

JHCPB Joint Venture

# R4.4: Water Treatment Plant Performance Report

Reporting Period: 1<sup>st</sup> June 2021

Project	Rozelle Interchange and WHT Enabling Works – Design and Construct
Document No.	RIC-JHC-RPT-20-EN-001-096
Revision Date	7/06/2021

## Document Approval

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
00	7/06/2021	██████	██████	██████	

## Contents

1. Licenced Discharge Points.....	2
2. Discharge Concentration Limits .....	3
3. Requirement to monitor concentration of pollutants discharged .....	4
4. Water Treatment Plant (WTP) Performance Reporting .....	5

## Table of Figures

Figure 1: WTP Licenced Discharge Points.....	2
--	---

## Table of Tables

Table 1 Point 1 Pollutant Concentrations .....	3
Table 2 Point 2 Pollutant Concentrations .....	3
Table 3 Point 1 monitoring requirement under condition M2 .....	4
Table 4 Point 2 monitoring requirement under condition M2 .....	4
Table 5 WTP Discharge Monitoring Results for 1 <sup>st</sup> April 2021 .....	6
Table 6 WTP Influent Monitoring Results .....	6
Table 7 Analysis of water quality results to date.....	7

## 1. Licenced Discharge Points

The Rozelle Interchange Project has three water treatment plants, located at 2 separate tunnelling sites. Under P1.2 of the Project Environmental Protection License (EPL #21278), all surface water which has been intercepted by groundwater must be processed through a construction Water Treatment Plant (WTP) and discharged into a licenced discharge point stated under P1.5. The licensed discharged points for the construction WTPs are featured in Figure 1.

In some instances, in this report will specifically reference the construction WTPs. The location of the construction WTPs:

- Construction WTP-A is located at Tunnelling Site A
- Construction WTP-B is located at Tunnelling Site C
- Construction WTP-C is located at Tunnelling Site C

