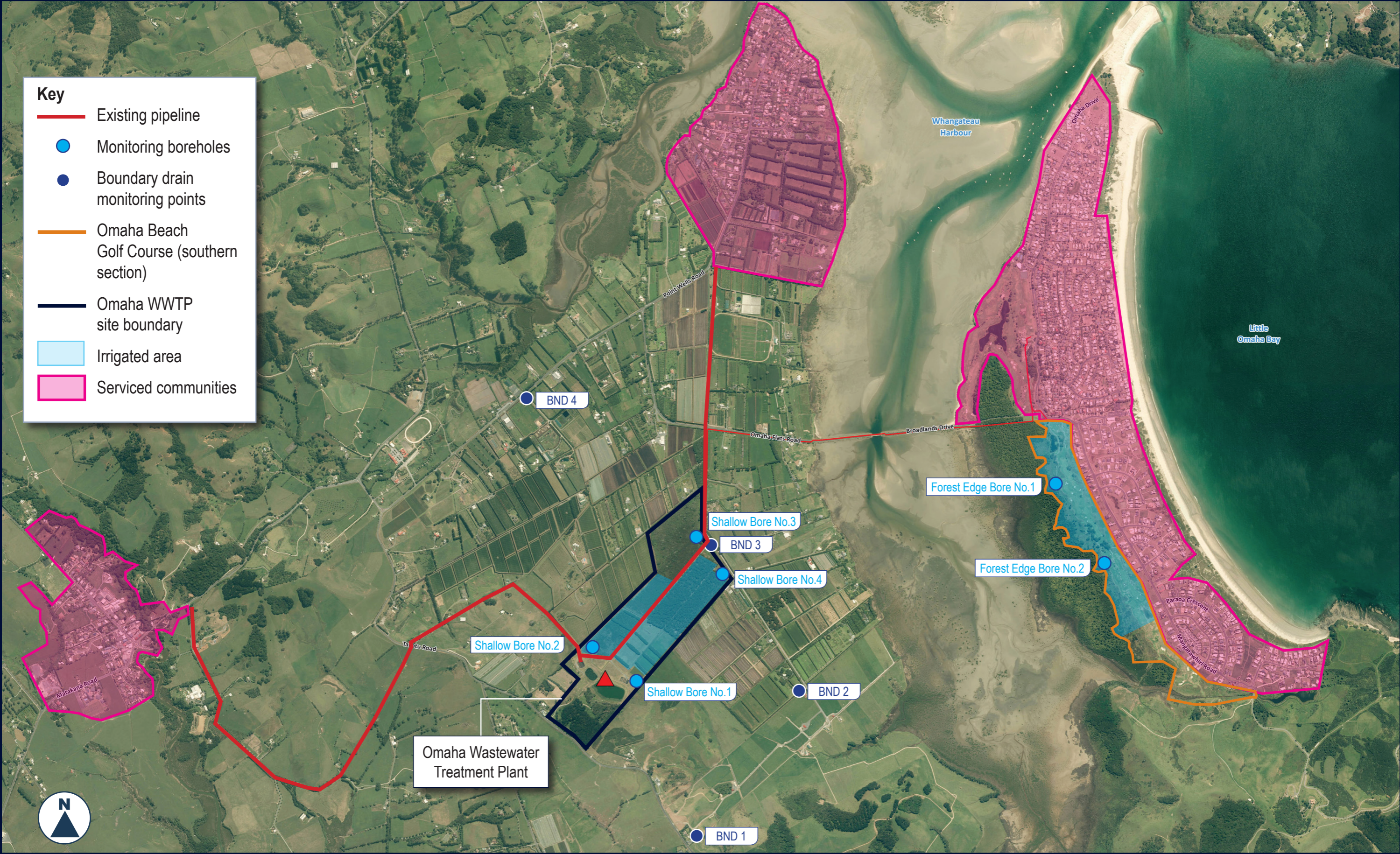
