Appendix A Monitoring bore licence



Contact: Alister Middleton Phone: 02 6841 7423 Email: alister.middleton@nrar.nsw.gov.au

Our ref: 40BL192733 File No: Your Ref:

11 December 2018

Charlie Litchfield Snowy Hydro Limited PO Box 332 COOMA NSW 2630

By email to: charlie.litchfield@snowyhydro.com.au cc: kbrodie@emmconsulting.com.au

Dear Mr Litchfield

Re: Part V Water Act 1912 licensing for monitoring bores – MB08A, MB08B, MB10A, MB11A, MB12A & MB12B

Please find attached a copy of your monitoring bore licence which authorises the construction of monitoring bores at the locations specified in your application. Also attached is a Form A template.

Please make sure the completed Form A and plan for this bore is provided to <u>diana.smith@waternsw.com.au</u>. Failure to do so could restrict future actions relating to this licence. If you wish to make a photocopy of the completed Form A, you should do so before forwarding the form to WaterNSW.

Your attention is drawn to the nature and description of the work, terms, limitations and conditions under which the licence is issued.

Please note that the bore must be constructed at the location specified on the application being at least 40m from the high bank of any watercourse.

Condition (2) of the licence <u>applies whether the bore is successful or not</u>. The attached Form A has been provided for the recording the details of the proposed bore. The driller is required to record the details of the bore, and provide you with the completed form. The driller is also required to mark the location of the bores site on the attached plan. <u>The sketch is required even though you may have already indicated the site to the Department</u>.

If during construction poor quality water is encountered above the main supply it is essential that the bore be completed in accordance with condition (4). This will prevent contamination and pollution of the supply and ensure maximum useful life of the bore by protecting the casing and equipment against corrosion.

Please show the licence to the driller so that they are aware of any conditions affecting the construction of the bore. The driller <u>must have</u> a current driller's licence issued by the Department.

Yours sincerely

Ill, for

Rachel Daly A/Senior Water Regulation Officer – Water Regulatory Operations - West Natural Resource Access Regulator

NSW Office of Water

Murrumbidgee RegionYanco Agricultural Institute Pri2198 Irrigation Way EastYancoNSW 2703Phone: (02) 69512611

BORE LICENSE CERTIFICATE UNDER SECTION 115 OF THE WATER ACT, 1912

40BL192733

NSW Other of Water

Snowy Hydro Limited Po Box 332 Cooma NSW 2630 LICENSE NUMBER 40BL192733 DATE LICENSE VALID FROM 27-Nov-2018 DATE LICENSE VALID TO PERPETUITY FEE \$151.00 PAID ABN 72189919072 GST NIL

 LOCATION OF WORKS

 Portion(s) or Lot/Section/DP
 PARISH
 COUNTY

 R
 Yarrangobilly
 Buccleuch

 R
 Tantangara
 Wallace

 R
 Gooandra
 Wallace

TYPE OF WORKS

PURPOSE(S) FOR WHICH WATER MAY BE USED Monitoring Bore

CONDITIONS APPLYING TO THIS LICENSE ARE

1.A

As shown on the attached Condition Statement





Contact: Alister Middleton Phone: 02 6841 7423 Email: alister.middleton@nrar.nsw.gov.au

Our ref: 40BL192723 File No: Your Ref:

21 November 2018

Charlie Litchfield Snowy Hydro Limited PO Box 332 COOMA NSW 2630

By email to: charlie.litchfield@snowyhydro.com.au cc: kbrodie@emmconsulting.com.au

Dear Mr Litchfield

Re: Part V Water Act 1912 licensing for test bores – PB06, PB09 & PB10

Please find attached a copy of your test bore licence which authorises the construction of test bores at locations as specified in your application. Also attached is a Form A template.

Please make sure the completed Form As and plans for these bores are provided to <u>diana.smith@waternsw.com.au</u>. Failure to do so could restrict future actions relating to this licence. If you wish to make a photocopy of the completed Form A, you should do so before forwarding the form to the Department.

Your attention is drawn to the nature and description of the work, terms, limitations and conditions under which the licence is issued.

Please note that the bores must be constructed at the locations specified on the application being at least 40m from the high bank of any watercourse.

Should you wish to convert any or all of the test bores for basic rights or production purposes, you will need to make applications & gain the appropriate approvals under the *Water Management Act, 2000*.

If any of the test bores are to be converted to a production bore, the relevant distance restrictions of the *Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011* (Attachment A) will apply. A water supply work approval will be required to be submitted and the bore will be assessed against the relevant conditions.

Condition (2) of the licence <u>applies whether the bore is successful or not</u>. The attached Form A has been provided for the recording the details of the proposed bore. The driller is required to record the details of the bore, and provide you with the completed form. The driller is also required to mark the location of the bores site on the attached plan. <u>The sketch is required even though you may have already indicated the site to the Department</u>.

If during construction poor quality water is encountered above the main supply it is essential that the bore be completed in accordance with condition (4). This will prevent contamination and pollution of the supply and ensure maximum useful life of the bore by protecting the casing and equipment against corrosion.

Please show the licence to the driller so that they are aware of any conditions affecting the construction of the bore. The driller <u>must have</u> a current driller's licence issued by the Department.

Yours sincerely

for Ill

Chris Binks A/Senior Water Regulation Officer – Water Regulatory Operations - West Natural Resource Access Regulator **Attachment A.** 'Distance conditions of the Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011'.

Please note there may be other conditions and restrictions which are relevant if the test bore is to be converted to a production bore via a Water Supply Work Approval. The information below is accurate as at 21/11/2018. Water Sharing Plans are updated periodically and are subject to change.

Part 9 Rules for water supply work approvals

Notes.

- 1 This Part is made in accordance with sections 5, 21 and 95 of the Act.
- 2 Part 12 allows for amendments to be made to Part 9.

35 General

The rules in this Part apply to water supply work approvals for a water supply work that may be used to take water from these groundwater sources.

36 Rules for amending water supply work approvals for replacement groundwater works

(1) The Minister may amend a water supply work approval to alter the water supply work to which the approval relates if the Minister is satisfied that the amendment is to authorise a replacement groundwater work.

(2) For the purpose of this Plan, *replacement groundwater work* means a water supply work that replaces an existing water supply work constructed and used for the purpose of taking water from an aquifer where:

(a) the existing water supply work is authorised by a water supply work approval under the Act,

(b) the replacement groundwater work is to be constructed to extract water from the same groundwater source as the existing water supply work,

- (c) the replacement groundwater work is to be constructed to extract water from:
- (i) the same depth as the existing water supply work, or
- (ii) a different depth if the Minister is satisfied that doing so will result in no greater impact on a groundwater source or its dependent ecosystems,
- (d) the replacement groundwater work is to be located:
- (i) within 20 metres of the existing water supply work, or

(ii) more than 20 metres from the existing water supply work if the Minister is satisfied that doing so will result in no greater impact on a groundwater source or its dependent ecosystems,

(e) if the existing water supply work is located within 40 metres of the high bank of a river, the replacement groundwater work is to be located:

(i) within 20 metres of the existing water supply work but no closer to the high bank of the river, or

(ii) more than 20 metres from the existing water supply work, but no closer to the high bank of the river if the Minister is satisfied that doing so will result in no greater impact on a groundwater source or its dependent ecosystems, and

(f) the replacement groundwater work must not have a greater internal diameter or excavation footprint than the existing water supply work, except where the internal diameter of the casing of the existing water supply work is no longer manufactured, in which case the internal diameter of the replacement groundwater work is to be no greater than 110% of the internal diameter of the existing water supply work it replaces. For the purpose of this paragraph, *internal diameter* means the diameter of the inside of the casing of the water supply work which is a water bore and *excavation footprint* means the authorised dimensions of a water supply work which is an unlined excavation constructed for the purpose of water supply only.

(3) For the purpose of subclause (2) (c) (ii), the Minister may require that the applicant submit a hydrogeological study, assessed as adequate by the Minister, to demonstrate that the construction of the water supply work at a different depth to the existing water supply work will result in no greater impact on a groundwater source or its dependent ecosystems.

(4) For the purpose of subclauses (2) (d) (ii) or (e) (ii), the Minister may require that the applicant submit a hydrogeological study, assessed as adequate by the Minister, to demonstrate that the location of the water supply work at a distance greater than 20 metres from the existing water supply work will result in no greater impact on a groundwater source or its dependent ecosystems.

Note.

The Minister may amend an approval on the application of the holder of the approval under section 107 of the Act. The operation of section 107 (3) of the Act may further restrict the replacement of an existing water supply work.

37 Rules to minimise interference between water supply works

(1) A water supply work approval must not be granted or amended to authorise the construction of a water supply work which, in the Minister's opinion, is located within:

(a) 400 metres of a water supply work on another landholding that is authorised to take water from the same groundwater source pursuant to an access licence,

(b) 200 metres of a water supply work on another landholding that is authorised to take water from the same groundwater source pursuant to basic landholder rights,

(c) 200 metres from the boundary of the land, on which the water supply work is located, unless the owner of the land adjoining the boundary has provided consent in writing,

(d) 500 metres of a water supply work authorised to take water from the same groundwater source by a local water utility or a major utility, unless the local water utility or major utility has provided consent in writing, or

(e) 400 metres of a NSW Office of Water observation or monitoring bore, unless the Minister has provided consent in writing.

(2) The distance restrictions specified in subclause (1) do not apply to the grant or amendment of a water supply work approval if the Minister is satisfied that:

(a) the water supply work is solely for basic landholder rights,

(b) the water supply work is a replacement groundwater work,

(c) the water supply work is for the purpose of monitoring, environmental management or remedial works, or

(d) the location of the water supply work at a lesser distance would result in no more than minimal impact on existing extractions within these groundwater sources.

(3) For the purpose of subclause (2) (d), the Minister may request the applicant to undertake a hydrogeological study, submitted by the applicant and assessed as adequate by the Minister, to demonstrate that the location of the water supply work at a lesser

distance would result in no more than minimal impact on existing extractions within these water sources.

(4) If an approval is granted under circumstances where subclause (2) (d) applies, the approval must be subject to a requirement that, when directed by the Minister by notice in writing, the approval holder must carry out all actions required by the Minister and specified in the notice, to minimise the impact of the water supply work on existing water levels or extraction, if the Minister is satisfied that the location of the water supply work is causing more than minimal impact on existing water levels or extraction.

38 Rules for water supply works located near contamination sources

(1) A water supply work approval must not be granted or amended to authorise the construction of a water supply work which, in the Minister's opinion is located:

(a) within 250 metres of the plume associated with a contamination source listed in Schedule 2,

(b) between 250 metres and 500 metres of the plume associated with a contamination source listed in Schedule 2, unless the Minister is satisfied that no drawdown of water will occur within 250 metres of that plume, or

(c) at a distance that is more than 500 metres from the plume associated with a contamination source listed in Schedule 2, if a greater distance is determined by the Minister to be necessary to protect the water source, the environment or public health and safety.

(2) The distance restrictions specified in subclause (1) do not apply to the grant or amendment of a water supply work approval if the Minister is satisfied that:

(a) the proposed distance is adequate to protect the groundwater source, its dependent ecosystems and public health and safety, or

(b) the water supply work is for the purpose of monitoring, environmental management or remedial works.

(3) For the purpose of subclause (2) (a), the Minister may request the applicant to undertake a hydrogeological study, submitted by the applicant and assessed as adequate by the Minister, to demonstrate that the location of the water supply work at a lesser distance would result in no greater impact on dependent ecosystems and public health and safety.

39 Rules for water supply works located near sensitive environmental areas

(1) A water supply work approval must not be granted or amended to authorise the construction of a water supply work which, in the Minister's opinion, is located:

(a) within 100 metres of a high priority groundwater dependent ecosystem listed in clause 1 of Schedule 3 in the case of a water supply work used solely to take water pursuant to basic landholder rights,

(b) within 200 metres of a high priority groundwater dependent ecosystem listed in clause 1 of Schedule 3 in the case of a water supply work not used solely to take water pursuant to basic landholder rights,

(c) at a distance that is more than 200 metres from a high priority groundwater dependent ecosystem listed in clause 1 of Schedule 3, excluding water supply works used solely to take water pursuant to basic landholder rights, if the Minister is satisfied that the water supply work is likely to cause more than minimal drawdown at the perimeter of any high priority groundwater dependent ecosystem listed in clause 1 of Schedule 3,

(d) within 500 metres of a high priority karst environment groundwater dependent ecosystem listed in clause 2 of Schedule 3,

(e) within 500 metres from the edge of an escarpment, where the location of the water supply work is to be above the escarpment, or

(f) within 40 metres of the top of the high bank of a river.

(2) The distance restrictions specified in subclause (1) (a) and (b) do not apply to the grant or amendment of a water supply work approval if the Minister is satisfied that no more than minimal drawdown of water will occur at the perimeter of any high priority groundwater dependent ecosystem in clause 1 of Schedule 3.

(3) The distance restrictions specified in subclause (1) (a) and (b) do not apply to the grant or amendment of a water supply work approval where the water supply work being used to take groundwater is constructed and maintained using an impermeable pressure cement seal constructed between the casing and the bore hole from the surface of the land to a minimum depth of 30 metres or a greater depth if required by the Minister.

(4) The distance restrictions specified in subclause (1) do not apply to the grant or amendment of a water supply work approval if the Minister is satisfied that:

(a) the water supply work is for the purpose of monitoring, environmental management or remedial works,

(b) the water supply work replaces an existing water supply work that is part of a bore network for a major utility or a local water utility for the purpose of town water supply,

(c) the water supply work is a replacement groundwater work, or

(d) the location of the water supply work at a lesser distance would result in no greater impact on these groundwater sources and their dependent ecosystems.

(5) The Minister may request the applicant to undertake a hydrogeological study, submitted by the applicant and assessed as adequate by the Minister, to demonstrate that:

(a) for the purpose of subclause (2), no more than minimal drawdown of water will occur at the perimeter of any high priority groundwater dependent ecosystem listed in Schedule 3, or

(b) for the purpose of subclause (4) (d), the location of the water supply work at a lesser distance would result in no greater impact on these groundwater sources and their dependent ecosystems.

40 Rules for water supply works located near groundwater dependent culturally significant sites

(1) A water supply work approval must not be granted or amended to authorise the construction of a water supply work which, in the Minister's opinion, is located within:

(a) 100 metres of a groundwater dependent culturally significant site in the case of a water supply work used solely to take water pursuant to basic landholder rights, or

(b) 200 metres of a groundwater dependent culturally significant site in the case of a water supply work not used solely to take water pursuant to basic landholder rights.

41 Rules for the use of water supply works located within restricted distances

(1) Subject to subclauses (2) and (3), a water supply work that is located within a restricted distance specified in clauses 37 to 40, must not, in any water year, be used to take more water than the volume of water that is equal to the sum of the share components of the access licences nominating that water supply work at the commencement of this Plan.

(2) Subject to subclause (3), a water supply work that becomes located within a restricted distance specified in clauses 37 to 40 as a result of an amendment to this Plan, must not, in any water year, be used to take more water than the volume of water that is equal to the sum of share components of access licences nominating that water supply work at the date of the amendment.

(3) Subclause (1) and (2) do not apply where a restricted distance does not apply in accordance with clauses 37 to 40.

Note.

The water quality from any bore can be affected by land use activities and inherent water quality in the aquifer. Water quality cannot be guaranteed and extracted water may be unsuitable for human consumption and other uses. The quality of water extracted should be tested before being used and appropriately treated. Such testing and treatment is the responsibility of the licence holder.

NSW Office of Water

Murrumbidgee RegionYanco Agricultural Institute Pri2198 Irrigation Way EastYancoNSW 2703Phone: (02) 69512611

BORE LICENSE CERTIFICATE UNDER SECTION 115 OF THE WATER ACT, 1912

40BL192723



Snowy Hydro Limited Po Box 332 Cooma NSW 2630

LICENSE NOWDER
40BL192723
DATE LICENSE VALID FROM
21-Nov-2018
DATE LICENSE VALID TO
PERPETUITY
FEE
\$0.00
ABN 72189919072 GST NIL

	LOCATION OF WORKS		
Portion(s) or Lot/Section/DP R R	<u>PARISH</u> Yarrangobilly Tantangara	COUNTY Buccleuch Wallace	

 TYPE OF WORKS
 PURPOSE(S) FOR WHICH WATER MAY BE USED

 Test Bore
 Test Bore

CONDITIONS APPLYING TO THIS LICENSE ARE

As shown on the attached Condition Statement

ORIGINAL

Appendix B



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Scientific and Technical Operating Procedures Form: A Issue: 3 Date issued: 28Aug2009



Form A Particulars of completed work

Page 2

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				BC	RE DEVEL	OPMENT				8	
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	Chemical(s) used Quantity applied (Litres) Method of application										
					TESTS O	N COMPLETIO Water Level	N			10	
	Test	Date	Pump intake	Initial Water	Pumping	at end of	Duration		Recovery		
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	Office
GOVERNMENT	of Water

Page 3

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Depth_From	Depth_To	Lithology	Description
0.00	1.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish grey, highly oxidised, SOIL, 40% fine grained, dark brown
1.00	2.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish orange, highly oxidised, CLAY, 40% fine grained, medium orange, highly oxidised
2.00	3.00	SANDSTONE	SANDSTONE very fine to fine grained , light bluish grey, highly oxidised, CLAY, 30% fine grained, medium orange, highly oxidised, 10% quartz
3.00	4.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish orange, highly oxidised, CLAY, 30% fine grained, medium orange, highly oxidised
4.00	5.00	SANDSTONE	SANDSTONE very fine to fine grained , light bluish grey, moderately oxidised
5.00	6.00	SANDSTONE	SANDSTONE very fine to fine grained , light bluish grey, highly oxidised
6.00	7.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish orange, highly oxidised
7.00	8.00	SANDSTONE	SANDSTONE very fine to fine grained , light bluish grey, moderately oxidised
8.00	9.00	SANDSTONE	SANDSTONE very fine to fine grained , light bluish grey, moderately oxidised, 2% quartz
9.00	10.00	SANDSTONE	SANDSTONE very fine to fine grained , light bluish grey, moderately oxidised, 2% quartz
10.00	11.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish orange, highly oxidised, 2% quartz
11.00	12.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish orange, highly oxidised, 2% quartz
12.00	13.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish orange, highly oxidised, 2% quartz
13.00	14.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish orange, highly oxidised, 1% quartz
14.00	15.00	SANDSTONE	SANDSTONE very fine to fine grained , light orangey grey, highly oxidised, 1% quartz
15.00	16.00	SANDSTONE	SANDSTONE very fine to fine grained , light orangey grey, moderately oxidised
16.00	17.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish grey, slightly oxidised
17.00	18.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish grey, slightly oxidised
18.00	19.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish grey, slightly oxidised, 2% quartz
19.00	20.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish grey, slightly oxidised, 10% quartz, Turned on water to suppress dust and received large coarse sandstone chips.
20.00	21.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish grey, slightly oxidised, SLATE, 30% very fine grained , light brown, slightly oxidised, platy, 5% quartz
21.00	22.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish grey, slightly oxidised, SLATE, 30% very fine grained , light brown, slightly oxidised, platy, 1% quartz

