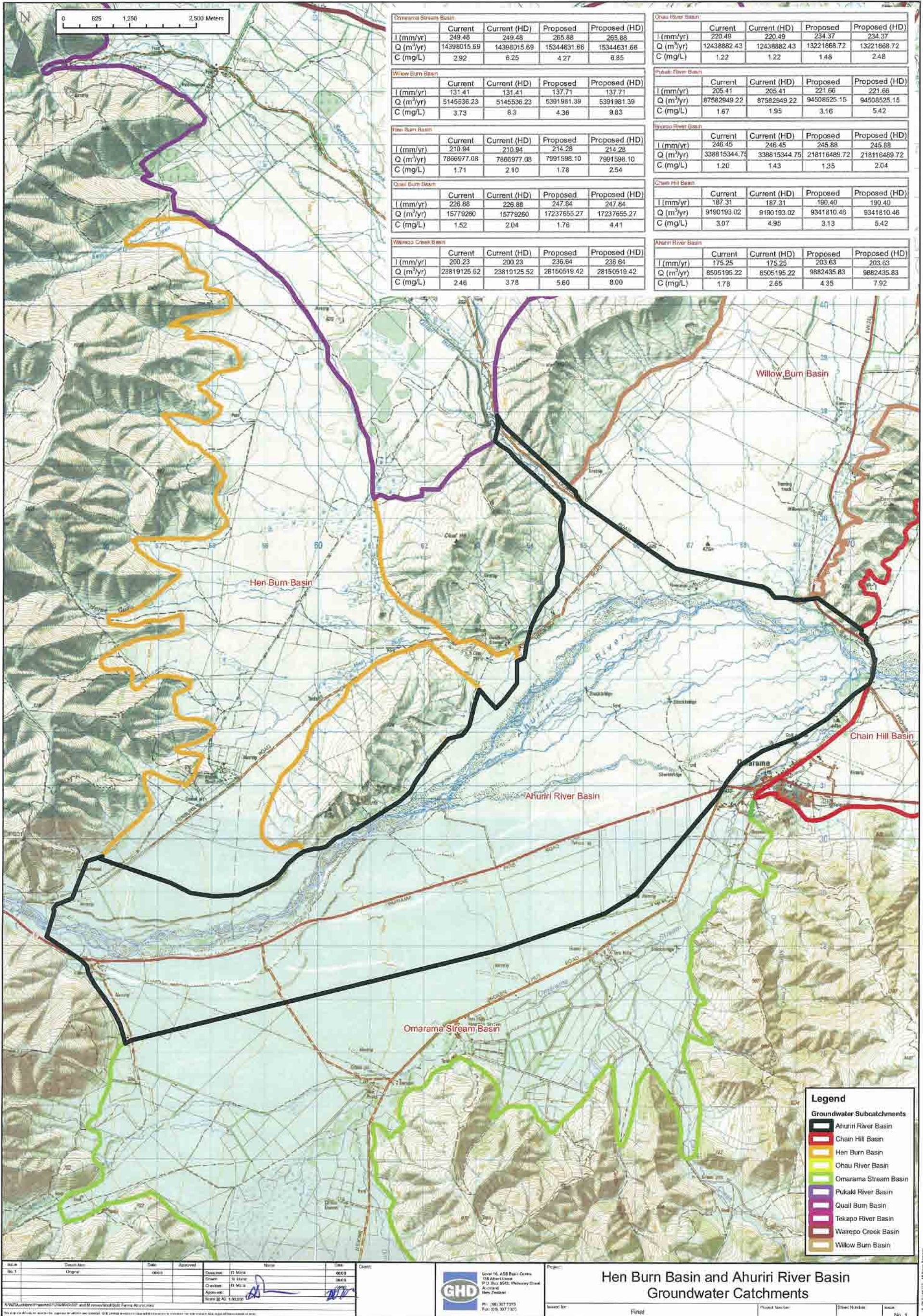
