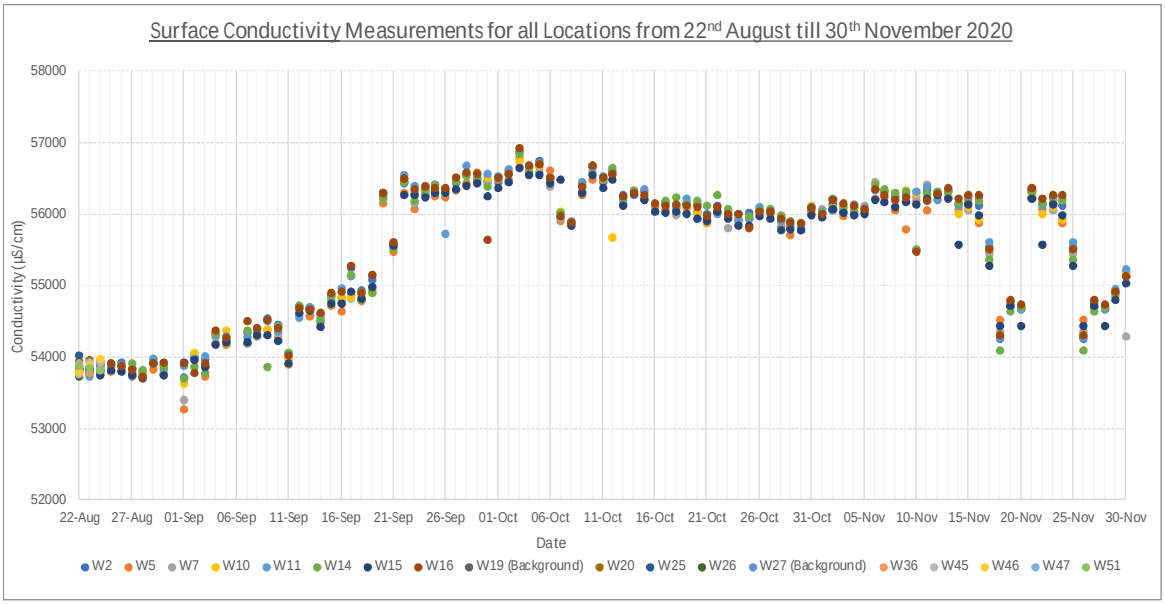

Figure 2-8: Surface Conductivity Measurements for all Locations from 22nd Aug until 30th Nov 2020.

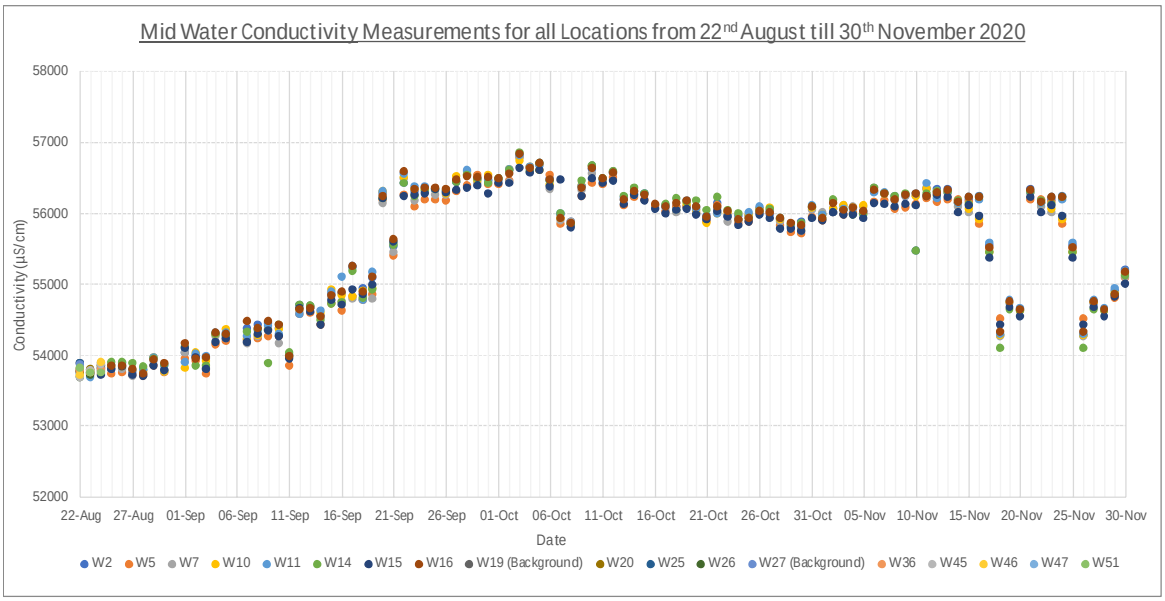

Figure 2-9: Mid Water Conductivity Measurements for all Locations from 22nd Aug until 30th Nov 2020.

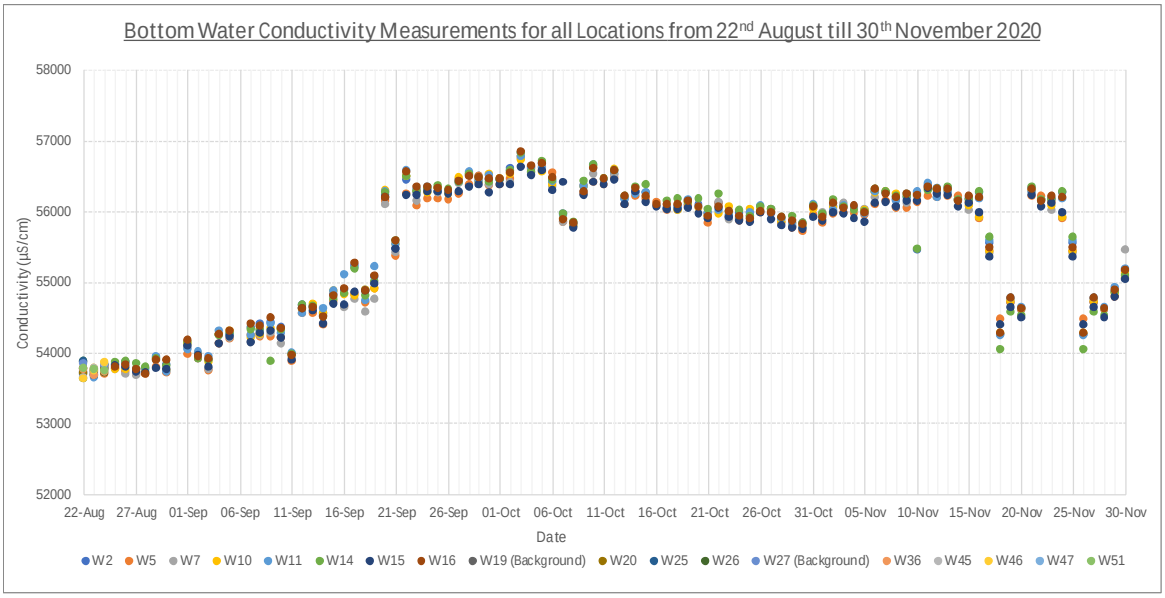

Figure 2-10: Bottom Conductivity Measurements for all Locations from 22nd Aug until 30th Nov 2020.

2.5.4 Turbidity (Reclamation area): 22nd August until 30th November 2020

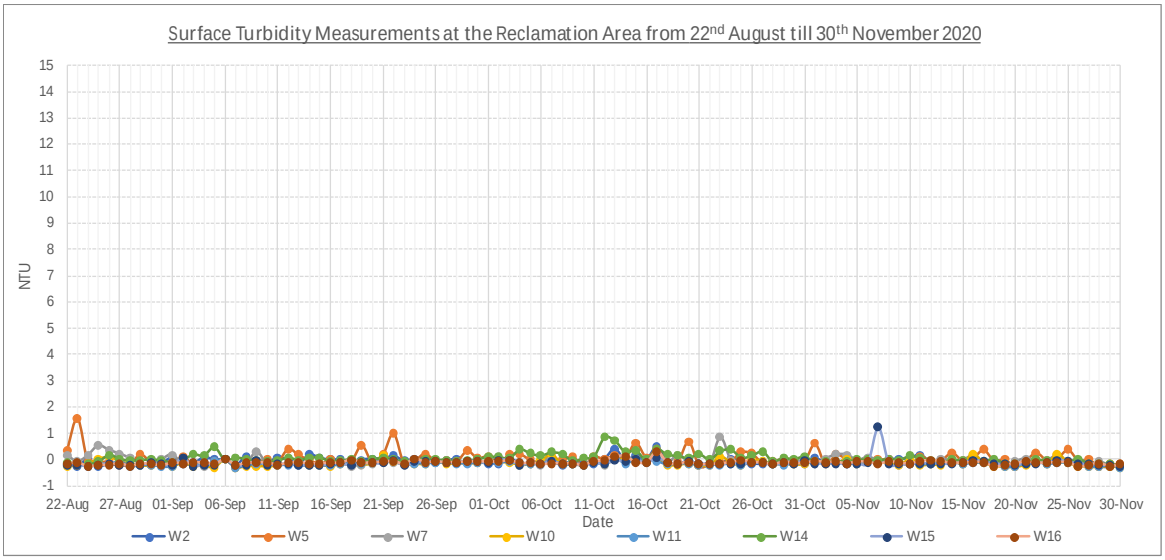

Figure 2-11: Surface Turbidity Measurements at the Reclamation Area from 22nd Aug until 30th Nov 2020.

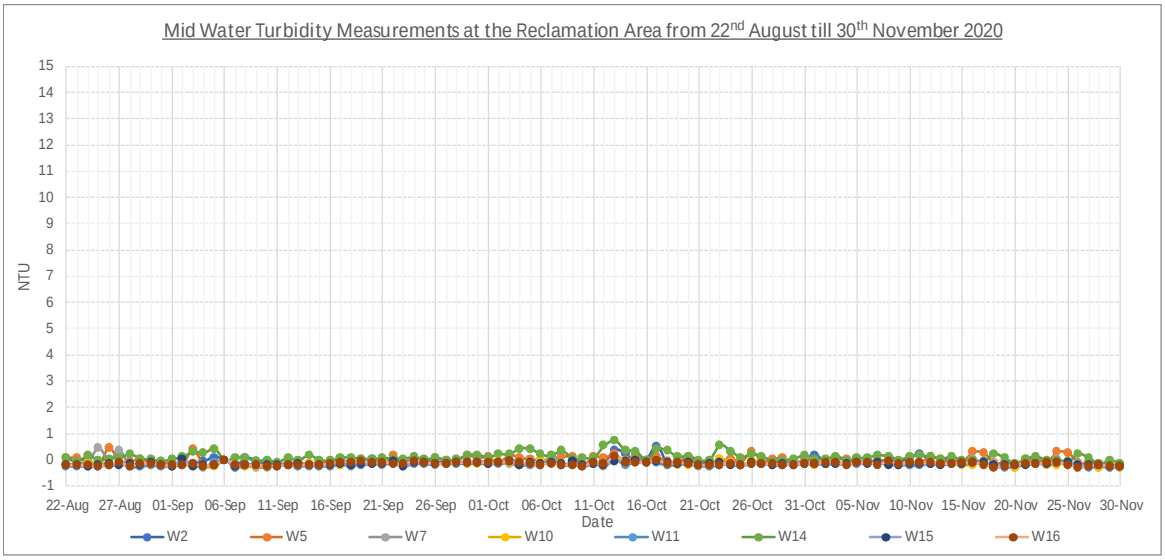

Figure 2-12: Mid Water Turbidity Measurements at the Reclamation Area from 22nd Aug until 30th Nov 2020.

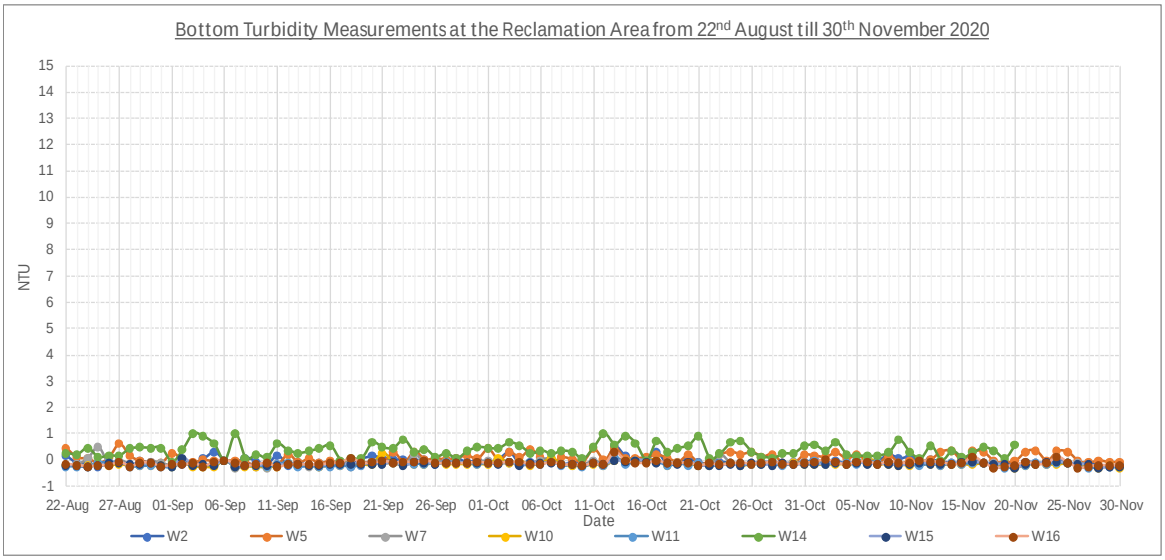

Figure 2-13: Bottom Turbidity Measurements at the Reclamation Area from 22nd Aug until 30th Nov 2020.

2.5.5 Turbidity (Borrow area): 22nd until 24th August 2020

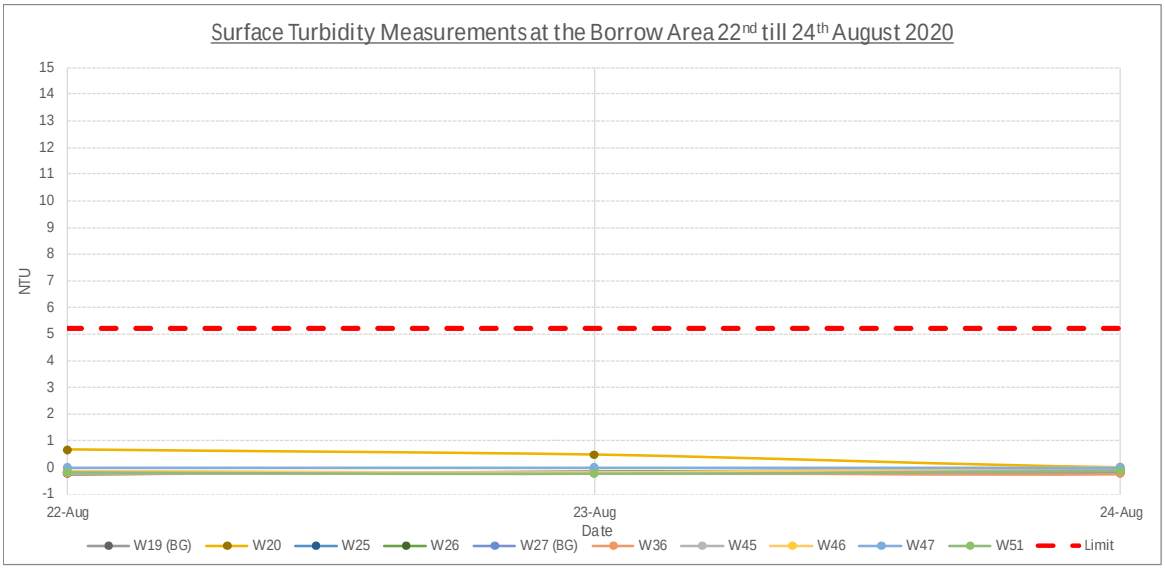

Figure 2-14: Surface Turbidity Measurements at the Borrow Area from 22nd until 24th August 2020.

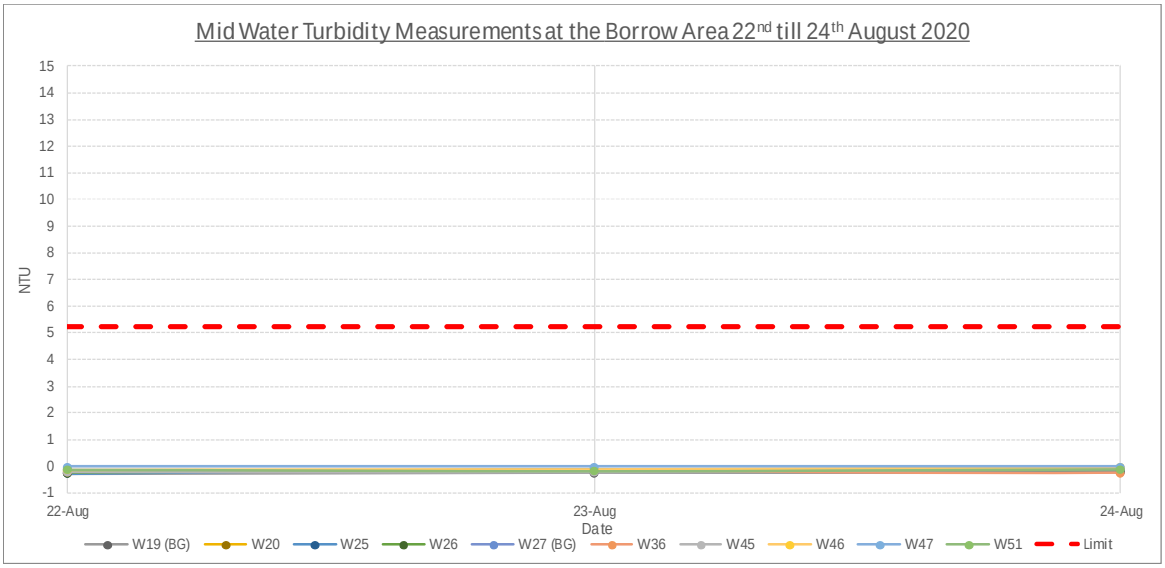

Figure 2-15: Mid Water Turbidity Measurements at the Borrow Area from 22nd until 24th August 2020.

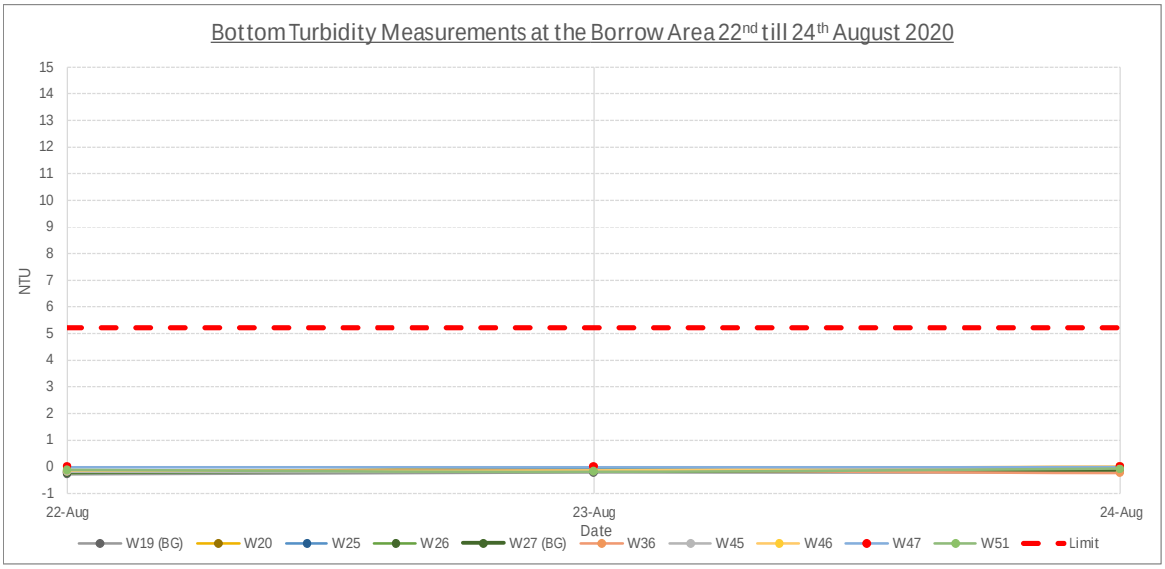

Figure 2-16: Bottom Turbidity Measurements at the Borrow Area from 22nd until 24th August 2020.

2.5.6 Summary

During this reporting period, no unexpected turbidity exceedances were measured. Daily average water quality data per location are shown in Appendix I.

- Seawater temperature during the sampling period ranges from 26.96°C to 30.84°C
- pH level for all of the sampling locations was found to be ranging at 5.82 – 9.34
- Conductivity values during the sampling period ranges from 53251 µS/cm to 56910 µS/cm
- Turbidity level recorded for all samples was very low, the highest recorded was 1.59 NTU (W5) on the 23rd August 2020

It should be noted that turbidity readings can show negative values, when more light is reflected in the field compared to circumstances during calibration. Negative values indicate no turbidity and should therefore be interpreted as 0 NTU.

Due to rough weather condition, no measurements were taken on the following dates and corresponding locations:

Date	Monitoring Locations
06th September 2020	All locations
13th – 15t October 2020	W7 and W10
16th October 2020	W2, W7, W10, W11 and W14
17th October 2020	W7 and W10

Moreover, as from the 23rd of June 2020, no measurements were taken at location W47 due to access restrictions by the marine police. Furthermore, as from the 24th August 2020, in-situ measurements at the borrow area were stopped as the TSHD Fairway competed its dredging operations on the 20th August 2020.

2.6 QUALITY ASSURANCE, QUALITY CONTROL

2.6.1 Calibration of Turbidity sensors

The Eureka Manta multiparameter probes are factory calibrated, and the calibration is verified monthly per manufacturer specification. Log sheets of calibration verifications are kept by the Environmental Engineer for each probe and are available hard and soft copy on site. Dates of calibration/verification of sensors currently on site are shown in Table 2-1.

Table 2-1: Calibration sensors

EUREKA MULTIMETER SENSOR	STATUS	CALIBRATION DATES
S/N: MT12183556	Used for measurements	19th September 2020 18th October 2020 17th November 2020
S/N: MT12183554	Spare	N/A

3 SEDIMENTATION RATE

CDE Consulting have been commissioned by Boskalis for the purpose of meeting the EIA requirement for monitoring sedimentation rate at selected reefs within the impact area of the Phase I - Gulhifalhu Port development Project (Dredging, Reclamation and Revetment works). Sedimentation rates are monitored at reefs that may potentially be affected by the dredging and reclamation works.

Sedimentation was monitored continuously during dredging and reclamation works. A daily average limit of 15 mg/cm^2/day, not exceeding 20% of the measurements, applies at the monitoring locations around the primary borrow area. During this reporting period, sediment traps were deployed between 05th September 2020 until 29th November 2020 on six fortnightly periods. Furthermore, there were no dredging operations during this monitoring period.

- Monitoring Period 8 (P8) – 05th until 20th September
- Monitoring Period 9 (P9) – 19th September until 04th October 2020
- Monitoring Period 10 (P10) – 03rd until 18th October
- Monitoring Period 11 (P11) – 17th October until 01st November 2020
- Monitoring Period 12 (P12) – 31st October until 15th November 2020
- Monitoring Period 13 (P13) – 14th – 29th November 2020

Furthermore, below were the major project activities during the monitoring period;

- Installation of permanent revetment on the reclaimed area.
- Sand slope, profiling works continue with assisting the revetment works
- Preparation of dry equipment for demobilization ongoing

3.1 METHOD

The same method for measuring sedimentation rate was applied as used for the baseline survey for the EIA [Ref. 10]. Sedimentation rate on the reef will are measured using sediment traps, which consisted of:

- Sediment traps, Figure 3-1 (constructed from 5 cm internal diameter PVC pipe, 11.5 cm long and sealed at one end, with baffles placed in the top of the pipe to prevent entry of fishes) (English, Wilkinson & Baker, 1997).
- Iron rods

The iron rods are hammered into the substratum, so that they are vertical and firmly secured. Three sediment traps are attached to the rod with cable tie. The base of the trap is 20 cm from the substratum, and the traps are tied to the rod in a way that rod does not protrude above the opening of the pipes.

The traps are left for a fourteen-day period and thereafter retrieved, weather permitting. The traps were sealed prior to removal from the rod, to prevent loss of any material. The samples are dried in oven (at 60°C) and weighed to the nearest milligram.

Figure 3-1: Sediment traps design.

Sedimentation rate is calculated as milligrams (mg) of sediment per cm^2 per day, using the following formula, where Sediment Weight is average dry weight of the sediment samples, and "r" is radius of the trap opening.

Sedimentation rate = ***(Sediment weight) / (Number of days × πr²)***

3.2 LOCATIONS

Sedimentation rate is measured at the locations indicated in Figure 3-2 as per the approved Environmental Monitoring Plan for the project. Three location categories are used:

- Yellow – To be monitored when reclamation works are being performed
- Pink – To be monitored when dredging is performed in the primary borrow area

Dredging operations were completed on 20th August 2020, and no project related works were ongoing near the sand borrow area during this monitoring period. Hence no sedimentation rate monitoring was carried out at sites near the sand borrow area during this period.

Table 2: Sedimentation measurement positions

TRAP ID	DESCRIPTION	LATITUDE	LONGITUDE	DEPTH (M)
T2	*Gulhifalhu (N)*	4.18785°	73.4684°	2.5
T4	*Gulhifalhu (NE)*	4.182291°	73.475565°	3
T6	*Gulhifalhu (SE)*	4.172121°	73.478178°	5
T7	*Gulhifalhu (SE)*	4.172238°	73.474390°	5
T8	*Gulhifalhu (S)*	4.17332°	73.467003°	5
T9	*Gulhifalhu (S)*	4.174529°	73.461196°	3.3
T10	*Gulhifalhu (SW)*	4.176124°	73.454658°	5
T11	*Villingili (NW)*	4.176084°	73.483121°	10
T19	*Feydhoo Finolhu*	4.211618°	73.481556°	3
T20	*Olhuhaa*	4.217497°	73.458640°	2.5
T21	*Bangau*	4.222450°	73.429949°	2.7
T22	*Kurumba*	4.226931°	73.517007°	2.5
T23	*Dhiyaneru*	4.231697°	73.471358°	2.5
T24	*Kandinmafalhu*	4.238414°	73.457170°	2.5

Note: according to the EIA, of the locations at Gulhifalhu south side (T6, T7, T8, T9 and T10), only two have to be monitored, based on the progress of works. Therefore, T6 and T7 have been monitored continuously, due to their proximity to the works. Additionally, during periods 4 - 13, T9 has been monitored for additional information.

Figure 3-2: Sedimentation measurement locations.

3.3 RESULTS

Table 3 shows the sedimentation measured for period 8 (P8) until period 13 (P13). No limit applies at Gulhifalhu and Villigili, as these sites are already heavily influenced by previous extensive reclamation works. Please note that background level of sedimentation already exceeded 15 mg/cm^2/day at the south of Gulhifalhu (Hans Hass Place) before any dredging and reclamation works took place. Additionally, considerations shall be made to account for naturally elevated sedimentation levels which may occur during storm events or bad weather.

- **Sedimentation rates recorded at monitoring sites in Gulhifalhu and Villingili**
  - **T-2** sedimentation rate over monitoring periods 8 to 13 ranges from 61.77 to 728.32 mg/cm^2/day. It is located on the northern side of Gulhifalhu where the perimeter bund seemed to suffer more erosion than along the eastern side. Heavy rainfall, thunderstorms and rough seas during this period in combination with the erosion of the sand bund around the reclaimed area and ongoing installation of revetment may have contributed to the high sedimentation rates at these sites;
  - **T-4** recorded its highest rate during period 8. The recorded rates throughout the remaining period significantly lower than Period 8 yet still above the trigger value (except for P11);
  - **T-6** sedimentation rate was below the trigger value, except Period 10 which showed 16.62 mg/cm^2/day;
  - **T-7** sedimentation rate was below the trigger value during Periods 9, 11 and 12, though Periods 8, 10 and 13 showed 44.74, 17.08 and 15.54 mg/cm^2/day respectively;
  - **T-9,** sedimentation rate was low all throughout the monitoring period ranging from 1.61 to 9.47 mg/cm^2/day rate;
  - **T-11** sedimentation rate was low all throughout the monitoring period ranging from 1.52 to 4.8 mg/cm^2/day rate.

