

21 March 2025

Attention: Rob Johnston
PIC Australasia Pty Ltd
PO Box 39
Grong Grong NSW 2652
rjohnston@picaustralia.com.au

BY EMAIL

Dear Rob

Re: Environmental monitoring – PIC ‘Bonnie Doon’ Pig Accommodation

I refer to the written request from yourself to conduct environmental monitoring at the PIC ‘Bonnie Doon’ pig accommodation at 240 Flanagans Lane Matong NSW 2652. The intended recipient of this report is Rob Johnston of PIC Australasia Pty Ltd to satisfy the requirements of NSW EPA Environmental Protection Licence No. 21734. It is assumed that third parties will not rely on this report, however DM McMahon Pty Ltd is required to be consulted if the report is to be used for any other purpose.

Objective and scope

The objective of the environmental monitoring is to satisfy the requirements of Environmental Protection Licence No. 21734 (Licence version date 24 November 2022).

The requirements of the licence are to:

- Collect groundwater samples on a six monthly basis from ten nested groundwater monitoring bores at five sites (Point 3, Point 4, Point 5, Point 6, and Point 7). Samples will be tested for conductivity, nitrogen (ammonia), nitrate, nitrite, nitrogen (total), pH, phosphorus, and potassium. Standing water level will be measured quarterly.

The scope of this monitoring round is to collect groundwater samples from the ten groundwater monitoring bores.

Location and description of the site

The monitoring points are located at the PIC ‘Bonnie Doon’ pig accommodation, 240 Flanagans Lane (also known as Slatteries Road) Matong NSW, **Attachment A**. The site is a 500-tonne accommodation capacity piggery and the effluent produced is applied to land by irrigation. The pig accommodation sheds are in the approximate centre of the site with effluent storage ponds to the south of the accommodation sheds. The irrigation area lies to the south and west of the accommodation sheds. Four of the monitoring points are located down

gradient of the piggery (Points 3-6) and one monitoring point is located upgradient of the piggery (Point 7).

Description of the regional and local environment

The subject site lies at an elevation of approximately 159-164m AHD on a south west trending broad alluvial plain formed on Quaternary alluvium. Surficial soils are described as grey and brown clay with unconsolidated alluvium underneath consisting of clay, silt, sand, and gravel to deep depths (>100m). The underlying geology is mapped as Ordovician sandstone associated with the Abercrombie Formation with bedding trending northwest to southeast. Igneous intrusions from the Silurian and Devonian periods lie to the north and south of the site respectively.

Groundwater nearest to the surface resides in the unconsolidated sediments associated with the Cowra Formation that is low yielding and brackish. Groundwater flows to the southwest as a muted reflection of the surface topography. Preferential flow paths nearest to the surface are in the sand and gravel associated with Cowra Formation. Hydraulic conductivity is low, and the groundwater gradient gentle. Flow lengths are regional. Some local to intermediate lateral flow of shallow groundwater (<6m) in sand seams in the clayey alluvium can occur under wet conditions, these being transient.

Records of fieldwork, including methods and results

The groundwater monitoring locations were sampled on 12 March 2025 by reference to AS5667.1:1998 Water Quality Sampling Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples and AS5667.11:1998 Part 11: Guidance on sampling of groundwaters.

Summary of results

The tabulated results can be seen in **Attachment B** and the laboratory report in **Attachment C**.

If you have any queries about the contents of this letter format report, please contact the undersigned.

Yours sincerely

A handwritten signature in black ink, appearing to read 'David McMahon', is written over a light blue horizontal line. The signature is somewhat stylized and includes a long horizontal stroke extending to the right.

David McMahon CPSS CEnvP SC

BAppSc SA

GradDip WRM

MEnvMgmt

MALGA MEIANZ MSSA

Disclaimer

The information contained in this report has been extracted from sources believed to be reliable and accurate. DM McMahon Pty Ltd will not assume any responsibility for the misinterpretation of information supplied in this report. The accuracy and reliability of recommendations identified in this report need to be evaluated with due care according to individual circumstances. The results of the assessment undertaken are an overall representation of the conditions encountered. It should be noted that the recommendations and findings in this report are based solely upon the said site location and the ground level conditions at the time of testing. The results of the said investigations undertaken are an overall representation of the conditions encountered. The properties of the soil within the location may change due to variations in ground conditions outside of the tested area. The author has no control or liability over site variability that may warrant further investigation that may lead to significant design changes.

