

P&T DEPARTMENT, CORPORATE OFFICE,
NALCO BHAWAN, P-1, NAYAPALLI,
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PHONE: 0674-2300633, 06764-221323,

EMAIL: smruti.mohanty@nalcoindia.co.in, gm_uecb@nalcoindia.co.in

Ref. No. NBC/ED (Proj. & Tech)/1528

Date: 28.12.2023

To
The Member Secretary
State Pollution Control Board, Odisha
Paribesh Bhawan, A/118, Nilakantha Nagar,
Unit-VIII, Bhubaneswar- 751012, Odisha.
Email: paribesh1@ospcboard.org

Sub: Submission Ground Water Quality, Water Level report and Ambient Air Quality report for the month of November 2023 of Utkal D Coal Mines of National Aluminium Company Limited at Tehsil-Chhendipada, Angul District, Odisha.

Ref: (i) Utkal-D Consent to Operate dated 28.03.2023: Special Condition - E 32
(ii) Utkal-D Consent to Establish dated 27.11.2020: Special Condition - B 20
(iii) Utkal-D Environment Clearance dated 29.01.2009: Specific Condition - A (xvi)

Sir,

Inviting reference to the subject cited above, we are herewith submitting the Ground Water Quality report, water level report and Ambient Air Quality report for the month of November 2023 (Post monsoon) of Utkal-D Coal Mine of National Aluminium Company Limited (NALCO) situated at Tehsil-Chhendipada of Angul District, Odisha.

We trust that the information furnished is in line with your requirement.

Thanking You,

Yours Faithfully,
For and on behalf of NALCO


28/12/23

(S R Mohanty)
GGM (T&C) and
Authorized Signatory

Enclosure (s):

Report of Ground Water Quality, Water Level and Ambient Air Quality

नेशनल एल्यूमिनियम कम्पनी लिमिटेड

(भारत सरकार का एक उद्यम)

निगम कार्यालय

नालको भवन, पि-1, नयापल्ली, भुवनेश्वर - 751 013, भारत

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CIN: L27203OR1981GOI000920

National Aluminium Company Limited

(A Government of India Enterprise)

CORPORATE OFFICE

Nalco Bhawan, P/1, Nayapalli, Bhubaneswar - 751 013, India

Copy to:

1. Director, Ministry of Environment Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi – 110003 (email: monitoring-ec@nic.in)
2. Deputy Director General of Forest, Integrated Regional Office, Ministry of Environment, Forest & Climate Change, Regional Office (EZ), A/3, Chandrashekharpur, Bhubaneswar – 751023 Email: roez.bsr-mef@nic.in
3. Member Secretary, Central Pollution Control Board, 'Parivesh Bhawan', East Arjun Nagar, Shahdara, New Delhi – 110032 (email: mscb.cpcb@nic.in)
4. Zonal Office, Central Pollution Control Board, Southern Conclave, Block 502, 5th & 6th Floor, 1582 Rajdanga Main Road, Kolkata, WB – 700107 (email: rdkolkata.cpcb@gov.in)
5. Regional Officer, State Pollution Control Board, S-3/3, Industrial Estate, Hakimpada, Angul, Odisha (email: rospcb.angul@ospcbboard.org)
6. The Member Secretary, Central Ground Water Authority, 18/11, Jamnagar, House, Man Singh Road, New Delhi-110011
7. Regional Director, Central Ground Water Board (South Eastern Region), Bhujal Bhawan, Khandagiri Chowk, Bhubneshwar, Odisha

ENVIRONMENTAL MONITORING REPORT FOR THE MINTH OF NOVEMBER-2023



NATIONAL ALUMINIUM COMPANY LIMITED
Coal Mine Division
Angul-759145, Odisha



My World Consultancy Services Private Limited

Plot No. 766, Telengapentha,
Cuttack, Odisha 754001

WCS/LQR/57

TEST REPORT

Report No. : WCS231108A Issue Date : 08.11.2023
NABL ULR No. : TC1122523000000189F
Name of the Client : **National Aluminium Company Limited**
Address : Coal Mine Division
Angul-759145, Odisha
Sampling Location : **Gopiballavpur Village (Buffer Zone)**
Sample Description : Ambient Air Quality Monitoring Date of Sampling : 03.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (AIR) Sample ID No : WCS1123A01A
Environmental Condition : Clear weather Date of Receiving : 06.11.2023
Sample Collected by : WCS Laboratory Quantity of Sample : 1 No.
Date of Testing : 06.11.2023 to 08.11.2023 Sample Condition : Good

Parameter	Unit	Result	Standard	Test Method
Respirable Suspended Particulate Matter (PM ₁₀)	µg/m ³	56.4	100 (As per NAAQ 2009)	IS-5182 (Part-23) 2006 RA 2017
Fine Particulate Matter (PM _{2.5})	µg/m ³	33.7	60 (As per NAAQ 2009)	IS-5182 (Part-24) 2019
Sulphur Dioxide (SO ₂)	µg/m ³	5.4	80 (As per NAAQ 2009)	IS-5182 (Part-2) 2001 RA 2017
Nitrogen Oxides (NO ₂)	µg/m ³	16.5	80 (As per NAAQ 2009)	IS-5182 (Part-6) 2006 RA 2017
Suspended Particulate Matter (SPM)	µg/m ³	132.2	500 (As per CTO No-2938)	IS-5182 (Part-4) 1999 RA 2019


Reviewed by
(Mr. Bijaya Kumar Chahataray)


Authorized Signatory
(Mr. Pradeept Mohapatra)

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Report No. : WCS231108B Issue Date : 08.11.2023
NABL ULR No. : TC1122523000000189F
Name of the Client : **National Aluminium Company Limited**
Address : Coal Mine Division
Angul-759145, Odisha
Sampling Location : **Colony Area (Buffer Zone)**
Sample Description : Ambient Air Quality Monitoring Date of Sampling : 03.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (AIR) Sample ID No : WCS1123A01B
Environmental Condition : Clear weather Date of Receiving : 06.11.2023
Sample Collected by : WCS Laboratory Quantity of Sample : 1 No.
Date of Testing : 06.11.2023 to 08.11.2023 Sample Condition : Good

Parameter	Unit	Result	Standard	Test Method
Respirable Suspended Particulate Matter (PM ₁₀)	µg/m ³	66.1	100 (As per NAAQ 2009)	IS-5182 (Part-23) 2006 RA 2017
Fine Particulate Matter (PM _{2.5})	µg/m ³	37.1	60 (As per NAAQ 2009)	IS-5182 (Part-24) 2019
Sulphur Dioxide (SO ₂)	µg/m ³	5.8	80 (As per NAAQ 2009)	IS-5182 (Part-2) 2001 RA 2017
Nitrogen Oxides (NO ₂)	µg/m ³	18.0	80 (As per NAAQ 2009)	IS-5182 (Part-6) 2006 RA 2017
Suspended Particulate Matter (SPM)	µg/m ³	165.4	500 (As per CTO No-2938)	IS-5182 (Part-4) 1999 RA 2019


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TEST REPORT

Report No.	: WCS231108C	Issue Date	: 08.11.2023
NABL ULR No.	: TC1122523000000189F		
Name of the Client	: National Aluminium Company Limited		
Address	: Coal Mine Division Angul-759145, Odisha		
Sampling Location	: Near Weigh Bridge (Core Zone)		
Sample Description	: Ambient Air Quality Monitoring	Date of Sampling	: 03.11.2023
Sampling Plan & Method	: WCS/QSP/SAMP (AIR)	Sample ID No	: WCS1123A01C
Environmental Condition	: Clear weather	Date of Receiving	: 06.11.2023
Sample Collected by	: WCS Laboratory	Quantity of Sample	: 1 No.
Date of Testing	: 06.11.2023 to 08.11.2023	Sample Condition	: Good

