Nickel West Leinster Operations

(Leinster Township)

Potable Water Quality Report

Contents

1. Water Provider Information

Water Povider contact details	
Name of Company	BHP Nickel West Pty Ltd
Company Address	Level 43 125 St Georges Tce, Perth WA 6000
DoH Liaison Officer	Giovanna De Sousa
DoH Liaison Officer Email	Giovanna.desousa@bhp.com
DoH Liaison Contact #	0466847141

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 Leinster township (residential area, commercial facilities and SPQ accommodation village).

In July 2024 BHP announced temporary suspension of its Nickel West Operations, with a further decision review by 2027. The transition phase has been completed in December 2024. With this, the average population on any given day has dropped from 1000 to approximately 350 to 400 people.

1.2 Drinking Water Supply System

Drinking water for the township of Leinster is sourced from the 11 mile bore field that sits 6 km equidistant from both locations. The raw water from this bore field 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.

Drinking water supplied by BHP complies with the health-related criteria, as outlined in version 3.7 of the Australian Drinking Water Guidelines (ADWG).

1.3 Number of Drinking Water Sampling Points

Table 1 below provides the number of drinking 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 drinking water provided for consumption, only consumer or distribution sample point information is collated in this quarterly report.

Table 1: Drinking Water Sampling Points		
Region	Consumer / Distribution Points	Source Water Points (11 mile)
Leinster Township	7	1

2. Performance Summary

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

Table 2: Drinking Water Sampling Performance Summary			
Microbiological Quality	No. assessed	No. compliant	Variance
Thermotolerant coliforms / E. coli	38	38	0
Amoeba (Thermophilic Naegleria)	35	35	0
Chemical Quality	No. assessed	No. compliant	Variance
Chemical - Health	117	98	19
Chemical - Aesthetic	96	77	19
Radiological	2	2	0

3. Microbial Performance

Microbiological verification sampling is completed routinely at identified drinking water sample points which are chosen to be representative of distributed water. The aim of verification sampling is to confirm the water quality supplied to Leinster Town is safe and aesthetically acceptable. To ensure confidence in the reported results, all microbiological analyses are undertaken by a NATA accredited laboratory.

Microbiological results are reported by exception, and the Department of Health Western Australia (DoH) is notified of the exception as required by the specific alert level notification requirements listed in the DoH Binding Protocol.

Table 3 below provides a 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
There were no microbiological exceptions in Q4 2024.						

4. Chemical - Health Related Performance

Water chemistry samples are completed routinely at locations and frequencies specified in the Site Water Quality Verification Monitoring Program developed using a risk-based approach following completion of the site-specific drinking water quality risk assessment. The aim of verification sampling is to ensure that the water quality delivered to Leinster Town is of acceptable quality. Verification samples are analysed by a NATA accredited laboratory with the exception of free chlorine readings which are undertaken by technicians on-site using handheld instruments.

Chemistry results that have the potential to affect human health and have health related guidelines in Table 10.6 of the Australian Drinking Water Guidelines (ADWG) 2011(v3.8) are reported by exception to the West Australian Department of Health (DoH).

Table 4 depicts health related chemical performance for October to December 2024.

