

"BUKULARA"
POBox 558 Ravenshoe,
Qld. 4888 Australia.
12th May 2023

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Email: rmmaster23@gmail.com

Department of Environment and Science,
Qld

Dear Sir/Madam,

RE: Mr J Vella : Environmental Authority Application A-EA-New 100200594 – Final Response

This letter is in reply to a request for further information regarding the above Application lodged to accompany an application for ML 100296, Cordalba.

Since the last communication with DES in February 2023, the ML site was visited by the author to undertake water and waste rock (mullock) sampling allowing for development of a suitable mine plan. This work included GPS pick-up to assist in preparation of a mine planning map.

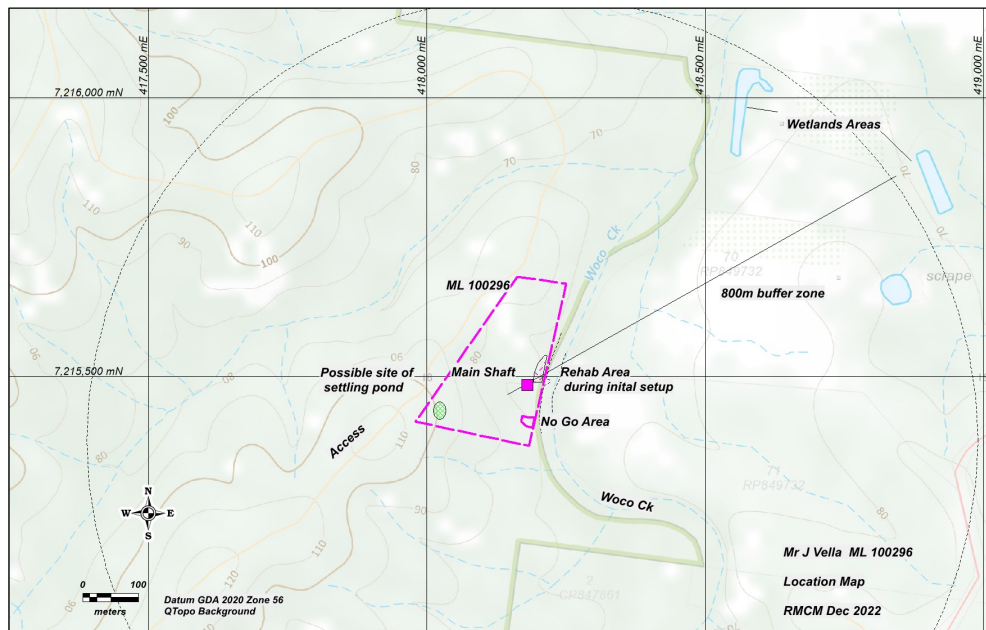
This letter presents results of this work and further detail regarding environmental considerations particularly water and waste rock as requested by DES (email 3rd Feb 2023).

All environmental considerations as previously discussed are again listed in this letter for completeness.

The ML application is being made to allow for planning and **small scale underground** mining of a defined (1980 Dept Drilling) Resource of some 700 tonnes of gold and base metal bearing ore at 30 - 50m depth.

ML 100296 is some 2.5 kilometres south west of Cordalba with designated access via Adies Road.

