HYDROGEOLOGICAL PROCESSES SUMMARY REPORT

PREPARED FOR:

AUSTRALIAN POTASH LIMITED

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LAKE WELLS
HYDROGEOLOGICAL SUMMARY REVIEW

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1. INTRODUCTION

1.1 PURPOSE AND SCOPE

This document has been developed to provide information on the hydrogeological environment associated with the Lake Wells Potash project, proposed to be developed by Australian Potash, and is a summary of two reports:

- AQ2 (2017) *Lake Wells Potash Project – Scoping Study* (memo report prepared for Australian Potash (APC)).
- APC (2017) Draft H2 (Basic hydrogeological Assessment) Fractured Rock Water Supply Investigation (draft report in preparation for submission to DWER)

1.2 PROJECT BACKGROUND

Australian Potash Ltd (ASX: APC) is seeking approval to develop the Lake Wells Potash Project (The Project) on the southwestern extremes of the Lake Wells palaeodrainage some 160 km north-northeast of Laverton (Figure 1). APC intend to produce Sulphate of Potash (SOP) from hypersaline brines contained in the underlying palaeochannel sediments. It is proposed that the brines be abstracted, subjected to solar evaporation and SOP recovered from the residual salts.

The Lake Wells pastoral lease is an operating cattle station with sandalwood pulling (deadwood licence) a subsidiary activity operated by the pastoralists. The station water use is minor, with approximately 12 operating windpumps abstracting fresh to brackish water from the shallow fractured rock aquifer system. The pastoral bores are likely to target the weathered/fresh bedrock contact zone and be relatively low yielding bores.

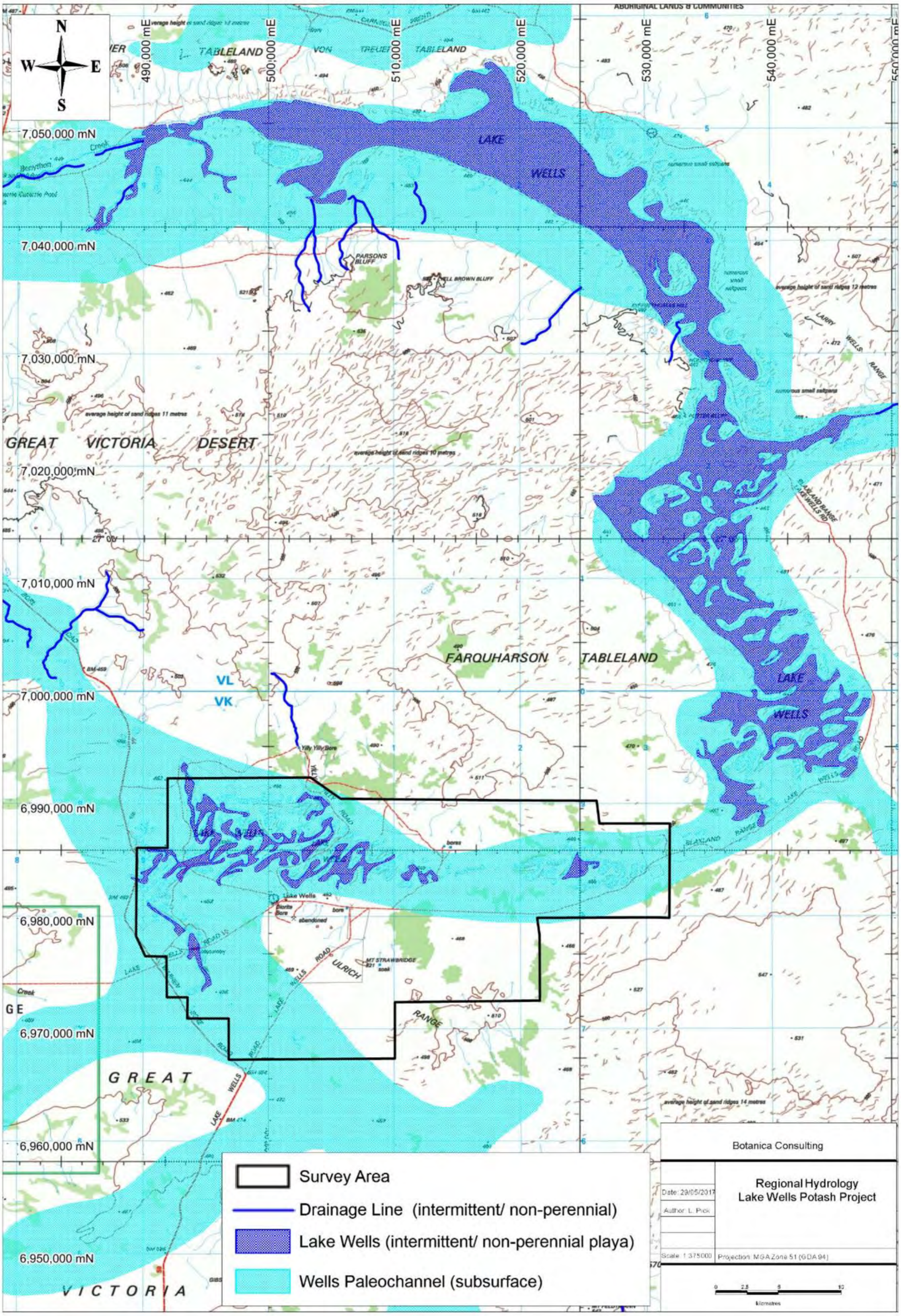

Figure 1: Location of the Project in regard to the Lake Wells Paleodrainage System (after Botanica Consulting, 2017).

2. REGIONAL SETTING

2.1 CLIMATE

Lake Wells is located in the arid Western Australia interior and has an average annual rainfall of approximately 200 mm. The climate is characterised by hot dry summers and cold winters, with average maximum temperatures of around 30C. Day time temperatures can exceed 40C during the summer (December to February), with overnight temperatures below zero possible during the winter (June to August). Pan evaporation rates for the area are estimated to be 3,200 mm/year, such that the potential evaporation rates in the area far exceed the annual rainfall depth.

The 170 km^2 southwestern limb of the Lake Wells paleodrainage on which the Project is proposed has a catchment area of approximately 6,600 km^2 which on average (based on an assumed average annual runoff yield of 1% of annual rainfall) results in 80 mm of water reporting across the lake area over the year. However, Intensity-Frequency-Duration (IFD) curves for the site (sourced from Bureau of Meteorology) indicate that a week-long storm event with a 1% Annual Exceedance Probability (AEP) would result in a rainfall of 198 mm; almost the annual average in a single event. Hence the volume of water reporting to the lake may be considerably larger for a single high magnitude / low frequency rainfall event. Dependent upon the actual rainfall distribution in any year, a portion of the water reporting to the lake will infiltrate the lake-bed sediments.

2.2 TOPOGRAPHY AND DRAINAGE

The area is characterised by salt lakes and major valley floors with lake derived dunes, sandplains with patches of seif dunes running east west and areas of moderate relief without-cropping and silcrete-capped mesas and plateaus (breakaways). The Lake Wells system of lakes is roughly shaped like a reverse “C” and constitutes an internally draining terminal basin (i.e. there is no surface water outflow). Soils comprise sandy earths and red deep sands with some red loamy earths and red-brown hardpan shallow loams. Vegetation is predominantly Mulga shrublands and spinifex grasslands with mallee. Scattered marble gum (*Eucalyptus gongylocarpa*) and native pine (Callitris) occur on the deeper sands of the sand plains. Mulga and acacia woodlands occur mainly on the colluvial and residual soils. Salt bush (*Atriplex* sp.), Bluebush (*Maireana* sp.), and samphire (*Tecticornia* sp.) occur on the margins of salt lakes and in saline drainage areas.

Within the Project development envelopes, the Lake Wells paleodrainage is the primary geomorphological feature, characterised by a playa lake, or series of depressions separated by slightly elevated sand dune ridges (Figure 1). Drainage is poorly defined and smaller rainfall events result in the development of ponds which possibly becoming interconnected during high levels of inundation. It is possible that during very large storm events excess storm runoff in the southwestern limb may spills north east into the main Lake Wells paleodrainage system. The southwestern limb of the palaeodrainage system has an extensive series of relatively large and deep depressions, in some places up to 3 to 4 m in depth (Golder Associates, 2017). These depressions provide sufficient storage capacity during the conveyance of upstream flood runoff to attenuate peak flow events, with discharge (spillage) to the main Lake Wells playa area unlikely. Channel gradients along the playa in the vicinity of the Project site are very low and average approximately 0.1 m/km in an east–west direction.

2.3 GEOLOGY

The Project is located on the northeastern margin of the Archaean Yilgarn Craton with geology comprising weathered Archean basement overlain by depositional sediments. The Archaean basement, including basalt, granite, porphyry, felsic volcanoclastics and ultramafic schistose rocks, is concealed by Cainozoic (dominantly Quaternary) depositional regime sediments of kopai dunes, aeolian sand dunes, sheetwash and playa lake sediments of the extensive Lake Wells playa lake system (GSWA THROSSELL 1: 250 000 Sheet ((Bunting, Bunting, Chin, Jackson, & Australia, 1978)). During the Tertiary, the Carnegie and Keene palaeorivers drained from the north into the Wells palaeoriver and a deep palaeochannel extending towards the northeastern tenement boundary. This Wells-Carnegie palaeodrainage system was extensive, with eroded valleys up to 170 m deep ultimately discharging to the Eucla-coast (Beard, 2002). Over time, the channel filled with sediments resulting in an infilled paleochannel system beneath the present day Lake Wells Salt Lake drainage system (Figure 1).

2.4 HYDROGEOLOGY

The extensive linear Cainozoic sediments of the Lake Wells system are characterised by chains of salt lakes containing shallow hypersaline groundwater. In the palaeovalleys, the basal palaeochannel aquifer is incised into Archean bedrock and is typically overlain by dense intervening clay. Both the basal sand and overlying materials within the palaeovalleys are saturated with hypersaline brine (Geoscience Australia, 2013). Elsewhere the basal sand and sand lenses are commonly utilised for process water supplies in the Eastern Goldfields, with palaeochannel sand aquifers providing significant groundwater supplies (Johnson, Commander, & O'Boy, 1999).

Calcrete units have not been identified in the project area during exploration drilling programmes. The regional geological and hydrogeological maps (Geoscience Australia, 2013) indicate the presence of calcrete units within the palaeochannel environment. These calcrete units are generally recognised as important local recharge areas where they extend below ground level fresh to brackish aquifers.

2.5 PROJECT HYDROGEOLOGY

The presence and extent of the paleochannel sediments was inferred from a Tromino passive seismic survey in late 2015 (Figure 2), which indicated a depth to basement and total thickness of valley sediments of between 150 to 170 metres below ground level (mbgl). The depth to water ranges between 0.12 and 5 mbgl; with the latter occurring where dunes overlie the lake floor. Hydrogeological units within the Project are illustrated in conceptual hydrogeological cross-sections in Figure 3 and are described further below:

- A surficial aquifer unit of Pliocene – Quaternary mixed alluvial/lacustrine sediments comprising clayey sands, laterite and evaporate deposits. This unit has been encountered extensively in the exploration drilling and auger holes (AQ2, 2017). The hydraulic properties of this unit are highly variable, depending on the mix of each sediment type. Overall, it is likely to form a low-permeability unconfined aquifer. This upper surficial aquifer has moderate permeability and specific yield representing approximately 25% of the total estimated porosity.
- A Pliocene aquifer unit of predominantly sand encountered at the base of surficial aquifer unit at depths ranging between 29 and 65 mbgl in the western part of the project area and between 68 and 77 mbgl in the east of the project area, with thicknesses varying from 1 to 15 m. This upper sand unit has reasonable permeability and specific yield, representing approximately 70% of the porosity, suggesting nearly three-quarters of the brine contained in this unit could potentially drain over time, contributing to the ability to pump from the surficial aquifer unit. The generally shallow nature of this unit does result in limited available drawdown however, an average thickness of 8m will have a transmissivity in the order of 10 m^2/d (based on the Particle Size Distribution (PSD) analyses), with test pumping indicating a transmissivity of up to 30 m^2/d.
- A Miocene clay aquitard comprising puggy lacustrine clay with sandy interbeds. Drilled extensively during the air-core drilling programme, this clay has a high porosity and will contain substantial volumes of brine. However, it has very low permeability and specific yield (i.e. direct abstraction of brine from the clay will be difficult and very little of the brine volume contained within the pore space will be expected to drain over time). While the specific yield is low, it is somewhat higher than estimates from other palaeochannels (Johnson et al., 1999), due to the sand proportion within the sampled clay. The clay unit would be expected to drain into the underlying sand when depressurised by pumping, therefore acting as a confining layer for the underlying basal sand and providing a source of downward leakage during pumping of the basal sand aquifer. Notwithstanding, the specific yield indicates only approximately 15% of the total brine contained within the pore space could potentially drain over time.

