



CHINA COMMUNICATIONS CONSTRUCTION COMPANY  
CCCC MOMBASA NEW KIPEVU OIL TERMINAL (KOT) PROJECT

ENGINEERING, PROCUREMENT AND CONSTRUCTION OF NEW  
KIPEVU OIL TERMINAL -MOMBASA PORT, TENDER NO.  
KPA/077/2017-18/PDM


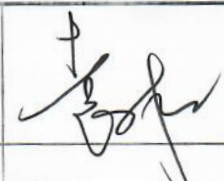
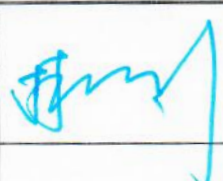
DOCUMENT NO.  
CCCC/KOT/EMP/02

**MONTHLY ENVIRONMENTAL MONITORING REPORT**

16<sup>th</sup> April – 15<sup>th</sup> May

**REV. A0**

**MONTHLY ENVIRONMENTAL MONITORING REPORT**  
**(16<sup>th</sup> April – 15<sup>th</sup> May)**

					
A0	18 <sup>th</sup> May 2021	For Approval	SIMON NZUKI	David Leo	Lin ZhiPing
Rev.	Date	Status	Prepared By	Reviewed By	Approved By



ENGINEERING, PROCUREMENT AND CONSTRUCTION OF  
NEW KIEVU OIL TERMINAL(KOT) AT MOMBASA PORT  
CONTRACT No. KPA/077/2017-18/PDM

Monthly Environmental Monitoring Report  
(16<sup>th</sup> April – 15<sup>th</sup> May 2021)



April/May 2021

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## **1. Background information**

In March 2019, China Communications and Construction Company Limited (CCCC) prepared and submitted to KPA an Environmental Management and Monitoring Plan (EMMP) as well as a Baseline Environmental Monitoring Report for the new Kipevu Oil Terminal (KOT) at Mombasa Port. Afterwards CCCC engaged Envasses Environmental Consultants Limited, a Firm of Experts registered by NEMA and Lahvens Limited who are a gazetted testing laboratory by NEMA to implement the EMMP. Between April and September 2019, a total of twenty-two (22) weekly monitoring reports were prepared consistent with the schedule agreed upon between CCCC, KPA, NEMA and the consultants. It had been previously agreed among the stakeholders that the reporting frequency would be reviewed with time as informed by the weekly reports and findings of the monitoring activities. This was done in September when KPA communicated to CCCC that the monitoring reports can be prepared and submitted on a monthly basis for the remaining part of their contract.

This is therefore the twentieth monthly report covering the period between 16<sup>th</sup> April - 15<sup>th</sup> May 2021 on implementation of the EMMP for the new KOT project in Mombasa Port. The main activities of the project include dredging, dumping and construction of the new oil and gas terminal within Port Reitz Creek. The EMMP upon which the report is based focuses on four environmental media which are water quality, biological monitoring, air quality and noise and vibration measurements. Water quality monitoring includes physical parameters and chemical parameters; the physical parameters were pH, Dissolved Oxygen (DO) and turbidity while the chemical ones were Chemical Oxygen Demand (COD), Total Suspended Solids (TSS) and Perspective Degree. Biological monitoring includes critical habitats i.e. coral reefs and benthic communities, seagrass beds, mangroves and fauna including fish, crustacean and endangered species. The two other environmental media are air quality and noise measurement at the construction camp site which is located within Mombasa Port.

## **2. Water quality monitoring**

Water quality monitoring was undertaken daily from 16<sup>th</sup> April - 15<sup>th</sup> May 2021 at the nine monitoring stations (MS1-MS9) for the following parameters; turbidity, Total Suspended Solids (TSS), pH, Dissolved Oxygen (DO), Chemical Oxygen Demand (COD) and Perspective Degree. In addition, dredging and dumping activities were temporarily stopped since December 2020 and thus monitoring of sediment plumes along Kilindini Channel was concluded.

