

Report to the Collaborative Stakeholder Group - For Information

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To: Collaborative Stakeholder Group

From: Bill Wasley, CSG Independent Chair

Subject: **Extent of Maori owned land within the Healthy Rivers sub-catchments and current land-use categories**

Section **For Information**

Disclaimer

This report has been prepared by Waikato Regional Council policy advisors for the use of Collaborative Stakeholder Group Healthy Rivers: Wai Ora Project as a reference document and as such does not constitute Council's policy.

Acknowledgement

The maps and data provided in this report has been compiled and analysed by WRC Staff in Spatial Information and Data Management.

1 Introduction

To help inform the Collaborative Stakeholder Group's (CSG) decision making on policy options and allocation there is some base quantitative information needed on the use of land in the Waikato and Waipa river catchments. For example for discussion on where landholders may have aspirations to intensify (i.e. create "headroom"), information on how much area may fall in this category is needed, including for example Multiple Maori Owned Land.

During the recent CSG Overseer subgroup meeting on the 23 October 2015 questions were raised relating to the extent of 'undeveloped and under-developed' Maori owned land within the Healthy Rivers Wai Ora sub-catchments, and what would be the implications of allowing this land to intensify, whilst still meeting the Healthy Rivers water quality limits. Land ownership can be used to identify landholder/s that may have aspirations to intensify, although this is not straight forward e.g. land may be Multiple Maori owned land and or Maori land under general title.

In this report the WRC Spatial Information and Data Management team have used the best data available to identify Maori owned land and done cross checking with other data sources.

2 Data availability

WRC Spatial Information and Data Management team have reviewed their available data, and have provided maps and data tables based on:

- Cadastral information derived from Land Information New Zealand's Landonline, this has been partially rectified using information from the Maori Land Court's land online service.
- Valuation data sourced from Territorial Authority District Valuation Roll, to define current land uses.

The detailed methodology used to generate the data and maps is outlined in Appendix 1.

It should be noted that this is not a perfect dataset, however is considered to be accurate and appropriate for indicative purposes.

3 Results

Analysis by the WRC Spatial Information and Data Management team has provided information for the Healthy Rivers area on land use types within the known Maori owned land blocks.

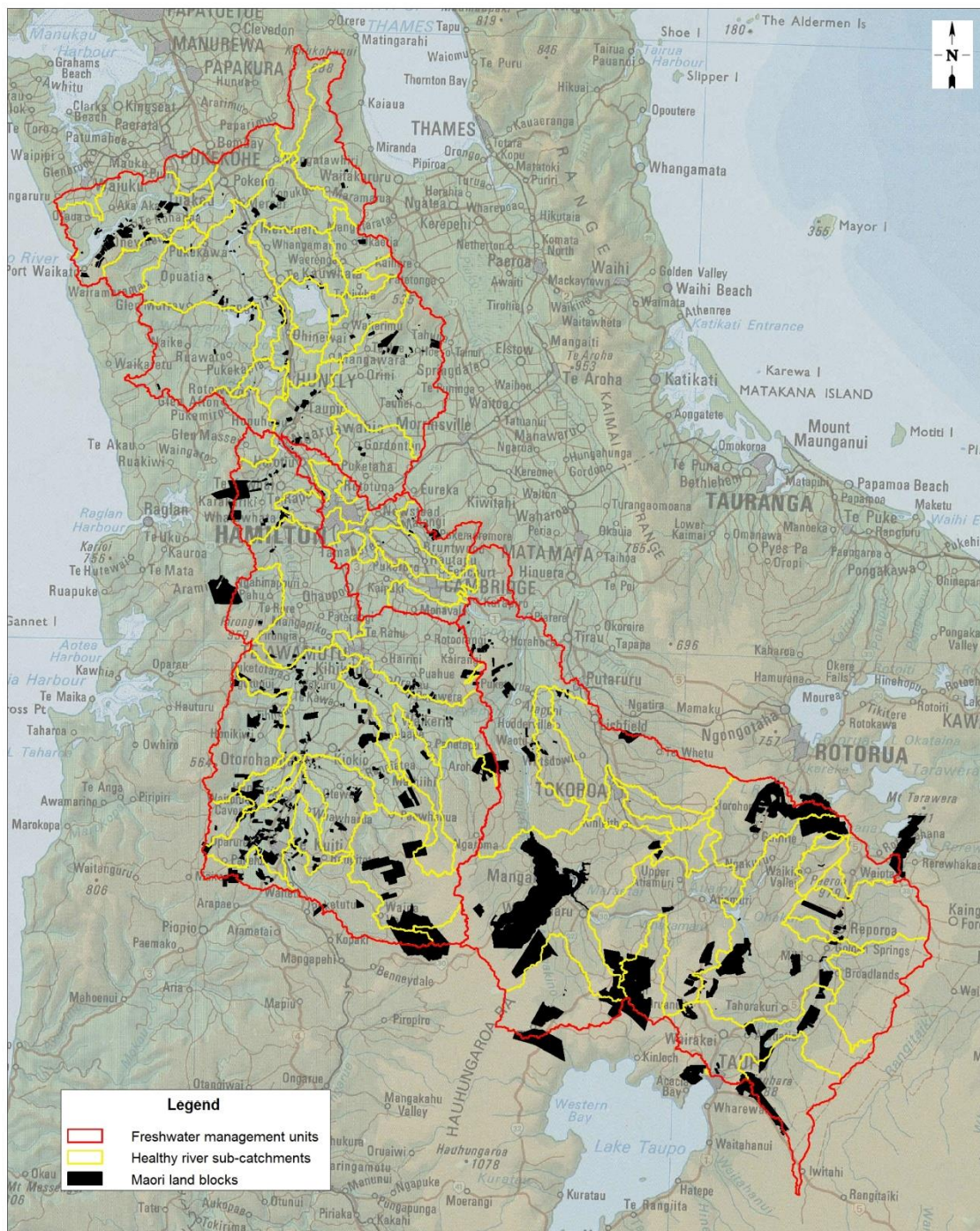
This is presented in the following Table and Maps:

Map 1 Maori Owned Land within the Healthy River sub-catchments and Freshwater Management Units.

Map 2 Maori owned Land Blocks within Healthy River sub-catchments, indicating land use type.

Map 3 FMUs and sub-catchment unique identifier (Refer to Appendix 2).

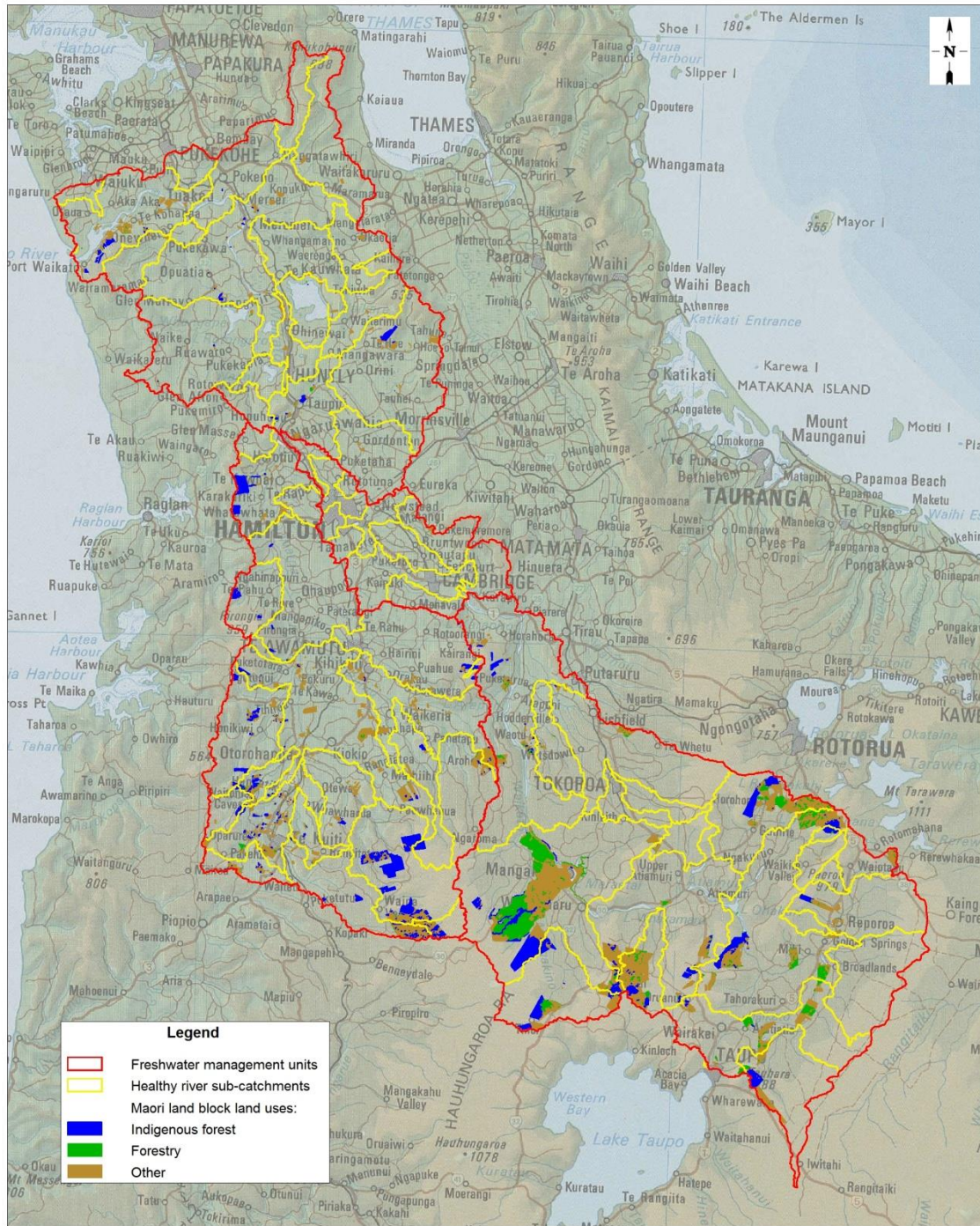
Table 1 Area in each sub -catchment of Maori owned blocks including total area Maori owned blocks, area under native forest, forestry, dairy farms, sheep and beef farms (including drystock). There is also an area split around Land Use Capability (LUC 6).