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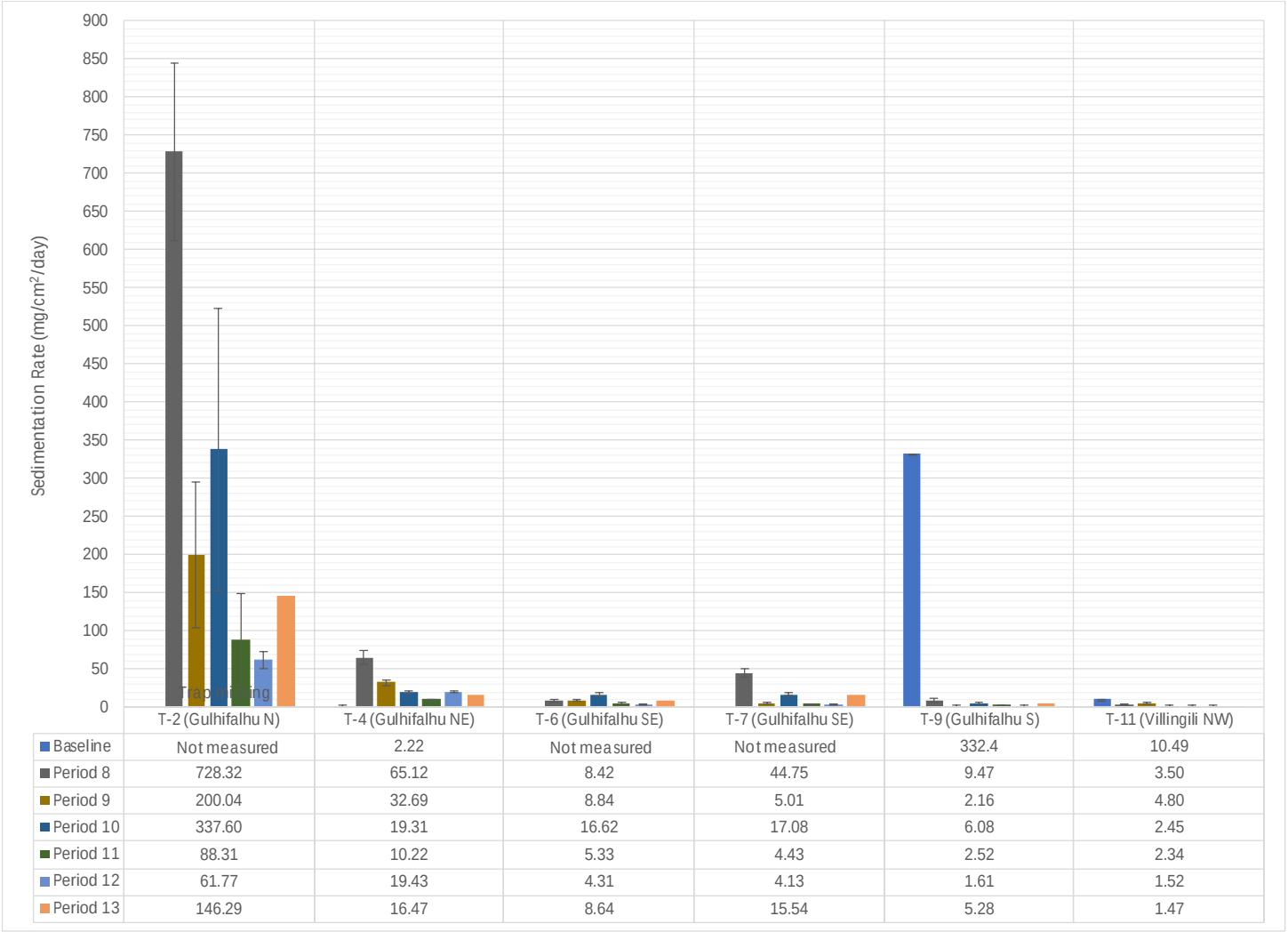
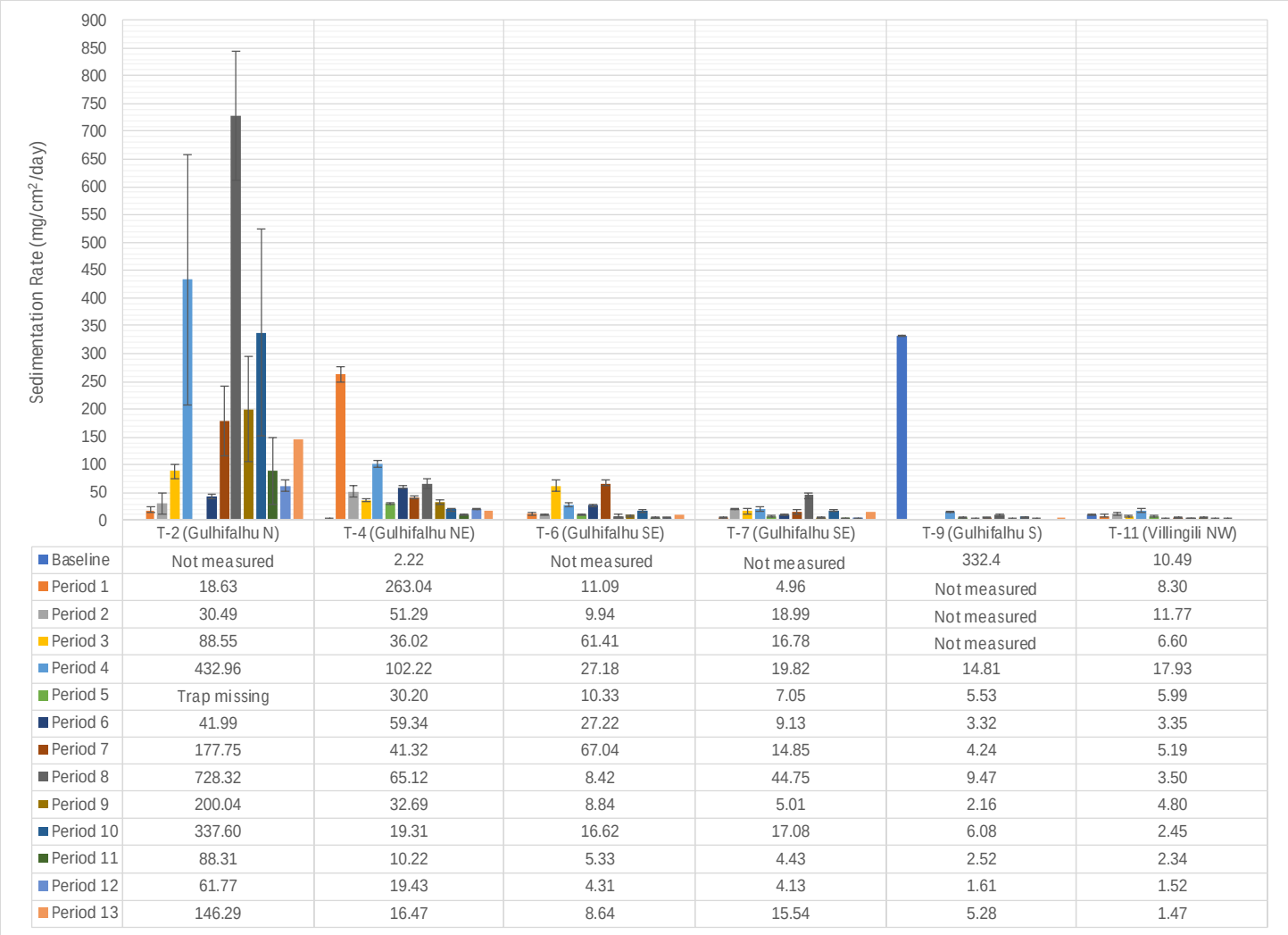
Table 3: Sedimentation rate and deployment overview

Trap ID	Description	Baseline Average (mg/cm2/day)	Period 8 (P8)			Period 9 (P9)			Period 10 (P10)			Period 11 (P11)			Period 12 (P12)			Period 13 (P13)		
			Deployment Dates	Rate (mg/cm2/day)	± SE	Deployment Dates	Rate (mg/cm2/day)	± SE	Deployment Dates	Rate (mg/cm2/day)	± SE	Deployment Dates	Rate (mg/cm2/day)	± SE	Deployment Dates	Rate (mg/cm2/day)	± SE	Deployment Dates	Rate (mg/cm2/day)	± SE
T2	Gulhifalhu (N)	not measured	05-20 Sept 2020	728.32	116.5	20 Sept - 04 Oct 2020	200.04	95.41	04-18 Oct 2020	337.6	186	18 Oct - 01Nov 2020	88.31	59.65	01-15 Nov 2020	61.77	10.43	15-29 Nov 2020	146.29	82.21
T4	Gulhifalhu (NE)	2.22	05-20 Sept 2020	65.11	9.01	20 Sept - 04 Oct 2020	32.69	3.39	04-18 Oct 2020	19.31	2.44	18 Oct - 01Nov 2020	10.22	0.50	01-15 Nov 2020	19.43	1.07	15-29 Nov 2020	16.47	1.29
T6	Gulhifalhu (SE)	not measured	07-19 Sept 2020	8.42	2.15	19 Sept - 03 Oct 2020	8.84	0.48	03-17 Oct 2020	16.62	2.14	17-31Oct 2020	5.32	0.51	31Oct - 14 Nov 2020	4.31	0.64	14-28 Nov 2020	8.64	0.66
T7	Gulhifalhu (SE)	not measured	05-19 Sept 2020	44.74	5.27	19 Sept - 03 Oct 2020	5.01	0.94	03-17 Oct 2020	17.08	2.04	17-31Oct 2020	4.43	0.17	31Oct - 14 Nov 2020	4.13	0.32	14-28 Nov 2020	15.54	4.81
T9	Gulhifalhu (S)	332.4	05-19 Sept 2020	9.47	2.72	19 Sept - 03 Oct 2020	2.16	0.31	03-17 Oct 2020	6.08	0.85	17-31Oct 2020	2.52	0.38	31Oct - 14 Nov 2020	1.61	0.05	14-28 Nov 2020	5.28	2.15
T11	Villingili (NW)	10.49	07-20 Sept 2020	3.5	0.77	20 Sept - 04 Oct 2020	4.8	0.82	04-18 Oct 2020	2.45	0.59	18 Oct - 01Nov 2020	2.34	0.75	01-15 Nov 2020	1.52	0.30	15-29 Nov 2020	1.47	0.19



	T-2 (Gulhifalhu N)	T-4 (Gulhifalhu NE)	T-6 (Gulhifalhu SE)	T-7 (Gulhifalhu SE)	T-9 (Gulhifalhu S)	T-11 (Villingili NW)
Baseline	Not measured	2.22	Not measured	Not measured	332.4	10.49
Period 8	728.32	65.12	8.42	44.75	9.47	3.50
Period 9	200.04	32.69	8.84	5.01	2.16	4.80
Period 10	337.60	19.31	16.62	17.08	6.08	2.45
Period 11	88.31	10.22	5.33	4.43	2.52	2.34
Period 12	61.77	19.43	4.31	4.13	1.61	1.52
Period 13	146.29	16.47	8.64	15.54	5.28	1.47

Figure 3-3: Comparison of average sedimentation rates recorded at monitoring sites in Gulhifalhu and Villingili: Baseline, Period 8 - Period 13.



	T-2 (Gulhifalhu N)	T-4 (Gulhifalhu NE)	T-6 (Gulhifalhu SE)	T-7 (Gulhifalhu SE)	T-9 (Gulhifalhu S)	T-11 (Villingili NW)
Baseline	Not measured	2.22	Not measured	Not measured	332.4	10.49
Period 1	18.63	263.04	11.09	4.96	Not measured	8.30
Period 2	30.49	51.29	9.94	18.99	Not measured	11.77
Period 3	88.55	36.02	61.41	16.78	Not measured	6.60
Period 4	432.96	102.22	27.18	19.82	14.81	17.93
Period 5	Trap missing	30.20	10.33	7.05	5.53	5.99
Period 6	41.99	59.34	27.22	9.13	3.32	3.35
Period 7	177.75	41.32	67.04	14.85	4.24	5.19
Period 8	728.32	65.12	8.42	44.75	9.47	3.50
Period 9	200.04	32.69	8.84	5.01	2.16	4.80
Period 10	337.60	19.31	16.62	17.08	6.08	2.45
Period 11	88.31	10.22	5.33	4.43	2.52	2.34
Period 12	61.77	19.43	4.31	4.13	1.61	1.52
Period 13	146.29	16.47	8.64	15.54	5.28	1.47

Figure 3-4: Comparison of average sedimentation rates recorded at monitoring sites in Gulhifalhu and Villingili: Baseline - Period 13.

Tidal currents are unique among the processes responsible for sediment transport and deposition because of their regularity, with the speed and direction varying with the frequency of the governing astronomical period. Figure 3-5 shows the tidal cycle in the project area during Period 8 to Period 13 deployment of sedimentation traps.

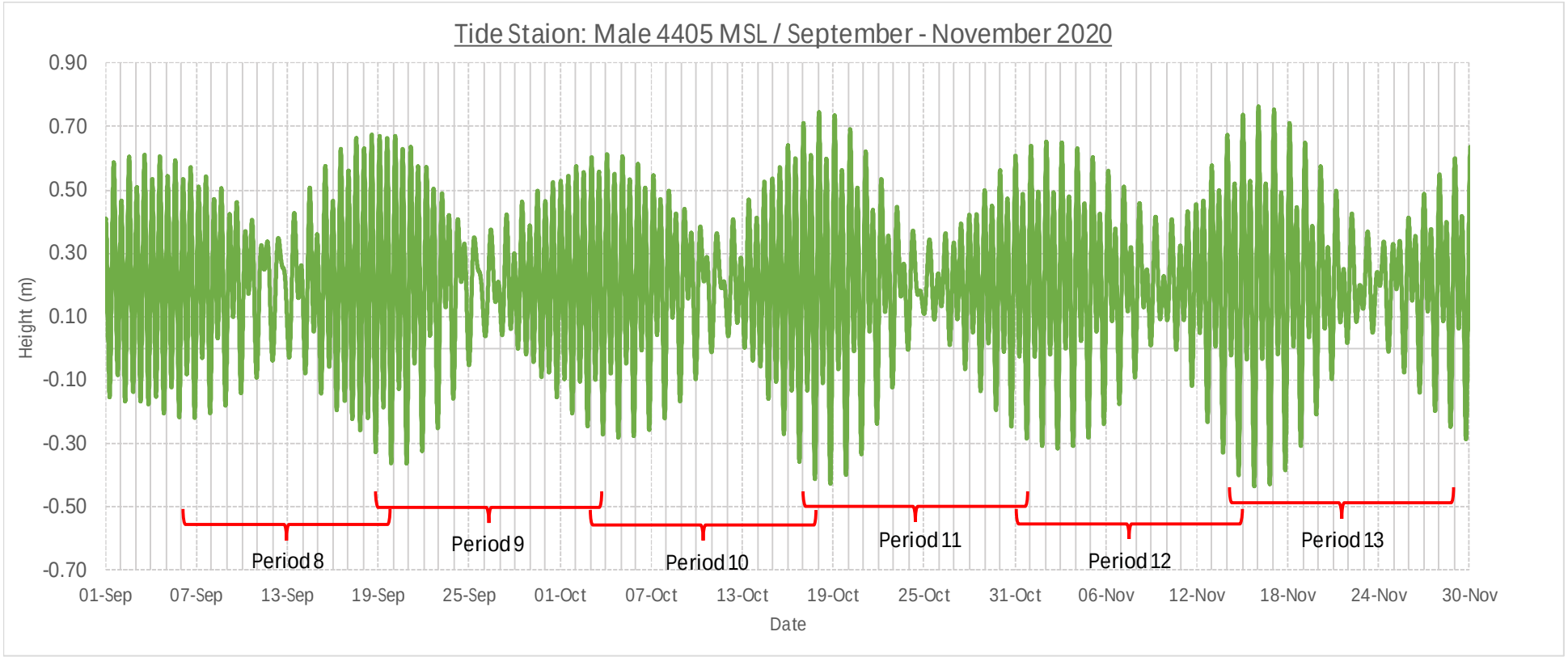


Figure 3-5: Male Tide graph: September - November 2020.

4 CORAL REEF HEALTH

CDE Consulting have been commissioned by Boskalis for the purpose of meeting EPA requirement for monitoring coral reef health at selected reefs within the impact area of the Phase I - Gulhifalhu Port development Project (Dredging, Reclamation and Revetment works). The same methodology as used for the baseline study in the EIA are applied.

The first baseline assessment of reefs near the project area was carried out between December 2019 – March 2020. A second baseline survey, of the locations that require monitoring during construction, was carried out from May – June 2020 just before the start of dredging and reclamation works with TSHD Fairway, to determine whether bleaching had taken place during the months of April – June, prior to commencement of construction.

Survey has been performed in late August 2020 followed by a survey in November 2020 as the EIA requires 4-monthly coral reef health surveys during construction.

4.1 METHOD

Two aspects are measured to determine coral reef health:
- Percent of live coral cover; and
- Fish species abundance and composition

- *Photo Quadrat Survey*
  At the survey site a 50 m transect line was deployed parallel to the reef at a constant depth. The composition of the benthic substrate along the transect was assessed by taking ten high-resolution images every 5 m (pictures covering 0.5 m2 of the seabed) along the transect. These were later analysed using CPCe. CPCe, or Coral Point Count with excel extension, developed by the National Coral Reef Institute, is software designed to determine coral community coverage and diversity using transect photographs. Underwater photographic frames are overlaid by a matrix of randomly generated points, and the fauna/flora of species or substrate type lying beneath each point is identified. 25 random points per picture were analysed to characterize the substrate composition (sample size: 250 points per transect).
- *Fish Census*
  A category-based methodology will be adopted to estimate fish abundance and the mean number of fish per category and observation will be extracted to estimate species and family abundance. The categories used to estimate abundance are displayed in Table 4.

Table 4: Fish Abundance categories

CATEGORY	NUMBER OF FISH
1	1
2	2-4
3	5-16
4	17-64
5	65-256

- *Visual Snorkelling Survey*
  Visual snorkelling surveys were carried out at select locations of the lagoon and reef of Gulhifalhu. General status of the site was recorded, special attention was given to types of corals and fishes present at these sites and the environmental conditions that could affect growth such as suspended solids, depth, and other threats to coral life.

4.2 LOCATIONS

Coral reef monitoring at selected sites commenced in May 2020. Since then, monitoring have been carried out thrice in reclamation site and twice in near the dredging area. As dredging operations were completed on 20th August 2020, monitoring at the sites near the dredging area was discontinued after the second round. Table 5 provides a summary of coral reef monitoring periods. GPS coordinates, depth of the coral reef survey site and survey timeline dates are provided in Table 6.

Table 5: Coral reef monitoring periods.

Monitoring Round		Period
Reclamation Site	**Dredging Site**	
Baseline	Baseline	23rd Dec 2019 – 05th Mar 2020
1 – Second baseline	1 – Second baseline	17th May 2020 – 09th June 2020
2	2	11th Aug 2020 – 28th Aug 2020
3	-	19th Nov 2020 – 22nd Nov 2020

* Second Baseline survey in the reclamation area

Table 6: Coral reef assessment sites and dates

Description	Coordinates		Baseline	Round 1*	Round 2	Round 3
	Latitude	Longitude	Survey Date	Survey Date	Survey Date	Survey Date
T-1 (3 m) - Gulhifalhu	4.187276°°	73.463960°	24-Dec-19			
T-1 (10 m) - Gulhifalhu	4.187276°°	73.463960°	24-Dec-19			
T-2 (5 m) - Gulhifalhu	4.187850°	73.468400°	24-Dec-19	24-May-20	August 2020	Nov 2020
T-3 (3 m) - Gulhifalhu	4.186494°	73.471825°	24-Dec-19			
T-4 (3 m) - Gulhifalhu	4.182291°	73.475565°	23-Dec-19	24-May-20	August 2020	Nov 2020
T-4 (10 m) - Gulhifalhu	4.182291°	73.475565°	24-Dec-19	24-May-20	August 2020	Nov 2020
T-5 (2 m) - Gulhifalhu	4.178903°	73.477620°	25-Dec-19			
T-6 (3.3 m) - Gulhifalhu	4.172121°	73.478178°	25-Dec-19	24-May-20	August 2020	Nov 2020
T-7 (3.5 m) - Gulhifalhu	4.172238°	73.474390°	25-Dec-19			
T-8 (5 m) - Gulhifalhu	4.173332°	73.467003°	28-Dec-19	23-May-20	August 2020	
T-8 (10 m) - Gulhifalhu	4.173332°	73.467003°	25-Dec-19	23-May-20	August 2020	Nov 2020
T-9 (3.3 m) - Gulhifalhu	4.174529°	73.461196°	25-Dec-19	17-May-20	August 2020	Nov 2020
T-9 (10m) - Gulhifalhu	4.174529°	73.461196°	28-Dec-19	17-May-20	August 2020	Nov 2020
T-10 (5 m) - Gulhifalhu	4.176124°	73.454658°	23-Dec-19	23-May-20	August 2020	Nov 2020
T-10 (10 m) - Gulhifalhu	4.176124°	73.454658°	23-Dec-19	23-May-20	August 2020	Nov 2020
T-11 (2 m) - Villingili	4.176084°	73.483121°	05-Jan-20	25-May-20	August 2020	Nov 2020
T-11 (10 m) – Villingili	4.176084°	73.483121°	05-Jan-20	25-May-20	August 2020	Nov 2020
T-12 (2.2 m) – Bodugiri	4.191207°	73.451788°	01-Jan-20	25-May-20	August 2020	
T-13 (2.9 m) - Thilafushi	4.181241°	73.425965°	01-Jan-20	17-May-20	August 2020	
T-13 (10 m) - Thilafushi	4.181241°	73.425965°	01-Jan-20	17-May-20	August 2020	
T-14 (3 m) - Centara Ras Fushi Resort & Spa	4.203525°	73.409940°	28-Dec-19	23-May-20	August 2020	
T-14 (10 m) - Centara Ras Fushi Resort &	4.203525°	73.409940°	28-Dec-19	23-May-20	August 2020	
T-15 (10 m) - Giraavaru Kuda Haa	4.216613°	73.415926°	31-Dec-19	20-May-20	August 2020	
T-16 (4 m) - Uthuru Thila Falhu	4.221044°	73.399886°	04-Mar-20			
T-17 (2.5 m) - Kohdhipparu Finolhu	4.249320°	73.379084°	05-Jan-20			
T-17 (10 m) - Kohdhipparu Finolhu	4.249320°	73.379084°	05-Jan-20			
T-18 (1.8 m) - Grand Park Kohdhipparu	4.260131°	73.381624°	13-Jan-20			
T-18 (10 m) - Grand Park Kohdhipparu	4.260131°	73.381624°	13-Jan-20			
T-19 (3 m) - Feydhoo Finolhu	4.211618°	73.481556°	04-Mar-20	26-May-20	August 2020	
T-19 (10 m) - Feydhoo Finolhu	4.211618°	73.481556°	04-Mar-20	26-May-20	August 2020	
T-20 (2.5 m) - Olhuhali	4.217497°	73.458640°	31-Dec-19	9-June-20	August 2020	
T-20 (10 m) - Olhuhali	4.217497°	73.458640°	31-Dec-19	9-June-20	August 2020	
T-21 (2.5 m) - Bangau	4.222450°	73.429949°	31-Dec-19	1-Jun-20	August 2020	
T-22 (2.5 m) - Kurumba Maldives	4.226931°	73.517007°	06-Jan-20	22-May-20	August 2020	
T-22 (10 m) - Kurumba Maldives	4.226931°	73.517007°	06-Jan-20	22-May-20	August 2020	
T-23 (3.5 m) - Reef (4.231697°, 73.471358°)	4.231697°	73.471358°	31-Dec-19	1-Jun-20	August 2020	
T-24 (3 m) - Reef (4.238414°, 73.457170°)	4.238414°	73.457170°	31-Dec-19	1-Jun-20	August 2020	
T-25 (3.5 m) - Papaya Reef	4.253588°	73.430684°	31-Dec-19			
T-26 (2 m) – Reef	4.284787°	73.398538°	05-Jan-20			
T-27 (1.5 m) - Baros Maldives	4.281752°	73.426863°	05-Jan-20			
T-27 (10 m) - Baros Maldives	4.281752°	73.426863°	05-Jan-20			
T-28 (3 m) - Banana Reef	4.239304°	73.531229°	01-Jan-20	3-Jun-20	August 2020	
T-28 (10 m) - Banana Reef	4.239304°	73.531229°	01-Jan-20	3-Jun-20	August 2020	
T-29 - Sheraton Full moon Resort & Spa	4.245960°	73.542605°	No Permit			
T-30 (5 m) - Maagiri	4.262919°	73.532168°	1-Jan-20			
T-30 (10 m) - Maagiri	4.262919°	73.532168°	1-Jan-20			
T-31 (1.5 m) - Malahini Kuda Bandos	4.264967°	73.499112°	6-Jan-20			
T-32 (2.7 m) - Bandos Island Resort	4.271971°	73.493860°	2-Feb-20			
T-32 (10 m) - Bandos Island Resort	4.271971°	73.493860°	2-Feb-20			
T-33 (11.5 m) - Lankan Thila	4.280606°	73.533565°	6-Jan-20			
T-34 (2 m) - Gili Lankanfushi Maldives	4.294634°	73.552659°	7-Jan-20			
T-34 (10 m) - Gili Lankanfushi Maldives	4.294634°	73.552659°	7-Jan-20			
T-35 (9 m) - Okobe Thila	4.296084°	73.511775°	6-Jan-20			
T-36 (2.5 m) - Thulhagiri Island Resort	4.307995°	73.488226°	13-Jan-20			
T-36 (10 m) - Thulhagiri Island Resort	4.307995°	73.488226°	13-Jan-20			

* 2nd Baseline survey in the reclamation area

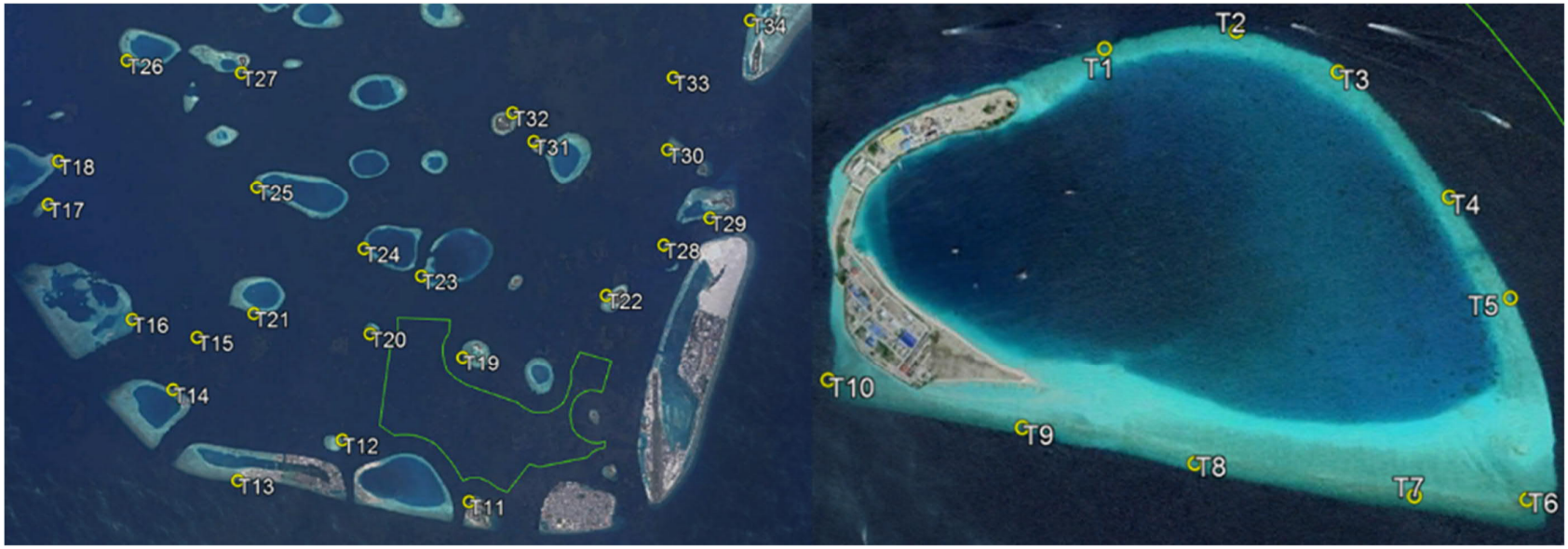


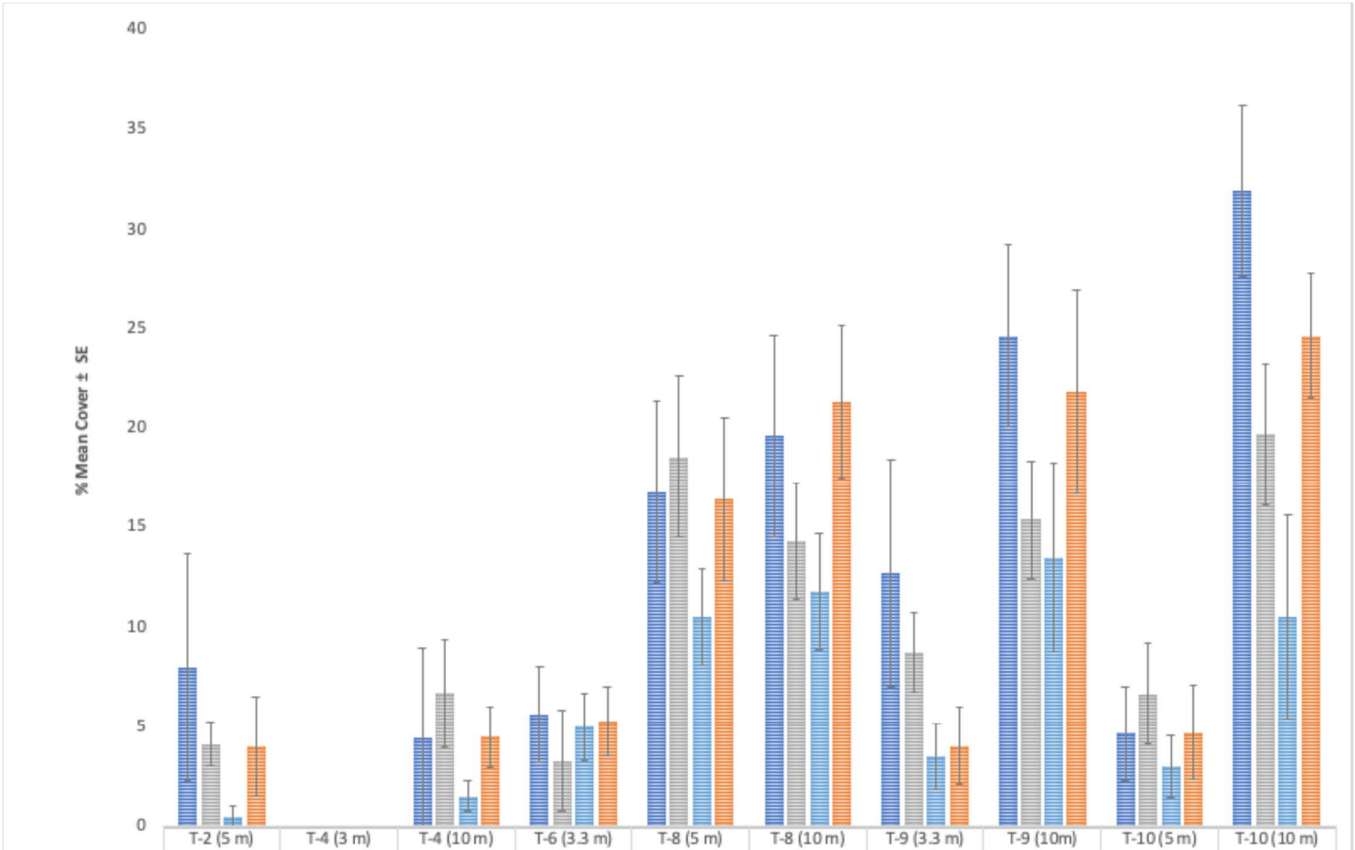
Figure 4-1: Coral reef health monitoring locations.

4.3 RESULTS

November 2020 surveys showed clearing of sediment cover and coral rubble and a higher live coral coverage at T-8, T-9 and T-10. Summary of coral cover and fish survey at reefs near reclamation area during the reporting period is presented in Table 7, **Error! Reference source not found.**Figure 4-2 and **Error! Reference source not found.**.

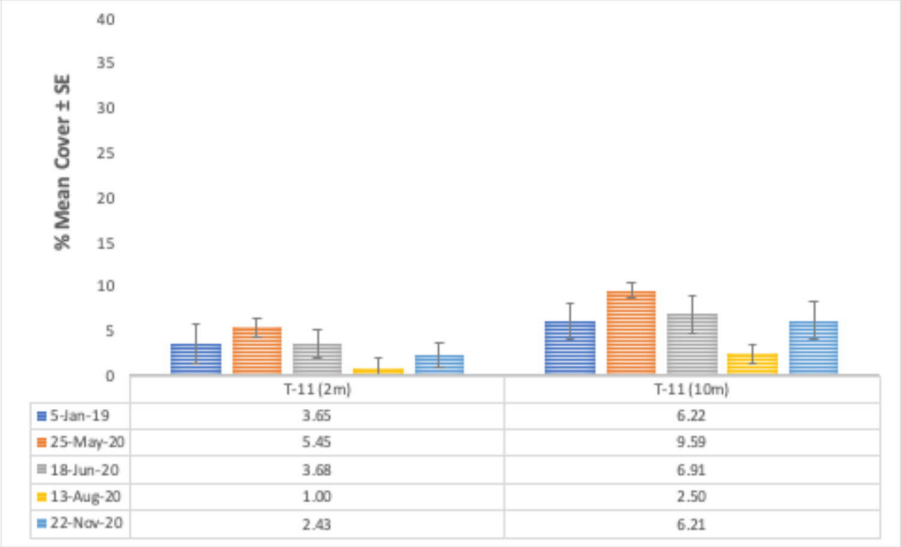
Table 7: November 2020 Overview of coral cover and fish survey at reefs near reclamation area

Survey Site		Depth	Live Coral Cover		Fish		Remarks
Transect	Description	(m)	%	±SE	Species Richness	Fish per m^2	
T-2	Gulhifalhu N	5	4.02	2.47	27	3.84	November 2020 coral coverage survey is higher compared to August 2020 survey (0.5%±0.5E)
T-4	Gulhifalhu NE	3	0	0	17	0.68	No coral was recorded during baseline and monitoring surveys.
T-4	Gulhifalhu NE	10	4.5	1.51	40	3.75	November 2020 coral coverage survey is higher compared to August 2020 survey (1.5%±0.76SE)
T-6	Gulhifalhu SE	3.3	5.26	1.73	27	1.67	No significant change in coral coverage compared to the baseline and monitoring surveys
T-8	Gulhifalhu S	5	16.45	4.09	29	5.57	November 2020 coral coverage survey is higher compared to August 2020 survey (10.5%±2.41SE)
T-8	Gulhifalhu S	10	21.32	3.81	31	4.51	November 2020 coral coverage survey show signs of recovery compared to August 2020 survey (11.78%±2.93SE).
T-9	Gulhifalhu S	3.3	4.03	1.94	46	1.38	November 2020 coral coverage survey was observed to have slightly increased compared to August 2020 survey (3.5%±1.67)
T-9	Gulhifalhu S	10	21.86	5.1	39	2.17	November 2020 coral coverage survey shows an increase in coral cover. Coral recruits and encrusting corallite was observed along the transect line during this period.
T-10	Gulhifalhu SW	5	4.73	2.4	28	3.93	Consecutive monitoring carried out in May 2020, August 2020 and recent monitoring shows no significant changes to coral coverage
T-10	Gulhifalhu SW	10	24.65	3.09	41	2.2	November 2020 coral coverage survey shows an increase in overall coral coverage, likely be due to clearing of coral rubble along the transect area.
T-11	Villingili	2	2.43	1.38	36	2.04	Coral cover at this depth was very low. No significant change in coral coverage compared to the baseline survey.
T-11	Villingili	10	6.21	2.11	42	2.57	No significant change in coral coverage compared to the baseline survey.