- An Eocene basal sand has been encountered in 10 drill holes located across the entire project area. The presence of this sand is consistent with the regional geological description above and the palaeochannel thalweg as interpreted from the geophysical survey. The sand forms a permeable aquifer with relatively high specific yield (i.e. over 50% of the brine contained within the pore-space will be recoverable). Additionally, pumping from the sand will lower the hydrostatic pressure within this unit, facilitating drainage of brine from the overlying clay aquitard. The basal sand unit has reasonable permeability and specific yield, representing approximately 70% of the porosity, suggesting over half of the contained brine could potentially drain over time. For an average sand thickness of 25 m, the transmissivity of this aquifer unit will be in the order of 35 m^2/d. This is sufficient to sustain pumping volumes and allow depressurisation of the aquifer over a wide area, which will allow the drainage of the overlying clay.

Table 1 summarises the conceptual hydrogeological model that underpins the Inferred and Indicated Resource assessments.

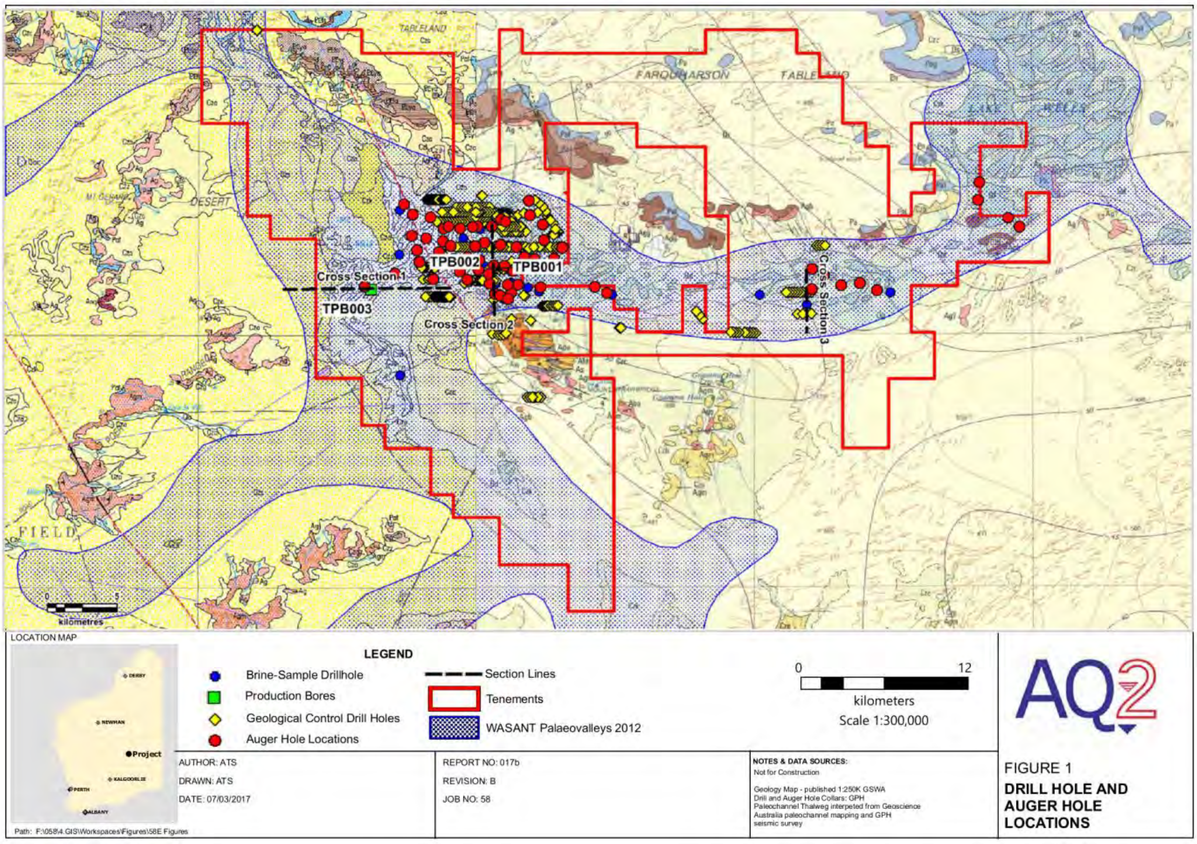

Figure 2: Surface lithologies showing the location of the paleochannel sediments.

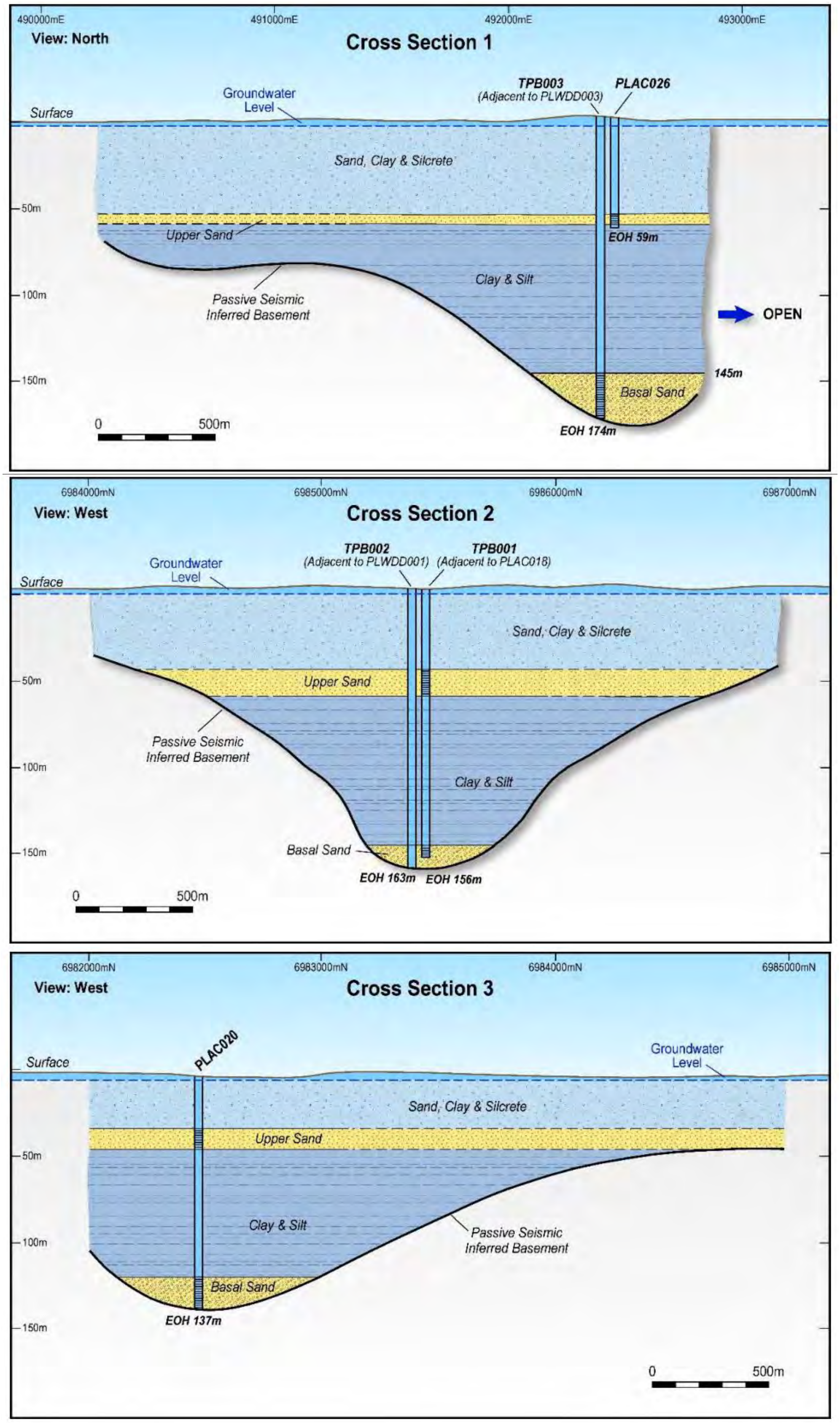

Figure 3: Conceptual hydrogeological cross sections

Table 1: Summary of Project Conceptual Hydrogeological Model

Age	Geology	Hydrogeology	Extent
Pliocene/Quaternary	Mixed sand, clay and evaporite. Periods of Playa Lake development and arid landforms (dunes, ephemeral creeks with alluvial wash).	Aquifer – Brine storage potential and moderate levels of recovery. Moderate pumping potential from shallow moderate yielding bores targeting sandy horizons or shallow trenches. T: low ~5 m^2/day to 15 m^2/day. Likely to receive surface water recharge / dilution in upper 20 m.	Extensive – occurs over most of modern lake surface. Variable with sand-clay proportions and 30m to 90m thick.
Pliocene	Predominantly sand unit with variable clay content. Period of higher energy deposition prior to playa Lake development.	Aquifer – Brine storage potential and moderate to high levels of recovery. Moderate pumping potential from shallow moderate yielding bores. (T: ~10 m^2/day to 30 m^2/day)	Extensive but discontinuous – anticipated to occur over most of modern lake though with variable thickness (ranging between 3 and 15m). Variable clay content. Occurs at depths ranging between 20 and 77m.
Miocene	Clay (with minor sand interbeds). Continental – interior wide deep weathering producing deep clay regolith. Deposited in low-energy environments as lacustrine and alluvial clays (e.g. Perkolili Shale).	Aquitard – large brine storage but low recovery due to low specific yield. Limited opportunity for direct pumping but long term source of leakage to support pumping from underlying sand.	Extensive – underlies modern lake surface and is over 100m thick in places.
Eocene	Coarse Sand. High energy basal sands in interior-wide paleo drainage system, (e.g. Wollubar Sandstone). Incision of inset valleys occurs within broad drainage pattern already established and is interior-wide.	Aquifer – large brine storage potential, high levels of recovery (due to specific yield) and good pumping potential (T:~35m^2/day) to depressurise and underdrain overlying clay. Up to 100m of available pumping drawdown.	Longitudinally extensive and laterally constrained to paleochannel thalweg (base of channel). Occurs – 100mbgl in the east and 150mbgl in the west, along entire paleochannel length with typical thickness of 25m.

2.5.1 Brine Abstraction

Permeability estimates for the main aquifer units combined with the recent pumping tests confirm the viability of abstracting brine from the more permeable upper and basal sand units of the palaeochannel. Brine abstraction for the mine will therefore be from production bores screened against these hydrogeological units. For testing, bores were installed against one or other of these units so that the hydraulic response of each individual unit could be determined during a test. However, in the operational borefield, each of the brine production bores will be screened against both the upper and basal sand. Abstraction from the basal sand will facilitate depressurisation and under-drainage of the overlying clays, whilst abstraction from the upper sand will drain the overlying surficial aquifer.

The design of the brine borefield is based on the brine demand and aquifer conditions. For the first five years of mining, APC propose an initial production rate of 100,000 Tpa of SOP from only the Indicated Resource. Thereafter, APC propose a production rate of 200,000 Tpa from both the Indicated and Inferred Resource areas. To meet these rates, based on 100,000 Tpa of SOP and a mean-weighted average K concentration of 3,700 mg/L, the brine borefield must produce 46,400 kL/d of brine on a continuous basis for the first five years. For the increased production rate of 200,000 Tpa and based on a mean-weighted average K concentration of 3,700 mg/L for the Indicated Resource and 2,670 mg/L for the Inferred Resource, the borefield must be capable of producing 102,200 kL/d of brine on a continuous basis. These estimates of brine volume must allow for losses in the process circuit (for example as infiltration through the base of the evaporation ponds and in losses during mechanical recovery of the precipitate) and an allowance for 40% loss is included in the above estimates (i.e. the amount pumped has been increased by 40%). This estimate should be refined when more detail is available on the process flow and long-term brine grades.