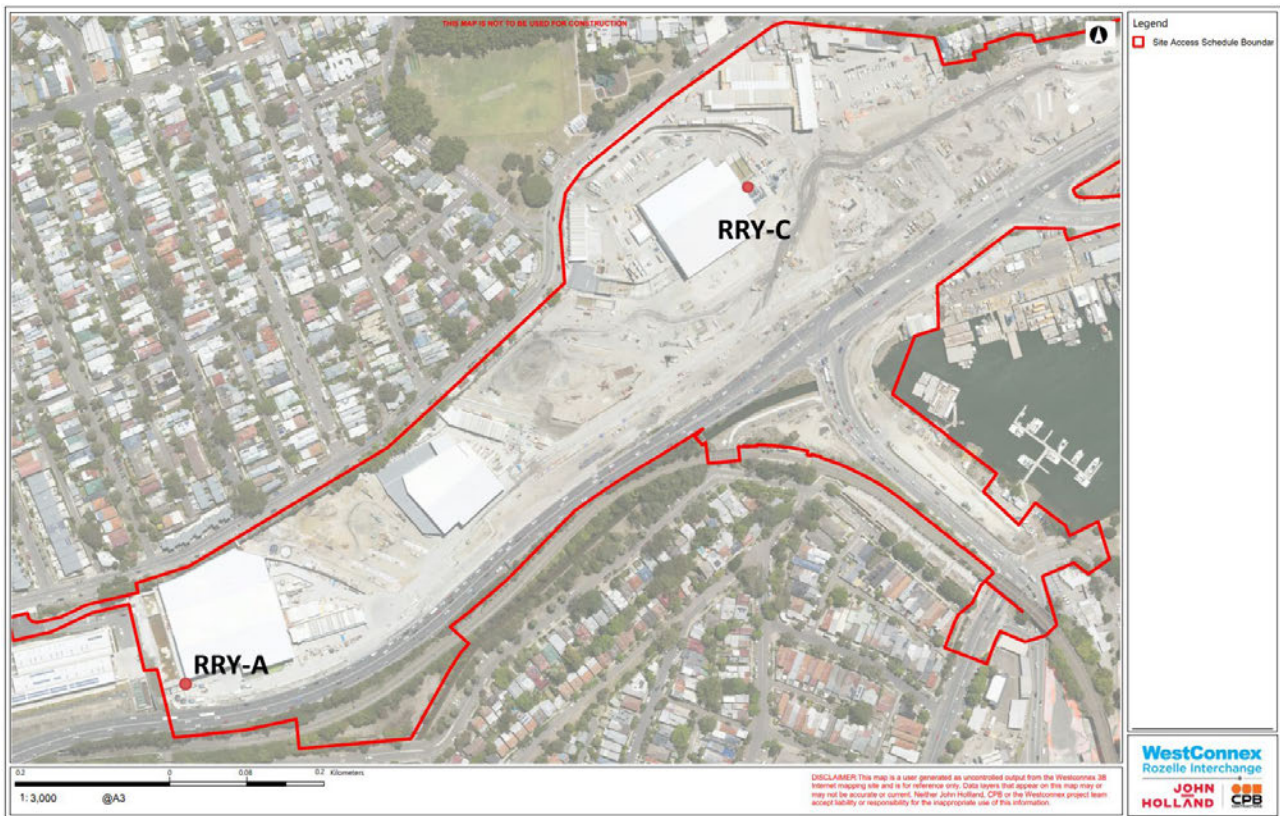


Figure 1: WTP Licenced Discharge Points

## 2. Discharge Concentration Limits

Under EPL condition L2.4, all water which has intercepted groundwater must be discharged in accordance with the following water concentration limits:

Table 1 Point 1 Pollutant Concentrations

Pollutant	Units of Measure	90 Percentile Concentration Limit	100 Percentile Concentration Limit
Oil and Grease	Visible		Not Visible
pH	pH		6.5-8.5
Total suspended solids	Milligrams per litre		50

Table 2 Point 2 Pollutant Concentrations

Pollutant	Units of Measure	90 Percentile Concentration Limit	100 Percentile Concentration Limit
Arsenic	Milligrams per litre		0.05
Cadmium	Milligrams per litre		0.014
Chromium (hexavalent)	Milligrams per litre	0.07	
Chromium (trivalent)	Milligrams per litre		0.15
Copper	Milligrams per litre	0.04	
Iron	Milligrams per litre		1.5
Lead	Milligrams per litre		0.03
Manganese	Milligrams per litre		2.5
Mercury	Milligrams per litre		0.0007
Nickel	Milligrams per litre		0.2
Zinc	Milligrams per litre	0.15	

### 3. Requirement to monitor concentration of pollutants discharged

Where water has been discharged, condition M2 specifies the sampling method, monitoring frequency and unit of measure. Details are presented in Table 3 and Table 4.

Table 3 Point 1 monitoring requirement under condition M2

Pollutant	Units of Measure	Frequency	Sampling Method
Oil and Grease	Visible	Special Frequency	Visual Inspection
pH	pH	Special Frequency	Probe
Total suspended solids	Milligrams per litre	Special Frequency	Grab Sample

Table 4 Point 2 monitoring requirement under condition M2

Pollutant	Units of Measure	Frequency	Sampling Method
Arsenic	Milligrams per litre	Special Frequency	Grab Sample
Cadmium	Milligrams per litre	Special Frequency	Grab Sample
Chromium (hexavalent)	Milligrams per litre	Special Frequency	Grab Sample
Chromium (trivalent)	Milligrams per litre	Special Frequency	Grab Sample
Copper	Milligrams per litre	Special Frequency	Grab Sample
Iron	Milligrams per litre	Special Frequency	Grab Sample
Lead	Milligrams per litre	Special Frequency	Grab Sample
Manganese	Milligrams per litre	Special Frequency	Grab Sample
Mercury	Milligrams per litre	Special Frequency	Grab Sample
Nickel	Milligrams per litre	Special Frequency	Grab Sample
Zinc	Milligrams per litre	Special Frequency	Grab Sample

## 4. Water Treatment Plant (WTP) Performance Reporting

This report presents information required under EPL Condition R4.4(a) and (b), where water is discharge under L2.4 (Section 2) and samples have been collected in accordance with M2 (Section 3). Refer to Table 5 and Table 6 for water quality results. All discharge data to date (and related to this Report) has been analysed and is presented in Table 7. The 90<sup>th</sup> percentile will be calculated annually and presented in the EPL Annual Return.

