THE Bloomfield GROUP
WE CARE. WE DELIVER.

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ABN 76 000 106 972

10 February 2020.

REF: 1095_EGOVR:CK

via email.

Department of Planning, Industry and Environment
4 Parramatta Square, 12 Darcy Street
PARRAMATTA NSW 2150

Attn: Mr. Matthew Sprott. Director Resource Assessments

**RE: Meteorological Monitoring.**

Dear Matthew,

Bloomfield Collieries Pty Limited received approval of the Rix's Creek South Continuation of Mining Project SSD 6300 on 12 October 2019.

In accordance with Schedule 2 Condition B28 of SSD 6300, Bloomfield Collieries provides the attached statement of compliance and calibration certificates to demonstrate that the following conditions have been satisfied:

***METEOROLOGICAL MONITORING***
*B28. Prior to commencing mining operations under this consent and for the remaining life of the development, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that:*

*(a) complies with the requirements in the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007);*

*(b) is capable of continuous real-time measurement of wind speed, wind direction sigma theta and temperature; and*

*(c) is capable of measuring meteorological conditions in accordance with the NSW Industrial Noise Policy (EPA, 2000),*

Please note the Meteorological Station was fully operational on 10 February 2020, two weeks prior to commencement of Mining Operations under SSD 6300.

If you require any further information please do not hesitate to contact this office.

Yours sincerely

**Chris Knight**
Environment Manager
**The Bloomfield Group**
PO Box 4, EAST MAITLAND NSW 2323
Tele: 612 6578 8824 | Mob: 0403 058 777
Email: cknight@bloomcoll.com.au | Website: www.bloomcoll.com.au

# CBased Environmental Pty Limited

ABN 62 611 924 264

20 December 2019

Attn: Chris Knight
Environment Manager
The Bloomfield Group
Via email: cknight@bloomcoll.com.au

Dear Chris,

**RE: Rixs Creek Meteorological Station: Statement of Conformance to AS/NZS 3580.14:2014 and NSW EPA Approved Methods for the Sampling and Analysis of Air Pollutants In NSW**

Thank you for engaging CBased Environmental to supply and install your meteorological station. **Table 1** provides a summary of the specification requirements associated with AS/NZS 3580.14:2014 (Methods for sampling and analysis of ambient air - Meteorological monitoring for ambient air quality monitoring applications), and the component specifications for equipment we have installed as part of your meteorological station installation. We are pleased to confirm the hardware installed meets or exceeds the requirements AS/NZS 3580.14:2014.

The station additionally meets the NSW EPA Approved Methods for the Sampling and Analysis of Air Pollutants (NSW EPA 2006), specifically method AM2: Guide for measurement of horizontal wind for air quality applications and method AM4: Meteorological monitoring guidance for regulatory modelling applications as the AS/NZS 3580.14:2014 requirements are equal to or more stringent than those detailed in AM2 or AM4.

Additional calculated parameters - Sigma Theta is calculated by the Yamatino method referenced in AM2 and Stability Class is calculated by the sigma theta method detailed in the Noise Policy for Industry (NSW EPA 2017). A temperature lapse differential is also calculated from the fan aspirated temperature sensors located at 2m and 10m.

Copies of calibration certificates issued by the original equipment manufacturers will be provided separately for your records.