22.00	23.00	SANDSTONE	SANDSTONE very fine to fine grained , light brownish grey, slightly oxidised, SLATE, 40% very fine grained , medium greyish brown, slightly oxidised, platy
23.00	24.00	SLATE	SLATE very fine grained , medium greyish brown, slightly oxidised, SANDSTONE, 40% very fine to fine grained , light brownish grey, slightly oxidised
24.00	25.00	SLATE	SLATE very fine grained , medium greyish brown, slightly oxidised, SANDSTONE, 40% very fine to fine grained , light brownish grey, slightly oxidised
25.00	26.00	SLATE	SLATE very fine grained , medium greyish brown, slightly oxidised, SANDSTONE, 40% very fine to fine grained , light brownish grey, slightly oxidised, 1% quartz
26.00	27.00	SLATE	SLATE very fine grained , medium greyish brown, slightly oxidised, SANDSTONE, 30% very fine to fine grained , light brownish grey, slightly oxidised
27.00	28.00	SLATE	SLATE very fine grained , medium greyish brown, slightly oxidised, SANDSTONE, 30% very fine to fine grained , light brownish grey, slightly oxidised
28.00	29.00	SLATE	SLATE very fine grained , medium greyish brown, slightly oxidised, SANDSTONE, 30% very fine to fine grained , light brownish grey, slightly oxidised
29.00	30.00	SLATE	SLATE very fine grained , medium greyish brown, slightly oxidised, SANDSTONE, 20% very fine to fine grained , light brownish grey, slightly oxidised, SILTSTONE, 20% fine to medium grained, medium grey, 1% quartz
30.00	31.00	SILTSTONE	SILTSTONE very fine grained , medium grey, slightly oxidised, SANDSTONE, 20% very fine to fine grained , light brownish grey, slightly oxidised, 1% quartz
31.00	32.00	SILTSTONE	SILTSTONE very fine grained , medium grey, slightly oxidised, SANDSTONE, 20% very fine to fine grained , light brownish grey, slightly oxidised
32.00	33.00	SILTSTONE	SILTSTONE very fine grained , medium grey, slightly oxidised, SANDSTONE, 20% very fine to fine grained , light brownish grey, slightly oxidised, SLATE, 10% fine to medium grained, medium grey, platy
33.00	34.00	SILTSTONE	SILTSTONE very fine grained , medium grey, slightly oxidised, SANDSTONE, 20% very fine to fine grained , light brownish grey, slightly oxidised, SLATE, 10% fine to medium grained, medium grey, platy
34.00	35.00	SILTSTONE	SILTSTONE very fine grained , medium grey, slightly oxidised, SANDSTONE, 20% very fine to fine grained , light brownish grey, slightly oxidised, SLATE, 10% fine to medium grained, medium grey, platy, 1% quartz
35.00	36.00	SILTSTONE	SILTSTONE very fine grained , medium grey, slightly oxidised, SANDSTONE, 20% very fine to fine grained , light brownish grey, slightly oxidised, SLATE, 10% fine to medium grained, medium grey, platy, 1% quartz
36.00	37.00	SILTSTONE	SILTSTONE very fine grained , medium grey, Despite no water flowing from the hole, I assume this is the SWL
37.00	38.00	SILTSTONE	SILTSTONE very fine grained , medium grey
38.00	39.00	SILTSTONE	SILTSTONE very fine grained , medium grey

40.00	41.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
41.00	42.00	SILTSTONE	SILTSTONE very fine grained , medium grey
42.00	43.00	SILTSTONE	SILTSTONE very fine grained , medium grey
43.00	44.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
44.00	45.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
			SILTSTONE very fine grained , medium grey, chlorite,
45.00	46.00	SILTSTONE	altered
			SILTSTONE very fine grained , medium grey, chlorite,
46.00	47.00	SILTSTONE	altered
47.00	48.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 2% quartz
48.00	49.00	SILTSTONE	SILTSTONE very fine grained , medium grey
49.00	50.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
50.00	51.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
			SILTSTONE very fine grained , medium grey, chlorite,
51.00	52.00	SILTSTONE	altered; 10% quartz
			SILTSTONE very fine grained , medium grey, 30% quartz,
52.00	53.00	SILTSTONE	rare pyrite
53.00	54.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
54.00	55.00	SILTSTONE	SILTSTONE very fine grained , medium grey
55.00	56.00	SILTSTONE	SILTSTONE very fine grained , medium grey
56.00	57.00	SILTSTONE	SILTSTONE very fine grained , medium grey
00.00	01.00	GIETOTONE	
57.00	58.00	SILTSTONE	SILTSTONE very fine grained , light grey, 80% quartz, rare
58.00	59.00	SILTSTONE	pyrite SILTSTONE very fine grained , medium grey
59.00	60.00	SILTSTONE	SILTSTONE very fine grained , medium grey
60.00	61.00	SILTSTONE	
61.00		SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
	62.00		SILTSTONE very fine grained , medium grey, 1% quartz
62.00	63.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
63.00	64.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 2% quartz,
64.00	05.00		rare pyrite
64.00	65.00	SILTSTONE	SILTSTONE very fine grained , medium grey
65.00	66.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 2% quartz,
66.00	67.00	SILTSTONE	rare pyrite
67.00	68.00	SLATE	SILTSTONE very fine grained , medium grey, 10% quartz
67.00	68.00	SLATE	SLATE very fine grained , dark grey, platy
68.00	69.00	SLATE	SLATE very fine grained, dark grey, platy, SILTSTONE,
			10% very fine grained , medium grey
69.00	70.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10%
70.00	71.00	SILTSTONE	very fine grained , dark grey
70.00	71.00	SILTSTONE	SILTSTONE very fine grained, medium grey
71.00	72.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 5% quartz
			SILTSTONE very fine grained , medium grey, 1% quartz
73.00 74.00	74.00 75.00	SILTSTONE SILTSTONE	SILTSTONE very fine grained, medium grey
			SILTSTONE very fine grained , medium grey, 40% quartz
75.00	76.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz
76.00	77.00	SLATE	SLATE very fine grained , dark grey, platy, SILTSTONE,
			10% very fine grained , medium grey, 1% quartz, rare pyrite
			SLATE very fine grained , dark grey, platy, 5% quartz, rare
77.00	78.00	SLATE	pyrite
			SLATE very fine grained , dark grey, platy, SILTSTONE,
78.00	79.00	SLATE	10% very fine grained , medium grey
		I	r to // very line grained , medium grey

79.00	80.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 5% quartz,
			rare pyrite
80.00	81.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 30% very fine grained , dark grey, platy, 2% quartz
81.00	82.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz, rare pyrite
82.00	83.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , dark grey, platy, 1% quartz
83.00	84.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
84.00	85.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 17, qualiz
85.00	86.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
86.00	87.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1/2 quarter
87.00	88.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz
88.00	89.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
89.00	90.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
90.00	91.00	SILTSTONE	SILTSTONE very fine grained , medium grey
30.00	91.00	SILTSTONE	
91.00	92.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 40%
			very fine grained , dark grey, platy
92.00	93.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 40%
02.00	04.00		very fine grained , dark grey, platy, 1% quartz
93.00	94.00	SLATE	SLATE very fine grained , dark grey, platy, 1% quartz
94.00	95.00	SLATE	SLATE very fine grained , dark grey, platy, SILTSTONE, 10% very fine grained , medium grey, 1% quartz, rare pyrite
95.00	96.00	SLATE	SLATE very fine grained , dark grey, platy
00.00	07.00		SILTSTONE very fine grained , medium grey, SLATE, 10%
96.00	97.00	SILTSTONE	very fine grained , dark grey, platy
97.00	98.00	SILTSTONE	SILTSTONE very fine grained , medium grey
98.00	99.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
99.00	100.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
100.00	101.00	SILTSTONE	SILTSTONE very fine grained , medium grey
101.00	102.00	SILTSTONE	SILTSTONE very fine grained , medium grey
102.00	103.00	SILTSTONE	SILTSTONE very fine grained , medium grey
103.00	104.00	SLATE	SLATE very fine grained , dark grey, platy, rare pyrite
104.00	105.00	SLATE	SLATE very fine grained , dark grey, platy
105.00	106.00	SLATE	SLATE very fine grained , dark grey, platy
106.00	107.00	SLATE	SLATE very fine grained , dark grey, platy, SILTSTONE, 10% very fine grained , medium grey, 1% quartz
107.00	108.00	SLATE	SLATE very fine grained , dark grey, platy, SILTSTONE, 20% very fine grained , medium grey
108.00	109.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 5% quartz
109.00	110.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 5% quartz
110.00	111.00	SILTSTONE	SILTSTONE very fine grained , medium grey
111.00	112.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 20% quartz
112.00	113.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 10% quartz
113.00	114.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 10% quartz
114.00	115.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 30% quartz, INCLUDING ROSE QUARTZ

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115.00	116.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 20% quartz
116.00	117.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 5% quartz
117.00	118.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 5% quartz
118.00	119.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered
119.00	120.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 5% quartz
120.00	121.00	SILTSTONE	SILTSTONE very fine grained , medium grey
121.00	122.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 10% quartz
122.00	123.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 10% quartz, rare pyrite
123.00	124.00	SLATE	SLATE very fine grained , dark grey, platy, SILTSTONE, 10% very fine grained , medium grey, rare pyrite
124.00	125.00	SLATE	SLATE very fine grained , dark grey, platy, SILTSTONE, 20% very fine grained , medium grey
125.00	126.00	SLATE	SLATE very fine grained , dark grey, platy, SILTSTONE, 40% very fine grained , medium grey, 1% quartz
126.00	127.00	SLATE	SLATE very fine grained , dark grey, platy, SILTSTONE, 20% very fine grained , medium grey
127.00	128.00	SILTSTONE	SILTSTONE very fine grained , medium grey
128.00	129.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , dark grey
129.00	130.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , dark grey, 1% quartz
130.00	131.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , dark grey, 1% quartz
131.00	132.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 2% quartz
132.00	133.00	SILTSTONE	SILTSTONE very fine grained , medium grey
133.00	134.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz
134.00	135.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz
135.00	136.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 10% quartz
136.00	137.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered
137.00	138.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 20% quartz, rare pyrite, INCLUDING ROSE QUARTZ
138.00	139.00	SILTSTONE	SILTSTONE very fine grained , medium grey
139.00	140.00	SILTSTONE	SILTSTONE very fine grained , medium grey, rare pyrite
140.00	141.00	SILTSTONE	SILTSTONE very fine grained , light grey, chlorite, altered; 10% quartz
141.00	142.00	SILTSTONE	SILTSTONE very fine grained , light grey, chlorite, altered; 20% quartz
142.00	143.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , dark grey, 10% quartz, rare pyrite
143.00	144.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 50% very fine grained , dark grey, 1% quartz

144.00	145.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , dark grey, 1% quartz, rare pyrite
145.00	146.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10%
146.00	147.00	SILTSTONE	very fine grained , dark grey, 5% quartz SILTSTONE very fine grained , medium grey, SLATE, 30%
147.00	148.00	SILTSTONE	very fine grained , dark grey, 1% quartz, rare pyrite SILTSTONE very fine grained , medium grey, SLATE, 40%
148.00	149.00	SILTSTONE	very fine grained , dark grey, 1% quartz, rare pyrite SILTSTONE very fine grained , medium grey, SLATE, 20%
149.00	150.00	SILTSTONE	very fine grained , dark grey, 1% quartz, rare pyrite SILTSTONE very fine grained , medium grey, SLATE, 20%
150.00	151.00	SILTSTONE	very fine grained , dark grey, 1% quartz SILTSTONE very fine grained , medium grey, chlorite,
151.00	152.00	SILTSTONE	altered; 5% quartz SILTSTONE very fine grained , light grey, chlorite, altered;
152.00	153.00	SILTSTONE	50% quartz, rare pyrite SILTSTONE very fine grained , light grey, chlorite, altered;
			50% quartz, rare pyrite SILTSTONE very fine grained , light grey, chlorite, altered;
153.00	154.00	SILTSTONE	50% quartz, rare pyrite
154.00	155.00	SLATE	SLATE very fine grained , dark grey, SILTSTONE, 10% very fine grained , medium grey, 1% quartz
155.00	156.00	SLATE	SLATE very fine grained , dark grey, SILTSTONE, 20% very fine grained , medium grey, rare pyrite
156.00	157.00	SLATE	SLATE very fine grained , dark grey
157.00	158.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , dark grey, 1% quartz
158.00	159.00	SILTSTONE	SILTSTONE very fine grained , medium grey
159.00	160.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
160.00	161.00	SILTSTONE	SILTSTONE very fine grained , medium grey
161.00	162.00	SILTSTONE	SILTSTONE very fine grained , medium grey
162.00	163.00	SILTSTONE	SILTSTONE very fine grained , medium grey
163.00	164.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 20% quartz, rare pyrite
164.00	165.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz
165.00	166.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered
166.00	167.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , dark grey
167.00	168.00	SLATE	SLATE very fine grained , dark grey, platy
168.00	169.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
169.00	170.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz
170.00	171.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 20% quartz, rare pyrite
171.00	172.00	SLATE	SLATE very fine grained , medium grey, SILTSTONE, 20% very fine grained , medium grey, 1% quartz
172.00	173.00	SLATE	SLATE very fine grained , medium grey, SILTSTONE, 10% very fine grained , medium grey
173.00	174.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 40% very fine grained , medium grey, 10% quartz
174.00	175.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , medium grey

			CILITETONE your fine areined modium and CLATE 2004
175.00	176.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , medium grey, 1% quartz
176.00	177.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 5% quartz
177.00	178.00	SILTSTONE	SILTSTONE very fine grained , medium grey
178.00	179.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz, rare pyrite
179.00	180.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz, rare pyrite
180.00	181.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
181.00	182.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
182.00	183.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
183.00	184.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 30% very fine grained , medium grey
184.00	185.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , medium grey
185.00	186.00	SILTSTONE	SILTSTONE very fine grained , medium grey
186.00	187.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
187.00	188.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz
188.00	189.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 20% quartz
189.00	190.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 40% very fine grained , medium grey, 5% quartz
190.00	191.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 20% quartz
191.00	192.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 20% quartz very fine grained , medium grey, 1% quartz
192.00	193.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz siLTSTONE very fine grained , medium grey, SLATE, 30% very fine grained , medium grey
193.00	194.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 30% very fine grained , medium grey
194.00	195.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 30% very fine grained , medium grey
195.00	196.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 40% very fine grained , medium grey, 10% quartz
196.00	197.00	SLATE	SLATE very fine grained , medium grey, 10% quartz very fine grained , medium grey, SILTSTONE, 20%
197.00	198.00	SILTSTONE	SILTSTONE very fine grained , medium grey
198.00	199.00	SILTSTONE	SILTSTONE very fine grained , medium grey
199.00	200.00	SLATE	SLATE very fine grained , medium grey, SILTSTONE, 30% very fine grained , medium grey, 2% quartz
200.00	201.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
200.00	201.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1/2 quartz
202.00	203.00	SILTSTONE	SILTSTONE very fine grained , medium grey
203.00	200.00	SILTSTONE	SILTSTONE very fine grained , medium grey
204.00	205.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , medium grey
205.00	206.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
205.00	200.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
200.00	207.00	SILTSTONE	SILTSTONE very fine grained , medium grey
208.00	209.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , medium grey, 1% quartz
209.00	210.00	SILTSTONE	SILTSTONE very fine grained , medium grey
203.00	210.00	SILTSTONE	SILTSTONE very fine grained , medium grey

211.00	212.00	SILTSTONE	
211.00 212.00	212.00	SILTSTONE	SILTSTONE very fine grained, medium grey, 1% quartz
	213.00	SILTSTONE	SILTSTONE very fine grained, medium grey
213.00 214.00	214.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 5% quartz
214.00	213.00	SILISIONE	SILTSTONE very fine grained , medium grey
215.00	216.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 10% quartz, rare pyrite
216.00	217.00	SILTSTONE	SILTSTONE very fine grained , medium grey
217.00	218.00	SILTSTONE	SILTSTONE very fine grained , medium grey
218.00	219.00	SILTSTONE	SILTSTONE very fine grained , medium grey
219.00	220.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 30% very fine grained , medium grey
220.00	221.00	SILTSTONE	SILTSTONE very fine grained , light grey, 20% quartz, rare pyrite
221.00	222.00	SILTSTONE	SILTSTONE very fine grained , medium grey
222.00	223.00	SILTSTONE	SILTSTONE very fine grained , medium grey
223.00	224.00	SILTSTONE	SILTSTONE very fine grained , medium grey
224.00	225.00	SILTSTONE	SILTSTONE very fine grained , medium grey
225.00	226.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
226.00	227.00	SILTSTONE	SILTSTONE very fine grained , medium grey
227.00	228.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10%
221.00	220.00	OILTOTORE	very fine grained , dark grey, 1% quartz
228.00	229.00	SLATE	SLATE very fine grained , dark grey, SILTSTONE, 10% very fine grained , medium grey
229.00	230.00	SLATE	SLATE very fine grained , dark grey, chlorite, altered; SILTSTONE, 20% very fine grained , medium grey, 10%
230.00	231.00	SLATE	quartz, rare pyrite SLATE very fine grained , dark grey, SILTSTONE, 10%
			very fine grained , medium grey
231.00	232.00	SLATE	SLATE very fine grained , dark grey, SILTSTONE, 40% very fine grained , medium grey
232.00	233.00	SILTSTONE	SILTSTONE very fine grained , medium grey
233.00	234.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
234.00	235.00	SILTSTONE	SILTSTONE very fine grained , medium grey
235.00	236.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 5% quartz
236.00	237.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz, rare pyrite
237.00	238.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 30% quartz, rare pyrite
238.00	239.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 2% quartz
239.00	240.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 2% quartz
240.00	241.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; SLATE, 10% very fine grained , medium grey, 5% quartz
241.00	242.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , medium grey
242.00	243.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , medium grey
243.00	244.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , medium grey
244.00	245.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , medium grey

			SILTSTONE very fine grained, medium grey, SLATE, 10%
245.00	246.00	SILTSTONE	very fine grained , medium grey
246.00	247.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 5% quartz
247.00	248.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10%
2.11.00	210.00		very fine grained , medium grey
248.00	249.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10%
			very fine grained , medium grey
249.00	250.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 10% quartz, rare pyrite
050.00	054.00		SILTSTONE very fine grained , medium grey, chlorite,
250.00	251.00	SILTSTONE	altered; 10% quartz, rare pyrite
251.00	252.00	SILTSTONE	SILTSTONE very fine grained , medium grey
252.00	253.00	SILTSTONE	SILTSTONE very fine grained , medium grey, rare quartz,
			rare pyrite
253.00	254.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite,
254.00	255.00	SILTSTONE	altered; 5% quartz, rare pyrite SILTSTONE very fine grained , medium grey, 5% quartz
255.00	256.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 3% quartz
			SILTSTONE very fine grained , medium grey, chlorite,
256.00	257.00	SILTSTONE	altered; 1% quartz
257.00	250.00		SILTSTONE very fine grained , medium grey, SLATE, 10%
257.00	258.00	SILTSTONE	very fine grained , medium grey
			SILTSTONE very fine grained , medium grey, chlorite,
258.00	259.00	SILTSTONE	altered; SLATE, 10% very fine grained , medium grey, 1%
			quartz
259.00	260.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
260.00	261.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
261.00	262.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
262.00	263.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 2% quartz,
			rare pyrite
263.00	264.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; SLATE, 10% very fine grained , medium grey, 1%
203.00	204.00	SILTOTONE	quartz
264.00	265.00	SILTSTONE	SILTSTONE very fine grained , medium grey
265.00	266.00	SLATE	SLATE very fine grained , medium grey, rare pyrite
266.00	267.00	SLATE	SLATE very fine grained , medium grey
267.00	268.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10%
			very fine grained , medium grey
268.00	269.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
			SILTSTONE very fine grained , medium grey, chlorite,
269.00	270.00	SILTSTONE	altered; SLATE, 20% very fine grained , medium grey, 2%
			quartz
270.00	271.00	SLATE	SLATE very fine grained , medium grey, SILTSTONE, 20%
			very fine grained , medium grey, rare pyrite
271.00	272.00	SLATE	SLATE very fine grained , medium grey, SILTSTONE, 10%
			very fine grained , medium grey
272.00	273.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; SLATE, 10% very fine grained , medium grey, 5%
			quartz
			1
070.00	074.65		SILTSTONE very fine grained medium grey chlorite
273.00	274.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 10% quartz, rare pyrite