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Attachments

- A.** Sampling locations map
- B.** Tabulated results
- C.** Laboratory report



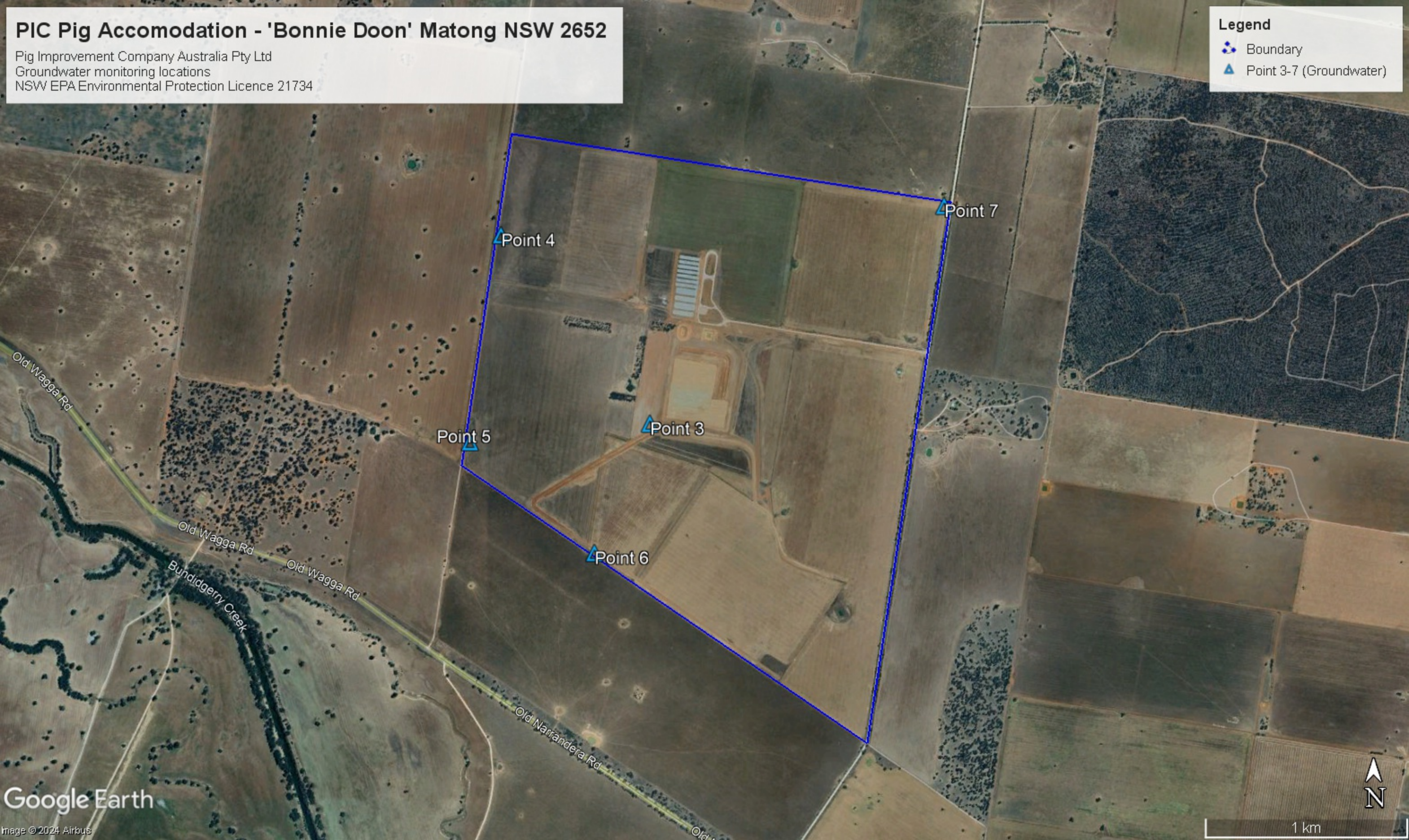
Attachment A : *Sampling locations map*

PIC Pig Accomodation - 'Bonnie Doon' Matong NSW 2652

Pig Improvement Company Australia Pty Ltd
Groundwater monitoring locations
NSW EPA Environmental Protection Licence 21734

Legend

-  Boundary
-  Point 3-7 (Groundwater)





Attachment B : *Tabulated results*



Attachment C : *Laboratory reports*

CLIENT DETAILS

Contact Admin
 Client DM MCMAHON
 Address 6 Jones Street
 Wagga Wagga
 PO Box 6118
 WAGGA WAGGA NSW 2650
 Telephone 61 2 69310510
 Facsimile (Not specified)
 Email admin@dmmcmahon.com.au
 Project **PIC Australia Pty Ltd - Matong**
 Order Number **10354**
 Samples 9

LABORATORY DETAILS

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 Laboratory SGS Alexandria Environmental
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 Alexandria NSW 2015
 Telephone +61 2 8594 0400
 Facsimile +61 2 8594 0499
 Email au.environmental.sydney@sgs.com
 SGS Reference **SE279811 R0**
 Date Received 14/3/2025
 Date Reported 20/3/2025

COMMENTS


Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

Ammonia Nitrogen - The Limit of Reporting (LOR) has been raised due to matrix interference.