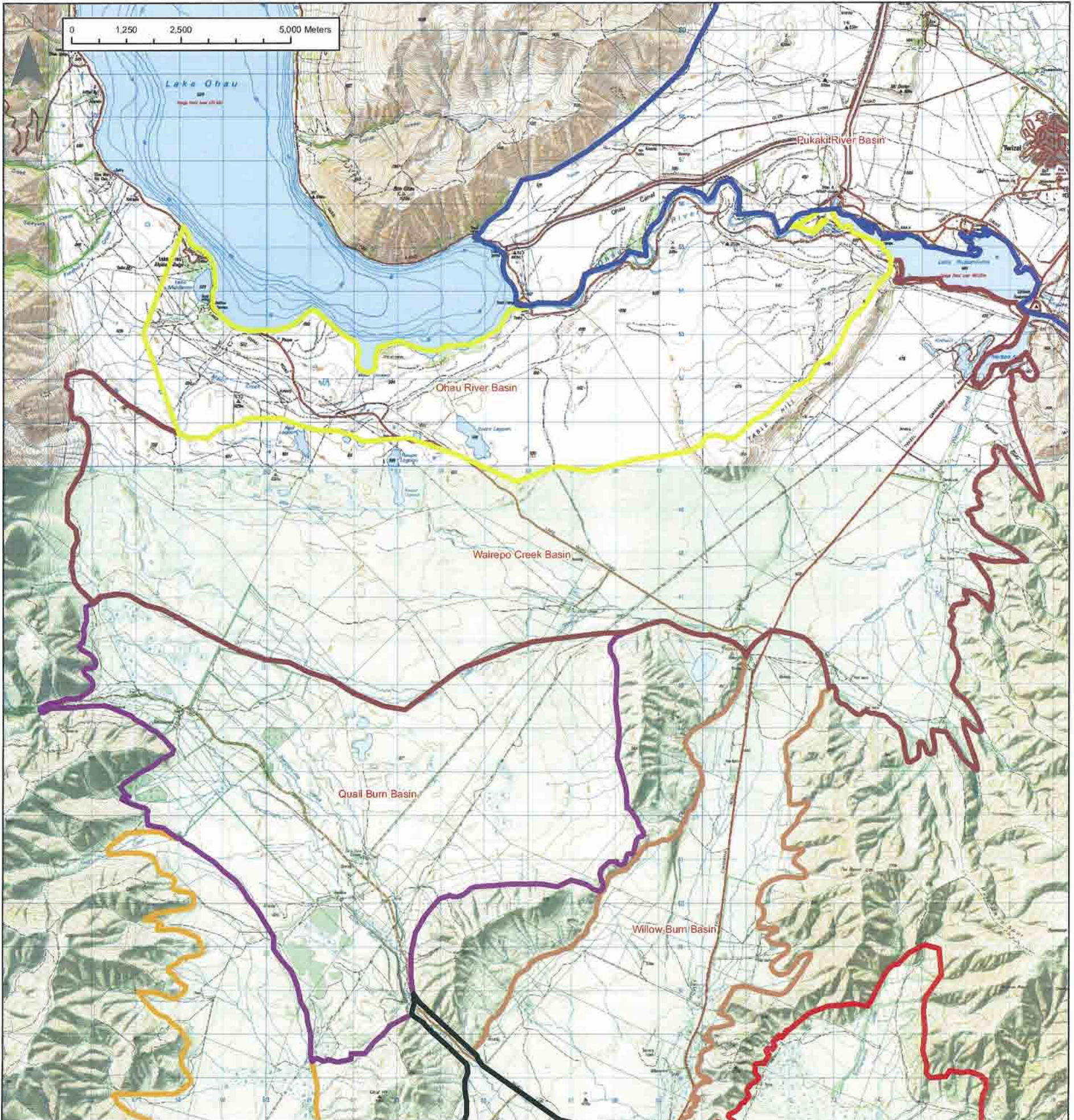