	T-2 (5 m)	T-4 (3 m)	T-4 (10 m)	T-6 (3.3 m)	T-8 (5 m)	T-8 (10 m)	T-9 (3.3 m)	T-9 (10m)	T-10 (5 m)	T-10 (10 m)
Dec 19-Mar 20	8.00	0.00	4.40	5.62	16.80	19.60	12.73	24.62	4.67	31.92
May-Jun 20	4.13	0.00	6.69	3.27	18.56	14.33	8.73	15.38	6.65	19.71
Aug-20	0.50	0.00	1.50	5.00	10.50	11.78	3.50	13.50	3.00	10.50
Nov-20	4.02	0.00	4.50	5.26	16.45	21.32	4.03	21.86	4.73	24.65

Figure 4-2: Comparison of percentage mean coral cover along the transects at Gulhifalhu Reef during the two baseline and two during-construction monitoring surveys.



	T-11 (2m)	T-11 (10m)
5-Jan-19	3.65	6.22
25-May-20	5.45	9.59
18-Jun-20	3.68	6.91
13-Aug-20	1.00	2.50
22-Nov-20	2.43	6.21

Figure 4-3: Comparison of percentage mean live coral cover at Villingili reef during the baseline and monitoring surveys.

5 NOISE MONITORING

CDE Consulting have been commissioned by Boskalis for the purpose of meeting EPA requirement for monitoring noise for the Phase I - Gulhifalhu Port development Project (Dredging, Reclamation and Revetment works). Measurements are required at Villingili on a monthly basis during revetment works on the eastern side of Gulhifalhu.

The baseline noise levels at Villingili were measured on 27th – 28th May 2020. Table 4.1 provides the major project activities that were ongoing during the baseline surveys and subsequent monitoring rounds.

Table 8: Major Project activities ongoing during monitoring periods

Monitoring Period	Date	Project activities
Baseline	27th -28th May 2020	Preparation
Period 1	15th November 2020	Revetment works

5.1 METHOD

- **Equipment**

Ambient noise level was measured using Handheld Center 322 Type II Noise Level Meter at the sites prescribed in the Environmental Monitoring Plan for the construction phase of the project.

- **Procedure**

At each monitoring site 40 noise readings were recorded for periods of 5 minutes during day (07:00 AM – 19:00 PM) and night hours (19:00 PM – 07:00 AM).

These readings were used to determine L_{max}, and L_{min}. L_{eq} of these readings was calculated using the following formula

$$L_{eq} = 10\,Log_{10}[\frac{10^{\frac{SPL(1)}{10}} + 10^{\frac{SPL(2)}{10}} + \cdots 10^{\frac{SPL(n)}{10}}}{N}]$$

5.2 LOCATIONS

Noise monitoring is required at three locations on Villingili in the approved Environmental Monitoring Plan for the project. GPS coordinates of these sites are provided in Table 9, and location map is provided in Figure 5-1.

Table 9: GPS coordinates of noise monitoring sites

Location ID	Description	GPS Coordinates	
		Latitude	Longitude
N1	Villingili - Water Sports Beach	4.174115	73.483228
N2	Villingili - Masjid Al-Ikhlaas (mosque)	4.174210	73.482785
N3	Villingili - Football pitch	4.175163	73.483419

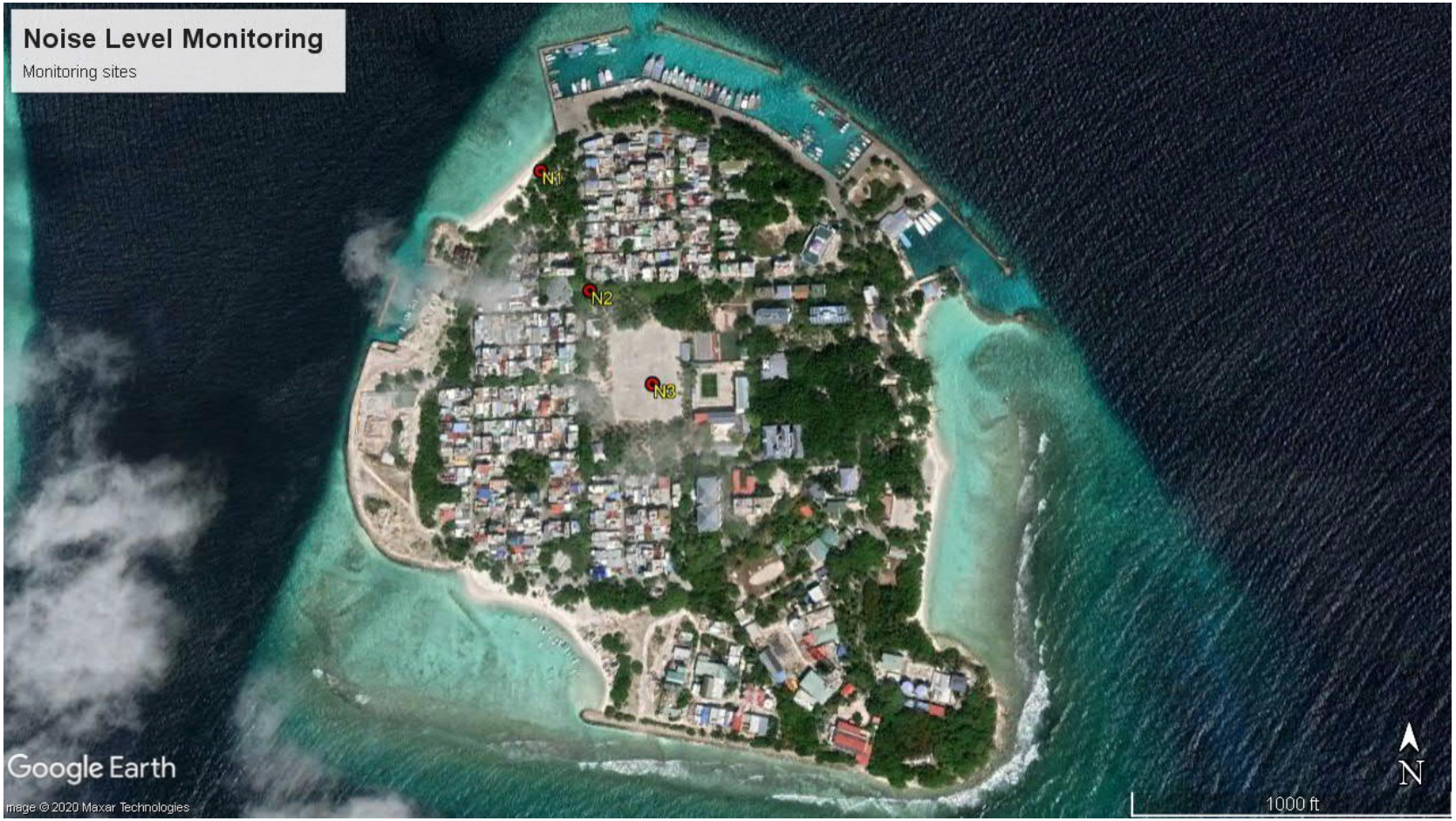


Figure 5-1: Noise monitoring sites N1 to N3 in Villingili.

5.3 RESULTS

There are no national noise standards or guidelines against which noise levels can be compared. Hence only a comparison is made against the baseline readings recorded in May 2020. No large changes in noise levels were observed between the baseline and monitoring measurements in November 2020 at N-1 and N-3. Noise levels measured at N-2 in November 2020 was slightly higher than the baseline. All the noise measurements recorded in November 2020 are provided in Table 10.

Table 10: Noise readings recorded on 15th November 2020 at locations N- 1, N-2 and N-3

	N-1		N-2		N-3	
Reading	Noise Level (dBA)		Noise Level (dBA)		Noise Level (dBA)	
	Day	Night	Day	Night	Day	Night
1	63.4	64.6	57.6	55.1	60.5	50.1
2	63.8	64.2	56.8	54.1	60.1	50.4
3	64.5	63.1	56.9	55.3	59.1	50
4	64.2	66.7	57.8	55.8	55.7	49.1
5	63.1	65.5	54.2	57.1	55.1	51.8
6	63.2	68.1	59	56.1	53.4	53.7
7	58.9	63.1	61.4	58.2	55.2	56.6
8	58.9	60.1	61.3	55.3	56.7	56.3
9	58.9	58.4	62.6	55.4	56.8	52
10	62.1	58.9	65.4	62.1	55.6	49.6
11	64.8	57.6	68.8	56.7	54.3	50.1
12	67.8	59.7	70.1	61.9	53.2	48.6
13	65.2	58.3	66.7	68.7	58.9	52.1
14	65.4	59.3	69	71.4	59.1	52.1
15	68.1	59.2	64.2	69.1	60.1	51.3
16	70.9	58.3	73.1	68.7	58.6	53
17	72.1	60.7	70.2	66	58.3	54.1
18	72	60.4	71.2	66	55.3	55.9
19	71.3	61.8	65.4	65.1	53.7	51.3
20	68.9	65.5	57.6	57.1	53.6	51.7
21	64.1	64.2	55.2	55.1	54.7	50
22	64.4	69.8	54	54.5	56.7	49.6
23	67.6	67.4	58.6	58.3	56	49.3
24	68.9	69	56.9	57.5	56.2	48.3
25	65.6	71.3	57	55	56.8	48.9
26	66.2	68	58.1	59.2	55.1	48.6
27	63.6	73.1	60.1	58.2	56.3	48.9
28	69.9	72	72.3	54.9	53.8	49.2
29	72.1	68.8	71	57.1	55	51.3
30	70	67.4	67.7	64.3	58	51
31	65.4	62.3	58.1	64.8	56.3	50.7
32	62.2	60.8	63.2	59	57.5	49.7
33	59.1	67	54	63.6	57.3	50.2
34	59.1	62.2	55.1	63.1	54.8	50.3
35	54.8	58.8	54.2	57.6	58	48.9
36	56.6	58	54.7	57.3	59.9	48.7
37	57.1	58.1	55.9	55.1	62.1	50.3
38	59	57.8	56.8	56.2	62.4	51
39	60.9	58.9	57.5	55.1	61	52.1
40	59.2	57.6	56.5	54.8	62.7	53.4
LMin	54.8	57.6	54	54.1	53.2	48.3
Leq	66.58	65.65	73.1	71.4	62.7	56.6
LMax	72.1	73.1	65.3	62.6	57.91	51.6

5.3.1 N1 (Villingili - Watersports Beach)

This is located on the north western side of Villingili and is the closest location of Villingili to the ongoing works at Gulhifalhu.

Table 11: Summary of noise readings at N-1

Monitoring Period	Noise Level (dBA)					
	Day Time			Nighttime		
	L_{min}	L_{eq}	L_{max}	L_{min}	L_{eq}	L_{max}
Baseline (May 2020)	58.6	65.7	70.2	59.9	65.8	70.7
Round 1 (Nov 2020)	54.8	66.58	72.1	57.6	65.65	73.1

5.3.2 N2 (Villingili - Masjid Al-Ikhlaas)

This is nearest to the mosque on the north western side of Villingili. Increase in noise levels may be attributed to Golf-Cart style buggy car that is operated near this area.

Table 12: Summary of noise readings at N-2

Monitoring Period	Noise Level (dBA)					
	Day Time			Nighttime		
	L_{min}	L_{eq}	L_{max}	L_{min}	L_{eq}	L_{max}
Baseline (May 2020)	54.3	59.0	65.6	54.5	56.9	60.6
Round 1 (Nov 2020)	54.0	65.36	73.1	54.1	62.64	71.4

5.3.3 N3 (Villingili - Football Pitch)

The football pitch is located in a central location of Villingili and is the furthest monitoring location to the project activities.

Table 13: Summary of noise readings at N-3

Monitoring Period	Noise Level (dBA)					
	Day Time			Nighttime		
	L_{min}	L_{eq}	L_{max}	L_{min}	L_{eq}	L_{max}
Baseline (May 2020)	51.8	55.4	58.2	49.3	51.1	53.3
Round 1 (Nov 2020)	53.2	57.91	62.7	48.3	51.6	56.6

6 EROSION AND COASTAL CHANGES

CDE Consulting have been commissioned by Boskalis to conduct beach profile surveys and mapping of shorelines for the Phase I - Gulhifalhu Port development Project (Dredging, Reclamation and Revetment works). This section provides the results of the coastal assessment of Villingili (Vilimalé) in November of 2020 in comparison with the baseline assessment which was carried out in May 2020 and coastal assessment conducted in August 2020.

6.1 METHOD

The coastal changes are assessed using shoreline surveys and by measuring the beach profile at pre-defined locations.

- Shoreline Surveys - Shorelines were mapped using geo-referenced, high-resolution ortho-image created using aerial images taken with Unmanned Aerial Vehicle (UAV). The flight altitude was between 150 - 220 meters. Shoreline surveys are aimed at identifying recession of the low and high tide lines which may be caused by scouring and erosion.
- Beach Profiling - Beach profiles were measured using an automatic level. Beach profiles help to calculate the degree of erosion at the measured site and provides an estimate for any olumetric loss of beach sand from the cell. Beach profiles also capture any offshore transport sediment within the beach cell. The locations had been marked using landscape features during the baseline surveys.

6.2 LOCATIONS

Beach profile monitoring is required at 9 locations (Table 3-1) of Villingili in the approved Environmental Monitoring Plan for the project. These locations are shown in Figure 6-1. The assessment contains the results of beach profile surveys and the mapping of shorelines on the island of Villingili, in order to monitor coastal changes compared to the baseline conditions of 27th May 2020.

Table 14: GPS coordinates of Beach Profile locations

Beach Profile ID	Island	GPS Coordinate	
		X	Y
BP16	Villigili	461162.2	331799.5
BP17	Villigili	461232.1	331771.6
BP18	Villigili	461266.2	331687.3
BP19	Villigili	461542.7	331599.6
BP20	Villigili	461646.9	331654.6
BP21	Villigili	461699.8	331712.8
BP22	Villigili	461514.4	332104.6
BP23	Villigili	461383.4	332112.5
BP24	Villigili	461254.4	332099.9

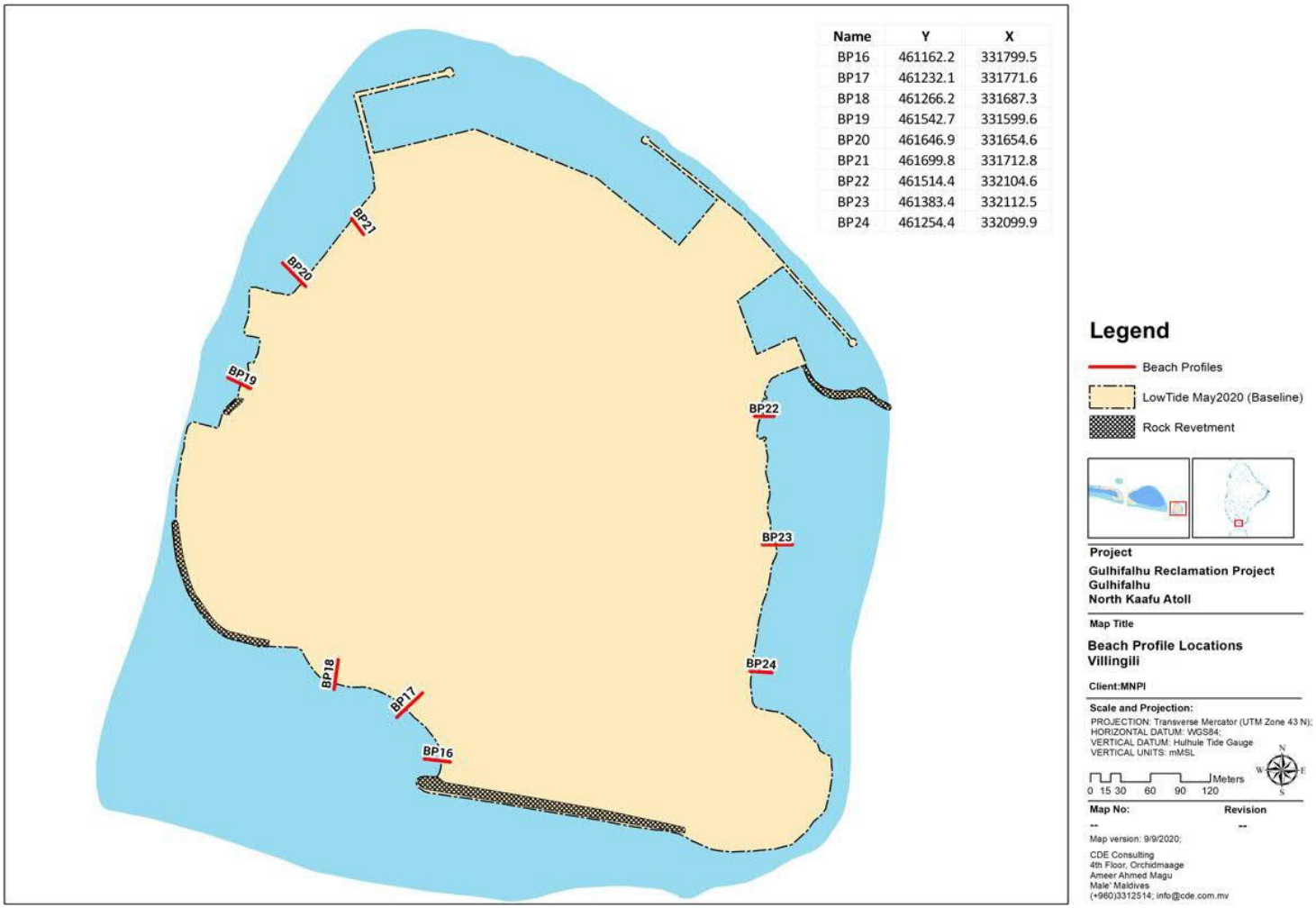


Figure 6-1: Villingili, North Kaafu Beach Profile Locations.

6.3 RESULTS

6.3.1 Shorelines

Description of Villingili shoreline is shown in Figure 6-2.

From the surveys carried out it can be seen that there have not been any drastic changes to the shorelines of Villingili between May 2020, August 2020 and November 2020.

The rate of sediment drift across the South Beach seems to have significantly stabilized compared to the changes observed between May 2020 and August 2020.

High-tide line has moved seawards at the northern end of the North-West Beach. This does not necessarily indicate accretion but the beach acquiring a smoother seaward slope.

No changes in shorelines were observed at the East Beach and West Beach. The shoreline map has been provided in Figure 6-3.

6.3.2 Beach Profiles

The comparison of beach profiles between the baseline survey of May 2020, August 2020 and the recent survey of November 2020 are shown in Figure 6-4 to Figure 6-12.

Little to no changes were observed in the profiles P22, P23 and P24 taken on the East Beach. However, the slope of the beach seems to become less steep, attributable to the absence of high-energy north-eastern wind waves during this period.

None of the three profiles at South Beach show great change but sediment seems to have continued their east-ward drift a considerably lowered rate. This is expected to stop eventually before the north-eastern monsoon, before transport within the beach cell reverses direction.

No changes were observed at P19, located at the West Beach. Despite facing west, absence of changes in shorelines and beach profile may be due to the lack of fine sand, which is more susceptible to drift.

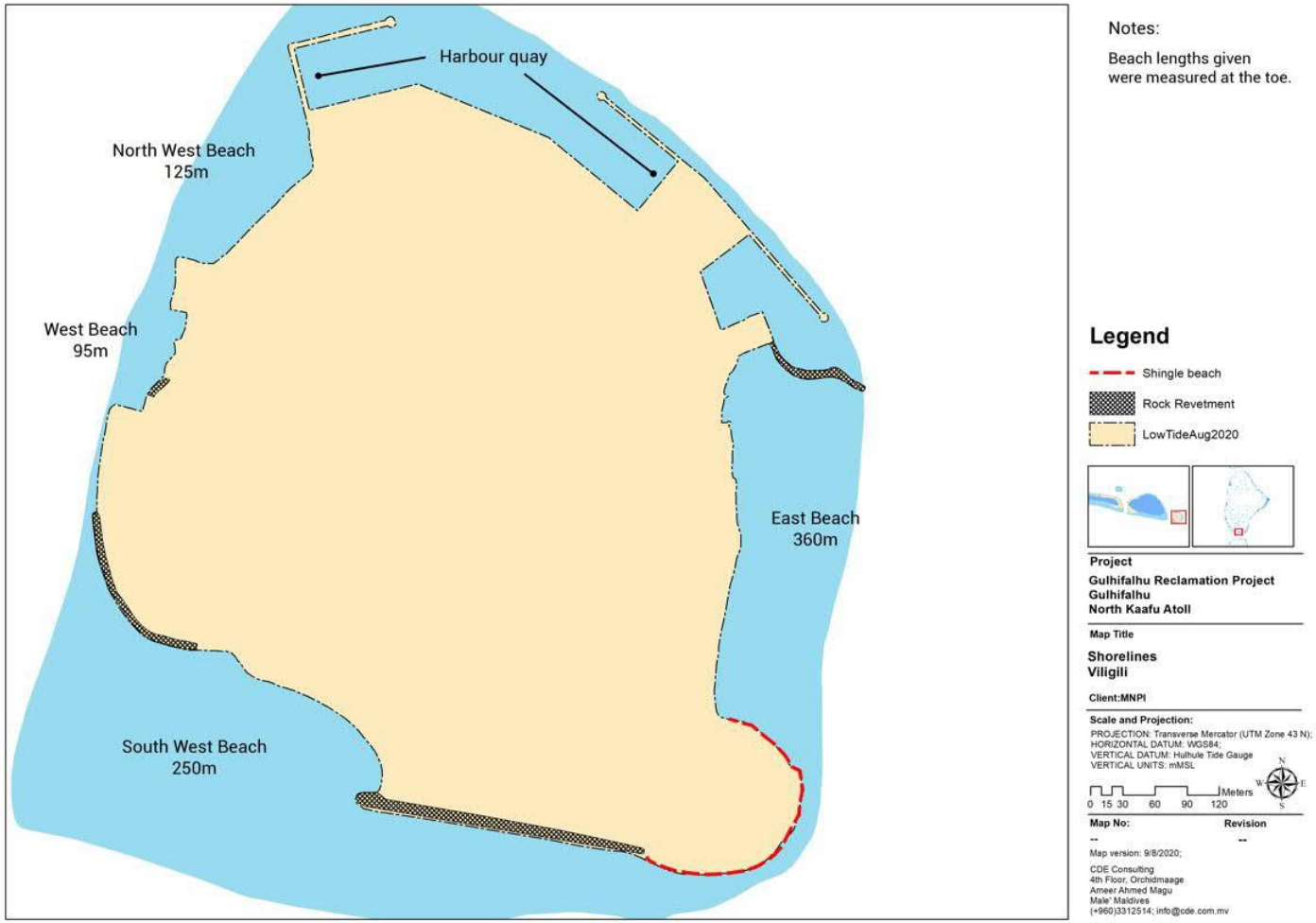


Figure 6-2: Description of Villingili shorelines.

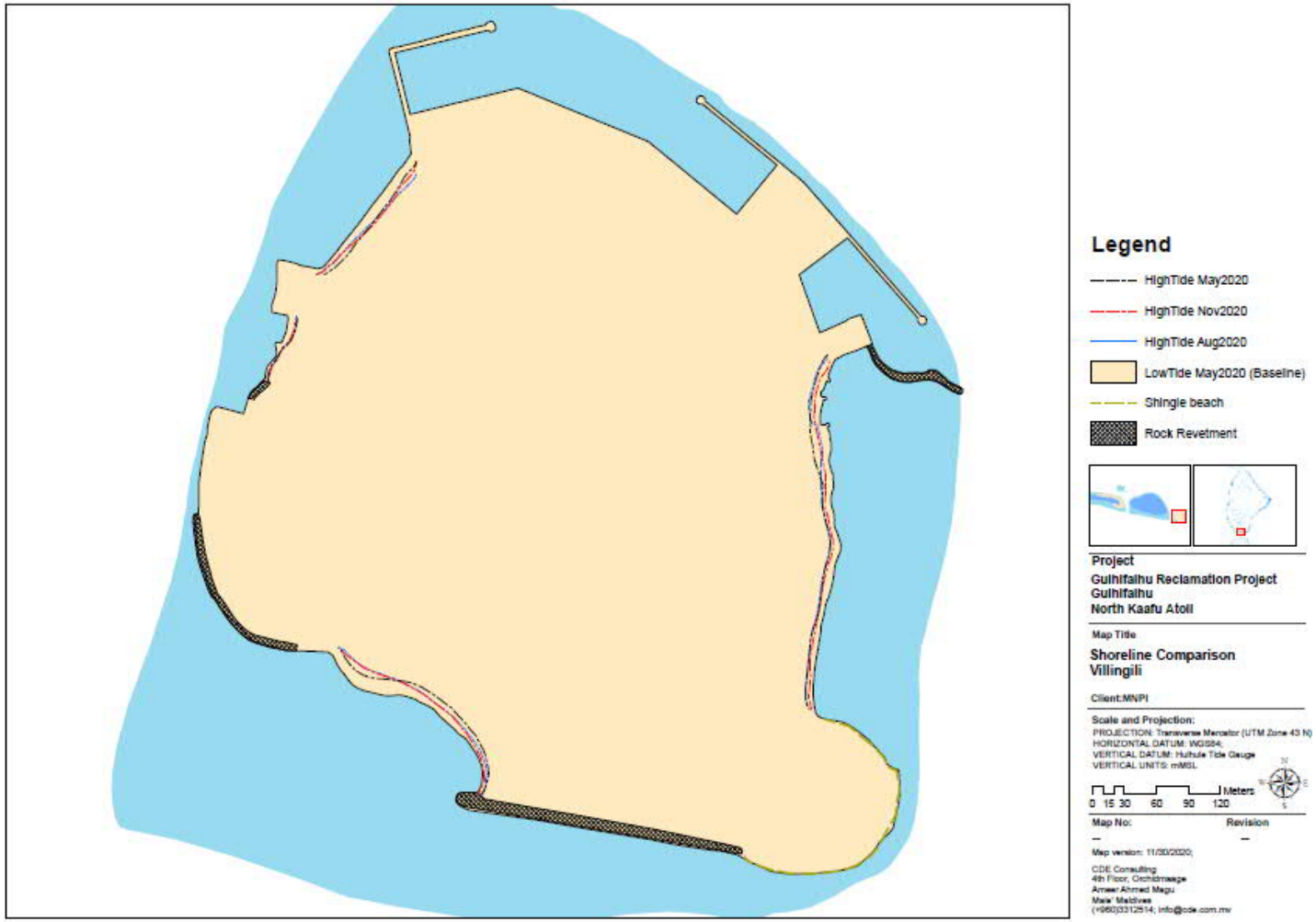


Figure 6-3: Shoreline comparison May 2020,Aug 2020 and Nov 2020.

Left to right: Photos facing south and north respectively (22-Nov-2020)

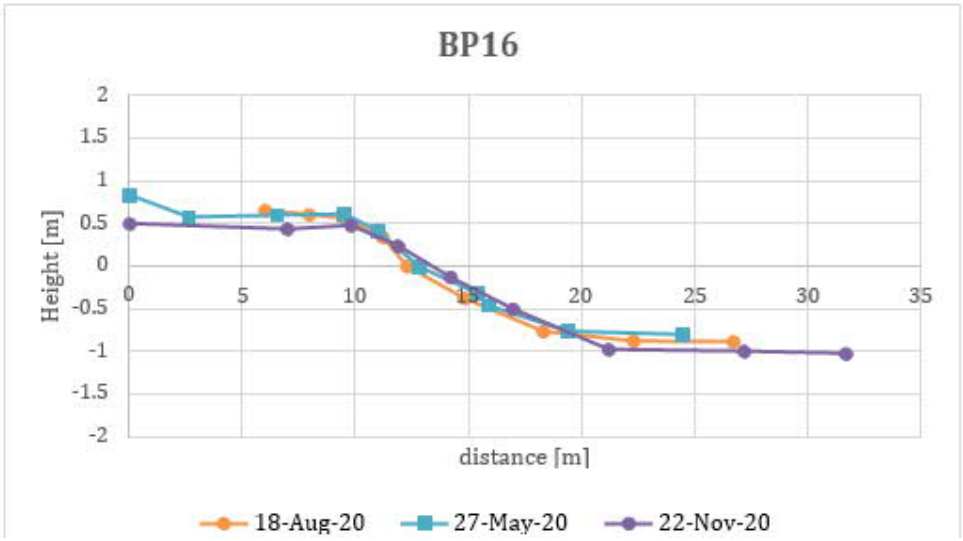


Figure 6-4: Beach Profile ID: BP-16.

Left to right: Photos facing south and north respectively (22-Nov-2020)

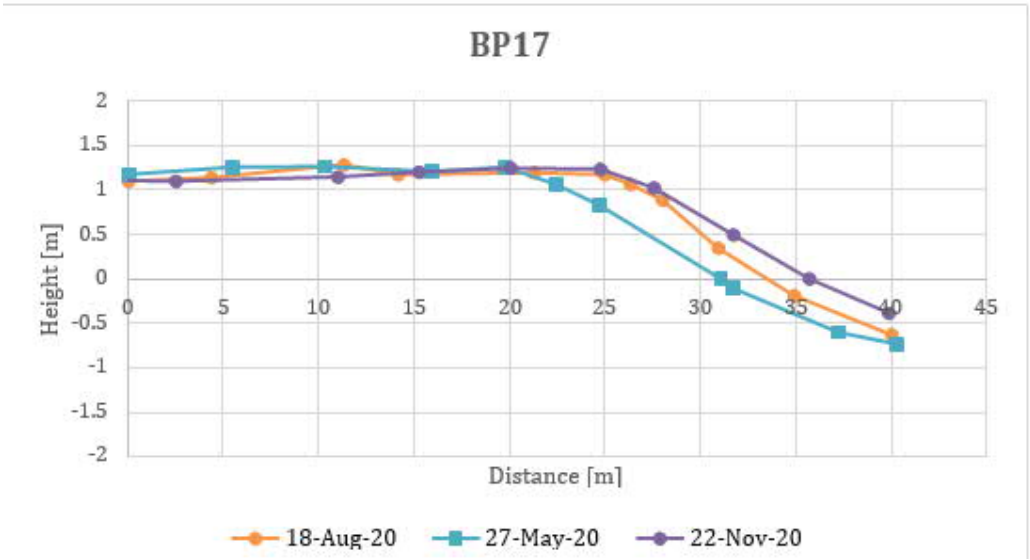


Figure 6-5: Beach Profile ID: BP-17.