## **3. Biological monitoring**

Biological monitoring is scheduled to be carried out in July 2021 at the three (3) monitoring stations (MS-1, MS-5 and MS-9) as per the EMMP and will be included in the next monthly report. MS-1 is located in inshore waters and is dominated by mangroves. MS-5 and MS-9 are located at Shelly Beach area and Mombasa Marine Reserve respectively.

## **4. Air quality and noise/vibration measurements**

The eighth air quality monitoring and noise/vibration measurements are scheduled to be carried out in June 2021 and will be included in the next monthly report when reporting times coincide.

## 6. Results

### 6.1 Water quality monitoring from 16<sup>th</sup> April – 15<sup>th</sup> May 2021

This section presents the results for water quality monitoring for both the inshore monitoring stations (MS1-4) and offshore monitoring stations (MS5-9) for the monthly report period. These are summarized in Table 1 and 2 below and the summary of the raw data pooled for both the inshore and offshore monitoring stations for the entire month (Table 3). Both the physical water quality parameters i.e. pH, Dissolved Oxygen (DO) and turbidity, and the chemical water quality parameters i.e. Total Suspended Solids (TSS), Chemical Oxygen Demand (COD) and Perspective Degree were reported. There was no significant change in the parameters reported except for turbidity and TSS values reported at inshore monitoring stations which reduced by 15.92% and 33.76% respectively as shown in figures 1 & 2. This is attributed to decreased sediment load from upstream sources into the channel.

**Table 1: Summary of the inshore (MS 1-4) monthly (16<sup>th</sup> April – 15<sup>th</sup> May 2021) sampling and analysis results for water quality parameters (pH, DO, TSS, Turbidity, COD and Perspective Degree) compared to baseline values and the EMMP Target (Source: Lahvens Limited, April/May 2021).**

Parameter	Average Value	Baseline Value	EMMP Target	Comments
pH	7.99	7.70	6.6-8.8	All results are within the EMMP targets
Dissolved Oxygen	6.29	5.95	>4mg/l	
Turbidity	13.10	16.41	+60mg/l	
Total Suspended Solids	15.17	4.87	+60mg/l	
Chemical Oxygen Demand	13.58	9.69	50mg/l	
Perspective Degree	0.77	0.52	-	

**Table 2: Summary of the offshore (MS 5-9) monthly (16<sup>th</sup> April – 15<sup>th</sup> May 2021) sampling and analysis results for water quality parameters (pH, DO, TSS, Turbidity, COD and Perspective Degree) compared to baseline values and the EMMP Target (Source: Lahvens Limited, April/May 2021).**

Parameter	Average Value	Baseline Value	EMMP Target	Comments
pH	8.07	7.99	6.6-8.8	All results are within the EMMP targets
Dissolved Oxygen	7.01	6.53	>4mg/l	
Turbidity	1.81	0.20	+60mg/l	
Total Suspended Solids	8.74	3.80	+60mg/l	
Chemical Oxygen Demand	11.04	10.47	50mg/l	
Perspective Degree	10.25	6.78	-	



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Figure : Dredging route from dredging site to dumping area.

Table 3: Detailed summary of the daily water quality monitoring results for onshore (MS1-4) and offshore (MS5-9) for the period 16<sup>th</sup> April – 15<sup>th</sup> May 2021 (Source: Lahvens Limited, April/May 2021).