Appendix A
Input parameters for each sub-catchment

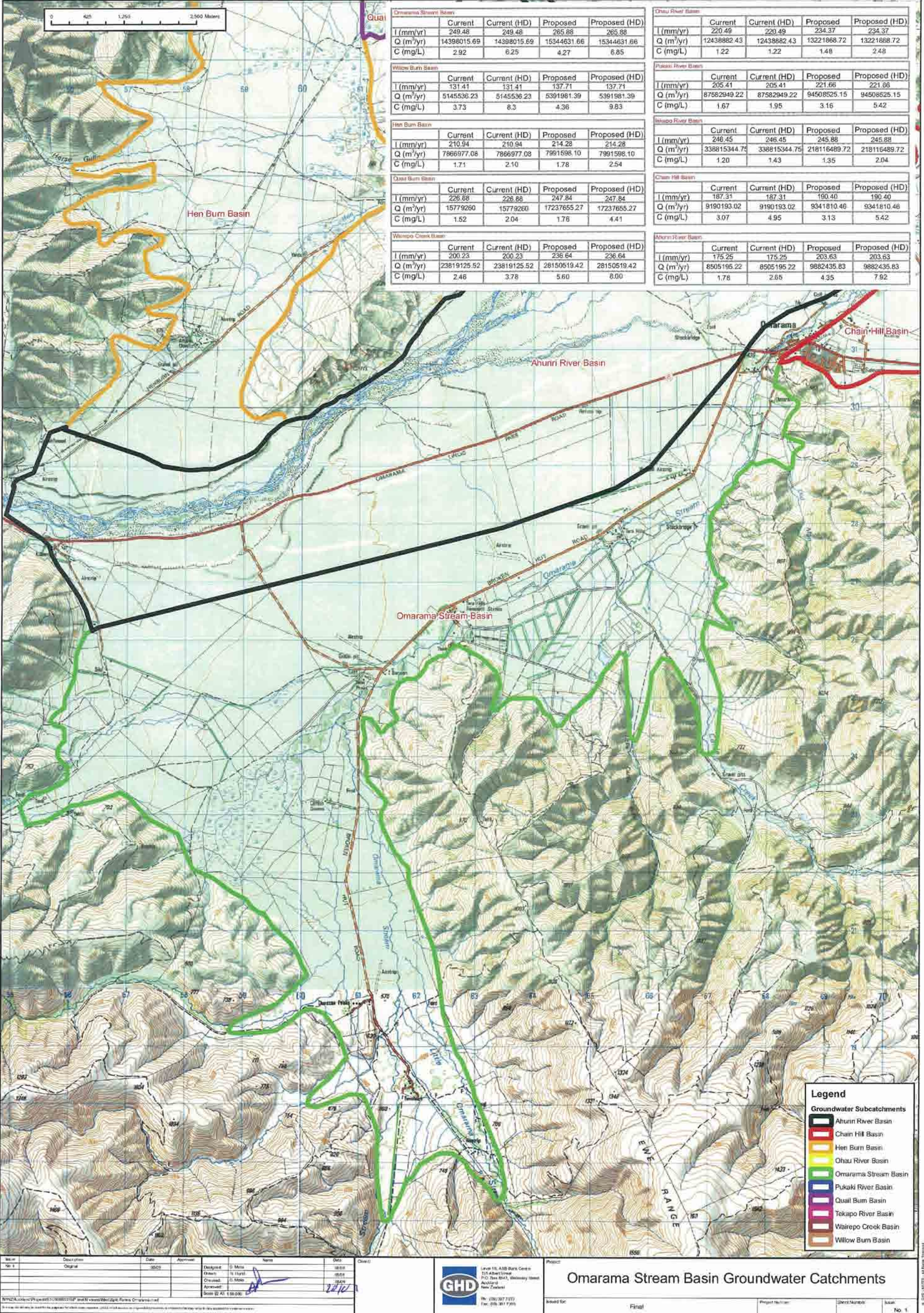




Subcatchment	Current	Current (HD)	Proposed	Proposed (HD)
Omarama Stream Basin				
I (mm/yr)	249.48	249.48	265.88	265.88
Q (m ³ /yr)	14398015.69	14398015.69	15344631.66	15344631.66
C (mg/L)	2.92	6.25	4.27	6.85
Willow Burn Basin				
I (mm/yr)	131.41	131.41	137.71	137.71
Q (m ³ /yr)	5145536.23	5145536.23	5391981.39	5391981.39
C (mg/L)	3.73	8.3	4.36	9.83
Hen Burn Basin				
I (mm/yr)	210.94	210.94	214.28	214.28
Q (m ³ /yr)	7866977.08	7866977.08	7991598.10	7991598.10
C (mg/L)	1.71	2.10	1.78	2.54
Quail Burn Basin				
I (mm/yr)	226.88	226.88	247.84	247.84
Q (m ³ /yr)	15779260	15779260	17237655.27	17237655.27
C (mg/L)	1.52	2.04	1.76	4.41
Wairepo Creek Basin				
I (mm/yr)	200.23	200.23	236.64	236.64
Q (m ³ /yr)	23819125.52	23819125.52	28150519.42	28150519.42
C (mg/L)	2.46	3.78	5.60	8.00
Ohau River Basin				
I (mm/yr)	220.49	220.49	234.37	234.37
Q (m ³ /yr)	12438882.43	12438882.43	13221868.72	13221868.72
C (mg/L)	1.22	1.22	1.48	2.48
Pukaki River Basin				
I (mm/yr)	205.41	205.41	221.66	221.66
Q (m ³ /yr)	87582949.22	87582949.22	94508525.15	94508525.15
C (mg/L)	1.67	1.95	3.16	5.42
Chain Hill Basin				
I (mm/yr)	246.45	246.45	245.88	245.88
Q (m ³ /yr)	338815344.75	338815344.75	218116489.72	218116489.72
C (mg/L)	1.20	1.43	1.35	2.04
Chain Hill Basin				
I (mm/yr)	187.31	187.31	190.40	190.40
Q (m ³ /yr)	9190193.02	9190193.02	9341810.46	9341810.46
C (mg/L)	3.07	4.95	3.13	5.42
Ahuriri River Basin				
I (mm/yr)	175.25	175.25	203.63	203.63
Q (m ³ /yr)	8505195.22	8505195.22	9882435.83	9882435.83
C (mg/L)	1.78	2.65	4.35	7.92