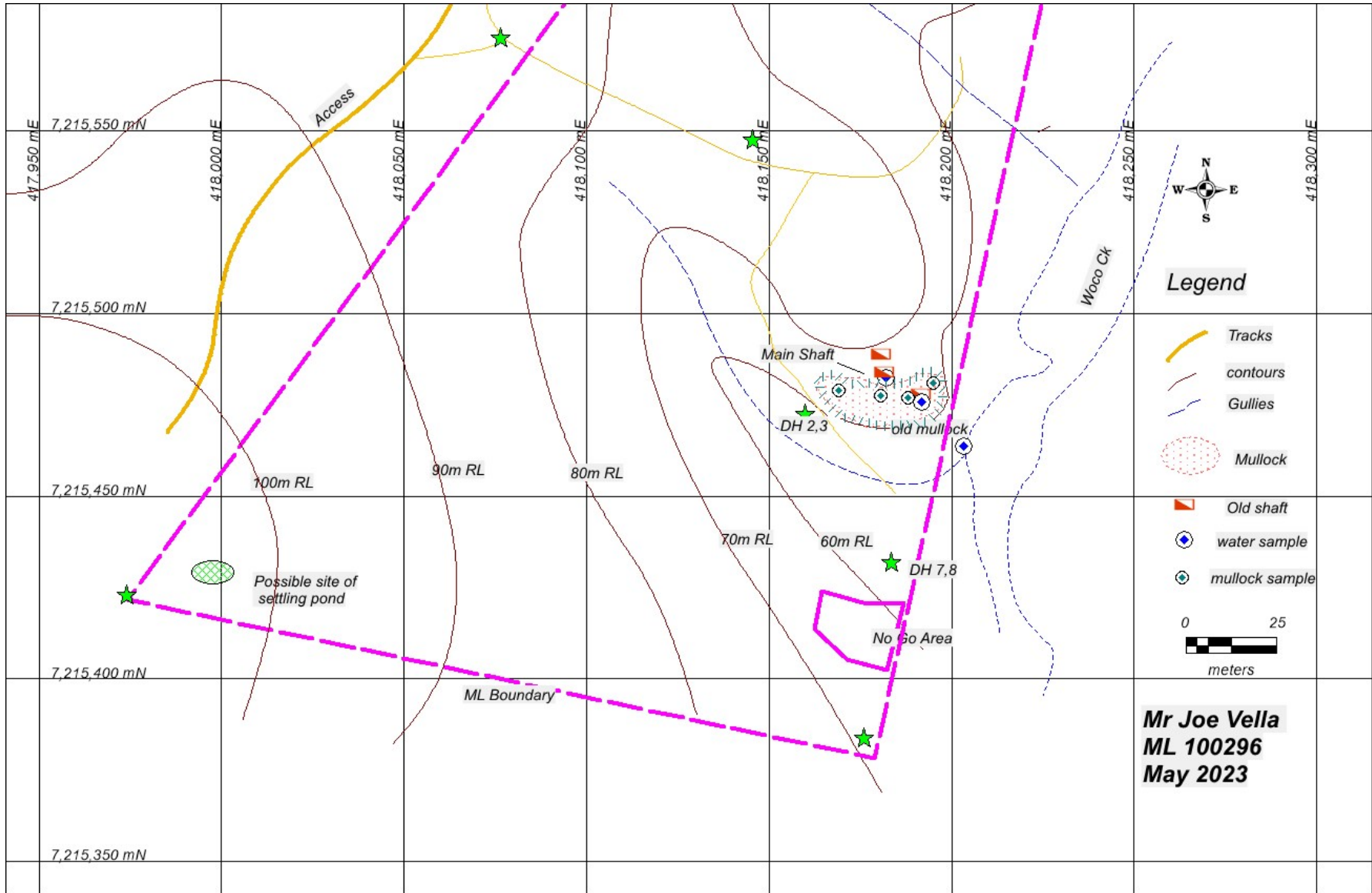
The ML is 5.18 hectares in area and is within Cordalba State Forest (background tenure). The ML area was previously held under Titles ML 1195 / ML146 (1974 – 2015).



Map 1- Location of ML 100296 showing Main Shaft, Buffer Zone, Rehab, Pond and No Go areas

Mr J Vella ML 100296
Location Map
RMCM Dec 2022

Map 2: Mine Planning Map after GPS pick-up



Addressing environmental points:

- There will be no emissions or releases generated during mining activities. The underground workings will be electric with 3 phase mains power being available from the neighbouring farm. Hence no onsite generator is needed.
- Acoustic - two person underground mining process at 30m depth generating very low noise levels at surface. Initial surface rehabilitation works will be of short duration and in daylight hours.
- Dust will be kept to a minimum with good practices being observed during underground mining and surface operations including light vehicle access along the designated access road (Adies Road). This road will be back bladed (3 PL Tractor) with a 10,000 litre water truck available for dust suppression if required during the dry season.