Parameter	Unit	Result	Standard	Test Method
Respirable Suspended Particulate Matter (PM ₁₀)	µg/m ³	72.8	100 (As per NAAQ 2009)	IS-5182 (Part-23) 2006 RA 2017
Fine Particulate Matter (PM _{2.5})	µg/m ³	45.8	60 (As per NAAQ 2009)	IS-5182 (Part-24) 2019
Sulphur Dioxide (SO ₂)	µg/m ³	6.2	80 (As per NAAQ 2009)	IS-5182 (Part-2) 2001 RA 2017
Nitrogen Oxides (NO ₂)	µg/m ³	20.2	80 (As per NAAQ 2009)	IS-5182 (Part-6) 2006 RA 2017
Suspended Particulate Matter (SPM)	µg/m ³	210	500 (As per CTO No-2938)	IS-5182 (Part-4) 1999 RA 2019



Reviewed by
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Authorized Signatory
(Mr. Pradeep Mohapatra)

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TEST REPORT

Report No. : WCS231108D Issue Date : 08.11.2023
NABL ULR No. : TC1122523000000189F
Name of the Client : **National Aluminium Company Limited**
Address : Coal Mine Division
Angul-759145, Odisha
Sampling Location : **Near Settling Pond (Core Zone)**
Sample Description : Ambient Air Quality Monitoring Date of Sampling : 03.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (AIR) Sample ID No : WCS1123A01D
Environmental Condition : Clear weather Date of Receiving : 06.11.2023
Sample Collected by : WCS Laboratory Quantity of Sample : 1 No.
Date of Testing : 06.11.2023 to 08.11.2023 Sample Condition : Good

Parameter	Unit	Result	Standard	Test Method
Respirable Suspended Particulate Matter (PM ₁₀)	µg/m ³	66	100 (As per NAAQ 2009)	IS-5182 (Part-23) 2006 RA 2017
Fine Particulate Matter (PM _{2.5})	µg/m ³	41.2	60 (As per NAAQ 2009)	IS-5182 (Part-24) 2019
Sulphur Dioxide (SO ₂)	µg/m ³	6.0	80 (As per NAAQ 2009)	IS-5182 (Part-2) 2001 RA 2017
Nitrogen Oxides (NO ₂)	µg/m ³	18.8	80 (As per NAAQ 2009)	IS-5182 (Part-6) 2006 RA 2017
Suspended Particulate Matter (SPM)	µg/m ³	171.5	500 (As per CTO No-2938)	IS-5182 (Part-4) 1999 RA 2019

Bhahataray
Reviewed by

(Mr. Bijaya Kumar Chahataray)

Pradeept Mohapatra
Authorized Signatory
(Mr. Pradeept Mohapatra)

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TEST REPORT

Report No. : WCS231116A Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000197F
Name of the Client : **National Aluminium Company Limited**
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : **Gopiballavpur Village (Buffer Zone)**
Sample Description : Ambient Air Quality Monitoring Date of Sampling : 17.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (AIR) Sample ID No : WCS1123A08A
Environmental Condition : Clear Weather Date of Receiving : 20.11.2023
Sample Collected by : WCS Laboratory Quantity of Sample : 1 No.
Date of Testing : 20.11.2023 to 24.11.2023 Sample Condition : Good

Parameter	Unit	Result	Standard	Test Method
Respirable Suspended Particulate Matter (PM ₁₀)	µg/m ³	58.8	100 (As per NAAQ 2009)	IS-5182 (Part-23) 2006 RA 2017
Fine Particulate Matter (PM _{2.5})	µg/m ³	34.9	60 (As per NAAQ 2009)	IS-5182 (Part-24) 2019
Sulphur Dioxide (SO ₂)	µg/m ³	6.2	80 (As per NAAQ 2009)	IS-5182 (Part-2) 2001 RA 2017
Nitrogen Oxides (NO ₂)	µg/m ³	17	80 (As per NAAQ 2009)	IS-5182 (Part-6) 2006 RA 2017
Suspended Particulate Matter (SPM)	µg/m ³	135.6	500 (As per CTO No-2938)	IS-5182 (Part-4) 1999 RA 2019


Reviewed by
(Mr. Bijaya Kumar Chahataray)


Authorized Signatory
(Mr. Pradeept Mohapatra)

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TEST REPORT

Report No. : WCS231116B Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000197F
Name of the Client : **National Aluminium Company Limited**
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : **Colony Area (Buffer Zone)**
Sample Description : Ambient Air Quality Monitoring Date of Sampling : 17.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (AIR) Sample ID No : WCS1123A08B
Environmental Condition : Clear Weather Date of Receiving : 20.11.2023
Sample Collected by : WCS Laboratory Quantity of Sample : 1 No.
Date of Testing : 20.11.2023 to 24.11.2023 Sample Condition : Good

Parameter	Unit	Result	Standard	Test Method
Respirable Suspended Particulate Matter (PM ₁₀)	µg/m ³	65.2	100 (As per NAAQ 2009)	IS-5182 (Part-23) 2006 RA 2017
Fine Particulate Matter (PM _{2.5})	µg/m ³	39.9	60 (As per NAAQ 2009)	IS-5182 (Part-24) 2019
Sulphur Dioxide (SO ₂)	µg/m ³	5.4	80 (As per NAAQ 2009)	IS-5182 (Part-2) 2001 RA 2017
Nitrogen Oxides (NO ₂)	µg/m ³	18.4	80 (As per NAAQ 2009)	IS-5182 (Part-6) 2006 RA 2017
Suspended Particulate Matter (SPM)	µg/m ³	162.8	500 (As per CTO No-2938)	IS-5182 (Part-4) 1999 RA 2019


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TEST REPORT

Report No.	: WCS231116C	Issue Date	: 27.11.2023
NABL ULR No.	: TC1122523000000197F		
Name of the Client	: National Aluminium Company Limited		
Address	: Smelter & Power (S&P) Complex Angul-759145, Odisha		
Sampling Location	: Near Weigh Bridge (Core Zone)		
Sample Description	: Ambient Air Quality Monitoring	Date of Sampling	: 17.11.2023
Sampling Plan & Method	: WCS/QSP/SAMP (AIR)	Sample ID No	: WCS1123A08C
Environmental Condition	: Clear Weather	Date of Receiving	: 20.11.2023
Sample Collected by	: WCS Laboratory	Quantity of Sample	: 1 No.
Date of Testing	: 20.11.2023 to 24.11.2023	Sample Condition	: Good

Parameter	Unit	Result	Standard	Test Method
Respirable Suspended Particulate Matter (PM ₁₀)	µg/m ³	74.6	100 (As per NAAQ 2009)	IS-5182 (Part-23) 2006 RA 2017
Fine Particulate Matter (PM _{2.5})	µg/m ³	48.2	60 (As per NAAQ 2009)	IS-5182 (Part-24) 2019
Sulphur Dioxide (SO ₂)	µg/m ³	6.8	80 (As per NAAQ 2009)	IS-5182 (Part-2) 2001 RA 2017
Nitrogen Oxides (NO ₂)	µg/m ³	21.4	80 (As per NAAQ 2009)	IS-5182 (Part-6) 2006 RA 2017
Suspended Particulate Matter (SPM)	µg/m ³	245	500 (As per CTO No-2938)	IS-5182 (Part-4) 1999 RA 2019


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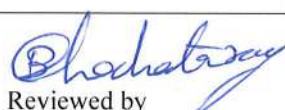


WCS/LQR/57

TEST REPORT

Report No.	: WCS231116D	Issue Date	: 27.11.2023
NABL ULR No.	: TC1122523000000197F		
Name of the Client	: National Aluminium Company Limited		
Address	: Smelter & Power (S&P) Complex Angul-759145, Odisha		
Sampling Location	: Near Settling Pond (Core Zone)		
Sample Description	: Ambient Air Quality Monitoring	Date of Sampling	: 17.11.2023
Sampling Plan & Method	: WCS/QSP/SAMP (AIR)	Sample ID No	: WCS1123A08D
Environmental Condition	: Clear Weather	Date of Receiving	: 20.11.2023
Sample Collected by	: WCS Laboratory	Quantity of Sample	: 1 No.
Date of Testing	: 20.11.2023 to 24.11.2023	Sample Condition	: Good