275.00	276.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
276.00	277.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
277.00	278.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
278.00	279.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , medium grey, 1% quartz, rare pyrite
279.00	280.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , medium grey
280.00	281.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , medium grey
281.00	282.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , medium grey, 1% quartz
282.00	283.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 2% quartz
283.00	284.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz, rare pyrite
284.00	285.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , medium grey, 1% quartz, rare pyrite
285.00	286.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , medium grey
286.00	287.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; SLATE, 5% very fine grained , medium grey, 10% quartz, rare pyrite
287.00	288.00	SLATE	SLATE very fine grained , medium grey, 1% quartz
288.00	289.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 30% very fine grained , medium grey, 1% quartz, rare pyrite
289.00	290.00	SLATE	SLATE very fine grained , medium grey, SILTSTONE, 10% very fine grained , medium grey, 1% quartz
290.00	291.00	SLATE	SLATE very fine grained , medium grey, SILTSTONE, 40% very fine grained , medium grey, 1% quartz
291.00	292.00	SLATE	SLATE very fine grained , medium grey, SILTSTONE, 10% very fine grained , medium grey, 1% quartz
292.00	293.00	SLATE	SLATE very fine grained , medium grey, SILTSTONE, 10% very fine grained , medium grey, 5% quartz, rare pyrite
293.00	294.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz
294.00	295.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 10% quartz
295.00	296.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , medium grey
296.00	297.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 40% very fine grained , medium grey
297.00	298.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , medium grey
298.00	299.00	SILTSTONE	SILTSTONE very fine grained , medium grey
299.00	300.00	SILTSTONE	SILTSTONE very fine grained , medium grey, rare pyrite
300.00	301.00	SILTSTONE	SILTSTONE very fine grained , medium grey
301.00	302.00	SILTSTONE	SILTSTONE very fine grained , medium grey
302.00	303.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz
303.00	304.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 10% very fine grained , medium grey, 1% quartz

304.00	305.00	SILTSTONE	SILTSTONE very fine grained , medium grey, SLATE, 20% very fine grained , medium grey, 1% quartz
305.00	306.00	SILTSTONE	SILTSTONE very fine grained , medium grey
306.00	307.00	SILTSTONE	SILTSTONE very fine grained , medium grey
307.00	308.00	SILTSTONE	SILTSTONE very fine grained , medium grey
308.00	309.00	SILTSTONE	SILTSTONE very fine grained , medium grey
309.00	310.00	SILTSTONE	SILTSTONE very fine grained , medium grey
310.00	311.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 10% quartz
311.00	312.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 1% quartz, rare pyrite
312.00	313.00	SILTSTONE	SILTSTONE very fine grained , medium grey
313.00	314.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 1% quartz, rare pyrite
314.00	315.00	SILTSTONE	SILTSTONE very fine grained , medium grey, chlorite, altered; 2% quartz, rare pyrite
315.00	316.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 5% quartz, rare pyrite
316.00	317.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 2% quartz, rare pyrite
317.00	318.00	SILTSTONE	SILTSTONE very fine grained , medium grey, 1% quartz, rare pyrite

	EMN		NG BORE LOG	Bore ID	: PB06			
	EMP	Client: Snowy Hydro Limited	Project: Sno	owy 2.0				
Suite 01 St Leona T: 02 94 F: 02 94	93 9599	Drilling contractor: Highland DrillDrilling method:Air RotaryHydrogeologist:Kaitlyn Brodie	9	Project number: J17188 Elevation: 1435.5mAH Easting: 643796.8 Northing: 6038289.1				
	ater Level: 292		tion: Adaminaby Group		11/2018			
Total de	pth: 318r	m Screened depth:	298 - 318m open h					
Depth	Lithology	Description	Drilling Notes	Bore Co	mpletion			
(mbgl)	Graphic			Diagram	Design notes			
-0		SANDSTONE very fine to fine grained, light brownish grey, highly oxidised, SOIL, 40% fine grained, dark brown SANDSTONE very fine to fine grained, light brownish orange, highly oxidised, CLAY, 40% fine grained, medium orange, highly oxidised SANDSTONE very fine to fine grained, light bluish grey, moderately oxidised, 2% quartz		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Cement grout (0 - 1 mBGL) 10 inch diameter borehole (0 - 30 mBGL)			
- 10		SANDSTONE very fine to fine grained, light brownish orange, highly oxidised, 2% quartz SANDSTONE very fine to fine grained, light		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	8 inch steel surface casing (0 - 30 mBGL)			
- 20		orangey grey, highly oxidised, 1% quartz SANDSTONE very fine to fine grained, light brownish grey, slightly oxidised SANDSTONE very fine to fine grained, light brownish grey, slightly oxidised, SLATE, 30% very fine grained, light brown, slightly oxidised, platy, 5% quartz SLATE very fine grained, medium greyish brown, slightly oxidised, SANDSTONE, 40% very fine to fine grained, light brownish grey, slightly oxidised, 1% quartz	Turned on water to suppress dust and received large coarse sandstone chips	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
- 30	aby Gro	SILTSTONE very fine grained, medium grey, slightly oxidised, SANDSTONE, 20% very fine to fine grained, light brownish grey, slightly oxidised, SLATE, 10% fine to medium grained, medium grey, platy, 1% quartz						
- 40		SILTSTONE very fine grained, medium grey, low occurrence of quartz, rare pyrite, minor chlorite alteration, rare sericite			Blue metal gravel backfill (5-8mm wash) (1 - 283 mBGL)			
4 0					7.5 inch diameter borehole (30 - 298 mBGL)			
					5.5 inch steel casing ((- 298 mBGL)			
- 50								

			
-			
			0.07 L/s, Temp: 23°C, EC: 151 µS/cm, TDS: 98 g/L, pH: 8.93, ORP:
			44 mV
			0.07 L/s, Temp: 21°C,
		SLATE very fine grained, dark grey, platy	EC: 111 μS/cm, TDS: 72 g/L, pH: 8.91, ORP: 41 mV
- 70		SILTSTONE very fine grained, medium grey, SLATE, 10% very fine grained, dark grey, 5% quartz	
			0.1 L/s, Temp: 22°C, EC: 152 µS/cm, TDS: 99 g/L, pH: 8.80, ORP:
			17 mV
		SLATE very fine grained, dark grey, platy, SILTSTONE, 10% very fine grained, medium grey, 1% quartz, rare pyrite	0.1 L/s, Temp: 16°C,
- 80		SILTSTONE very fine grained, medium grey, 5% quartz, rare pyrite	EC: 150 μS/cm, TDS: 98 g/L, pH: 8.66, ORP: 67 mV
			0.02 L/s, Temp: 19°C, EC: 477 μS/cm, TDS: 313 g/L
- 90 III			
		SLATE very fine grained, dark grey, platy, SILTSTONE, 10% very fine grained, medium grey, 1% quartz, rare pyrite	
		SILTSTONE very fine grained, medium grey, SLATE, 10% very fine grained, dark grey, platy	0.02 L/s, Temp: 18°C, EC: 157 µS/cm, TDS: 102 g/L, ORP: 24 mV
- 100			
			0.02 L/s, Temp: 16°C, ∙EC: 109 µS/cm, TDS:
		SLATE very fine grained, dark grey, platy, rare pyrite	71 g/L, ORP: 29 mV
	dno.		
- 110	Adaminaby Group	SILTSTONE very fine grained, medium grey, varying occurrence of quartz, minor chlorite alteration, rare sericite, rare calcite	0.02 L/s, Temp: 19°C, EC: 100 µS/cm, TDS: 65 g/L, ORP: 51 mV
	- Adami		
			0.02 L/s, Temp: 19°C, EC: 133 μS/cm, TDS:
			86 g/L, ORP: 102 mV

- 120	1	0.02 L/s, Temp: 22°C,
	SLATE very fine grained, dark grey, platy,	EC: 86 μS/cm, TDS: 56 g/L, ORP: 125 mV
- - 130	SILTSTONE, 10% very fine grained, medium grey, 1% quartz, rare pyrite SILTSTONE very fine grained, medium grey, chlorite, altered; SLATE, 10% very fine grained, dark grey, 1% quartz	0.05 L/s, Temp: 22°C, EC: 184 µS/cm, TDS: 120 g/L, ORP: 125 mV
- 130		0.05 L/s, Temp: 21°C, EC: 202 µS/cm, TDS: 131 g/L, ORP: 131 mV
- 140	SILTSTONE very fine grained, light grey, chlorite, altered; 10% quartz	0.05 L/s, Temp: 20°C, EC: 130 μS/cm, TDS: 85 g/L, ORP: 131 mV
	SILTSTONE very fine grained, medium grey, SLATE, 10% very fine grained, dark grey, 10% quartz, rare pyrite	0.05 L/s, Temp: 20°C, EC: 126 μS/cm, TDS: 82 g/L, ORP: 132 mV
- 150	SILTSTONE very fine grained, light grey, chlorite, altered; 50% quartz, rare pyrite	
- 160	SLATE very fine grained, dark grey, SILTSTONE, 10% very fine grained, medium grey, 1% quartz, rare pyrite SILTSTONE very fine grained, medium grey, varying occurrence of quartz, minor chlorite alteration, rare sericite, rare pyrite	0.5 L/s, Temp: 21°C, EC: 64 µS/cm, TDS: 41 g/L, ORP: 128 mV, fracture at 154m
- 170	SLATE very fine grained, medium grey, SILTSTONE, 20% very fine grained, medium grey,	0.5 L/s, Temp: 22°C, EC: 160 μS/cm, TDS: 104 g/L, ORP: 132 mV
	SILTSTONE, 20% very fine grained, medium grey, SILTSTONE very fine grained, medium grey, SLATE, 20% very fine grained, medium grey, 10% quartz, varying occurrence of quartz, rare pyrite	0.5 L/s, Temp: 22°C, EC: 137 μS/cm, TDS: 89 g/L, ORP: 129 mV
- 180		0.5 L/s, Temp: 19°C, EC: 202 μS/cm, TDS: 131 g/L, ORP: 142 mV
		0.5 L/s, Temp: 16°C, EC: 71 μS/cm, TDS: 47 g/L, ORP: 14 mV

— 190 -	Adaminaby Group	SLATE very fine grained, medium grey,	0.5 L/s, Temp: 21°C, EC: 130 μS/cm, TDS: 85 g/L, ORP: 142 mV
- 200	Adam	SILTSTONE, 20% very fine grained, medium grey, 1% quartz SILTSTONE very fine grained, medium grey, low occurrence of quartz, rare pyrite, rare chlorite alteration, rare slate lenses	0.5 L/s, Temp: 23°C, EC: 115 µS/cm, TDS: 75 g/L, ORP: 138 mV
- 210			0.5 L/s, Temp: 24°C, EC: 87 μS/cm, TDS: 57 g/L, ORP: 179 mV
- 220			0.5 L/s, Temp: 21°C, EC: 127 μS/cm, TDS: 83 g/L, ORP: 162 mV 0.5 L/s, Temp: 22°C, EC: 93 μS/cm, TDS: 60 g/L, ORP: 148 mV
- 230		SLATE very fine grained, dark grey, chlorite, altered; SILTSTONE, 10% very fine grained, medium grey, 10% quartz, rare pyrite SILTSTONE very fine grained, medium grey, varying occurrence of quartz, minor chlorite alteration, rare sericite, rare pyrite	0.5 L/s, Temp: 23°C, EC: 152 μS/cm, TDS: 100 g/L, ORP: 147 mV 0.5 L/s, Temp: 21°C,
- 240		SILTSTONE very fine grained, medium grey, chlorite, altered; SLATE, 10% very fine grained, medium grey, 5% quartz	EC: 164 μS/cm, TDS: 107 g/L, ORP: 15 mV 0.5 L/s, Temp: 24°C, EC: 118 μS/cm, TDS: 77 g/L, pH: 8.55, ORP: 86 mV
- - 250		SILTSTONE very fine grained, medium grey, varying occurrence of quartz, minor chlorite alteration, rare sericite, rare pyrite	0.5 L/s, Temp: 22°C, EC: 97 μS/cm, TDS: 56 g/L, pH: 8.68, ORP: 85 mV 0.5 L/s, Temp: 14°C, EC: 156 μS/cm, TDS: 101 g/L, pH: 8.54, ORP: 50 mV



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- 260			0.5 L/s, Temp: 20°C, EC: 163 µS/cm, TDS: 106 g/L, pH: 8.68, ORP: 69 mV		
-			0.5 L/s, Temp: 19°C, EC: 180 μS/cm, TDS: 117 g/L, pH: 8.73, ORP: 49 mV		
- 270		SILTSTONE very fine grained, medium grey, chlorite, altered; SLATE, 20% very fine grained, medium grey, 2% quartz SLATE very fine grained, medium grey, SILTSTONE, 20% very fine grained, medium grey, rare pyrite	0.5 L/s, Temp: 21°C, EC: 173 μS/cm, TDS: 112 g/L, pH: 8.71, ORP: 48 mV		
-	Group	SILTSTONE very fine grained, medium grey, 1% quartz, rare pyrite	0.5 L/s, Temp: 20°C, EC: 114 μS/cm, TDS: 75 g/L, pH: 8.49, ORP: 50 mV		
- 280	Adaminaby	SILTSTONE very fine grained, medium grey, SLATE, 20% very fine grained, medium grey, 1% quartz, rare pyrite	0.5 L/s, Temp: 20°C,		
-			EC: 141 μS/cm, TDS: 92 g/L, pH: 8.60, ORP: 55 mV		Bentonite seal (283 - 293 mBGL)
- 290		SLATE very fine grained, medium grey, SILTSTONE, 10% very fine grained, medium grey, 1% quartz	0.5 L/s, Temp: 20°C, EC: 195 μS/cm, TDS: 127 g/L, pH: 8.71, ORP: 56 mV		
-		SILTSTONE very fine grained, medium grey, chlorite, altered; 10% quartz SILTSTONE very fine grained, medium grey, SLATE, 20% very fine grained, medium grey	0.5 L/s, Temp: 20°C, EC: 101 μS/cm, TDS: 66 g/L, pH: 8.42, ORP: 59 mV		Gravel pack (5mm wash) (293 - 298 mBGL)
— 300		SILTSTONE very fine grained, medium grey			4 inch open hole (298 - 318 mBGL)
-		SILTSTONE very fine grained, medium grey, SLATE, 10% very fine grained, medium grey, 1% quartz SILTSTONE very fine grained, medium grey, low			
— 310		occurrence of quartz, minor chlorite alteration, rare sericite, rare pyrite			
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Scientific and Technical Operating Procedures Form: A Issue: 3 Date issued: 28Aug2009



Form A Particulars of completed work

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	Work Licence No: 40BL192733										
BORE DEVELOPMENT 8											
Chemical used for breaking down drilling mud (Yes/No) No Name:											
Method	Bailing/Surging	g Je	tting	Airlifti	ng X	Backwashing	Ρι	umping	Other:		
Duration		hrs	hrs		0.5 hrs		hrs	hrs		hrs	
	DISINFECTION ON COMPLETION 9										
	Chemical(s) used		C	Quantity app	lied (Litres)		Method of	application		
					TESTS OI		N			10	
	Test	Date	Pump intake	Initial Water	Pumping	Water Level at end of	Duration		Recovery		
	type		depth	Level	rate	pumping	of Test	Water	Time	taken	
			(m)	(SWL) (m)	(L/s)	(DDL) (m)	(hrs)	level (m)	(hrs)	(mins)	
	Stage 1										
Multi stage	Stage 2										
(stepped drawdown)	Stage 3 Stage 4			-							
Single stag											
(constant ra											
Height of m	easuring point	above grour	id level		m	Test Method			See Code 4		
			WORK	PARTLY	BACKFILL	ED OR ABAN	DONED			11	
Original de	oth of work:	m			ls	work partly bac	kfilled:	(Yes/No)			
ls work aba	indoned:	(Yes/No)	Me	thod of a	abandonmer	nt: Backfille	d	Plugged	Сарр	ed	
Has any ca	sing been left ir	n the work	(Yes/	(No)		From	m	То	m		
Sealing	/ fill type	From dept	h	To de	pth	Sealing / fill ty	pe F	rom depth	То	depth	
See C	ode 11	(m)		(m))	See Code 11		(m)		(m)	
					1						
Site chosen	by: Hydrogeo	logist	Geolo	gist	Driller	Diviner	Client	t Oth	ner	12	
Lot No	National Parl	C DP N	o 🛛	Nationa	l Park					13	
Work Loca	tion Co ordinat	es	Easting	64	13789.6	Northing	603826	8.2	Zone	55	
GPS:	(Yes/No) Yes	>>		AMG	AGD	or	MGA/GDA	X	(See explana	ition)	
Please mark the work site with "X" on the CLID provided map.											
Indicate also the distances in metres from two (2) adjacent boundaries, and attach the map to this Form A package.											
Signatures:											
	Signatures:										
Driller:	4	63 6 Mar	$\langle\!\!\langle$		Licens	00'					
	0 1				LICCIIS						
Date:	Date: 24/01/2019 Date:										



	Office
GOVERNMENT	of Water

Page 3

GOVERNMEN		· · · · · · · · ·			Work Licen	ice No:		40E	3L1	927	'33						
	DRILLE	R'S ROCK	/STRATA DE	SCRIPTION (LITH	IOLOGY)										ŀ	15	
De From (m)	Depth Description From To See Code 15						WORK CONSTRUCTION SKETCH										
(111)	(m)			See Attachment				1	:	1	-	T			}	}	
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									-							16	
Method of ex	cavation:	Hand dug	Back ho	Dragline	Dozer		0	the	r								
Depth	Length	Width	Diameter	Lining	Dimention		F			Сер	th		Тс	o De		I	
(m)	(m)	(m)	(m)	material	liner (n	(m)			(m)				(m)				
												+					
	<u>-</u>	<u>.</u>	Please atta	ch copies of the fo	ollowing if ava	ilable									ŀ	17	
Geologist log	(Yes/No)	Yes	Laboratory analysis		(Yes/No)	Pumpin	g test	:(s)			(Ye	es/No)					
Geophysical log	(Yes/No)		Sieve analysis of aqu	uifer material	(Yes/No)	Installed	l Pun	np de	etails	6	(Ye	es/No)					