Plate 1 Access Road

The road is in shale country and has been used for forest access for some time – the ML holder will be using this road for **light vehicle access only** once initial set up (rehabilitation and small pond construction) has been completed.. ie no hauling or trucks.

- Mining activities will **not** be undertaken in environmentally sensitive areas such as mapped wetlands and riverine areas – Woco Ck is adjacent to the ML eastern boundary and is mapped as Wetland of General Ecological Significance. No water will be drawn from this Creek.
- Please refer to Map 1 above. The mapped wetlands to the NE are within the 1000m buffer zone – the ML holder seeks to amend this buffer zone to 800m considering that the mining operation is underground and small scale with little or no impact as discussed here.

- All machinery and vehicles will be pressure cleaned and sprayed with herbicide when moving into the ML area to prevent the spread of weeds.
- As shown in the attached photographs (Appendix 3) the ML area has considerable surface disturbance and vegetation regrowth from previous 1970-1980 era mining. These areas will be rehabilitated during initial surface work – it will **not** be necessary to undertake clearing of any mature trees - advice will be sought from Forestry prior to this work.
- Vehicles and initial machinery will be monitored for oil leaks with a spill kit on hand.
- Waste water

Water samples were collected by the author in April 2023 with results and descriptions presented in Table 1 with locations shown on *Map 3: Detail* .

The water pH values were obtained from Bundaberg Poolwerx (attached as Appendix 1).

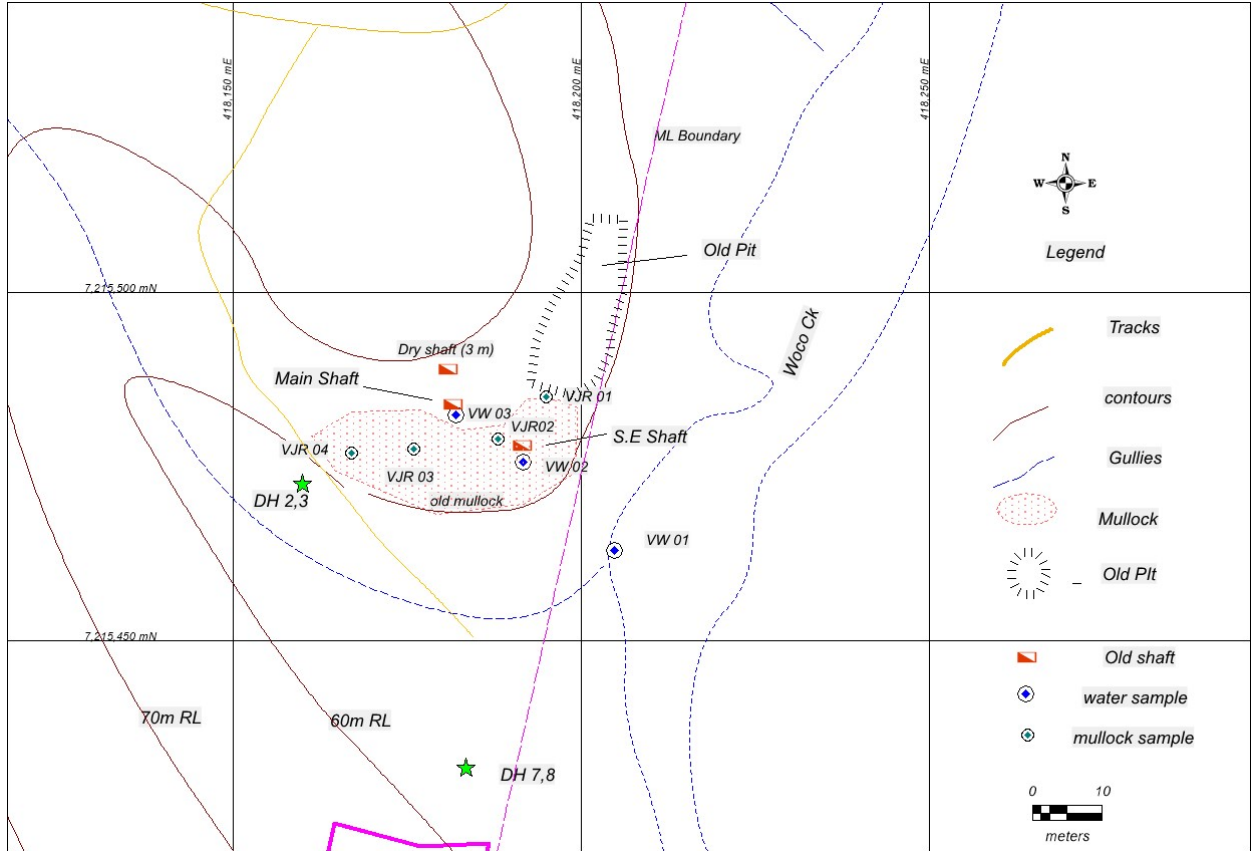
Independent digital testing onsite by the author produced repeatable 6.7 – 7.0 values. Water quality will be monitored during planned dewatering of the two shafts.