Left to right: Photos facing south and north respectively (22-Nov-2020)

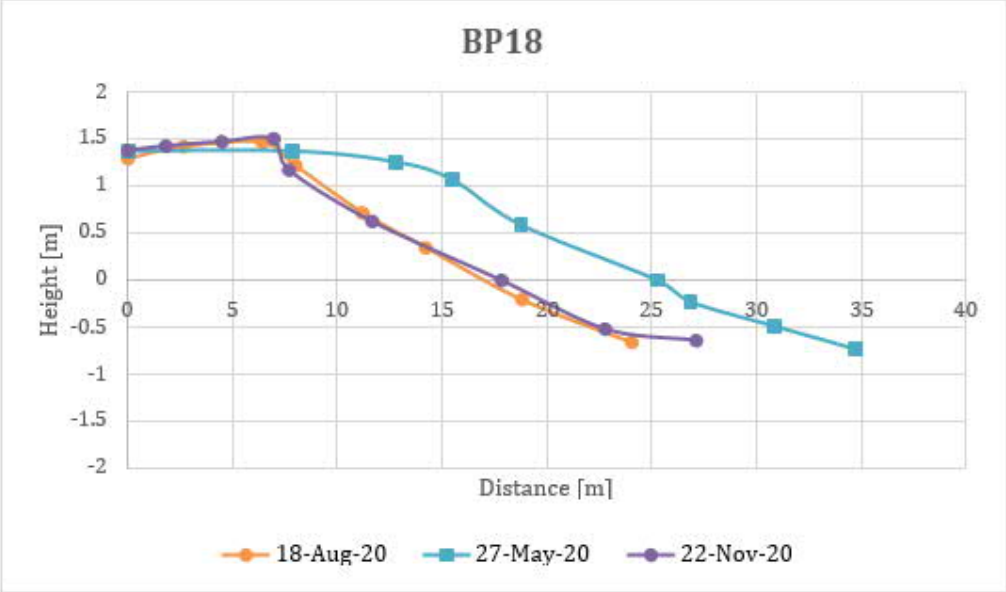


Figure 6-6: Beach Profile ID: BP-18.

Left to right: Photos facing south and north respectively (22-Nov-2020)

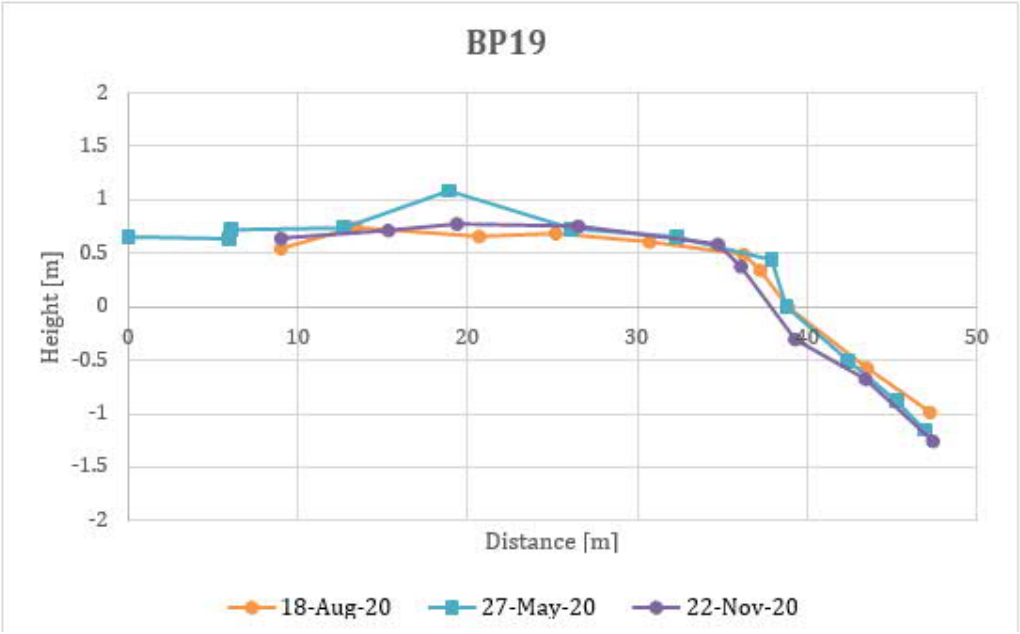


Figure 6-7: Beach Profile ID: BP-19.

Left to right: Photos facing south-west and north-east respectively (22-Nov-2020)

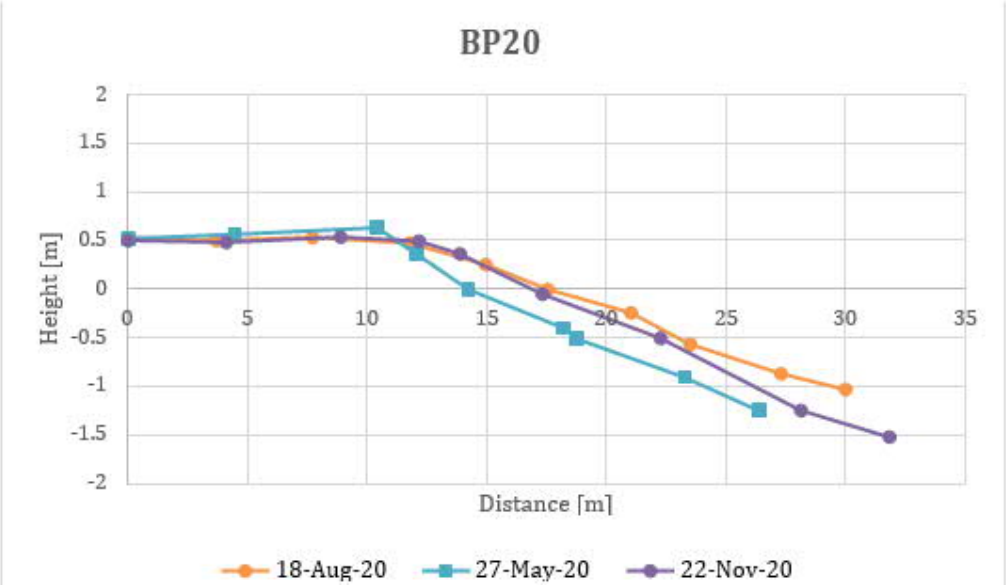


Figure 6-8: Beach Profile ID: BP-20.

Left to right: Photos facing south and north respectively (22-Nov-2020)

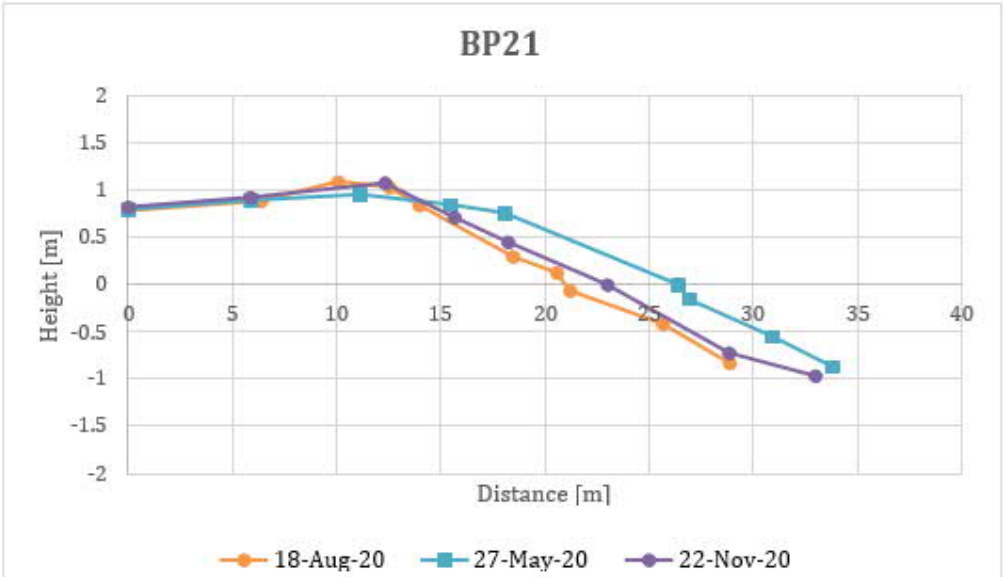


Figure 6-9: Beach Profile ID: BP-21.

Left to right: Photos facing north and south respectively (22-Nov-2020)

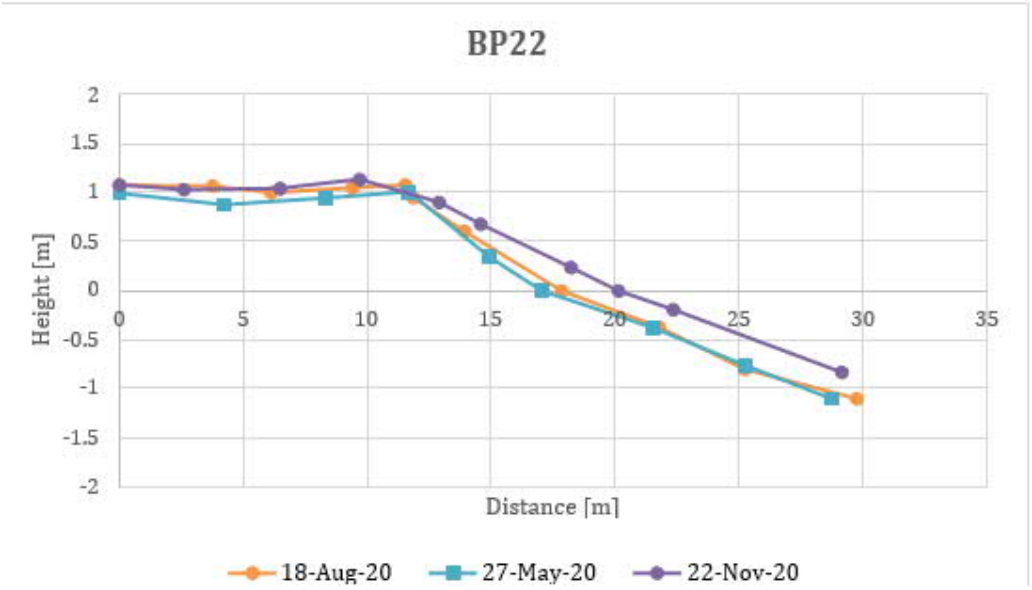


Figure 6-10: Beach Profile ID: BP-22.

Left to right: Photos facing north and south respectively (22-Nov-2020)

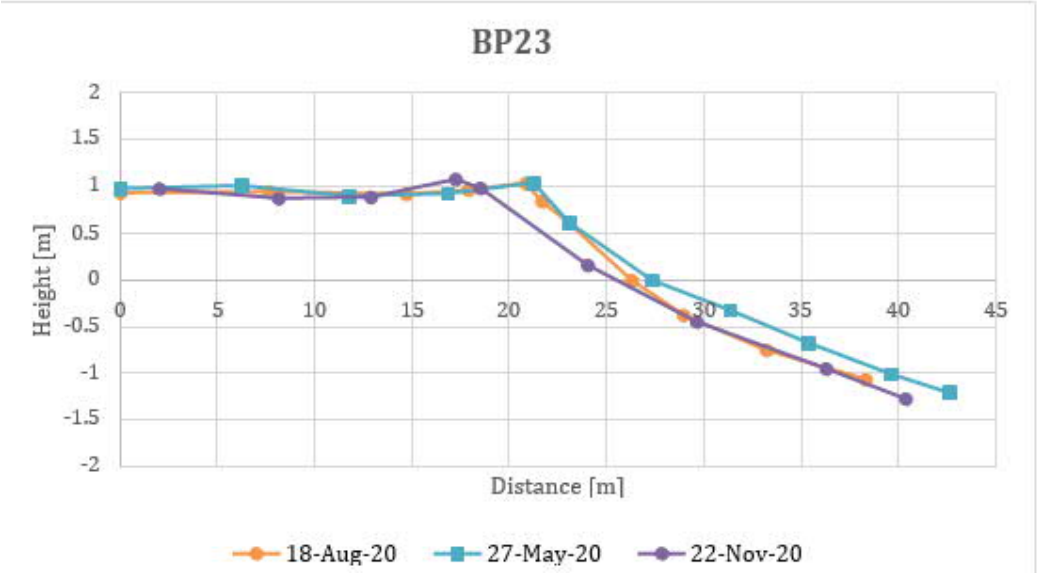


Figure 6-11: Beach Profile ID: BP-23.

Left to right; Photos facing north and south respectively (22-Nov-2020)

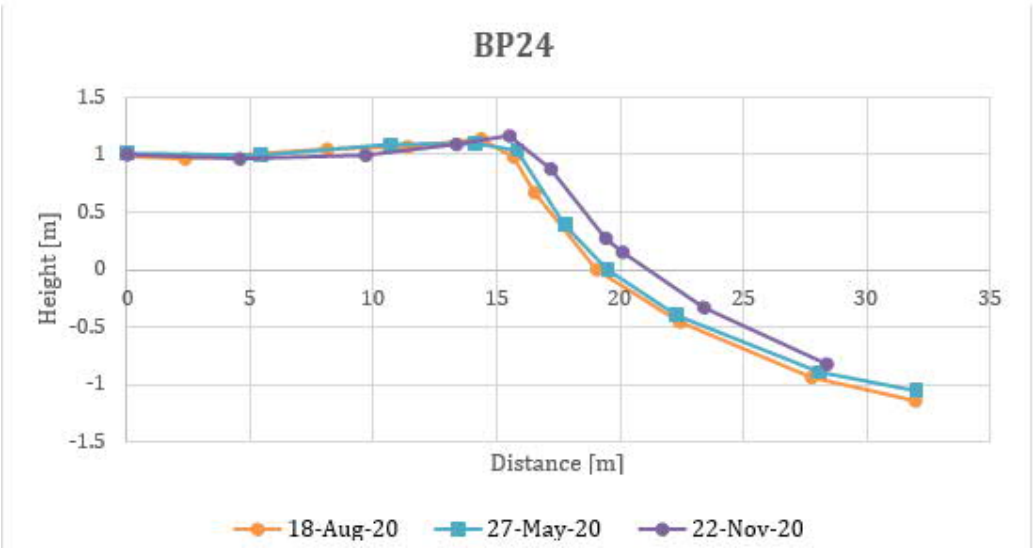


Figure 6-12: Beach Profile ID: BP-24.

7 REFERENCES, ABBREVIATIONS, DEFINITIONS

7.1 REFERENCES

Client Documents		
No.	**Document No.**	**Document Title**
1.	203-AS/471/2020/175	Environmental Decision Statement
2.	203-AS/471/2020/174	Dredging Permit

Boskalis Documents		
No.	**Document No.**	**Document Title**
3.	462-10042-BWC- SHE-QS-001	Project Safety, Health and Environmental Plan
4.	462-10042-BWC- SHE-QS-002	Project Environmental Management Plan
5.	462-10042-BWC- SHE-QS-012	Silt Screen Installation Plan

Supplier / Subcontractor Documents		
No.	**Supplier / Subcontractor**	**Document Title**
6.	CDE	Environment Impact Assessment - for the proposed port development project at Gulhifalhu, North Malé Atoll - Phase I - Dredging, Land reclamation and revetment works

7.2 ABBREVIATIONS

Abbreviation	Full meaning
BHD	Backhoe Dredger
BWC	Boskalis Westminster Contracting Ltd
CPCe	Coral Point Count with excel extension
CSR	Corporate Social Responsibility
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
GPS	Global Positioning System
HSSE-Q	Health, Safety, Security, Environment and Quality
ISO	International Organization for Standardization
MSL	Mean Sea Level
MMS	Maldives Meteorological Services

NTU	Nephelometric Turbidity Units
RBW	Royal Boskalis Westminster
SSC	Suspended Sediment Concentration
TSHD	Trailing Suction Hopper Dredger
TSS	Total Suspended Solids
UTC	Coordinated Universal Times

7.3 DEFINITIONS

Definition	Full meaning
Project	Dredging, Reclamation and Revetment Works at Gulhifalhu
Client	Ministry of National Planning, Housing and Infrastructure, Maldives
Contractor	Boskalis Westminster Contracting Ltd

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APPENDIX 1 – 3-MONTHS WATER QUALITY MONITORING DATA

Table 15: 22nd August until 30th November 2020 Daily Average Temperature (°C) Data

	Date	2020-Aug-22	2020-Aug-23	2020-Aug-24	2020-Aug-25	2020-Aug-26	2020-Aug-27	2020-Aug-28	2020-Aug-29	2020-Aug-30	2020-Aug-31	2020-Sep-01	2020-Sep-02	2020-Sep-03	2020-Sep-04	2020-Sep-05	2020-Sep-06
		Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp
W2	Surface	29.7	29.73	29.66	29.70	29.55	29.33	29.33	29.35	29.40	29.29	29.35	29.37	29.19	29.16	29.05	
	Mid-water	29.5	29.49	29.61	29.67	29.54	29.31	29.34	29.26	29.42	29.25	29.37	29.29	29.19	29.06	29.07	
	Bottom	29.5	29.44	29.48	29.67	29.54	29.28	29.32	29.18	29.37	29.15	29.33	29.26	29.14	29.06	29.06	
W5	Surface	29.9	29.85	29.45	29.67	29.56	29.24	29.25	29.27	29.30	29.31	29.18	29.35	29.14	29.05	29.09	
	Mid-water	29.5	29.40	29.40	29.54	29.52	29.24	29.23	29.22	29.19	29.31	29.31	29.31	29.00	29.05	29.08	
	Bottom	29.3	29.21	29.18	29.54	29.41	29.23	29.20	28.90	29.15	29.30	29.26	29.28	28.73	29.05	29.06	
W7	Surface	29.7	29.79	29.79	29.53	29.43	29.23	29.12	29.47	29.36	29.44	29.38	29.48	29.30	29.33	29.26	
	Mid-water	29.4	29.63	29.81	29.39	29.32	28.97	29.12	29.45	29.27	29.39	29.50	29.44	29.30	29.34	29.22	
	Bottom	29.4	29.46	29.73	29.27	28.74	28.83	29.10	29.43	29.12	29.26	29.27	29.01	28.89	29.33	29.10	
W10	Surface	29.7	29.73	29.81	29.74	29.58	29.08	29.08	29.46	29.44	29.48	29.45	29.48	29.33	29.34	29.28	
	Mid-water	29.5	29.38	29.80	29.67	29.44	28.89	28.95	29.43	29.40	29.48	29.52	29.45	29.33	29.33	29.28	
	Bottom	29.3	29.36	29.73	29.56	29.44	28.71	28.90	29.42	29.36	29.39	29.54	29.28	29.34	29.34	29.28	
W11	Surface	29.4	29.56	29.49	29.66	29.51	29.37	29.07	29.41	29.34	29.51	29.53	29.37	29.24	29.33	29.10	
	Mid-water	29.4	29.51	29.46	29.53	29.51	29.36	29.13	29.41	29.30	29.43	29.56	29.24	29.17	29.32	29.08	
	Bottom	29.4	29.51	29.47	29.46	29.52	29.26	29.11	29.39	28.86	29.39	29.62	29.00	29.34	29.31	29.05	
W14	Surface	29.9	30.19	29.75	29.78	29.70	29.57	29.48	29.54	29.52	29.56	29.36	29.43	29.15	29.19	29.11	
	Mid-water	29.6	29.74	29.67	29.75	29.67	29.51	29.38	29.44	29.50	29.56	29.58	29.35	29.03	29.16	29.11	
	Bottom	29.5	29.61	29.63	29.70	29.58	29.43	29.33	29.32	29.44	29.48	29.53	29.35	29.05	29.12	29.09	
W15	Surface	29.9	29.55	29.51	29.53	29.51	29.26	29.25	29.30	29.18	29.24	29.49	29.10	29.33	29.15	29.00	
	Mid-water	29.4	29.45	29.49	29.51	29.48	29.25	29.20	29.14	29.16	29.24	29.41	29.10	28.93	29.14	28.90	
	Bottom	29.4	29.38	29.48	29.48	29.49	29.23	29.19	29.03	29.11	29.23	29.39	29.11	28.85	29.09	28.81	
W16	Surface	29.7	30.20	29.64	29.67	29.55	29.36	29.12	29.31	29.41	29.26	29.55	29.46	29.10	29.19	29.06	
	Mid-water	29.5	29.56	29.63	29.65	29.55	29.33	29.11	29.30	29.38	29.27	29.38	29.43	29.12	29.18	29.06	
	Bottom	29.5	29.46	29.59	29.39	29.54	29.31	29.08	29.19	29.31	29.25	29.34	29.28	29.01	29.17	28.98	
W19 (Background	Surface	29.7	29.90	29.57													
	Mid-water	29.5	29.72	29.48													
	Bottom	29.5	29.53	29.28													
W20	Surface	30.0	30.84	29.62													
	Mid-water	29.7	29.52	29.48													
	Bottom	29.5	29.37	29.35													
W25	Surface	30.4	29.85	29.66													
	Mid-water	29.5	29.35	29.51													
	Bottom	29.4	29.22	29.45													
W26	Surface	29.5	30.34	29.43													
	Mid-water	29.4	29.39	29.42													
	Bottom	29.2	29.32	29.40													
W27 (Background	Surface	29.6	29.59	29.47													
	Mid-water	29.5	29.51	29.29													
	Bottom	29.4	29.34	29.28													
W36	Surface	29.8	29.59	29.61													
	Mid-water	29.5	29.51	29.60													
	Bottom	29.3	29.34	29.54													
W45	Surface	29.5	30.29	29.73													
	Mid-water	29.2	29.56	29.47													
	Bottom	29.2	29.33	29.26													
W46	Surface	30.1	30.41	29.83													
	Mid-water	29.5	29.42	29.58													
	Bottom	29.3	29.31	29.26													
W47	Surface																
	Mid-water																
	Bottom																
W51	Surface	29.6	29.85	29.48													
	Mid-water	29.4	29.47	29.42													
	Bottom	29.2	29.32	29.39													

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	Date	2020-Sep-07	2020-Sep-08	2020-Sep-09	2020-Sep-10	2020-Sep-11	2020-Sep-12	2020-Sep-13	2020-Sep-14	2020-Sep-15	2020-Sep-16	2020-Sep-17	2020-Sep-18	2020-Sep-19	2020-Sep-20	2020-Sep-21	2020-Sep-22	2020-Sep-23	2020-Sep-24
		Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp
W2	Surface	28.85	28.69	28.60	28.59	28.63	28.60	28.32	28.49	28.82	28.69	28.64	28.50	28.61	28.59	28.56	28.75	28.55	28.66
	Mid-water	28.78	28.63	28.47	28.35	28.31	28.36	28.27	28.27	28.46	28.57	28.64	28.51	28.57	28.51	28.36	28.60	28.55	28.61
	Bottom	28.72	28.62	28.36	28.29	28.14	28.30	28.25	28.25	28.41	28.57	28.63	28.48	28.57	28.43	28.30	28.54	28.52	28.58
W5	Surface	28.80	28.60	28.39	28.11	28.27	28.35	28.25	28.33	28.55	28.31	28.02	28.16	28.52	28.47	28.29	28.43	28.32	28.58
	Mid-water	28.76	28.58	28.08	28.07	28.25	28.35	28.22	28.28	28.54	28.33	28.02	28.17	28.32	28.50	28.09	28.31	28.32	28.58
	Bottom	28.64	28.56	27.96	27.90	28.14	28.33	28.15	28.21	28.55	28.33	28.02	28.15	28.44	28.49	28.03	28.32	28.32	28.57
W7	Surface	28.96	28.48	28.37	28.31	28.51	28.51	28.60	28.55	28.71	28.73	28.09	28.63	28.38	28.49	28.43	28.81	28.52	28.71
	Mid-water	28.93	28.47	28.30	27.55	28.48	28.50	28.58	28.54	28.68	28.58	28.03	28.38	28.15	28.38	28.30	28.76	28.49	28.70
	Bottom	28.92	28.46	28.18	26.96	28.46	28.47	28.57	28.55	28.25	28.38	28.00	27.77	28.07	28.33	28.21	28.70	28.47	28.68
W10	Surface	28.99	28.69	28.23	28.35	28.51	28.49	28.57	28.60	28.85	28.75	28.20	28.52	28.31	28.63	28.61	29.01	28.68	28.70
	Mid-water	28.98	28.67	28.24	28.35	28.51	28.44	28.56	28.59	28.72	28.73	28.21	28.51	28.31	28.58	28.45	28.77	28.70	28.68
	Bottom	28.96	28.65	28.21	28.28	28.51	28.44	28.57	28.58	28.69	28.58	28.16	28.53	28.30	28.59	28.37	28.69	28.69	28.62
W11	Surface	28.95	28.66	28.32	28.27	28.50	28.41	28.59	28.56	28.82	28.80	28.50	28.39	28.55	28.52	28.45	28.81	28.80	28.72
	Mid-water	28.93	28.57	28.23	27.98	28.35	28.41	28.58	28.56	28.74	28.78	28.61	27.87	28.58	28.51	28.46	28.88	28.76	28.68
	Bottom	28.94	28.01	28.17	27.83	28.29	28.41	28.58	28.57	28.73	28.79	28.58	27.83	28.70	28.49	28.45	28.85	28.65	28.68
W14	Surface	28.73	28.79	28.74	28.65	28.60	28.58	28.59	28.58	28.74	28.70	28.87	28.63	28.61	28.66	28.63	28.93	28.60	28.75
	Mid-water	28.69	28.75	28.69	28.53	28.50	28.55	28.57	28.47	28.55	28.62	28.83	28.63	28.58	28.65	28.60	28.69	28.56	28.65
	Bottom	28.65	28.69	28.52	28.32	28.42	28.42	28.50	28.41	28.54	28.70	28.80	28.63	28.60	28.51	28.55	28.67	28.54	28.64
W15	Surface	28.85	28.60	28.18	28.01	28.41	28.43	28.32	28.51	28.62	28.32	28.10	28.47	28.44	28.56	28.49	28.50	28.59	28.57
	Mid-water	28.81	28.61	28.17	27.99	28.39	28.43	28.27	28.50	28.50	28.30	28.06	28.46	28.43	28.50	28.48	28.44	28.59	28.58
	Bottom	28.68	28.62	28.11	27.96	28.20	28.43	28.29	28.47	28.19	28.30	28.03	28.35	28.41	28.53	28.27	28.42	28.55	28.57
W16	Surface	28.75	28.61	28.59	28.60	28.39	28.33	28.34	28.56	28.66	28.57	28.68	28.48	28.60	28.45	28.60	28.95	28.65	28.79
	Mid-water	28.73	28.60	28.56	28.53	28.38	27.97	28.25	28.24	28.50	28.56	28.65	28.49	28.54	28.43	28.55	28.74	28.59	28.60
	Bottom	28.74	28.60	28.56	28.36	28.36	27.80	28.23	28.22	28.47	28.54	28.60	28.49	28.54	28.42	28.54	28.71	28.55	28.60

	Date	2020-Sep-25	2020-Sep-26	2020-Sep-27	2020-Sep-28	2020-Sep-29	2020-Sep-30	2020-Oct-01	2020-Oct-02	2020-Oct-03	2020-Oct-04	2020-Oct-05	2020-Oct-06	2020-Oct-07	2020-Oct-08	2020-Oct-09	2020-Oct-10	2020-Oct-11	2020-Oct-12
		Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp
W2	Surface	28.73	28.70	28.78	28.89	28.83	28.80	28.97	28.87	28.85	28.85	28.96	29.00	29.01	28.97	29.00	28.82	28.97	28.88
	Mid-water	28.72	28.70	28.70	28.72	28.72	28.80	28.90	28.87	28.81	28.84	28.97	28.99	28.97	28.96	28.92	28.82	28.90	28.88
	Bottom	28.71	28.63	28.65	28.77	28.74	28.80	28.89	28.85	28.83	28.82	28.97	29.00	28.97	28.96	28.91	28.82	28.89	28.88
W5	Surface	28.59	28.63	28.69	28.79	28.89	28.82	28.85	28.82	28.81	28.82	28.99	29.02	28.94	28.89	28.89	28.76	28.85	28.79
	Mid-water	28.49	28.62	28.66	28.78	28.67	28.73	28.78	28.82	28.81	28.80	28.94	28.98	28.93	28.87	28.87	28.77	28.78	28.76
	Bottom	28.42	28.58	28.59	28.58	28.58	28.69	28.66	28.80	28.80	28.80	28.86	28.98	28.93	28.88	28.86	28.77	28.65	28.74
W7	Surface	28.69	28.64	28.66	28.93	28.72	29.31	29.06	28.66	28.79	28.97	28.89	28.98	28.97	28.87	29.04	28.96	29.06	28.94
	Mid-water	28.38	28.62	28.65	28.94	28.71	29.10	29.11	28.56	28.76	28.97	28.86	28.99	28.91	28.86	29.02	28.97	29.11	28.95
	Bottom	28.19	28.54	28.63	28.82	28.63	29.14	29.08	28.41	28.75	28.97	28.87	28.93	28.84	28.85	29.01	28.97	29.08	28.95
W10	Surface	28.76	28.68	28.72	28.91	28.69	29.27	29.11	28.86	28.70	28.89	28.77	28.91	29.09	28.86	29.11	28.95	29.11	28.96
	Mid-water	28.75	28.58	28.72	28.84	28.62	29.27	29.10	28.86	28.70	28.86	28.77	28.90	29.00	28.87	29.05	28.98	29.10	28.98
	Bottom	28.74	28.55	28.71	28.77	28.63	29.27	29.10	28.82	28.70	28.86	28.77	28.86	28.96	28.83	29.04	28.98	29.10	28.97
W11	Surface	28.71	28.61	28.57	29.02	28.78	29.15	29.01	28.88	28.86	28.86	28.96	28.95	28.96	28.95	29.12	28.94	29.01	28.96
	Mid-water	28.77	28.59	28.52	28.92	28.68	29.03	28.98	28.86	28.86	28.85	28.93	28.95	28.95	28.95	28.99	28.95	28.98	28.96
	Bottom	28.76	28.60	28.49	28.81	28.52	29.06	28.93	28.83	28.85	28.84	28.93	28.95	28.96	28.95	28.94	28.94	28.93	28.96
W14	Surface	28.78	28.94	29.03	29.04	29.16	28.98	29.10	29.04	28.94	28.82	28.86	28.90	29.03	29.02	29.06	28.90	29.10	28.82
	Mid-water	28.76	28.79	28.80	28.98	28.98	28.89	29.03	29.00	28.93	28.80	28.79	28.84	28.97	28.99	29.02	28.90	29.03	28.82
	Bottom	28.71	28.68	28.72	28.89	28.95	28.85	29.01	28.88	28.87	28.74	28.75	28.79	28.95	28.97	29.02	28.91	29.01	28.76
W15	Surface	28.56	28.64	28.58	28.78	28.78	28.80	28.71	28.65	28.76	28.93	28.79	28.93	28.91	28.90	28.98	28.94	28.71	28.81
	Mid-water	28.54	28.57	28.51	28.71	28.78	28.74	28.74	28.63	28.69	28.93	28.83	28.92	28.90	28.89	28.91	28.94	28.74	28.80
	Bottom	28.52	28.59	28.48	28.68	28.75	28.63	28.73	28.59	28.67	28.93	28.82	28.91	28.87	28.87	28.88	28.83	28.73	28.80
W16	Surface	28.75	28.67	28.71	28.93	28.62	28.83	28.94	28.89	28.84	28.76	28.95	29.00	29.01	29.03	29.15	28.85	28.94	28.87
	Mid-water	28.74	28.59	28.62	28.77	28.60	28.82	28.90	28.88	28.88	28.74	28.90	28.98	29.02	28.96	28.99	28.86	28.90	28.85
	Bottom	28.73	28.50	28.60	28.72	28.52	28.83	28.86	28.85	28.87	28.69	28.86	28.99	28.92	28.93	28.97	28.86	28.86	28.85