<table border="1"> <tr> <th>No.</th> <th>Description</th> <th>Date</th> <th>Approved</th> <th>Checked</th> <th>Drawn</th> <th>Date</th> <th>Client</th> </tr> <tr> <td>1</td> <td>Original</td> <td>0809</td> <td></td> <td></td> <td></td> <td>0809</td> <td></td> </tr> </table>	No.	Description	Date	Approved	Checked	Drawn	Date	Client	1	Original	0809				0809		<table border="1"> <tr> <th>No.</th> <th>Description</th> <th>Date</th> <th>Approved</th> <th>Checked</th> <th>Drawn</th> <th>Date</th> <th>Client</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	No.	Description	Date	Approved	Checked	Drawn	Date	Client									<p>GHD</p> <p>Level 16, Ash Road Centre 127 Main Street P.O. Box 9948, Wellesley Street North New Zealand</p> <p>Tel: (06) 377 1333 Fax: (06) 377 1300</p>	<p>Willow Burn, Ohau River, Wairepo Creek, and Quail Burn Basin Groundwater Catchments</p> <p>Project: Willow Burn, Ohau River, Wairepo Creek, and Quail Burn Basin Groundwater Catchments</p> <p>Revision: Final</p> <p>Project Number: [Blank]</p> <p>Sheet Number: [Blank]</p> <p>Issue: No. 1</p>
No.	Description	Date	Approved	Checked	Drawn	Date	Client																												
1	Original	0809				0809																													
No.	Description	Date	Approved	Checked	Drawn	Date	Client																												



Omarama Stream Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	249.48	249.48	265.88	265.88
Q (m ³ /yr)	14398015.69	14398015.69	15344631.66	15344631.66
C (mg/L)	2.92	6.25	4.27	6.85

Willow Burn Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	131.41	131.41	137.71	137.71
Q (m ³ /yr)	5145536.23	5145536.23	5391981.39	5391981.39
C (mg/L)	3.73	8.3	4.36	9.83

Hen Burn Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	210.94	210.94	214.28	214.28
Q (m ³ /yr)	7866977.08	7866977.08	7991598.10	7991598.10
C (mg/L)	1.71	2.10	1.78	2.54

Quail Bum Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	226.68	226.68	247.84	247.84
Q (m ³ /yr)	15779260	15779260	17237655.27	17237655.27
C (mg/L)	1.52	2.04	1.76	4.41

Waipopo Creek Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	200.23	200.23	236.64	236.64
Q (m ³ /yr)	23819125.52	23819125.52	28150519.42	28150519.42
C (mg/L)	2.46	3.78	5.60	8.00

Ohau River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	220.49	220.49	234.37	234.37
Q (m ³ /yr)	12438882.43	12438882.43	13221868.72	13221868.72
C (mg/L)	1.22	1.22	1.48	2.48

Pukaki River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	205.41	205.41	221.66	221.66
Q (m ³ /yr)	87582949.22	87582949.22	94508525.15	94508525.15
C (mg/L)	1.67	1.95	3.16	5.42

Waipopo River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	246.45	246.45	245.88	245.88
Q (m ³ /yr)	338815344.75	338815344.75	218116489.72	218116489.72
C (mg/L)	1.20	1.43	1.35	2.04

Chain Hill Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	187.31	187.31	190.40	190.40
Q (m ³ /yr)	9190193.02	9190193.02	9341810.46	9341810.46
C (mg/L)	3.07	4.95	3.13	5.42

Ahuriri River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	175.25	175.25	203.63	203.63
Q (m ³ /yr)	8505195.22	8505195.22	9882435.83	9882435.83
C (mg/L)	1.78	2.65	4.35	7.92