Parameter	Unit	Result	Standard	Test Method
Respirable Suspended Particulate Matter (PM ₁₀)	µg/m ³	66	100 (As per NAAQ 2009)	IS-5182 (Part-23) 2006 RA 2017
Fine Particulate Matter (PM _{2.5})	µg/m ³	44.2	60 (As per NAAQ 2009)	IS-5182 (Part-24) 2019
Sulphur Dioxide (SO ₂)	µg/m ³	6.6	80 (As per NAAQ 2009)	IS-5182 (Part-2) 2001 RA 2017
Nitrogen Oxides (NO ₂)	µg/m ³	19	80 (As per NAAQ 2009)	IS-5182 (Part-6) 2006 RA 2017
Suspended Particulate Matter (SPM)	µg/m ³	184.4	500 (As per CTO No-2938)	IS-5182 (Part-4) 1999 RA 2019


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WCS/LQR/57

TEST REPORT

Report No. : WCS231110 Issue Date : 08.11.2023
NABL ULR No. : TC1122523000000191F
Name of the Client : **National Aluminium Company Limited**
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sample Description : Fugitive Emission (Core Zone)
Sampling Plan & Method : WCS/QSP/SAMP (AIR)
Environmental Condition : Clear Weather Date of Receiving : 06.11.2023
Sample Collected by : WCS Laboratory Quantity of Sample : 4 No.
Date of Testing : 07.11.2023 Sample Condition : Good

Sl. No.	Sample ID No	Location	Date of Sampling	Suspended Particulate Matter (SPM)	Unit
1	WCS1123A03A	Haul Road	04.11.2023	313	µg/m ³
2	WCS1123A03B	OB Dump	04.11.2023	176	µg/m ³
3	WCS1123A03C	Loading Point	04.11.2023	292	µg/m ³
4	WCS1123A03D	Blasting Area	04.11.2023	268	µg/m ³
Standard as per CTO No-2938				500	µg/m ³
Test Method				IS-5182 (Part-4) 1999 RA 2019	


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Cuttack, Odisha - 754001

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WCS/LQR/99

TEST REPORT

Report No. : WCS231110A Issue Date : 08.11.2023
NABL ULR No. : TC1122523000000191F
Name of the Client : **National Aluminium Company Limited**
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sample Description : Personal Sampling Analysis (Core Zone)
Sampling Plan & Method : WCS/QSP/SAMP (AIR)
Environmental Condition : Clear Weather Date of Receiving : 06.11.2023
Sample Collected by : WCS Laboratory Quantity of Sample : 4 No.
Date of Testing : 07.11.2023 Sample Condition : Good

Sl. No.	Sample ID No	Location	Date of Sampling	Respirable Particulate Matter (RPM)	Unit
1	WCS1123A04A	Haul Road	04.11.2023	1.04	mg/m ³
2	WCS1123A04B	OB Dump	04.11.2023	0.59	mg/m ³
3	WCS1123A04C	Loading Point	04.11.2023	0.97	mg/m ³
4	WCS1123A04D	Blasting Area	04.11.2023	0.89	mg/m ³
Permissible Limit as per DGMS (Tech.) (S&T) Circular No.01 Dhanbad, Dated 21 st January 2010				3.0	mg/m ³
Test Method				NIOS-600-15th August, 1994	


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NABL CERTIFICATE & Scope

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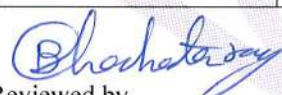
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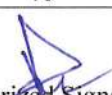
TEST REPORT

Report No. : WCS231109 Issue Date : 08.11.2023
NABL ULR No. : TC1122523000000190F
Name of the Client : National Aluminium Company Limited
Address : Coal Mine Division
Angul-759145, Odisha
Month of Sampling : November- 2023 Date of Receiving : 06.11.2023
Sample Description : Ambient Noise Quantity of Sample : 04
Sampling Plan & Method : WCS/QSP/SAMP (NOISE) Sample Condition : Good
Sample Collected by : WCS Laboratory Date of Analysis : 07.11.2023

Sample ID No.	Location	Date of Monitoring	Day Time dB(A) Leq	Night Time dB(A) Leq	Environmental Condition
WCS1123N01A	Gopiballavpur Village (Buffer Zone)	03.11.2023	50.1	38.8	Clear Weather
WCS1123N01B	Near Settling Pond (Core Zone)	03.11.2023	63.0	41.5	Clear Weather
WCS1123N01C	Colony Area (Buffer Zone)	03.11.2023	62.5	42.0	Clear Weather
WCS1123N01D	Near Weigh Bridge (Core Zone)	03.11.2023	63.6	65.2	Clear Weather
Test Method		IS 9989: 1981			

Noise Standard in dB(A) Leq as per CPCB		
Category of Area	Day Time dB(A) Leq (6.00 Am to 10.00 Pm)	Night Time dB(A) Leq (10.00 Pm to 6.00 Am)
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Sensitive Area	50	40


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WCS/LQR/59

TEST REPORT

Report No. : WCS231117 Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000198F
Name of the Client : National Aluminium Company Limited
Address : Coal Mine Division
Angul-759145, Odisha
Month of Sampling : November- 2023 Date of Receiving : 20.11.2023
Sample Description : Ambient Noise Quantity of Sample : 04
Sampling Plan & Method : WCS/QSP/SAMP (NOISE) Sample Condition : Good
Sample Collected by : WCS Laboratory Date of Analysis : 21.11.2023

Sample ID No.	Location	Date of Monitoring	Day Time dB(A) Leq	Night Time dB(A) Leq	Environmental Condition
WCS1123N02A	Gopiballavpur Village (Buffer Zone)	17.11.2023	52.6	39.4	Clear Weather
WCS1123N02B	Near Settling Pond (Core Zone)	17.11.2023	66.2	43.6	Clear Weather
WCS1123N02C	Colony Area (Buffer Zone)	17.11.2023	62.4	44.1	Clear Weather
WCS1123N02D	Near Weigh Bridge (Core Zone)	17.11.2023	66.8	68.5	Clear Weather
Test Method		IS 9989: 1981			

Noise Standard in dB(A) Leq as per CPCB		
Category of Area	Day Time dB(A) Leq (6.00 Am to 10.00 Pm)	Night Time dB(A) Leq (10.00 Pm to 6.00 Am)
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Sensitive Area	50	40

Reviewed by
(Mr. Bijaya Kumar Chahataray)

Authorized Signatory
(Mr. Pradeept Mohapatra)

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WCS/LQR/60

TEST REPORT

Report No. : WCS231115A Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000196F
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : Colony Area Bore Well No-MAFMT6 (Buffer Zone)
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Sample ID No : WCS1123W02A
Weather :
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
1	Colour	Hazen	3	Max, 5	IS 3025 (Part-4): 2021
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part-5): 2018
3	pH Value	--	5.762	6.5-8.5	IS 3025 (Part-11): 2022
4	Taste Threshold	--	Agreeable	Agreeable	IS 3025 (Part-7): 2017
5	Turbidity	NTU	0.3	1	IS 3025 (Part-10): 1984 RA 2017
6	Total Dissolved Solid as TDS	mg/l	150	500	IS 3025 (Part-16): 1984 RA 2017
7	Ammonia as Total ammonia-N	mg/l	0.08	0.5	IS 3025 (Part-34): 1988 RA 2019
8	Chloride as Cl	mg/l	22.49	250	IS 3025(Part-32): 1988 RA 2019
9	Fluoride as F	mg/l	< 0.02	1.0	APHA 23 rd Ed. (4500-F-D): 2017
10	Iron as Fe	mg/l	0.15	1.0	IS 3025 (Part -53): 2003 RA 2019
11	Total Hardness as CaCO ₃	mg/l	30	200	IS 3025 (Part-21): 2009 RA 2019
12	Calcium as Ca	mg/l	8.02	75	IS 3025 (Part-40): 1991 RA 2019
13	Magnesium as Mg	mg/l	2.43	30	APHA 23 rd Ed. (3500-Mg-B): 2017
14	Nitrate as NO ₃	mg/l	12.1	45	APHA 23 rd Ed. (4500-NO ₃ -B): 2017
15	Sulphate as SO ₄	mg/l	2.72	200	IS 3025 (Part-24 Sec 1):2022
16	Total Alkalinity as CaCO ₃	mg/l	15	200	IS 3025 (Part-23): 1986 RA 2019
17	Total Chromium as Cr	mg/l	<0.02	0.05	IS 3025 (Part-52): 2003 RA 2019
18	Potassium as K	mg/l	4.8	--	IS 3025 (Part-45): 1993 RA 2019
19	Sodium as Na	mg/l	6.1	--	IS 3025 (Part-45): 1993 RA 2019
20	Total Suspended Solid as TSS	mg/l	<5	--	IS 3025 (Part-17): 2022
21	E.Coli	MPN/100 ml	<1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019
22	Faecal Coliform	MPN/100 ml	<1	--	IS 1622 : 1981 RA 2019
23	Total Coliform	MPN/100 ml	<1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019