<p>Maori Land Blocks within the Healthy Rivers Sub-Catchments and Freshwater Management Units</p> <p>Created by: A. Jeffries Projection: NZTM Date: 13 Nov. 2015</p> <p>Status: Version 1 Request No.: 31211 File name: 31211_MLBs_Intersection_n_with_Land_Use_and_LUC.gws</p>	<p>0 20 40 60 80 Kilometres</p> <p>Scale - 1:650,000 at A3</p> <p>A3</p> <p>Acknowledgements and Disclaimers</p> <ul style="list-style-type: none"> - Cadastral information derived from Land Information New Zealand's Landonline Cadastral Database. CROWN COPYRIGHT RESERVED. Valuation Data Sourced from Territorial Authority District Valuation Roll. - © Waikato Regional Council 2013-2014. Healthy Rivers: Plan for Change / Wai Ora: He Rautaki Whakapaipai Data. - Topographic Maps Sourced from LINZ. Crown Copyright reserved. 	<p>Waikato REGIONAL COUNCIL Te Kaunihera ā Rohe o Waikato</p>
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Map 1 Maori Owned Land within the Healthy River sub-catchments and Freshwater Management Units



Legend

- Freshwater management units
- Healthy river sub-catchments
- Maori land block land uses:**
- Indigenous forest
- Forestry
- Other

Maori Land Block Land Uses within the Healthy Rivers Sub-Catchments

Created by: A Jeffries
 Projection: NZTM
 Date: 13 Nov. 2015

Status: Version 1
 Request No.: 31211
 File name: 31211_MLBs_Intersection_with_Land_Use_and_LUC.gws



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Map 2 – Maori Owned Land Blocks within Healthy River sub-catchments, indicating land use type

Table 1: Area of the Land use types within each sub catchment in known Maori owned land blocks

Sub-Catchment Unique ID	Sub-Catchment FMU Zone	Total Maori owned land (Ha)	Native forest in Maori Land Blocks (Ha)	Forestry in Maori Land Blocks (Ha)	Dairy Farms in Maori Land Blocks (Ha)	Sheep and Beef Farms in Maori Land Blocks (includes Drystock) (Ha)	Total area of Maori owned land <LCU6 ¹ (1 to 6) (Ha)	Total area of Maori owned land >LUC6 (6e, 7, 8) (Ha)
23	Central Waikato	0	0	0	0	0	0	0
25	Central Waikato	0	0	0	0	0	0	0
27	Central Waikato	0	0	0	0	0	0	0
28	Central Waikato	1	0	0	0	0	1	0
29	Central Waikato	153	1	0	77	32	153	0
30	Central Waikato	0	0	0	0	0	0	0
31	Central Waikato	13	2	0	0	0	10	3
32	Central Waikato	0	0	0	0	0	0	0
33	Central Waikato	0	0	0	0	0	0	0
35	Central Waikato	0	0	0	0	0	0	0
	Central Waikato TOTAL	167	3	0	77	32	164	3
1	Lower Waikato	0	0	0	0	0	0	0
2	Lower Waikato	125	0	1	42	40	124	1
3	Lower Waikato	0	0	0	0	0	0	0
4	Lower Waikato	27	3	5	0	0	1	25
5	Lower Waikato	0	0	0	0	0	0	0
6	Lower Waikato	1511	7	232	196	63	543	960
7	Lower Waikato	8	0	0	7	0	5	2
8	Lower Waikato	88	0	0	16	0	88	0
9	Lower Waikato	732	1	69	283	171	584	147