Depth_From	Depth_To	Lithology	Description
0.00	1.00	CLAY	CLAY fine to medium grained, light brownish grey, highly oxidised, highly weathered, very poorly sorted
1.00	2.00	SANDSTONE	SANDSTONE fine to medium grained, light brownish grey, highly oxidised, highly weathered, CLAY, 40% fine grained, medium orange, highly oxidised
2.00	3.00	SANDSTONE	SANDSTONE fine to medium grained, light brownish grey, highly oxidised, highly weathered, CLAY, 30% fine grained, medium orange, highly oxidised, 10% quartz
3.00	4.00	SANDSTONE	SANDSTONE fine to medium grained, light bluish grey, highly oxidised, moderately weathered, CLAY, 10% fine grained, medium orange, highly oxidised
4.00	5.00	SANDSTONE	SANDSTONE fine to medium grained, light bluish grey, highly oxidised, moderately weathered
5.00	6.00	SANDSTONE	SANDSTONE fine to medium grained, light brownish grey, highly oxidised, moderately weathered
6.00	7.00	SANDSTONE	SANDSTONE fine to medium grained, light brownish grey, moderately oxidised, moderately weathered
7.00	8.00	SANDSTONE	SANDSTONE fine to medium grained, light brownish grey, highly oxidised, moderately weathered
8.00	9.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, highly oxidised, moderately weathered
9.00	10.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, moderately oxidised, slightly weathered
10.00	11.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, moderately oxidised, slightly weathered
11.00	12.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, moderately oxidised, moderately weathered
12.00	13.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, moderately oxidised, slightly weathered
13.00	14.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, moderately oxidised, slightly weathered
14.00	15.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, moderately oxidised, slightly weathered
15.00	16.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, moderately oxidised, slightly weathered
16.00	17.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, slightly oxidised, slightly weathered
17.00	18.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, slightly oxidised, slightly weathered
18.00	19.00	SANDSTONE	SANDSTONE fine to medium grained, light orangey grey, slightly oxidised, slightly weathered
19.00	20.00	SANDSTONE	SANDSTONE fine to medium grained, light brownish grey, slightly oxidised, slightly weathered, 10% quartz
20.00	21.00	SANDSTONE	SANDSTONE fine to medium grained, light brownish grey, slightly oxidised, moderately weathered, SLATE, 30% fine to medium grained, medium brownish grey, slightly oxidised, 5% quartz
21.00	22.00	SLATE	SLATE fine to medium grained, light brownish grey, slightly oxidised, interbedded, platy; SANDSTONE, 30% fine to medium grained, medium brownish grey
22.00	23.00	SLATE	SLATE fine to medium grained, medium brownish grey, slightly oxidised, interbedded, platy; SANDSTONE, 30% fine to medium grained, medium brownish grey
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23.00	24.00	SLATE	SLATE fine to medium grained, medium brownish grey, slightly oxidised, interbedded
24.00	25.00	SLATE	SLATE fine to medium grained, medium brownish grey, slightly oxidised, interbedded, platy; SANDSTONE, 20% fine to medium grained, medium brownish grey
25.00	26.00	SLATE	SLATE fine to medium grained, medium brownish grey, slightly oxidised, interbedded, platy; SANDSTONE, 30% fine to medium grained, medium brownish grey
26.00	27.00	SLATE	SLATE fine to medium grained, medium brownish grey, slightly oxidised, platy
27.00	28.00	SLATE	SLATE fine to medium grained, medium brownish grey, slightly oxidised, interbedded, platy; SANDSTONE, 30% fine to medium grained, medium brownish grey
28.00	28.00 29.00 SLATE oxid		SLATE fine to medium grained, medium brownish grey, slightly oxidised, interbedded, platy; SANDSTONE, 40% fine to medium grained, medium brownish grey
29.00	30.00	SANDSTONE	SANDSTONE fine to medium grained, medium brownish grey, slightly oxidised

	EMN	Л	WATER MONITORI	NG BORE LOG	Bore ID	MB08A
	CI.II	· I	Client: Snowy Hydro Limited	Project: Sr	10wy 2.0	
a she was a she was a set	nconsulting.com	201-010 m	Date completed: 20/11/2018		Project num	ber: J17188
	, 20 Chandos S		Drilling contractor: Highland Dril	ling	Elevation:	1435.2 mAHD
	ards NSW 2065 I93 9500	ų.	Drilling method: Air rotary		Easting:	643789.6
0149 / HOLD 1 H. A.	93 9599		Hydrogeologist: Kaitlyn Brodie	9	Northing:	6038268.2
Static Wa	ater Level: 22	20	Screened Format	tion: Adaminaby Group		1/2018
Total de	pth: 30	m I	Screened depth:	19 - 29 mbgl	Casing: 50m	
Depth	Lithology		Description	Drilling Notes	Bore Co	mpletion
(mbgl)	Graphic			_	Diagram	Design notes
_0		highly sorted SAND brown	STONE fine to medium grained, light ish grey, highly oxidised, highly weathered, , 30% fine grained, medium orange, highly			Cement grout (0 - 1 mBGL) 7.5 inch diameter borehole (0 - 6 mBGL)
-			STONE fine to medium grained, light ish grey, highly oxidised, moderately ered		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	6 inch PVC surface casing (0 - 6 mBGL)
		orang	STONE fine to medium grained, light ey grey, highly oxidised, moderately			Blue metal gravel backfill (5-8mm wash) (1 - 14 mBGL)
— 10		weath SAND orang weath	STONE fine to medium grained, light ey grey, moderately oxidised, slightly		*****	5.5 inch diameter borehole (6 - 30 mBGL) 50mm blank PN18
<del>.</del>	Adaminaby Group					U-PVC casing (0 - 19 mBGL)
- 20	Adar					Bentonite seal (14 - 19 mBGL)
		brown weath mediu quartz	STONE fine to medium grained, light ish grey, slightly oxidised, moderately ered, SLATE, 30% fine to medium grained, im brownish grey, slightly oxidised, 5% E fine to medium grained, light brownish			Gravel pack (5mm wash) (19 - 30 mBGL)
-		grey, s SAND	slightly oxidised, interbedded, platy; STONE, 30% fine to medium grained, im brownish grey	Drilled dry. No groundwater samples during drilling		50mm slotted PN18 U-PVC casing (0.5mm aperture) (19 - 29 mBGL)
_ 30			STONE fine to medium grained, medium ish grey, slightly oxidised			50mm blank PN18 U-PVC sump (29 - 30 mBGL)

NS GOVER	NMENT			ice Vat	er			F	or	m A I	Parti	icula	ars	of	com	ple	tec	<b>l wo</b> Pag	
Driller's	s Licenc	e No:	DL	.1913				1	Wo	ork Lice	nce No	:	40B	L192	2733				2
Class o	of Licen	ce:	Cla	ass 4					Na	me of L	icense	e:	Sno	wv H	lydro	Limi	ted		
Driller's	Name:			n Palk						ended			~~~~~	~~~~~	ng Bo	~~~~~			
	ant Drille			ayne S	nratio					mpletio		6			ig Do	10		17/10	/18
												-						17710	
Contra		V	-	ghlanc				ງາາາາາ	-		5 DE IA								3
New bo		X		-	ement	bore	•			From		То	П		ameter	Dri		Metho	a
Deepe	ened			Enlarg						(m)	-	(m)			nm)		See	Code 3	
Recon	ditioned			Other	specify	)				0		30		2	00			9	
Final D	Depth	298	m							30	2	298		1	40			9	
WAT	ER BE	ARING	ZO	NES							-								4
					E	stima	ated Yi	eld		Test	DD	) L	Dı	Iratio	n		Salir	nity	<u> </u>
From	То	Thickn	iess	SWL			L/s)			ethod	at end							ty or T	DS)
(m)	(m)	(m	)	(m)	Individ			ulative	_		(n	ו)	Hrs	n		Cond		TDS	
( )	. ,		,	( )	Aquif				See	e Code 4	L `	,			(H	JS/cm)		(mg/L)	)
				22.44	•				1	Α									
					See	Э	Attac	hment	1	Α									
									1	Α									
CASI	NG / LII	NER DI	ETAI	LS															5
Material	OD	Wa	11	From	То	Met	hod	Cas	ina	suppor	t meth	od		See	e Code 5	5	2		1
		Thickn				Fixi	ina	0.00		00.pp0.							_		
Code 5	(mm)	(mn		(m)	(m)	Cod	-		e o	f casing	g botto	m		See	e Code 5	5	2		1
5	160.25	4.2		0	30	4	L Ce	ntralise			-	1	o (ir	ndicate	on sketc	h)			
8	60.2	5		0	279	5		mp insta			Yes/No				297		То	298	
	60.2	5		297	294			-			{Yes/No			From		_		290	
8	00.2	5		291	294			essure c						FIOIII		m	То		m
							Ca	sing Pro	otect	tor cem	ented i	n plac	e						
WATE	ER ENT	RY DE	SIG	N															6
	<b>I</b>			Gene						Scree	en			S	lot Det	ails			
Material	OD	Wa		From	То	-	ening	Fixin	g	Apert	ure	Len	gth	١	Width		Alig	nment	
		Thickn					уре										_		
Code 5	(mm)	(mn		(m)	(m)	See	Code 6	See Coo	le 5	(mn	,	(mi	,		(mm)		See	Code 6	
8	60.2	5		279	297		5	5		0.4	-	20	0	_	10	_		H	
GRA	VEL PA	CK						1		1									7
							Gr	ain size				Depth	<u>ו</u>			Q	uanti		
								(mm)				(m)					1		
	Туре			Grade		F	rom	1	0		From		Т	o		res		m ³	
	ounded	Х			ded X		3	;	5		275			298					
С	rushed			Ungrad	ded														
Bentor	nite/Gro	ut seal		(Yes/No)	Yes						265			275					
Method	of place	ment of	Gra	vel Pack		S	iee Code	7		1									
For De	epartme	ntal u	se c	only:		[	GW	]											
	•			~			1	1											

Scientific and Technical Operating Procedures Form: A Issue: 3 Date issued: 28Aug2009



GOVERNME		vater				Work Lie	cence No:	40BL192	2733	
				BC	RE DEVEL	OPMENT				8
Chemical us	sed for breaking	g down drillin	g mud	(Yes/No)	No	Name:				
Method	Bailing/Surging	g Je	tting	Airlifti	ng X	Backwashing	Pu	umping	Other:	
Duration		hrs	hrs		0.5 hrs		hrs	hrs		hrs
				DISINFE	CTION ON	COMPLETION				9
	Chemical(	s) used		0	Quantity app	lied (Litres)		Method of	application	
			-		TESTS O	N COMPLETIO Water Level	N			10
	Test	Date	Pump intake	Initial Water	Pumping	at end of	Duration		Recovery	
f	type		depth	Level	rate	pumping	of Test	Water	Time	taken
			(m)	(SWL) (m)	(L/s)	(DDL) (m)	(hrs)	level (m)	(hrs)	(mins)
	Stage 1									
Multi stage	Stage 2									
(stepped drawdown)	Stage 3 Stage 4									
Single stag										
(constant ra	ate)									
Height of m	easuring point	above grour	nd level		m	Test Method			See Code 4	
			WORK	PARTLY	BACKFILL	ED OR ABAN	DONED			11
Original dep	oth of work:	m			ls	work partly bac	kfilled:	(Yes/No)		
ls work aba	ndoned:	(Yes/No)	Me	ethod of a	abandonmer	nt: Backfille	d	Plugged	Capp	ed
Has any ca	sing been left i	n the work	(Yes	/No)		From	m	То	m	
Sealing	/ fill type	From dept	h	To de	pth	Sealing / fill ty	pe F	From depth	depth	
See C	ode 11	(m)		(m)	)	See Code 11		(m)		(m)
					1	<u> </u>				
Site chosen	by: Hydrogeo	ologist	Geolo	gist	Driller	Diviner	Clien	t Oth	ner	12
Lot No	National Parl	K DP N	0	Nationa	l Park	]				13
Work Loca	tion Co ordinat	tes	Easting	64	13789.6	Northing	603827	6.7	Zone	55
GPS:	(Yes/No) Yes	>>		AMG	/AGD	or	MGA/GDA	X	(See explana	tion)
Please mark the work site with "X" on the CLID provided map.										
Indicate	Indicate also the distances in metres from two (2) adjacent boundaries, and attach the map to this Form A package.									
	Signatures:									
Driller:	4	636h	$\ll$		Licens	ee:				
	0 1									
Date:	24/01/20	)19			Date:					



	Office
GOVERNMENT	of Water

OVERNMEN					Work Licence	lo:		40	BL	19:	273	33						
	DRILLE	R'S ROCK	/STRATA DE	SCRIPTION (LITH	IOLOGY)												1	5
De From (m)	pth To (m)			Description See Code 15	l				wc	DRł		ON SKE			сті	ION	ı	
(111)	(11)			See attachment							5		_					_
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			WORK NO		BY DRILLING RIC	G											1	6
Method of ex	cavation:	Hand dug	Back ho	Dragline	Dozer			Oth					_					
Depth (m)	Length (m)	Width (m)	Diameter (m)	Lining material	Dimentions of liner (m)			Fro	om (r	De n)	pth	I		Т	o D (n	)ep n)	th	
			Please atta	ch copies of the fo	ollowing if availab	le											1	7
Geologist log	(Yes/No)	Yes	Laboratory analysis	of water Sample	(Yes/No)	umpino	g tes	st(s)				(Yes	s/No)			]		
Geophysical log	(Yes/No)		Sieve analysis of aqu	uifer material	(Yes/No)	nstalled	l Pur	mpo	detai	ls		(Yes	s/No)			]		

Тор	Base	Lithology	Description
			CLAY fine to medium grained, medium brownish grey, highly oxidised,
0	1	CLAY	highly weathered, very poorly sorted
			SANDSTONE fine to medium grained, light brownish grey, moderately
1	4	SANDSTONE	oxidised, highly weathered
			SANDSTONE fine to medium grained, light orangey grey, highly oxidised,
4	5	SANDSTONE	moderately weathered
			SANDSTONE fine to medium grained, medium orangey brown, highly
5	11	SANDSTONE	oxidised, moderately weathered
			SANDSTONE fine to medium grained, light bluish grey, slightly oxidised,
11	12	SANDSTONE	moderately weathered
12	20	SANDSTONE	SANDSTONE fine to medium grained, medium bluish grey, moderately oxidised, slightly weathered
			SANDSTONE fine to medium grained, medium brownish grey, slightly
			oxidised, moderately weathered, slate, 10% fine to medium grained,
20	21	SANDSTONE	medium brownish grey, slightly oxidised
			SLATE fine to medium grained, medium brownish grey, slightly oxidised,
			interbedded, platy; sandstone, 10% fine to medium grained, medium
21	29	SLATE	brownish grey
			SILTSTONE fine grained, medium brownish grey, varying quartz content,
29		SILTSTONE	rare pyrite, minor chlorite alteration, and rare sericite
78	81	SLATE	SLATE fine grained, dark grey, platy
			SILTSTONE fine grained, medium grey, chlorite, altered; 1% quartz, rare
81	91	SILTSTONE	pyrite
			SLATE fine grained, dark grey, platy, siltstone, 40% fine to medium
91	95	SLATE	grained, medium grey, chlorite, altered
			SILTSTONE fine grained, medium grey, chlorite, altered; 1% quartz, rare
95	103	SILTSTONE	pyrite
			SILTSTONE fine grained, medium grey, chlorite, altered; slate, 10% fine
103	115	SILTSTONE	grained, medium grey, platy, 1% quartz, rare pyrite
			SILTSTONE fine grained, light grey, chlorite, altered; 1% quartz, 10%
115	116	SILTSTONE	
110	100		SILTSTONE fine grained, medium grey, slate, 20% fine grained, medium
116	122	SILTSTONE	grey, 1% quartz, 10% calcite
400	405		SLATE fine grained, dark grey, chlorite, altered; siltstone, 10% fine
122	125	SLATE	grained, medium grey
105	100		SILTSTONE fine grained, medium grey, chlorite, altered; slate, 10% fine
125	129	SILTSTONE	grained, medium grey, rare pyrite
100	140		SILTSTONE fine grained, medium grey, varying quartz content, rare
129	143	SILTSTONE	pyrite, minor chlorite alteration, rare sericite, rare calcite
140	1 4 4		SLATE fine grained, dark grey, chlorite, altered; siltstone, 40% fine
143		SLATE SILTSTONE	grained, medium grey, 1% quartz
144			SILTSTONE fine grained, medium grey, 1% quartz
145	140	SLATE	SLATE fine grained, medium grey, 2% quartz
146	150	SILTSTONE	SILTSTONE fine grained, medium grey, chlorite, altered; slate, 10% fine grained, medium grey, 2% quartz, 1% calcite, rare pyrite
170	100		SLATE fine grained, medium grey, siltstone, 10% fine grained, medium
150	158	SLATE	grey, 1% quartz, rare pyrite
			SILTSTONE fine grained, medium grey, varying quartz content, rare
158	165	SILTSTONE	pyrite, minor chlorite alteration, rare sericite
.00	.00		SLATE fine grained, medium grey, siltstone, 40% fine grained, medium
165	169	SLATE	grey, 1% quartz, rare pyrite, rare calcite
100	100		grogi i / quanz, iaro pyrio, iaro balono

169	171	SILTSTONE	SILTSTONE fine grained, medium grey, chlorite, altered; slate, 10% fine grained, medium grey, 1% quartz, rare pyrite
			SLATE fine grained, medium grey, siltstone, 10% fine grained, medium
171	173	SLATE	grey, 1% quartz, rare pyrite
173	176	SILTSTONE	SILTSTONE fine grained, medium grey, chlorite, altered
176	178	SLATE	SLATE fine grained, medium grey, siltstone, 10% fine grained, medium grey
			SILTSTONE fine grained, medium grey, chlorite, altered; 2% quartz, rare
178	183	SILTSTONE	pyrite
183	191	SILTSTONE	SILTSTONE fine grained, medium grey, rare pyrite
191	192	SLATE	SLATE fine grained, medium grey
192	218	SILTSTONE	SILTSTONE fine grained, medium grey, 2% quartz, rare pyrite, varying quartz content, rare pyrite, minor chlorite alteration
218		SILTSTONE	SILTSTONE fine grained, medium grey, 40% quartz
219		SILTSTONE	SILTSTONE fine grained, medium grey, 2% quartz, rare pyrite
			SILTSTONE fine grained, medium grey, chlorite, altered; 2% quartz, rare pyrite, varying quartz content, rare pyrite, minor chlorite alteration, rare
228	243	SILTSTONE	sericite
243	274	SILTSTONE	SILTSTONE fine grained, medium grey, 2% quartz, rare pyrite
274	298	SILTSTONE	SILTSTONE fine grained, medium grey, 5% quartz, rare pyrite, varying quartz content, rare pyrite, minor chlorite alteration, rare sericite

WATE	WATER BEARING ZONES											
				Estimat	ted Yield		Test	DDL	Dura	ation	S	Salinity
From	То	Thickness	SWL	(L	_/s)	m	ethod	at end of test			(Condu	ctivity or TDS)
(m)	(m)	(m)	(m)	Individual	Cumulative	Soc	e Code 4	(m)	Hrs	min	Cond	TDS
				Aquifer		500	e coue +				(µS/cm)	(mg/L)
29	30	1	22.44	0.1	0.1	1	Α				1136	
95	96	1		0.1	0.2	1	Α				95	
125	126	1		0.1	0.3	1	Α				81	
137	138	1		0.5	0.8	1	Α				155	
155	156	1		1	1.5	1	Α				154	
						1	Α					