Bhachataray
Reviewed by

(Mr. Bijaya Kumar Chahataray)

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Authorized Signatory for Microbiology

(Miss. Laxmi Sahoo)

Pradeep
Authorized Signatory for Chemical

(Mr. Pradeept Mohapatra)

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TEST REPORT

Report No. : WCS231115A Issue Date : 27.11.2023
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : Colony Area Bore Well No-MAFMT6 (Buffer Zone)
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Weather Sample ID No : WCS1123W02A
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
24	Aluminium as Al	mg/l	<0.02	0.03	IS 3025 (Part 55): 2003 RA 2019
25	Anionic detergents as MBAS	mg/l	<0.02	0.2	Annex K of IS 13428
26	Barium as Ba	mg/l	<0.1	0.7	Annex F of IS 13428* or IS 15302
27	Boron as B	mg/l	<0.1	0.5	IS 3025 (Part 57):2021
28	Chloramines as Cl ₂	mg/l	<0.02	4.0	IS 3025 (Part 26): 2021* or APHA 4500-Cl G
29	Copper as Cu	mg/l	<0.01	0.05	IS 3025 (Part 42):1992 RA 2019
30	Manganese as Mn	mg/l	<0.05	0.1	IS 3025 (Part 59):2006 RA 2017
31	Mineral oil	mg/l	<0.5	1.0	Clause 6 of IS 3025 (Part 39):2021
32	Phenolic compounds as C ₆ H ₅ OH	mg/l	<0.001	0.001	IS 3025 (Part 43): 1992 RA 2019
33	Selenium as Se	mg/l	<0.001	0.01	IS 3025 (Part 56):2003 RA 2019 or IS 15303*
34	Silver as Ag	mg/l	<0.02	0.1	Annex J of IS 13428
35	Sulphide as H ₂ S	mg/l	<0.05	0.05	IS 3025 (Part 29):1986 RA 2019
36	Zinc as Zn	mg/l	<0.05	5	IS 3025 (Part 49):1994 RA 2019
37	Cadmium as Cd	mg/l	<0.001	0.003	IS 3025 (Part 41):1992 RA 2019
38	Cyanide as CN	mg/l	<0.01	0.05	IS 3025 (Part 27):1986 RAA 2019
39	Lead as Pb	mg/l	<0.001	0.01	IS 3025 (Part 47):1994 RA 2019
40	Mercury as Hg	mg/l	<0.001	0.001	IS 3025 (Part 48):1994 RA 2019
41	Molybdenum as Mo	mg/l	<0.02	0.07	IS 3025 (Part 2)
42	Nickel as Ni	mg/l	<0.01	0.02	IS 3025 (Part 54): 2003 RA 2019
43	Polynuclear aromatic hydrocarbons as PAH	mg/l	<0.0001	0.0001	APHA 6440
44	Total arsenic as As	mg/l	<0.001	0.01	IS 3025 (Part 37):2022

Bijaya Kumar Chahataray
Reviewed by
(Mr. Bijaya Kumar Chahataray)

Pradeept Mohapatra
Authorized Signatory
(Mr. Pradeept Mohapatra)

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TEST REPORT

Report No. : WCS231115B Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000196F
Name of the Client : **National Aluminium Company Limited**
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : **Colony Area Bore Well No-MAFMT7 (Buffer Zone)**
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Sample ID No : WCS1123W02B
Weather :
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
1	Colour	Hazen	4	Max, 5	IS 3025 (Part-4): 2021
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part-5): 2018
3	pH Value	--	5.864	6.5-8.5	IS 3025 (Part-11): 2022
4	Taste Threshold	--	Agreeable	Agreeable	IS 3025 (Part-7): 2017
5	Turbidity	NTU	0.6	1	IS 3025 (Part-10): 1984 RA 2017
6	Total Dissolved Solid as TDS	mg/l	142	500	IS 3025 (Part-16): 1984 RA 2017
7	Ammonia as Total ammonia-N	mg/l	0.06	0.5	IS 3025 (Part-34): 1988 RA 2019
8	Chloride as Cl	mg/l	22.49	250	IS 3025(Part-32): 1988 RA 2019
9	Fluoride as F	mg/l	<0.02	1.0	APHA 23 rd Ed. (4500-F-D): 2017
10	Iron as Fe	mg/l	0.14	1.0	IS 3025 (Part -53): 2003 RA 2019
11	Total Hardness as CaCO ₃	mg/l	24	200	IS 3025 (Part-21): 2009 RA 2019
12	Calcium as Ca	mg/l	6.41	75	IS 3025 (Part-40): 1991 RA 2019
13	Magnesium as Mg	mg/l	1.94	30	APHA 23 rd Ed. (3500-Mg-B): 2017
14	Nitrate as NO ₃	mg/l	9.26	45	APHA 23 rd Ed. (4500-NO ₃ -B): 2017
15	Sulphate as SO ₄	mg/l	2.2	200	IS 3025 (Part-24 Sec 1):2022
16	Total Alkalinity as CaCO ₃	mg/l	25	200	IS 3025 (Part-23): 1986 RA 2019
17	Total Chromium as Cr	mg/l	<0.02	0.05	IS 3025 (Part-52) : 2003 RA 2019
18	Potassium as K	mg/l	4.9	--	IS 3025 (Part-45): 1993 RA 2019
19	Sodium as Na	mg/l	6.5	--	IS 3025 (Part-45) : 1993 RA 2019
20	Total Suspended Solid as TSS	mg/l	5	--	IS 3025 (Part-17): 2022
21	E.Coli	MPN/100 ml	<1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019
22	Faecal Coliform	MPN/100 ml	<1	--	IS 1622 : 1981 RA 2019
23	Total Coliform	MPN/100 ml	<1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019

Reviewed by
(Mr. Bijaya Kumar Chahataray)

Authorized Signatory for Microbiology
(Miss. Laxmi Sahoo)

Authorized Signatory for Chemical
(Mr. Pradeept Mohapatra)