Table 4: Leinster Township Distribution Water Chemical Health Performance				
Parameter	Analyses Completed	ADWG Compliant	Variance	Maximum recorded value
2,4,6-Trichlorophenol (0.02 mg/L)	3	3	0	<0.001
2,4-Dichlorophenol (0.2 mg/L)	3	3	0	<0.0001
2,4-Dichlorophenol (0.3 mg/L)	3	3	0	<0.00005
Acrylamide (0.0002 mg/L)	1	1	0	<0.0001
Ametryn (0.07 mg/L)	1	1	0	<0.002
Amitrole (0.0009 mg/L)	1	1	0	<0.0009
Antimony (0.003 mg/L)	1	1	0	<0.001
Benzene (0.001 mg/L)	1	1	0	<0.001
Benzo(a)pyrene (0.00001 mg/L)	3	3	0	<0.000005
Bioresmethrin (0.1 mg/L)	1	1	0	<0.002
Bis(2-ethylhexyl) phthalate (DEHP) (0.01 mg/L)	2	2	0	<0.01
Bromacil (0.4 mg/L)	1	1	0	<0.002
Bromate (0.02 mg/L)	1	0	1	0.05
Bromodichloromethane (0.25 mg/L)	3	3	0	<0.001
Bromoform (0.25 mg/L)	3	3	0	0.0065
Cadmium (0.002 mg/L)	1	1	0	<0.001
Carbon Tetrachloride (0.003 mg/L)	1	1	0	<0.0005
Chlorate (0.7 mg/L)	1	1	0	<0.05
Chloroacetic acid (MCA) (0.15 mg/L)	1	1	0	<0.05
Chloroform (0.25 mg/L)	3	3	0	<0.001
Chlorpyrifos (0.01 mg/L)	1	1	0	<0.002
Chromium (as Cr VI) (0.05 mg/L)	1	1	0	<0.005
Clopyralid (2 mg/L)	1	1	0	<0.001
Copper (2 mg/L)	1	1	0	0.084
Cyfluthrin (0.05 mg/L)	1	1	0	<0.002
Cypermethrin (0.2 mg/L)	1	1	0	<0.002
Diazinon (0.004 mg/L)	1	1	0	<0.002
Dibromochloromethane (0.25 mg/L)	3	3	0	<0.001
Dicamba (0.1 mg/L)	1	1	0	<0.0005
Dichlobenil (0.001 mg/L)	1	1	0	<0.002
Dichloroacetic acid (DCA) (0.1 mg/L)	3	3	0	<0.02
Diclofop Methyl (0.005 mg/L)	1	1	0	<0.005
Diquat (0.007 mg/L)	1	1	0	<0.0002
Diuron (0.02 mg/L)	1	1	0	<0.005

Table 4: Leinster Township Distribution Water Chemical Health Performance				
Parameter	Analyses Completed	ADWG Compliant	Variance	Maximum recorded value
Esfenvalerate (0.03 mg/L)	1	1	0	<0.0005
Ethylbenzene (0.3 mg/L)	1	1	0	<0.001
Fenthion (0.007 mg/L)	1	1	0	<0.002
Fenvalerate (0.06 mg/L)	1	1	0	<0.002
Fipronil (0.0007 mg/L)	1	1	0	<0.002
Free Chlorine (5 mg/L) *	9	9	0	0.88
Glyphosate (0.05 mg/L)	1	1	0	<0.01
Hexazinone (0.4 mg/L)	1	1	0	<0.002
Iodide (0.5 mg/L)	0	0	0	0
Lead (0.01 mg/L)	1	1	0	<0.01
Manganese (0.5 mg/L)	1	1	0	<0.001
MCPA (0.04 mg/L)	1	1	0	<0.0005
Metsulfuron Methyl (0.04 mg/L)	1	1	0	<0.00000001
Naphthalene (0.005 mg/L)	1	1	0	<0.001
Nickel (0.02 mg/L)	1	1	0	<0.001
Nitrate (50 mg/L)	39	21	18	78
Nitrite (3 mg/L)	0	0	0	0
Paraquat (0.02 mg/L)	1	1	0	<0.0002
Permethrin (0.2 mg/L)	1	1	0	<0.0005
Piperonyl butoxide (0.6 mg/L)	1	1	0	<0.002
Pirimiphos-methyl (0.09 mg/L)	1	1	0	<0.002
Propargite (0.007 mg/L)	1	1	0	<0.002
Simazine (0.02 mg/L)	1	1	0	<0.0001
Toluene (0.8 mg/L)	1	1	0	<0.001
Trihalomethanes (0.25 mg/L)	3	3	0	0.0065
Trichloroacetaldehyde (0.1 mg/L)	3	3	0	<0.02
Trichloroacetic acid (0.1 mg/L)	3	3	0	<0.02
Triclopyr (0.02 mg/L)	1	1	0	<0.001
Xylene (0.6 mg/L)	1	1	0	<0.003

*As total chlorine is not tested, the free chlorine result is measured against the ADWG health-related guideline value for total chlorine within Table 4.

4.1 Chemical - Health Related - Exception Notification

Bromate was detected at 0.05 mg/L, above the ADWG health limit of 0.02 mg/L. Disinfection was undertaken to address the concern. Additional sampling is conducted on a monthly frequency for Nitrate at the Leinster Medical Centre due to the ongoing detections of Nitrate above the ADWG Health guidelines for the Leinster Township Water Distribution System, which is further depicted in Table 5.