		WATER MONITORI	NG BORE LOG	Bore ID	: MB08B
	EMN	Client: Snowy Hydro Limited	Project: Sno	wy 2.0	
Suite 01 St Leona T: 02 94 F:02 94	93 9599	treet Drilling contractor: Highland Dri Drilling method: Air Rotary Hydrogeologist: Kaitlyn Brodi	lling e	Project num Elevation: Easting: Northing:	1435.6 mAHD 643789.6 6038276.7
	ater Level: 22.		tion: Adaminaby Group		11/2018
Total de	pth: 298	3 m Screened depth	: 278 - 298 mBGL		mm threaded PVC
Depth	Lithology	Description	Drilling Notes	Bore Co	mpletion
(mbgl)	Graphic			Diagram	Design notes
-0		CLAY fine to medium grained, medium brownish grey, highly oxidised, highly weathered, very poorly sorted			Cement grout (0 - 1 mBGL)
	••••• ••••	SANDSTONE fine to medium grained, light brownish grey, moderately oxidised, highly weathered SANDSTONE fine to medium grained, light			
		orangey grey, highly oxidised, moderately weathered SANDSTONE fine to medium grained, medium orangey brown, highly oxidised, moderately			7.5 inch diameter borehole (0 - 24 mBGL)
10		weathered			( - · · · · · · · · · · · · · · · · · ·
		SANDSTONE fine to medium grained, light bluish grey, slightly oxidised, moderately weathered SANDSTONE fine to medium grained, medium bluish grey, moderately oxidised, slightly	-		
		weathered			6 inch steel surface casing (0 - 24 mBGL)
		SANDSTONE fine to medium grained, medium brownish grey, slightly oxidised, moderately			(0 - 24 MBGL)
20	····	weathered, SLATE, 10% fine to medium grained, medium brownish grey, slightly oxidised SLATE fine to medium grained, medium brownish grey, slightly oxidised, interbedded, platy; SANDSTONE, 10% fine to medium grained,			
		medium brownish grey			tanga ting pa
					Blue metal gravel backfill (5-8mm wash (1 - 260 mBGL)
30	Adaminaby Group	SILTSTONE fine grained, medium brownish grey, varying quartz content, rare pyrite, minor chlorite alteration, and rare sericite	0.1 L/s, Temp: 12.2°C, EC: 1136 µS/cm, TDS: 738 g/L, pH: 11.8, ORP: -62.8 mV		5.5 inch diameter borehole (24 - 298 mBGL)
			0.1 L/s, Temp: 14.6°C, EC: 838 μS/cm, TDS: 539.5 g/L, pH: 11.11,		50mm blank PN18 U-PVC casing (0 - 277 mBGL)
40			ORP: -42.8 mV		
			0.1 L/s, Temp: 18.5°C, EC: 280.9 μS/cm, TDS: 183.95 g/L, pH: 9.73, ORP: 19.9 mV		
- 50			0.1 L/s, Temp: 12.4°C, EC: 155.5 μS/cm, TDS: 101.4 g/L, pH: 9.17, ORP: 43.6 mV		

-6			0.1 L/s, Temp: 12.7°C, EC: 114.3 µS/cm, TDS: 74.1 g/L, pH: 9, ORP: 53.6 mV
- 60			0.1 L/s, Temp: 12.9°C, EC: 216.9 µS/cm, TDS: 141.05 g/L, pH: 9.18, ORP: 46.5 mV
			0.1 L/s, Temp: 12.5°C, EC: 151 µS/cm, TDS: 98.15 g/L, pH: 9.17, ORP: 29.3 mV
— 70 -			0.1 L/s, Temp: 12.9°C, EC: 151 µS/cm, TDS: 98.15 g/L, pH: 9.14, ORP: 42 mV
- 80		SLATE fine grained, dark grey, platy	0.1 L/s, Temp: 13.2°C, EC: 196.6 µS/cm, TDS: 128.05 g/L, pH: 9.17, ORP: 46.9 mV
t.1		SILTSTONE fine grained, medium grey, chlorite, altered; 1% quartz, rare pyrite	0.1 L/s, Temp: 13.5°C, EC: 157.9 µS/cm, TDS: 102.7 g/L, pH: 9.18, ORP: 41.1 mV
— 90		SLATE fine grained, dark grey, platy, SILTSTONE 40% fine to medium grained, medium grey, chlorite altered	0.1 L/s, Temp: 13.9°C, EC: 161.6 µS/cm, TDS: 105.3 g/L, pH: 9.21, ORP: 36.5 mV
-		SILTSTONE fine grained, medium grey, chlorite, altered; 1% quartz, rare pyrite	0.2 L/s, Temp: 14.1°C, EC: 95.4 µS/cm, TDS: 62.75 g/L, pH: 9.09, ORP: 43.5 mV
- 100	۲ ۹	SILTSTONE fine grained, medium grey, chlorite	0.2 L/s, Temp: 13.7°C, EC: 99.5 μS/cm, TDS:
	Adaminaby Group	altered; SLATE, 10% fine grained, medium grey, platy, 1% quartz, rare pyrite	64.95 g/L, pH: 9.22, ORP: 52.4 mV
- 110			0.2 L/s, Temp: 13.5°C, EC: 108.7 μS/cm, TDS: 70.85 g/L, pH: 9.11, ORP: 58.6 mV
-		SILTSTONE fine grained, light grey, chlorite altered; 1% quartz, 10% calcite SILTSTONE fine grained, medium grey, SLATE, 20% fine grained, medium grey, 1% guartz, 10%	0.2 L/s, Temp: 13.4°C, EC: 159.1 µS/cm, TDS: 103.35 g/L, pH: 9.2, ORP: 59.6 mV

848 	20% fine grained, medium grey, 1% quartz, 10% calcite	
- 120	SLATE fine grained, dark grey, chlorite altered; SILTSTONE, 10% fine grained, medium grey	0.2 L/s, Temp: 14.6°C, EC: 171.5 μS/cm, TDS: 111.8 g/L, pH: 8.93, ORP: 58.9 mV
-	SILTSTONE, 10% line grained, medium grey, chlorite altered; SLATE, 10% fine grained, medium grey, rare pyrite	0.3 L/s, Temp: 16.5°C,
- 130	SILTSTONE fine grained, medium grey, varying quartz content, rare pyrite, minor chlorite alteration, rare sericite, rare calcite	EC: 81.4 μS/cm, TDS: 52.65 g/L, pH: 9.21, ORP: 44.8 mV
-		0.3 L/s, Temp: 18.1°C, EC: 156.2 μS/cm, TDS: 101.4 g/L, pH: 9.21, ORP: 46.7 mV
— 140		0.8 L/s, Temp: 14.8°C, EC: 155.3 μS/cm, TDS: 100.75 g/L, pH: 8.83, ORP: 68.5 mV
-	SLATE fine grained, dark grey, chlorite altered; SILTSTONE, 40% fine grained, medium grey, 1% quartz SILTSTONE fine grained, medium grey, 1% quartz SLATE fine grained, medium grey, 2% quartz SILTSTONE fine grained, medium grey, chlorite	0.8 L/s, Temp: 12.8°C, EC: 217 μS/cm, TDS: 141.05 g/L, pH: 8.83, ORP: 72.9 mV
— 150	altered; SLATE, 10% fine grained, medium grey, 2% quartz, 1% calcite, rare pyrite SLATE fine grained, medium grey, SILTSTONE, 10% fine grained, medium grey, 1% quartz, rare pyrite	0.8 L/s, Temp: 14.3°C, EC: 153.3 μS/cm, TDS: 99.45 g/L, pH: 8.78, ORP: 68.9 mV
-		0.8 L/s, Temp: 12.7°C, EC: 109.4 μS/cm, TDS: 70.85 g/L, pH: 8.73,
— 160	SILTSTONE fine grained, medium grey, varying quartz content, rare pyrite, minor chlorite alteration, rare sericite	ORP: 74.2 mV
-		1.5 L/s, Temp: 7.6°C, EC: 154.1 μS/cm, TDS: 100.1 g/L, pH: 8.57, ORP: 113.5 mV
	SLATE fine grained, medium grey, SILTSTONE, 40% fine grained, medium grey, 1% quartz, rare pyrite, rare calcite	1.5 L/s, Temp: 10.1°C,
— 170	SILTSTONE fine grained, medium grey, chlorite altered; SLATE, 10% fine grained, medium grey, 1% quartz, rare pyrite SLATE fine grained, medium grey, SILTSTONE, 10% fine grained, medium grey, 1% quartz, rare pyrite	EC: 151.8 µS/cm, TDS: 98.8 g/L, pH: 8.56, ORP: 104.9 mV
7.0	SILTSTONE fine grained, medium grey, chlorite altered SLATE fine grained, medium grey, SILTSTONE,	1.5 L/s, Temp: 12.1°C, EC: 145.5 μS/cm, TDS: 94.25 g/L, pH: 8.6, ORP: 92 mV
- 180	SLATE tine grained, medium grey, SILTSTONE, 10% fine grained, medium grey SILTSTONE fine grained, medium grey, chlorite altered; 2% quartz, rare pyrite	
	SILTSTONE fine grained, medium grev, rare pyrite	1.5 L/s, Temp: 10°C, EC: 147.4 μS/cm, TDS: 95.55 g/L, pH: 8.59, ORP: 88.9 mV

T		SIL ISIONE TINE grained, medium grey, rare pyrite	[]
-			1.5 L/s, Temp: 12.5°C, EC: 78.1 μS/cm, TDS: 50.7 g/L, pH: 8.68,
— 190	Adaminaby Group	SLATE fine grained, medium grey	ORP: 76.5 mV
70		SILTSTONE fine grained, medium grey, 2% quartz, rare pyrite, minor chlorite alteration	1.5 L/s, Temp: 12.9°C, EC: 98.4 μS/cm, TDS: 63.7 g/L, pH: 8.57, ORP: 84.4 mV
- 200			1.5 L/s, Temp: 14°C, EC: 146.9 μS/cm, TDS: 94.9 g/L, pH: 8.56, ORP: 84.5 mV
			1.5 L/s, Temp: 14.8°C,
1953 1			EC: 127.9 µS/cm, TDS: 83.2 g/L, pH: 8.59, ORP: 80.2 mV
- 210			
- 220		SILTSTONE fine grained, medium grey, 40% quartz SILTSTONE fine grained, medium grey, 2% quartz, rare pyrite	1.5 L/s, Temp: 14.3°C, EC: 138.5 μS/cm, TDS: 89.7 g/L, pH: 8.55, ORP: 81.2 mV
-			
- 230		SILTSTONE fine grained, medium grey, chlorite altered; 2% quartz, rare pyrite, rare sericite	1.5 L/s, Temp: 13.8°C, EC: 164 μS/cm, TDS: 106.6 g/L, pH: 8.4, ORP: 71.6 mV
- 9			1.5 L/s, Temp: 17.6°C, EC: 142.5 µS/cm, TDS: 92.96 g/L, pH: 8.54, ORP: 88.2 mV
- 240			1.5 L/s, Temp: 18.2°C, EC: 158.8 µS/cm, TDS:
- 5		SILTSTONE fine grained, medium grey, 2% quartz, rare pyrite	103.35 g/L, pH: 8.36, ORP: 82.8 mV
- 250			1.5 L/s, Temp: 18.2°C, EC: 163.8 μS/cm, TDS: 106.6 g/L, pH: 8.31, ORP: 80.4 mV

-			1.5 L/s, Temp: 17.6°C, EC: 141.2 μS/cm, TDS: 91.65 g/L, pH: 8.38, ORP: 72.7 mV	
— 260			1.5 L/s, Temp: 16.9°C, EC: 115.6 μS/cm, TDS: 76.4 g/L, pH: 8.49, ORP: 66.3 mV	
	<ul> <li>Adaminaby Group</li> </ul>		1.5 L/s, Temp: 17.9°C, EC: 139.9 μS/cm, TDS: 91 g/L, pH: 8.39, ORP: 69.7 mV	
- 270			1.5 L/s, Temp: 19.3°C, EC: 147.6 μS/cm, TDS: 96.2 g/L, pH: 8.44, ORP: 66.9 mV	Bentonite seal (260 - 275 mBGL)
- 5		SILTSTONE fine grained, medium grey, 5% quartz, rare pyrite, minor chlorite alteration, rare sericite	1.5 L/s, Temp: 19.3°C, EC: 136.3 μS/cm, TDS: 88.4 g/L, pH: 8.48, ORP: 64.3 mV	
— 280			1.5 L/s, Temp: 11.9°C, EC: 156.3 μS/cm, TDS: 101.4 g/L, pH: 8.33, ORP: 84.3 mV	Gravel pack (5mm wash) (275 - 298 mBGL)
-			1.5 L/s, Temp: 13.4°C, EC: 165.1 μS/cm, TDS: 107.25 g/L, pH: 8.26,	50mm slotted PN18 U-PVC casing (0.5mm aperture) (277 - 297 mBGL)
- 290			ORP: 80.6 mV 1.5 L/s. Temp: 16.7°C.	
			EC: 162.1 μS/cm, TDS: 105.3 g/L, pH: 8.4, ORP: 75.7 mV	50mm blank PN18 U-PVC sump (297 - 298 mBGL)

NS GOVER			of V	ice Vat	er_			F	orr	n A	N Pa	artic					ole	tec	<b>l wo</b> Pag	
Driller's	s Licenc	e No	: DL	.1913				1	Wo	rk Lic	cence	e No:	4	0BL1	19272	23				2
Class o	of Licen	ce:	Cla	ass 4					Nar	ne of	f Lice	ensee:	S	now	y Hyd	ro L	imit	ed		
Driller's	Name:		lar	n Palk					Inte	ende	d Use	e:	N	lonit	oring	Bore	Э			
Assista	ant Drille	er:	Wa	ayne S	pratle	эy			Cor	nplet	tion D	Date:							18/12	/18
Contra	ctor:		Hig	ghland	l Drilli	ng	<u></u>		DR	ILLI	NG D	ETAIL	S							3
New b	ore		X	Replac	ement	bore			F	rom		Тс	)	Hol	e Diam	eter	Drill	ing	Metho	d
Deepe	ned			Enlarg	ed					(m)		(m	)		(mm)	1		See	Code 3	
Recon	ditioned	4		Other (		<b>v</b> )				0		30	)		254				9	
						, ,				30		20			190.	5			9	
Final D	Depth	300	m							200		30			99	-			9	
WATI	ER BE	ARIN	g zoi	NES																4
					E	stima	ated Yie	eld	ר	Fest		DDL		Dura	ation			Saliı	nity	
From	То	Thic	kness	SWL		(	(L/s)		me	ethod	d at	t end of t	est			(Co	ondu	ctivi	ity or T	DS)
(m)	(m)	(1	m)	(m)	Indivi	dual	Cumu	lative	See	Code	4	(m)		Hrs	min	Co	ond		TDS	
					Aqu											(µS	/cm)		(mg/L)	)
					Se	e	Attac	ched	1	Α										
CASI	NG / LI	NER	DETA	ILS																5
Material	OD	V	Vall	From	То	Met	hod	Cas	sing s	suppo	ort m	nethod			See Co	de 5		6	;	Γ
		Thic	kness			Fixi	ing		0											4
Code 5	(mm)	(n	nm)	(m)	(m)	Code	e 5	Тур	e of	casi	ing b	oottom			See Co	de 5		1		1
9	219	4	.2	0	30	6	Cer	ntralise	rs ins	talled	d {Ye	es/No)	No	(indi	cate on s	ketch)				-
9	130	4	.2	0	200	6	S Sur	mp inst	alled		{Ye	es/No)	No	F	rom		m	То		m
								ssure		nted		es/No)	No	F	rom		m	То		-
								sing Pr				,						10		m
W/A TI	ER ENT		ESICI	N			Cas	sing Pi	oleci	JI Ce	ment	eu in p	nace							
WAT		RID	2310	Gene	ral					Sci	reen	T			Slot	Deta	ils			6
Material	OD	V	Vall	From	То	Ор	ening	Fixin	ng		erture	. 1	engt	h	Wid		1	Alia	nment	
		Thic	kness			t	ype		Ū	•			0					0		
Code 5	(mm)	(n	nm)	(m)	(m)	See	Code 6	See Co	de 5	(n	nm)		(mm)	1	(mr	n)		See	Code 6	
		oper	n hole	200	300					Oper	n hole	e no	cas	ing						
GRA	VEL PA	ACK																		7
								ain size (mm)	;				epth m)				Qı	ant	ty	
·	Туре			Grade		F	rom		То		Fro	1		То		Litre	S		m ³	
	ounded			Grad	ded		No	Grave	el Pa	ck (	Open									
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Bentor	nite/Gro	ut se	al	(Yes/No)	Yes															
	of place			vel Pack		S	Gee Code 7	7	1											
For De	epartme	ental	use c	only:		[	GW													
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Scientific and Technical Operating Procedures Form: A Issue: 3 Date issued: 28Aug2009



GOVERNME		Vacci				Work Li	cence No:	40BL192	2723		
				BC	RE DEVEL	OPMENT				8	
Chemical us	sed for breaking	g down drillin	g mud	(Yes/No)	No	Name:					
Method	Bailing/Surging	g Je	tting	Airlifti	ng X	Backwashing	P	umping	Other:		
Duration		hrs	hrs		0.5 hrs		hrs	hrs		hrs	
DISINFECTION ON COMPLETION 9											
	Chemical(	s) used		0	Quantity app	lied (Litres)		Method of	application		
			-	-	TESTS O	N COMPLETIO	N N			10	
	Test	Date	Pump intake	Initial Water	Pumping	Water Level at end of	Duration		Recovery		
	type	2010	depth	Level	rate	pumping	of Test	Water	Time	taken	
			(m)	(SWL) (m)	(L/s)	(DDL) (m)	(hrs)	level (m)	(hrs)	(mins)	
	Stage 1						(113)		(110)	(11110)	
Multi stage	Stage 2										
(stepped	Stage 3										
drawdown) Single stag	Stage 4										
(constant ra											
Height of m	easuring point	above grour	nd level		m	Test Method			See Code 4		
			WOPK			ED OR ABAN				11	
Original dep	oth of work:	m	monar			work partly bac		(Yes/No)			
ls work aba		(Yes/No)	Me	ethod of a	abandonme			Plugged	Сарр	ed	
Has any ca	sing been left i	n the work	(Yes	;/No)	]	From	m	То	m		
	/ fill type	From dept	h	To de	nth	Sealing / fill ty	/pe	From depth	To	depth	
	ode 11	(m)		(m)	-	See Code 11		(m)	10	(m)	
Site chosen	by: Hydroged	ologist X	Geolo	gist	Driller	Diviner	Clien	t Otł	ner	12	
Lot No	National Parl	K DP N		Nationa	l Park	1				13	
	tion Co ordinat		Easting		32503.2	Northing	603854	2.1	Zone	55 IS	
GPS:	(Yes/No) Yes	1	-	AMG		or	MGA/GDA	X	(See explana		
010.		]		/ (100)					(Coo oxplain		
Please mark the work site with "X" on the CLID provided map.											
Indicate	also the distan	ces in metre	s from two	o (2) adja	cent bound	aries, and attac	ch the map t	o this Form A	package.		
			11		Signatu	res:					
	0_	Bla									
Driller:	1	10.	~		Licens	ee:					
Date:	24/01/20	19			Date:						
				-	Duto.						