No.	Description	Date	Approved	Designed	Checked	Drawn	Scale
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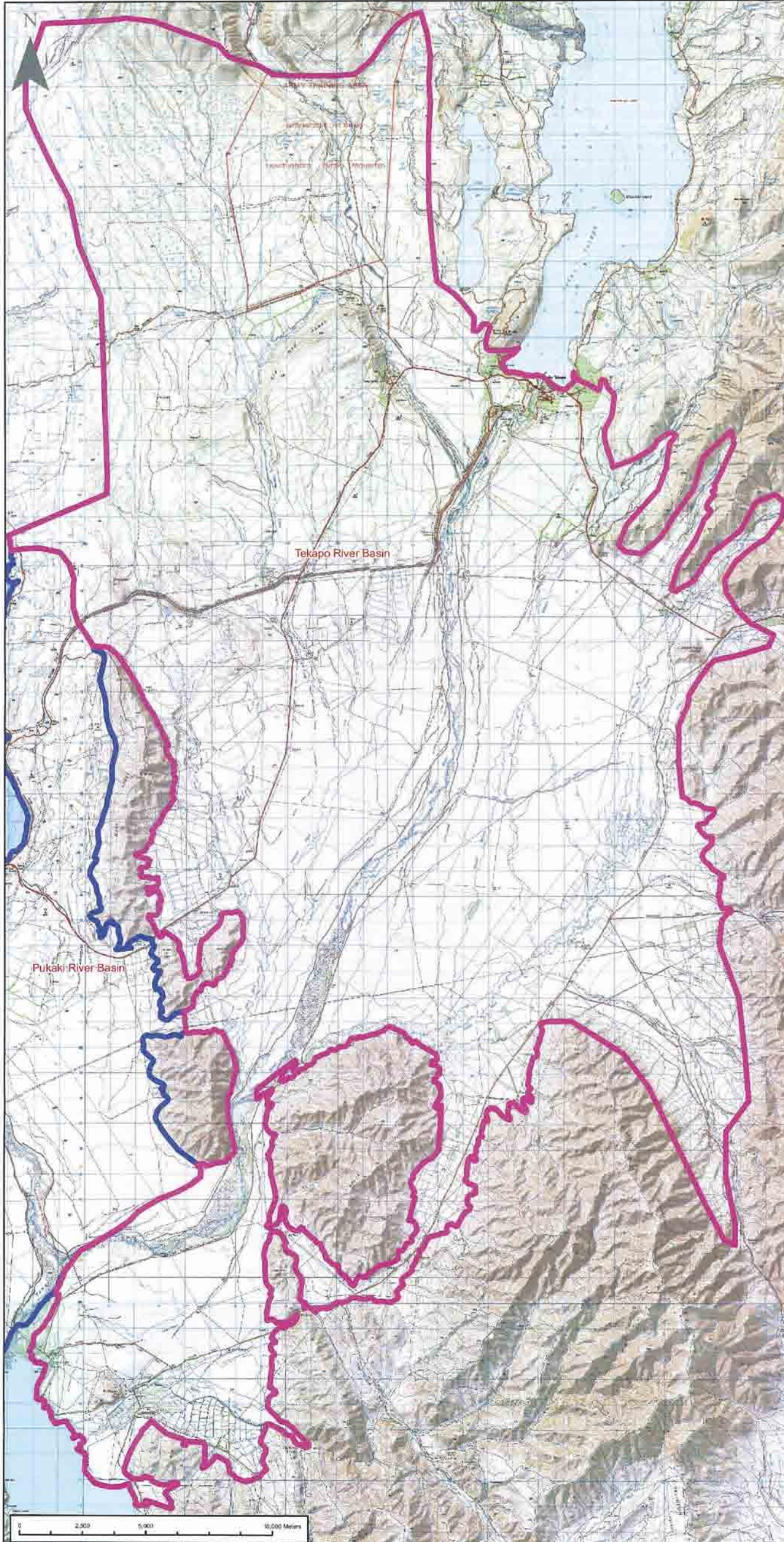
Omarama Stream Basin Groundwater Catchments

Issued for: Final

Project Number: []

Sheet Number: []

Issue No. 1



Omarama Stream Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	249.48	249.48	265.88	265.88
Q (m ³ /yr)	14398015.69	14398015.69	15344631.66	15344631.66
C (mg/L)	2.92	6.25	4.27	6.85

Willow Burn Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	131.41	131.41	137.71	137.71
Q (m ³ /yr)	5145536.23	5145536.23	5391981.39	5391981.39
C (mg/L)	3.73	8.3	4.36	9.83

Hen Burn Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	210.94	210.94	214.28	214.28
Q (m ³ /yr)	7866977.08	7866977.08	7991598.10	7991598.10
C (mg/L)	1.71	2.10	1.78	2.54

Quail Bum Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	226.88	226.88	247.84	247.84
Q (m ³ /yr)	15779260	15779260	17237655.27	17237655.27
C (mg/L)	1.52	2.04	1.76	4.41

Waiepo Creek Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	200.23	200.23	236.64	236.64
Q (m ³ /yr)	23819125.52	23819125.52	28150519.42	28150519.42
C (mg/L)	2.46	3.78	5.60	8.00

Chau River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	220.48	220.48	234.37	234.37
Q (m ³ /yr)	12438882.43	12438882.43	13221868.72	13221868.72
C (mg/L)	1.22	1.22	1.48	2.48

Pukaki River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	205.41	205.41	221.66	221.66
Q (m ³ /yr)	87582949.22	87582949.22	94508525.15	94508525.15
C (mg/L)	1.67	1.95	3.16	5.42

Tekapo River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	246.45	246.45	245.88	245.88
Q (m ³ /yr)	338815344.75	338815344.75	218116489.72	218116489.72
C (mg/L)	1.20	1.43	1.35	2.04

Chain Hill Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	187.31	187.31	190.40	190.40
Q (m ³ /yr)	9190193.02	9190193.02	9341810.46	9341810.46
C (mg/L)	3.07	4.95	3.13	5.42