Table 5 WTP Discharge Monitoring Results for 1<sup>st</sup> June 2021

Date	License Discharge Point	Turbidity (NTU)	pH	Oil & Grease	Arsenic	Cadmium	Chromium hexavalent	Chromium trivalent	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc
Discharge Concentrations		<50	6.5-8.5	None visible	0.05	0.014	0.07*	0.15	0.04*	1.5	0.03	2.5	0.0007	0.2	0.15*
01/06/2021	RRY-A	0.7	7.1	None visible	0.0005	<0.00005	0.014	0.001	0.0007	0.004	<0.0001	0.318	<0.0001	0.0007	0.002
01/06/2021	RRY-C	0.4	7.08	None visible	0.0006	<0.00005	0.032	<0.001	0.0008	0.006	<0.0001	0.0368	<0.0001	0.0016	0.002
01/06/2021	RRY-C	4.5	6.8	None visible	0.0006	0.00008	0.033	<0.001	0.001	0.004	<0.0001	0.018	<0.0001	0.0006	<0.001

\*measure in 90<sup>th</sup> Percentile over a year

Table 6 WTP Influent Monitoring Results

Date	Where water will be treated	Turbidity (NTU)	pH	Oil & Grease	Arsenic	Cadmium	Chromium hexavalent	Chromium trivalent	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc
26/05/2021	M402: CH06	-	-	None visible	0.0018	<0.00005	0.038	<0.001	0.0037	0.028	0.0001	0.0005	<0.0001	<0.0005	<0.001
31/05/2021	M1A0: CH1200	-	-	None visible	0.0002	0.00005	<0.005	<0.001	0.0005	29.7	0.0001	1.62	<0.0001	0.0042	0.005