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TEST REPORT

Report No. : WCS231115B Issue Date : 27.11.2023
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : Colony Area Bore Well No-MAFMT7 (Buffer Zone)
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Weather Sample ID No : WCS1123W02B
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
24	Aluminium as Al	mg/l	<0.02	0.03	IS 3025 (Part 55) : 2003 RA 2019
25	Anionic detergents as MBAS	mg/l	<0.02	0.2	Annex K of IS 13428
26	Barium as Ba	mg/l	<0.1	0.7	Annex F of IS 13428* or IS 15302
27	Boron as B	mg/l	<0.1	0.5	IS 3025 (Part 57):2021
28	Chloramines as Cl ₂	mg/l	<0.02	4.0	IS 3025 (Part 26): 2021* or APHA 4500-Cl G
29	Copper as Cu	mg/l	<0.01	0.05	IS 3025 (Part 42):1992 RA 2019
30	Manganese as Mn	mg/l	<0.05	0.1	IS 3025 (Part 59):2006 RA 2017
31	Mineral oil	mg/l	<0.5	1.0	Clause 6 of IS 3025 (Part 39):2021
32	Phenolic compounds as C ₆ H ₅ OH	mg/l	<0.001	0.001	IS 3025 (Part 43): 1992 RA 2019
33	Selenium as Se	mg/l	<0.001	0.01	IS 3025 (Part 56):2003 RA 2019 or IS 15303*
34	Silver as Ag	mg/l	<0.02	0.1	Annex J of IS 13428
35	Sulphide as H ₂ S	mg/l	<0.05	0.05	IS 3025 (Part 29):1986 RA 2019
36	Zinc as Zn	mg/l	<0.05	5	IS 3025 (Part 49):1994 RA 2019
37	Cadmium as Cd	mg/l	<0.001	0.003	IS 3025 (Part 41):1992 RA 2019
38	Cyanide as CN	mg/l	<0.01	0.05	IS 3025 (Part 27):1986 RAA 2019
39	Lead as Pb	mg/l	<0.001	0.01	IS 3025 (Part 47):1994 RA 2019
40	Mercury as Hg	mg/l	<0.001	0.001	IS 3025 (Part 48):1994 RA 2019
41	Molybdenum as Mo	mg/l	<0.02	0.07	IS 3025 (Part 2)
42	Nickel as Ni	mg/l	<0.01	0.02	IS 3025 (Part 54): 2003 RA 2019
43	Polynuclear aromatic hydrocarbons as PAH	mg/l	<0.0001	0.0001	APHA 6440
44	Total arsenic as As	mg/l	<0.001	0.01	IS 3025 (Part 37):2022

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Reviewed by

(Mr. Bijaya Kumar Chahataray)

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Pradeep Mohapatra
Authorized Signatory
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TEST REPORT

Report No. : WCS231115C Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000196F
Name of the Client : **National Aluminium Company Limited**
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : **Dhobamaliya Village, Dug well (Buffer Zone)**
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Weather Sample ID No : WCS1123W02C
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
1	Colour	Hazen	3	Max, 5	IS 3025 (Part-4): 2021
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part-5): 2018
3	pH Value	--	5.864	6.5-8.5	IS 3025 (Part-11): 2022
4	Taste Threshold	--	Agreeable	Agreeable	IS 3025 (Part-7): 2017
5	Turbidity	NTU	0.3	1	IS 3025 (Part-10): 1984 RA 2017
6	Total Dissolved Solid as TDS	mg/l	164	500	IS 3025 (Part-16): 1984 RA 2017
7	Ammonia as Total ammonia-N	mg/l	0.07	0.5	IS 3025 (Part-34): 1988 RA 2019
8	Chloride as Cl	mg/l	23.99	250	IS 3025(Part-32): 1988 RA 2019
9	Fluoride as F	mg/l	<0.02	1.0	APHA 23 rd Ed. (4500-F-D): 2017
10	Iron as Fe	mg/l	0.11	1.0	IS 3025 (Part -53): 2003 RA 2019
11	Total Hardness as CaCO ₃	mg/l	28	200	IS 3025 (Part-21): 2009 RA 2019
12	Calcium as Ca	mg/l	8.82	75	IS 3025 (Part-40): 1991 RA 2019
13	Magnesium as Mg	mg/l	1.46	30	APHA 23 rd Ed. (3500-Mg-B): 2017
14	Nitrate as NO ₃	mg/l	6.30	45	APHA 23 rd Ed. (4500-NO ₃ -B): 2017
15	Sulphate as SO ₄	mg/l	2.3	200	IS 3025 (Part-24 Sec 1):2022
16	Total Alkalinity as CaCO ₃	mg/l	30	200	IS 3025 (Part-23): 1986 RA 2019
17	Total Chromium as Cr	mg/l	<0.02	0.05	IS 3025 (Part-52): 2003 RA 2019
18	Potassium as K	mg/l	5.1	--	IS 3025 (Part-45): 1993 RA 2019
19	Sodium as Na	mg/l	7.2	--	IS 3025 (Part-45): 1993 RA 2019
20	Total Suspended Solid as TSS	mg/l	<5	--	IS 3025 (Part-17): 2022
21	E.Coli	MPN/100 ml	<1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019
22	Faecal Coliform	MPN/100 ml	<1	--	IS 1622 : 1981 RA 2019
23	Total Coliform	MPN/100 ml	<1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019

Reviewed by
(Mr. Bijaya Kumar Chahataray)

Authorized Signatory for Microbiology
(Miss. Laxmi Sahoo)

Authorized Signatory for Chemical
(Mr. Pradeept Mohapatra)

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TEST REPORT

Report No. : WCS231115C Issue Date : 27.11.2023
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : Dhobamaliya Village, Dug Well (Buffer Zone)
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Weather Sample ID No : WCS1123W02C
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
24	Aluminium as Al	mg/l	<0.02	0.03	IS 3025 (Part 55): 2003 RA 2019
25	Anionic detergents as MBAS	mg/l	<0.02	0.2	Annex K of IS 13428
26	Barium as Ba	mg/l	<0.1	0.7	Annex F of IS 13428* or IS 15302
27	Boron as B	mg/l	<0.1	0.5	IS 3025 (Part 57):2021
28	Chloramines as Cl ₂	mg/l	<0.02	4.0	IS 3025 (Part 26): 2021* or APHA 4500-Cl G
29	Copper as Cu	mg/l	<0.01	0.05	IS 3025 (Part 42):1992 RA 2019
30	Manganese as Mn	mg/l	<0.05	0.1	IS 3025 (Part 59):2006 RA 2017
31	Mineral oil	mg/l	<0.5	1.0	Clause 6 of IS 3025 (Part 39):2021
32	Phenolic compounds as C ₆ H ₅ OH	mg/l	<0.001	0.001	IS 3025 (Part 43): 1992 RA 2019
33	Selenium as Se	mg/l	<0.001	0.01	IS 3025 (Part 56):2003 RA 2019 or IS 15303*
34	Silver as Ag	mg/l	<0.02	0.1	Annex J of IS 13428
35	Sulphide as H ₂ S	mg/l	<0.05	0.05	IS 3025 (Part 29):1986 RA 2019
36	Zinc as Zn	mg/l	<0.05	5	IS 3025 (Part 49):1994 RA 2019
37	Cadmium as Cd	mg/l	<0.001	0.003	IS 3025 (Part 41):1992 RA 2019
38	Cyanide as CN	mg/l	<0.01	0.05	IS 3025 (Part 27):1986 RAA 2019
39	Lead as Pb	mg/l	<0.001	0.01	IS 3025 (Part 47):1994 RA 2019
40	Mercury as Hg	mg/l	<0.001	0.001	IS 3025 (Part 48):1994 RA 2019
41	Molybdenum as Mo	mg/l	<0.02	0.07	IS 3025 (Part 2)
42	Nickel as Ni	mg/l	<0.01	0.02	IS 3025 (Part 54): 2003 RA 2019
43	Polynuclear aromatic hydro-carbons as PAH	mg/l	<0.0001	0.0001	APHA 6440
44	Total arsenic as As	mg/l	<0.001	0.01	IS 3025 (Part 37):2022

Bhahataray
Reviewed by
(Mr. Bijaya Kumar Chahataray)

Pradeep Mohapatra
Authorized Signatory
(Mr. Pradeep Mohapatra)