¹ For this analysis LCU 6 was considered to be an approximate cut-off for land to become too steep for intensive agricultural use

Sub-Catchment Unique ID	Sub-Catchment FMU Zone	Total Maori owned land (Ha)	Native forest in Maori Land Blocks (Ha)	Forestry in Maori Land Blocks (Ha)	Dairy Farms in Maori Land Blocks (Ha)	Sheep and Beef Farms in Maori Land Blocks (includes Drystock) (Ha)	Total area of Maori owned land <LCU6 ¹ (1 to 6) (Ha)	Total area of Maori owned land >LUC6 (6e, 7, 8) (Ha)
10	Lower Waikato	44	0	0	24	20	41	3
11	Lower Waikato	69	0	0	0	14	26	43
12	Lower Waikato	0	0	0	0	0	0	0
13	Lower Waikato	97	2	1	21	68	70	26
14	Lower Waikato	63	0	0	34	29	62	1
15	Lower Waikato	102	0	0	5	4	100	0
16	Lower Waikato	122	4	7	0	88	87	35
17	Lower Waikato	778	1	253	179	195	367	411
18	Lower Waikato	8	0	0	3	3	8	0
19	Lower Waikato	33	1	25	2	2	8	25
20	Lower Waikato	429	30	107	5	181	186	242
22	Lower Waikato	61	0	0	0	32	61	0
	Lower Waikato TOTAL	4297	49	700	817	910	2361	1921
41	Upper Waikato	1546	112	286	682	600	721	824
44	Upper Waikato	98	8	5	24	12	92	6
45	Upper Waikato	460	29	2	454	239	182	278
48	Upper Waikato	0	0	0	0	0	0	0
49	Upper Waikato	1	0	0	0	0	1	0
54	Upper Waikato	4599	647	865	1855	1018	1333	3266
56	Upper Waikato	263	25	236	263	0	0	263
57	Upper Waikato	114	3	0	114	0	1	113
58	Upper Waikato	424	7	1	423	325	111	312
59	Upper Waikato	6	0	0	0	0	0	6
62	Upper Waikato	12	0	0	12	0	12	0

Sub-Catchment Unique ID	Sub-Catchment FMU Zone	Total Maori owned land (Ha)	Native forest in Maori Land Blocks (Ha)	Forestry in Maori Land Blocks (Ha)	Dairy Farms in Maori Land Blocks (Ha)	Sheep and Beef Farms in Maori Land Blocks (includes Drystock) (Ha)	Total area of Maori owned land <LCU6 ¹ (1 to 6) (Ha)	Total area of Maori owned land >LUC6 (6e, 7, 8) (Ha)
64	Upper Waikato	16303	5297	2513	8911	4355	4369	11934
65	Upper Waikato	772	19	153	579	0	445	327
66	Upper Waikato	6028	868	1063	3034	2224	1722	4305
67	Upper Waikato	2658	70	389	376	1797	929	1729
69	Upper Waikato	6	0	0	6	0	5	1
70	Upper Waikato	4215	220	355	21	3292	2003	2213
71	Upper Waikato	2961	296	1011	0	2939	843	2119
72	Upper Waikato	0	0	0	0	0	0	0
73	Upper Waikato	2616	675	32	638	66	1643	973
74	Upper Waikato	1699	70	472	279	707	733	966
	Upper Waikato TOTAL	44781	8346	7383	17671	17574	15145	29635
21	Waipa	0	0	0	0	0	0	0
24	Waipa	1259	8	927	41	403	243	1016
26	Waipa	20	0	0	0	0	20	0
34	Waipa	157	3	55	1	50	52	105
36	Waipa	322	1	229	0	290	51	271
37	Waipa	0	0	0	0	0	0	0
38	Waipa	518	0	178	205	45	280	238
39	Waipa	109	0	109	0	0	0	109
40	Waipa	1565	2	19	1290	758	1330	235
42	Waipa	1082	10	404	89	459	368	713
43	Waipa	2607	23	194	1333	737	1613	994
46	Waipa	822	47	218	35	326	351	471
47	Waipa	495	0	314	107	0	234	261