SIGNATORIES



Bennet LO
Senior Chemist



Dong LIANG
Metals/Inorganics Team Leader



Ying Ying ZHANG
Laboratory Technician

pH in water [AN101] Tested: 14/3/2025

| PARAMETER | UOM | LOR | Point 3 (Shallow) | Point 3 (Deep) | Point 4 (Shallow) | Point 4 (Deep) | Point 5 (Shallow) |
|-----------|---------|-----|---|---|---|---|---|
| | | | WATER - 12/3/2025 SE279811.001 | WATER - 12/3/2025 SE279811.002 | WATER - 12/3/2025 SE279811.003 | WATER - 12/3/2025 SE279811.004 | WATER - 12/3/2025 SE279811.005 |
| pH** | No unit | - | 7.1 | 6.4 | 6.4 | 6.9 | 6.6 |

| PARAMETER | UOM | LOR | Point 5 (Deep) | Point 6 (Shallow) | Point 6 (Deep) | Point 7 (Deep) |
|-----------|---------|-----|---|---|---|---|
| | | | WATER - 12/3/2025 SE279811.006 | WATER - 12/3/2025 SE279811.007 | WATER - 12/3/2025 SE279811.008 | WATER - 12/3/2025 SE279811.009 |
| pH** | No unit | - | 6.6 | 7.5 | 7.7 | 7.1 |

Conductivity and TDS by Calculation - Water [AN106] Tested: 14/3/2025

| PARAMETER | UOM | LOR | Point 3 (Shallow) | Point 3 (Deep) | Point 4 (Shallow) | Point 4 (Deep) | Point 5 (Shallow) |
|---------------------|-------|-----|-------------------|----------------|-------------------|----------------|-------------------|
| | | | WATER | WATER | WATER | WATER | WATER |
| | | | - | - | - | - | - |
| | | | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 |
| | | | SE279811.001 | SE279811.002 | SE279811.003 | SE279811.004 | SE279811.005 |
| Conductivity @ 25 C | µS/cm | 2 | 23000 | 28000 | 21000 | 22000 | 8100 |

| PARAMETER | UOM | LOR | Point 5 (Deep) | Point 6 (Shallow) | Point 6 (Deep) | Point 7 (Deep) |
|---------------------|-------|-----|----------------|-------------------|----------------|----------------|
| | | | WATER | WATER | WATER | WATER |
| | | | - | - | - | - |
| | | | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 |
| | | | SE279811.006 | SE279811.007 | SE279811.008 | SE279811.009 |
| Conductivity @ 25 C | µS/cm | 2 | 16000 | 8400 | 7900 | 16000 |

Anions by Ion Chromatography in Water [AN245] Tested: 18/3/2025

| PARAMETER | UOM | LOR | Point 3 (Shallow) | Point 3 (Deep) | Point 4 (Shallow) | Point 4 (Deep) | Point 5 (Shallow) |
|-------------------------|------|-------|---|---|---|---|---|
| | | | WATER - 12/3/2025 SE279811.001 | WATER - 12/3/2025 SE279811.002 | WATER - 12/3/2025 SE279811.003 | WATER - 12/3/2025 SE279811.004 | WATER - 12/3/2025 SE279811.005 |
| Nitrate Nitrogen, NO3-N | mg/L | 0.005 | 0.58 | 0.34 | 1.6 | 3.3 | 4.3 |

| PARAMETER | UOM | LOR | Point 5 (Deep) | Point 6 (Shallow) | Point 6 (Deep) | Point 7 (Deep) |
|-------------------------|------|-------|---|---|---|---|
| | | | WATER - 12/3/2025 SE279811.006 | WATER - 12/3/2025 SE279811.007 | WATER - 12/3/2025 SE279811.008 | WATER - 12/3/2025 SE279811.009 |
| Nitrate Nitrogen, NO3-N | mg/L | 0.005 | 5.7 | 10 | 11 | 1.0 |