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TEST REPORT

Report No. : WCS231115D Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000196F
Name of the Client : **National Aluminium Company Limited**
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : **Raijharana Village, Dug Well (Buffer zone)**
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Sample ID No : WCS1123W02D
Weather :
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
1	Colour	Hazen	4	Max, 5	IS 3025 (Part-4): 2021
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part-5): 2018
3	pH Value	--	7.489	6.5-8.5	IS 3025 (Part-11): 2022
4	Taste Threshold	--	Agreeable	Agreeable	IS 3025 (Part-7): 2017
5	Turbidity	NTU	0.9	1	IS 3025 (Part-10): 1984 RA 2017
6	Total Dissolved Solid as TDS	mg/l	270	500	IS 3025 (Part-16): 1984 RA 2017
7	Ammonia as Total ammonia-N	mg/l	0.06	0.5	IS 3025 (Part-34): 1988 RA 2019
8	Chloride as Cl	mg/l	55.98	250	IS 3025(Part-32): 1988 RA 2019
9	Fluoride as F	mg/l	<0.02	1.0	APHA 23 rd Ed. (4500-F-D): 2017
10	Iron as Fe	mg/l	0.08	1.0	IS 3025 (Part -53): 2003 RA 2019
11	Total Hardness as CaCO ₃	mg/l	46	200	IS 3025 (Part-21): 2009 RA 2019
12	Calcium as Ca	mg/l	15.23	75	IS 3025 (Part-40): 1991 RA 2019
13	Magnesium as Mg	mg/l	1.94	30	APHA 23 rd Ed. (3500-Mg-B): 2017
14	Nitrate as NO ₃	mg/l	5.43	45	APHA 23 rd Ed. (4500-NO ₃ -B): 2017
15	Sulphate as SO ₄	mg/l	2.6	200	IS 3025 (Part-24 Sec 1):2022
16	Total Alkalinity as CaCO ₃	mg/l	70	200	IS 3025 (Part-23): 1986 RA 2019
17	Total Chromium as Cr	mg/l	<0.02	0.05	IS 3025 (Part-52) : 2003 RA 2019
18	Potassium as K	mg/l	4.8	--	IS 3025 (Part-45): 1993 RA 2019
19	Sodium as Na	mg/l	6.8	--	IS 3025 (Part-45) : 1993 RA 2019
20	Total Suspended Solid as TSS	mg/l	<5	--	IS 3025 (Part-17): 2022
21	E.Coli	MPN/100 ml	<1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019
22	Faecal Coliform	MPN/100 ml	<1	--	IS 1622 : 1981 RA 2019
23	Total Coliform	MPN/100 ml	<1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019

Reviewed by
(Mr. Bijaya Kumar Chahataray)

Authorized Signatory for Microbiology
(Miss. Laxmi Sahoo)

Authorized Signatory for Chemical
(Mr. Pradeept Mohapatra)

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WCS/LQR/60

TEST REPORT

Report No. : WCS231115D Issue Date : 27.11.2023
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : Raijharana Village, Dug Well (Buffer Zone)
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Weather Sample ID No : WCS1123W02D
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
24	Aluminium as Al	mg/l	<0.02	0.03	IS 3025 (Part 55) : 2003 RA 2019
25	Anionic detergents as MBAS	mg/l	<0.02	0.2	Annex K of IS 13428
26	Barium as Ba	mg/l	<0.1	0.7	Annex F of IS 13428* or IS 15302
27	Boron as B	mg/l	<0.1	0.5	IS 3025 (Part 57):2021
28	Chloramines as Cl ₂	mg/l	<0.02	4.0	IS 3025 (Part 26): 2021* or APHA 4500-Cl G
29	Copper as Cu	mg/l	<0.01	0.05	IS 3025 (Part 42):1992 RA 2019
30	Manganese as Mn	mg/l	<0.05	0.1	IS 3025 (Part 59):2006 RA 2017
31	Mineral oil	mg/l	<0.5	1.0	Clause 6 of IS 3025 (Part 39):2021
32	Phenolic compounds as C ₆ H ₅ OH	mg/l	<0.001	0.001	IS 3025 (Part 43): 1992 RA 2019
33	Selenium as Se	mg/l	<0.001	0.01	IS 3025 (Part 56):2003 RA 2019 or IS 15303*
34	Silver as Ag	mg/l	<0.02	0.1	Annex J of IS 13428
35	Sulphide as H ₂ S	mg/l	<0.05	0.05	IS 3025 (Part 29):1986 RA 2019
36	Zinc as Zn	mg/l	<0.05	5	IS 3025 (Part 49):1994 RA 2019
37	Cadmium as Cd	mg/l	<0.001	0.003	IS 3025 (Part 41):1992 RA 2019
38	Cyanide as CN	mg/l	<0.01	0.05	IS 3025 (Part 27):1986 RAA 2019
39	Lead as Pb	mg/l	<0.001	0.01	IS 3025 (Part 47):1994 RA 2019
40	Mercury as Hg	mg/l	<0.001	0.001	IS 3025 (Part 48):1994 RA 2019
41	Molybdenum as Mo	mg/l	<0.02	0.07	IS 3025 (Part 2)
42	Nickel as Ni	mg/l	<0.01	0.02	IS 3025 (Part 54): 2003 RA 2019
43	Polynuclear aromatic hydrocarbons as PAH	mg/l	<0.0001	0.0001	APHA 6440
44	Total arsenic as As	mg/l	<0.001	0.01	IS 3025 (Part 37):2022

Bhacharya
Reviewed by

(Mr. Bijaya Kumar Chahataray)

Pradeep Mohapatra
Authorized Signatory

(Mr. Pradeep Mohapatra)

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TEST REPORT

Report No. : WCS231115E Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000196F
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : Gopiballavpur Village, Dug Well (Buffer Zone)
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Sample ID No : WCS1123W02E
Weather :
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
1	Colour	Hazen	4	Max, 5	IS 3025 (Part-4): 2021
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part-5): 2018
3	pH Value	--	7.703	6.5-8.5	IS 3025 (Part-11): 2022
4	Taste Threshold	--	Agreeable	Agreeable	IS 3025 (Part-7): 2017
5	Turbidity	NTU	0.4	1	IS 3025 (Part-10): 1984 RA 2017
6	Total Dissolved Solid as TDS	mg/l	376	500	IS 3025 (Part-16): 1984 RA 2017
7	Ammonia as Total ammonia-N	mg/l	0.16	0.5	IS 3025 (Part-34): 1988 RA 2019
8	Chloride as Cl	mg/l	55.98	250	IS 3025(Part-32): 1988 RA 2019
9	Fluoride as F	mg/l	< 0.02	1.0	APHA 23 rd Ed. (4500-F-D): 2017
10	Iron as Fe	mg/l	0.24	1.0	IS 3025 (Part -53): 2003 RA 2019
11	Total Hardness as CaCO ₃	mg/l	96	200	IS 3025 (Part-21): 2009 RA 2019
12	Calcium as Ca	mg/l	19.24	75	IS 3025 (Part-40): 1991 RA 2019
13	Magnesium as Mg	mg/l	11.66	30	APHA 23 rd Ed. (3500-Mg-B): 2017
14	Nitrate as NO ₃	mg/l	0.42	45	APHA 23 rd Ed. (4500-NO ₃ -B): 2017
15	Sulphate as SO ₄	mg/l	4.31	200	IS 3025 (Part-24 Sec 1):2022
16	Total Alkalinity as CaCO ₃	mg/l	295	200	IS 3025 (Part-23): 1986 RA 2019
17	Total Chromium as Cr	mg/l	< 0.02	0.05	IS 3025 (Part-52) : 2003 RA 2019
18	Potassium as K	mg/l	4.6	--	IS 3025 (Part-45): 1993 RA 2019
19	Sodium as Na	mg/l	71	--	IS 3025 (Part-45) : 1993 RA 2019
20	Total Suspended Solid as TSS	mg/l	<5	--	IS 3025 (Part-17): 2022
21	E.Coli	MPN/100 ml	< 1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019
22	Faecal Coliform	MPN/100 ml	< 1	--	IS 1622 : 1981 RA 2019
23	Total Coliform	MPN/100 ml	< 1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019

Reviewed by
(Mr. Bijaya Kumar Chahataray)

Authorized Signatory for Microbiology
(Miss. Laxmi Sahoo)