	Office
GOVERNMENT	of Water

GOVERNMEI		· · · · · · · ·			Work Licence No	:	2	I0B	L1	927	23					
	DRILLE	R'S ROCK	/STRATA DE	SCRIPTION (LITH	HOLOGY)											15
From	pth To			Description See Code 15	]			M	/OF	RK (	CON SKE			стіс	NC	
(m)	(m)			See attachment		╡	1	ŝ		7	1	3		_	1	
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			<u> </u>		BY DRILLING RIG											16
Method of ex	cavation:	Hand dug	Back ho	Dragline	Dozer		Ot	her								
Depth	Length	Width	Diameter	Lining	Dimentions of		F)ept	h		Т	o De		ı
(m)	(m)	(m)	(m)	material	liner (m)	_			(m)		_	_	(m	I)	
						_						┢				
			Dia se stra													47
					ollowing if available									_		17
Geologist log	(Yes/No)	Yes	Laboratory analysis	ot water Sample	(Yes/No) Pur	ping	test(s)			(Ye	s/No)				
Geophysical log	(Yes/No)		Sieve analysis of aqu	uifer material	(Yes/No) Insta	alled F	Pum	p de	tails		(Ye	s/No)				

Тор	Base	Lithology	Description
0.00	20.00	SILTSTONE	SILTSTONE very fine to fine grained , medium brownish grey,
			moderately oxidised
20.00	26.00	SILTSTONE	SILTSTONE very fine to fine grained , medium grey, slightly oxidised
26.00	27.00	SILTSTONE	SILTSTONE very fine to fine grained , medium brownish grey, slightly
			oxidised, 5% quartz
27.00	32.00	SILTSTONE	SILTSTONE very fine to fine grained , medium brownish grey, slightly oxidised
32.00	34.00	SILTSTONE	SILTSTONE very fine to fine grained , medium brownish grey, slightly oxidised, 10% quartz
34.00	41.00	SILTSTONE	SILTSTONE very fine to fine grained , medium brownish grey
41.00	43.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, Redish staining
43.00	54.00	SILTSTONE	
54.00	59.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, SANDSTONE, 5% medium grained , dark reddish brown, rare pyrite
59.00	60.00	SILTSTONE	SILTSTONE very fine to fine grained , medium grey, chlorite, altered; 20% quartz, Redish staining
60.00	63.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey
			SILTSTONE very fine to fine grained , dark grey, 2% quartz, Redish
63.00	66.00	SILTSTONE	staining
66.00	78.00	SILTSTONE	
78.00	81.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, SANDSTONE, 5% medium grained , dark reddish brown
81.00	85.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, 2% quartz, Redish staining
85.00	91.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey
91.00	94.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, chlorite, altered; Minor clay lenses
94.00	103.00	SILTSTONE	
103.00	107.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, chlorite, altered; CLAY, 5% very fine to fine grained , light grey, 2% quartz
107.00	109.00	SILTSTONE	
109.00	112.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, CLAY, 5% very fine to fine grained , light grey
112.00	115.00	SILTSTONE	
115.00	116.00		SILTSTONE very fine to fine grained , dark grey, 5% quartz
116.00	117.00	SILTSTONE	
117.00	118.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, SANDSTONE, 5% medium grained , dark reddish brown
118	119	SILTSTONE	SILTSTONE very fine to fine grained , dark grey
119.00	120.00	SILTSTONE	
120.00	136.00	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, and quartz
136.00	139.00	SILTSTONE	
139	142	SILTSTONE	SILTSTONE very fine to fine grained , dark grey
142	147	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, chlorite, altered; 5% quartz
147	168	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, 2% quartz, rare pyrite
168	184	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, chlorite, altered; 30%
184	199		quartz
104	193	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, rare pyrite

199	201	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, chlorite, altered; 20% quartz
201	206	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, 1% quartz, rare pyrite
206	227	SILTSTONE	SILTSTONE very fine to fine grained , dark grey, 10% quartz, rare pyrite
227	239	SILTSTONE	SILTSTONE very fine to fine grained , dark black
239	245	SILTSTONE	SILTSTONE very fine to fine grained , dark black, 2% quartz
245	250	SILTSTONE	SILTSTONE very fine to fine grained , dark black
250	268	SILTSTONE	SILTSTONE very fine to fine grained , dark black, chlorite, altered; 5% quartz
268	269	SILTSTONE	SILTSTONE very fine to fine grained , dark black, CLAY, 50% very fine to fine grained , light grey
269	270	SILTSTONE	SILTSTONE very fine to fine grained , dark black, chlorite, altered; CLAY, 5% very fine to fine grained , light grey
270	281	SILTSTONE	SILTSTONE very fine to fine grained , dark black
281	300	SILTSTONE	SILTSTONE very fine to fine grained , dark black, chlorite, altered; 1% quartz, rare pyrite

WATE	WATER BEARING ZONES												
				Estima	ted Yield	Test		DDL	Duration		Salinity		
From	То	Thickness	SWL	(L	_/s)	m	method at end of test				(Condu	ctivity or TDS)	
(m)	(m)	(m)	(m)	Individual	Cumulative	Soc	e Code 4	(m)	Hrs	min	Cond	TDS	
				Aquifer		See	e Coue 4				(µS/cm)	(mg/L)	
35	36	1	107.6	0.3	0.3	1	Α				131.7		
77	78	1		0.1	0.4	1	Α				57.7		
89	90	1		0.1	0.5	1	Α				82.5		
137	138	1		0.25	0.75	1	Α				194.9		
143	144	1		0.75	1.5	1	Α				161.5		
						1	Α						

	EMN		NG BORE LOG	Bore ID:	PB09
	EMN	Client: Snowy Hydro Limited	wy 2.0		
Suite 01,		street Drilling contractor: Highland Dril		Project numb Elevation: Easting: Northing:	er: J17188 1330.0 mAHD 632503.2 6038542.1
Static Wa	ater Level: 107	7.6 mBGL Screened Forma	tion: Ravine Beds	Date: 20/12	/2018
Total dep	oth: 300	0m Screened depth:	200 - 300m open ho	ole Casing: 5.5 in	ch steel casing
Depth	Lithology			Bore Com	pletion
(mbgl)	Graphic	Description	Drilling Notes	Diagram	Design notes
		SILTSTONE fine grained, medium brownish grey, moderately oxidised			Cement grout (0 - 1 mBGL)
- 10					10 inch diameter borehole (0 - 30 mBGL)
-					8 inch steel surface casing (0 - 30 mBGL)
- 20	Beds -	SILTSTONE fine grained, medium grey, slightly oxidised			
	Ravine	SILTSTONE fine grained, medium brownish grey, slightly oxidised, 5% quartz SILTSTONE fine grained, medium brownish grey, slightly oxidised			Blue metal gravel backfill (5-8mm wash) (1 - 187 mBGL)
- 30		SILTSTONE fine grained, medium brownish grey, slightly oxidised, 10% quartz SILTSTONE fine grained, medium brownish grey			7.5 inch diameter borehole (30 - 200 mBGL)
- 40			0.3 L/s, Temp: 20°C, EC: 132 µS/cm, TDS: 86 g/L, pH: 9.57, ORP: 68 mV		5.5 inch steel casing
		SILTSTONE fine grained, dark grey, iron staining SILTSTONE fine grained, dark grey, rare pyrite	0.3 L/s, Temp: 18°C, EC: 45 μS/cm, TDS: 29 g/L, pH: 8.34, ORP: 129 mV		(0 - 200 mBGL)
- 50			0.3 L/s, Temp: 17°C, EC: 45 μS/cm, TDS: 29 g/L, pH: 8.48, ORP: 145 mV		

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	T	SILTSTONE fine grained, dark grey,	0.3 L/s, Temp: 19°C,
		SANDSTONE, 5% medium grained, dark reddish brown, rare pyrite	EC: 51 µS/cm, TDS: 33 g/L, pH: 8.44, ORP: 130 mV
- 60		SILTSTONE fine grained, medium grey, chlorite altered; 20% quartz, iron staining SILTSTONE fine grained, dark grey	
2		SILTSTONE fine grained, dark grey, 2% quartz, iron staining	
		SILTSTONE fine grained, dark grey	0.3 L/s, Temp: 19°C, EC: 74 μS/cm, TDS: 48 g/L, pH: 8.23, ORP: 125 mV
- 70			
- 80		SILTSTONE fine grained, dark grey, SANDSTONE, 5% medium grained, dark reddish brown	0.4 L/s, Temp: 22°C, EC: 58 µS/cm, TDS: 25 g/L, pH: 8.36, ORP: 115 mV
	Ravine Beds —	SILTSTONE fine grained, dark grey, 2% quartz, iron staining	
	Rav	SILTSTONE fine grained, dark grey	-
- 90			0.5 L/s, Temp: 23°C, EC: 83 μS/cm, TDS: 53
		SILTSTONE fine grained, dark grey, chlorite altered; minor clay lenses	g/L, pH: 8.06, ORP: 120 mV
2		SILTSTONE fine grained, dark grey, rare pyrite	
- 100			
		SILTSTONE fine grained, dark grey, chlorite altered; CLAY, 5% fine grained, light grey, 2% quartz	
		SILTSTONE fine grained, dark grey	
- 110		SILTSTONE fine grained, dark grey, CLAY, 5% fine grained, light grey	
		SILTSTONE fine grained, dark grey, 5% quartz	0.5 L/s, Temp: 21°C, EC: 89 µS/cm, TDS: 57 g/L, pH: 8.18, ORP: 106 mV
		SILTSTONE fine grained, dark grey	1

W.

T.		SANDSTONE, 5% medium grained, dark reddish	Ĩ
		brown	
- 120		SILTSTONE fine grained, dark grey	
120		SILTSTONE fine grained, dark grey, 5% quartz	
		SILTSTONE fine grained, dark grey, rare pyrite	J
		SILTSTONE fine grained, dark grey, 5% quartz	
-			
			0.5 L/s, Temp: 21°C,
			EC: 135 µS/cm, TDS: 88 g/L, pH: 7.93, ORP:
			116 mV
- 130			
.			
		SILTSTONE fine grained, dark grey	
		SILTSTONE fine grained, dark grey, chlorite	0.75 L/s, Temp: 13°C, EC: 195 µS/cm, TDS:
- 140		altered; 5% quartz	127 g/L, pH: 8.76, ORP: 142 mV
		SILTSTONE fine grained, dark grey, 2% quartz, rare pyrite]
			1.5 L/s, Temp: 14°C,
-			EC: 162 µS/cm, TDS: 105 g/L, pH: 8.06,
			ORP: 147 mV
		SILTSTONE fine grained, dark grey, chlorite altered; 30% quartz	
	Ravine Beds		
- 150	jue		1.5 L/s, Temp: 14°C,
	Ray		EC: 193 µS/cm, TDS: 125 g/L, pH: 8.08,
	重要		ORP: 143 mV
1. 1 . 12			
	憲憲		1.5 L/s, Temp: 16°C, EC: 176 μS/cm, TDS:
			114 g/L, pH: 8.19, ORP: 136 mV
100			
- 160			
			1.5.1 (a. Tama: 10%)
			1.5 L/s, Temp: 16°C, EC: 166 μS/cm, TDS:
L			108 g/L, pH: 8.15, ORP: 128 mV
		SILTSTONE fine grained, dark grey, rare pyrite	1
- 170		50 F G 455 545	
1/0			
	国		
F			1.5 L/s, Temp: 17°C, EC: 198 µS/cm, TDS:
	宝宝		135 g/L, pH: 8.2, ORP: 124 mV
			2017/01/01/01/01
- 180	国主		
	T REAL	L	





Class of Licence: Class 4 Ina Palk Name of License: Snowy Hydro Limited Diller's Name: Lia Palk Mane of License: Monitoring Bore 18/12/11 Assistant Diller: Highland Drilling Intended Use: Monitoring Bore 18/12/11 New bore X Replacement bore Enlarged 0 36 140 9 From To Hole Diameter Drilling Method (m) (m) (m) (m) Sec Code 3 From To Thickness S.W.L Class Test D L Duration (Conductivity or TDS (m) (m) (m) (m) (m) Individual Casing Support method Individual (m) (m)<	NS GOVER	NMENT			ice Vat	er			F	or	m A	Par	ticul	lars	s of	cor	np	olet	ed	WO Pag	
Class of Licence: Class 4 Ina Palk Name of License: Snowy Hydro Limited Diller's Name: Lia Palk Mane of License: Monitoring Bore 18/12/11 Assistant Diller: Highland Drilling Intended Use: Monitoring Bore 18/12/11 New bore X Replacement bore Enlarged 0 36 140 9 From To Hole Diameter Drilling Method (m) (m) (m) (m) Sec Code 3 From To Thickness S.W.L Class Test D L Duration (Conductivity or TDS (m) (m) (m) (m) (m) Individual Casing Support method Individual (m) (m)<	Driller's	Licenc	e No:	DL	.1913				1	Wo	ork Lice	ence N	No:	408	BL19	2733	3				2
Dialler Summe: Ian Palk Intended Use: Monitoring Bore Istantal Dial Palk Assistant Driller: Highland Drilling Completion Date: Istantal Palk Ista	Class o	of Licen	ce:		ass 4		~~~~~	••••••		Na	me of	Licens	see:	Sno	owy	Hydr	o Li	imite	ed	······	
Assistant Driller: Wayne Spratley Isinged Completion Date: Isinged Isinged <td>Driller's</td> <td>Name:</td> <td></td>	Driller's	Name:																			
Contractor. Highland Drilling DRLLING DETAILS Image: Contractor in the contractor					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	nratle	······						to:			<u>9</u> –			1	8/12/	/18
New bore Deepened New bore Enlarged Offer Seplacement bore Enl	_											_								0/12/	3
Deepened Integrad (m) (m) (mm) See Code 3 Reconditioned Thickness SWL Estimated Yield Test D D L Duration Selinity YMATER BEARING ZONES Estimated Yield Test D D L Duration Selinity Yow (m) (m) (m) Imbinitional Conductivity or TDS Yow (m) (m) Individual Curulative See Code 4 (m) His min Conductivity or TDS 35 36 1 26.25 1 A - - 156.9 35 36 1 26.25 1 A - - 156.9 36 1 26.25 1 A - - 156.9 36 1 26.25 0 26 6 Casing support method See Code 5 2 5 60.2 5 35 36 Sump installed (Yes/No) No from stelo) r 5 60.2 5 35 5 5 0.4 <td></td> <td></td> <td>\rangle</td> <td></td> <td>Hole [</td> <td>Diamet</td> <td>er</td> <td>Drilli</td> <td>na N</td> <td>lethoo</td> <td></td>			\rangle												Hole [Diamet	er	Drilli	na N	lethoo	
Reconditioned Other (specify) 0 36 140 9 Final Depth 36 m 0 36 140 9 WATER BEARING ZONES Estimated Yield Test D D L at end dited 1 Autor Salinity (m) (m) (m) (m) Individual Cumulative See Code 4 (m) Hrs min Conductivity or TDS (m) (m) (m) (m) Individual Cumulative See Code 4 (m) Hrs min Conductivity or TDS (m) (m) (m) (m) Individual Cumulative See Code 4 (m) Hrs min Conductivity or TDS (m) (m) (m) (m) Individual Cumulative See Code 5 2 2 2 CASING / LINER DETAILS From To Metrid Casing support method See Code 5 2 2 5 60.2 5 35 36 Casing Protector cemented in place Material No Indicate on sketch) To To	Deene	ned			-		0010				(m)		(m)		((mm)			-		
Final Depth 36 m 4 WATER BEARING ZONES 4 From To Thickness S W L (L/s) Test (L/s) D L arend of test (m) D Uration (Conductivity or TDS (Users)) (m) (m) (m) (m) individual Cumulative See Code 4 (m) His min Conductivity or TDS (Users) (users) (m) (m) (m) TDS (Users) (users) (m) (m) (m) TDS (Users) (users) (m) (m) (m) TDS (Users) (users) (m) (m) TDS (Users) (users) (m) (m) TDS (Users) (users) (m) TDS (Users) (users) (m) (m) TDS (Users) (users) (m) TDS (Users) (users) (m) (m) TDS (Users) (users) (m) (m) TDS (Users) (users) (m) TDS (Users) (users) (m) (m) (m) (m) (m) (m) TDS (Users) (users) (m) (m) (m) (m) (m) (m) (m) (users) (users) (m) (users) (. –	-	-		、				· · /					· ,					
WATER BEARING ZONES 4 From (m) To (m) Thickness (m) S W L (m) Estimated Yield (L/s) Test method D D L et end of test (m) Duration (at end of test (m) Duration (at end of test (m) Salinity (Conductivity or TDS (u)Som) (m) 35 36 1 26.25 1 A 1	Recon	aitioned			Other (specity)			-	0		30			140				9	
From To Thickness S W L Estimated Yield (L/s) Test method D D L at end of test (m) Duration Salinity (Conductivity or TDS (mg/L) 35 36 1 26.25 1 A 1 A 1 156.9 35 36 1 26.25 1 A 1 A 1 169.9 36 1 26.25 1 A 1 A 1	Final D	Depth	36	m																	
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Cols Cols Cols Aquifer See Code 4 Cols (usion) (mg/L) 35 36 1 26.25 1 A 1 A 156.9 Casing View 1 A A A A <t< td=""><td>From</td><td>То</td><td>Thick</td><td>ness</td><td>SWL</td><td></td><td>(</td><td>L/s)</td><td></td><td>m</td><td>ethod</td><td>at er</td><td>nd of test</td><td></td><td></td><td></td><td>(Co</td><td>nduo</td><td>ctivity</td><td>y or Tl</td><td>DS)</td></t<>	From	То	Thick	ness	SWL		(L/s)		m	ethod	at er	nd of test				(Co	nduo	ctivity	y or Tl	DS)
Aquifer Aquifer (uScm) (mg/L) 35 36 1 26.25 1 A 156.9 Amage 1 A 1 A 156.9 1 Casime LINER DETAILS 1 A A A A A A A A A <	(m)	(m)	(n	n)	(m)	Individ	ual	Cumu	lative	See	Code 4		(m)	H	rs	min	Со	nd		TDS	
CASING / LINER DETAILS 1 A I A I A I I A I						Aquif	er			5.0									(I	mg/L)	
Internal of the second	35	36		1	26.25												156	6.9			
CASING / LINER DETAILS 5 Material OD Wall Thickness From (mm) To Metrod Fixing Code 5 Casing support method Type of casing bottom See Code 5 2 5 60.2 5 0 26 6 Centralisers installed (Yes/No) No indicate on sketch) 5 60.2 5 35 36 Sump installed (Yes/No) Yes From 35 m To 36 r 5 60.2 5 35 36 Sump installed (Yes/No) Yes From 35 m To 36 r 6 0.2 5 35 36 Sump installed (Yes/No) No finderate on sketch) r 6 0.2 5 35 36 Sump installed Yes From m To 36 n Material OD Wall From To Opening Fixing Aperture Length Width Alignment Code 5 (mm)										1								_			
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Code 5 (mm) (mm) (m) (m) (m) Code 5 Type of casing bottom See Code 5 2 5 60.2 5 0 26 6 Centralisers installed (Yes/No) No (indicate on sketch) 5 60.2 5 35 36 G Sump installed (Yes/No) Yes From 35 m To 36 r 60.2 5 35 36 G Sump installed (Yes/No) No findicate on sketch) 6 60.2 5 35 36 Pressure cemented (Yes/No) No From 36 r WATER ENTY DESIGN General Casing Protector cemented in place Vidth Alignment Material OD Wall From To Opening type Fixing type Aperture Length Width Alignment Material OD Wall From To See Code 5 G 0.4 20 10 H Gracin size<	Material	OD			From	То			Cas	sing	suppo	rt met	thod		S	See Code	e 5		2		l
5 60.2 5 0 26 6 Centralisers installed (Yes/No) No (indicate on sketch) 5 60.2 5 35 36 Sump installed (Yes/No) Yes From 35 m To 36 r 5 60.2 5 35 36 Sump installed (Yes/No) Yes From 35 m To 36 r Pressure cemented (Yes/No) No From m To r Casing Protector cemented in place Water ENTRY DESIGN General Screen Slot Details Material OD Wall From To Opening Fixing Aperture Length Width Alignment Trickness (mm) (mm) (mm) (mm) (mm) See Code 6 See Code 5 (mm) (mm) Grain size Image: Code 6 See Code 7 Image: Code 6 See Code 7 Image: Code 7	Code 5	(mm)			(m)	(m)			Tvn		f casin	a hot	ttom		S	See Code	e 5		2		1
5 60.2 5 35 36 3 Sump installed (Yes/No) Yes From 35 m To 36 r 6 1		· /	``	,	. ,	· · /	-					-		10					-		I
Image: Constraint of the state of							-						-			_		m	То	26	
MATER ENTRY DESIGN Casing Protector cemented in place Material OD Wall From To Opening type Screen Slot Details Material OD Wall From To Opening type Aperture Length Width Alignment Code 5 (mm) (mm) (mm) (mm) See Code 6 See Code 5 (mm) (mm) See Code 6 See Code 7 Image: See Code 6 See Code 6 See Code 7 Image:		00.2		,	00	00			-				-			_	0		_	30	
Material Screen Slot Details Material OD Wall From To Opening Fixing Aperture Length Width Alignment Code 5 (mm) (mm) (m) (m) See Code 6 See Code 5 (mm) (mm) (mm) See Code 6 See Code 7 I															FIU	[[]		m	10		m
Material OD Wall From To Opening type Fixing type Aperture Length Width Alignment Code 5 (mm) (mm) (m) (m) (m) See Code 6 See Code 5 (mm) (mm) (mm) See Code 6 See Code 5 (mm) (mm) (mm) See Code 6 See Code 7								Cas	sing Pr	otect	tor cen	nentec	d in pla	се							
Material OD Wall From To Opening Fixing Aperture Length Width Alignment Code 5 (mm) (mm) (m) (m) (m) See Code 6 See Code 5 (mm) (mm) (mm) See Code 6 See Code 6 (mm) (mm) (mm) See Code 6 See Code 7 See Code 7 </td <td>WATE</td> <td>ER ENT</td> <td>RY DI</td> <td>ESIGI</td> <td>N</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>T</td> <td>n</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>6</td>	WATE	ER ENT	RY DI	ESIGI	N						T	n									6
Code 5 (mm) (mm) (m) (m) See Code 6 See Code 5 (mm) (mm) (mm) See Code 6 8 60.2 5 26 35 5 5 0.4 20 10 H a					·						Scre	en				Slot D	etai				
Code 5 (mm) (m) (m) (m) See Code 6 See Code 5 (mm) (mm) (mm) (mm) See Code 6 See Code 7 I <t< td=""><td>Material</td><td>OD</td><td></td><td></td><td>From</td><td>То</td><td>•</td><td>Ũ</td><td>Fixir</td><td>ng</td><td>Aper</td><td>ture</td><td>Ler</td><td>ngth</td><td></td><td>Width</td><td>h</td><td>/</td><td>Align</td><td>ment</td><td></td></t<>	Material	OD			From	То	•	Ũ	Fixir	ng	Aper	ture	Ler	ngth		Width	h	/	Align	ment	
8 60.2 5 26 35 5 5 0.4 20 10 H GRAVEL PACK Grain size Depth Quantity Type Grade From To From To Litres m³ Rounded X Graded X 3 5 25 36 Bentonite/Grout seal (Yes/No) Yes 21 25 0.4	Code 5	(mm)			(m)	(m)			See Co	de 5	(mr	n)	(m	nm)		(mm))		See C	ode 6	
GRAVEL PACK Grain size Depth Quantity Type Grade X 3 5 25 36 1 Rounded X Graded X 3 5 25 36 1 Bentonite/Grout seal (Yes/No) Yes 21 25 0 1	8	· · /		,	· · /	· · /			5			,					/			4	
Type Grade From To From To Litres m³ Rounded X Graded X 3 5 25 36 Crushed Ungraded X 3 5 21 25 36 Bentonite/Grout seal (Yes/No) Yes Yes 21 25 25 0																					
Type Grade From To From To Litres m³ Rounded X Graded X 3 5 25 36 Crushed Ungraded X 3 5 21 25 36 Bentonite/Grout seal (Yes/No) Yes Yes 21 25 25 0																					
Type Grade From To From To Litres m³ Rounded X Graded X 3 5 25 36 Crushed Ungraded X 3 5 21 25 36 Bentonite/Grout seal (Yes/No) Yes Yes 21 25 25 0																					
Type Grade From To From To Litres m ³ Rounded X Graded X 3 5 25 36 Crushed Ungraded X 3 5 25 36 Bentonite/Grue Yes/No Yes 21 25 0 Method of placement of Gravel Pack See Code 7 1	GRA	VEL PA	ск																		7
$\begin{array}{c c c c c c c c c c c c c c c c c c c $										•			-					Qua	antit	У	
Rounded X Graded X 3 5 25 36 Crushed Ungraded Image: Constraint of the set of th	-	Туре			Grade		F			То		From			To	ΤL	itre	s		m ³	
Crushed Ungraded Image: Constraint of the set			X			ded X		1								6					
Method of placement of Gravel Pack See Code 7 1	С	rushed			Ungrad	led															
Method of placement of Gravel Pack See Code 7 1	Bentor	nite/Gro	ut sea	al	(Yes/No)	Yes						21			2	5					
For Departmental use only:							Se	ee Code 7	7		1					~					
	For De	epartme	ntal u	use o	only:		Γ	GW													

