



Report to the Department of Health

By

Nickel West Leinster Operations

for the period

1st of July to 30th of September 2021

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1.0 Water Provider Information

Water provider contact details	
Name of Company	BHP Nickel West Pty Ltd
Company Address	Level 43 125 St Georges Tce, Perth WA 6000
DoH Liaison Officer	Heather Little
DoH Liaison Officer Email	heather.little@bhp.com
DoH Liaison Contact #	0405 585 229

1.1. System Information

BHP Nickel West Leinster Nickel Operations is located 370 km north of Kalgoorlie. The Leinster Nickel Operations cover large mineral tenement landholdings incorporating several Nickel deposits and facilities including:

- Underground mining
- Nickel Sulphide Concentrator Facility
- Open pit operations
- Leinster township (residential area, commercial facilities and SPQ accommodation village)

Average population on any given day at this location is 800 people.

1.1.1. Potable Water Supply System

Potable water for the mine site and township of Leinster is sourced from the 11 mile bore field that sits 6 km equidistant from both locations. The raw water from this borefield has historically raised levels of salinity and nitrates.

Water is stored at the 11-mile water transfer station (390 kilolitres) and is gas chlorinated prior to being pumped to storage facilities located at town and the mine site.

The town reticulation network includes a 3 million litre buffer tank which provides holding capacity and distribution head pressure. There are two reverse osmosis (RO) units located at the dry mess facility and the town medical centre to deliver higher quality water.

The mine site has storage capacity of 1.6 megalitres. Water quality improvement is achieved via in-line filters (4 stage filters; particulate removal class 3; taste / odor removal class 4; calcium removal) at designated drinking water facilities.

1.2. Number of Potable Water Sampling Points

Table 1 below provides the number of potable water sample points maintained. Source water sample points are included in the monitoring program to provide data relating to changes in chemistry and microbiology of pre-treatment water. As these points are not indicative of the quality of potable water provided for consumption, only consumer or distribution sample point information is collated in this quarterly report.

Table 1: Potable Water Sampling Points		
Region	Consumer / Distribution Points	Source Water Points
Leinster	11	1

2.0 Performance Summary

Table 2 below provides the number of microbiological water samples completed throughout quarter two. The required number assessed, number within compliance and any variance within the sampling quota.

Table 2: Potable Water Sampling Performance Summary			
Microbiological Quality	No. assessed	No. compliant	Variance
<i>Thermotolerant coliforms / E.coli</i>	27	27	0
<i>Amoeba (Thermophilic Naegleria)</i>	27	27	0
<i>Chemical - Health</i>	49	47	2
<i>Chemical - Aesthetic</i>	28	22	6
<i>Radiological</i>	0	0	0

3.0 Microbial Performance

Table 3 below provides a 12-month summary of microbiological compliance. Including samples that require DoH notification and remedial actions.

Table 3: Microbiological - Compliance						
Region/ Scheme /Zone	Date	Microbiological Characteristic	Alert Level	Remedial Actions	Date DOH notified	Close out date
QUARTER 3 2021				No issues to report		
QUARTER 2 2021				No issues to report		
QUARTER 1 2021				No issues to report		
QUARTER 4 2020						
Leinster	24/12/2020	E. coli	1	The cooler has been fully drained, cleaned, and disinfected and chlorine confirmed present at 0.75 ppm	04/01/2021	12/01/2021
QUARTER 3 2020				No issues to report		
QUARTER 2 2020				No issues to report		

4.0 Chemical - Health Related Performance

Table 4: Leinster Distribution Water Chemical Health Performance				
	Analyses Completed	ADWG Compliant	Variance	Maximum recorded value
Antimony (0.003 mg/L)	8	8	0	<0.001
Arsenic (0.01 mg/L)	1	1	0	<0.001
Cadmium (0.002 mg/L)	8	8	0	<0.0001
Copper (2 mg/L)	8	8	0	0.046
Cyanide (0.08 mg/L)	2	2	0	<0.004
Fluoride (1.5 mg/L)	1	1	0	0.4
Iodide (0.5 mg/L)	0	0	0	0
Lead (0.01 mg/L)	8	8	0	<0.001
Nickel (0.02 mg/L)	8	8	0	<0.001
Nitrate (50 mg/L)	2	2	2	75
Nitrite (3 mg/L)	2	2	0	<0.5
Selenium 0.01 mg/L)	1	1	0	0.002