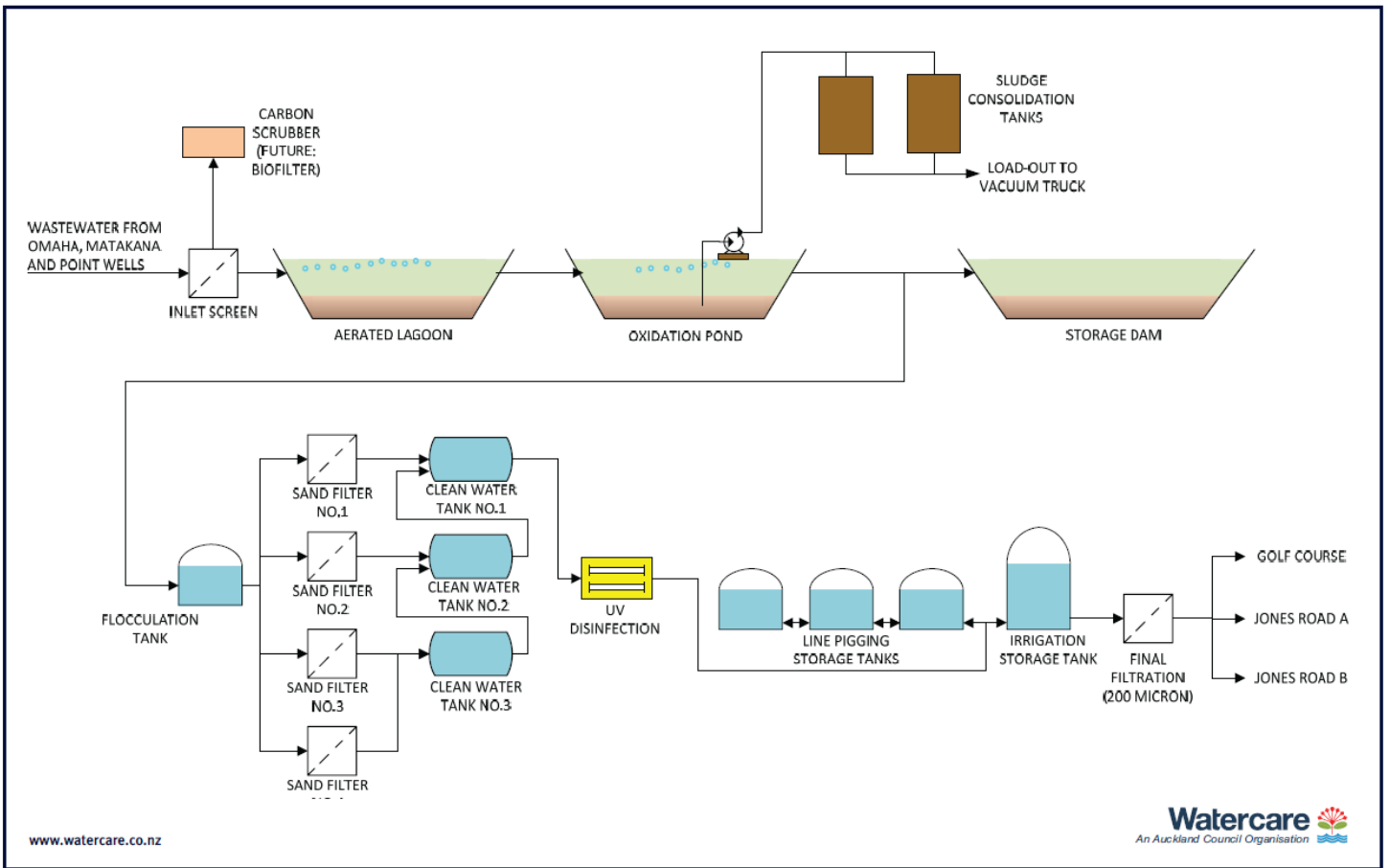