Table 7 Analysis of water quality results to date

Date	License Discharge Point	Turbidity (NTU)	pH	Oil & Grease	Arsenic	Cadmium	Chromium hexavalent	Chromium trivalent	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc
Discharge Concentrations		<50	6.5-8.5	None visible	0.05 mg/L	0.014 mg/L	0.07 mg/L	0.15 mg/L	0.04 mg/L	1.5 mg/L	0.03 mg/L	2.5 mg/L	0.0007 mg/L	0.2 mg/L	0.15 mg/L
22/05/2020	RRY-A	3	7.79	None visible	0.001	0.0002	0.014	<0.005	0.001	0.05	0.001	0.005	0.0001	0.001	<0.005
28/05/2020	RRY-A	1	6.87	None visible	0.001	0.0002	0.012	<0.005	0.001	0.05	0.001	0.005	0.0001	0.001	<0.005
22/06/2020	RRY-C	0.9	7.0	None visible	0.0002	<0.00005	0.022	<0.001	0.0009	0.031	0.0001	0.0254	<0.0001	<0.0005	0.041
22/06/2020	RRY-A	0.03	6.92	None visible	0.0002	<0.00005	0.016	<0.001	<0.0005	0.002	0.0001	0.0047	<0.0001	<0.0005	0.004
01/07/2020	RRY-C	3.2	7.12	None visible	0.0002	<0.00005	0.03	<0.001	0.0013	0.002	0.0001	0.0036	<0.0001	<0.0005	0.032
08/07/2020	RRY-C	14	8.05	None visible	0.0002	<0.00005	0.022	<0.001	0.0023	0.002	0.0001	0.248	<0.0001	<0.0005	0.008
20/07/2020	RRY-C	0.9	7.4	None visible	0.0004	<0.00005	0.024	<0.001	0.0007	0.003	0.0001	0.002	<0.0001	<0.0005	0.001
20/07/2020	RRY-C	1	7.3	None visible	0.0004	<0.00005	0.023	<0.001	0.0013	0.003	0.0001	0.0372	<0.0001	0.0008	0.004
20/07/2020	RRY-A	0.03	6.9	None visible	<0.0002	<0.00005	0.014	<0.001	0.0005	0.002	0.0001	0.0039	<0.0001	<0.0005	0.002
21/08/2020	RRY-A	3.8	6.5	None visible	0.0003	<0.00005	0.002	<0.001	0.0006	0.064	0.0001	0.0166	<0.0001	0.0033	0.012
21/08/2020	RRY-A	3.8	6.57	None visible	0.0002	<0.00005	0.004	0.006	0.0006	0.003	0.0001	0.0149	<0.0001	0.0006	<0.005
21/08/2020	RRY-C	14	7.0	None visible	0.0002	<0.00005	0.034	<0.001	0.0012	0.002	0.0001	0.0018	<0.0001	0.0006	0.002
21/08/2020	RRY-C	2.9	7.2	None visible	0.0003	<0.00005	0.030	0.004	0.0013	0.002	0.0001	0.0005	<0.0001	<0.0005	0.004
21/08/2020	RRY-C	16.5	7.1	None visible	0.0003	<0.00005	0.040	<0.001	0.0011	0.002	0.0001	0.0016	<0.0001	<0.0005	0.002
21/08/2020	RRY-C	0.1	7.1	None visible	0.0003	<0.00005	0.035	<0.001	0.0012	0.002	0.0001	0.0098	<0.0001	<0.0005	0.003
22/09/2020	RRY-A	1.1	6.9	None visible	<0.001	<0.0002	0.011	<0.005	0.001	<0.05	<0.001	0.033	<0.0001	<0.001	<0.005
22/09/2020	RRY-C	5.2	8.21	None visible	<0.001	<0.0002	0.014	<0.005	0.001	<0.05	<0.001	0.005	<0.0001	<0.001	<0.005
22/09/2020	RRY-C	5.0	7.13	None visible	<0.001	<0.0002	0.014	<0.005	0.002	<0.05	<0.001	0.005	<0.0001	<0.001	<0.005
19/10/2020	RRY-A	0.0	7.8	None visible	<0.001	<0.0002	0.015	<0.005	0.001	<0.05	<0.001	0.013	<0.0001	<0.001	<0.005
19/10/2020	RRY-C	6.4	7.4	None visible	<0.001	<0.0002	0.019	<0.005	0.001	<0.05	<0.001	0.039	<0.0001	<0.001	<0.005
19/10/2020	RRY-C	1.0	6.8	None visible	<0.001	<0.0002	0.011	<0.005	0.0014	<0.05	<0.001	0.009	<0.0001	<0.001	<0.005
24/11/2020	WTP-A	0	6.8	None visible	<0.001	<0.0002	0.015	<0.005	0.001	<0.05	<0.001	0.005	<0.0001	<0.001	<0.005
24/11/2020	WTP-B	8.6	7.6	None visible	<0.001	<0.0002	0.017	<0.005	0.004	<0.05	<0.001	0.006	<0.0001	<0.001	<0.005
24/11/2020	WTP-C	1.1	7.95	None visible	<0.001	<0.0002	0.022	<0.005	0.001	<0.05	<0.001	0.005	<0.0001	<0.001	<0.005
04/12/2020	WTP-A	7.4	7.6	None visible	<0.0005	<0.0002	0.023	<0.001	0.001	<0.005	<0.0002	0.0034	<0.0001	<0.0005	<0.005
04/12/2020	WTP-B	14.6	7.7	None visible	<0.0005	<0.0002	0.027	<0.001	0.006	<0.005	<0.0002	0.022	<0.0001	0.0006	<0.005
04/12/2020	WTP-C	7.5	6.8	None visible	<0.0005	<0.0002	0.026	<0.001	0.002	<0.005	<0.0002	0.0153	<0.0001	0.0011	0.013
05/01/2021	RRY-A	0	8.21	None visible	<0.0005	<0.0002	<0.001	<0.001	0.001	<0.005	<0.0002	0.0042	<0.0001	<0.0005	0.006
05/01/2021	RRY-C	1.6	7.95	None visible	<0.0005	<0.0002	0.002	<0.001	0.001	<0.005	<0.0002	0.0514	<0.0001	<0.0005	<0.005
05/01/2021	RRY-C	0.1	7.92	None visible	<0.0005	<0.0002	0.003	<0.001	0.001	<0.005	<0.0002	0.0494	<0.0001	<0.0005	<0.005
05/02/2021	RRY-A	5.8	7.51	None visible	0.0004	<0.0005	0.0011	<0.001	<0.0005	0.006	0.0001	0.022	<0.0001	0.0005	0.004
05/02/2021	RRY-C	4.5	7.62	None visible	0.0007	<0.0005	0.003	<0.001	0.0011	0.002	0.0001	0.0632	<0.0001	0.0006	0.004
05/02/2021	RRY-C	0.2	7.67	None visible	0.0004	<0.0005	0.0035	<0.001	0.0011	0.002	0.0001	0.025	<0.0001	<0.0005	0.008
05/03/2021	RRY-A	1.8	7.51	None visible	0.0004	<0.0005	0.009	<0.002	0.0008	0.003	<0.0001	0.111	<0.0001	0.0011	0.004
05/03/2021	RRY-C	1	7.43	None visible	0.0008	<0.0005	0.017	<0.001	0.001	0.003	<0.0001	0.392	<0.0001	0.0017	0.003
05/03/2021	RRY-C	0.6	7.47	None visible	0.0005	<0.0005	0.022	<0.001	0.0014	0.006	<0.0001	0.025	<0.0001	0.0009	0.004
01/04/2021	RRY-A	<0.1	7.58	None visible	0.001	<0.00005	0.006	0.002	0.0011	<0.002	<0.0001	0.0025	<0.0001	<0.0005	0.005
01/04/2021	RRY-C	0.3	7.52	None visible	0.001	<0.00005	0.054	<0.001	0.0009	0.036	<0.0001	0.0437	<0.0001	0.0005	0.002