Table 5: Leinster Medical Centre RO Monthly Nitrate Analysis	
Sample Date	Nitrate Value (mg/L)
5/12/2024	3.2
21/11/2024	2.9
10/10/2024	3.1
19/09/2024	6.8
22/08/2024	23
16/07/2024	21
20/06/2024	16
16/05/2024	16
21/04/2024	16
27/03/2024	17
29/02/2024	19
1/02/2024	11
28/12/2023	10
28/11/2023	9.7
17/11/2023	10

5. Chemical - Aesthetic Performance

This section includes water chemistry results that do not have health guideline values but do have aesthetic guideline values in the ADWG (2011). Exceeding an aesthetic guideline value does not pose a health risk (provided no health guideline is exceeded at the same time) but can affect the palatability and how pleasing the water appears. Individual exceedances are generally not reportable to the DoH, with exception of turbidity.

Table 6 depicts aesthetic related chemical performance for October to December 2024. Next round of sampling completed in January 2025.

Table 6: Leinster Township Distribution Water Chemical Aesthetic Performance				
Parameter	Analyses Completed	ADWG Compliant	Variance	Maximum recorded value
2,4,6-Trichlorophenol (0.002 mg/L)	3	3	0	<0.001
2,4-Dichlorophenol (0.0003 mg/L)	3	3	0	<0.0001
2-Chlorophenol (0.0001 mg/L)	3	3	0	<0.00005
Aluminium (0.2 mg/L)	1	1	0	<0.1
Colour (15 HU)	3	3	0	<5.0
Copper (1 mg/L)	1	1	0	0.084
Ethylbenzene (0.003 mg/L)	1	1	0	<0.001
Free Chlorine (0.6 mg/L)	6	3	3	0.88
Hardness (200 mg/L)	1	0	1	260

Table 6: Leinster Township Distribution Water Chemical Aesthetic Performance				
Parameter	Analyses Completed	ADWG Compliant	Variance	Maximum recorded value
Iron (0.3 mg/L)	1	1	0	<0.01
Manganese (0.1 mg/L)	1	1	0	<0.01
pH (6.5 - 8.5)	23	23	0	8.0
Sodium (180 mg/L)	1	1	0	130
TDS (600 mg/L)	21	10	11	850
Toluene (0.025 mg/L)	1	1	0	<0.001
Turbidity (5 NTU)	23	23	0	0.64
Xylene (0.02 mg/L)	1	1	0	<0.003
Zinc (3 mg/L)	1	1	0	0.016

5.1 Chemical - Aesthetic Related – Incident Specific Information

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. Highest record value for TDS in this quarter was recorded at 850 mg/L, within "fair quality water" as defined in ADWG.

6. Radiological Performance

Radiological parameters include gross alpha and gross beta levels which measure the overall radioactivity of the water. Verification samples are analysed by a NATA accredited laboratory to ensure accuracy of results.

Radiological results that are above the ADWG (2011) recommended screening levels (0.5 Bq/L for either gross alpha or gross beta) are investigated to determine the nature of the radioactivity. If further radiological analysis reveals a radiation dose exceedance, this is reported to the West Australian Department of Health (DoH). The department is notified of the exception within the required timeframe and using the communication mode specified in the DoH Binding Protocol.

There were no potable water radiological exceptions recorded for this quarter.

Table 7: Leinster Township Radiological Performance				
Parameter	Analyses Completed	ADWG Compliant	Variance	Maximum recorded value
Gross Alpha (0.5 Bq/L)	1	1	0	0.22
Gross Beta (0.5 Bq/L)	1	1	0	0.057

7. Planned Sample Summary

Planned drinking water quality monitoring completeness during October to December 2024 is summarised in Table 8 below.

Table 8: Leinster Township Distribution Water Planned Sample Summary			
Parameter	Planned Analyses	Taken	% Compliance to Plan
Microbial	96	73	76%
Chemical	240	193	80%
Radiological	2	2	100%

8. Planned Sample Exceptions

On July 11th, 2024, BHP announced plans to enter Nickel West into a period of temporary suspension from October 2024. During this transition period, several operational changes made have had an impact on the potable water sampling program. These changes include the suspension and closure of some water sampling locations, as well as a shortage of available personnel to conduct sampling tasks.

The frequency of potable water sampling at Leinster has been altered in adjustment to such changes. The Department of Health is aware of these changes in line with licensing requirements.

9. 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).