Authorized Signatory for Chemical
(Mr. Pradeep Mohapatra)

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TEST REPORT

Report No. : WCS231115E Issue Date : 27.11.2023
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : Gopiballavpur Village, Dug Well (Buffer Zone)
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Weather Sample ID No : WCS1123W02E
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
24	Aluminium as Al	mg/l	<0.02	0.03	IS 3025 (Part 55): 2003 RA 2019
25	Anionic detergents as MBAS	mg/l	<0.02	0.2	Annex K of IS 13428
26	Barium as Ba	mg/l	<0.1	0.7	Annex F of IS 13428* or IS 15302
27	Boron as B	mg/l	<0.1	0.5	IS 3025 (Part 57):2021
28	Chloramines as Cl ₂	mg/l	<0.02	4.0	IS 3025 (Part 26): 2021* or APHA 4500-Cl G
29	Copper as Cu	mg/l	<0.01	0.05	IS 3025 (Part 42):1992 RA 2019
30	Manganese as Mn	mg/l	<0.05	0.1	IS 3025 (Part 59):2006 RA 2017
31	Mineral oil	mg/l	<0.5	1.0	Clause 6 of IS 3025 (Part 39):2021
32	Phenolic compounds as C ₆ H ₅ OH	mg/l	<0.001	0.001	IS 3025 (Part 43): 1992 RA 2019
33	Selenium as Se	mg/l	<0.001	0.01	IS 3025 (Part 56):2003 RA 2019 or IS 15303*
34	Silver as Ag	mg/l	<0.02	0.1	Annex J of IS 13428
35	Sulphide as H ₂ S	mg/l	<0.05	0.05	IS 3025 (Part 29):1986 RA 2019
36	Zinc as Zn	mg/l	<0.05	5	IS 3025 (Part 49):1994 RA 2019
37	Cadmium as Cd	mg/l	<0.001	0.003	IS 3025 (Part 41):1992 RA 2019
38	Cyanide as CN	mg/l	<0.01	0.05	IS 3025 (Part 27):1986 RAA 2019
39	Lead as Pb	mg/l	<0.001	0.01	IS 3025 (Part 47):1994 RA 2019
40	Mercury as Hg	mg/l	<0.001	0.001	IS 3025 (Part 48):1994 RA 2019
41	Molybdenum as Mo	mg/l	<0.02	0.07	IS 3025 (Part 2)
42	Nickel as Ni	mg/l	<0.01	0.02	IS 3025 (Part 54): 2003 RA 2019
43	Polynuclear aromatic hydrocarbons as PAH	mg/l	<0.0001	0.0001	APHA 6440
44	Total arsenic as As	mg/l	<0.001	0.01	IS 3025 (Part 37):2022

Bhahataray

Reviewed by
(Mr. Bijaya Kumar Chahataray)

Pradeep Mohapatra
Authorized Signatory
(Mr. Pradeep Mohapatra)

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TEST REPORT

Report No. : WCS231115F Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000196F
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : Kosala Village, Dug Well (Buffer Zone)
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Sample ID No : WCS1123W02F
Weather :
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
1	Colour	Hazen	1	Max, 5	IS 3025 (Part-4): 2021
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part-5): 2018
3	pH Value	--	6.824	6.5-8.5	IS 3025 (Part-11): 2022
4	Taste Threshold	--	Agreeable	Agreeable	IS 3025 (Part-7): 2017
5	Turbidity	NTU	0.1	1	IS 3025 (Part-10): 1984 RA 2017
6	Total Dissolved Solid as TDS	mg/l	320	500	IS 3025 (Part-16): 1984 RA 2017
7	Ammonia as Total ammonia-N	mg/l	0.07	0.5	IS 3025 (Part-34): 1988 RA 2019
8	Chloride as Cl	mg/l	47.49	250	IS 3025(Part-32): 1988 RA 2019
9	Fluoride as F	mg/l	<0.02	1.0	APHA 23 rd Ed. (4500-F-D): 2017
10	Iron as Fe	mg/l	0.053	1.0	IS 3025 (Part -53): 2003 RA 2019
11	Total Hardness as CaCO ₃	mg/l	48	200	IS 3025 (Part-21): 2009 RA 2019
12	Calcium as Ca	mg/l	16.83	75	IS 3025 (Part-40): 1991 RA 2019
13	Magnesium as Mg	mg/l	1.46	30	APHA 23 rd Ed. (3500-Mg-B): 2017
14	Nitrate as NO ₃	mg/l	5.61	45	APHA 23 rd Ed. (4500-NO ₃ -B): 2017
15	Sulphate as SO ₄	mg/l	2.8	200	IS 3025 (Part-24 Sec 1):2022
16	Total Alkalinity as CaCO ₃	mg/l	65	200	IS 3025 (Part-23): 1986 RA 2019
17	Total Chromium as Cr	mg/l	<0.02	0.05	IS 3025 (Part-52) : 2003 RA 2019
18	Potassium as K	mg/l	4.7	--	IS 3025 (Part-45): 1993 RA 2019
19	Sodium as Na	mg/l	6.9	--	IS 3025 (Part-45) : 1993 RA 2019
20	Total Suspended Solid as TSS	mg/l	<5	--	IS 3025 (Part-17): 2022
21	E.Coli	MPN/ 100 ml	<1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019
22	Faecal Coliform	MPN/ 100 ml	<1	--	IS 1622 : 1981 RA 2019
23	Total Coliform	MPN/ 100 ml	<1	Shall not be detectable in any 100 ml sample	IS 1622 : 1981 RA 2019

Reviewed by
(Mr. Bijaya Kumar Chahataray)

Authorized Signatory for Microbiology
(Miss. Laxmi Sahoo)

Authorized Signatory for Chemical
(Mr. Pradeep Mohapatra)

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TEST REPORT

Report No. : WCS231115F Issue Date : 27.11.2023
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : Kosala Village, Dug Well (Buffer Zone)
Sample Description : Ground Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Weather Sample ID No : WCS1123W02F
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Requirement as per IS 10500:2012 Reaffirmed 2018	Test Methods
24	Aluminium as Al	mg/l	<0.02	0.03	IS 3025 (Part 55): 2003 RA 2019
25	Anionic detergents as MBAS	mg/l	<0.02	0.2	Annex K of IS 13428
26	Barium as Ba	mg/l	<0.1	0.7	Annex F of IS 13428* or IS 15302
27	Boron as B	mg/l	<0.1	0.5	IS 3025 (Part 57):2021
28	Chloramines as Cl ₂	mg/l	<0.02	4.0	IS 3025 (Part 26): 2021* or APHA 4500-Cl G
29	Copper as Cu	mg/l	<0.01	0.05	IS 3025 (Part 42):1992 RA 2019
30	Manganese as Mn	mg/l	<0.05	0.1	IS 3025 (Part 59):2006 RA 2017
31	Mineral oil	mg/l	<0.5	1.0	Clause 6 of IS 3025 (Part 39):2021
32	Phenolic compounds as C ₆ H ₅ OH	mg/l	<0.001	0.001	IS 3025 (Part 43): 1992 RA 2019
33	Selenium as Se	mg/l	<0.001	0.01	IS 3025 (Part 56):2003 RA 2019 or IS 15303*
34	Silver as Ag	mg/l	<0.02	0.1	Annex J of IS 13428
35	Sulphide as H ₂ S	mg/l	<0.05	0.05	IS 3025 (Part 29):1986 RA 2019
36	Zinc as Zn	mg/l	<0.05	5	IS 3025 (Part 49):1994 RA 2019
37	Cadmium as Cd	mg/l	<0.001	0.003	IS 3025 (Part 41):1992 RA 2019
38	Cyanide as CN	mg/l	<0.01	0.05	IS 3025 (Part 27):1986 RAA 2019
39	Lead as Pb	mg/l	<0.001	0.01	IS 3025 (Part 47):1994 RA 2019
40	Mercury as Hg	mg/l	<0.001	0.001	IS 3025 (Part 48):1994 RA 2019
41	Molybdenum as Mo	mg/l	<0.02	0.07	IS 3025 (Part 2)
42	Nickel as Ni	mg/l	<0.01	0.02	IS 3025 (Part 54): 2003 RA 2019
43	Polynuclear aromatic hydrocarbons as PAH	mg/l	<0.0001	0.0001	APHA 6440
44	Total arsenic as As	mg/l	<0.001	0.01	IS 3025 (Part 37):2022