Sub-Catchment Unique ID	Sub-Catchment FMU Zone	Total Maori owned land (Ha)	Native forest in Maori Land Blocks (Ha)	Forestry in Maori Land Blocks (Ha)	Dairy Farms in Maori Land Blocks (Ha)	Sheep and Beef Farms in Maori Land Blocks (includes Drystock) (Ha)	Total area of Maori owned land <LCU6 ¹ (1 to 6) (Ha)	Total area of Maori owned land >LUC6 (6e, 7, 8) (Ha)
50	Waipa	630	8	18	246	625	351	279
51	Waipa	443	0	36	165	52	273	171
52	Waipa	284	1	169	0	99	50	233
53	Waipa	2152	87	234	510	1065	1185	966
55	Waipa	306	4	12	70	203	182	125
60	Waipa	4416	18	2527	0	2534	1720	2696
61	Waipa	566	10	27	180	340	340	226
63	Waipa	1891	19	262	23	1681	1363	528
68	Waipa	983	1	219	0	983	683	300
	Waipa TOTAL	20627	242	6151	4295	10650	10689	9937
	Total	69872	8640	14234	22860	29166	28359	41496

4 Possible scenario modelling

Initial conversations with the Healthy Rivers Wai Ora economic modellers have suggested the model may be capable of conducting a simulation to determine:

- The effect on water quality generated if the Maori owned land was converted from its current land use, and into a more intensive use.
- How the additional contaminants could get back to a zero sum or better if undeveloped land is developed.
- Other simulations may be possible on request and definition by the CSG.

In order for this to occur, all modelling simulation assumptions would need to be defined by the CSG in coordination with River Iwi including:

- What defines 'undeveloped' and 'under-developed land' i.e. do these include only that land which is currently forestry, or does it include native forests? Is sheep and beef land with the potential for conversion to dairy also considered 'under-developed'?
- What percentage of this land is to be assumed will be converted i.e. 100%, or lower more realistic figure (considering other barriers to conversion such as land ownership, capital availability, desire to retain native forestry land for cultural or environmental protection purposes, etc?)
- Will land use conversion happen on all types of land, or only of a certain LUC class?
- What would be the final land use conversion type i.e. is everything to be converted into dairy, or will a portion of this be sheep and beef land or horticulture, etc?

5 Conclusion

It has been determined that imperfect but appropriate data does exist in relation to the extent of Maori owned land within the Healthy Rivers Wai Ora sub-catchments. The information here only relates to Maori Owned Land, that is not Maori owned land under general or any general title land that may be undeveloped or underdeveloped. This memo provides an indication to the extent Maori owned land and its current land use types, including forestry and native forests. The CSG in coordination with River Iwi, need to determine if there is a need to conduct additional simulation modelling, along with defining the assumptions under which this model run should occur.

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Appendix 1: Data extraction methodology

1. Extracted all CRS properties where ownership IDs = 6 or 7 (indicates that the property is most likely a Maori Land Block (MLB)) and where those properties spatially overlapped the healthy rivers sub-catchments.
2. Checked the results from 1. against the Maori Land Online website to confirm whether all the MLBs had been captured or if there were MLBs that hadn't been captured yet. Adjustments were then made to the queries in 1. to accommodate these extra CRS properties or remove unwanted CRS properties.
3. CRS properties can have multiple non-contiguous polygons. As a result, one CRS property can have polygons that overlap the healthy rivers sub-catchments and polygons that don't. Therefore, the geometries were expanded to separate out the polygons and only those polygons that overlapped the healthy rivers sub-catchments were queried. Then a merge based on the valuation ID was performed to return the CRS properties back to their normal state minus the polygons that do not overlap the health river sub-catchments. The result of step 1. – 3. is a dataset of only those MLBs that overlap the healthy rivers sub-catchments. I estimate the accuracy of this resultant dataset to be at about 95% +/- 5%.
4. Calculations were performed to determine the overall area (Ha) of each MLB, the area of each MLB segment (result of the spatial intersections), and the percentage each segment area represented to the overall MLB area.
5. This data was used to make maps and output a data table for use in the Healthy Rivers project.

Appendix 2

Map 3 FMUs and sub-catchment unique identifier