4.1 Chemical - Health Related - Exception Notifications

The Australian Drinking Water Guidelines Version 3.6 set a 50 mg/L Guideline value to protect young infants, however, provides that up to 100 mg/L can be used by adults and children over 3 months of age without significant health events.

Leinster potable water is sourced from groundwater resources and is naturally high in nitrates. Although results received during the monitoring period exceed the 50 mg/L Guideline value, all results measured were below the 100 mg/L maximum for adults and children over 3 months. As Leinster operates as both a FIFO camp and a residential township, the risk of elevated nitrates in the drinking water is actively managed by providing reverse osmosis (RO) plants in two key locations (the medical centre and the dry mess), for the township to replenish their drinking water stores. There is weekly maintenance on the RO plant at both locations to ensure efficient filtering. The town site also issues an accommodation guide to all new entrants, which highlights to those who are at risk from the raised nitrate level (infants under three months) to drink water only from the RO plants located at the township for their drinking water requirements. A new RO plant was commissioned at the Leinster Town Medical Centre 27 May 2018. Monthly sampling for nitrates continued for the Leinster Medical Centre RO Plant during the quarter.

Leinster Medical Centre RO Monthly Nitrate Analysis	
Sample Date	Nitrate Value (mg/L)
30/09/21	2.7
26/08/21	3.0
29/07/21	2.5
24/06/21	2.4
24/05/21	2.3
25/03/21	3.5
11/03/21	3.3
28/01/21	3.4
17/12/20	2.8
30/11/20	2.9
23/09/2020	2.3
26/08/2020	1.9

Note: Leinster Medical Centre RO not sampled in October and April as sample bottle not received.

5.0 Chemical - Aesthetic Performance

5.1 Chemical - Aesthetic Performance

Table 8: Leinster Distribution Water Chemical Aesthetic Performance				
	Analyses Completed	ADWG Compliant	Variance	Maximum recorded value
Aluminium (0.2 mg/L)	2	2	0	<0.01
Ammonia (0.5 mg/L)	2	2	0	0.007
Chloride (250/L)	1	1	0	220
Colour (15 HU)	2	2	0	<5
Hardness (200 mg/L)	3	0	3	250
Iron (0.3 mg/L)	7	7	0	0.01
Manganese (0.1 mg/L)	2	2	0	<0.005
pH (6.5 - 8.5)	2	2	0	7.8
Sodium (180 mg/L)	1	1	0	120
Sulphate (250 mg/L)	1	1	0	110
TDS (600 mg/L)	3	0	3	820
Turbidity (5 NTU)	2	2	0	0.6

5.2 Chemical - Aesthetic Related – Incident Specific Information

As Leinster potable water is sourced from groundwater aquifer resources, the water is naturally hard. The recorded max value of 820 mg/L is marginally above the Australian Drinking Water Guideline value of 600 mg/L and typical for this system. Australian Drinking Water Guidelines state based on taste total dissolved solids should ideally be less than 600 mg/L to be regarded good quality for drinking. The Australian Drinking Water Guideline also state between 600 – 900mg/L is regarded as fair quality drinking water and acceptable.

6.0 Radiological Performance

No Radiological samples were required during the reporting period.

7.0 Planned Sample Summary

Table 11: Leinster Distribution Water Planned Sample Summary			
	Planned Analyses	Taken	% Compliance to Plan
Microbial	54	53	97
Chemical	77	77	100
Radiological	0	0	100

7.1 Planned Sample Exceptions

No planned sample exceptions.

8.0 General Notes/Other News

A Water Services Licence was granted by the Economic Regulation Authority (ERA) for the town of Leinster in September 2020 (commenced 16/9/2020 and expires 15/9/2045).