Ahuriri River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	175.25	175.25	203.63	203.63
Q (m ³ /yr)	8505195.22	8505195.22	9882435.83	9882435.83
C (mg/L)	1.78	2.65	4.35	7.92

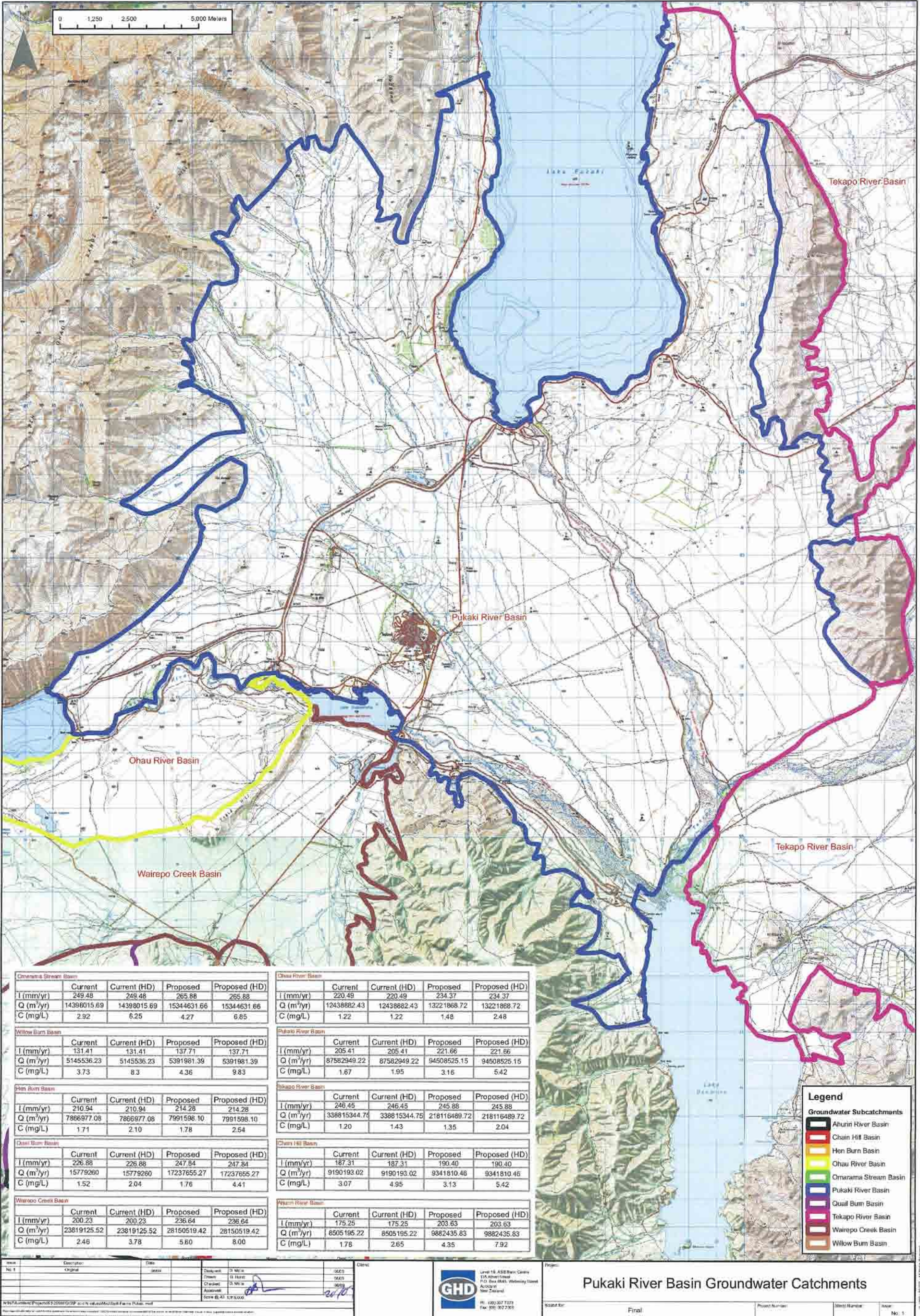


No.	Description	Date	Approved	Name	Date
1	Original	08/03			08/03
2	Design: D. Mc L.				08/03
3	Drawn: R. S. S.				08/03
4	Checked: M. M. S.				08/03
5	Approved: [Signature]				08/03
6	Scale: 1:100,000				08/03

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Tekapo River Basin Groundwater Catchments

Project Name: Tekapo River Basin Groundwater Catchments
 Client: [Blank]
 Date: Final
 Issue: No. 1



Omarama Stream Basin	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	249.48	249.48	265.88	265.88
Q (m ³ /yr)	14398015.69	14398015.69	15344631.66	15344631.66
C (mg/L)	2.92	6.25	4.27	6.65