Monitoring Station (MS)	Sampling Depth (M)	Acidity/ Basicity (pH)	COD (mg/l)	Dissolved Oxygen	Perspective Degree	Total Suspended Solids (mg/l)	Turbidity (NTU)
<b>Onshore monitoring stations</b>							
MS 1	0.5	7.99	13.90	6.35	0.83	17.70	12.88
	3m	7.99	13.28	6.31	0.83	15.03	12.41
	8m	7.99	16.73	6.30	0.83	12.10	13.33
MS 2	0.5	7.99	11.27	6.35	0.77	14.90	12.81
	3m	7.99	11.78	6.32	0.77	16.30	13.90
	8m	7.99	14.00	6.31	0.77	12.37	13.79
MS 3	0.5	7.99	13.19	6.32	0.90	14.23	10.14
	3m	7.99	14.14	6.31	0.90	12.47	9.92
	8m	7.99	11.75	6.26	0.90	12.00	10.18
MS 4	0.5	7.99	11.97	6.23	0.57	17.23	15.79
	3m	7.99	17.29	6.23	0.57	21.03	16.04
	8m	7.99	13.63	6.19	0.57	16.67	16.04
<b>Offshore monitoring stations</b>							
MS 5	0.5	-	-	-	-	-	-
	3m	-	-	-	-	-	-
	8m	-	-	-	-	-	-
MS 6	0.5	8.09	11.01	7.10	10.67	9.37	0.00
	3m	8.08	9.93	7.09	10.67	6.63	0.00
	8m	8.09	11.85	7.07	10.67	7.73	0.00
MS 7	0.5	8.09	11.09	7.13	11.00	8.37	0.00
	3m	8.09	11.75	7.10	11.00	10.73	0.00
	8m	8.08	11.05	7.08	11.00	7.43	0.00
MS 8	0.5	8.09	11.36	7.09	11.33	8.83	0.00
	3m	8.09	11.44	7.08	11.33	8.97	0.00
	8m	8.08	10.82	7.09	11.33	6.97	0.00
MS 9	0.5	8.03	8.62	6.77	8.00	11.37	7.07
	3m	8.04	11.89	6.79	8.00	9.87	6.97
	8m	8.03	11.67	6.78	8.00	8.60	7.62

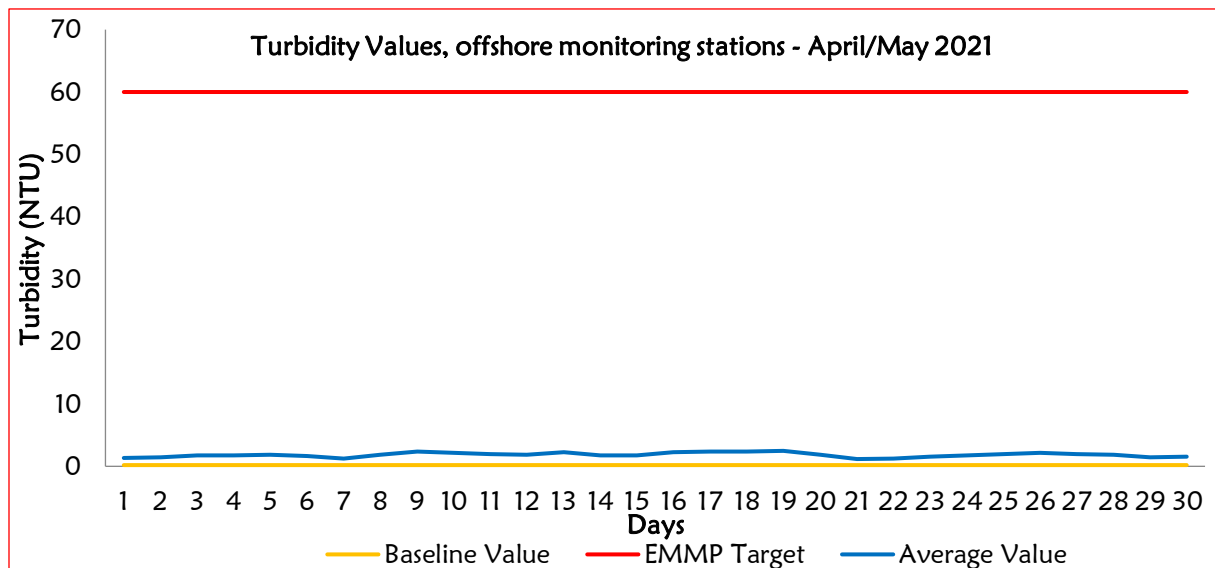
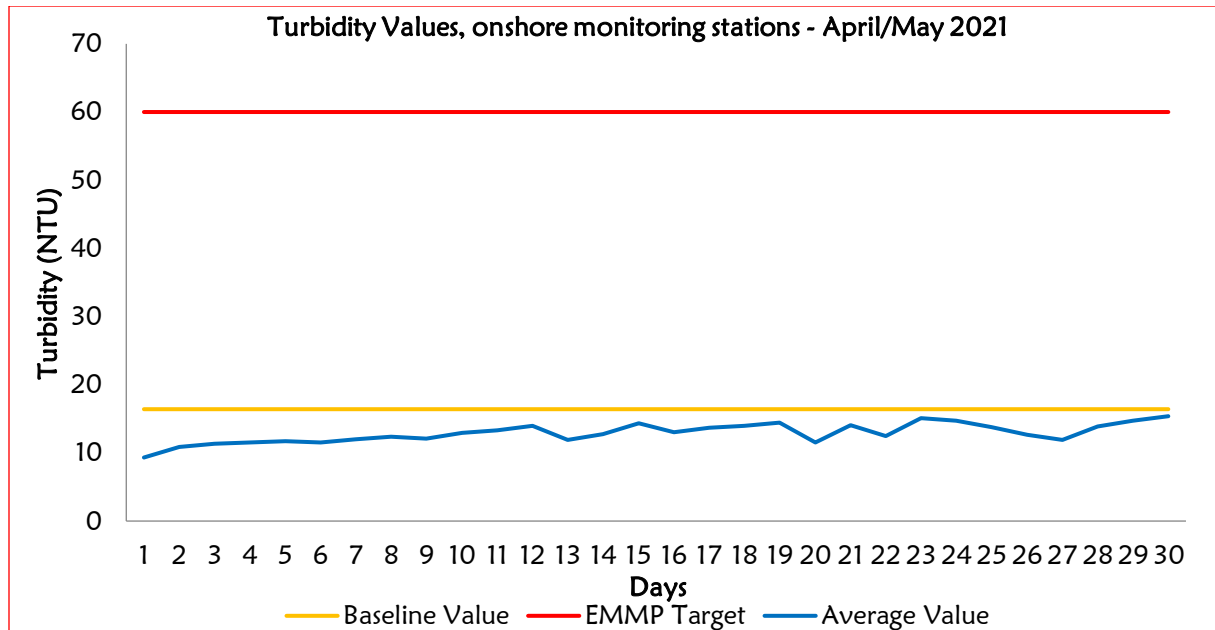