To intersect the sand units, bores will be located linearly along the length of the palaeochannel thalweg and drilled into the basal sand. Bores will be screened across both the basal and upper sand. The design of the borefield takes account of:

- aquifer properties
- spacing between bores for associated interference effects and the effects of negative boundaries imposed by the edges of the palaeochannel system.
- Drawdown in water levels over the life of the project:
  - Analysis suggests pumping water levels will fall below the base of the upper sand during the first year of operation. Inflow into the bores from the upper sand has therefore been calculated based on the free-drainage of water if the water level in the upper sand were drawn to the base of the formation at each well. A long-term inflow rate of 200 kL/d has been determined (assuming a specific yield of 10%).
  - Pumping water levels in the basal sand are likely to draw down to below the notional top of the sand aquifer over the life of the project.

After year five, the proposed 200,000 Tpa brine borefield will comprise 83 production bores, at 250m to 500m spacing, located linearly along the length of the palaeochannel. The bores, each operating at rates of between 13 and 15 L/s, will be connected to four main transfer pipelines, discharging the brine into the evaporation ponds at two locations.

2.6 POTABLE BOREFIELD

A fresh water supply for potable use and processing operations will be required, and will be sourced from a fractured rock aquifer. The Northern Goldfields area is underlain by weathered and fractured Archaean bedrock, which forms the northern portion of the Yilgarn Goldfields fractured-rock groundwater province. Fractured-rock aquifers comprise greenstones, granitoids and minor intrusive rocks that are characterised by secondary porosity and permeability which may also be enhanced by chemical dissolution along fracture lines. Allen (1996) noted that large supplies of groundwater may be obtained from bores to 100 m depth, particularly where these intersect fractured chert and banded iron-formations, regional structural features, fault and shear zones.

The storativity and hydraulic conductivity of these aquifers is largely related to the degree of fracture intensity. Rock solution associated with fracturing is rare below the weathered zone owing to fracture closure, although significant groundwater has been intersected at depth within localised fracture and fault systems. The local geological structure is the dominant feature controlling the occurrence of fractured-rock aquifers, with the lithology of the rocks having limited influence and affecting only the extent of structural development. The lateral continuity of the aquifer systems along the dominant geological structures is poorly understood, although ellipsoidal drawdowns associated with mine dewatering suggest that the aquifers are strongly directionally dependant with the greatest permeability parallel to the major structures (Johnson et al., 1999). Recharge of the groundwater flow systems is by rainfall, mainly during large events when augmented by surface runoff and local flooding.

2.6.1 Proposed Production Borefield

The APC groundwater exploration programme was based on interrogation of available geological and geophysical (magnetic) data sets for identification of geological structures which might have the potential to host secondary porosity and permeability. Specifically targeted were structures off the playa system recharged by rainfall and consequently less saline than the brine groundwater resource. Approximately 30 potential targets on 12 structures were identified from the 400 kilometres of structures which exist in the vicinity of the project area. The 30 initial targets were refined to 20, largely on the basis of accessibility and proximity to the project operations (Figure 4). Terran Imaging was commissioned to conduct resistivity transects of at least 378 metres in length across the 20 targets in order to better identify those suitable for drilling. Data were acquired using a ZZ FlashRes multi-channel resistivity system, using a combination of dipole-dipole and Schlumberger electrode arrays for a good combination of near surface resolution and depth of investigation respectively.

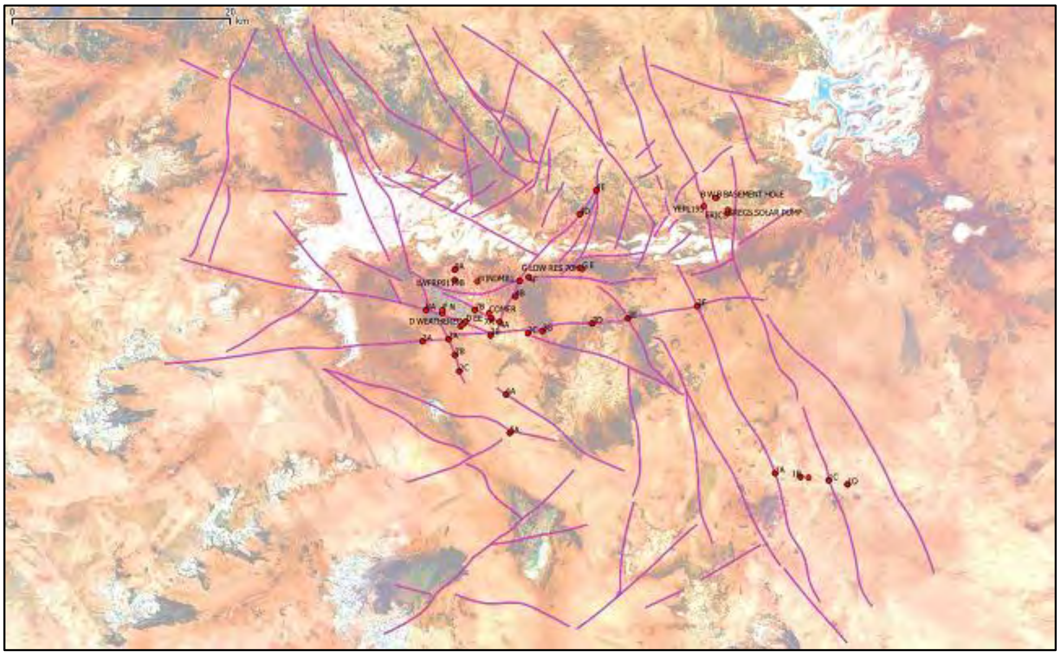

Figure 4: Bedrock geological structures targeted for fractured rock aquifers

Given the narrow and linear nature of the targets, the first hole was placed on the optimal location according to the resistivity survey results. If the yield during drilling was sufficient, a production bore was constructed and a monitoring bore drilled on the same pad and along strike of the first bore. If the drilling yield was not prospective, only a monitoring bore was constructed. However, if the monitoring bore produced a higher drilling yield, it was completed as a production bore – which resulted in two production bores at the one site. While depths varied somewhat, in general, each test production bore was drilled to 60-90 m depth and encountered several fracture zones (construction details for all drilled bores are summarised in Appendix 1 and bore logs are provided in Appendix 2).

By the conclusion of the exploration program, nine (9) production bores were constructed with their locations relative to existing stock water bores indicated in Figure 5. Table 2 summarises the Production Bore details and predicted drawdown levels. Most bores had multiple fracture inflow zones and the sustainable pumping rates selected maintain the bore water level above the primary inflow zone. The drawdowns predicted are that experienced directly at the bore itself. The drawdown radius of influence will likely be an ellipsoid oriented along the geological structure, and shallower with increased distance from each bore. A conservative three metre drawdown calculation is used for environmental impact assessment purposes, which at the proposed abstraction rates, extends a maximum distance of 310m from each bore. All existing stock watering bores are located considerable distances outside of these zones of influence.

All production and monitoring bores are to be fitted with transducers for continuous water level monitoring. Groundwater quality monitoring was undertaken at the time of drilling and indicated that groundwater was generally fresh to brackish with a few saline bores (Table 3).

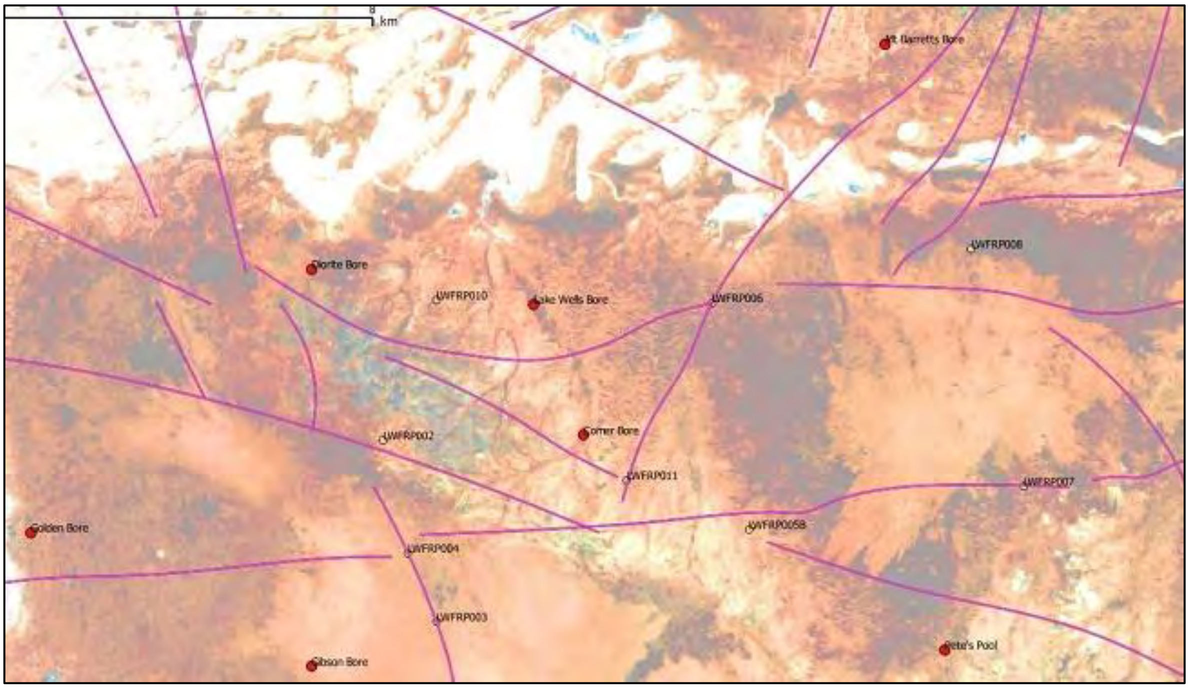

Figure 5: The location of the proposed freshwater production bores and all existing pastoral stock water bores.

Table 2: Production bore construction and expected drawdown details

Production Bore	Hole Depth (m)	CRT Q (L/s)	SWL Prior to Test (mbmpt)	Monitor Bore	r (m)	Top of Primary Fracture Inflow Zones (mbgl)	Proposed Pumping Rate (L/s)	Predicted Pumping Bore Drawdown after 12 months
LWFRP002	70	12.2	23.88	LWFRM005	10.88	34	12	2.2
LWFRP003	78	0.8	14.51	LWFRM007	9.95	30	0.8	10
LWFRP004	72	8.5	20.65	LWFRM008	12.62	28	5.5	6
LWFRP005B	84	1.5	21.28	LWFRP05A	11.15	36	1.5	13.5
LWFRP006	64	3	8.6	LWFRM011	25.86	40	3	22
LWFRP007	84	0.9	24.39	LWFRM013	25.70	44	0.95	7
LWFRP008	42	1.5	8.30	LWFRM014R	18.72	25	1.5	22
LWFRP009	90	0.6	38.13	LWFRM015	13.34	50	0.65	17
LWFRP011	72	1.8	10.65	LWFRMP010	14.25	20	1.8	24
LWFRP012	66	3	17.75	LWFRM010	14.40	24	3.1	11

Table 3: Production Bore Groundwater Quality Monitoring Results

Bore	Ca	Mg	Na	K	S	SO4	Cl	As	Cr	Cu	Pb	As	TDS	SG	Alkalinity	Anion	Cation
LWFRP002	79	60	180	<10	60	180	250	<0.01	0.5	1	<0.05	<0.01	1200	1	200	14.8	17
LWFRP003	92	55	390	20	50	150	500	<0.01	<0.5	<0.5	<0.05	<0.01	1650	0.99	290	23	26.7
LWFRP004	110	305	370	<10	60	180	600	0.01	<0.5	1	<0.05	0.01	1700	1	320	27.1	30.2
LWFRP005B	69	45	220	<10	40	120	300	<0.01	<0.5	1	<0.05	<0.01	1000	1	140	13.8	16.8
LWFRP006	509	8250	64600	3090	8100	24300	103700	<0.01	0.5	0.5	<0.05	<0.01	211800	1.14	70	3430	3590
LWFRP007	203	92	380	30	100	300	700	<0.01	<0.5	0.5	<0.05	<0.01	2050	1	150	29	35.4
LWFRP008	508	5610	44600	2000	5670	17000	71000	<0.01	<0.5	1.5	<0.05	<0.01	146450	1.09	120	2360	2480
LWFRP009	461	305	1340	40	140	420	2500	0.08	0.5	1.5	<0.05	0.08	5650	1	70	80.7	91.8
LWFRP011	218	5240	39600	2100	4700	14100	63750	0.06	<0.5	1	<0.05	0.06	129150	1.08	120	2090	2220
LWFRP012	106	45	200	<10	70	210	300	0.08	<0.5	<0.5	0.05	0.08	950	1	80	14.4	17.9