Table 1: Water sampling

Sample No	Co-ordinates East	Co-ordinates South	Location	pH value	Notes
VW 01	418204	7215465	Woco Creek - surface	6.7	Woco Ck - seasonal flow
VW 02	418181	7215484	Main shaft - 7m depth	6.6	SWL 6.8 m -- water bottom at 12.5m , estimated volume to initially dewater : 13,000 litres
VW 03	418193	7215481	SE shaft - 7.5m depth	6.6	SWL 7.5m -- water bottom at 10.5m , estimated volume to initially dewater : 7,000 litres



Plate 2: Main shaft (2m by 1.2m) at surface with sound timbers below ground level



Map 3: Detail – Location of Water and Rock (Mullock) Samples

Dewatering : waste water (some 20,000 litres total) from the two shafts will be pumped to a purpose built small pond on the high ground to the south west within the ML area. This will include

- Construction of small “turkeys nest” style settling pond in the highest corner of the ML as shown on Map1 – this will be some 10 metres square and 1-2m deep in open space shale country. (set aside topsoil if available) The small pond is considered non-referable.
- Lining of the small pond floor and low banks with limestone gravel / aggregate from local limestone quarry (Childers / Bundaberg) to assist in maintaining a neutral pH and provide a buffer zone.

- Waste Rock (mullock)

Rock samples (mullock) were collected by the author in April 2023 with results and descriptions presented in Table 2. The 4 sample locations are shown on *Map 3: Detail*.

Each sample was approximately 2kg in size and were submitted to SGS Cairns for NAG (Net Acid Generation) analysis. The full SGS report is attached as Appendix 2.

During sample collection the mullock piles were surveyed via GPS and an approximate volume represented by each sample is also presented.

Sample No	Co-ordinates East	Co-ordinates South	Location / volume	NAG pH	NAG (kg H₂SO₄/t)	Acid Production Potential*
VJR 01	418193	7215485	east of SE shaft- approx 100 cu metre of orange grey material	5	0	Potentially acid forming – lower capacity (PAF-LC)
VJR 02	418187	7215479	adj main shaft - approx 200 cu m of grey material	4	1	Non-acid forming (NAF)
VJR 03	418176	7215477	under loading area - approx 50 cu m of yellow grey material	7.9	0	Potentially acid forming (PAF)
VJR 04	418167	7215478	west end of mullock - approx 100 cu m of grey material	3.7	2	Non-acid forming (NAF)

Reference * The acid production potential of the sample can be obtained from the NAGpH and NAG value as presented below:

Interpretation of the NAG test results (AMIRA 2002)

NAGpH	NAG (kg H₂SO₄/t)	Acid Production Potential
4.5	0	Non-acid forming (NAF)
< 4.5	5	Potentially acid forming – lower capacity (PAF-LC)
< 4.5	> 5	Potentially acid forming (PAF)

As expected the grey shale mullock (wall rock) is generally low acid forming whilst the mineralized vein material (yellow / grey mullock) is considered potentially acid forming. This sampling has provided initial baseline knowledge and will be incorporated during initial set up work and future mining.