Nitrite in Water [AN277] Tested: 14/3/2025

| PARAMETER | UOM | LOR | Point 3 (Shallow) | Point 3 (Deep) | Point 4 (Shallow) | Point 4 (Deep) | Point 5 (Shallow) |
|---|------|-------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | | | WATER | WATER | WATER | WATER | WATER |
| | | | 12/3/2025 SE279811.001 | 12/3/2025 SE279811.002 | 12/3/2025 SE279811.003 | 12/3/2025 SE279811.004 | 12/3/2025 SE279811.005 |
| Nitrite Nitrogen, NO ₂ as N | mg/L | 0.005 | <0.005 | 0.40 | <0.005 | <0.005 | 0.030 |
| Total Oxidised Nitrogen, NO _x -N | mg/L | 0.005 | 0.59 | 0.74 | 1.6 | 3.3 | 4.3 |

| PARAMETER | UOM | LOR | Point 5 (Deep) | Point 6 (Shallow) | Point 6 (Deep) | Point 7 (Deep) |
|---|------|-------|---------------------------|---------------------------|---------------------------|---------------------------|
| | | | WATER | WATER | WATER | WATER |
| | | | 12/3/2025 SE279811.006 | 12/3/2025 SE279811.007 | 12/3/2025 SE279811.008 | 12/3/2025 SE279811.009 |
| Nitrite Nitrogen, NO ₂ as N | mg/L | 0.005 | <0.005 | 0.007 | <0.005 | <0.005 |
| Total Oxidised Nitrogen, NO _x -N | mg/L | 0.005 | 5.8 | 10 | 11 | 1.0 |

TKN Kjeldahl Digestion by Discrete Analyser [AN292] Tested: 18/3/2025

| PARAMETER | UOM | LOR | Point 3 (Shallow) | Point 3 (Deep) | Point 4 (Shallow) | Point 4 (Deep) | Point 5 (Shallow) |
|-------------------------|------|------|-------------------|----------------|-------------------|----------------|-------------------|
| | | | WATER | WATER | WATER | WATER | WATER |
| | | | - | - | - | - | - |
| | | | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 |
| | | | SE279811.001 | SE279811.002 | SE279811.003 | SE279811.004 | SE279811.005 |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | 0.63 | 0.42 | 0.50 | 0.23 | 0.79 |
| Total Nitrogen (calc) | mg/L | 0.05 | 1.2 | 1.2 | 2.1 | 3.5 | 5.1 |

| PARAMETER | UOM | LOR | Point 5 (Deep) | Point 6 (Shallow) | Point 6 (Deep) | Point 7 (Deep) |
|-------------------------|------|------|----------------|-------------------|----------------|----------------|
| | | | WATER | WATER | WATER | WATER |
| | | | - | - | - | - |
| | | | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 |
| | | | SE279811.006 | SE279811.007 | SE279811.008 | SE279811.009 |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | 0.27 | 0.52 | 0.72 | 0.50 |
| Total Nitrogen (calc) | mg/L | 0.05 | 6.0 | 10 | 11 | 1.5 |

Ammonia Nitrogen by Discrete Analyser [AN291] Tested: 14/3/2025

| PARAMETER | UOM | LOR | Point 3 (Shallow) | Point 3 (Deep) | Point 4 (Shallow) | Point 4 (Deep) | Point 5 (Shallow) |
|--|------|------|-------------------|----------------|-------------------|----------------|-------------------|
| | | | WATER | WATER | WATER | WATER | WATER |
| | | | - | - | - | - | - |
| | | | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 |
| | | | SE279811.001 | SE279811.002 | SE279811.003 | SE279811.004 | SE279811.005 |
| Ammonia Nitrogen, NH ₃ as N | mg/L | 0.01 | <0.05 † | 0.06 | 0.07 | <0.05 † | 0.05 |

| PARAMETER | UOM | LOR | Point 5 (Deep) | Point 6 (Shallow) | Point 6 (Deep) | Point 7 (Deep) |
|--|------|------|----------------|-------------------|----------------|----------------|
| | | | WATER | WATER | WATER | WATER |
| | | | - | - | - | - |
| | | | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 |
| | | | SE279811.006 | SE279811.007 | SE279811.008 | SE279811.009 |
| Ammonia Nitrogen, NH ₃ as N | mg/L | 0.01 | <0.05 † | <0.01 | 0.02 | <0.05 † |