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APPENDICES

APPENDIX 1: FRACTURED ROCK BOREFIELD BORE DETAILS

Bore Name	Easting	Northing	Drilled Depth (m)	Screened Interval (m)	Completion Date	Airlift (L/s)
LWFRP001	507171	6978217	67	12.5 – 66.5	31/5/17	0.2
LWFRM001	507161	6978218	66	11.5-35.5, 59.5-65.5	2/6/17	Neg
LWFRM002	507722	6977381	72	17.3-23.3, 29.3-41.3, 65.3-71.3	3/6/17	1 L/s (0.25!)
LWFRM003	505219	6977005	70	33.5-45.5, 63.5-69.5	4/6/17	neg
LWFRM004	505027	6976833	65	58.5-64.5	6/6/17	Neg
LWFRP002	503227	6977923	70	33.5-39.5,61.5-63.5	9/6/17	15
LWFRM005	503233	6977930	70	58-70	10/6/17	15
LWFRM006	504806	6972577	78	64-76	12/6/17	0
LWFRP003	504381	6974056	78	30-36, 66-78	14/6/17	5
LWFRM007	504379	6974065	78	66-78	16/6/17	5
LWFRP004	503759	6975519	72	24-30, 60-72	17/6/17	8
LWFRM008	503762	6975508	72	60-72	19/6/17	
LWFRM009	501373	6975328	72	60-72	20/6/17	0.3
LWFRP012	508468	6977089	66	24-36, 48-54	21/6/17	5
LWFRM010	508461	6977079	72	60-72	22/6/17	0.8
LWFRP005A	511073	6976024	84	36-40, 72-84	23/6/17	1.7
LWFRP005B	511080	6976017	84	36-48, 72-78	26/6/17	3.5
LWFRP006	510279	6980859	66	22-34, 40-52	28/6/17	3.5
LWFRM011	510295	6980875	50	65-71	29/6/17	
LWFRM012	510006	6979785	72	65-71	1/7/17	0.1
LWFRP007	516760	6976879	84	36-48, 54-60, 72-84	3/7/17	1.5
LWFRM013	516733	6976879	84	48-54, 78-84	5/7/17	0.1
LWFRP008	515821	6982008	52	23.8-41.8	6/7/17	4.5
LWFRM014R (redrill)	515836	6982004	48	24-48	24/7/17	
LWFRP009	528368	6988478	93	54-72, 84-90	10/7/17	2
LWFRM015	528377	6988470	93	84-90	12/7/17	
LWFRM016	536786	6962808	78	64.7-76.7	14/7/17	0.1
LWFRP011	504359	6980912	74	18-24, 36-42, 66-72	20/7/17	2
LWFRP010	504359	6980925	72	12-18, 48-54, 66-72	17/7/17	1.2
LWFRM017	515806	6986948	69	54-66	15/7/17	2

APPENDIX 2: PRODUCTION BORE LOGS

COMPOSITE WELL LOG

Bore No: LWFRP002

31 Ord Street
West Perth
WA 6005
Australia
t: +61 (8) 9322 1003
australianpotash.com.au

Client: Australian Potash
Project: Lake Wells Potash Project

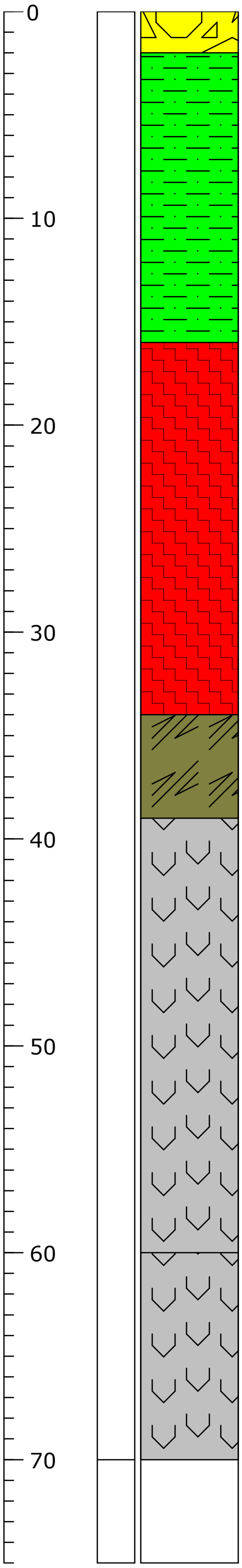
Commenced: 6/06/2017
Completed: 9/06/2017
Drilled: Acqua Drill
Logged By: Australian Potash

Method: 0-70m = Conv Hammer
Fluid: Air
Bit Record: 0-5.5m = 11"
5.5-70m = 9"

Area: Lake Wells
Elevation:
Easting: 503227
Northing: 6977923
Projection: GDA 94 zone 51

Static Water Level: 23.41 (mbtoc)
Date: 18/06/2017
Remarks: 0.29m Stick Up

Depth (mbgl) | **Strat** | **Graphic Log** | **Lithological Description** | **Aquifer** | **Field Notes** | **Well Completion: Diagram, Notes**



Alluvium: transported alluvim Light brown/ red brown, silt to coarse sand and gravels (lithics), minor calcrete.

Mudstone: calcrete or extremely weather mudstone (?), cream, fine grained, iron oxide and manganese stains and coatings on joint and fracture faces, no clay.

Quartzite: light brown, massive, microcrystaline, siliceous and hard, Fe oxide and Mn coats. Occasional softer material (carbonate/dolomite?). Broken ground and very large chips (>10cm).

Meta Volcanic: light grey (fresh) to khaki (altered), hard, massive siliceous microcystaline groundmass with occasional white blebs (possibly after feldspar), with occasional softer light brown folliated rock (meta claystone/siltstone ?). Common large sample chips (>10 cm), typically with joint faces and Fe oxide and Mn coats and stains.

Meta Mafic: black, very fine grained groundmass, weakly foliated, occasional light medium to coarse white blebs. Occasional quartz veining. Occasional iron oxide coats and water stains throughout.

Meta Mafic: as above, (basalt/dolerite?), black, very fine grained groundmass, weakly foliated, occasional light medium to coarse white blebs. Trace iron oxide coats and water stains, with completely filled (annealed) joint voids.

FWS. (25m)

Fracture zone/broken ground, lost circulation 28 - 36m, air exiting old dry well (503177 mE, 6977929 mN, 18m deep approx 50m north of LWFRM005), which was plugged.

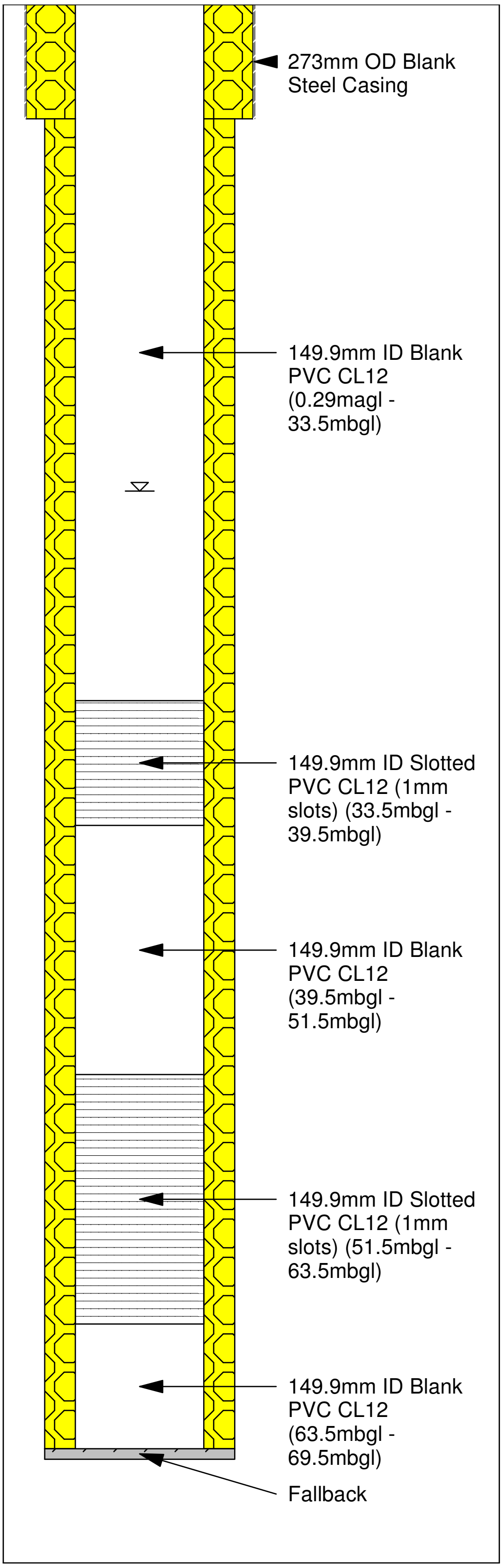
Airlift = >10 (L/s). (38m).

Airlift = > 8 (L/s). Broken ground, fractured material @46m.

No airlift due to lost circulation (re-established once drilling again). (56m)

Airlift ~15 to 20 (L/s). Too much water to measure, v-notch not feasible without major earthworks and delay - will hydraulic test later. (58m)

Airlift = > 10 (L/s). Some lost circulation. (70m) EOH.



273mm OD Blank Steel Casing

149.9mm ID Blank PVC CL12 (0.29magl - 33.5mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (33.5mbgl - 39.5mbgl)

149.9mm ID Blank PVC CL12 (39.5mbgl - 51.5mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (51.5mbgl - 63.5mbgl)

149.9mm ID Blank PVC CL12 (63.5mbgl - 69.5mbgl)

Fallback

File Ref: \\dc01\Jobs\058\2.TECH\Borelogs\Fresh\Production Bores.zip\

Well No: LWFRP002

31 Ord Street
West Perth
WA 6005
Australia
t: +61 (8) 9322 1003
australianpotash.com.au

COMPOSITE WELL LOG

Bore No: LWFRP003

Client: Australian Potash
Project: Lake Wells Potash Project

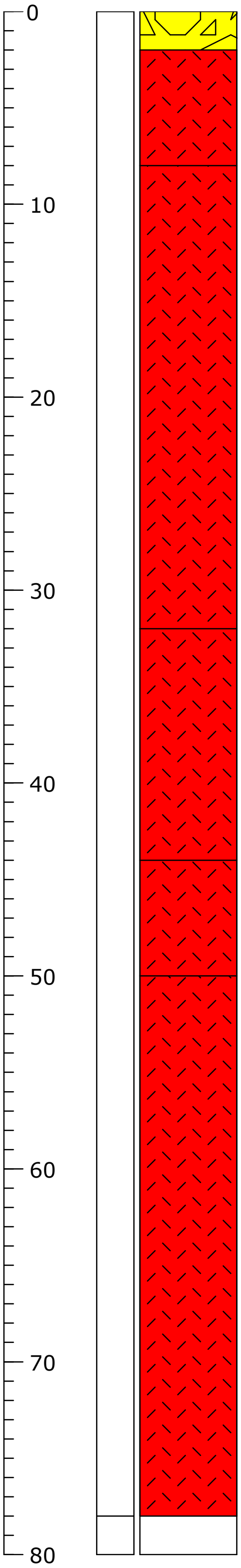
Commenced: 13/06/2017
Completed: 14/06/2017
Drilled: Acqua Drill
Logged By: Australian Potash

Method: 0-78m = Conv Hammer
Fluid: Air
Bit Record: 0-5.5m = 11"
5.5-78m = 9"

Area: Lake Wells
Elevation:
Easting: 504381
Northing: 6974056
Projection: GDA 94 zone 51

Static Water Level: 13.83 (mbtoc)
Date: 17/06/2017
Remarks: 0.46m Stick Up

Depth (mbgl)	**Strat**	**Graphic Log**	**Lithological Description**	**Aquifer**	**Field Notes**	**Well Completion** Diagram	**Well Completion** Notes



Alluvium: transported alluvim Light brown/ red brown, silt to coarse sand and gravels (lithics), minor calcrete, extremely weathered.

Granite: extremely weathered, with cream, orange, pink and light brown lithics. Trace bioite schist. Iron oxides and stains throughout.