During initial rehabilitation it will be necessary to use limestone aggregate to line the old pit area after clean up of old timbers etc. Some blending and compaction will also be undertaken. Particular attention will be paid to any yellow mullock from under the old loading platform.



Plate 3: Old headstock with timber loading platform on right – small area (5m by 7m) of yellow grey mullock (sample VJR03)

During future mining, selected ore (vein material) from the underground workings will be treated offsite . Any other rock waste will be incorporated in surface rehabilitation with attention paid to limestone aggregate lining / blending / compaction with topsoil capping and bund walls to prevent run off. This waste rock will be less than 50 tonnes per year as the underground workings are small in scale.



Plate 4 : Old pit near shaft – this is considered suitable to fill with waste rock (mullock) and as mining progresses. The pit is approximately 1,400 cubic metres in volume with solid rock (NAF) walls.

- General Rehabilitation works within the ML area will take place in accordance with the requirements of the standard conditions: eg
Mounding (less than 2m high) of available topsoil during initial earthworks in rehab area and at pond site. This will store natural and original seed material for later capping.
Surface sculpting and utilisation of small bund walls to control surface run-off.
- There will be no significant adverse impacts to MSES mapped within ML100296 – the MSES Report has been filed for reference- wildlife and vegetation within the ML area.

As shown on Maps 1 & 2 and discussed below:

No Go Area has been shown where DEHP has identified:

MSES 7A - Area where threatened (endangered or vulnerable) wildlife occurs.

MSES 8D - Area of essential habitat (vegetation)

No activities will be undertaken in the No Go Area by the ML holder.

Also identified in the DEHP Report is MSES 8A – Regulated Vegetation – Endangered / of concern Category B (Remnant) which applies to 96% of the ML area.

Acknowledging this, the ML holder will not be undertaking any fresh clearing of mature trees : as shown on the attached photographs the ML area has many areas of grass and shrub regrowth from previous logging and other activities.



Exploration Geologist

B.Sc. M.AusIMM.

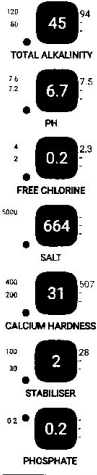
Appendix 1 – Water Sample sheets (3 samples)

poolwerx
for healthy pool people
POOLWERX BUNDABERG

VN01 ML 100296
WATER VN01

22
Apr

#000 TESTY MCTEST
224B Walker Street Svensson Heights Qld 4670 AU



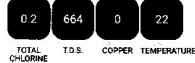
45
6.7
0.2
664
31
2
0.2

RECOMMENDED ADJUSTMENTS

- TOTAL ALKALINITY**
Dissolve 6kg of Vitalyse Alkalinity Up in a bucket of water. Add as a slurry mix directly to the pool. Afterwards filter pool for 4-6 hours and re-test.
- PH**
Adjust Total Alkalinity then dissolve 2x 300g of Vitalyse pH Increaser (waiting between each dose) in a bucket of water and add to the pool away from the skimmer box. Filter pool for 4-6 hours before re-testing.
- FREE CHLORINE**
A shock dose (1 x 500g bag of Vitalyse Shock N Swim Plus) is recommended. An increase salt chlorinator hours/level may be required.
- SALT**
Turn off salt cell and leave pump running. Add 24kg of Pool Salt in the shallow end. Broom salt until fully dissolved and then re-adjust salt chlorinator.
- CALCIUM HARDNESS**
Dissolve 9.7kg of Vitalyse Calcium Up in a bucket of water and add to the pool away from the skimmer box. Afterwards filter pool for 4-6 hours.
- STABILISER**
Clean/backwash the pool filter then dissolve 1.9kg of Vitalyse Sunblock in a bucket of water. Add slurry mix directly to the pool. Afterwards filter pool for at least 6 hours.
- PHOSPHATE**
Phosphate levels are ok.