Total Phosphorus by Kjeldahl Digestion DA in Water [AN279/AN293(Sydney only)] Tested: 18/3/2025

| PARAMETER | UOM | LOR | Point 3 (Shallow) | Point 3 (Deep) | Point 4 (Shallow) | Point 4 (Deep) | Point 5 (Shallow) |
|--|------|------|---|---|---|---|---|
| | | | WATER - 12/3/2025 SE279811.001 | WATER - 12/3/2025 SE279811.002 | WATER - 12/3/2025 SE279811.003 | WATER - 12/3/2025 SE279811.004 | WATER - 12/3/2025 SE279811.005 |
| Total Phosphorus (Kjeldahl Digestion) as P | mg/L | 0.02 | 0.13 | 0.05 | 0.20 | 0.43 | 0.26 |

| PARAMETER | UOM | LOR | Point 5 (Deep) | Point 6 (Shallow) | Point 6 (Deep) | Point 7 (Deep) |
|--|------|------|---|---|---|---|
| | | | WATER - 12/3/2025 SE279811.006 | WATER - 12/3/2025 SE279811.007 | WATER - 12/3/2025 SE279811.008 | WATER - 12/3/2025 SE279811.009 |
| Total Phosphorus (Kjeldahl Digestion) as P | mg/L | 0.02 | 0.29 | 0.31 | 0.14 | <0.02 |

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 17/3/2025

| PARAMETER | UOM | LOR | Point 3 (Shallow) | Point 3 (Deep) | Point 4 (Shallow) | Point 4 (Deep) | Point 5 (Shallow) |
|--------------|------|-----|-------------------|----------------|-------------------|----------------|-------------------|
| | | | WATER | WATER | WATER | WATER | WATER |
| | | | - | - | - | - | - |
| | | | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 |
| | | | SE279811.001 | SE279811.002 | SE279811.003 | SE279811.004 | SE279811.005 |
| Potassium, K | mg/L | 0.2 | 52 | 44 | 16 | 21 | 10 |

| PARAMETER | UOM | LOR | Point 5 (Deep) | Point 6 (Shallow) | Point 6 (Deep) | Point 7 (Deep) |
|--------------|------|-----|----------------|-------------------|----------------|----------------|
| | | | WATER | WATER | WATER | WATER |
| | | | - | - | - | - |
| | | | 12/3/2025 | 12/3/2025 | 12/3/2025 | 12/3/2025 |
| | | | SE279811.006 | SE279811.007 | SE279811.008 | SE279811.009 |
| Potassium, K | mg/L | 0.2 | 23 | 34 | 26 | 33 |

METHOD

METHODOLOGY SUMMARY

- AN020** Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
- AN101** pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, an extract with water is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
- AN106** Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos/cm or µS/cm @ 25°C. For soils, an extract with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Total Dissolved Salts can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. SGS use 0.6. Reference APHA 2510 B.
- AN106** Salinity may be calculated in terms of NaCl from the sample conductivity. This assumes all soluble salts present, measured by the conductivity, are present as NaCl.
- AN245** Anions by Ion Chromatography: A water sample is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO₂, NO₃ and SO₄ are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B
- AN277** Nitrite ions, when reacted with a reagent containing sulphanilamide and N-(1-naphthyl)-ethylenediamine dihydrochloride produce a highly coloured azo dye that is measured photometrically at 540nm.
- AN279/AN293(Sydney)** The sample is digested with Sulphuric acid, K₂SO₄ and CuSO₄. All forms of phosphorus are converted into orthophosphate. The digest is cooled and placed on the discrete analyser for colorimetric analysis.
- AN281** An unfiltered water or soil sample is first digested in a block digester with sulfuric acid, K₂SO₄ and CuSO₄. The ammonia produced following digestion is then measured colourimetrically using the Discrete Analyser. A portion of the digested sample is buffered to an alkaline pH, and interfering cations are complexed. The ammonia then reacts with salicylate and hypochlorite to give a blue colour whose absorbance is measured at 660nm and compared with calibration standards. This is proportional to the concentration of Total Kjeldahl Nitrogen in the original sample.
- AN291** Ammonia in solution reacts with hypochlorite ions from Sodium Dichloroisocyanate, and salicylate in the presence of Sodium Nitroprusside to form indophenol blue and measured at 660 nm by Discrete Analyser.
- AN320** Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components .
- AN320** Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements . Reference APHA 3120 B.

FOOTNOTES

| | | | | | |
|-----|--|-----|-----------------------------------|-----|------------------------------------|
| * | NATA accreditation does not cover the performance of this service. | - | Not analysed. | UOM | Unit of Measure. |
| ** | Indicative data, theoretical holding time exceeded. | NVL | Not validated. | LOR | Limit of Reporting. |
| *** | Indicates that both * and ** apply. | IS | Insufficient sample for analysis. | ↑↓ | Raised/lowered Limit of Reporting. |
| | | LNR | Sample listed, but not received. | | |

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received. Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the "Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.

Note that in terms of units of radioactivity:

- a. 1 Bq is equivalent to 27 pCi
- b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

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