Ohau River Basin	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	220.49	220.49	234.37	234.37
Q (m ³ /yr)	12438882.43	12438882.43	13221868.72	13221868.72
C (mg/L)	1.22	1.22	1.48	2.48

Willow Burn Basin	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	131.41	131.41	137.71	137.71
Q (m ³ /yr)	5145536.23	5145536.23	5391981.39	5391981.39
C (mg/L)	3.73	8.3	4.36	9.83

Pukaki River Basin	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	205.41	205.41	221.66	221.66
Q (m ³ /yr)	87582949.22	87582949.22	94508525.15	94508525.15
C (mg/L)	1.67	1.95	3.16	5.42

Hen Burn Basin	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	210.94	210.94	214.28	214.28
Q (m ³ /yr)	7866977.08	7866977.08	7991598.10	7991598.10
C (mg/L)	1.71	2.10	1.78	2.54

Tekapo River Basin	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	246.45	246.45	245.88	245.88
Q (m ³ /yr)	338815344.75	338815344.75	218116489.72	218116489.72
C (mg/L)	1.20	1.43	1.35	2.04

Quail Burn Basin	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	226.88	226.88	247.84	247.84
Q (m ³ /yr)	15779260	15779260	17237655.27	17237655.27
C (mg/L)	1.52	2.04	1.76	4.41

Chain Hill Basin	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	187.31	187.31	190.40	190.40
Q (m ³ /yr)	9190193.02	9190193.02	9341810.46	9341810.46
C (mg/L)	3.07	4.95	3.13	5.42

Wairepo Creek Basin	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	200.23	200.23	236.64	236.64
Q (m ³ /yr)	23819125.52	23819125.52	28150519.42	28150519.42
C (mg/L)	2.46	3.78	5.60	8.00

Ahuriri River Basin	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	175.25	175.25	203.63	203.63
Q (m ³ /yr)	8505195.22	8505195.22	9882435.83	9882435.83
C (mg/L)	1.78	2.65	4.35	7.92

Legend

Groundwater Subcatchments

- Ahuriri River Basin
- Chain Hill Basin
- Hen Burn Basin
- Ohau River Basin
- Omarama Stream Basin
- Pukaki River Basin
- Quail Burn Basin
- Tekapo River Basin
- Wairepo Creek Basin
- Willow Burn Basin

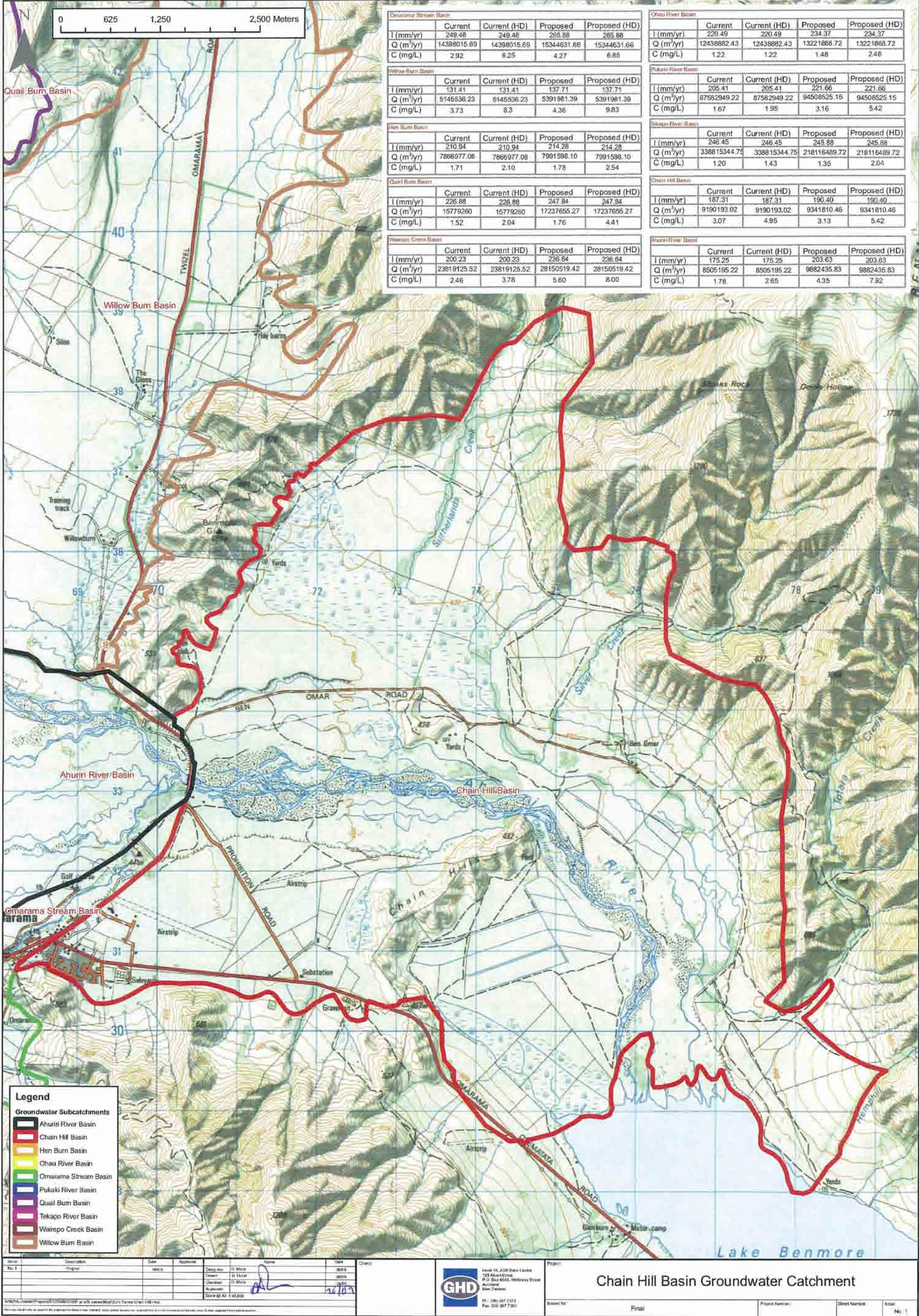
No.	Description	Date	Drawn	Checked	Scale
1	Original				