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	Date	2020-Oct-13	2020-Oct-14	2020-Oct-15	2020-Oct-16	2020-Oct-17	2020-Oct-18	2020-Oct-19	2020-Oct-20	2020-Oct-21	2020-Oct-22	2020-Oct-23	2020-Oct-24	2020-Oct-25	2020-Oct-26	2020-Oct-27	2020-Oct-28	2020-Oct-29	2020-Oct-30
		Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp
W2	Surface	28.89	28.96	28.87		28.79	28.84	28.83	29.05	28.82	28.74	28.76	28.84	28.98	28.78	28.88	29.06	28.89	28.97
	Mid-water	28.91	28.95	28.81		28.80	28.83	28.78	28.79	28.76	28.80	28.68	28.75	28.79	28.76	28.86	28.99	28.81	28.87
	Bottom	28.91	28.95	28.79		28.85	28.84	28.77	28.77	28.75	28.79	28.68	28.67	28.78	28.76	28.85	28.99	28.80	28.87
W5	Surface	28.93	28.93	29.00	28.69	28.69	28.81	28.71	28.92	28.76	28.75	28.72	28.71	28.88	28.70	28.87	28.89	28.80	28.83
	Mid-water	28.90	28.92	28.91	28.70	28.66	28.77	28.68	28.73	28.74	28.76	28.71	28.70	28.77	28.70	28.87	28.94	28.82	28.84
	Bottom	28.91	28.88	28.92	28.69	28.65	28.75	28.66	28.59	28.74	28.67	28.70	28.61	28.69	28.68	28.87	28.98	28.86	28.83
W7	Surface						28.92	28.70	29.02	28.82	28.79	28.63	28.88	28.95	28.80	28.76	28.86	28.77	28.86
	Mid-water						28.92	28.60	28.83	28.64	28.80	28.71	28.81	28.84	28.80	28.76	28.87	28.77	28.84
	Bottom						28.92	28.58	28.57	28.55	28.62	28.65	28.76	28.81	28.80	28.76	28.86	28.76	28.84
W10	Surface						28.95	28.83	28.94	28.82	28.85	28.84	28.87	29.04	28.76	28.68	28.82	28.85	28.92
	Mid-water						28.93	28.80	28.85	28.80	28.85	28.79	28.83	28.90	28.77	28.68	28.82	28.83	28.89
	Bottom						28.92	28.59	28.63	28.59	28.80	28.28	28.81	28.81	28.69	28.66	28.80	28.83	28.83
W11	Surface	29.00	29.10	29.00		28.89	28.96	28.78	28.77	28.76	28.82	28.69	28.92	28.97	28.72	28.83	28.89	28.83	28.89
	Mid-water	29.00	29.11	28.96		28.89	28.94	28.78	28.75	28.69	28.82	28.69	28.88	28.81	28.69	28.81	28.83	28.83	28.87
	Bottom	29.00	29.03	28.89		28.87	28.93	28.79	28.75	28.58	28.82	28.66	28.77	28.67	28.68	28.75	28.81	28.80	28.86
W14	Surface	28.90	28.91	28.88		28.86	28.82	28.88	29.28	29.03	28.98	28.98	29.04	29.11	28.90	28.96	29.00	28.94	28.99
	Mid-water	28.90	28.89	28.76		28.87	28.74	28.79	28.94	28.90	28.99	28.82	28.81	28.96	28.83	28.87	28.96	28.79	28.89
	Bottom	28.81	28.77	28.73		28.67	28.69	28.79	28.89	28.83	28.95	28.75	28.86	28.85	28.77	28.81	28.95	28.91	28.87
W15	Surface	28.95	28.97	28.96	28.90	28.98	28.77	28.87	28.82	28.74	28.77	28.71	28.72	28.87	28.74	28.64	28.90	28.75	28.84
	Mid-water	28.95	28.99	28.94	28.82	28.89	28.76	28.72	28.80	28.75	28.75	28.71	28.71	28.83	28.74	28.67	28.90	28.75	28.84
	Bottom	28.94	28.98	28.91	28.73	28.80	28.76	28.64	28.62	28.74	28.73	28.70	28.66	28.79	28.74	28.75	28.93	28.74	28.85
W16	Surface	29.10	29.01	29.04	28.69	28.87	28.89	28.81	29.10	28.80	28.70	28.71	28.96	29.09	28.86	29.05	29.02	29.05	28.91
	Mid-water	28.95	29.00	29.04	28.69	28.78	28.89	28.79	28.90	28.74	28.71	28.68	28.72	28.90	28.80	28.85	28.99	28.85	28.84
	Bottom	28.91	28.99	29.01	28.68	28.77	28.87	28.77	28.90	28.73	28.69	28.68	28.70	28.81	28.82	28.82	28.99	28.81	28.84

	Date	2020-Oct-31	2020-Nov-01	2020-Nov-02	2020-Nov-03	2020-Nov-04	2020-Nov-05	2020-Nov-06	2020-Nov-07	2020-Nov-08	2020-Nov-09	2020-Nov-10	2020-Nov-11	2020-Nov-12	2020-Nov-13	2020-Nov-14	2020-Nov-15	2020-Nov-16	2020-Nov-17
		Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp
W2	Surface	29.01	29.58	29.12	29.10	29.20	29.16	29.22	29.38	29.31	29.33	29.43	29.37	29.35	29.45	29.40	29.14	28.93	28.95
	Mid-water	29.01	29.26	29.10	28.93	29.19	29.08	29.14	29.31	29.21	29.25	29.42	29.35	29.32	29.30	29.37	29.13	28.95	28.98
	Bottom	29.01	29.10	29.09	28.93	29.12	29.02	29.13	29.24	29.16	29.14	29.24	29.26	29.22	29.13	29.34	29.11	28.93	28.99
W5	Surface	28.91	29.68	29.11	29.09	29.08	29.23	29.12	29.39	29.14	29.09	29.36	29.23	29.30	29.37	29.33	29.11	29.00	28.91
	Mid-water	28.90	29.08	29.06	28.99	28.98	29.12	29.04	29.28	29.08	29.12	29.37	29.31	29.23	29.35	29.24	29.12	28.99	28.93
	Bottom	28.88	28.98	29.03	28.82	28.95	29.09	28.98	29.20	29.06	29.03	29.18	29.31	29.24	29.20	29.11	29.11	28.98	28.91
W7	Surface	28.98	29.25	29.08	29.33	29.31	29.46	29.75	29.24	28.96	29.12	29.25	29.32	29.46	29.29	29.40	28.88	29.01	29.03
	Mid-water	28.96	29.17	28.94	29.08	29.14	29.44	29.56	29.19	29.03	29.08	29.16	29.31	29.46	29.33	29.35	28.81	29.00	29.04
	Bottom	28.92	29.15	28.92	29.03	29.14	29.41	29.00	29.18	28.67	28.09	29.12	29.32	29.43	29.28	29.36	28.79	28.96	29.06
W10	Surface	28.96	29.48	29.23	29.14	29.31	29.55	29.40	29.31	29.32	29.29	29.26	29.31	29.48	29.42	29.46	29.11	29.13	28.99
	Mid-water	28.89	29.16	29.17	29.03	29.25	29.47	29.16	29.21	29.25	29.07	29.13	29.30	29.46	29.38	29.42	29.11	29.14	29.01
	Bottom	28.88	29.02	29.02	29.02	29.14	29.33	29.01	29.18	29.22	28.72	29.10	29.29	29.42	29.36	29.41	28.76	29.12	29.02
W11	Surface	28.96	29.32	29.09	29.06	29.23	29.40	29.34	29.23	29.19	29.26	29.16	29.36	29.47	29.33	29.32	29.12	28.97	28.97
	Mid-water	28.96	29.21	29.07	29.01	29.07	29.20	29.24	29.22	29.22	29.20	29.15	29.36	29.45	29.31	29.28	29.10	28.97	28.98
	Bottom	28.91	29.11	29.08	29.00	29.04	29.15	29.21	29.21	28.92	28.55	29.11	29.35	29.45	29.28	29.25	29.10	28.97	28.99
W14	Surface	29.02	29.57	29.31	29.46	29.75	29.47	29.56	29.60	29.47	29.54	29.42	29.35	29.49	29.61	29.49	29.28	29.20	28.97
	Mid-water	28.98	29.24	29.26	29.19	29.34	29.27	29.42	29.46	29.38	29.43	29.42	29.29	29.38	29.48	29.40	29.23	29.11	29.04
	Bottom	28.95	29.21	29.18	29.21	29.22	29.22	29.31	29.40	29.29	29.37	29.36	29.33	29.37	29.46	29.36	29.18	29.08	29.14
W15	Surface	28.90	29.18	29.05	29.16	29.20	29.14	29.03	29.17	29.06	29.03	29.36	29.26	29.32	29.26	29.31	29.08	28.77	28.90
	Mid-water	28.91	29.12	29.03	29.08	29.21	28.97	28.86	29.15	29.05	29.05	29.35	29.27	29.22	29.18	29.34	29.10	28.81	28.92
	Bottom	28.89	29.04	28.95	29.03	29.21	28.89	28.74	29.08	29.02	28.88	29.33	29.24	29.08	29.01	29.32	29.04	28.74	28.92
W16	Surface	28.98	29.59	29.15	29.65	29.39	29.16	29.47	29.42	29.26	29.29	29.40	29.31	29.51	29.42	29.37	29.14	28.98	28.94
	Mid-water	28.99	29.08	28.97	29.04	29.25	29.14	29.42	29.44	29.23	29.29	29.42	29.27	29.31	29.39	29.37	29.13	28.97	28.96
	Bottom	28.97	28.94	28.90	29.00	29.22	29.12	29.39	29.45	29.21	29.22	29.40	29.19	29.20	29.30	29.36	29.12	28.97	28.94

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	Date	2020-Nov-18	2020-Nov-19	2020-Nov-20	2020-Nov-21	2020-Nov-22	2020-Nov-23	2020-Nov-24	2020-Nov-25	2020-Nov-26	2020-Nov-27	2020-Nov-28	2020-Nov-29	2020-Nov-30
		Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp
W2	Surface	28.79	29.11	29.04	29.17	29.40	29.14	28.93	28.95	28.79	29.11	29.04	29.17	29.13
	Mid-water	28.82	28.98	28.93	29.10	29.37	29.13	28.95	28.98	28.82	28.98	28.93	29.10	29.02
	Bottom	28.83	28.97	28.91	29.10	29.34	29.11	28.93	28.99	28.83	28.97	28.91	29.10	29.02
W5	Surface	28.78	28.96	28.96	29.01	29.33	29.11	29.00	28.91	28.78	28.96	28.96	29.01	29.01
	Mid-water	28.78	28.88	28.94	28.98	29.24	29.12	28.99	28.93	28.78	28.88	28.94	28.98	29.01
	Bottom	28.78	28.88	28.91	28.93	29.11	29.11	28.98	28.91	28.78	28.88	28.91	28.93	29.01
W7	Surface	28.83	29.19	29.13	29.11	29.40	28.88	29.01	29.03	28.83	29.19	29.13	29.11	29.13
	Mid-water	28.83	29.06	29.04	29.06	29.35	28.81	29.00	29.04	28.83	29.06	29.04	29.06	29.14
	Bottom	28.83	29.00	29.03	29.04	29.36	28.79	28.96	29.06	28.83	29.00	29.03	29.04	28.71
W10	Surface	28.80	29.23	29.11	29.03	29.46	29.11	29.13	28.99	28.80	29.23	29.11	29.03	29.15
	Mid-water	28.80	29.12	29.04	29.01	29.42	29.11	29.14	29.01	28.80	29.12	29.04	29.01	29.13
	Bottom	28.80	29.07	29.02	29.01	29.41	28.76	29.12	29.02	28.80	29.07	29.02	29.01	29.10
W11	Surface	28.81	29.31	29.01	29.11	29.32	29.12	28.97	28.97	28.81	29.31	29.01	29.11	29.15
	Mid-water	28.80	29.08	28.99	29.11	29.28	29.10	28.97	28.98	28.80	29.08	28.99	29.11	29.15
	Bottom	28.83	28.97	28.99	29.13	29.25	29.10	28.97	28.99	28.83	28.97	28.99	29.13	29.11
W14	Surface	28.73	29.01	29.06	29.09	29.49	29.28	29.20	28.97	28.73	29.01	29.06	29.09	29.14
	Mid-water	28.70	28.83	28.90	29.00	29.40	29.23	29.11	29.04	28.70	28.83	28.90	29.00	29.09
	Bottom	28.69	28.69	28.72	28.98	29.36	29.18	29.08	29.14	28.69	28.69	28.72	28.98	29.08
W15	Surface	28.78	28.90	28.93	28.97	29.31	29.08	28.77	28.90	28.78	28.90	28.93	28.97	29.13
	Mid-water	28.78	28.89	28.93	28.95	29.34	29.10	28.81	28.92	28.78	28.89	28.93	28.95	29.15
	Bottom	28.77	28.88	29.05	28.96	29.32	29.04	28.74	28.92	28.77	28.88	29.05	28.96	29.16
W16	Surface	28.91	29.03	29.55	29.14	29.37	29.14	28.98	28.94	28.91	29.03	29.55	29.14	29.13
	Mid-water	28.92	29.00	29.02	29.13	29.37	29.13	28.97	28.96	28.92	29.00	29.02	29.13	29.08
	Bottom	28.92	28.93	28.98	29.05	29.36	29.12	28.97	28.94	28.92	28.93	28.98	29.05	29.06

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Table 16: 22nd August until 30th November 2020 Daily Average pH Data

	Date	2020-Aug-22	2020-Aug-23	2020-Aug-24	2020-Aug-25	2020-Aug-26	2020-Aug-27	2020-Aug-28	2020-Aug-29	2020-Aug-30	2020-Aug-31	2020-Sep-01	2020-Sep-02	2020-Sep-03	2020-Sep-04	2020-Sep-05	2020-Sep-06	2020-Sep-07	2020-Sep-08
		pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH
W2	Surface	8.6	8.54	8.38	8.42	8.16	7.90	8.10	7.92	7.91	7.90	8.10	7.61	7.87	7.87	7.83		7.73	7.64
	Mid-water	8.4	8.38	8.44	8.34	8.08	7.85	8.07	7.76	7.83	7.89	8.03	7.58	7.72	7.78	7.88		7.71	7.59
	Bottom	8.4	8.37	8.39	8.31	8.12	7.89	8.10	7.79	7.84	7.87	8.08	7.61	7.71	7.82	7.91		7.70	7.62
W5	Surface	8.6	8.46	8.58	8.33	8.21	7.64	7.82	8.08	7.42	7.70	7.34	7.38	7.63	7.12	7.66		7.16	7.11
	Mid-water	8.3	8.40	8.49	8.27	8.01	7.50	7.69	7.83	7.45	7.67	7.45	7.37	7.53	7.11	7.55		7.12	6.99
	Bottom	8.4	8.41	8.54	8.19	7.94	7.49	7.69	7.81	7.48	7.68	7.79	7.37	7.41	7.11	7.57		7.13	7.05
W7	Surface	8.9	8.49	8.48	8.45	8.13	7.70	7.84	8.06	7.69	7.81	7.40	7.56	7.70	7.48	7.67		7.34	7.63
	Mid-water	8.4	8.46	8.39	8.24	7.86	7.66	7.77	7.97	7.60	7.67	7.31	7.50	7.64	7.37	7.63		7.31	7.94
	Bottom	8.3	8.39	8.39	8.22	7.74	7.70	7.79	7.96	7.59	7.66	7.27	7.58	7.59	7.32	7.65		7.31	8.29
W10	Surface	8.5	8.58	8.51	8.48	8.12	7.88	7.89	8.10	7.79	7.83	7.90	7.63	7.72	7.79	7.73		7.52	7.74
	Mid-water	8.4	8.41	8.38	8.24	7.83	7.71	7.82	8.01	7.71	7.76	7.74	7.61	7.72	7.59	7.69		7.47	7.72
	Bottom	8.4	8.42	8.41	8.34	7.90	7.59	7.85	8.04	7.75	7.77	7.70	7.61	7.71	7.52	7.71		7.49	7.64
W11	Surface	8.4	8.52	8.48	8.53	8.15	7.84	7.88	8.03	7.76	7.91	8.24	7.61	8.36	7.90	7.76		7.60	7.46
	Mid-water	8.5	8.34	8.38	8.52	7.93	7.87	7.81	7.96	7.76	7.84	8.20	7.62	8.18	7.88	7.67		7.57	7.34
	Bottom	8.4	8.37	8.42	8.35	7.93	8.00	7.81	7.97	7.67	7.85	8.00	7.61	7.88	7.72	7.68		7.61	7.46
W14	Surface	8.1	8.56	8.42	8.50	8.25	8.00	8.07	7.93	7.93	7.94	8.01	7.68	7.87	7.88	7.74		7.80	7.66
	Mid-water	7.7	8.40	8.45	8.36	8.10	7.86	8.11	7.91	7.85	7.90	8.03	7.60	7.79	7.80	7.73		7.78	7.54
	Bottom	7.6	8.43	8.44	8.43	8.14	7.87	8.08	7.90	7.85	7.94	8.11	7.62	7.82	7.69	7.74		7.77	7.64
W15	Surface	8.6	8.41	8.72	8.46	8.13	7.46	7.80	7.92	7.43	7.52	6.90	7.29	7.34	6.92	7.52		7.07	7.02
	Mid-water	8.3	8.35	8.54	8.20	7.89	7.38	7.57	7.76	7.21	7.52	6.84	7.15	7.26	6.97	7.36		6.98	7.04
	Bottom	8.4	8.35	8.43	8.16	7.95	7.40	7.54	7.71	7.17	7.56	6.87	7.19	7.31	6.96	7.33		6.93	7.11
W16	Surface	8.4	8.61	8.49	8.50	8.13	7.89	7.82	7.92	7.80	7.83	8.31	7.71	8.20	7.89	7.73		7.79	8.20
	Mid-water	8.2	8.37	8.48	8.41	7.95	7.71	7.70	7.92	7.72	7.79	8.24	7.59	7.93	7.73	7.71		7.77	7.89
	Bottom	8.2	8.36	8.37	8.42	7.95	7.65	7.73	7.87	7.72	7.78	8.30	7.57	7.92	7.76	7.70		7.77	7.72
W19 (Background	Surface	8.7	8.62	8.65															
	Mid-water	8.5	8.42	8.62															
	Bottom	8.6	8.44	8.68															
W20	Surface	8.3	8.52	8.32															
	Mid-water	8.2	8.30	8.28															
	Bottom	8.1	8.29	8.24															
W25	Surface	8.7	8.54	8.52															
	Mid-water	8.6	8.38	8.52															
	Bottom	8.6	8.37	8.50															
W26	Surface	8.5	8.43	8.19															
	Mid-water	8.2	8.22	8.29															
	Bottom	8.2	8.24	8.46															
W27 (Background	Surface	8.5	8.70	8.37															
	Mid-water	8.5	8.39	8.35															
	Bottom	8.5	8.31	8.37															
W36	Surface	8.6	8.70	8.47															
	Mid-water	8.4	8.39	8.27															
	Bottom	8.4	8.31	8.31															
W45	Surface	8.4	8.48	8.41															
	Mid-water	8.1	8.30	8.37															
	Bottom	8.2	8.30	8.35															
W46	Surface	8.7	8.49	8.39															
	Mid-water	8.6	8.24	8.38															
	Bottom	8.7	8.30	8.54															
W47	Surface																		
	Mid-water																		
	Bottom																		
W51	Surface	8.6	8.87	8.32															
	Mid-water	8.6	8.78	8.32															
	Bottom	8.6	8.75	8.25															

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	Date	2020-Sep-09	2020-Sep-10	2020-Sep-11	2020-Sep-12	2020-Sep-13	2020-Sep-14	2020-Sep-15	2020-Sep-16	2020-Sep-17	2020-Sep-18	2020-Sep-19	2020-Sep-20	2020-Sep-21	2020-Sep-22	2020-Sep-23	2020-Sep-24	2020-Sep-25	2020-Sep-26
		pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH
W2	Surface	7.68	7.55	7.37	7.27	7.50	7.76	7.45	7.45	7.22	7.15	7.07	8.25	7.27	8.15	8.12	7.83	7.48	7.68
	Mid-water	7.68	7.48	7.14	7.10	7.35	7.69	7.42	7.41	7.04	7.01	6.93	8.22	7.17	8.03	8.00	7.79	7.48	7.67
	Bottom	7.67	7.48	7.18	7.10	7.33	7.67	7.38	7.35	7.05	7.07	6.97	8.26	7.17	8.00	8.02	7.80	7.50	7.69
W5	Surface	7.42	6.59	7.80	6.65	7.02	7.22	7.22	7.15	6.65	6.63	6.42	7.69	7.24	7.39	7.30	7.35	7.07	7.59
	Mid-water	7.25	6.45	7.75	6.55	6.97	7.18	7.19	7.12	6.58	6.50	6.35	7.64	7.03	7.36	7.17	7.28	6.99	7.53
	Bottom	7.71	6.48	8.22	6.51	6.97	7.19	7.19	7.10	6.62	6.48	6.32	7.67	6.97	7.33	7.16	7.29	7.08	7.59
W7	Surface	7.86	6.96	7.29	7.02	7.41	7.44	7.37	7.31	6.83	6.92	6.82	7.93	7.14	8.01	7.33	7.68	7.77	7.72
	Mid-water	8.73	6.65	7.13	6.96	7.32	7.45	7.39	7.28	6.71	6.70	7.43	7.86	7.07	7.81	7.17	7.59	7.56	7.68
	Bottom	8.03	6.52	7.14	6.96	7.28	7.43	7.40	7.30	6.73	6.59	7.84	7.95	7.01	7.77	7.29	7.57	7.57	7.70
W10	Surface	7.77	6.97	7.40	7.11	7.49	7.53	7.57	7.32	7.05	7.01	6.85	7.97	7.25	8.29	7.52	7.73	7.23	7.63
	Mid-water	7.75	6.91	7.03	7.06	7.54	7.48	7.29	7.14	7.02	6.80	6.94	7.90	7.17	8.02	7.38	7.66	7.30	7.58
	Bottom	7.73	6.95	7.10	7.04	8.13	7.50	7.12	7.12	7.06	6.85	7.21	7.92	7.20	7.93	7.42	7.68	7.41	7.60
W11	Surface	7.83	7.28	7.41	7.14	7.29	7.81	7.51	7.38	6.69	7.20	6.70	7.93	7.19	8.18	7.53	7.76	7.27	7.68
	Mid-water	7.77	6.96	7.03	7.19	7.16	7.45	7.38	7.32	6.66	6.86	6.76	7.86	7.04	8.14	7.33	7.72	7.13	7.64
	Bottom	8.02	7.02	7.06	7.21	7.14	7.45	7.45	7.37	6.70	6.85	6.79	7.84	7.04	8.14	7.34	7.74	7.23	7.65
W14	Surface	7.83	7.59	7.44	7.18	7.52	7.64	7.60	7.50	7.39	7.29	7.15	8.21	7.35	8.14	8.03	7.94	7.50	7.83
	Mid-water	7.75	7.52	7.36	7.16	7.44	7.65	7.46	7.45	7.26	7.27	7.11	8.20	7.22	8.07	8.03	7.88	7.48	7.82
	Bottom	7.70	7.51	7.36	7.17	7.43	7.69	7.40	7.47	7.26	7.34	7.14	8.20	7.22	8.09	8.05	7.90	7.46	7.84
W15	Surface	7.17	6.39	6.79	6.70	6.96	7.24	7.26	6.97	6.46	6.55	6.84	7.66	7.27	7.34	7.18	7.35	7.38	7.55
	Mid-water	7.52	6.14	6.70	6.69	6.97	7.18	7.13	6.99	6.27	6.35	6.00	7.66	7.12	7.20	7.17	7.30	7.42	7.47
	Bottom	8.13	6.25	6.76	6.78	7.03	7.15	7.08	7.04	6.26	6.31	6.11	7.70	7.10	7.17	7.22	7.42	7.55	7.58
W16	Surface	7.74	7.48	7.40	7.27	7.41	7.71	7.45	7.40	7.08	7.10	6.91	8.39	7.05	8.24	8.87	7.86	7.43	7.58
	Mid-water	7.71	7.28	7.21	7.08	7.31	7.65	7.39	7.33	7.02	7.03	6.84	8.69	6.88	8.03	8.61	7.60	7.27	7.57
	Bottom	7.72	7.25	7.33	7.04	7.31	7.70	7.40	7.39	7.01	7.05	6.85	8.33	6.89	8.06	7.99	7.57	7.32	7.56

	Date	2020-Sep-27	2020-Sep-28	2020-Sep-29	2020-Sep-30	2020-Oct-01	2020-Oct-02	2020-Oct-03	2020-Oct-04	2020-Oct-05	2020-Oct-06	2020-Oct-07	2020-Oct-08	2020-Oct-09	2020-Oct-10	2020-Oct-11	2020-Oct-12	2020-Oct-13	2020-Oct-14
		pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH
W2	Surface	7.50	7.93	8.03	8.10	7.85	7.54	7.83	7.79	7.79	7.59	7.53	7.83	7.52	7.48	7.85	7.32	7.38	7.21
	Mid-water	7.71	7.76	7.92	7.99	7.86	7.74	7.70	7.72	7.71	7.49	7.40	7.83	7.35	7.44	7.86	7.21	7.22	7.07
	Bottom	7.72	7.69	7.90	7.99	7.52	7.77	7.76	7.79	7.75	7.48	7.44	8.09	7.36	7.44	7.52	7.23	7.25	7.13
W5	Surface	7.85	7.65	8.03	8.10	8.13	8.01	7.70	7.82	7.96	7.72	7.45	7.54	6.96	7.39	8.13	6.89	6.74	6.43
	Mid-water	7.82	7.50	7.97	8.05	8.36	8.00	7.36	7.77	7.76	7.69	7.37	7.52	6.95	7.39	8.36	6.83	6.67	6.19
	Bottom	7.86	7.44	7.99	8.06	8.08	8.01	7.29	7.82	7.80	7.68	7.41	7.60	7.02	7.43	8.01	6.83	6.69	6.15
W7	Surface	7.79	7.51	7.99	7.92	7.65	7.82	7.80	7.98	7.82	7.36	7.44	7.53	7.17	7.46	7.65	7.16		
	Mid-water	7.68	7.40	7.92	7.82	7.65	7.77	7.71	8.11	7.75	7.29	7.32	8.22	7.09	7.47	7.65	7.03		
	Bottom	7.75	7.35	7.93	7.82	7.67	7.76	7.74	8.30	7.79	7.28	7.32	9.10	7.09	7.50	7.67	7.07		
W10	Surface	8.99	7.70	8.00	8.14	7.69	7.51	7.82	7.81	7.86	7.46	7.61	6.98	7.13	7.49	7.69	7.26		
	Mid-water	8.32	7.59	7.94	8.06	7.58	7.66	7.72	7.74	7.85	7.39	7.41	7.34	6.90	7.48	7.58	7.22		
	Bottom	8.77	7.57	7.97	7.98	7.57	7.69	7.76	7.82	7.88	7.38	7.43	7.33	6.86	7.53	7.57	7.23		
W11	Surface	8.14	7.80	8.00	8.10	7.72	7.73	7.89	7.88	7.86	7.39	7.65	7.53	7.27	7.46	7.72	7.31	7.22	7.11
	Mid-water	8.26	7.72	7.99	7.98	7.57	7.61	7.77	7.84	7.74	7.31	7.50	7.38	7.19	7.44	7.57	7.26	7.11	7.10
	Bottom	8.48	7.63	7.95	7.93	7.53	7.61	7.79	7.91	7.79	7.30	7.64	7.94	7.22	7.45	7.53	7.28	7.11	7.17
W14	Surface	7.67	7.98	8.04	8.15	7.96	7.64	7.93	7.88	7.88	7.64	7.73	7.65	7.50	7.54	7.96	7.62	7.45	7.23
	Mid-water	7.70	7.86	8.01	8.11	7.97	7.41	7.88	7.88	7.87	7.62	7.68	7.62	7.66	7.53	7.97	7.37	7.37	7.18
	Bottom	7.69	7.87	8.02	8.12	8.18	7.42	7.90	7.89	7.87	7.62	7.67	7.72	7.85	7.53	8.16	7.34	7.36	7.18
W15	Surface	7.80	7.44	8.00	7.76	7.36	7.90	7.43	7.73	7.72	7.05	7.09	7.54	6.67	7.46	7.36	6.82	6.39	6.19
	Mid-water	7.79	7.37	7.95	7.71	7.13	7.97	7.36	7.74	7.72	6.92	6.93	7.50	6.69	7.50	7.13	6.59	5.87	6.08
	Bottom	7.85	7.40	8.00	7.71	7.17	8.02	7.40	7.80	7.85	6.91	6.97	7.60	6.74	7.57	7.17	6.61	5.82	6.17
W16	Surface	7.82	7.85	7.89	7.92	7.74	7.84	7.90	7.75	7.86	7.56	7.81	7.57	7.29	7.51	7.73	7.35	7.13	7.10
	Mid-water	7.83	7.77	7.81	7.88	7.54	7.68	7.89	7.66	7.75	7.48	7.81	7.36	7.04	7.53	7.54	7.26	6.96	6.97
	Bottom	7.85	7.81	7.77	7.85	7.55	7.68	7.91	7.69	7.70	7.49	7.82	7.30	6.97	7.57	7.55	7.30	7.00	7.04