Poolwerx Bundaberg
174-175/179
224B Walker Street
Svensson Heights QLD 4670
Australia

ADDITIONAL MEASUREMENTS

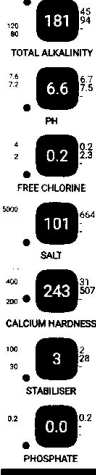


poolwerx
for healthy pool people
POOLWERX BUNDABERG

VN02 ML 100296
WATER VN02

22
Apr

#000 TESTY MCTEST
224B Walker Street Svensson Heights Qld 4670 AU



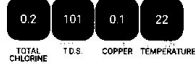
181
6.6
0.2
101
243
3
0.0

RECOMMENDED ADJUSTMENTS

- TOTAL ALKALINITY**
Total Alkalinity is high. Monitor and seek advice from a consultant.
- PH**
Dissolve 2x 400g of Vitalyse pH Increaser (waiting between each dose) in a bucket of water and add to the pool away from the skimmer box. Filter pool for 4-6 hours before re-testing.
- FREE CHLORINE**
A shock dose (1 x 500g bag of Vitalyse Shock N Swim Plus) is recommended. An increase salt chlorinator hours/level may be required.
- SALT**
Turn off salt cell and leave pump running. Add 270kg of Pool Salt in the shallow end. Broom salt until fully dissolved and then re-adjust salt chlorinator.
- CALCIUM HARDNESS**
Calcium Hardness levels are ok.
- STABILISER**
Clean/backwash the pool filter then dissolve 1.9kg of Vitalyse Sunblock in a bucket of water. Add slurry mix directly to the pool. Afterwards filter pool for at least 6 hours.
- PHOSPHATE**
Phosphate levels are ok.

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ADDITIONAL MEASUREMENTS



poolwerx
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POOLWERX BUNDABERG

VN03 ML 100296
WATER VN03

22
Apr

#000 TESTY MCTEST
224B Walker Street Svensson Heights Qld 4670 AU

Pool Outdoor 50,000 litres Auto-LIQI 100% PEER 100% SALT



127
6.6
0.2
45
106
3
0.4

RECOMMENDED ADJUSTMENTS

- TOTAL ALKALINITY**
Total Alkalinity is high. Monitor and seek advice from a consultant.
- PH**
Dissolve 2x 400g of Vitalyse pH Increaser (waiting between each dose) in a bucket of water and add to the pool away from the skimmer box. Filter pool for 4-6 hours before re-testing.
- FREE CHLORINE**
A shock dose (1 x 500g bag of Vitalyse Shock N Swim Plus) is recommended. An increase salt chlorinator hours/level may be required.
- SALT**
Turn off salt cell and leave pump running. Add 273kg of Pool Salt in the shallow end. Broom salt until fully dissolved and then re-adjust salt chlorinator.
- CALCIUM HARDNESS**
Dissolve 6kg of Vitalyse Calcium Up in a bucket of water and add to the pool away from the skimmer box. Afterwards filter pool for 4-6 hours.
- STABILISER**
Clean/backwash the pool filter then dissolve 1.9kg of Vitalyse Sunblock in a bucket of water. Add slurry mix directly to the pool. Afterwards filter pool for at least 6 hours.
- PHOSPHATE**
Dissolve 150mls of Vitalyse Phosphate Remover in a bucket of water and, with pump running, add the solution slowly through skimmer box (for pools with cartridge filters add the solution directly to the pool). Filter pool for 4 hours and retest.

Poolwerx Bundaberg
174-175/179
224B Walker Street
Svensson Heights QLD 4670
Australia

ADDITIONAL MEASUREMENTS



The accuracy of this test result is dependent upon both the accuracy of the test method and the procedure followed by the user. The value of salt chlorinator, if there is one, and chlorinator and skimmer box, if there is one, are also important in determining the accuracy of the test result. The accuracy of the test result is dependent upon the accuracy of the test method and the procedure followed by the user.