# Omaha Wastewater Treatment Plant Discharge Resource Consent Renewal





# Omaha Wastewater Treatment Plant – Process Flow Diagram



# Omaha Wastewater Treatment Plant Discharge Resource Consent Renewal



## Omaha Wastewater Treatment Plant Information Sheet

The Omaha Wastewater Treatment Plant (WWTP) is located at 64 Jones Road, Omaha and treats wastewater from Omaha, Point Wells and Matakana.

### **Treatment Process**

The existing Omaha WWTP treats wastewater for land-based disposal through a multi-stage process. This comprises:

- inlet screen
- aerated lagoon
- oxidation pond
- storage dam
- sand filter system
- UV disinfection

### **Disposal of Treated Wastewater Discharge**

Treated wastewater discharge (**Discharge**) from the Omaha WWTP is currently disposed to land by irrigating to the following:

- an eucalyptus plantation on the WWTP site at Jones Road. Not the entire site has been used for disposal.
- across the causeway to the northern section of the Omaha Beach Golf Course.

At both sites the treated wastewater is irrigated to land.

### **Existing Consents**

Existing resource consents authorising discharge from the Omaha WWTP were granted in 2007 and will lapse in on 31 May 2015. The existing resource consents limits the quantity and quality of the discharge. These parameters are summarised below:

#### **Quantity**

The maximum allowable discharge quantity is:

- 1,200m<sup>3</sup> /day and 210,000m<sup>3</sup>/year at the Jones Road site plantation
- 860m<sup>3</sup>/day between 1 October to 30 April at the Omaha Beach Golf Course site
- 570m<sup>3</sup>/day between 1 May to 30 September at the Omaha Beach Golf Course site
- 180,000m<sup>3</sup>/year at the Omaha Beach Golf Course site

#### **Quality**

In 95% of samples collected during a year, the following pollutants in the discharge must not exceed the following concentrations:

- |   |               |
|---|---------------|
| - Carbonaceous Biochemical Oxygen Demand (CBOD) | 30 mg/L       |
| - Total Suspended Solids (TSS)                  | 20 mg/L       |
| - Faecal Coliforms                              | 500 cfu/100ml |

Definitions	
<b>m<sup>3</sup></b>	1 Cubic Meter is 1,000 Litres
<b>Carbonaceous Biochemical Oxygen Demand (CBOD5)</b>	A measure of oxygen quantity consumed by bacteria during the decomposition of organic matter
<b>Total Suspended Solids (TSS)</b>	Solid materials that are suspended in the water. TSS measures the turbidity of water
<b>Faecal Coliforms</b>	Bacteria found in human and animal wastes – an indicator organism

## Monitoring & Compliance – Discharge Quantity

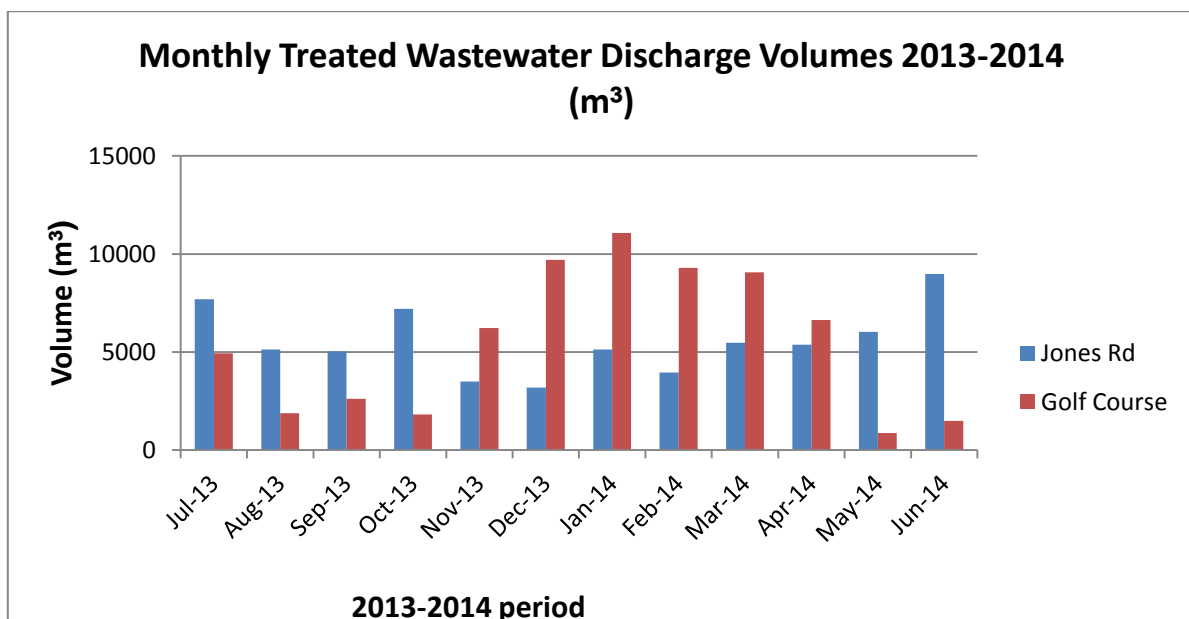
All daily & annual discharge quantities have been compliant with existing resource consent limits.