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	Date	2020-Oct-15	2020-Oct-16	2020-Oct-17	2020-Oct-18	2020-Oct-19	2020-Oct-20	2020-Oct-21	2020-Oct-22	2020-Oct-23	2020-Oct-24	2020-Oct-25	2020-Oct-26	2020-Oct-27	2020-Oct-28	2020-Oct-29	2020-Oct-30	2020-Oct-31	2020-Nov-01
		pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH
W2	Surface	6.96		7.00	7.13	8.34	7.90	8.15	7.93	7.75	8.05	7.84	8.07	6.21	7.99	7.81	8.28	8.55	8.17
	Mid-water	6.88		6.89	7.01	8.17	7.82	8.00	7.86	7.64	7.92	7.73	7.99	6.19	8.04	7.70	8.30	8.56	8.04
	Bottom	6.90		6.93	7.00	7.90	7.85	7.83	7.90	7.69	7.92	7.71	8.06	6.23	8.19	7.67	8.35	8.60	8.02
W5	Surface	6.67	6.92	6.66	7.03	7.58	7.73	7.68	7.63	7.64	7.64	7.78	7.74	7.82	7.61	7.54	7.84	7.89	7.69
	Mid-water	6.49	6.83	6.56	6.94	7.48	7.62	7.58	7.53	7.60	7.54	7.71	7.70	7.76	7.56	7.34	7.78	7.80	7.56
	Bottom	6.45	6.79	6.56	6.94	7.51	7.61	7.59	7.52	7.59	7.52	7.80	7.70	7.76	7.52	7.50	7.78	7.83	7.50
W7	Surface				6.95	7.62	7.74	7.80	7.70	7.72	7.86	7.78	8.46	7.88	7.39	7.38	7.86	8.28	7.89
	Mid-water				6.81	7.58	7.59	7.68	7.58	7.63	7.76	7.68	9.18	7.83	7.37	7.19	7.89	8.35	7.83
	Bottom				6.80	7.59	7.54	7.67	7.58	7.64	7.76	7.67	9.13	7.86	7.34	7.22	7.89	8.45	7.80
W10	Surface				7.03	7.76	7.86	7.82	7.82	7.83	7.88	7.84	8.14	6.27	7.41	7.59	7.94	8.01	7.90
	Mid-water				6.95	7.71	7.58	7.76	7.74	7.82	7.76	7.69	8.08	6.16	7.39	7.56	7.84	7.95	7.85
	Bottom				6.93	7.71	7.58	7.75	7.70	7.84	7.73	7.68	8.06	5.97	7.40	7.59	7.87	8.00	7.88
W11	Surface	6.83		6.93	7.16	7.82	7.81	7.85	7.85	7.77	7.88	7.87	8.11	6.19	7.46	7.48	7.88	8.02	7.90
	Mid-water	6.72		6.89	7.15	7.70	7.70	7.75	7.77	7.66	7.79	7.78	7.97	6.10	7.38	7.37	7.89	7.93	7.83
	Bottom	6.68		6.97	7.18	7.72	7.70	7.73	7.82	7.68	7.79	7.79	7.95	5.95	7.36	7.31	7.96	7.98	7.85
W14	Surface	7.05		7.10	7.30	7.92	8.01	8.20	7.87	7.87	8.08	7.98	8.05	6.45	7.38	7.97	8.07	8.39	8.14
	Mid-water	6.97		7.09	7.21	7.90	7.91	8.10	7.91	7.76	7.98	7.91	8.00	6.40	7.45	7.90	8.05	8.41	8.07
	Bottom	6.96		7.08	7.15	7.94	7.92	8.08	7.92	7.74	7.97	7.93	7.99	6.33	7.55	7.92	8.08	8.44	8.03
W15	Surface	6.39	6.83	6.44	6.83	7.57	7.74	7.54	7.57	7.58	7.79	7.64	7.61	7.62	7.50	7.31	7.80	7.93	7.20
	Mid-water	6.40	6.87	6.28	6.73	7.48	7.70	7.39	7.42	7.46	7.73	7.59	7.58	7.53	7.35	7.23	7.76	7.89	7.10
	Bottom	6.50	6.96	6.27	6.76	7.46	7.69	7.38	7.42	7.49	7.74	7.80	7.63	7.49	7.37	7.23	7.82	7.92	7.09
W16	Surface	6.93	7.06	6.84	7.21	7.83	7.88	8.10	7.90	7.72	8.13	8.02	8.04	6.25	7.67	8.19	8.35	9.34	8.04
	Mid-water	6.79	6.94	6.74	7.10	7.72	7.72	7.85	7.83	7.64	8.01	7.95	7.96	6.09	7.55	8.16	7.96	7.98	7.88
	Bottom	6.80	6.98	6.74	7.06	7.70	7.73	7.75	7.88	7.71	8.03	7.96	8.01	6.09	7.47	8.02	7.85	7.97	7.86

	Date	2020-Nov-02	2020-Nov-03	2020-Nov-04	2020-Nov-05	2020-Nov-06	2020-Nov-07	2020-Nov-08	2020-Nov-09	2020-Nov-10	2020-Nov-11	2020-Nov-12	2020-Nov-13	2020-Nov-14	2020-Nov-15	2020-Nov-16	2020-Nov-17	2020-Nov-18	2020-Nov-19
		pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH
W2	Surface	8.59	8.06	7.89	7.85	8.21	7.57	7.38	7.54	7.42	7.38	7.06	6.93	7.08	6.85	7.88	6.66	7.88	7.86
	Mid-water	8.58	7.94	7.82	7.78	8.19	7.59	7.23	7.38	7.42	7.38	7.01	7.12	7.01	6.86	7.92	6.58	7.88	7.83
	Bottom	8.62	7.96	7.84	7.78	8.20	7.68	7.12	7.25	7.47	7.37	7.02	7.07	7.02	6.87	8.39	6.77	7.87	7.89
W5	Surface	7.77	8.02	7.68	7.18	7.57	7.31	6.98	6.90	7.29	7.41	6.79	7.06	6.65	6.68	6.77	6.16	7.35	7.20
	Mid-water	7.71	7.98	7.59	7.11	7.54	7.17	6.95	6.71	7.24	7.41	6.65	7.03	6.57	6.66	6.71	6.14	7.22	7.11
	Bottom	7.72	7.94	7.54	7.00	7.53	7.11	6.90	6.66	7.20	7.39	6.58	6.98	6.46	6.61	6.68	6.13	7.23	7.05
W7	Surface	7.75	8.12	8.06	7.50	7.57	7.49	7.09	7.00	7.33	7.45	6.81	7.18	6.89	6.72	6.93	6.49	7.51	7.53
	Mid-water	7.74	8.32	8.36	7.44	7.47	7.49	7.05	7.08	7.31	7.46	7.02	7.19	6.86	6.69	6.90	6.50	7.50	7.42
	Bottom	7.75	8.48	8.56	7.40	7.41	7.51	6.99	6.89	7.24	7.49	7.07	7.19	6.85	6.71	6.91	6.48	7.53	7.41
W10	Surface	7.82	7.96	7.73	7.64	7.58	7.37	7.52	7.26	7.45	7.40	7.00	7.17	6.99	6.69	6.92	6.55	7.67	7.66
	Mid-water	7.73	7.87	7.78	7.58	7.44	7.34	7.05	7.24	7.67	7.23	6.94	7.20	6.98	6.74	6.84	6.55	7.69	7.56
	Bottom	7.70	7.88	7.75	7.57	7.33	7.36	6.88	7.22	7.79	7.11	6.93	7.23	7.03	6.78	6.83	6.57	7.66	7.57
W11	Surface	8.05	8.02	7.83	7.57	7.58	7.43	7.52	7.10	7.42	7.47	7.03	7.20	6.97	6.71	6.87	6.62	7.75	7.82
	Mid-water	8.03	8.00	7.73	7.53	7.43	7.39	7.48	7.03	7.37	7.41	6.99	7.11	6.87	6.67	6.87	6.59	7.67	7.71
	Bottom	8.04	8.00	7.69	7.56	7.42	7.38	7.38	6.84	7.36	7.38	6.99	7.08	6.91	6.70	6.90	6.61	7.70	7.66
W14	Surface	8.59	8.10	7.95	7.88	8.14	7.51	7.50	7.57	7.41	7.37	7.03	7.26	7.11	6.59	7.52	6.56	7.95	7.92
	Mid-water	8.57	8.06	7.89	7.85	8.16	7.45	7.46	7.50	7.40	7.36	6.97	7.23	7.09	6.47	7.58	6.75	7.93	7.88
	Bottom	8.52	8.09	7.88	7.86	8.17	7.45	7.43	7.51	7.40	7.39	6.97	7.23	7.14	6.68	7.67	6.77	7.97	7.84
W15	Surface	7.78	8.06	7.70	6.84	7.41	7.25	6.60	6.36	7.05	7.25	6.47	6.87	6.57	6.33	6.51	5.95	6.92	6.79
	Mid-water	7.78	8.09	7.65	6.85	7.38	7.21	6.53	6.26	7.03	7.27	6.40	6.79	6.53	6.36	6.47	6.00	6.83	6.76
	Bottom	7.82	8.15	7.63	6.80	7.41	7.28	6.49	6.28	7.10	7.41	6.39	6.77	6.57	6.46	6.49	6.11	6.80	6.81
W16	Surface	8.59	8.28	7.89	7.76	8.53	7.60	7.48	7.54	7.37	7.40	6.90	7.24	6.95	6.68	6.98	6.82	7.87	7.85
	Mid-water	8.56	8.17	7.79	7.66	8.63	7.63	7.40	7.40	7.43	7.36	6.80	7.17	6.89	6.59	6.87	6.92	7.83	7.81
	Bottom	8.51	8.18	7.80	7.57	8.97	7.72	7.39	7.26	7.47	7.40	6.77	7.11	6.81	6.53	6.78	7.07	7.82	7.82

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	Date	2020-Nov-20	2020-Nov-21	2020-Nov-22	2020-Nov-23	2020-Nov-24	2020-Nov-25	2020-Nov-26	2020-Nov-27	2020-Nov-28	2020-Nov-29	2020-Nov-30
		pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH
W2	Surface	8.41	6.93	7.08	6.85	7.88	6.66	7.88	7.86	8.41	8.10	7.97
	Mid-water	8.39	7.12	7.01	6.86	7.92	6.58	7.88	7.83	8.39	8.04	7.80
	Bottom	8.36	7.07	7.02	6.87	8.39	6.77	7.87	7.89	8.36	8.01	7.68
W5	Surface	7.63	7.06	6.65	6.68	6.77	6.16	7.35	7.20	7.63	7.57	7.81
	Mid-water	7.59	7.03	6.57	6.66	6.71	6.14	7.22	7.11	7.59	7.49	7.77
	Bottom	7.55	6.98	6.46	6.61	6.68	6.13	7.23	7.05	7.55	7.52	7.79
W7	Surface	7.93	7.18	6.89	6.72	6.93	6.49	7.51	7.53	7.93	7.74	7.84
	Mid-water	7.84	7.19	6.86	6.69	6.90	6.50	7.50	7.42	7.84	7.46	7.86
	Bottom	7.84	7.19	6.85	6.71	6.91	6.48	7.53	7.41	7.84	7.35	7.74
W10	Surface	7.94	7.17	6.99	6.69	6.92	6.55	7.67	7.66	7.94	8.02	7.93
	Mid-water	7.89	7.20	6.98	6.74	6.84	6.55	7.69	7.56	7.89	7.98	7.85
	Bottom	7.85	7.23	7.03	6.78	6.83	6.57	7.66	7.57	7.85	7.89	7.83
W11	Surface	7.84	7.20	6.97	6.71	6.87	6.62	7.75	7.82	7.84	8.08	8.04
	Mid-water	8.00	7.11	6.87	6.67	6.87	6.59	7.67	7.71	8.00	8.02	8.04
	Bottom	7.99	7.08	6.91	6.70	6.90	6.61	7.70	7.66	7.99	7.94	8.05
W14	Surface	8.24	7.26	7.11	6.59	7.52	6.56	7.95	7.92	8.24	8.20	8.16
	Mid-water	8.13	7.23	7.09	6.47	7.58	6.75	7.93	7.88	8.13	8.00	8.12
	Bottom	8.01	7.23	7.14	6.68	7.67	6.77	7.97	7.84	8.01	7.97	8.06
W15	Surface	7.39	6.87	6.57	6.33	6.51	5.95	6.92	6.79	7.39	7.37	7.79
	Mid-water	7.22	6.79	6.53	6.36	6.47	6.00	6.83	6.76	7.22	7.42	7.78
	Bottom	7.28	6.77	6.57	6.46	6.49	6.11	6.80	6.81	7.28	7.52	7.83
W16	Surface	9.17	7.24	6.95	6.68	6.98	6.82	7.87	7.85	9.17	8.18	8.00
	Mid-water	9.12	7.17	6.89	6.59	6.87	6.92	7.83	7.81	9.12	8.16	7.93
	Bottom	9.11	7.11	6.81	6.53	6.78	7.07	7.82	7.82	9.11	8.19	7.83

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Table 17: 22nd August until 30th November 2020 Daily Average Conductivity (µS/cm)) Data

	Date	2020-Aug-22	2020-Aug-23	2020-Aug-24	2020-Aug-25	2020-Aug-26	2020-Aug-27	2020-Aug-28	2020-Aug-29	2020-Aug-30	2020-Aug-31	2020-Sep-01	2020-Sep-02	2020-Sep-03	2020-Sep-04	2020-Sep-05	2020-Sep-06	2020-Sep-07	2020-Sep-08
		Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity
W2	Surface	53825.4	53781.56	53792.90	53884.60	53915.29	53769.27	53778.72	53967.45	53885.27	7.90	53708.96	54006.29	53950.40	54315.94	54236.18		54327.50	54400.87
	Mid-water	53781.4	53745.60	53818.92	53855.48	53850.94	53753.21	53775.54	53950.18	53856.10	7.89	54035.33	53973.01	53950.60	54287.29	54267.50		54380.79	54419.43
	Bottom	53740.9	53723.90	53788.62	53838.28	53870.75	53714.65	53774.11	53933.07	53834.79	7.87	54116.89	53914.13	53906.93	54260.70	54268.26		54355.95	54407.20
W5	Surface	53874.2	53813.83	53750.50	53786.32	53798.48	53719.77	53690.00	53825.08	53730.56	7.70	53251.51	53951.17	53716.14	54177.55	54166.92		54187.74	54279.60
	Mid-water	53798.8	53733.40	53734.12	53739.62	53756.72	53719.47	53694.83	53843.37	53752.92	7.67	53947.66	53912.84	53739.09	54149.21	54192.66		54215.90	54235.57
	Bottom	53775.8	53731.90	53700.81	53785.29	53728.25	53697.19	53703.27	53806.20	53721.29	7.68	53990.61	53912.96	53753.88	54126.36	54193.61		54251.78	54226.98
W7	Surface	53813.6	53789.73	53784.47	53834.55	53844.38	53721.35	53730.49	53915.71	53766.96	7.81	53387.82	54029.41	53856.12	54264.13	54231.19		54172.56	54281.63
	Mid-water	53771.0	53731.20	53776.48	53820.68	53797.78	53695.80	53736.71	53922.61	53769.54	7.67	54038.53	53964.33	53808.18	54260.95	54232.89		54167.50	54261.81
	Bottom	53777.4	53721.91	53753.78	53776.29	53704.09	53681.16	53723.33	53905.07	53747.22	7.66	54064.79	53977.89	53771.54	54249.79	54220.00		54155.88	54246.75
W10	Surface	53777.2	53790.38	53856.25	53878.95	53873.15	53820.63	53743.82	53908.82	53752.24	7.83	53617.97	54051.74	53874.12	54301.43	54368.75		54266.39	54338.10
	Mid-water	53707.1	53763.67	53822.89	53836.75	53829.33	53777.40	53760.54	53961.57	53765.89	7.76	53808.08	54023.65	53922.90	54287.22	54361.76		54235.80	54282.92
	Bottom	53702.7	53778.67	53812.22	53773.93	53776.15	53763.82	53736.44	53920.87	53744.38	7.77	54138.29	54001.80	53874.59	54261.57	54315.00		54215.58	54263.13
W11	Surface	53777.7	53710.33	53805.65	53065.00	53878.33	53836.43	53792.91	53961.59	53818.33	7.91	53861.09	53969.21	53995.60	54296.67	54280.49		54268.64	54364.69
	Mid-water	53732.9	53689.56	53836.88	53801.58	53875.97	53786.02	53805.41	53969.79	53779.51	7.84	53895.60	54019.49	53987.11	54309.07	54309.04		54264.78	54340.38
	Bottom	53699.5	53660.27	53831.49	53831.82	53862.41	53770.70	53786.60	53953.25	53733.09	7.85	54048.39	54010.69	53942.57	54308.57	54264.65		54245.90	54314.52
W14	Surface	53854.2	53843.95	53811.33	53892.50	53866.33	53898.54	53801.73	53901.54	53845.24	7.94	53681.94	53846.56	53773.40	54325.61	54195.64		54353.95	54325.00
	Mid-water	53820.9	53775.00	53857.02	53898.28	53903.00	53881.36	53830.98	53951.72	53860.41	7.90	54117.47	53852.17	53842.03	54286.88	54279.90		54322.75	54354.49
	Bottom	53889.8	53748.19	53832.36	53860.14	53885.27	53846.23	53806.43	53910.00	53815.92	7.94	54152.40	53917.63	53900.82	54249.26	54279.31		54330.50	54334.03
W15	Surface	53823.8	53775.15	53730.88	53793.00	53783.09	53734.29	53696.14	53906.39	53742.92	7.52	53916.51	53951.74	53845.76	54156.27	54195.52		54190.91	54287.78
	Mid-water	53753.9	53738.44	53719.55	53798.36	53824.77	53713.45	53694.26	53851.63	53778.28	7.52	54092.29	53960.68	53799.22	54184.59	54228.37		54177.56	54292.50
	Bottom	53720.2	53710.00	53763.81	53822.83	53805.29	53736.53	53718.98	53784.77	53765.56	7.56	54097.22	53970.29	53807.82	54130.73	54231.59		54145.40	54284.21
W16	Surface	53824.9	53780.85	53861.43	53906.38	53871.95	53823.81	53717.67	53903.24	53909.76	7.83	53903.14	53770.86	53904.88	54354.31	54264.40		54498.95	54387.11
	Mid-water	53761.0	53749.82	53846.67	53850.16	53855.52	53806.31	53730.00	53925.33	53885.67	7.79	54168.41	53949.68	53959.33	54316.00	54301.11		54470.29	54377.40
	Bottom	53781.3	53690.96	53800.89	53803.43	53841.80	53770.25	53709.57	53899.12	53897.37	7.78	54181.19	53947.35	53920.00	54265.58	54307.64		54409.60	54378.06
W19 (Background	Surface	53939.8	53818.86	53936.11															
	Mid-water	53883.4	53789.41	53880.18															
	Bottom	53863.7	53766.04	53812.75															
W20	Surface	53822.7	53954.38	53918.46															
	Mid-water	53763.5	53798.57	53853.54															
	Bottom	53727.0	53756.96	53783.72															
W25	Surface	54018.4	53843.89	53888.30															
	Mid-water	53882.7	53755.10	53814.00															
	Bottom	53878.7	53728.67	53829.00															
W26	Surface	53726.2	53811.20	53800.32															
	Mid-water	53688.0	53712.24	53760.41															
	Bottom	53644.6	53678.63	53716.33															
W27 (Background	Surface	53855.0	53775.11	53844.44															
	Mid-water	53861.1	53742.27	53806.92															
	Bottom	53857.9	53689.72	53816.11															
W36	Surface	53894.1	53775.11	53813.55															
	Mid-water	53776.7	53742.27	53791.93															
	Bottom	53773.1	53689.72	53733.53															
W45	Surface	53759.1	53922.75	53922.82															
	Mid-water	53677.7	53787.76	53868.73															
	Bottom	53659.3	53784.44	53844.21															
W46	Surface	53782.7	53864.57	53967.67															
	Mid-water	53718.9	53747.31	53900.86															
	Bottom	53642.4	53755.45	53864.91															
W47	Surface																		
	Mid-water																		
	Bottom																		
W51	Surface	53873.8	53829.12	53807.19															
	Mid-water	53810.8	53757.44	53753.18															
	Bottom	53782.1	53761.14	53749.02															

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	Date	2020-Sep-09	2020-Sep-10	2020-Sep-11	2020-Sep-12	2020-Sep-13	2020-Sep-14	2020-Sep-15	2020-Sep-16	2020-Sep-17	2020-Sep-18	2020-Sep-19	2020-Sep-20	2020-Sep-21	2020-Sep-22	2020-Sep-23	2020-Sep-24	2020-Sep-25	2020-Sep-26
		Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity
W2	Surface	54522.81	54451.85	54054.41	54707.87	54669.58	54482.24	54837.73	54819.58	55243.28	54918.46	55066.14	56234.20	55565.11	56428.27	56280.22	56387.11	56401.97	56333.00
	Mid-water	54445.96	54377.81	53987.35	54706.58	54656.14	54540.75	54853.66	54876.74	55253.21	54932.00	55090.38	56268.97	55527.46	56413.77	56299.47	56347.41	56319.72	56300.99
	Bottom	54433.40	54363.28	53978.41	54670.96	54656.25	54563.64	54831.18	54898.00	55240.41	54899.60	55082.38	56232.94	55464.14	56450.00	56280.85	56319.73	56335.14	56302.73
W5	Surface	54364.29	54232.67	53885.48	54599.28	54562.90	54410.43	54709.51	54629.64	54857.50	54768.49	54908.04	56145.18	55463.68	56288.80	56058.50	56255.90	56240.86	56219.07
	Mid-water	54267.10	54261.79	53851.69	54579.86	54590.12	54429.29	54727.42	54619.31	54829.84	54765.63	54852.83	56183.33	55396.36	56259.34	56097.84	56186.13	56191.58	56173.28
	Bottom	54235.56	54219.25	53877.50	54567.05	54561.75	54404.64	54721.29	54664.12	54819.86	54714.59	54904.10	56146.72	55373.48	56255.00	56082.36	56186.06	56177.76	56164.88
W7	Surface	54372.96	54282.92	53945.61	54672.68	54677.55	54548.26	54843.44	54796.36	54806.53	54881.95	54947.50	56263.98	55551.77	56459.36	56147.81	56326.75	56311.37	56279.11
	Mid-water	54341.41	54164.68	53957.88	54614.15	54670.77	54525.09	54820.64	54752.10	54796.20	54785.25	54785.20	56146.80	55453.65	56481.04	56181.84	56299.37	56248.90	56250.00
	Bottom	54283.41	54136.30	53942.19	54627.72	54651.63	54526.18	54796.36	54642.82	54765.96	54573.23	54760.45	56105.65	55423.06	56496.83	56153.48	56293.71	56266.44	56249.17
W10	Surface	54383.33	54321.94	53978.36	54659.49	54669.38	54600.17	54880.00	54822.17	54818.46	54891.52	54945.33	56281.48	55588.36	56486.22	56325.00	56368.13	56330.00	56318.50
	Mid-water	54361.91	54353.69	53978.33	54637.50	54686.14	54590.88	54913.13	54836.83	54815.90	54908.10	54939.74	56309.49	55584.57	56507.36	56332.50	56344.61	56346.70	56274.09
	Bottom	54355.12	54330.39	53959.79	54608.18	54694.36	54570.74	54880.68	54828.05	54814.17	54886.98	54915.00	56292.13	55533.86	56498.00	56296.77	56265.16	56337.96	56254.75
W11	Surface	54487.80	54342.93	54013.61	54544.00	54691.52	54587.66	54859.51	54963.02	55111.82	54824.67	55130.54	56296.38	55564.50	56537.07	56384.52	56290.68	56290.42	55715.32
	Mid-water	54413.62	54298.61	53999.72	54580.95	54687.06	54630.00	54887.33	55098.85	55241.73	54768.72	55172.98	56300.15	55571.13	56547.82	56379.81	56366.10	56345.29	56312.99
	Bottom	54411.73	54283.50	53993.73	54570.47	54642.29	54621.33	54877.61	55111.49	55212.37	54752.08	55221.76	56274.50	55539.52	56575.20	56316.67	56356.30	56278.25	56294.00
W14	Surface	53854.90	54431.78	54040.75	54714.78	54659.25	54508.75	54790.88	54740.69	55139.46	54786.96	54884.15	56214.35	55516.53	56442.38	56176.34	56330.00	56410.18	56343.91
	Mid-water	53882.05	54427.33	54024.10	54705.70	54690.57	54489.68	54723.19	54738.85	55181.74	54797.37	54912.90	56204.94	55554.89	56421.02	56241.95	56328.53	56346.21	56329.18
	Bottom	53886.60	54336.14	53982.91	54684.35	54669.63	54505.65	54754.80	54839.17	55199.01	54803.56	55002.78	56267.57	55588.18	56499.18	56280.87	56338.70	56360.76	56310.19
W15	Surface	54299.58	54215.59	53900.67	54616.19	54647.35	54404.26	54737.65	54746.25	54899.82	54800.63	54968.95	56285.32	55552.00	56253.33	56258.18	56222.26	56290.00	56298.37
	Mid-water	54344.14	54257.12	53943.87	54658.94	54601.58	54428.16	54778.31	54713.57	54916.44	54852.11	54994.93	56200.15	55596.46	56233.00	56256.92	56273.83	56335.27	56282.16
	Bottom	54317.86	54217.60	53909.35	54624.55	54602.39	54416.73	54699.29	54676.61	54868.15	54875.66	54971.89	56195.21	55477.12	56235.00	56231.04	56283.56	56287.58	56253.58
W16	Surface	54503.14	54402.05	54011.75	54672.50	54650.00	54606.09	54882.28	54903.43	55260.56	54882.88	55131.43	56282.34	55602.00	56496.39	56338.60	56375.07	56355.63	56361.87
	Mid-water	54483.45	54428.89	53985.65	54638.33	54662.33	54548.95	54835.23	54881.88	55242.86	54889.24	55096.39	56246.41	55628.08	56582.05	56337.69	56355.27	56357.34	56333.69
	Bottom	54492.73	54350.20	53964.55	54630.83	54650.55	54516.32	54804.19	54917.52	55273.41	54873.33	55098.42	56205.75	55585.53	56560.00	56345.62	56350.85	56332.22	56291.19

	Date	2020-Sep-27	2020-Sep-28	2020-Sep-29	2020-Sep-30	2020-Oct-01	2020-Oct-02	2020-Oct-03	2020-Oct-04	2020-Oct-05	2020-Oct-06	2020-Oct-07	2020-Oct-08	2020-Oct-09	2020-Oct-10	2020-Oct-11	2020-Oct-12	2020-Oct-13	2020-Oct-14
		Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity
W2	Surface	56428.20	56554.43	56482.08	56452.00	56446.60	56585.71	56859.52	56635.42	56729.35	56508.22	56015.73	55880.28	56412.96	56649.14	56446.60	56578.42	56255.00	56309.94
	Mid-water	56436.35	56531.81	56471.17	56457.53	56476.37	56604.49	56825.11	56624.06	56693.56	56487.08	55968.39	55882.35	56377.23	56612.74	56476.37	56574.73	56221.25	56304.65
	Bottom	56440.73	56509.93	56496.00	56443.03	56444.46	56619.82	56820.49	56623.08	56676.89	56418.15	55964.55	55825.49	56365.49	56606.33	56439.57	56525.23	56181.00	56280.16
W5	Surface	56326.88	56419.87	56571.00	56424.04	56475.33	56477.29	56783.48	56637.85	56654.31	56605.20	55898.41	55872.75	56258.47	56477.87	56475.44	56532.38	56125.52	56254.50
	Mid-water	56306.46	56391.16	56530.13	56404.62	56401.91	56453.01	56786.79	56632.54	56679.21	56543.98	55851.38	55838.00	56241.19	56429.18	56401.91	56496.67	56110.46	56225.45
	Bottom	56251.67	56380.00	56501.71	56360.75	56375.61	56466.56	56774.83	56633.72	56632.99	56548.21	55853.33	55842.47	56255.00	56408.44	56376.13	56476.09	56096.72	56209.55
W7	Surface	56446.76	56572.61	56454.91	56461.36	56480.54	56548.18	56739.57	56612.18	56580.80	56366.62	55923.09	55897.92	56303.26	56579.17	56477.47	56610.00		
	Mid-water	56445.00	56580.88	56424.94	56436.63	56477.18	56434.74	56779.51	56586.93	56594.55	56330.84	55886.09	55879.23	56323.50	56555.00	56477.18	56577.82		
	Bottom	56406.03	56515.08	56425.19	56387.44	56462.81	56406.49	56750.60	56552.79	56575.32	56342.24	55848.83	55800.52	56284.32	56525.18	56462.81	56520.71		
W10	Surface	56509.55	56564.52	56489.36	56505.82	56483.54	56591.48	56737.58	56667.50	56663.45	56450.48	56023.40	55854.02	56430.85	56663.76	56485.11	56658.39		
	Mid-water	56513.28	56533.28	56450.72	56530.55	56482.23	56613.54	56729.73	56647.95	56597.39	56397.47	55934.55	55851.76	56381.78	56669.65	56482.23	56590.66		
	Bottom	56473.11	56535.74	56419.82	56528.94	56466.49	56538.05	56734.75	56593.11	56566.77	56381.36	55897.38	55806.55	56350.91	56630.57	56466.49	56600.88		
W11	Surface	56445.14	56677.76	56475.00	56557.54	56516.35	56615.52	56863.06	56662.39	56697.78	56484.52	55960.71	55876.57	56433.39	56655.96	56516.35	56583.51	56192.97	56258.30
	Mid-water	56444.05	56603.47	56482.84	56478.79	56483.49	56624.79	56825.05	56650.24	56661.98	56446.23	55996.04	55838.85	56372.41	56667.30	56483.49	56588.54	56185.40	56258.93
	Bottom	56414.48	56562.38	56438.91	56519.31	56455.38	56579.05	56781.97	56618.45	56611.83	56424.18	55958.69	55832.68	56344.66	56658.64	56455.38	56581.65	56161.04	56253.72
W14	Surface	56443.05	56515.84	56496.07	56379.23	56495.42	56556.47	56836.19	56593.07	56705.18	56481.31	56003.41	55851.38	56370.26	56662.67	56495.42	56630.82	56220.35	56328.84
	Mid-water	56438.54	56532.22	56492.93	56416.39	56479.78	56602.67	56842.60	56588.29	56698.59	56447.11	55988.21	55849.38	56456.77	56666.15	56479.78	56588.77	56234.30	56362.12
	Bottom	56410.69	56530.65	56481.90	56409.06	56453.64	56573.75	56830.47	56555.28	56708.15	56439.86	55970.29	55847.00	56427.58	56654.27	56460.00	56576.88	56222.45	56344.25
W15	Surface	56345.93	56382.79	56418.87	56240.79	56357.22	56437.04	56639.10	56532.20	56536.79	56426.40	56472.35	55832.50	56291.88	56531.73	56357.22	56479.62	56105.71	56268.08
	Mid-water	56322.23	56358.21	56393.62	56275.97	56419.87	56418.15	56637.59	56568.78	56595.73	56378.91	56465.75	55796.84	56243.82	56484.00	56419.87	56451.15	56128.86	56249.05
	Bottom	56283.86	56347.54	56386.54	56258.98	56387.54	56373.24	56626.62	56516.34	56577.31	56298.19	56407.32	55764.06	56228.71	56417.08	56387.54	56448.22	56095.70	56274.70
W16	Surface	56507.53	56568.79	56546.53	56525.59	56505.37	56549.15	56910.33	56675.00	56691.43	56504.61	55955.85	55880.00	56369.69	56663.46	56504.41	56557.69	56233.25	56282.46
	Mid-water	56464.47	56525.14	56503.78	56498.03	56482.43	56557.13	56835.56	56637.98	56704.21	56463.12	55925.00	55858.59	56355.85	56643.33	56482.43	56564.31	56192.83	56305.53
	Bottom	56434.33	56500.68	56472.76	56461.45	56466.92	56554.19	56847.96	56650.93	56675.47	56474.55	55889.33	55833.47	56280.75	56617.30	56465.94	56571.83	56218.06	56330.56