Granite: pink, extremely weathered grading down to weathered, with occasional pink "quartzite" (rubbly around 23.5 and 25.5, large > 5cm chips). Orthoclase >plagioclase>quartz>mafics. Occasional bioite schist. Fractures at 27.5, 28 to 28.5 and 29.5m. Iron oxide coats and stains throughout.

Granite: light grey, fresh from 34m. Mostly white feldspars with mafic (mostly biotite) flecks throughout. Occasional mafic-rich intervals (xenoliths?) Driller reports "gravelly" zone 33 to 33.2m. Large joint bounded chips (> 3 cm) in 34 to 36m sample interval. Occasional iron oxide coats and stains.

Granite: light grey, fresh, as above, but with occasional pink phases and black, very fine grained foliated mafic phases. Occasional iron oxide coats and stains.

Granite: meta granite, pink, orthoclase >plagioclase>quartz>mafics. Trace iron oxies and stains.

FWS. (20.5m)

Rubbly - Drillers observation. (23.5m)

Airlft = 1.7 (L/s). bucket test. EC = 1263 uS/cm. (24m)

Rubbly - Drillers observation. (25.5m)

Airlift = 3.5 to 4 (L/s) estimate. (30m)

Driller reports "gravelly" zone. (33 - 33.2m)

Rubble zone - large joint bounded chips (> 3 cm). (34-36m)

Airlift = 5 (L/s) estimate. (36m)

Airlift = 2 (L/s) estimate. (42m)

Airlift = 3.0 (L/s) bucket test. (48m)

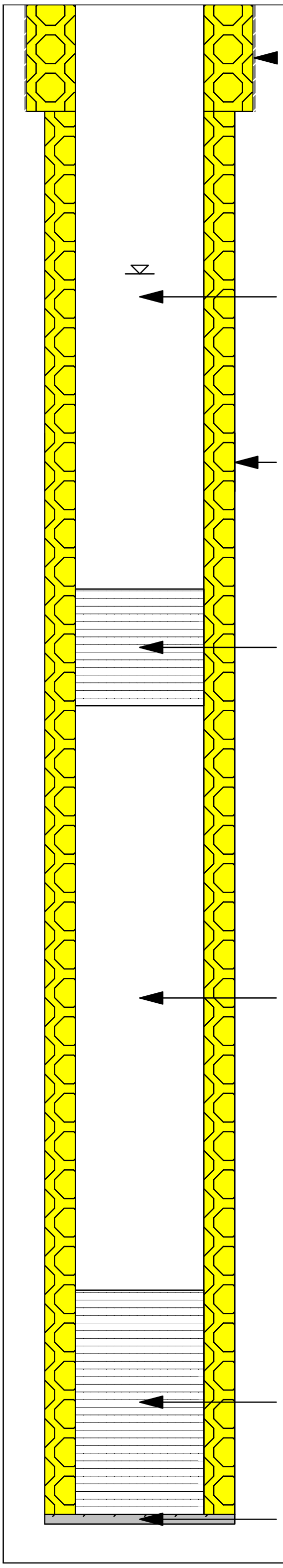
Airlift = 3.5 (L/s) bucket test. EC = 1273 uS/cm. (54m)

Airlft = 4 to 5 (L/s) estimate. EC = 2400 uS/cm. (66m)

Airlft = 4 to 5 (L/s) estimate. EC = 2200 uS/cm. (72m)

Airlft = 4.6 (L/s) bucket test. EC = 2720 uS/cm. (78m)

EOH. Completed Bore: EC = 2490 uS/cm.



273mm OD Blank Steel Casing

149.9mm ID Blank PVC CL12 (0.46magl - 30mbgl)

1.6mm - 3.2mm Graded Gravel

149.9mm ID Slotted PVC CL12 (1mm slots) (30mbgl - 36mbgl)

149.9mm ID Blank PVC CL12 (36mbgl - 66mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (66mbgl - 78mbgl)

Fallback

AUSTRALIAN POTASH

31 Ord Street
West Perth
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COMPOSITE WELL LOG

Bore No: LWFRP004

Client: Australian Potash

Project: Lake Wells Potash Project

Commenced: 16/06/2017
Completed: 17/06/2017
Drilled: Ausdrill NW
Logged By: Acqua Drill

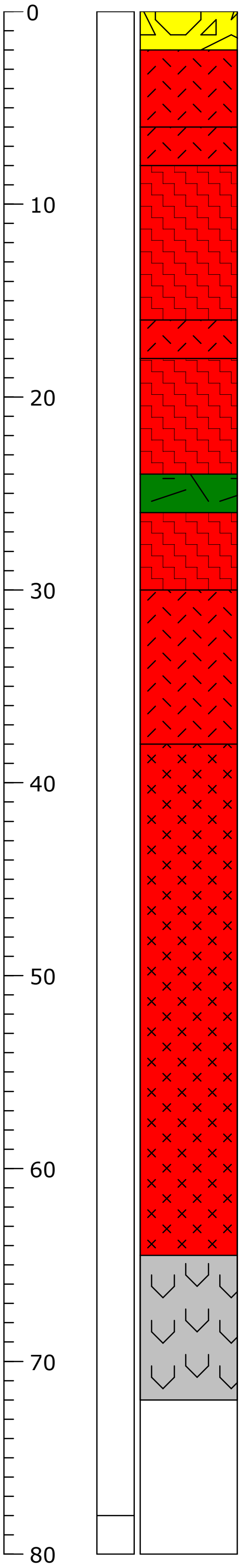
Method: 0-78m = Conv Hammer

Fluid: Air
Bit Record: 0-5.5m = 12"
5.5-78m = 9"

Area: Lake Wells
Elevation:
Easting: 503759
Northing: 6975519
Projection: GDA 94 zone 51

Static Water Level: 19.17 (mbtoc)
Date: 29/06/2017
Remarks: 0.45m Stick Up

Depth (mbgl) | **Strat** | **Graphic Log** | **Lithological Description** | **Aquifer** | **Field Notes** | **Well Completion: Diagram** | **Notes**



Lithological Description

Alluvium: transported soil red brown, with clay and quartz chips.

Granite: clayey red brown soil with major quartzite chips and boulders, with dark (mafic) inclusions.

Granite: extremely weathered, green grey with clear vein quartz chips. Other quartz is milky with dark inclusions. Iron oxide coats and stains throughout.

Quartzite: white to orange with mafic inclusions. Massive but highly fractured (broken ground) Iron oxide coats and stains throughout.

Granite: extremely weathered, sample clayey and dark green but only quartz grains coated in green weathered mineral are retained in seive.

Quartzite: white and orange quartz, massive Iron oxides and stains throughout. Very coarse chips from 20 to 24m.

Pegmatite Vein: large quartz and pink feldspar chips. Trace blue/green massive clay.

Quartzite: white and orange quartz, massive,Iron oxides and stains throughout.

Granite: light grey, quartz has mafic inclusions. Possibly with pegmatic phases given large quartz chips (>5mm). Iron oxide coats and stains throughout.

Granodiorite: light grey, mostly quartz and white feldspar with minor biotite and mafics, with occasional pink (alkali feldspar?) intervals . Common iron oxide coats and stains on joint and defect faces.

Meta Mafic: (Gabbro?), black fine to medium grained (occasionally coarse) mafics and white feldspar, wealky foliated. Minor iron oxide coats and stains possibly on contact fracture, but otherwise no coats or stains observed.

Field Notes

FWS. Airlift = 1.5 (L/s). (23m)

Driller observed fractures (25.5, 28, 28.5, 29 and 29.5m)

Airlift ~ 8 to 10 (L/s) estimate (30m)

Airlift ~ 8 (L/s) estimate (36m)

Fractures (drillers observation) (37 and 39.5m)

Fracture zone 40-46m

Airlift ~ 8 (L/s) estimate (42m)

Airlift ~ 8 (L/s) estimate (48m)

Fracture (drillers observation) (53m)

Airlift ~ 8 (L/s) estimate (54m)

Numerous fractures (58 - 62m)

Airlift ~ 8 (L/s) estimate (60m)

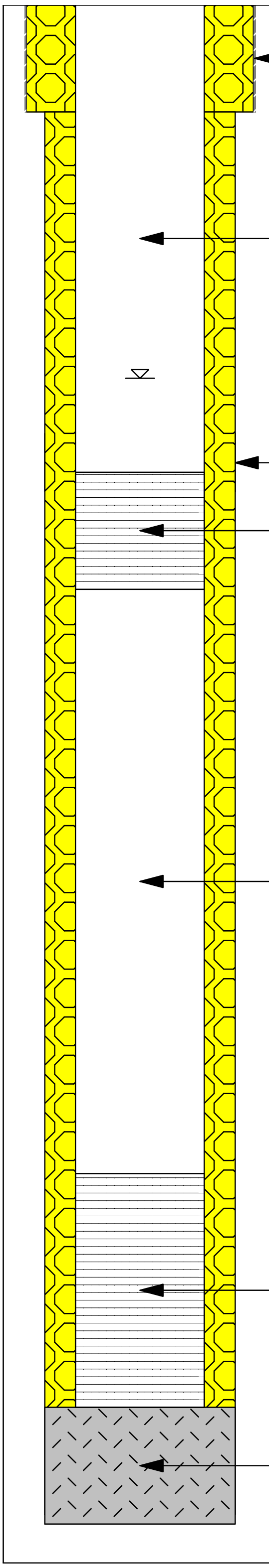
Fracture (65.5m)

Airlift ~ 8 (L/s) estimate. EC = 3000uS/cm. (66m)

Airlift ~ 6.7 (L/s) measured. EC = 3050 uS/cm. (72m)
Completed Bore. EC = 3080 uS/cm.

EOH.

Well Completion



273mm OD Blank Steel Casing

149.9mm ID Blank PVC CL12 (0.45magl - 24mbgl)

1.6mm - 3.2mm Graded Gravel

149.9mm ID Slotted PVC CL12 (1mm slots) (24mbgl - 30mbgl)

149.9mm ID Blank PVC CL12 (30mbgl - 60mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (60mbgl - 72mbgl)

Fallback

COMPOSITE WELL LOG

Bore No: LWFRP005B

AUSTRALIAN POTASH

31 Ord Street
West Perth
WA 6005
Australia
t: +61 (8) 9322 1003
australianpotash.com.au

Client: Australian Potash
Project: Lake Wells Potash Project

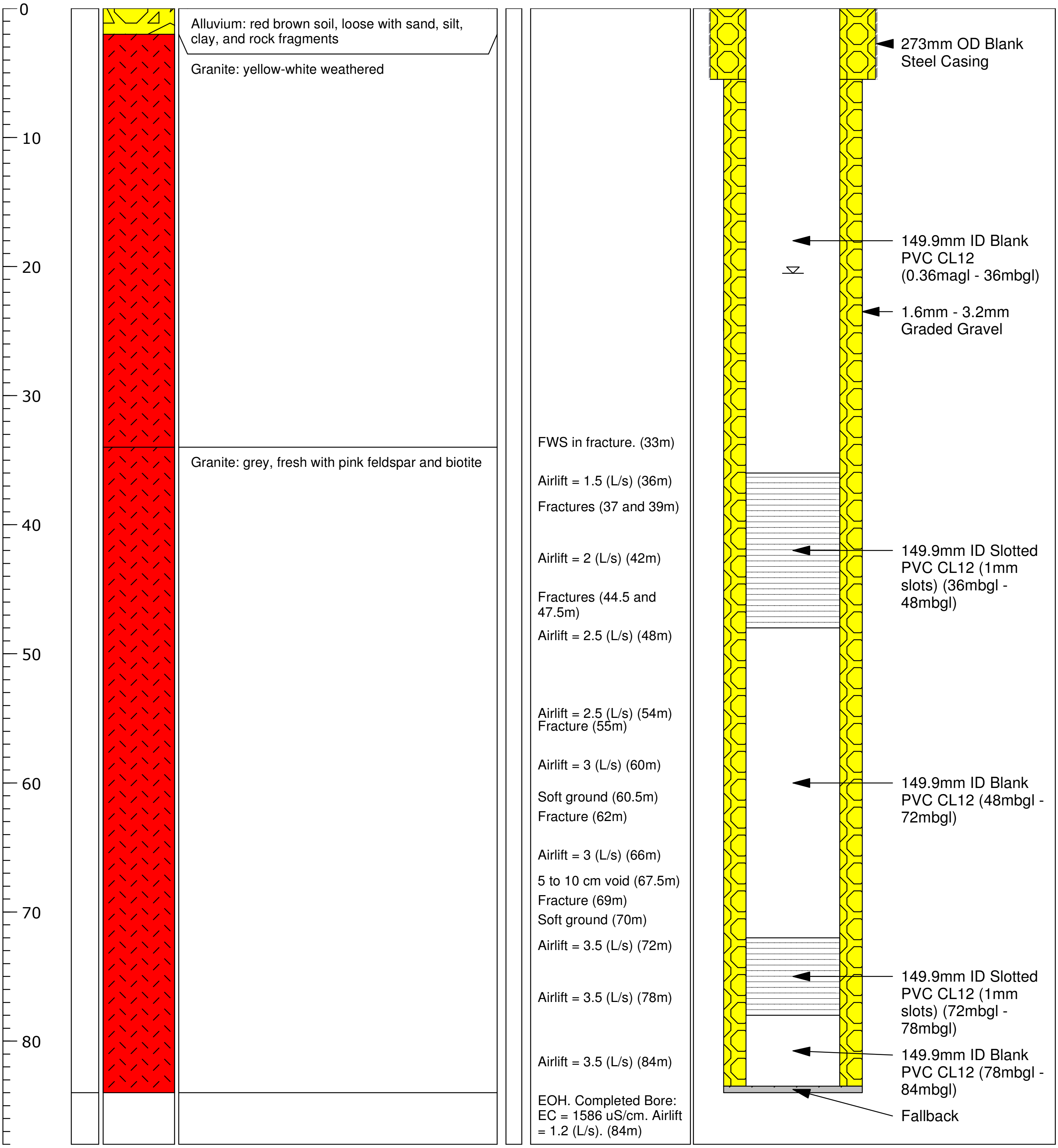
Commenced: 23/06/2017
Completed: 26/06/2017
Drilled: Acqua Drill
Logged By: Australian Potash