Parameters For Irrigation Area	Units	Maximum	Consented Maximum	Compliant with Maximum
Discharge Volume (Jones Road)	m <sup>3</sup> /day	602	1,200	Y
Discharge Volume (Jones Road)	m <sup>3</sup> /year	84,526	210,000	Y
Summer Discharge Volume (Golf Course) - 1 October to 30 April	m <sup>3</sup> /day	479	860	Y
Winter Discharge Volume (Golf Course) - 1 May to 30 September	m <sup>3</sup> /day	339	570	Y
Discharge Volume (Golf Course)	m <sup>3</sup> /year	54,441	180,000	Y
Summer Discharge Volume (Golf Course) - 1 October to 30 April	m <sup>3</sup> /week	2,651	6,000	Y
Winter Discharge Volume (Golf Course) - 1 May to 30 September	m <sup>3</sup> /week	1,777	4,000	Y

Figure 1 Summary of Discharge Volume 1 July 2012 to 30 June 2013

### Seasonal Variation Trend

- During summer most of the discharge is pumped to irrigate the Golf Course fairways and a lesser amount is discharged to the Jones Road Site
- During winter most of the discharge is irrigated to the Jones Road Site and a small amount is pumped to the high rate dunes on the Golf Course
- During times of heavy rain all irrigation is turned off and the discharge is held in the Storage Dam





## Compliance Discharge Quality

All monitored samples have been compliant with existing resource consent concentrations.

Parameter	Units	n	Minimum	Maximum	Average	Median	95 <sup>th</sup> Percentile	Consented 95 <sup>th</sup> Percentile	Compliant with 95 <sup>th</sup> Percentile
pH	SU	53	7.0	7.9	7.9	7.9	7.8		-
Dissolved Oxygen	mg/L	53	5.8	9.1	9.1	9.1	8.8		-
Faecal Coliforms	cfu/100ml	26	1.6	8.2	2.5	1.6	6.6	500	Y
Total Suspended Solids	mg/L	27	1.0	22.0	7.2	7.2	11.0	20	Y
CBOD <sub>5</sub>	mg/L	27	0.5	8.3	3.9	4.4	7.8	30	Y
Ammoniacal Nitrogen	mg/L	26	0.4	37.0	19.3	18.5	34.5		-
Nitrate Nitrogen	mg/L	26	2.0	11.0	6.1	6.5	10.0		-

Figure 2 Summary of Discharge Monitoring Results 1 July 2012 to 30 June 2013

## Monitoring Locations and Frequency

- Monitoring of the discharge has been undertaken since 2002
- Boundary drains monitor the quality of run-off. Boreholes monitor the quality of groundwater
- All boundary drains (BND1-4) and boreholes (shallow bores and forest edge bores) are monitored on a six-monthly basis, generally in March and September every year
- Boundary Drains BND1, BND2 and BND4 are used as Control Sites to provide baseline water quality data for sites unaffected by discharge irrigation



Figure 3 Monitoring boundary drain and borehole locations

## **Monitoring: 2002 – 2013 Results Summary**

### **Boundary Drains (BND 1 – 4): Runoff Quality**

- CBOD<sub>5</sub>, Nitrate and Ammonia concentrations are consistently low (typically less than 2, 0.5 and 1 g/m<sup>3</sup> respectively)
- Faecal coliforms and Total Suspended Solid concentrations are variable – probably as a result of runoff from surrounding agricultural land use

### **Jones Road Site Boreholes (Shallow Bores 1 – 4): Groundwater Quality**

- CBOD<sub>5</sub> concentrations are less than 5g/m<sup>3</sup> in all bores, with one exception recorded in early 2013
- Total Suspended Solid concentrations in Shallow Bored No.1 and 2 have been variable. Following repairs to the borehole, these results have been consistently lower
- Nitrogen and Ammonia concentrations have been consistently low (typically less than 1g/m<sup>3</sup>)

### **Golf Course Site Boreholes (Forest Edge Bores 1 – 2): Groundwater Quality**

- Faecal Coliform concentrations are generally below 50 cfu/100ml. One spike was recorded in May 2013 – indicating Faecal Coliforms are higher in the environment than in the discharge
- Nitrogen and Ammonia concentrations have been consistently low (typically less than 5g/m<sup>3</sup> and 1g/m<sup>3</sup> respectively)
- Dissolved reactive phosphorous has been consistently less than 0.2g/m<sup>3</sup>