Scientific and Technical Operating Procedures Form: A Issue: 3 Date issued: 28Aug2009



GOVERNMEN		vater				Work Lie	cence No:	40BL192	2733	
				BC	DRE DEVEL	OPMENT				8
Chemical us	sed for breaking	g down drillin	g mud	(Yes/No)	No	Name:				
Method	Bailing/Surging	g Je	tting	Airlifti	ng X	Backwashing	Ρι	umping	Other:	
Duration		hrs	hrs		0.5 hrs		hrs	hrs		hrs
				DISINFE	CTION ON	COMPLETION				9
	Chemical(s) used		0	Quantity app	lied (Litres)		Method of	application	
					TESTS O		N			10
-	Test	Date	Pump intake	Initial Water	Pumping	Water Level at end of	Duration		Recovery	
t	type		depth	Level	rate	pumping	of Test	Water	Time	taken
			(m)	(SWL) (m)	(L/s)	(DDL) (m)	(hrs)	level (m)	(hrs)	(mins)
	Stage 1									
Multi stage	Stage 2									
(stepped	Stage 3									
drawdown) Single stage	Stage 4									
(constant ra										
Height of m	easuring point	above grour	nd level		m	Test Method			See Code 4	
			WORK	PARTI Y		ED OR ABAN	DONED			11
Original dep	oth of work:	m				work partly bac		(Yes/No)		
ls work aba	ndoned:	(Yes/No)	Me	ethod of a	abandonmer	nt: Backfille	d 🗌	Plugged	Сарр	ed
Has any ca	sing been left i	n the work	(Yes	/No)]	From	m	То	m	
Sealing	/ fill type	From dept	h	To de	pth	Sealing / fill ty	pe F	rom depth	То	depth
	ode 11	(m)		(m)		See Code 11		(m)		(m)
Site chosen	by: Hydroged	ologist	Geolo	gist	Driller	Diviner	Client	t Otł	ner	12
Lot No	National Parl	K DP N	0	Nationa	l Park]				13
	tion Co ordinat		Easting		32508	Northing	603854	9.3	Zone	55
GPS:	(Yes/No) Yes	>>	,	AMG	/AGD	or	MGA/GDA	X	(See explana	ition)
		1				1				-
Please n	nark the work s	ite with "X"	on the C	LID provi	ded map.					
Indicate	also the distan	ces in metre	s from two	o (2) adja	cent bounda	aries, and attac	h the map to	o this Form A	package.	
					01					
	1	11	1		Signatu	res:				
	4	0) UPa	K							
Driller:	0 1	57			Licens	ee:				
Date:	24/01/2	2019			Date:					
				•						



GOVERNMEN					Work Licence No:		40E	3L1	92	733	3					
	DRILLE	R'S ROCK	STRATA DE	SCRIPTION (LITH	IOLOGY)										1	5
De	pth			Description			v	NO	RK	cc	ONS	TR	ист	101	N	
From	То			See Code 15							KET					
(m)	(m)															
0	13	SILTSTONE very	fine to fine grained , medium	n brownish grey, moderately oxidised,	2% quartz, Minor organic matter present											
13	15		, ,	ined , medium brownish grey												
15	20		· ·		nish grey, highly oxidised									<u></u>	, 	
20	26				, slightly oxidised, 20% quartz									ļ	ļ., !	Ļ
26	29				hish grey, slightly oxidised									ļ	<u>}</u>	
29	36	SILT	STONE very f	fine to fine grained	1, medium grey											Ļ
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			WORK NO	T CONSTRUCTED	BY DRILLING RIG										1	6
Method of ex	cavation:	Hand dug	Back ho	Dragline	Dozer	0)the	r								
Depth	Length	Width	Diameter	Lining	Dimentions of	F	Fro		-	pth		-	To E	Dep m)	oth	
(m)	(m)	(m)	(m)	material	liner (m)	+		(m	<u>)</u>		+			<u></u>		
						+					+		_	_	_	
			Please atta	ch conjec of the fr	blowing if available						_				F	7
				-										-	Ľ	<u>'</u>
Geologist log	(Yes/No)	Yes	Laboratory analysis o	of water Sample	(Yes/No) Pump	ing tes	t(s)			C	(Yes/N	^{.0)}	_			
Geophysical log	(Yes/No)		Sieve analysis of aqu	lifer material	(Yes/No) Install	ed Pun	np de	etails	3	C	Yes/N	io)				

	EMN			G Bore ID	: MB12A
	CL.II.	Client: Snowy Hydro Limited	Project: S	Snowy 2.0	
Suite 01 St Leona	nconsulting.com , 20 Chandos S ards NSW 2065 93 9500 93 9599	treet Drilling contractor: Highlar	nd Drilling ary	Project num Elevation: Easting: Northing:	nber: J17188 1329.9 mAHD 632508.0 6038549.3
Static W	ater Level: 26.	25 mBGL Screened F	ormation: Adaminaby Grou	up Date: 20/	12/2018
Total de					mm threaded PVC
Depth	Lithology	Description	Drilling Notes		mpletion
(mbgl)	Graphic	Description	Drining Notes	Diagram	Design notes
0		SILTSTONE very fine to fine grained , media brownish grey, moderately oxidised, 2% qua minor organic matter present			Cement grout (0 - 1 mAHD)
-					5.5 inch diameter borehole (0 - 36 mBGL)
— 10					Blue metal gravel backfill (5-8mm wash) (1 - 21 mBGL)
	Ravine Beds	SILTSTONE very fine to fine grained , mediu brownish grey, highly oxidised, 30% quartz SILTSTONE very fine to fine grained , mediu brownish grey, highly oxidised			50mm blank PN18 U-PVC casing (threaded) (0 - 26 mBGL)
— 20		SILTSTONE very fine to fine grained , mediu brownish grey, slightly oxidised, 20% quartz	im.		Bentonite seal (21 - 25 mBGL)
-		SILTSTONE very fine to fine grained , mediu brownish grey, slightly oxidised	ım		Gravel pack (5mm wash) (25 - 36 mBGL)
— 30		SILTSTONE very fine to fine grained , mediu grey	Temp: 23°C, EC: 157 μS/cm, TDS: 102 g/L, pH: 6.55, ORP: 150 mV, injected water to		50mm slotted PN18 U-PVC casing (0.5mm aperture) (26 - 35 mBGL)
-			<5mins before reading may have altered pH and ORP		50mm blank PN18 U-PVC sump (threaded) (35 - 36 mBGL)

NS GOVER	NMENT			ice Vat	er_			F	or	m A	Par	ticul	ars	s of	fcoi	mp	olet	ted	WO Pag	
Driller's	Licenc	e No:	DL	.1913				1	Wo	ork Lice	nce N	lo:	40E	3L19	92733	3				2
Class o	of Licen	ce:	Cla	ass 4					Na	ime of l	icens	see:	Sno	owy	Hydr	o Li	imit	ed		
Driller's	Name:			n Palk		~~~~~			Int	ended	Use:		*****	~~~~~~	ring E	~~~~~				
Assista	ant Drille	er:	~~~~~	ayne S	pratle	v				mpletic		e.	~~~~~			~~~~~		~~~~~	3/12/	/18
Contra				ghland		ō				RILLIN	_								0/12/	3
New bo		Х	ĺ		ement					From		То		Hole	Diamet	er	Drill	ina N	Netho	
Deepe	ned		ł	-		5010				(m)		(m)			(mm)	[Code 3	
-				Enlarge		、			_	. ,		()			. ,					
Recon	ditioned			Other (specify)				0		12			200		-		9	
Final D	epth	180	m							12		180			140				9	
WATE	R BE	ARING	701	NES					_				_			-				4
WAIL			201		E	stima	ited Yie	eld		Test	D	DL	C	Durati	ion			Salin	lity	4
From	То	Thickn	ess	SWL		(L/s)		m	ethod	at er	nd of test				(Co			y or T	DS)
(m)	(m)	(m)		(m)	Individ		Cumu	lative				(m)	Hr	s	min	Со			TDS	- /
()	~ /	~ /		. ,	Aqui				See	e Code 4		()				(µS/	(cm)	((mg/L)	1
					See		Attach	nment	1	Α									0 /	
									1	Α										
									1	Α										
CASI	NG / LII	NER DE	TAI	LS																5
Material	OD	Wal	I	From	То	Meth	hod	Cas	ing	suppor	t met	thod		:	See Cod	e 5		2		1
		Thickn	ess			Fixi	na		Ũ	• •				L						4
Code 5	(mm)	(mm		(m)	(m)	Code	-	αvΤ	e o	f casin	a bot	ttom			See Cod	e 5		2		1
9	168	4.2		0	12	6	Cei	ntralise			-		lo ((indica	ite on ske	etch)				
8	60.2	5		0	149	5					{Yes/I	-	es		om 17	,		та	400	Т
_								mp inst										То	180	m
8	60.2	5		179	180	5	Pre	ssure o	eme	ented	{Yes/I	No) N	lo	Fro	om		m	То		m
							Cas	sing Pro	otect	tor cem	entec	l in pla	ce							
WATE	ER ENT	RY DES	SIGI	N																6
	1	T		Gene				1		Scre	en				Slot D	etai	ls			
Material	OD	Wal		From	То	Ор	ening	Fixin	g	Apert	ure	Ler	ngth		Widtl	h		Aligr	nment	
		Thickn	ess			_	уре													
Code 5	(mm)	(mm)	(m)	(m)	See	Code 6	See Coo	le 5	(mn			m)		(mm)			Code 6	
8	60.2	5		149	179		5	5		0.4	ł	2	0		10				H	
GRA	/EL P/	ск								u	1									7
							Gra	ain size		T		Dept	h				Qu	anti		
								(mm)				(m)								
	Гуре			Grade		F	rom		Го		From			То		itre	s		m ³	_
Ro	ounded	Х		Grad	led X		3		5		147			18	80					
С	rushed			Ungrad	led															
Bentor	nite/Gro	ut seal		(Yes/No)	Yes						140			14	7					
Method	of place	ement of	Gra	vel Pack		Se	ee Code 7	7		1										
For De	epartme	ntal us	se c	only:		Г	GW													
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Scientific and Technical Operating Procedures Form: A Issue: 3 Date issued: 28Aug2009



GOVERNMEI		vater				Work Lie	cence No:	40BL192	2733	
				BC	RE DEVEL	OPMENT				8
Chemical u	sed for breaking	g down drillin	ig mud	(Yes/No)	No	Name:				
Method	Bailing/Surging	g Je	tting	Airlifti	ng X	Backwashing	Pu	umping	Other:	
Duration		hrs	hrs		0.5 hrs		hrs	hrs		hrs
				DISINFE	CTION ON	COMPLETION				9
	Chemical(s) used		0	Quantity app	lied (Litres)		Method of	application	
					TESTS O		N	-		10
	Test	Date	Pump intake	Initial Water	Pumping	Water Level at end of	Duration		Recovery	
	type		depth	Level	rate	pumping	of Test	Water	Time	taken
			(m)	(SWL) (m)	(L/s)	(DDL) (m)	(hrs)	level (m)	(hrs)	(mins)
	Stage 1									
Multi stage	Stage 2									
(stepped drawdown)	Stage 3 Stage 4									
Single stag										
(constant ra										
Height of m	easuring point	above grour	nd level		m	Test Method			See Code 4	
			WORK	PARTLY	BACKFILL	.ED OR ABAN	DONED			11
Original de	oth of work:	m			ls	work partly bac	kfilled:	(Yes/No)		
ls work aba	indoned:	(Yes/No)	Me	ethod of a	abandonmei	nt: Backfille	d	Plugged	Сарр	ed
Has any ca	sing been left i	n the work	(Yes	/No)		From	m	То	m	
Sealing	/ fill type	From dept	h	To de	pth	Sealing / fill ty	pe F	From depth	То	depth
See C	ode 11	(m)		(m)	See Code 11		(m)		(m)
Site chosen	by: Hydrogeo	ologist	Geolog	gist	Driller	Diviner	Clien	t Otl	her	12
Lot No	National Parl	K DP N	0	Nationa	l Park]				13
Work Loca	tion Co ordinat	tes	Easting	63	32514.8	Northing	603854	1.6	Zone	55
GPS:	(Yes/No) Yes	>>		AMG	/AGD	or	MGA/GDA	X	(See explana	ation)
		1				J				
	mark the work s									
Indicate	also the distan	ces in metre	s from two	o (2) adja	cent bounda	aries, and attac	h the map to	o this Form A	package.	
<u> </u>					Signatu	roc:				
	1	1 /1	1/1		Signatu	163.				
Driller:	4	15 6 Jan	$\langle\!\langle$		Lisses	~~·				
Driller:	0 1	<u> </u>			Licens					
Date:	24/01/20	19			Date:					



	Office
GOVERNMENT	of Water

OVERNMEN					Work Licence	lo:		40	BL	19:	273	33						
	DRILLE	R'S ROCK	/STRATA DE	SCRIPTION (LITH	IOLOGY)												1	5
De From (m)	pth To (m)			Description See Code 15	l				wc	DRł		ON SKE			сті	ION	ı	
(11)	(11)			See attachment							5		_					_
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			WORK NO		BY DRILLING RIC	G											1	6
Method of ex	cavation:	Hand dug	Back ho	Dragline	Dozer			Oth					_					
Depth (m)	Length (m)	Width (m)	Diameter (m)	Lining material	Dimentions of liner (m)			Fro	om (r	De n)	pth	I		Т	o D (n)ep n)	th	
			Please atta	ch copies of the fo	ollowing if availab	le											1	7
Geologist log	(Yes/No)	Yes	Laboratory analysis	of water Sample	(Yes/No)	umpino	g tes	st(s)				(Yes	s/No)]		
Geophysical log	(Yes/No)		Sieve analysis of aqu	uifer material	(Yes/No)	nstalled	l Pur	mpo	detai	ls		(Yes	s/No)]		