Method: 0-84m = Conv Hammer
Fluid: Air
Bit Record: 0-5.5m = 12"
5.5-84m = 9"

Area: Lake Wells
Elevation:
Easting: 511080
Northing: 6976017
Projection: GDA 94 zone 51

Static Water Level: 20.53 (mbtoc)
Date: 29/06/2017
Remarks: 0.36m Stick Up

Depth (mbgl)	Strat	Graphic Log	Lithological Description	Aquifer	Field Notes	Well Completion: Diagram	Well Completion: Notes



Alluvium: red brown soil, loose with sand, silt, clay, and rock fragments

Granite: yellow-white weathered

Granite: grey, fresh with pink feldspar and biotite

FWS in fracture. (33m)
Airlift = 1.5 (L/s) (36m)
Fractures (37 and 39m)
Airlift = 2 (L/s) (42m)
Fractures (44.5 and 47.5m)
Airlift = 2.5 (L/s) (48m)
Airlift = 2.5 (L/s) (54m)
Fracture (55m)
Airlift = 3 (L/s) (60m)
Soft ground (60.5m)
Fracture (62m)
Airlift = 3 (L/s) (66m)
5 to 10 cm void (67.5m)
Fracture (69m)
Soft ground (70m)
Airlift = 3.5 (L/s) (72m)
Airlift = 3.5 (L/s) (78m)
Airlift = 3.5 (L/s) (84m)
EOH. Completed Bore: EC = 1586 uS/cm. Airlift = 1.2 (L/s). (84m)

273mm OD Blank Steel Casing
149.9mm ID Blank PVC CL12 (0.36magl - 36mbgl)
1.6mm - 3.2mm Graded Gravel
149.9mm ID Slotted PVC CL12 (1mm slots) (36mbgl - 48mbgl)
149.9mm ID Blank PVC CL12 (48mbgl - 72mbgl)
149.9mm ID Slotted PVC CL12 (1mm slots) (72mbgl - 78mbgl)
149.9mm ID Blank PVC CL12 (78mbgl - 84mbgl)
Fallback

AUSTRALIAN POTASH

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WA 6005
Australia
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australianpotash.com.au

COMPOSITE WELL LOG

Bore No: LWFRP006

Client: Australian Potash
Project: Lake Wells Potash Project

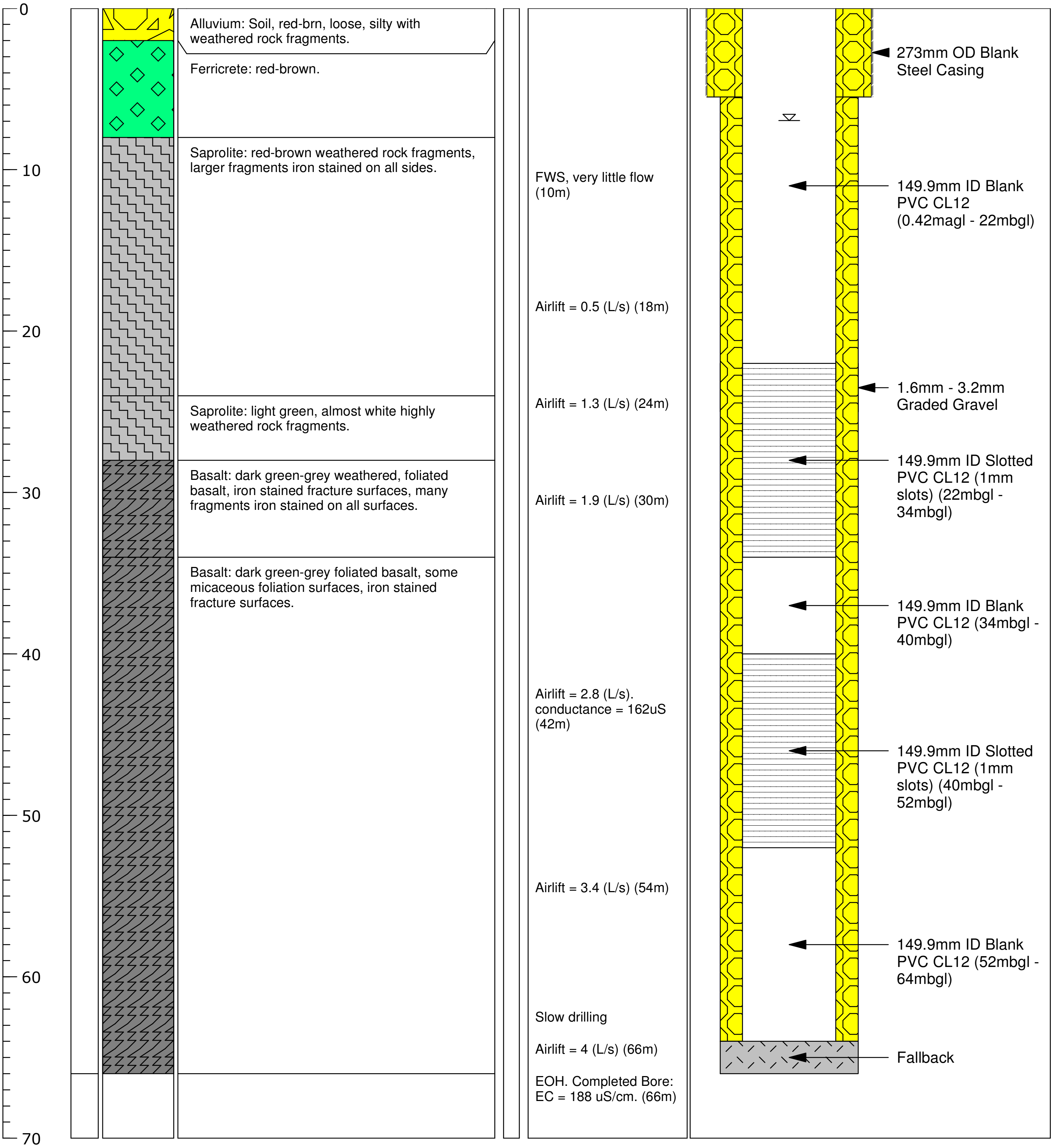
Commenced: 27/06/2017
Completed: 27/06/2017
Drilled: Acqua Drill
Logged By: Australian Potash

Method: 0-66m = Conv Hammer
Fluid: Air
Bit Record: 0-5.5m = 12"
5.5-66m = 9"

Area: Lake Wells
Elevation:
Easting: 510279
Northing: 6980859
Projection: GDA 94 zone 51

Static Water Level: 6.96 (mbtoc)
Date: 29/06/2017
Remarks: 0.42m Stick Up

Depth (mbgl)	Strat	Graphic Log	Lithological Description	Aquifer	Field Notes	Well Completion Diagram	Well Completion Notes



Lithological Description

Alluvium: Soil, red-brn, loose, silty with weathered rock fragments.

Ferricrete: red-brown.

Saprolite: red-brown weathered rock fragments, larger fragments iron stained on all sides.

Saprolite: light green, almost white highly weathered rock fragments.

Basalt: dark green-grey weathered, foliated basalt, iron stained fracture surfaces, many fragments iron stained on all surfaces.

Basalt: dark green-grey foliated basalt, some micaceous foliation surfaces, iron stained fracture surfaces.

Field Notes

FWS, very little flow (10m)

Airlift = 0.5 (L/s) (18m)

Airlift = 1.3 (L/s) (24m)

Airlift = 1.9 (L/s) (30m)

Airlift = 2.8 (L/s). conductance = 162uS (42m)

Airlift = 3.4 (L/s) (54m)

Slow drilling

Airlift = 4 (L/s) (66m)

EOH. Completed Bore: EC = 188 uS/cm. (66m)

Well Completion Notes

273mm OD Blank Steel Casing

149.9mm ID Blank PVC CL12 (0.42magl - 22mbgl)

1.6mm - 3.2mm Graded Gravel

149.9mm ID Slotted PVC CL12 (1mm slots) (22mbgl - 34mbgl)

149.9mm ID Blank PVC CL12 (34mbgl - 40mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (40mbgl - 52mbgl)

149.9mm ID Blank PVC CL12 (52mbgl - 64mbgl)

Fallback

AUSTRALIAN POTASH

31 Ord Street
West Perth
WA 6005
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t: +61 (8) 9322 1003
australianpotash.com.au

COMPOSITE WELL LOG

Bore No: LWFRP007

Client: Australian Potash
Project: Lake Wells Potash Project

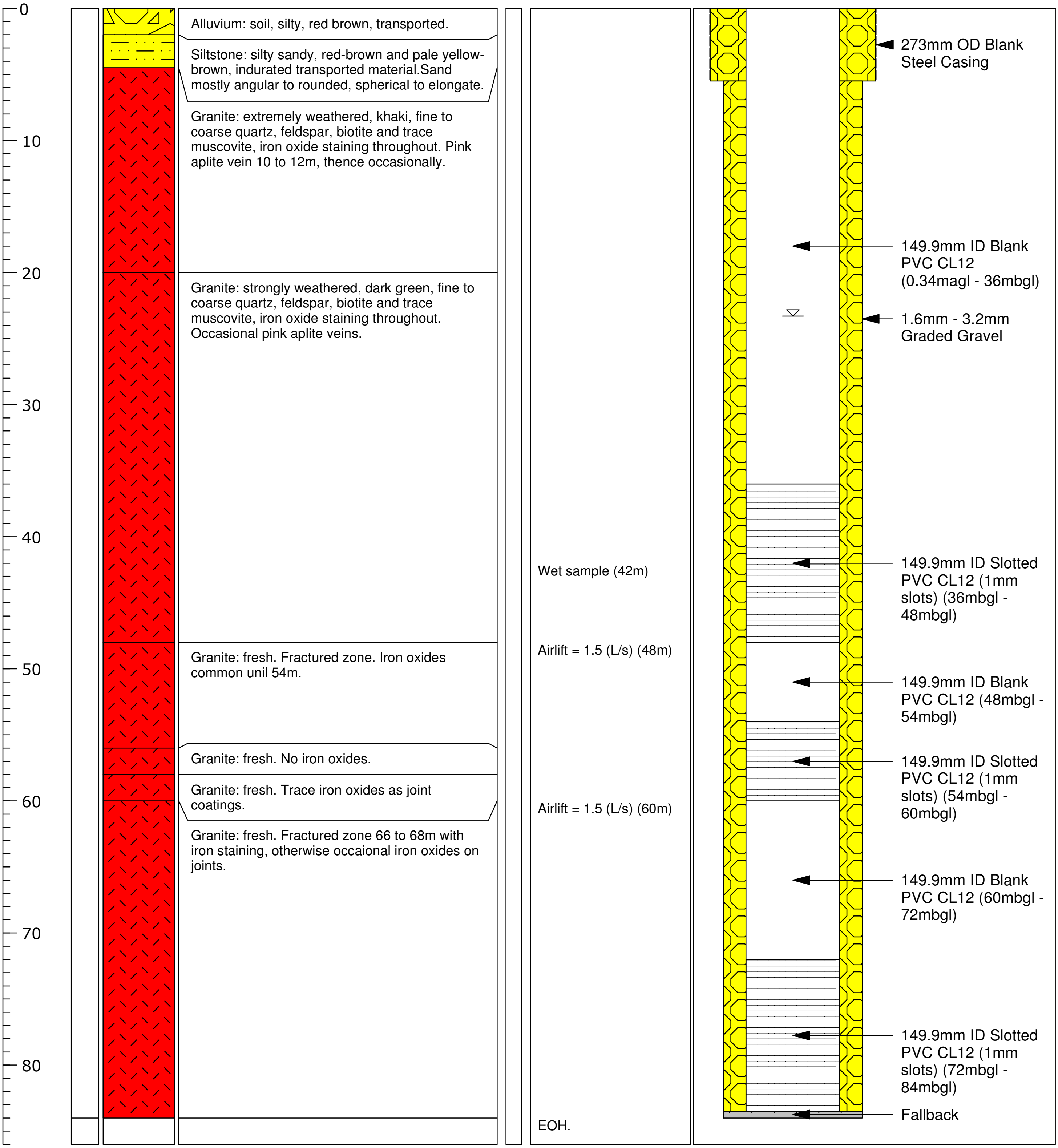
Commenced: 2/07/2017
Completed: 3/07/2017
Drilled: Acqua Drill
Logged By: Australian Potash