Yours Faithfully

Colin Davies BSc MEIA CENVP
Environmental Scientist

**CBased Environmental Pty Ltd**
Unit 3, 2 Enterprise Crescent
Singleton, NSW, 2330
Phone: (02) 65713334

Table 1: Parameter requirements and component specification summary

| Component | AS/NZS Parameters – Minimum Requirements | | Component Specification | Compliant |
|---|---|---|---|---|
| Gill Metpak 2 – wind speed sensor (anemometer) | Range | 0.5 to 30 m/s | 0-60 m/s (0-134mph) | Yes |
| | Total accuracy* | 3% or ±0.2 m/s (whichever is greater) | ± 2% @ 12m/s | Yes |
| | Resolution | ≤ 0.25m/s | 0.01m/s (0.02mph) | Yes |
| | Starting threshold | ≤ 0.4m/s | 0.01m/s (0.02mph) | Yes |
| Gill Metpak 2 – wind direction sensor | Range | Mechanical 0 to 360° Output 0 to 355° | 0 – 359° – no deadband | Yes |
| | Total accuracy* | ± 3° | ± 3° @ 12m/s | Yes |
| | Resolution | 1° | 1° | Yes |
| Gill Metpak 2 – relative humidity sensor | Range | 5 to 100% RH | 0-100% | Yes |
| | Total accuracy: 10 to 90% | ±2% RH | ±0.8% @ 23°C | Yes |
| | Total accuracy: 90 to 100% | ±4% RH | | |
| | Resolution | 1% RH | 0.1% | Yes |
| | Operating temperature | -10 to 55°C | -35°C to +70°C | Yes |
| Gill Metpak 2 – barometric pressure sensor | Range | 750 to 1050 hPa | 600 – 1100hPa | Yes |
| | Total accuracy | ±3 hPa | ±0.5hPa | Yes |
| | Resolution | 1 hPa | 0.1hPa | Yes |
| | Operating temperature | -10 to 55°C | -20°C to +70°C | Yes |
| Environdata TA-60 – air temperature sensor | Range | -10° to 50°C | -10°C to +60°C | Yes |
| | Total accuracy (at 20°C) | ±0.1°C | ±0.1°C | Yes |
| | Time constant | <45 s | <30 seconds in air | Yes |
| Apogee TS-100 – fan aspirated shield | Aspirated shield face velocity | ≥3 m/s | Aspiration rate: 6 m $s^{-1}$ at full-speed; 3 m $s^{-1}$ at half-speed | Yes |
| Hyquest Model TB4 Tipping Bucket Rain Gauge (0.2 mm capacity) | Minimum range | 0 to 400 mm/h | 700 mm/hr | Yes |
| | Total accuracy | ±5% (0 to 120 mm/h) | 0-250 mm/hr: ±2% 250-500 mm/hr: ±3% | Yes |
| | Minimum resolution | 0.5 mm | 0.2 mm | Yes |

* excludes measurement deadband range

# MetPak

Rinc Creek
AWS Met.

# Product Test Report

**Product Tested: MetPak**
**Part Number: 1723-1B-2-111**
**Serial Number: 19170020**
**Test Date: 24/04/2019**
**Location: Gill Instruments Ltd**

GILL ensures that quality is inherent in all aspects of their activities and ensures that compliance with BS EN ISO9001: 2008 is maintained.

This report certifies that the above instrument has been tested in accordance with Gill internal procedures

## Results

| Test | Limits | Results |
|---|---|---|
| Wind Still Air Test (Zero Wind Speed) | Pass/Fail | Pass |
| Wind Tunnel Test (12m/s nominal) | Pass/Fail | Pass |
| Pressure Sensor (Comparison DPI 142) | Pass/Fail | Pass |
| Temperature Sensor (Comparison HC2-S (SCS certified)) | Pass/Fail | Pass |
| Humidity Sensor (Comparison HC2-S (SCS certified)) | Pass/Fail | Pass |

Wind sensor generic calibration is traceable to the University of Southampton wind tunnel and Gill instrumentation is maintained in accordance with UKAS.

Comparisons for Temperature, Humidity and Pressure are done against reference UKAS traceable instruments. The reference system numbers of these instruments are listed above.

All tests have been successfully completed

On behalf of Gill Instruments Ltd

Les Rann
Quality Control

**gillinstruments.com**
Tel: +44 (0) 1590 613 500
anem@gillinstruments.com

Test report no. H31-19330110

# TEST REPORT

Rixs Creek
RT Noise
Met

| | |
|---|---|
| **Product family** | WXT530 series |
| **Product type** | WXT532 |
| **Order code** | 2C1B1A2D1A1B |
| **Serial number** | R3350451 |
| **Manufacturer** | Vaisala Oyj, Finland |
| **Test date** | 16 August 2019 |

This test report certifies that the product was thoroughly tested and inspected, and found to meet its published test limits when it was shipped from Vaisala.

**Test results**

| Test | Result | Lower limit | Upper limit | Unit |
|---|---|---|---|---|
| Zero wind speed | 0 | 0 | 0.4 | m/s |
| Heating current | N/A | - | - | - |
| Current (service port) | 1.21 | 0.5 | 2 | mA |
| Communication (service port) | pass | PASS | PASS | - |
| Current (main port) | 0.86 | 0.5 | 2 | mA |
| Communication (main port) | pass | PASS | PASS | - |

**Ambient conditions** / Humidity 41.44 ±5 %RH, Temperature 24.13 ±1 °C, Pressure 1011.41 ±1 hPa.

Signature

Technician

 *DOC233150-A.doc*

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