Boskalis
Dredging & Marine Experts

	Date	2020-Oct-15	2020-Oct-16	2020-Oct-17	2020-Oct-18	2020-Oct-19	2020-Oct-20	2020-Oct-21	2020-Oct-22	2020-Oct-23	2020-Oct-24	2020-Oct-25	2020-Oct-26	2020-Oct-27	2020-Oct-28	2020-Oct-29	2020-Oct-30	2020-Oct-31	2020-Nov-01
		Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity
W2	Surface	56308.81		56155.83	56105.37	56148.14	56131.70	55992.35	56116.36	55969.62	55990.73	56012.70	56052.36	56008.97	55951.53	55866.41	55843.16	56047.17	56017.97
	Mid-water	56273.08		56100.81	56098.62	56098.40	56091.00	55953.60	56143.09	55952.78	55965.33	55959.15	56061.37	55983.65	55917.32	55808.94	55873.13	56079.31	55972.99
	Bottom	56272.59		56054.31	56060.30	56105.30	56098.46	55970.32	56117.66	55911.02	55986.44	55942.65	56023.92	55960.95	55900.00	55803.10	55833.77	56062.39	55946.18
W5	Surface	56200.28	56097.73	56062.98	56082.31	56073.81	56006.96	55866.91	56090.31	55943.04	55893.57	55931.40	56012.75	55994.24	55810.82	55698.27	55756.73	55993.97	55978.41
	Mid-water	56182.76	56108.97	56023.08	56086.97	56097.77	56004.71	55873.65	56106.78	55964.32	55864.80	55869.52	56007.33	56003.94	55822.94	55722.22	55720.57	55948.37	55900.53
	Bottom	56177.97	56131.07	56013.33	56102.14	56090.45	56053.97	55839.77	56124.39	55926.97	55873.69	55897.89	55984.69	55993.48	55829.26	55764.92	55721.33	55959.09	55835.34
W7	Surface				55974.81	56153.15	56028.18	55886.98	56028.03	55801.11	55862.33	55924.46	56017.57	56022.89	55870.87	55823.63	55763.97	56100.49	56060.90
	Mid-water				56015.84	56156.10	55991.09	55930.86	56063.76	55875.96	55892.70	55952.70	56006.52	56037.89	55883.24	55806.25	55741.82	56046.15	56008.99
	Bottom				56025.47	56141.67	56065.96	55969.57	56136.52	55883.27	55906.34	55976.46	56005.39	56040.52	55844.34	55783.26	55772.46	56051.97	55983.55
W10	Surface				56072.26	56100.45	55999.18	55882.92	56023.46	56033.40	55945.63	55924.21	56057.28	56056.36	55915.76	55820.53	55782.46	56107.43	56018.11
	Mid-water				56038.22	56122.24	56041.16	55865.13	55996.59	56008.05	55916.34	55978.35	56061.54	56072.09	55912.42	55840.00	55763.88	56081.61	55979.22
	Bottom				56019.63	56140.73	56055.33	55929.13	55970.08	56073.75	55908.12	56039.88	56056.34	56039.08	55851.05	55838.68	55785.30	56037.14	55953.11
W11	Surface	56334.39		56131.58	56071.45	56207.42	55929.79	55913.96	55987.35	55984.03	55903.33	55935.05	56088.50	56016.36	55894.62	55833.97	55800.29	56098.69	56025.08
	Mid-water	56271.06		56078.77	56045.21	56168.08	56056.41	55934.86	56000.00	55956.14	55910.94	56014.93	56095.13	56028.16	55933.44	55831.81	55796.15	56113.60	55981.81
	Bottom	56257.36		56034.56	56063.67	56171.62	56060.15	55988.05	56021.80	55949.84	55920.15	55990.14	56087.23	56030.21	55906.22	55832.32	55764.23	56107.85	55953.89
W14	Surface	56188.23		56169.17	56231.11	56131.10	56176.57	56112.81	56253.73	56051.64	55987.24	55961.87	56051.17	56060.76	55974.93	55890.31	55857.65	56091.80	56016.54
	Mid-water	56268.82		56124.00	56214.20	56159.81	56168.33	56048.16	56225.70	56041.93	55991.71	55934.43	56033.76	56055.50	55927.72	55837.32	55853.54	56094.27	55930.25
	Bottom	56382.71		56151.94	56190.45	56140.83	56179.80	56035.87	56241.41	56008.54	56023.26	55930.57	56060.54	56037.53	55914.87	55939.44	55836.24	56077.90	55967.82
W15	Surface	56193.16	56029.17	56003.45	56021.93	56000.70	55928.18	55895.16	56024.35	55931.61	55831.55	55824.24	55959.37	55931.07	55763.89	55774.26	55757.62	55969.46	55941.31
	Mid-water	56166.81	56060.59	55998.64	56049.70	56055.21	55969.02	55906.84	56029.65	55948.00	55830.34	55882.13	55968.93	55919.67	55772.40	55784.63	55739.51	55926.79	55901.29
	Bottom	56139.86	56063.09	56030.57	56040.63	56046.25	55972.70	55905.32	56047.95	55911.18	55860.83	55858.15	55978.24	55885.69	55809.24	55776.90	55744.80	55918.79	55869.34
W16	Surface	56263.54	56134.77	56110.58	56124.59	56117.24	56093.68	55954.84	56086.07	56000.96	55991.33	55792.91	56025.41	56032.07	55929.74	55871.69	55859.43	56084.29	55991.36
	Mid-water	56258.69	56127.07	56089.77	56136.75	56167.69	56089.72	55936.63	56083.95	56023.00	55914.32	55921.12	56032.28	56015.45	55923.33	55868.67	55831.34	56087.88	55925.28
	Bottom	56212.71	56104.39	56095.42	56104.54	56147.02	56070.72	55933.31	56059.36	56002.22	55933.37	55905.90	56004.32	55989.44	55916.39	55865.90	55826.19	56062.46	55923.04

	Date	2020-Nov-02	2020-Nov-03	2020-Nov-04	2020-Nov-05	2020-Nov-06	2020-Nov-07	2020-Nov-08	2020-Nov-09	2020-Nov-10	2020-Nov-11	2020-Nov-12	2020-Nov-13	2020-Nov-14	2020-Nov-15	2020-Nov-16	2020-Nov-17	2020-Nov-18	2020-Nov-19
		Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity
W2	Surface	56120.37	56011.41	56072.30	56066.95	56332.33	56308.10	56243.75	56282.33	55476.00	56320.83	56294.03	56316.29	56145.70	56248.79	56115.24	55527.96	54247.06	54687.04
	Mid-water	56066.48	56046.31	56074.38	56022.07	56310.11	56276.82	56211.33	56245.41	55459.13	56344.81	56335.78	56335.20	56144.49	56182.78	56238.00	55549.21	54281.49	54728.02
	Bottom	56074.07	56057.65	56042.25	56016.61	56283.93	56260.65	56160.73	56200.19	55451.83	56364.79	56330.60	56333.14	56160.83	56180.63	56264.73	55560.40	54260.89	54709.69
W5	Surface	56039.75	55968.71	56007.80	56023.33	56211.82	56226.60	56050.00	55785.75	56176.57	56047.78	56186.21	56207.17	56059.78	56186.79	55861.35	55472.56	54512.10	54771.50
	Mid-water	56004.00	55975.24	56012.89	55996.71	56163.42	56168.75	56064.77	56076.31	56125.62	56209.25	56152.93	56191.86	56191.85	56150.49	55840.87	55490.48	54500.68	54733.33
	Bottom	55964.35	55985.31	55974.00	55950.00	56107.85	56142.08	56048.78	56057.34	56133.44	56221.33	56197.55	56209.30	56208.10	56131.60	55902.87	55446.67	54485.58	54713.48
W7	Surface	56054.71	56111.21	56077.23	56101.49	56435.83	56284.20	56184.38	56231.82	56222.18	56413.25	56311.61	56225.29	56138.49	56047.60	55929.28	55432.67	54340.31	54776.22
	Mid-water	56004.95	56108.66	56093.91	56087.91	56356.49	56267.22	56181.70	56246.25	56246.70	56355.96	56307.43	56287.59	56098.00	56015.53	55933.43	55445.23	54267.19	54754.21
	Bottom	55995.42	56114.27	56081.29	56042.35	56192.82	56274.29	56061.76	56113.41	56217.46	56351.05	56303.17	56278.57	56158.28	56014.71	55925.00	55404.39	54262.54	54755.87
W10	Surface	56074.48	56102.74	56088.65	56081.14	56364.57	56299.52	56292.75	56319.85	56280.60	56372.08	56264.67	56273.28	56000.00	56100.70	55915.93	55494.00	54293.14	54781.43
	Mid-water	56054.38	56110.31	56074.11	56112.94	56308.36	56280.50	56223.71	56262.78	56245.26	56335.06	56239.78	56290.72	56144.48	56063.17	55905.88	55455.50	54280.30	54733.47
	Bottom	56042.58	56071.77	56033.39	56018.23	56263.47	56277.53	56250.00	56251.33	56256.62	56313.38	56322.06	56299.63	56149.73	56079.89	55914.68	55446.56	54286.15	54725.69
W11	Surface	56035.48	56067.33	56125.29	56078.99	56321.67	56301.50	56233.82	56273.01	56302.77	56380.18	56189.44	56302.27	56112.44	56243.33	56207.71	55591.40	54263.70	54743.64
	Mid-water	56014.90	56061.46	56060.67	56013.22	56297.31	56286.59	56231.74	56260.72	56280.68	56423.53	56200.94	56296.17	56137.43	56216.87	56194.06	55582.00	54288.87	54770.83
	Bottom	56009.89	56076.02	56050.00	55967.53	56282.32	56270.86	56148.28	56242.44	56279.87	56400.74	56204.06	56274.85	56155.32	56162.03	56182.92	55581.82	54255.44	54785.58
W14	Surface	56202.91	56098.26	56034.41	56051.45	56412.11	56340.19	56283.06	56301.83	55501.29	56267.71	56309.31	56299.58	56136.96	56140.54	56170.33	55349.00	54078.57	54629.66
	Mid-water	56197.38	56043.03	55973.66	55983.00	56350.75	56280.65	56241.20	56267.15	55471.06	56274.55	56313.13	56307.32	56173.60	56118.40	56221.26	55453.69	54100.00	54646.75
	Bottom	56165.80	56062.35	56019.25	55998.10	56318.42	56280.11	56213.37	56215.87	55469.15	56304.14	56321.41	56340.97	56159.78	56172.55	56274.60	55644.68	54056.84	54586.97
W15	Surface	56057.53	56015.50	55979.27	55989.57	56194.26	56164.91	56087.63	56166.43	56128.35	56202.33	56254.46	56204.35	55569.58	56121.90	55977.32	55273.64	54430.95	54713.68
	Mid-water	56013.85	55967.92	55969.47	55920.59	56139.25	56121.69	56096.83	56131.26	56108.45	56242.21	56249.91	56228.79	56016.52	56114.54	55954.76	55364.11	54432.22	54673.21
	Bottom	55991.35	55961.02	55901.15	55854.93	56112.65	56130.73	56062.39	56141.70	56142.08	56336.56	56245.39	56240.00	56067.56	56108.63	55985.23	55361.23	54403.81	54644.59
W16	Surface	56191.71	56147.33	56107.91	56056.90	56337.16	56256.55	56184.40	56230.53	55464.76	56181.97	56266.87	56350.30	56206.99	56249.69	56258.70	55495.67	54299.61	54796.03
	Mid-water	56139.51	56048.62	56076.67	56023.14	56320.00	56276.53	56192.14	56252.35	56269.05	56243.49	56293.19	56328.98	56158.60	56221.72	56230.39	55514.41	54327.46	54759.80
	Bottom	56114.30	56053.91	56079.46	55991.55	56307.39	56252.56	56191.94	56253.62	56225.06	56355.97	56317.62	56321.69	56156.40	56217.31	56195.27	55480.81	54283.96	54775.00

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	Date	2020-Nov-20	2020-Nov-21	2020-Nov-22	2020-Nov-23	2020-Nov-24	2020-Nov-25	2020-Nov-26	2020-Nov-27	2020-Nov-28	2020-Nov-29	2020-Nov-30
		Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity	Conductivity
W2	Surface	54680.00	56316.29	56145.70	56248.79	56115.24	55527.96	54247.06	54687.04	54680.00	54909.60	55172.86
	Mid-water	54637.91	56335.20	56144.49	56182.78	56238.00	55549.21	54281.49	54728.02	54637.91	54896.20	55195.89
	Bottom	54619.76	56333.14	56160.83	56180.63	56264.73	55560.40	54260.89	54709.69	54619.76	54866.05	55164.85
W5	Surface	54654.87	56207.17	56059.78	56186.79	55861.35	55472.56	54512.10	54771.50	54654.87	54840.92	55116.67
	Mid-water	54619.25	56191.86	56191.85	56150.49	55840.87	55490.48	54500.68	54733.33	54619.25	54805.77	55087.32
	Bottom	54607.25	56209.30	56208.10	56131.60	55902.87	55446.67	54485.58	54713.48	54607.25	54795.75	55053.80
W7	Surface	54652.06	56225.29	56138.49	56047.60	55929.28	55432.67	54340.31	54776.22	54652.06	54885.44	54274.38
	Mid-water	54629.02	56287.59	56098.00	56015.53	55933.43	55445.23	54267.19	54754.21	54629.02	54850.23	55096.25
	Bottom	54623.16	56278.57	56158.28	56014.71	55925.00	55404.39	54262.54	54755.87	54623.16	54877.69	55454.67
W10	Surface	54656.44	56273.28	56000.00	56100.70	55915.93	55494.00	54293.14	54781.43	54656.44	54924.85	55161.92
	Mid-water	54629.65	56290.72	56144.48	56063.17	55905.88	55455.50	54280.30	54733.47	54629.65	54863.62	55154.83
	Bottom	54629.07	56299.63	56149.73	56079.89	55914.68	55446.56	54286.15	54725.69	54629.07	54840.00	55128.70
W11	Surface	54661.86	56302.27	56112.44	56243.33	56207.71	55591.40	54263.70	54743.64	54661.86	54934.60	55215.74
	Mid-water	54655.53	56296.17	56137.43	56216.87	56194.06	55582.00	54288.87	54770.83	54655.53	54931.79	55192.50
	Bottom	54637.75	56274.85	56155.32	56162.03	56182.92	55581.82	54255.44	54785.58	54637.75	54925.78	55189.82
W14	Surface	54696.62	56299.58	56136.96	56140.54	56170.33	55349.00	54078.57	54629.66	54696.62	54864.92	55126.44
	Mid-water	54622.69	56307.32	56173.60	56118.40	56221.26	55453.69	54100.00	54646.75	54622.69	54860.56	55111.43
	Bottom	54530.97	56340.97	56159.78	56172.55	56274.60	55644.68	54056.84	54586.97	54530.97	54858.97	55088.86
W15	Surface	54420.00	56204.35	55569.58	56121.90	55977.32	55273.64	54430.95	54713.68	54420.00	54783.80	55023.87
	Mid-water	54540.00	56228.79	56016.52	56114.54	55954.76	55364.11	54432.22	54673.21	54540.00	54819.67	55004.02
	Bottom	54500.00	56240.00	56067.56	56108.63	55985.23	55361.23	54403.81	54644.59	54500.00	54800.14	55049.46
W16	Surface	54730.45	56350.30	56206.99	56249.69	56258.70	55495.67	54299.61	54796.03	54730.45	54899.69	55120.98
	Mid-water	54637.33	56328.98	56158.60	56221.72	56230.39	55514.41	54327.46	54759.80	54637.33	54854.25	55172.59
	Bottom	54636.56	56321.69	56156.40	56217.31	56195.27	55480.81	54283.96	54775.00	54636.56	54890.68	55180.66

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Table 18: 22nd August until 30th November 2020 Daily Average Turbidity (NTU) Data

	Date	2020-Aug-22	2020-Aug-23	2020-Aug-24	2020-Aug-25	2020-Aug-26	2020-Aug-27	2020-Aug-28	2020-Aug-29	2020-Aug-30	2020-Aug-31	2020-Sep-01	2020-Sep-02	2020-Sep-03	2020-Sep-04	2020-Sep-05	2020-Sep-06	2020-Sep-07	2020-Sep-08
		Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity
W2	Surface	-0.2	-0.24	0.00	-0.24	-0.18	-0.22	-0.20	-0.20	-0.14	-0.12	0.08	-0.18	-0.13	0.09	0.02		-0.22	0.12
	Mid-water	-0.1	-0.20	-0.09	-0.25	-0.22	-0.21	-0.20	-0.18	-0.11	-0.18	-0.16	-0.20	-0.15	-0.06	0.10		-0.23	0.06
	Bottom	0.2	-0.11	-0.13	-0.23	-0.12	-0.07	-0.21	-0.03	-0.12	-0.14	-0.21	-0.15	-0.13	0.06	0.30		-0.07	0.10
W5	Surface	0.3	1.59	-0.09	-0.07	-0.07	-0.21	-0.16	0.22	-0.08	-0.14	-0.15	0.11	-0.18	-0.19	-0.07		-0.24	-0.17
	Mid-water	0.1	0.10	-0.09	-0.22	0.47	-0.04	-0.07	0.05	-0.12	-0.16	-0.09	-0.13	0.40	-0.18	-0.20		-0.19	-0.15
	Bottom	0.5	0.11	0.07	-0.10	0.12	0.63	0.17	-0.02	-0.07	-0.09	0.29	0.00	-0.08	0.02	-0.03		-0.01	-0.06
W7	Surface	0.2	-0.08	0.18	0.54	0.36	0.23	0.05	-0.18	-0.19	0.01	0.18	-0.16	-0.18	-0.25	-0.23		-0.29	-0.19
	Mid-water	-0.2	-0.13	-0.10	0.47	-0.02	0.36	-0.25	-0.24	-0.21	-0.16	-0.25	-0.18	-0.20	-0.27	-0.21		-0.28	-0.23
	Bottom	-0.2	-0.16	0.07	0.48	-0.15	0.00	-0.18	-0.20	-0.05	-0.12	-0.22	-0.13	-0.21	-0.23	-0.15		-0.29	-0.21
W10	Surface	-0.2	-0.21	-0.15	0.04	0.10	-0.05	-0.19	-0.22	-0.23	-0.17	-0.25	-0.12	-0.24	-0.23	-0.29		-0.28	-0.25
	Mid-water	-0.2	-0.21	-0.16	-0.09	-0.19	-0.11	-0.22	-0.24	-0.20	-0.25	-0.27	-0.15	-0.24	-0.27	-0.26		-0.28	-0.25
	Bottom	-0.2	-0.22	-0.22	-0.16	-0.19	-0.16	-0.22	-0.23	-0.21	-0.23	-0.26	-0.13	-0.23	-0.26	-0.26		-0.27	-0.25
W11	Surface	-0.2	-0.18	-0.22	-0.18	-0.16	-0.10	-0.24	-0.22	-0.20	-0.27	-0.25	-0.10	-0.18	-0.23	-0.07		-0.29	-0.22
	Mid-water	-0.2	-0.25	-0.23	-0.20	-0.18	-0.12	-0.24	-0.23	-0.20	-0.26	-0.23	-0.14	-0.20	-0.26	-0.09		-0.28	-0.21
	Bottom	-0.2	-0.24	-0.24	-0.09	-0.09	-0.07	-0.24	-0.22	-0.21	-0.24	-0.27	-0.09	-0.16	-0.22	-0.13		-0.27	-0.19
W14	Surface	-0.1	-0.16	-0.18	-0.07	0.19	0.03	-0.03	0.00	0.01	-0.02	-0.10	0.00	0.20	0.17	0.47		0.07	0.05
	Mid-water	0.1	-0.08	0.16	-0.01	0.06	0.08	0.21	0.05	0.02	-0.05	0.04	0.12	0.31	0.26	0.42		0.08	0.08
	Bottom	0.3	0.23	0.47	0.12	0.18	0.18	0.45	0.49	0.47	0.48	-0.06	0.39	1.02	0.91	0.62		1.02	0.06
W15	Surface	-0.2	-0.20	-0.26	-0.20	-0.15	-0.20	-0.22	-0.20	-0.14	-0.19	-0.21	0.05	-0.24	-0.19	-0.19		-0.22	-0.20
	Mid-water	-0.2	-0.21	-0.26	-0.21	-0.14	-0.20	-0.17	-0.18	-0.13	-0.19	-0.24	0.02	-0.22	-0.19	-0.18		-0.26	-0.20
	Bottom	-0.2	-0.21	-0.23	-0.21	-0.13	-0.13	-0.15	-0.17	-0.13	-0.19	-0.25	0.08	-0.19	-0.15	-0.20		-0.24	-0.21
W16	Surface	-0.2	-0.11	-0.26	-0.22	-0.20	-0.14	-0.24	-0.16	-0.17	-0.23	-0.12	-0.15	-0.11	-0.12	-0.16		-0.21	-0.13
	Mid-water	-0.2	-0.21	-0.21	-0.23	-0.19	-0.11	-0.24	-0.14	-0.16	-0.21	-0.21	-0.19	-0.15	-0.23	-0.19		-0.18	-0.21
	Bottom	-0.2	-0.19	-0.23	-0.20	-0.20	-0.07	-0.23	-0.10	-0.11	-0.24	-0.17	-0.17	-0.11	-0.23	-0.04		-0.13	-0.20
W19 (Background	Surface	-0.2	-0.25	-0.22															
	Mid-water	-0.3	-0.23	-0.21															
	Bottom	-0.3	-0.21	-0.19															
W20	Surface	0.7	0.48	0.01															
	Mid-water	-0.2	-0.15	-0.16															
	Bottom	-0.2	-0.05	-0.06															
W25	Surface	-0.2	-0.16	-0.06															
	Mid-water	-0.3	-0.11	-0.19															
	Bottom	-0.2	-0.09	-0.15															
W26	Surface	-0.2	-0.16	-0.14															
	Mid-water	-0.2	-0.13	-0.13															
	Bottom	-0.2	-0.11	-0.15															
W27 (Background	Surface	-0.2	-0.18	-0.14															
	Mid-water	-0.1	-0.17	-0.11															
	Bottom	-0.2	-0.14	-0.11															
W36	Surface	-0.2	-0.18	-0.25															
	Mid-water	-0.2	-0.17	-0.24															
	Bottom	-0.2	-0.14	-0.23															
W45	Surface	-0.2	-0.21	-0.07															
	Mid-water	-0.2	-0.20	-0.08															
	Bottom	-0.2	-0.15	0.01															
W46	Surface	-0.1	-0.18	0.01															
	Mid-water	-0.1	-0.09	-0.04															
	Bottom	-0.1	-0.12	0.03															
W47	Surface																		
	Mid-water																		
	Bottom																		
W51	Surface	-0.2	-0.23	-0.13															
	Mid-water	-0.1	-0.18	-0.11															
	Bottom	-0.1	-0.19	-0.08															

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	Date	2020-Sep-09	2020-Sep-10	2020-Sep-11	2020-Sep-12	2020-Sep-13	2020-Sep-14	2020-Sep-15	2020-Sep-16	2020-Sep-17	2020-Sep-18	2020-Sep-19	2020-Sep-20	2020-Sep-21	2020-Sep-22	2020-Sep-23	2020-Sep-24	2020-Sep-25	2020-Sep-26
		Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity
W2	Surface	-0.13	-0.08	0.05	0.03	-0.16	0.19	0.07	0.00	0.00	-0.15	0.00	0.05	0.04	0.15	-0.05	0.02	0.07	-0.12
	Mid-water	-0.05	-0.18	-0.17	-0.18	-0.20	-0.19	-0.18	-0.17	-0.03	-0.12	-0.11	0.01	-0.02	-0.09	-0.08	-0.02	-0.05	-0.10
	Bottom	-0.04	-0.15	0.19	-0.19	-0.08	-0.20	-0.10	-0.09	-0.06	-0.12	0.05	0.15	0.10	0.02	0.04	-0.04	0.02	-0.16
W5	Surface	-0.05	0.00	-0.06	0.42	0.19	0.00	-0.14	0.00	-0.13	-0.04	0.55	-0.10	0.20	1.01	-0.15	-0.03	0.23	-0.05
	Mid-water	-0.21	-0.07	-0.13	-0.14	-0.10	-0.14	-0.10	-0.05	-0.16	-0.12	0.03	-0.11	-0.14	0.16	-0.15	0.03	-0.02	0.07
	Bottom	-0.20	-0.09	-0.15	0.23	-0.07	0.06	-0.11	-0.02	-0.12	-0.12	-0.08	-0.08	-0.08	0.30	-0.06	0.33	0.03	0.09
W7	Surface	0.30	-0.20	-0.21	-0.15	-0.20	-0.23	-0.23	-0.22	-0.19	-0.24	-0.22	-0.14	-0.12	-0.11	-0.20	-0.04	-0.10	-0.13
	Mid-water	-0.28	-0.28	-0.20	-0.16	-0.23	-0.17	-0.24	-0.21	-0.20	-0.19	-0.21	-0.15	-0.18	-0.14	-0.21	0.02	-0.14	-0.18
	Bottom	-0.25	-0.28	-0.22	-0.16	-0.21	-0.23	-0.24	-0.19	-0.20	-0.24	-0.21	-0.14	-0.16	-0.12	-0.22	0.22	-0.16	-0.05
W10	Surface	-0.24	-0.26	-0.22	-0.16	-0.18	-0.22	-0.21	-0.24	-0.17	-0.15	-0.18	-0.13	0.15	-0.06	-0.12	-0.15	-0.16	-0.06
	Mid-water	-0.27	-0.27	-0.27	-0.15	-0.23	-0.14	-0.24	-0.23	-0.21	-0.21	-0.14	-0.14	0.03	-0.11	-0.20	-0.13	-0.13	-0.14
	Bottom	-0.26	-0.26	-0.24	-0.13	-0.23	-0.20	-0.25	-0.22	-0.22	-0.21	-0.18	-0.16	0.27	-0.12	-0.12	-0.14	-0.14	-0.12
W11	Surface	-0.16	-0.15	-0.21	-0.19	-0.22	-0.21	-0.22	-0.23	-0.17	-0.14	-0.17	-0.08	-0.07	-0.02	-0.14	-0.14	-0.15	-0.13
	Mid-water	-0.11	-0.22	-0.23	-0.16	-0.25	-0.23	-0.23	-0.24	-0.16	-0.22	-0.19	-0.02	-0.09	-0.05	-0.23	-0.15	-0.16	-0.13
	Bottom	-0.19	-0.25	-0.15	-0.09	-0.24	-0.23	-0.24	-0.24	-0.20	-0.24	-0.19	-0.04	-0.06	-0.11	-0.15	-0.14	-0.14	-0.12
W14	Surface	-0.05	-0.09	-0.03	0.09	0.00	0.09	0.09	-0.06	-0.03	0.03	-0.07	0.01	0.06	0.02	-0.07	-0.01	0.03	0.01
	Mid-water	-0.05	0.00	-0.08	0.06	-0.02	0.19	-0.01	-0.03	0.09	0.08	0.05	0.01	0.08	0.04	0.06	0.11	0.02	0.09
	Bottom	0.23	0.11	0.62	0.37	0.28	0.34	0.45	0.56	0.00	0.07	0.08	0.68	0.49	0.47	0.79	0.31	0.43	0.14
W15	Surface	-0.04	-0.21	-0.17	-0.18	-0.20	-0.22	-0.21	-0.17	-0.14	-0.21	-0.14	-0.14	-0.14	-0.02	-0.23	-0.09	-0.08	-0.07
	Mid-water	-0.21	-0.21	-0.19	-0.19	-0.16	-0.20	-0.22	-0.18	-0.13	-0.20	-0.14	-0.13	-0.16	-0.04	-0.23	-0.12	-0.11	-0.14
	Bottom	-0.21	-0.20	-0.18	-0.18	-0.16	-0.19	-0.22	-0.15	-0.15	-0.14	-0.14	-0.14	-0.16	-0.07	-0.23	-0.07	-0.10	-0.15
W16	Surface	-0.12	-0.11	-0.20	-0.13	-0.11	-0.14	-0.16	-0.13	-0.12	0.00	-0.13	-0.11	-0.09	-0.07	-0.17	0.02	-0.11	-0.08
	Mid-water	-0.20	-0.24	-0.24	-0.22	-0.22	-0.18	-0.19	-0.15	-0.08	-0.09	-0.08	-0.11	-0.08	-0.15	-0.14	-0.04	-0.11	-0.13
	Bottom	-0.15	-0.12	-0.25	-0.16	-0.18	-0.17	-0.17	-0.11	-0.09	0.08	-0.13	-0.08	-0.04	-0.09	-0.07	-0.08	-0.03	-0.11

	Date	2020-Sep-27	2020-Sep-28	2020-Sep-29	2020-Sep-30	2020-Oct-01	2020-Oct-02	2020-Oct-03	2020-Oct-04	2020-Oct-05	2020-Oct-06	2020-Oct-07	2020-Oct-08	2020-Oct-09	2020-Oct-10	2020-Oct-11	2020-Oct-12	2020-Oct-13	2020-Oct-14
		Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity
W2	Surface	-0.01	0.00	-0.13	-0.10	-0.14	-0.14	0.03	-0.12	-0.16	-0.18	-0.09	-0.20	-0.04	-0.14	-0.14	0.04	0.42	-0.01
	Mid-water	-0.10	-0.09	-0.13	-0.09	-0.11	-0.12	-0.01	-0.13	-0.16	-0.18	-0.06	-0.22	-0.16	-0.17	-0.11	-0.13	0.38	0.21
	Bottom	-0.01	0.09	-0.09	0.03	-0.11	0.05	0.30	-0.12	-0.09	-0.14	-0.02	-0.16	-0.09	-0.13	-0.09	-0.15	0.53	0.16
W5	Surface	-0.02	-0.06	0.34	0.07	0.14	-0.08	0.19	0.23	0.00	-0.10	-0.05	0.01	0.11	-0.19	0.13	0.04	0.17	0.07
	Mid-water	0.00	-0.02	0.18	0.08	0.11	-0.11	0.20	0.07	0.05	-0.02	-0.09	0.11	0.11	-0.18	0.11	0.09	0.22	-0.04
	Bottom	0.03	0.08	0.18	0.06	0.43	0.02	0.31	0.12	0.40	0.13	-0.07	0.11	0.04	-0.03	0.44	0.03	0.47	0.09
W7	Surface	-0.04	-0.13	-0.09	-0.14	0.00	0.11	-0.09	-0.21	-0.11	-0.19	0.13	-0.19	-0.09	-0.21	0.00	-0.20		
	Mid-water	-0.06	-0.14	-0.08	-0.11	-0.13	-0.13	-0.14	-0.22	-0.17	-0.19	0.20	-0.17	-0.20	-0.22	-0.13	-0.23		
	Bottom	-0.08	-0.13	-0.09	-0.09	-0.01	-0.12	-0.13	-0.18	-0.13	0.00	0.06	-0.15	-0.20	-0.21	-0.01	-0.22		
W10	Surface	-0.16	-0.13	-0.14	-0.13	-0.06	-0.09	-0.10	-0.20	-0.16	-0.03	0.22	-0.18	-0.16	-0.21	-0.06	-0.17		
	Mid-water	-0.16	-0.14	-0.16	-0.14	-0.17	-0.04	-0.12	-0.19	-0.20	-0.02	0.01	-0.17	-0.19	-0.23	-0.17	-0.20		
	Bottom	-0.17	-0.14	-0.16	-0.15	-0.17	0.06	-0.11	-0.05	-0.19	-0.13	0.07	-0.18	-0.20	-0.22	-0.17	-0.19		
W11	Surface	-0.11	-0.15	-0.15	-0.12	-0.13	-0.14	-0.08	-0.19	-0.16	-0.16	-0.06	-0.19	-0.19	-0.21	-0.13	-0.17	0.07	-0.16
	Mid-water	-0.11	-0.14	-0.13	-0.12	-0.15	-0.14	-0.07	-0.19	-0.18	-0.16	-0.05	-0.20	-0.17	-0.25	-0.15	-0.19	0.02	-0.19
	Bottom	-0.07	-0.08	-0.11	-0.15	-0.13	-0.13	-0.05	-0.18	-0.17	-0.17	-0.05	-0.21	-0.17	-0.23	-0.13	-0.20	0.13	-0.17
W14	Surface	0.00	-0.09	-0.03	0.01	0.13	0.10	0.08	0.39	0.24	0.17	0.29	0.22	-0.05	0.06	0.13	0.85	0.74	0.29
	Mid-water	-0.02	0.01	0.18	0.20	0.09	0.22	0.21	0.44	0.42	0.20	0.16	0.36	0.04	0.07	0.09	0.54	0.74	0.38
	Bottom	0.26	0.07	0.35	0.50	0.46	0.47	0.68	0.55	0.27	0.37	0.24	0.36	0.29	0.06	0.50	1.01	0.61	0.93
W15	Surface	-0.12	-0.10	-0.05	-0.06	-0.13	-0.02	-0.01	-0.21	-0.12	-0.15	-0.07	-0.16	-0.17	-0.22	-0.13	-0.18	-0.02	-0.06
	Mid-water	-0.14	-0.11	-0.10	-0.10	-0.13	-0.10	-0.06	-0.20	-0.10	-0.15	-0.11	-0.17	-0.07	-0.22	-0.13	-0.18	-0.03	-0.06
	Bottom	-0.13	-0.12	-0.10	-0.11	-0.12	-0.14	-0.06	-0.21	-0.09	-0.11	-0.13	-0.15	-0.16	-0.20	-0.12	-0.16	-0.03	-0.06
W16	Surface	-0.11	-0.11	-0.09	-0.09	-0.08	-0.09	-0.03	-0.14	-0.13	-0.18	-0.15	-0.15	-0.16	-0.21	-0.08	-0.03	0.10	0.11
	Mid-water	-0.15	-0.12	-0.11	-0.09	-0.11	-0.13	-0.07	-0.10	-0.16	-0.20	-0.15	-0.21	-0.19	-0.23	-0.11	-0.16	0.12	-0.08
	Bottom	-0.12	-0.11	-0.11	-0.06	-0.11	-0.10	-0.08	-0.07	-0.14	-0.16	-0.07	-0.17	-0.16	-0.21	-0.12	-0.16	0.31	-0.03