Method: 0-84m = Conv Hammer
Fluid: Air
Bit Record: 0-6m = 11"
6-84m = 9"

Area: Lake Wells
Elevation:
Easting: 516759
Northing: 6976875
Projection: GDA 94 zone 51

Static Water Level: 23.30 (mbtoc)
Date: 23/07/2017
Remarks: 0.34m Stick Up

Depth (mbgl)	Strat	Graphic Log	Lithological Description	Aquifer	Field Notes	Well Completion: Diagram	Well Completion: Notes



Alluvium: soil, silty, red brown, transported.

Siltstone: silty sandy, red-brown and pale yellow-brown, indurated transported material.Sand mostly angular to rounded, spherical to elongate.

Granite: extremely weathered, khaki, fine to coarse quartz, feldspar, biotite and trace muscovite, iron oxide staining throughout. Pink aplite vein 10 to 12m, thence occasionally.

Granite: strongly weathered, dark green, fine to coarse quartz, feldspar, biotite and trace muscovite, iron oxide staining throughout. Occasional pink aplite veins.

Granite: fresh. Fractured zone. Iron oxides common unil 54m.

Granite: fresh. No iron oxides.

Granite: fresh. Trace iron oxides as joint coatings.

Granite: fresh. Fractured zone 66 to 68m with iron staining, otherwise occaional iron oxides on joints.

Wet sample (42m)

Airlift = 1.5 (L/s) (48m)

Airlift = 1.5 (L/s) (60m)

EOH.

273mm OD Blank Steel Casing

149.9mm ID Blank PVC CL12 (0.34magl - 36mbgl)

1.6mm - 3.2mm Graded Gravel

149.9mm ID Slotted PVC CL12 (1mm slots) (36mbgl - 48mbgl)

149.9mm ID Blank PVC CL12 (48mbgl - 54mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (54mbgl - 60mbgl)

149.9mm ID Blank PVC CL12 (60mbgl - 72mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (72mbgl - 84mbgl)

Fallback

AUSTRALIAN POTASH

31 Ord Street
West Perth
WA 6005
Australia
t: +61 (8) 9322 1003
australianpotash.com.au

COMPOSITE WELL LOG

Bore No: LWFRP008

Client: Australian Potash
Project: Lake Wells Potash Project

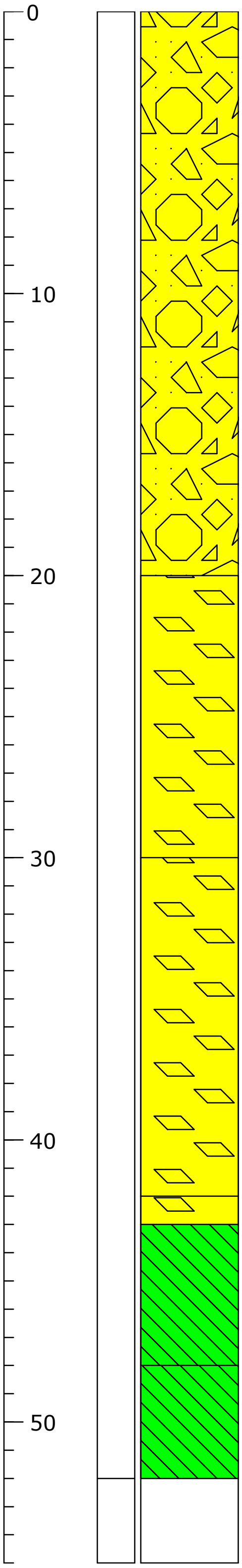
Commenced: 5/07/2017
Completed: 6/07/2017
Drilled: Acqua Drill
Logged By: Australian Potash

Method: 0-52m = Conv Hammer
Fluid: Air
Bit Record: 0-6m = 12"
6-52m = 9"

Area: Lake Wells
Elevation:
Easting: 515818
Northing: 6982006
Projection: GDA 94 zone 51

Static Water Level: 7.45 (mbtoc)
Date: 21/07/2017
Remarks: 0.36m Stick Up

Depth (mbgl) | **Strat** | **Graphic Log** | **Lithological Description** | **Aquifer** | **Field Notes** | **Well Completion** – **Diagram** | **Notes**



Lithological Description

Alluvium: top soils, gravels and sand to gritty, sandy clay and possibly calcrete.

Sand and Sandy Clay: with gravels of calcrete, possible paleo-channel.

Sand and Sandy Clay

Sand and Sandy Clay

Clay: Red clay.

Clay: Gritty clay and possibly calcrete.

Field Notes

FWS (10m)

Airlift = 0.1 (L/s) (18m)

Airlift = 1.5 (L/s). (21m)

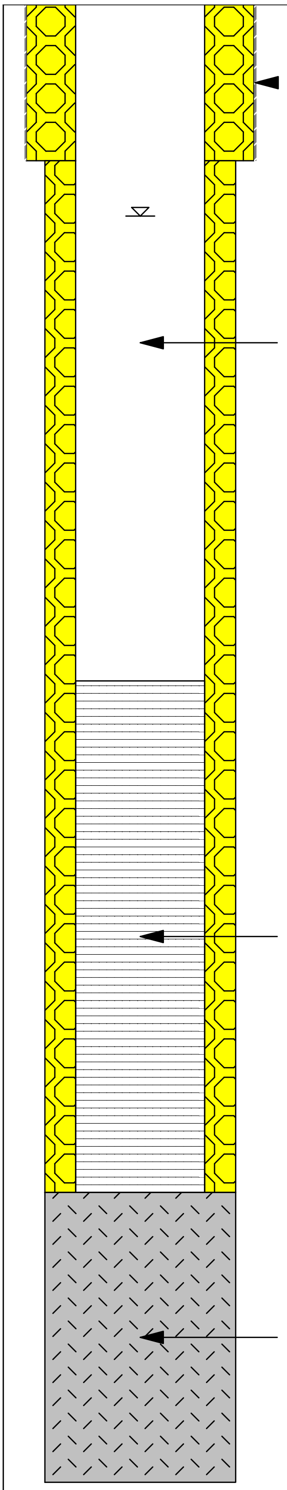
Airlift = 4 (L/s). (30m)

Airlift = 4.5 (L/s) (36m)

Airlift = 5 (L/s). (42m)

Airlift = 3 (L/s). (48m)

EOH. Completed Bore: EC = 138800 uS/cm. (52m)



273mm OD Blank Steel Casing

149.9mm ID Blank PVC CL12 (0.36magl - 23.8mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (23.8mbgl - 41.8mbgl)

Fallback

AUSTRALIAN POTASH
31 Ord Street
West Perth
WA 6005
Australia
t: +61 (8) 9322 1003
australianpotash.com.au

COMPOSITE WELL LOG

Bore No: LWFRP009

Client: Australian Potash
Project: Lake Wells Potash Project

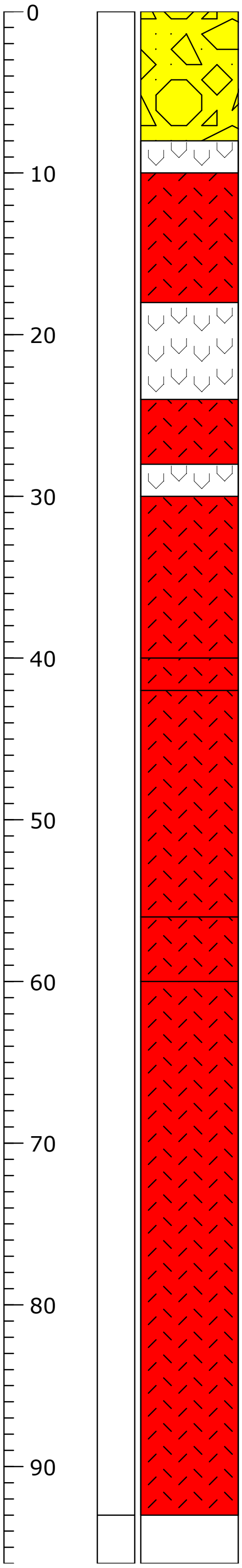
Commenced: 8/07/2017
Completed: 10/07/2017
Drilled: Acqua Drill
Logged By: Australian Potash

Method: 0-93m = Conv Hammer
Fluid: Air
Bit Record: 0-6m = 12"
6-93m = 9"

Area: Lake Wells
Elevation:
Easting: 528367
Northing: 6988477
Projection: GDA 94 zone 51

Static Water Level: 36.12 (mbtoc)
Date: 25/07/2017
Remarks: 0.32m Stick Up

Depth (mbgl)	**Strat**	**Graphic Log**	**Lithological Description**	**Aquifer**	**Field Notes**	**Well Completion** Diagram	**Well Completion** Notes



Alluvium: Red-brown, gritty clay (completely weather granite?).

Quartz Veining

Granite: Brown, gritty clay (completely weathered granite).

Quartz Veining

Granite: Brown, gritty clay (completely weathered granite).

Quartz Veining

Granite: Brown, gritty clay (completely weathered granite).

Granite: Brown, gritty clay (completely weathered granite).

Granite: Pink-brown, weathered granite, completely weathered to clay in parts.

Granite: Very silicous.

Granite: Grey, little weathering.

Airlift = 0.5 (L/s) (42m)

Airlift = 1 (L/s) (48m)

Airlift = 1.5 (L/s) (56m)

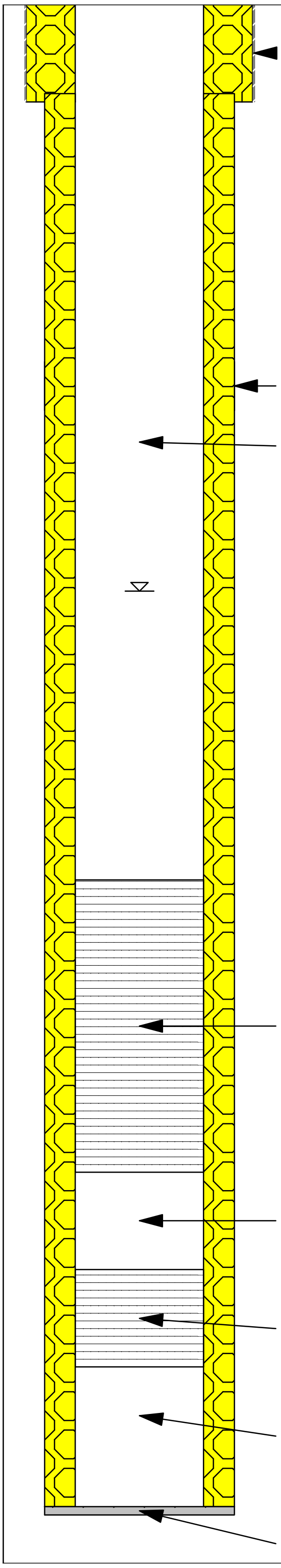
Fracture (60m)

Airlift = 1 (L/s) (65.5m)
Broken drilling (67m)
Fracture (68m)

Soft drilling - like sand (70m)

Airlift = 2 (L/s) (90m)

EOH. Completed Bore:
EC = 138800 uS/cm.