GHD

Level 18 ASE Basin Centre
115 Albert Street
P.O. Box 6464, Wellington, New Zealand

Project: Pukaki River Basin Groundwater Catchments

Project	Client	Scale	Project Number	Sheet Number	Issue
Pukaki River Basin Groundwater Catchments		Final			No. 5



Omarama Stream Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	249.48	249.48	265.88	265.88
Q (m ³ /yr)	14398015.69	14398015.69	15344631.66	15344631.66
C (mg/L)	2.92	6.25	4.27	6.85

Willow Burn Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	131.41	131.41	137.71	137.71
Q (m ³ /yr)	5145536.23	5145536.23	5391981.39	5391981.39
C (mg/L)	3.73	8.3	4.36	9.83

Hon Burn Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	210.94	210.94	214.28	214.28
Q (m ³ /yr)	7866977.08	7866977.08	7991598.10	7991598.10
C (mg/L)	1.71	2.10	1.78	2.54

Quail Burn Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	226.88	226.88	247.84	247.84
Q (m ³ /yr)	15779260	15779260	17237655.27	17237655.27
C (mg/L)	1.52	2.04	1.76	4.41

Waitepo Creek Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	200.23	200.23	236.64	236.64
Q (m ³ /yr)	23819125.52	23819125.52	28150519.42	28150519.42
C (mg/L)	2.46	3.78	5.60	8.00

Ohau River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	220.49	220.49	234.37	234.37
Q (m ³ /yr)	12438882.43	12438882.43	13221868.72	13221868.72
C (mg/L)	1.22	1.22	1.48	2.48

Pukaki River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	205.41	205.41	221.66	221.66
Q (m ³ /yr)	87582949.22	87582949.22	94508525.15	94508525.15
C (mg/L)	1.67	1.95	3.16	5.42

Tekapo River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	246.45	246.45	245.88	245.88
Q (m ³ /yr)	338815344.75	338815344.75	218116489.72	218116489.72
C (mg/L)	1.20	1.43	1.35	2.04

Chain Hill Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	187.31	187.31	190.40	190.40
Q (m ³ /yr)	9190193.02	9190193.02	9341810.46	9341810.46
C (mg/L)	3.07	4.95	3.13	5.42

Ahuiri River Basin				
	Current	Current (HD)	Proposed	Proposed (HD)
I (mm/yr)	175.25	175.25	203.63	203.63
Q (m ³ /yr)	8505195.22	8505195.22	9882435.83	9882435.83
C (mg/L)	1.78	2.65	4.35	7.92

- Legend**
- Groundwater Subcatchments**
- Ahuiri River Basin
 - Chain Hill Basin
 - Hon Burn Basin
 - Ohau River Basin
 - Omarama Stream Basin
 - Pukaki River Basin
 - Quail Burn Basin
 - Tekapo River Basin
 - Waitepo Creek Basin
 - Willow Burn Basin

No.	Description	Date	Approval	Design	Name	Date	Change
1	Original	08/12/18		D. Mace		08/12/18	
				G. Hunt		08/12/18	
				D. Mace		08/12/18	
						08/12/18	



Chain Hill Basin Groundwater Catchment

Project: Final

Sheet Number: No. 1



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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
	Doug Mzila	Melissa Robson John Male	<i>J. Male</i>	Steve Carne	<i>Steve Carne</i>	21/8/09