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	Date	2020-Oct-15	2020-Oct-16	2020-Oct-17	2020-Oct-18	2020-Oct-19	2020-Oct-20	2020-Oct-21	2020-Oct-22	2020-Oct-23	2020-Oct-24	2020-Oct-25	2020-Oct-26	2020-Oct-27	2020-Oct-28	2020-Oct-29	2020-Oct-30	2020-Oct-31	2020-Nov-01
		Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity
W2	Surface	0.16		0.50	-0.12	-0.15	-0.06	-0.15	-0.16	-0.13	0.03	-0.04	-0.15	-0.16	-0.15	-0.11	-0.14	-0.14	0.06
	Mid-water	-0.08		0.53	-0.17	-0.12	-0.03	-0.17	-0.10	-0.18	-0.14	-0.18	-0.16	-0.14	-0.13	-0.15	-0.16	-0.15	0.18
	Bottom	-0.03		0.31	-0.15	-0.10	0.04	-0.07	-0.16	-0.06	-0.10	-0.13	-0.15	-0.08	-0.06	-0.12	-0.07	-0.06	0.01
W5	Surface	0.65	0.09	0.38	-0.10	-0.05	0.70	-0.21	-0.16	-0.07	-0.03	0.30	0.24	-0.11	-0.08	0.04	-0.15	-0.07	0.61
	Mid-water	0.14	0.01	0.11	-0.08	-0.10	0.15	-0.21	-0.07	-0.05	0.04	-0.05	0.31	-0.05	0.04	0.08	-0.18	0.02	-0.01
	Bottom	0.09	0.13	0.22	0.09	-0.04	0.21	-0.10	-0.04	0.22	0.33	0.23	0.32	0.14	0.23	-0.11	-0.11	0.21	0.19
W7	Surface				-0.15	0.18	-0.12	-0.23	-0.19	0.87	-0.02	-0.18	-0.13	-0.06	-0.18	-0.07	-0.03	-0.07	-0.17
	Mid-water				-0.18	-0.09	-0.16	-0.23	-0.21	0.05	-0.13	-0.19	-0.08	-0.09	-0.21	-0.17	-0.04	-0.12	-0.18
	Bottom				-0.17	-0.10	-0.13	-0.21	-0.19	0.20	-0.11	-0.20	-0.12	-0.08	-0.19	-0.16	-0.07	-0.13	-0.17
W10	Surface				-0.21	-0.20	-0.15	-0.21	-0.22	0.12	-0.10	-0.22	-0.03	-0.05	-0.16	-0.17	-0.18	-0.16	-0.07
	Mid-water				-0.20	-0.19	-0.18	-0.17	-0.22	0.05	-0.11	-0.22	-0.03	-0.11	-0.16	-0.18	-0.16	-0.16	-0.19
	Bottom				-0.19	-0.12	-0.17	-0.19	-0.20	-0.18	-0.13	-0.22	-0.15	-0.14	-0.16	-0.17	-0.13	-0.17	-0.18
W11	Surface	0.02		-0.07	-0.19	-0.14	-0.15	-0.19	-0.19	-0.19	-0.16	-0.19	-0.12	-0.12	-0.16	-0.19	-0.14	-0.14	-0.11
	Mid-water	-0.06		-0.12	-0.19	-0.16	-0.17	-0.18	-0.24	-0.20	-0.16	-0.21	-0.17	-0.14	-0.17	-0.19	-0.16	-0.15	-0.08
	Bottom	-0.04		-0.06	-0.21	-0.13	-0.18	-0.11	-0.22	-0.18	-0.13	-0.19	-0.16	-0.14	-0.17	-0.18	-0.15	-0.12	-0.01
W14	Surface	0.36		0.40	0.20	0.15	0.06	0.22	0.01	0.33	0.39	0.09	0.15	0.31	-0.06	0.08	0.03	0.13	-0.08
	Mid-water	0.34		0.42	0.35	0.11	0.15	-0.02	0.01	0.57	0.33	0.09	0.23	0.12	-0.04	-0.01	0.04	0.18	0.06
	Bottom	0.63		0.75	0.32	0.47	0.57	0.90	0.07	0.28	0.67	0.72	0.33	0.15	0.09	0.25	0.28	0.56	0.58
W15	Surface	0.02	-0.14	0.07	-0.11	-0.18	-0.08	-0.17	-0.16	-0.18	-0.15	-0.18	-0.11	-0.14	-0.18	-0.14	-0.17	-0.04	-0.16
	Mid-water	0.01	-0.10	-0.05	-0.10	-0.15	-0.10	-0.19	-0.17	-0.13	-0.19	-0.22	-0.11	-0.15	-0.19	-0.14	-0.19	-0.15	-0.17
	Bottom	0.00	-0.04	-0.09	-0.09	-0.17	-0.07	-0.22	-0.20	-0.20	-0.17	-0.21	-0.10	-0.17	-0.19	-0.11	-0.18	-0.17	-0.17
W16	Surface	-0.10	-0.12	0.31	-0.13	-0.15	-0.09	-0.18	-0.17	-0.16	-0.10	-0.03	-0.10	-0.11	-0.19	-0.10	-0.14	-0.13	-0.06
	Mid-water	-0.12	-0.12	-0.01	-0.16	-0.12	-0.15	-0.22	-0.19	-0.19	-0.16	-0.19	-0.16	-0.14	-0.17	-0.18	-0.18	-0.15	-0.14
	Bottom	-0.10	-0.12	-0.02	-0.12	-0.11	-0.10	-0.19	-0.13	-0.16	-0.13	-0.10	-0.14	-0.11	-0.08	-0.14	-0.16	-0.10	-0.07

	Date	2020-Nov-02	2020-Nov-03	2020-Nov-04	2020-Nov-05	2020-Nov-06	2020-Nov-07	2020-Nov-08	2020-Nov-09	2020-Nov-10	2020-Nov-11	2020-Nov-12	2020-Nov-13	2020-Nov-14	2020-Nov-15	2020-Nov-16	2020-Nov-17	2020-Nov-18	2020-Nov-19
		Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity
W2	Surface	-0.11	-0.10	-0.02	-0.14	-0.05	-0.09	0.03	0.02	0.07	0.19	-0.11	-0.14	-0.07	-0.15	-0.11	-0.09	-0.21	-0.10
	Mid-water	-0.13	-0.10	-0.17	-0.10	-0.05	-0.13	-0.04	-0.09	0.09	0.21	-0.09	-0.13	-0.08	-0.12	-0.10	-0.10	-0.26	-0.12
	Bottom	-0.06	-0.03	-0.12	-0.04	-0.03	0.00	0.22	0.07	0.13	-0.02	0.03	-0.05	-0.10	-0.11	-0.02	-0.10	-0.19	-0.13
W5	Surface	-0.17	0.20	0.05	-0.03	-0.08	0.02	0.00	-0.08	-0.18	0.14	-0.07	-0.01	0.26	-0.02	0.08	0.38	-0.04	0.01
	Mid-water	-0.15	0.10	0.02	-0.13	-0.07	-0.01	-0.03	-0.16	-0.14	-0.10	0.15	0.02	0.03	-0.05	0.30	0.28	-0.09	-0.13
	Bottom	0.13	0.30	0.08	0.20	-0.02	-0.10	0.19	-0.10	-0.03	-0.04	0.04	0.34	0.37	-0.01	0.35	0.32	-0.03	-0.07
W7	Surface	0.04	0.19	0.18	-0.03	0.08	-0.04	-0.14	-0.19	-0.09	-0.18	-0.15	0.03	-0.07	-0.02	0.15	-0.10	-0.08	-0.26
	Mid-water	-0.13	-0.14	-0.18	-0.07	-0.01	-0.10	-0.15	-0.20	-0.16	-0.17	-0.17	-0.14	-0.06	-0.15	0.02	-0.10	-0.15	-0.24
	Bottom	-0.15	-0.13	-0.16	-0.07	-0.14	-0.11	-0.15	-0.18	-0.18	-0.18	-0.13	-0.15	-0.09	-0.16	0.10	-0.11	-0.11	-0.19
W10	Surface	-0.13	-0.12	0.01	-0.16	-0.02	-0.09	-0.11	-0.19	0.00	-0.20	-0.18	-0.19	-0.02	-0.16	0.23	-0.11	-0.24	-0.27
	Mid-water	-0.16	-0.17	-0.10	-0.12	-0.02	-0.11	-0.13	-0.19	-0.20	-0.19	-0.17	-0.14	-0.13	-0.20	-0.18	-0.10	-0.24	-0.25
	Bottom	-0.17	-0.16	-0.16	-0.13	0.08	-0.15	-0.15	-0.19	-0.19	-0.18	-0.18	-0.19	-0.15	-0.16	-0.18	-0.13	-0.24	-0.25
W11	Surface	-0.14	-0.11	-0.16	-0.16	-0.04	-0.11	-0.03	-0.15	-0.15	-0.19	-0.14	-0.13	-0.10	-0.16	-0.11	-0.13	-0.17	-0.27
	Mid-water	-0.15	-0.11	-0.13	-0.15	-0.04	-0.10	-0.03	-0.12	-0.20	-0.21	-0.14	-0.17	-0.11	-0.14	-0.08	-0.10	-0.22	-0.29
	Bottom	-0.14	-0.11	-0.13	-0.14	-0.03	-0.11	-0.13	-0.15	-0.18	-0.19	-0.13	-0.18	-0.11	-0.15	-0.11	-0.10	-0.24	-0.30
W14	Surface	-0.05	-0.06	-0.05	0.00	0.00	-0.02	0.04	-0.01	0.15	0.06	-0.01	-0.11	0.00	-0.03	-0.07	-0.07	0.03	-0.14
	Mid-water	0.05	0.11	-0.03	0.07	0.09	0.18	0.14	0.00	0.14	0.15	0.12	0.04	0.13	-0.02	-0.03	-0.08	0.23	0.07
	Bottom	0.37	0.70	0.22	0.18	0.17	0.18	0.31	0.77	0.29	0.08	0.55	0.00	0.35	0.11	0.29	0.49	0.36	0.07
W15	Surface	-0.15	-0.17	-0.14	-0.15	-0.14	1.23	-0.16	-0.18	-0.18	-0.15	-0.14	-0.16	-0.15	-0.11	-0.02	-0.06	-0.16	-0.19
	Mid-water	-0.17	-0.14	-0.15	-0.12	-0.15	-0.12	-0.18	-0.21	-0.17	-0.16	-0.16	-0.18	-0.16	-0.13	-0.10	-0.09	-0.20	-0.18
	Bottom	-0.15	-0.12	-0.14	-0.12	-0.15	-0.15	-0.17	-0.20	-0.16	-0.12	-0.16	-0.16	-0.14	-0.08	-0.07	-0.10	-0.17	-0.16
W16	Surface	-0.10	-0.09	-0.15	-0.08	-0.09	-0.16	-0.07	-0.13	-0.15	-0.05	-0.04	-0.07	-0.13	-0.12	-0.12	-0.11	-0.28	-0.20
	Mid-water	-0.10	-0.10	-0.18	-0.11	-0.10	-0.18	-0.07	-0.15	-0.10	-0.13	-0.10	-0.13	-0.16	-0.12	-0.11	-0.18	-0.31	-0.25
	Bottom	0.01	-0.08	-0.16	-0.06	-0.06	-0.15	-0.05	-0.10	-0.11	-0.01	-0.05	-0.08	-0.16	-0.12	0.12	-0.10	-0.29	-0.24

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	Date	2020-Nov-20	2020-Nov-21	2020-Nov-22	2020-Nov-23	2020-Nov-24	2020-Nov-25	2020-Nov-26	2020-Nov-27	2020-Nov-28	2020-Nov-29	2020-Nov-30
		Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity	Turbidity
W2	Surface	-0.25	-0.14	-0.07	-0.15	-0.11	-0.09	-0.21	-0.10	-0.25	-0.28	-0.24
	Mid-water	-0.20	-0.13	-0.08	-0.12	-0.10	-0.10	-0.26	-0.12	-0.20	-0.27	-0.14
	Bottom	-0.19	-0.05	-0.10	-0.11	-0.02	-0.10	-0.19	-0.13	-0.19	-0.25	-0.16
W5	Surface	-0.24	-0.01	0.26	-0.02	0.08	0.38	-0.04	0.01	-0.24	-0.17	-0.16
	Mid-water	-0.17	0.02	0.03	-0.05	0.30	0.28	-0.09	-0.13	-0.17	-0.19	-0.14
	Bottom	-0.01	0.34	0.37	-0.01	0.35	0.32	-0.03	-0.07	-0.01	-0.07	-0.06
W7	Surface	-0.08	0.03	-0.07	-0.02	0.15	-0.10	-0.08	-0.26	-0.08	-0.25	-0.25
	Mid-water	-0.27	-0.14	-0.06	-0.15	0.02	-0.10	-0.15	-0.24	-0.27	-0.27	-0.28
	Bottom	-0.26	-0.15	-0.09	-0.16	0.10	-0.11	-0.11	-0.19	-0.26	-0.26	-0.26
W10	Surface	-0.28	-0.19	-0.02	-0.16	0.23	-0.11	-0.24	-0.27	-0.28	-0.24	-0.29
	Mid-water	-0.28	-0.14	-0.13	-0.20	-0.18	-0.10	-0.24	-0.25	-0.28	-0.22	-0.29
	Bottom	-0.29	-0.19	-0.15	-0.16	-0.18	-0.13	-0.24	-0.25	-0.29	-0.22	-0.28
W11	Surface	-0.27	-0.13	-0.10	-0.16	-0.11	-0.13	-0.17	-0.27	-0.27	-0.22	-0.28
	Mid-water	-0.22	-0.17	-0.11	-0.14	-0.08	-0.10	-0.22	-0.29	-0.22	-0.28	-0.26
	Bottom	-0.25	-0.18	-0.11	-0.15	-0.11	-0.10	-0.24	-0.30	-0.25	-0.26	-0.27
W14	Surface	-0.16	-0.11	0.00	-0.03	-0.07	-0.07	0.03	-0.14	-0.16	-0.17	-0.22
	Mid-water	-0.16	0.04	0.13	-0.02	-0.03	-0.08	0.23	0.07	-0.16	-0.02	-0.16
	Bottom	0.60	0.00	0.35	0.11	0.29	0.49	0.36	0.07	0.60	-0.03	0.03
W15	Surface	-0.19	-0.16	-0.15	-0.11	-0.02	-0.06	-0.16	-0.19	-0.19	-0.22	-0.26
	Mid-water	-0.20	-0.18	-0.16	-0.13	-0.10	-0.09	-0.20	-0.18	-0.20	-0.25	-0.25
	Bottom	-0.31	-0.16	-0.14	-0.08	-0.07	-0.10	-0.17	-0.16	-0.31	-0.25	-0.26
W16	Surface	-0.15	-0.07	-0.13	-0.12	-0.12	-0.11	-0.28	-0.20	-0.15	-0.26	-0.19
	Mid-water	-0.19	-0.13	-0.16	-0.12	-0.11	-0.18	-0.31	-0.25	-0.19	-0.25	-0.22
	Bottom	-0.19	-0.08	-0.16	-0.12	0.12	-0.10	-0.29	-0.24	-0.19	-0.19	-0.20

APPENDIX 2 – SPECIFICATIONS EUREKA WATER QUALITY PROBES

Eureka's Hallmark Features

Reliable data is Eureka's Top Priority. We start with the best sensors on the market and finish with our famously simple user-interface.

Using the Manta is really, really easy. Plug the Manta into a USB port and see live Manta data a few seconds later. Most users teach themselves the Manta operating software in about 15 minutes, without reading the manual.

Why pay more to purchase a multiprobe AND pay more to maintain it? The Manta's modular architecture often saves you thousands of dollars in purchase costs, and our rebuildable reference electrode and long-life DO sensor save you as much as $600 in annual maintenance cost.

Excellent Customer Service is standard equipment. A human is always available to answer you call or email.

New Features in the Manta+

Three-Year Warranty includes the pH sensor, reference electrode, and DO cap.

Event Triggering increases the frequency of data logging when a user-selected parameter changes by a certain amount over a certain time.

Digital Turbidity Sensor has built-in autoranging for excellent performance in near-zero FNU waters, with an upper range to 5000 FNU.

Calibration Stability Indicator tells you when your sensor is stable enough for calibration.

New Sensors include tryptophan/BOD, optical brighteners, bromide, calcium, and sodium ions, fDOM II, chlorophyll red, and transmissivity.

Other new features include: Custom Parameter, Calibration Stability Indicator, Copper-Gauze Antifouling Kit, Expanded Calibration Log, Raw Values, Aquarius™ Compatibility, Battery Voltage Indicator.


manta+
Trimeter
temperature
depth
+ any other single parameter
including flourometers
20
temp
pH
conductivity
optical DO
(optional depth or ORP)
25
temp
pH
conductivity
turbidity
30
temp
pH
conductivity
optical DO
(optional depth or ORP)
turbidity
35
40
small sensor options
sodium
ammonium
nitrate
chloride
TDG
medium sensor options
PAR
chlorophyll
blue-green algae
rhodamine
crude oil
refined oil
CDOM/FDOM
fluorescein dye
optical brighteners
tryptophan
temp
pH
conductivity
optical DO
+ turbidity
standard sensors on 35/40

Products

Trimeter - Three Parameters at the Lowest Possible Cost

Get all the features of a Manta, including top-grade sensors and simple software, in an instrument designed for economy. Each Trimeter employs one of any sensor that Eureka offers, plus optional temperature and depth sensors.

A Data Display for Every Application and Budget

The AmphibianPlus is a waterproof, full-function Windows PDA incorporating the Manta user interface, with GPS and cell phone options.

The Bluetooth Battery powers your Manta, and lets you talk wirelessly to the Manta with any Bluetooth-equipped Android or Windows peripheral. You can save up to $1500 by using your own phone instead of a limited-purpose data display.

One Job – One Instrument

The Manta family offers up to 12 sensors in one, integrated package.

Available sensors include temperature, optical DO, pH, ORP, conductivity, depth, level, turbidity, fluorometers including chlorophyll a, chlorophyll red, phycocyanin, phycoerythrin, fDOM, fDOM II, rhodamine, fluorescein, crude oil, refined fuels, optical brighteners, and tryptophan/BOD, CO2, ammonium, nitrate, sodium, calcium, bromide, chloride, TDG, PAR, dual PAR, and transmissivity.

Field-Proven Methods to Minimize Fouling

The Extended Turbidity Brush cleans turbidity and other sensors, such as DO, chlorophyll, and BG algae.

The MiniCleaner is a stand-alone wiper system used when you don't have an Extended Turbidity Brush.

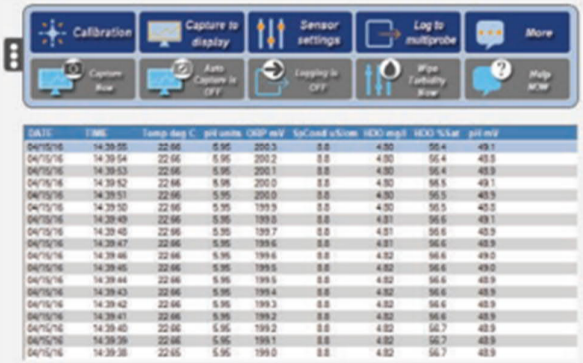
The Copper-Gauze Kit wraps the sensors in copper gauze that slowly dissolves, bathing the sensors with the copper ions that discourage biofouling. Copper gauze is superior to solid copper, which become ineffective once oxidized.

The New Manta Manager

The new Manta Manager retains its predecessors' ease of use and adds new features like event triggering, calibration stability indicator, more QC information options in the permanent calibration log, single-point calibrations, visibility of "raw" sensor values, cut-and-paste of rolling data to MS Office documents, more help screens, a more powerful user-defined-parameter creator, and built-in instruction manual.

Mobile Version

The new Manta Manager also offers a tablet and smartphone version with new "small screen" features like "swipeable" pages and large, high-contrast numbers for easier visibility in sunlight.



Accessories for Every Application

Standard accessories include flow cells, copper-gauze anti-fouling kits, cable reels, SDI-12 converters, hard-sided cases, pipe kits to protect logging units in the field, weather stations, auxiliary batteries, auxiliary batteries with Bluetooth, and a full line of calibration standards including secondary calibration standards for fluorometers.

Applications

lakes, rivers, ground water, storm water, estuaries, streams, ponds, near-shore oceanographic, process waters, waste waters, laboratory research

Site to Site Profiling

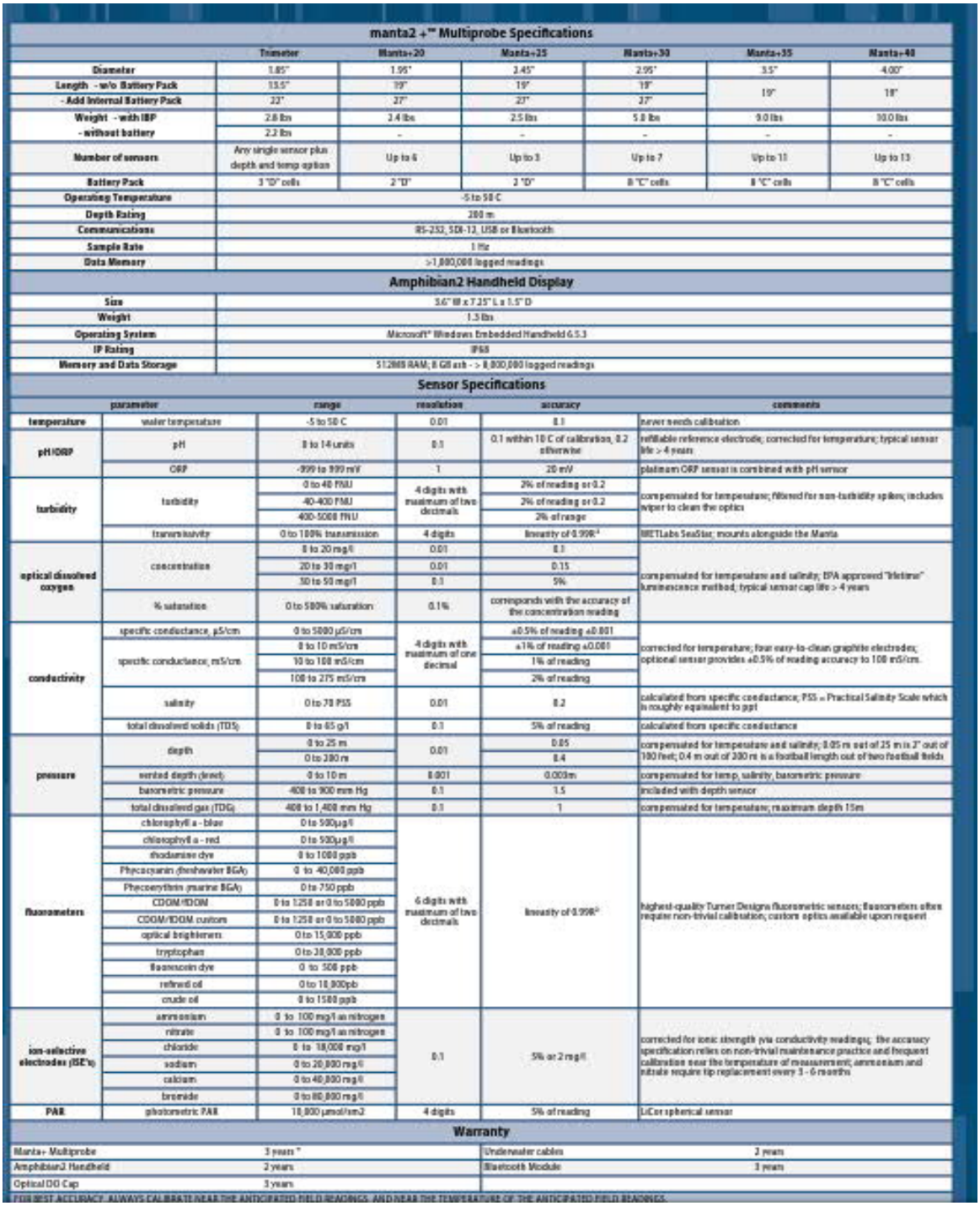
Process Monitoring

Unattended Logging

Ground Water

Telemetered Deployments

Buoy Deployments



manta2 +™ Multiprobe Specifications

	Trimeter	Manta+20	Manta+25	Manta+30	Manta+35	Manta+40
Diameter	1.85"	1.95"	2.45"	2.95"	3.5"	4.00"
Length - w/o Battery Pack	15.5"	19"	19"	19"	19"	19"
- Add Internal Battery Pack	23"	27"	27"	27"		
Weight - with IBP	2.8 lbs	3.4 lbs	2.5 lbs	5.8 lbs	9.0 lbs	10.0 lbs
- without battery	2.2 lbs	-	-	-	-	-
Number of sensors	Any single sensor plus depth and temp option	Up to 6	Up to 3	Up to 7	Up to 11	Up to 13
Battery Pack	3 "D" cells	2 "D"	2 "D"	8 "C" cells	8 "C" cells	8 "C" cells
Operating Temperature	-5 to 50 C					
Depth Rating	200 m					
Communications	RS-232, SDI-12, USB or Bluetooth					
Sample Rate	1 Hz					
Data Memory	>1,000,000 logged readings					

Amphibian2 Handheld Display

Size	3.6" W x 7.25" L x 1.5" D
Weight	1.3 lbs
Operating System	Microsoft® Windows Embedded Handheld 6.5.3
IP Rating	IP68
Memory and Data Storage	512MB RAM; 8 GB ash - > 8,000,000 logged readings

Sensor Specifications

parameter		range	resolution	accuracy	comments
temperature	water temperature	-5 to 50 C	0.01	0.1	never needs calibration
pH/ORP	pH	0 to 14 units	0.1	0.1 within 10 C of calibration, 0.2 otherwise	refillable reference electrode; corrected for temperature; typical sensor life > 4 years
	ORP	-999 to 999 mV	1	20 mV	platinum ORP sensor is combined with pH sensor
turbidity	turbidity	0 to 40 FNU	4 digits with maximum of two decimals	2% of reading or 0.2	compensated for temperature; filtered for non-turbidity spikes; includes wiper to clean the optics
		40-400 FNU		2% of reading or 0.2	
		400-5000 FNU		2% of range	
	transmissivity	0 to 100% transmission	4 digits	linearity of 0.999[4]	WETLabs SeaStar; mounts alongside the Manta
optical dissolved oxygen	concentration	0 to 20 mg/l	0.01	0.1	compensated for temperature and salinity; EPA approved "lifetime" luminescence method; typical sensor cap life > 4 years
		20 to 30 mg/l	0.01	0.15	
		30 to 50 mg/l	0.1	5%	
	% saturation	0 to 500% saturation	0.1%	corresponds with the accuracy of the concentration reading	
conductivity	specific conductance, µS/cm	0 to 5000 µS/cm	4 digits with maximum of one decimal	±0.5% of reading ±0.001	corrected for temperature; four easy-to-clean graphite electrodes; optional sensor provides ±0.5% of reading accuracy to 100 mS/cm.
	specific conductance, mS/cm	0 to 10 mS/cm		±1% of reading ±0.001	
		10 to 100 mS/cm		1% of reading	
		100 to 275 mS/cm		2% of reading	
	salinity	0 to 70 PSS	0.01	0.2	calculated from specific conductance; PSS = Practical Salinity Scale which is roughly equivalent to ppt
	total dissolved solids (TDS)	0 to 65 g/l	0.1	5% of reading	calculated from specific conductance
pressure	depth	0 to 25 m	0.01	0.05	compensated for temperature and salinity; 0.05 m out of 25 m is 2" out of 160 feet; 0.4 m out of 300 m is a football length out of two football fields
		0 to 300 m		0.4	
	vented depth (level)	0 to 10 m	0.001	0.003m	compensated for temp, salinity, barometric pressure
	barometric pressure	400 to 900 mm Hg	0.1	1.5	included with depth sensor
	total dissolved gas (TDG)	400 to 1,400 mm Hg	0.1	1	compensated for temperature; maximum depth 15m
fluorometers	chlorophyll a - blue	0 to 500µg/l	6 digits with maximum of two decimals	linearity of 0.998[4]	highest-quality Turner Designs fluorometric sensors; fluorometers often require non-trivial calibration; custom optics available upon request
	chlorophyll a - red	0 to 500µg/l			
	rhodamine dye	0 to 1000 ppb			
	Phycocyanin (freshwater BGA)	0 to 40,000 ppb			
	Phycoerythrin (marine BGA)	0 to 750 ppb			
	CDOM/fDOM	0 to 1,250 or 0 to 5000 ppb			
	CDOM/fDOM, custom	0 to 1,250 or 0 to 5000 ppb			
	optical brighteners	0 to 15,000 ppb			
	tryptophan	0 to 20,000 ppb			
	fluorescein dye	0 to 500 ppb			
	refined oil	0 to 10,000pb			
	crude oil	0 to 1500 ppb			
ion-selective electrodes (ISE's)	ammonium	0 to 100 mg/l as nitrogen	0.1	5% or 2 mg/l	corrected for ionic strength via conductivity readings; the accuracy specification relies on non-trivial maintenance practice and frequent calibration near the temperature of measurement; ammonium and nitrate require tip replacement every 3 - 6 months
	nitrate	0 to 100 mg/l as nitrogen			
	chloride	0 to 18,000 mg/l			
	sodium	0 to 20,000 mg/l			
	calcium	0 to 40,000 mg/l			
	bromide	0 to 80,000 mg/l			
PAR	photometric PAR	10,000 µmol/sm2	4 digits	5% of reading	LiCor spherical sensor

Warranty

Manta+ Multiprobe	3 years *	Underwater cables	2 years
Amphibian2 Handheld	2 years	Bluetooth Module	3 years
Optical DO Cap	3 years		

FOR BEST ACCURACY, ALWAYS CALIBRATE NEAR THE ANTICIPATED FIELD READINGS, AND NEAR THE TEMPERATURE OF THE ANTICIPATED FIELD READINGS.

About Us

Eureka was formed in 2002 by industry veterans who believed there was considerable room in the multiprobe market for improvements in technology and customer service. Eureka, an employee-owned partnership, includes the company's founder along with partners from both Europe and Asia with extensive history in the water quality industry.

Eureka Water Probes continues to provide innovative, reliable multiprobes backed by market-leading customer service. Designing and manufacturing the world's best multiprobes remains our sole focus.

Give us a call – we can make your data-collection easier, better and less expensive.

Worldwide Distribution

Eureka Water Probes
2113 Wells Branch Parkway
Austin , TX 78728
Tel +1.512-302-4333
www.waterprobes.com

For a complete list of our international partners, please see www.waterprobes.com/contact.

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water probes