273mm OD Blank Steel Casing

1.6mm - 3.2mm Graded Gravel

149.9mm ID Blank PVC CL12 (0.32magl - 53.9mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (53.9mbgl - 71.9mbgl)

149.9mm ID Blank PVC CL12 (71.9mbgl - 77.9mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (77.9mbgl - 83.9mbgl)

149.9mm ID Blank PVC CL12 (83.9mbgl - 89.9mbgl)

Fallback

AUSTRALIAN POTASH
31 Ord Street
West Perth
WA 6005
Australia
t: +61 (8) 9322 1003
australianpotash.com.au

COMPOSITE WELL LOG

Bore No: LWFRP011

Client: Australian Potash
Project: Lake Wells Potash Project

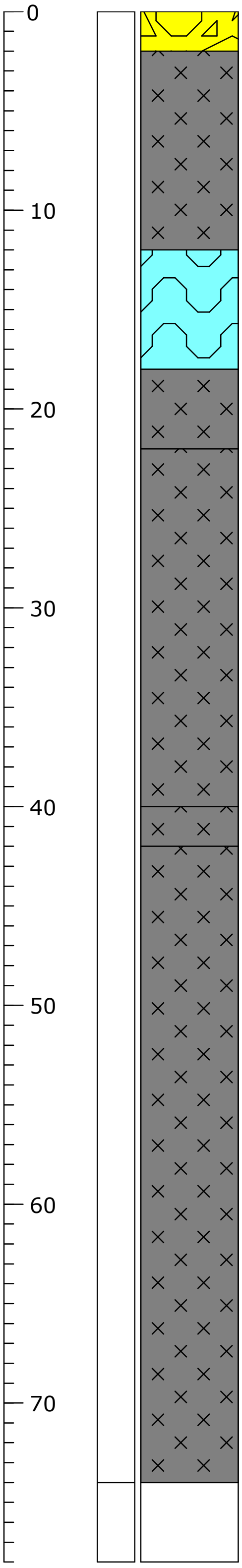
Commenced: 18/07/2017
Completed: 20/07/2017
Drilled: Acqua Drill
Logged By: Australian Potash

Method: 0-74m = Conv Hammer
Fluid: Air
Bit Record: 0-6m = 12"
6-74m = 9"

Area: Lake Wells
Elevation:
Easting: 504359
Northing: 6980912
Projection: GDA 94 zone 51

Static Water Level: 10.24 (mbtoc)
Date: 22/07/2017
Remarks: 0.42m Stick Up

Depth (mbgl)	Strat	Graphic Log	Lithological Description	Aquifer	Field Notes	Well Completion Diagram	Well Completion Notes



Alluvium: weakly, oxidised, dark blue/black, fine to medium grained mafic + minor red brown sand.

Dolerite: dark blue/black, fine to medium grained, weakly oxidised dolerite.

Porphyry: softer moderately oxidised medium to coarse grained intermediate porphyry.

Dolerite: weakly oxidised, dark blue/black, fine to medium grained dolerite.

Dolerite: dark blue/black fine to medium grained fresh dolerite.

Dolerite: wealy oxidised, white, fine to coarse grained felsic porphyry + common dolerite.

Dolerite: dark blue/black, fine to medium grained, fresh dolerite, minor quartz veining.

Airlift = 1.5 (L/s).(20m)

Airlift = 1.5 (L/s) (24m)

Airlift = 1.5 (L/s) (30m)

Airlift = 1.545 (L/s) (36m)
Flow increased at 38-41m

Airlift = 1.8 (L/s) (42m)

Airlift = 1.8 (L/s). EC = 85000 uS/cm. (48m)

Airlift = 1.8 (L/s) (54m)

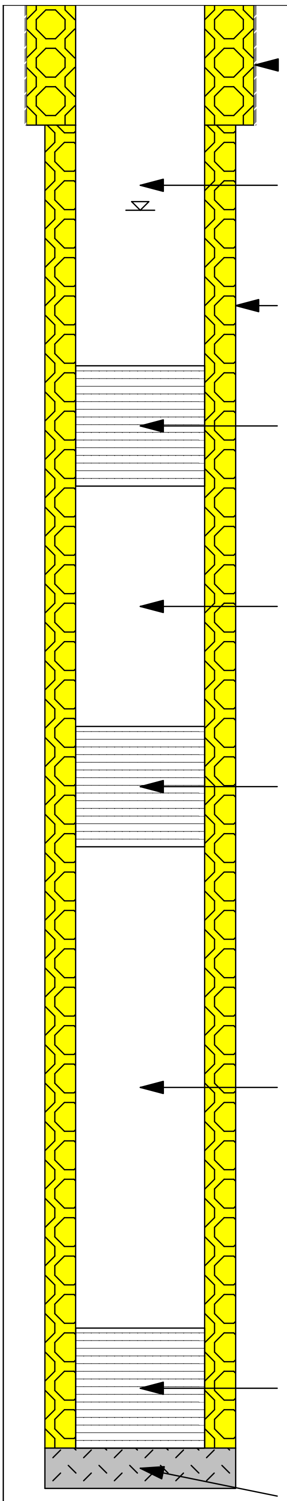
Airlift = 1.8 (L/s) (60m)

Airlift = 1.8 (L/s) (64m)

Airlift = 1.8 (L/s) (68m)

Airlift = 1.8 (L/s). Completed Bore: EC = 185000 uS/cm. (72m)

EOH. (74m)



273mm OD Blank Steel Casing

149.9mm ID Blank PVC CL12 (0.42magl - 18mbgl)

1.6mm - 3.2mm Graded Gravel

149.9mm ID Slotted PVC CL12 (1mm slots) (18mbgl - 24mbgl)

149.9mm ID Blank PVC CL12 (24mbgl - 36mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (36mbgl - 42mbgl)

149.9mm ID Blank PVC CL12 (42mbgl - 66mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (66mbgl - 72mbgl)

Fallback

COMPOSITE WELL LOG

Bore No: LWFRP012 (4A)

AUSTRALIAN POTASH

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Client: Australian Potash
Project: Lake Wells Potash Project

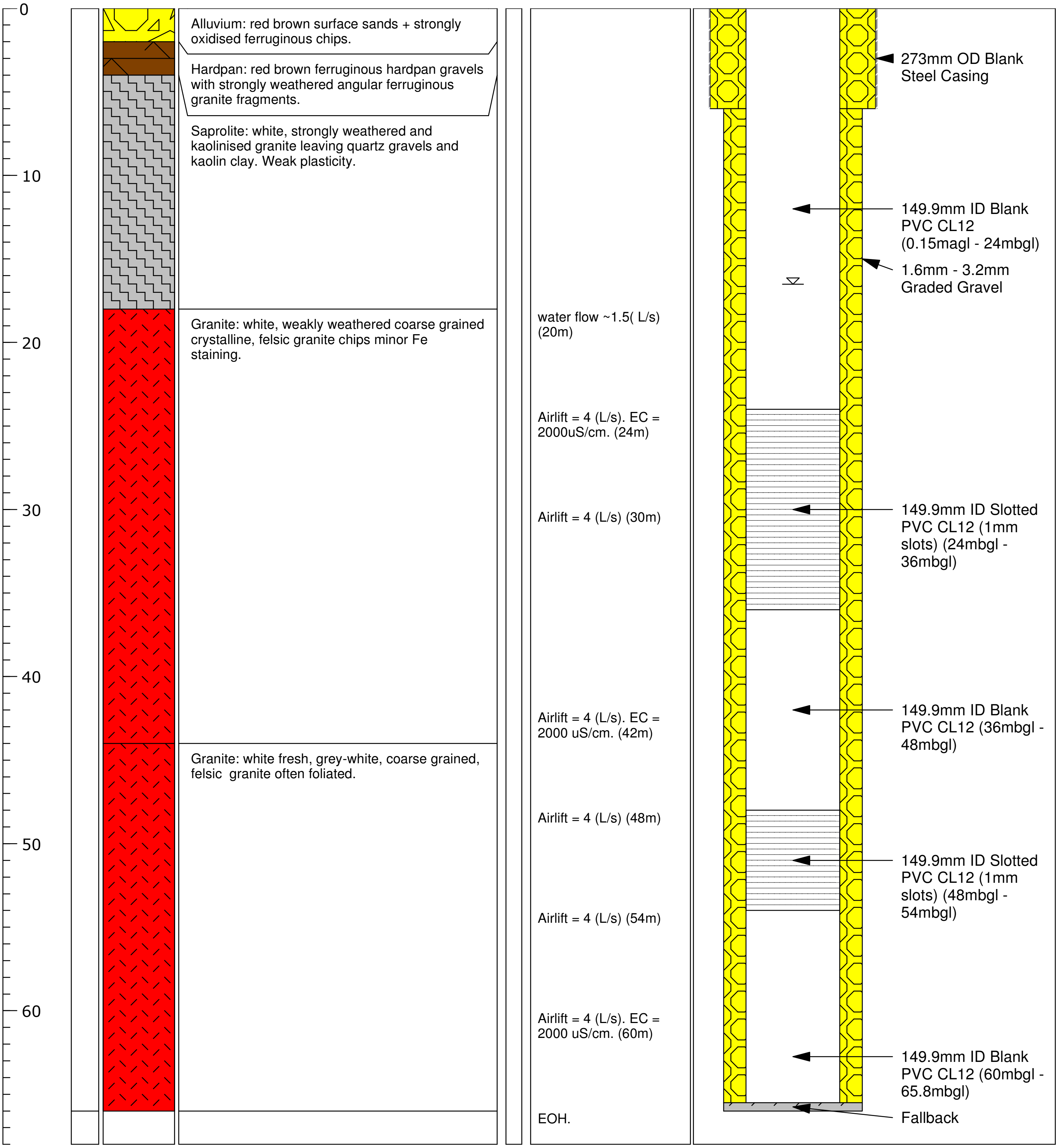
Commenced: 20/07/2017
Completed: 21/07/2017
Drilled: Acqua Drill
Logged By: Australian Potash

Method: 0-66m = Conv Hammer
Fluid: Air
Bit Record: 0-6m = 12"
6-66m = 9"

Area: Lake Wells
Elevation:
Easting: 508469
Northing: 6977091
Projection: GDA 94 zone 51

Static Water Level: 16.51 (mbtoc)
Date: 26/07/2017
Remarks: 0.15m Stick Up

Depth (mbgl)	Strat	Graphic Log	Lithological Description	Aquifer	Field Notes	Well Completion Diagram	Well Completion Notes



Alluvium: red brown surface sands + strongly oxidised ferruginous chips.

Hardpan: red brown ferruginous hardpan gravels with strongly weathered angular ferruginous granite fragments.

Saprolite: white, strongly weathered and kaolinised granite leaving quartz gravels and kaolin clay. Weak plasticity.

Granite: white, weakly weathered coarse grained crystalline, felsic granite chips minor Fe staining.

Granite: white fresh, grey-white, coarse grained, felsic granite often foliated.

water flow ~1.5(L/s) (20m)

Airlift = 4 (L/s). EC = 2000uS/cm. (24m)

Airlift = 4 (L/s) (30m)

Airlift = 4 (L/s). EC = 2000 uS/cm. (42m)

Airlift = 4 (L/s) (48m)

Airlift = 4 (L/s) (54m)

Airlift = 4 (L/s). EC = 2000 uS/cm. (60m)

EOH.

273mm OD Blank Steel Casing

149.9mm ID Blank PVC CL12 (0.15magl - 24mbgl)

1.6mm - 3.2mm Graded Gravel

149.9mm ID Slotted PVC CL12 (1mm slots) (24mbgl - 36mbgl)

149.9mm ID Blank PVC CL12 (36mbgl - 48mbgl)

149.9mm ID Slotted PVC CL12 (1mm slots) (48mbgl - 54mbgl)

149.9mm ID Blank PVC CL12 (60mbgl - 65.8mbgl)

Fallback