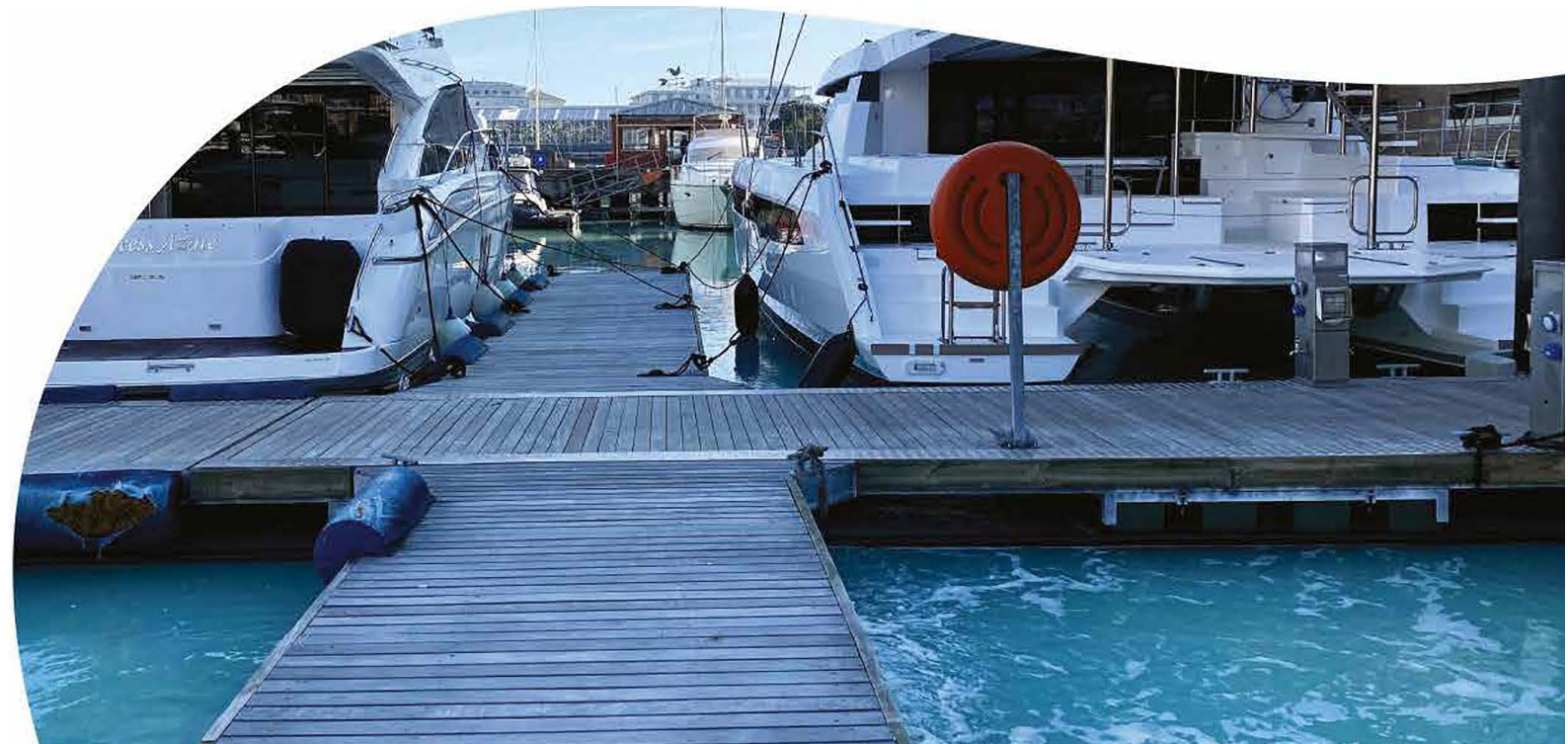


# Case Study

V & A Waterfront  
Cape Town, South Africa



Yacht Basin Biological Remediation of poor water quality



## The Challenge:

- **Large fish shoal** chased into the basin by whales outside the harbor
- All the **oxygen was depleted** very quickly
- All **fish died** in the basin
- Degradation of the fish result in oxygen dropping to **dissolved oxygen level of 2%**
- Any fish coming into the basin died immediately i.e. **Ocean Sunfish**

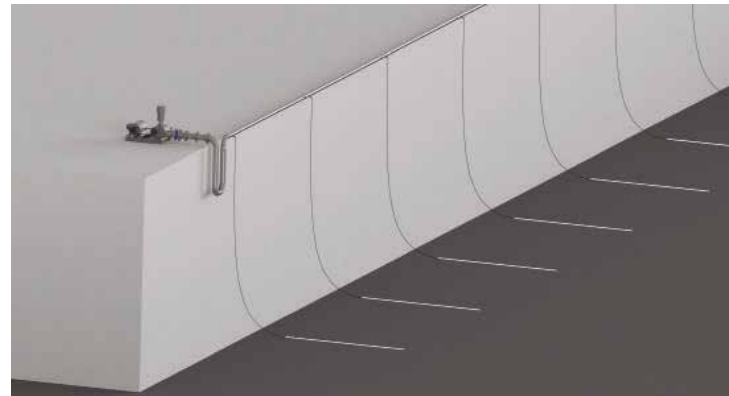


## The Trial:

- To ensure that the amount of **Hydrogen Sulphide** being released would not cause a health hazard to the visitors and those living/working in the area
- To show that the process would **increase the DO** and would not further lower the **pH** which could cause damage to the vessels
- System would **not be a danger to yachts** for example getting caught in yacht propulsion systems
- To show the client the **visual affect** of the diffuser in operation