Figure 1: Turbidity values for onshore and offshore monitoring stations for the month of April/May 2021. The average value is the mean turbidity at -0.5m, -3.0m and -8.0m for the onshore and offshore monitoring stations (Data source: Lahvens Limited, April/May 2021).



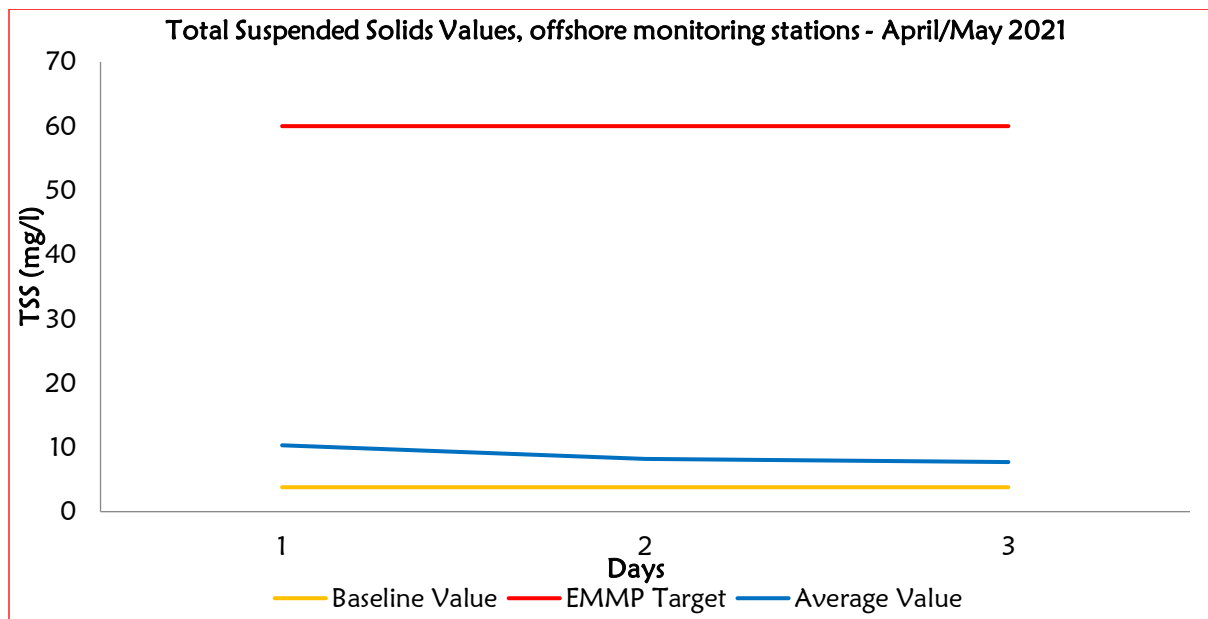
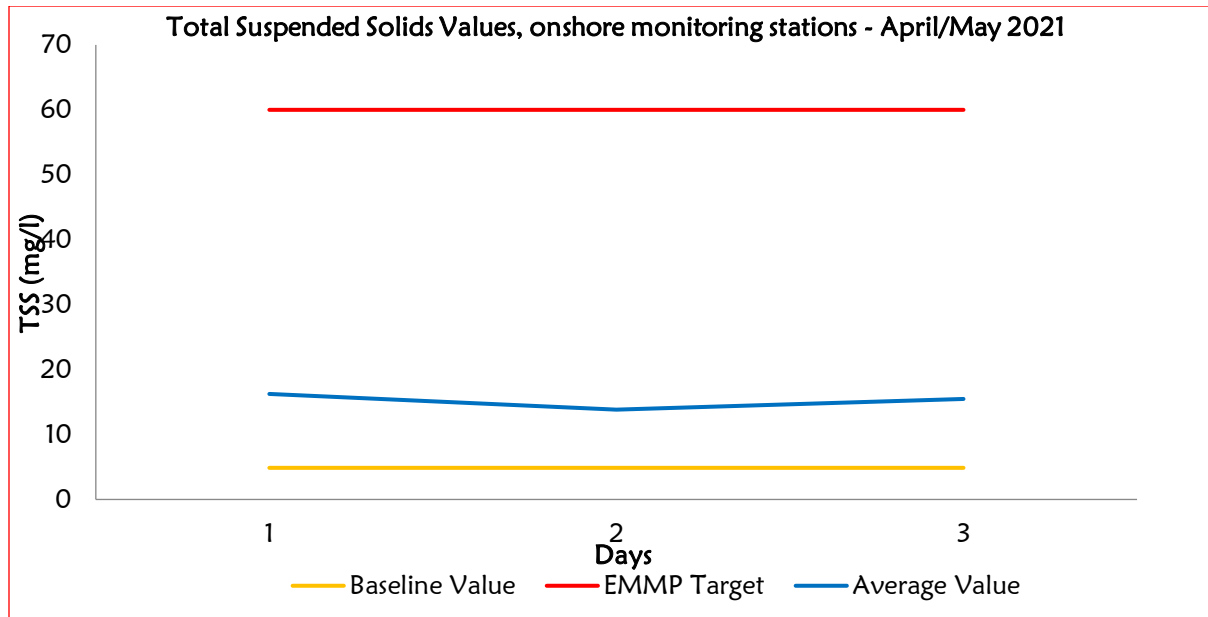


Figure 2: Total Suspended Solid values for onshore and offshore monitoring stations for the month of April/May 2021. The average value is the mean TSS at -0.5m, -3.0m and -8.0m for onshore and offshore monitoring stations (Data source: Lahvens Limited, April/May 2021).