Appendix 2 . SGS Report for NAG Analyses (4 Rock-Mullock samples)

CLIENT DETAILS

Contact **ROSS MCMASTER**
Client **ROSS MCMASTER**
Address **PO BOX 558
RAVENSHOE QLD 4886**

Telephone **(Not specified)**
Facsimile **(Not specified)**
Email **rmcmaster23@gmail.com**

Project **CORDALBA**
Order Number **COD**
Samples **4**

LABORATORY DETAILS

Manager **Anthony Nilsson**
Laboratory **SGS Cairns Environmental**
Address **Unit 2, 58 Comport St
Portsmith QLD 4870**

Telephone **+61 07 4035 5111**
Facsimile **+61 07 4035 5122**
Email **AU.Environmental.Cairns@sgs.com**

SGS Reference **CE166309 R0**
Date Received **21 Apr 2023**
Date Reported **28 Apr 2023**

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(3146/19038)

SIGNATORIES

Anthony NILSSON
Operations Manager

Jon Dicker
Manager Northern QLD

Parameter	Units	LOR	CE166309.001	CE166309.002	CE166309.003	CE166309.004
Sample Number			CE166309.001	CE166309.002	CE166309.003	CE166309.004
Sample Matrix			Soil	Soil	Soil	Soil
Sample Name			VJR01	VJR02	VJR03	VJR04

Moisture Content Method: AN002 Tested: 24/4/2023

Parameter	Units	LOR	CE166309.001	CE166309.002	CE166309.003	CE166309.004
% Moisture	%w/w		0.5	2.9	0.9	1.4
						1.7

Single Addition Net Acid Generation (NAG) Method: AN218 Tested: 26/4/2023

Parameter	Units	LOR	CE166309.001	CE166309.002	CE166309.003	CE166309.004
ECox (NAG Conductivity)	µS/cm	1	75	120	89	380
pHox (NAG pH)	No unit	-	5.0	4.0	7.9	3.7
NAG as kg H ₂ SO ₄ /tonne to pH 4.5	kg H ₂ SO ₄ /t	0.5	<0.5	1.0	<0.5	2.0
NAG as kg H ₂ SO ₄ /tonne to pH 7	kg H ₂ SO ₄ /t	0.5	2.6	3.4	<0.5	9.3
NAG as kg CaCO ₃ /tonne to pH 4.5	kg CaCO ₃ /t	1	<1.0	1.0	<1.0	2.0
NAG as kg CaCO ₃ /tonne to pH 7	kg CaCO ₃ /t	1	2.7	3.5	<1.0	9.5

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Single Addition Net Acid Generation (NAG) Method: ME (AU)-(ENVJAN21E)

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
ECox (NAG Conductivity)	LB115542	µS/cm	1	-37	95%
pHox (NAG pH)	LB115542	No unit	-	4.2	104%
NAG as kg H2SO4/tonne to pH 4.5	LB115542	kg H2SO4/T	0.5	<0.5	107%
NAG as kg H2SO4/tonne to pH 7	LB115542	kg H2SO4/T	0.5	<0.5	99%
NAG as kg CaCO3/tonne to pH 4.5	LB115542	kg CaCO3/T	1	<1.0	107%
NAG as kg CaCO3/tonne to pH 7	LB115542	kg CaCO3/T	1	<1.0	96%

METHOD

METHODOLOGY SUMMARY

AN002

The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.

AN216

Pulverised sub-sample of a waste rock or an as received sample of filter cake, soil or sludge is subjected to an oxidising digest with 15% hydrogen peroxide adjusted to pH 4.5. The pH and EC of the NAG suspension is recorded at various stages in the digest. The acid produced (if any) is titrated using standardised NaOH to pH 7.0. NAG results are reported to 0.5 kg H₂SO₄/tonne.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
***	Indicates that both * and ** apply.	-	The sample was not analysed for this analyte
		NVL	Not Validated

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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Appendix 3 – Photographs (August 2022)

Plate 2 : Cleared Area



Plate 4: Vegetation regrowth



Plate 5 : Area for rehabilitation