## The Solution:

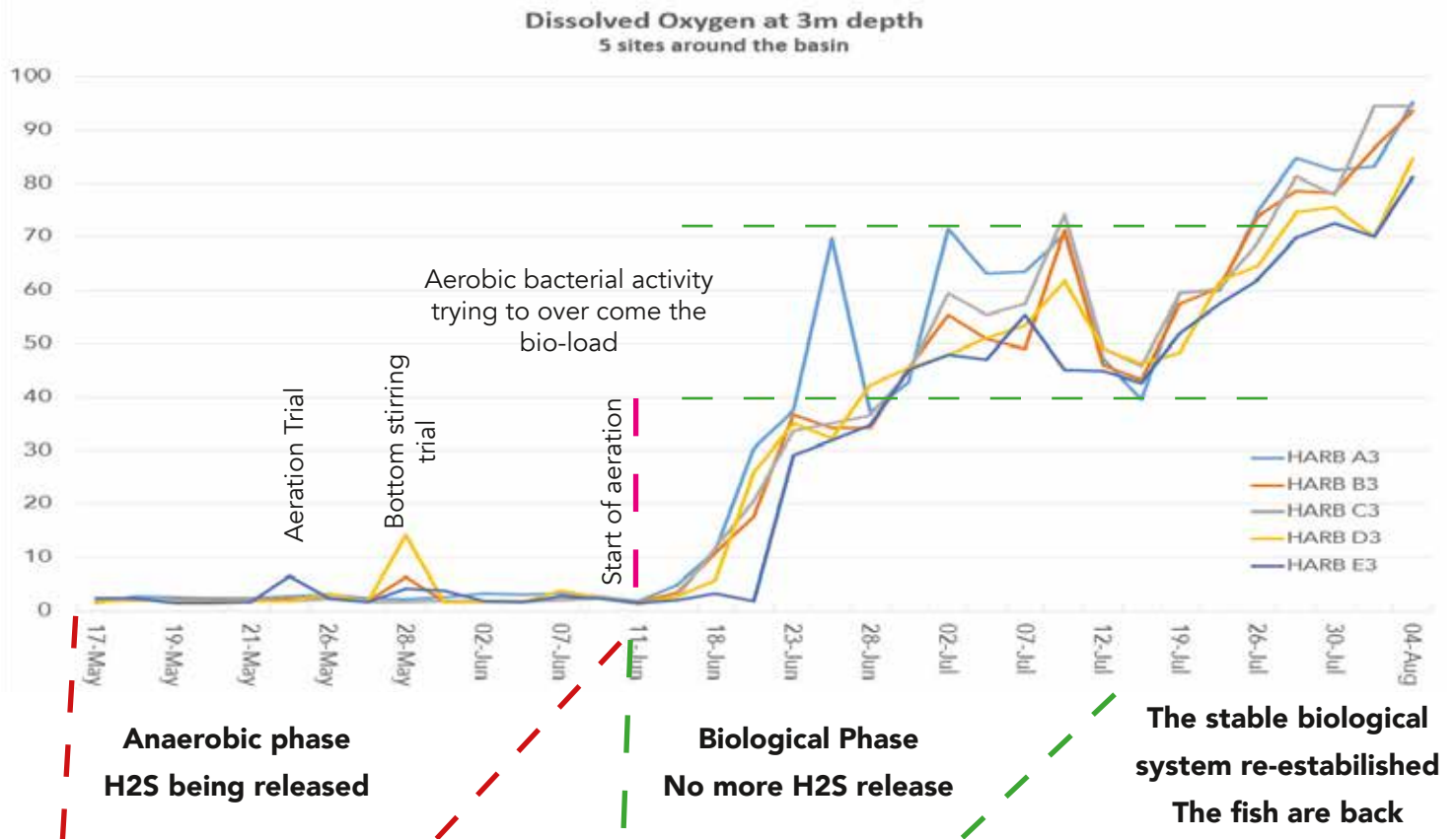
- **75 Dryden Aqua high efficiency air diffusers**
- **10m<sup>3</sup>/hr** of air per diffuser @ 3m depth
- Distributed around the basin, fed by **two roots blowers**
- Moving a total of **750m<sup>3</sup>/hr** of water to increase mixing - much large area was improved that we thought would happen, showing the extent of the water movement
- Oxygen transfer of **1650kg O<sup>2</sup> per day**



## The Results:

The below graph shows the entire process from very low DO levels (2%) to greater than 80%, where a stable and healthy environment was again achieved. As with the DO, the overall pH climbed from its lowest at 7.4 to over 8, which is a normal pH for the water around Cape Town.

Bacterial samples were taken throughout the process and the advent of Hydrogen Sulphide producing bacteria quickly diminished once aeration was started, with aerobic bacteria taking its place to decompose the organics sitting on the sea bed.



30th April 2021



30th June 2021



30th Sept 2021

**Table: Summary of the change in DO parameters for the deepest sampling points**

	May 2021			Sept 2021		
	Sal (ppt)	pH	DO (%)	Sal (ppt)	pH	DO (%)
Harb A3	35.66	7.53	1.5	35.95	8.04	87.3
Harb B3	35.66	7.56	1.8	35.95	8.06	89
Harb C3	35.66	7.55	1.7	35.94	8.07	88.1
Harb D3	35.66	7.56	1.7	35.94	8.07	86.6
Harb E3	35.65	7.63	2.3	35.93	8.06	81.1

Although the system is no longer in operation, it is still available in the event of algal tides or other reasons for low oxygen events and is therefore an ongoing safety net for maintaining good water quality in the basin.

## AIR DIFFUSER **APPLICATIONS**

- Waste water aeration
- Aquaria
- Aquaculture
- Pond/Lake/Harbour remediation
- Oxidation of metals from solution
- VOC removal