Тор	Base	Lithology	Description
			SOIL fine to coarse grained, medium orangey brown, highly
0.00	1.00	SOIL	oxidised
			SILTSTONE very fine to fine grained , medium bluish grey,
1.00	8.00	SILTSTONE	highly oxidised, 5% quartz
			SILTSTONE very fine to fine grained , medium brownish grey,
8.00	13.00	SILTSTONE	highly oxidised, large chips
			SILTSTONE very fine to fine grained , medium bluish grey,
13.00	25.00	SILTSTONE	
05.00	00.00		SILTSTONE very fine to fine grained , medium bluish grey,
25.00	26.00	SILTSTONE	slightly oxidised, 40% quartz
26.00	20.00	SILTSTONE	SILTSTONE very fine to fine grained , medium brownish grey,
20.00	29.00	SILISIONE	slightly oxidised, 5% quartz
29.00	34.00	SILTSTONE	SILTSTONE very fine to fine grained , medium brownish grey, slightly oxidised
29.00	34.00	SILTSTONE	
34.00	36.00	SILTSTONE	SILTSTONE very fine to fine grained , medium brownish grey, Water level
34.00	30.00	SILTSTONE	SILTSTONE very fine to fine grained , medium brownish grey,
36.00	38.00	SILTSTONE	
	00.00		SILTSTONE very fine to fine grained , medium brownish grey,
38.00	44 00	SILTSTONE	
00.00	11.00		SILTSTONE very fine to fine grained , medium brownish grey,
44.00	45.00	SII TSTONE	20% quartz, Iron staining in quartz chips
			SILTSTONE very fine to fine grained , medium brownish grey,
45.00	50.00	SILTSTONE	rare quartz
			SILTSTONE very fine to fine grained , dark bluish grey,
50.00	66.00	SILTSTONE	metamorphosed, rare pyrite, Occasional surface contamination
			SILTSTONE very fine to fine grained , dark bluish grey,
66.00	68.00	SILTSTONE	metamorphosed, 10% quartz, rare calcite
			SILTSTONE very fine to fine grained , dark bluish grey,
68.00	74.00	SILTSTONE	metamorphosed, rare pyrite, Occasional surface contamination
			SILTSTONE very fine to fine grained , dark bluish grey,
74.00	75.00	SILTSTONE	metamorphosed, 5% quartz, Iron staining in quartz chips
			SILTSTONE very fine to fine grained , dark bluish grey,
75.00	80.00	SILTSTONE	metamorphosed, 5% quartz
			SILTSTONE very fine to fine grained , dark bluish grey,
			metamorphosed, 5% quartz, Iron and serisite staining in quartz
80.00	81.00	SILTSTONE	
			SILTSTONE very fine to fine grained , dark bluish grey,
81.00	83.00	SILTSTONE	metamorphosed
			SILTSTONE very fine to fine grained , dark bluish grey,
83.00	84.00	SILTSTONE	metamorphosed, 10% quartz
04.00	00.00		SILTSTONE very fine to fine grained , dark bluish grey,
84.00	86.00	SILTSTONE	
			SILTSTONE very fine to fine grained , dark bluish grey,
96.00	07.00		metamorphosed, 20% quartz, Iron and chlorite alteration in
86.00	07.00	SILTSTONE	
			SILTSTONE very fine to fine grained , dark bluish grey,
87.00	102.00		metamorphosed, 2% quartz, rare pyrite, Iron staining in quartz
07.00	102.00	SILTSTONE	chips

	100.00		SILTSTONE very fine to fine grained , dark bluish grey, metamorphosed, 70% quartz, Iron and chlorite alteration in
102.00	103.00	SILTSTONE	quartz
102.00	107.00		SILTSTONE very fine to fine grained , dark bluish grey, metamorphosed, 10% quartz, rare pyrite, rare calcite, Iron and
103.00	107.00	SILTSTONE	chlorite alteration in quartz
107.00	114.00	SILTSTONE	SILTSTONE very fine to fine grained , dark bluish grey, metamorphosed, 2% quartz, rare pyrite
114.00	123.00	SILTSTONE	SILTSTONE very fine to fine grained , dark bluish grey, metamorphosed
123.00	127.00	SILTSTONE	SILTSTONE very fine to fine grained , dark bluish grey, metamorphosed, 5% quartz, Minor chlorite alteration in quartz
127.00	146.00	SILTSTONE	SILTSTONE very fine to fine grained , dark bluish grey, metamorphosed
146.00	147.00	SILTSTONE	SILTSTONE very fine to fine grained , dark bluish grey, metamorphosed, 95% quartz, 5% calcite, Iron and chlorite alteration in quartz
147.00	150.00	SILTSTONE	SILTSTONE very fine to fine grained , dark bluish grey, metamorphosed, 10% quartz, Minor chlorite alteration in quartz
150.00	177.00	SILTSTONE	SILTSTONE very fine to fine grained , dark bluish grey, metamorphosed, 2% quartz
177.00	180.00	SILTSTONE	SILTSTONE very fine to fine grained , dark bluish grey, metamorphosed, 20% quartz, Minor chlorite alteration in quartz

WATE	ER BE	ARING	ZONES									4
				Estimat	ted Yield		Test	DDL	Dura	tion	S	Salinity
From	То	Thickness	SWL	(L	_/s)	m	ethod	at end of test			(Condu	ctivity or TDS)
(m)	(m)	(m)	(m)	Individual	Cumulative	Soc	e Code 4	(m)	Hrs	min	Cond	TDS
				Aquifer		500	e Coue +				(µS/cm)	(mg/L)
35	36	1	32.53	0.3	0.3	1	Α				131.7	
77	78	1		0.1	0.4	1	Α				57.7	
89	90	1		0.1	0.5	1	Α				82.5	
137	138	1		0.25	0.75	1	Α				194.9	
143	144	1		0.75	1.5	1	Α				161.5	
						1	Α					

			NG BORE LOG	Bore ID	MB12B
	EMN	Client: Snowy Hydro Limited	Project: Sno	owy 2.0	
Suite 01, St Leona T: 02 94 F:02 949	93 9599 ater Level: 32	Drilling contractor: Highland Dril Drilling method: Air Rotary Hydrogeologist: Kaitlyn Brodie .53mBGL Screened Formation	lling	Project num Elevation: Easting: Northing: Date: 20/*	1330.5mAHD 632514.8 6038541.6
Total dep	pth: 18	0m Screened depth:	149 - 179mBGL	Casing: 50m	nm threaded PVC
Depth	Lithology	Description	Drilling Notes	Bore Co	mpletion
(mbgl)	Graphic	Description	Drining Notes	Diagram	Design notes
-0		SOIL fine to coarse grained, medium orangey brown, highly oxidised SILTSTONE very fine to fine grained, medium bluish grey, highly oxidised, 5% quartz			Cement grout (0 - 1 mBGL)
10		SILTSTONE very fine to fine grained, medium brownish grey, highly oxidised, large chips			7.5 inch diameter borehole (0 - 30 mBGL)
20		SILTSTONE very fine to fine grained, medium bluish grey, slightly oxidised			6 inch PVC surface casing (0 - 30 mBGL)
	Ravine Beds	SILTSTONE very fine to fine grained, medium bluish grey, slightly oxidised, 40% quartz SILTSTONE very fine to fine grained, medium brownish grey, slightly oxidised, 5% quartz SILTSTONE very fine to fine grained, medium			Blue metal gravel backfill (5-8mm wash) (1 - 140 mBGL)
30		brownish grey, slightly oxidised			5.5 inch diameter borehole (30 - 180 mBGL)
		SILTSTONE very fine to fine grained, medium brownish grey, water cut SILTSTONE very fine to fine grained, medium brownish grey, 20% guartz	0.4 L/s, Temp: 27°C, EC: 34 μS/cm, TDS: 22		50mm blank PN18 U-PVC casing
40		SILTSTONE very fine to fine grained, medium brownish grey, 5% quartz, rare pyrite, iron staining in quartz chips	g/L, pH: 8.16, ORP: 46 mV		(0 - 149 mBGL)
		SILTSTONE very fine to fine grained, medium brownish grey, 20% quartz, iron staining in quartz chips			
		SILTSTONE very fine to fine grained, medium brownish grey, rare quartz			
50		SILTSTONE verv fine to fine arained. dark bluish			

-		SILISIONE very fine to fine grained, dark bluish grey, metamorphosed, rare pyrite, occasional surface contamination	0.4 L/s, Temp: 18°C, EC: 94 µS/cm, TDS: 61 g/L, pH: 7.60, ORP: 127 mV
- 60			
		SILTSTONE very fine to fine grained, dark bluish	
- 70		SILTSTONE very fine to fine grained, dark blush grey, metamorphosed, 10% quartz, rare calcite SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, rare pyrite, occasional surface contamination	
		SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 5% quartz, iron staining in quartz chips	
		SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 5% quartz	0.4 L/s, Temp: 18°C,
- 80	Ravine Beds	SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 5% quartz, iron and serisite staining in quartz chips SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed SILTSTONE very fine to fine grained, dark bluish	EC: 56 µS/cm, TDS: 36 g/L, pH: 8.51, ORP: 109 mV
- 1	Ravin	grey, metamorphosed, 10% quartz SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 20% quartz, iron and chlorite alteration in guartz	
— 90		SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 2% quartz, rare pyrite, iron staining in quartz	0.5 L/s, Temp: 19°C, EC: 62 µS/cm, TDS: 40 g/L, pH: 8.72, ORP:
-			g/L, pr. 6.72, UKP. 109 mV
— 100			0.5 L/s, Temp: 18°C, EC: 105 μS/cm, TDS: 68 g/L, pH: 9.05, ORP: 104 mV
100		SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 70% quartz, iron and chlorite alteration in quartz SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 10% quartz, rare pyrite,	
		SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 2% quartz, rare pyrite	0.51/6 Tarra 1000
— 110		name and a second second considered from an every field of Food 1997 of Cons	0.5 L/s, Temp: 19°C, EC: 93 µS/cm, TDS: 60 g/L, pH: 8.71, ORP: 123 mV
-2		SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed	

- 120			0.5 L/s, Temp: 14°C, EC: 67 μS/cm, TDS: 44 g/L, pH: 8.42, ORP: 128 mV	
-		SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 5% quartz, minor chlorite alteration in quartz		
— 130		SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed		
. S			Temp: 10°C, EC: 56 μS/cm, TDS: 36 g/L, pH: 8.01, ORP: 98 mV	
— 140				Bentonite seal (140 - 149 mBGL)
-	ads sb	SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 95% quartz, 5% calcite, iron and chlorite alteration in quartz SILTSTONE very fine to fine grained, dark bluish	0.5 L/s, Temp: 15°C, EC: 52 μS/cm, TDS: 33 g/L, pH: 7.04, ORP: 94 mV	
— 150	Ravine Beds	SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 10% quartz, minor chlorite alteration in quartz SILTSTONE very fine to fine grained, dark bluish grey, metamorphosed, 2% quartz		
-			1 L/s, Temp: 15°C, EC: 63 μS/cm, TDS: 41 g/L, pH: 8.28, ORP: 100	
— 160			mV 1 L/s, Temp: 16°C, EC: 63 μS/cm, TDS: 41 g/L,	50mm slotted PN18 U-PVC casing (0.5mm aperture) (149 - 179 mBGL)
.			pH: 8.46, ORP: 103 mV	
— 170			1 L/s, Temp: 15°C, EC: 49 μS/cm, TDS: 32 g/L, pH: 8.11, ORP: 111 mV	Gravel pack (5mm wash) (149 - 180 mBGL)
7.0		SILTSTONE very fine to fine grained, dark bluish	1 L/s, Temp: 15°C, EC: 115 µS/cm, TDS: 100 g/L, pH: 8.11, ORP: 117 mV	50mm blank PN18 U-PVC sump
L 180		grey, metamorphosed, 20% quartz, minor chlorite alteration in quartz		(threaded) (179 - 180 mBGL)

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	Chemic	al(s) used				lied (Litres)	T.	Method	of applicatio	
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Page 3

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ologist log (Yes/No) Laboratory analysis of water Sample (Yes/No) Pumping test(s) (Yes/No)			F	Please attacl	h copies of the fo	ollowing if available	88	17
Cious analysis of aquifor material installed Formp details		(Yes/No)		Laboratory analys	is of water Sample	(Yes/No) Pumpi	ng test(s) (Yesh	Na

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I PARTY INTERNATION							ander i nieg	spain to tea	POG	n A pac	wage.
PRILLED	BY	SARDON	TAUR	JTON :	Signature	State of the state			112-21	- inter	
SUPPERUM	SED By	Ken	ADA	HR.	orginature	·3.					
	LIC A	1/3	5'		License	e:			(114) 10	10.5	
۶.											
65.					Dale.						



- No Trill Course			- Shillington - Shiring		Work Licence N	lo:	
D	RILLER'	'S ROCK	STRATA	DESCRIPTION (L	_ITHOLOGY)		15
De From (m)	pth To (m)			Description See Code 15]		ONSTRUCTION KETCH
0	10	Bro	will Wer	THENED C.N	ALL X		TTTTT
							CATIC COVE COVE COVE COVE COVE COVE COVE COV
			WORK NOT	CONSTRUCTED	BY DRILLING RIG		16
hod of exca	avation: ŀ	Hand dug	Back ho		Dozer	Other	10
epth I (m)	_ength (m)	Width (m)	Diameter (m)	Lining material	Dimentions of liner (m)	From Depth (m)	To Depth (m)
		I	-	-			
	and the second second	P	lease attac	h copies of the fo	llowing if available		17
ogist log	(Yes/No)					ng test(s) (Yes/	
 	e. =		Sect analysis of	aquitor material		a Panip dotails I	

Form A Particulars of completed work		Form	A	Particulars	of	completed	work
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and the second s	SW	lof	Wa	ter											Pag
	er's Lice	0110 Sec. 2 Statistics	17	738			1	Work	Licer	nce No:	4	BL	1927	33	Γ
	s of Lice	1930000000	4	1				Name	of L	icensee:)
1.1.1	er's Nam		ILEN					Intend	ded L	lse:	m	nita	Driver	tydra	e
Assis	stant Dri	iller:	SAN	00	Ac	UNTO	on	Comp	letior	n Date:)	
Conti	ractor:							DRIL	LING	DETAI	S			ALLS. LESS	1
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		Ι	T	E	stim	ated Yi	eld	Test	- 1	DDL		uration	1	Salini	4
From	То	Thickness	SWL			(L/s)		metho	1	it end of te:		lation		ductivity	
(m)	(m)	(m)	(m)	Indivi	dual	Cumu	ulative	See Cod		(m)	Hrs	mi			DS
1	100			Aqu	ifer			See Cou	e4			1	(µS/cr	m) (r r	ng/L)
177	189	12	3-8				3	11			1	1		12	020
						-					-				
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laterial	1	Wall	From	То	Met		0								5
		Thickness		10	Fixi		Casi	ng supp	ort r	nethod		See (Code 5	2	
Code 5	(mm)	(mm)	(m)	(m)	Code	<u> </u>	Type	e of cas	ina I	hottom		[C	S. I. El		
6	50	3	0	177	5			s installe	_		V Icin	dicate on	Code 5	2	
						_	np insta			es/No)					and the
					┢──			emented		es/No)		From	<i>994</i> m		90 n
					-	_				ited in pl				Το	n
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	and failed i	IT DESIG	Gene	ral	10.00									N'T IT	6
aterial	OD	Wall	From	То	Op	ening	Fixing		reen erture		a	-	Details	_	
		Thickness		10		/pe	Liviné	J Ape	enture	Lei	ngth	Wie	dth	Alignm	ient
ode 5	(mm)	(mm)	(m)	(m)	-		See Code	e 5 (m	າm)	(m	ım)	(m	m) -	See Coo	10.6
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GRAV	EL PA	СК	1990 - 2017A	RD-ICUT 23		in days	and the second	and the second second	There	-	- The second second				7
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	unded			ed X	-		3/1	6	19	0	174		320		
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	e/Grout		Yes/No)	Y						!				ļ	
	the second second	ment of Gr	100 10	ck	See	e Code 7					17 10 10 10 10 10 10 10 10 10 10 10 10 10	tautore and	-	10000	
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Scientific and Technical Operating Procedures Form: A Issue: 3 Date issued; 28Aug2009

Office



· · · · · · · · · · · · · · · · · · ·						Work	Licence No	0:		
						ELOPMENT				8
	sed for brea	king down	drilling m	UC (Yes/No	N	Name:				
Method	Bailing/Surg	ing .	Jetting	Airlit	ting X	Backwashir	ig F	umping	Other:	
Duration		hrs	hrs) hrs	·	hrs	h	ns l	hrs
	**		LI L	DISINEE	CTION (ON COMPLETI	ON	-lan series and		
	Chemical	(s) used				pplied (Litres)		A.M. at. 17 a 1	*	9
1		(-),	2011.5		ucuality a	pplied (cities)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	iviemod o	f application	
			DI	IMPINIC	TECTO			12112		
	Par de la	1	Pump	Initial	12313	ON COMPLET	the state of the s	1		10
Τe	⇒st	Date	intake	Water	Pumpin		Duration	10-10-00	Recovery	
ty	pe		depth	Level	rate	pumping	of Test	Water	Time	taken
	A A		(m)	(SWL) (m)	(L/s)	(DDL)	2	level		Su?
	Stage 1	Care and a	(ag.)	(iii)	(L/S)	(4)	(hrs)	(m)	(hrs)	(mins)
Multi stage	Stage 2				/			-		
(stepped	Stage 3			/				1		
drawdown)	Stage 4			/				1		
Single stage								1	1	
(constant rat										
Height of mea	suring point	above grou	ind level		m	Test Method			See Code 4	
					DAOU					
Original dept	h of work:			ARILY		LLED OR AB			The second s	11
s work aban	1	(Yes/No)	1			s work partly ba	_	(Yes/No)	4	_
					abandonr	nent: Backfille	ed	Plugged	Capp	ed
las any casi	ng been left	in the work	((Yes/)	No)	/	From	m	То	m	
Sealing / fi		From dep	th	To dep	th	Sealing / fill ty	/pe F	rom depth	To	depth
See Code	11	(m)		(m)		See Code 11		(m)		(m)
277 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		5782								
ite chosen by:	Hydrogeol	ogist	Geolog	gist 🗙	Driller	Diviner	Clien	t 🗍 Otl	her	12
			and an even with	<u>r v</u>			Ann Pollar			
ot No		DP N								13
Vork Locatio	on Co ordin	ates	Easting	the second s		Northing			Zone	2
GPS:	(Yes/No)	>>		AMG//	AGD	or	MGA/GDA		(See explan	ation)
	Brein Jamener geweinneren				L					All Contractions and Co
Please mai	k the work a	ite with ")	C on the	CUD pr	ovid <mark>e</mark> d h	ap.				
indicate als	to the distan	ces in met	res from	two (<mark>2)</mark> a	djacent i	oundaries, and	attach the	map to this	Form A pa	ckage.
DRILLER	5 BY J	ARROC	TAON	Ton	Signati	ures:			10.10	
Suppe	RUISED	By IK	ENT	DAng	5					
riller:	hi4	No 17.	25		Licen	6001				
	/ -		IV.		FIACU					tu de ca
 01.5.	******				Date.					
							9 40 10 10 10 10 10 10 10 10 10 10 10 10 10			



Work	Licence	No:

Depth	R'S ROCK/STRATA DESCRIPTION (LITHOLOGY)	15
From To (m) (m	Description See Code 15	WORK CONSTRUCTION SKETCH
0 12		
	WEATHERED BROWN C-DANITE	(A)
	WORK NOT CONSTRUCTED BY DRILLING R	
od of excavation:	Hand dug Back hoe Dragline Dezer	Other 16
epth Length m) (m)	Width Diameter Lining Dimentions of (m) (m) material liner (m)	From Depth To Depth (m) (m)
	Please attach copies of the following if availa	ble 17
	Laboratory analysis of water Sample (Yes/No) Pui	