01/04/2021	RRY-C	0.2	6.7	None visible	0.0009	<0.00005	0.052	<0.001	0.001	0.014	<0.0001	0.0449	<0.0001	<0.0005	0.003
04/05/2021	RRY-A	0.1	7.54	None visible	0.0007	<0.00005	0.019	<0.001	0.0017	0.022	0.0002	0.0217	<0.0001	0.0006	0.005
04/05/2021	RRY-C	0.6	7.02	None visible	0.001	<0.00005	0.018	<0.001	0.0006	0.004	<0.0001	0.984	<0.0001	0.0008	0.002
04/05/2021	RRY-C	0.2	6.73	None visible	0.001	<0.00005	0.017	<0.001	0.0008	<0.002	<0.0001	0.034	<0.0001	0.0006	0.001
01/06/2021	RRY-A	0.7	7.1	None visible	0.0005	<0.00005	0.014	0.001	0.0007	0.004	<0.0001	0.318	<0.0001	0.0007	0.002
01/06/2021	RRY-C	0.4	7.08	None visible	0.0006	<0.00005	0.032	<0.001	0.0008	0.006	<0.0001	0.0368	<0.0001	0.0016	0.002
01/06/2021	RRY-C	4.5	6.8	None visible	0.0006	0.00008	0.033	<0.001	0.001	0.004	<0.0001	0.018	<0.0001	0.0006	<0.001
Analytes subject to 90th percentile thresholds							Chromium hexavalent		Copper						Zinc
Number of samples (excluding samples below Limit of Detection "<")							44		43						28
90 Percentile							0.0337		0.00194						0.0123
Max							0.054		0.006						0.041

\*measure in 90th Percentile over a year