Reviewed by
(Mr. Bijaya Kumar Chahataray)


Authorized Signatory
(Mr. Pradeep Mohapatra)

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TEST REPORT

Report No. : WCS231114A Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000195F
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : Mines Discharge Water (Core Zone)
Sample Description : Surface Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Weather Sample ID No : WCS1123W01A
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Permissible Limit as per Consent Order No-5059/IND-I-CON-6762 Dt:28.03.2023	Test Methods
1	pH Value	--	6.85	5.5-9.0	IS 3025 (Part-11): 2022
2	Total suspended Solid	mg/l	18	100	IS 3025(Part-17)1984 RA 2012
3	Oil & Grease	mg/l	<4	10	APHA 23rd Ed. (5520-B): 2017
4	Biochemical Oxygen Demand as BOD	mg/l	3	--	IS 3025 (Part-44): 1993
5	Chemical Oxygen Demand as COD	mg/l	8	250	APHA 23rd Ed. (5220-D): 2017
6	Colour	Hazen	20	--	IS 3025 (Part-4): 2021
7	Specific Conductivity	µs/cm	462.5	--	IS 3025 (Part-14): 2013
8	Turbidity	NTU	85.2	--	IS 3025 (Part-10): 1984 RA 2017
9	Dissolve Oxygen as DO	mg/l	6	--	IS 3025 (Part-38): 1989
10	Total Hardness as CaCO ₃	mg/l	86	--	APHA 23 rd Ed. (2340-C): 2017
11	Chloride as Cl	mg/l	44.99	--	IS 3025 (Part-32): 1988
12	Sulphate as SO ₄	mg/l	68.1	--	IS 3025 (Part-24, Sec-1): 2022
13	Nitrate as NO ₃	mg/l	1.44	--	APHA 23 rd Ed. (4500-NO ₃ -B): 2017
14	Calcium as Ca	mg/l	16.03	--	APHA 23rd Ed. (3500-Ca-B): 2017
15	Magnesium as Mg	mg/l	11.18	--	APHA 23 rd Ed. (3500-Mg-B): 2017
16	Total Dissolved Solid as TDS	mg/l	270	--	IS 3025 (Part-16): 1984
17	Total Alkalinity as CaCO ₃	mg/l	135	--	IS 3025 (Part-23): 1986 RA 2019
18	Potassium as K	mg/l	22.4	--	IS 3025 (Part-45): 1993 RA 2019
19	Sodium as Na	mg/l	38.1	--	IS 3025 (Part-45) : 1993 RA 2019

Bhahataray
Reviewed by

(Mr. Bijaya Kumar Chahataray)

Pradeep
Authorized Signatory

(Mr. Pradeept Mohapatra)



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TEST REPORT

Report No. : WCS231114B Issue Date : 27.11.2023
NABL ULR No. : TC1122523000000195F
Name of the Client : **National Aluminium Company Limited**
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Sampling Location : **Seepage Water (Core Zone)**
Sample Description : Surface Water Date of Sampling : 04.11.2023
Sampling Plan & Method : WCS/QSP/SAMP (WATER) Date of Receiving : 06.11.2023
Environmental Condition : Temperature 29 °C, Clear Weather Sample ID No : WCS1123W01B
Sample Collected by : WCS Laboratory Quantity of Sample : 1 Ltr
Date of Testing : 06.11.2023 to 17.11.2023 Sample Condition : Good

Sl. No.	Parameter	Unit	Result	Permissible Limit as per Consent Order No-5059/IND-I-CON-6762 Dt:28.03.2023	Test Methods
1	pH Value	--	6.91	5.5-9.0	IS 3025 (Part-11): 2022
2	Total suspended Solid	mg/l	20	100	IS 3025(Part-17)1984 RA 2012
3	Oil & Grease	mg/l	<4	10	APHA 23 rd Ed. (5520-B): 2017
4	Biochemical Oxygen Demand as BOD	mg/l	<2	--	IS 3025 (Part-44): 1993
5	Chemical Oxygen Demand as COD	mg/l	4	250	APHA 23 rd Ed. (5220-D): 2017
6	Colour	Hazen	15	--	IS 3025 (Part-4): 2021
7	Specific Conductivity	µs/cm	442.3	--	IS 3025 (Part-14): 2013
8	Turbidity	NTU	54.6	--	IS 3025 (Part-10): 1984 RA 2017
9	Dissolve Oxygen as DO	mg/l	5.4	--	IS 3025 (Part-38): 1989
10	Total Hardness as CaCO ₃	mg/l	82	--	APHA 23 rd Ed. (2340-C): 2017
11	Chloride as Cl	mg/l	50.98	--	IS 3025 (Part-32): 1988
12	Sulphate as SO ₄	mg/l	41.7	--	IS 3025 (Part-24, Sec-1): 2022
13	Nitrate as NO ₃	mg/l	<1	--	APHA 23 rd Ed. (4500-NO ₃ -B): 2017
14	Calcium as Ca	mg/l	20.84	--	APHA 23 rd Ed. (3500-Ca-B): 2017
15	Magnesium as Mg	mg/l	7.29	--	APHA 23 rd Ed. (3500-Mg-B): 2017
16	Total Dissolved Solid as TDS	mg/l	262	--	IS 3025 (Part-16): 1984
17	Total Alkalinity as CaCO ₃	mg/l	160	--	IS 3025 (Part-23): 1986 RA 2019
18	Potassium as K	mg/l	5	--	IS 3025 (Part-45): 1993 RA 2019
19	Sodium as Na	mg/l	4.2	--	IS 3025 (Part-45) : 1993 RA 2019

Bhahataray
Reviewed by

(Mr. Bijaya Kumar Chahataray)

P. Mohapatra
Authorized Signatory
(Mr. Pradeep Mohapatra)



NABL CERTIFICATE & Scope

- N.B.:
- ① The results relate to the sample received in respect to the Parameters tested.
 - ② Liability for return of sample ceases after 7 days from the date of Test certificate.
 - ③ The report cannot be reproduced either in full or in part, without prior written consent of Director.
 - ④ In case of any complaint, please mail us bijaya@theworld.co.in

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WCS/LQR/60

TEST REPORT

Report No. : WCSL231103 Issue Date : 08.11.2023
Name of the Client : National Aluminium Company Limited
Address : Smelter & Power (S&P) Complex
Angul-759145, Odisha
Month of Monitoring : November- 2023
Sample Description : Ground Water Level
Sampling Plan & Method : WCS/QSP/SAMP (WATER LEVEL) Date of Receiving : 06.11.2023
Environmental Condition : Clear Weather
Sample Collected by : WCS Laboratory

Sample ID No.	Location	Date	Ground water Level
WCS1123WL01	Raijharana (Dug Well) (Buffer Zone)	04.11.2023	0.5 meter
WCS1123WL02	Kosala (Dug Well) (Buffer Zone)	04.11.2023	1.60 meter
WCS1123WL03	Gopiballavpur Village (Dug Well) (Buffer Zone)	04.11.2023	1.73 meter
WCS1123WL04	Dhobamalya Village (Dug Well) (Buffer Zone)	04.11.2023	2.7 meter
WCS1123WL05	Colony Area Bore Well No-MAPM_T6 (Buffer Zone)	04.11.2023	3.38 meter
WCS1123WL06	Colony Area Bore Well No-MAPM_T7 (Buffer Zone)	04.11.2023	2.26 meter


Reviewed by
(Mr. Bijaya Kumar Chahataray)


Authorized Signatory
(Mr. Pradeept Mohapatra)

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