

ASSESSMENT OF THE CULTURAL HEALTH OF TE WAIHORA

A critical feature of this Report Card is the selection of indicators, which relate directly to the tangata whenua objectives for Te Waihora as articulated in *Mahaanui Iwi Management Plan 2013*¹. Indicator selection was driven primarily by the knowledge of existing indicators that are already in use by tangata whenua and feasible to monitor, the availability of existing data, the degree to which the indicators are representative of the eco-cultural system of Te Waihora that is valued and used by Ngai Tahu, and the likelihood that the indicators would continue to be monitored in the future.

Colour coding is used to highlight the scores awarded for each of the components.

	This outcome has been achieved.
	Processes are being implemented, work is in progress and there is a likelihood that this outcome will be achieved.
	This outcome has not been achieved. There are processes in place that could realise this objective.
	This outcome has not been achieved. Processes are still being developed that could realise this objective.
	This outcome has not been achieved. There are no processes in place that are likely to realise this objective.

The data that informs the assessment is drawn from the evidence presented by Ngai Tahu whanui at various hearings², the report "*Cultural Values, Flow & Water Management Issues for the Waikirikiri / Selwyn - Te Waihora Catchments*"³, and the data that has been considered by the Selwyn Te Waihora Zone Committee.

¹ <http://mkt.co.nz/mahaanui-iwi-management-plan/>

² Evidence has been submitted at the Central Plains hearings plus the amendment to the Water Conservation Order for Te Waihora.

³ A report prepared in April 2013 by Tipa and Associates Ltd that is available from Environment Canterbury.

OBJECTIVE	INDICATOR	GRADE	COMMENT
Ngāi Tahu are active co-governors of Te Waihora and its catchment .	1. Yes / No to formal co-governance arrangement in place for the catchment as a whole.		<ul style="list-style-type: none"> Te Runanga o Ngai Tahu, Environment Canterbury and Te Waihora Management Board signed a Memorandum that commits the parties to development of a co-governance arrangement. Two key words are highlighted in the objective of the plan– “active” and “catchment” It is unclear, the extent to which the wider catchment will be co-governed. While processes are in place and actions are being taken to establish a co-governance regime, it cannot be concluded that this objective has been achieved.
	2. Yes / No to formal long term commitment to Whakaora Te Waihora		<ul style="list-style-type: none"> Whakaora Te Waihora is a practical expression of the commitment of Environment Canterbury, Te Runanga o Ngai Tahu and Te Waihora Management Board to work collaboratively on the restoration of Te Waihora. However, this programme was signed with funding provided for a limited number of years, when in fact, from the perspective of Ngai Tahu whanui, the restoration effort will be intergenerational. Te Waihora Management Board and Te Runanga o Ngai Tahu are still awaiting the long term commitment, including a funding commitment.
Land and water management in the catchment effectively provides for the Treaty partner status of Ngāi Tahu, and the taonga status of Te Waihora.	3. Yes / No to Te Rūnanga o Ngāi Tahu/Papatipu Rūnanga being joint holders of the consent for the lake opening.		Environment Canterbury and Te Runanga o Ngai Tahu are joint holders of the resource consent for opening the lake. However, there are concerns with Ngai Tahu that centre on the level of engagement before decisions are taken to open to the lake ⁴ .
	4. Yes / No to Te Rūnanga o Ngāi Tahu/Papatipu Rūnanga being the joint consent authority for the catchment		Ngāi Tahu have limited control over activities that affect the lake bed, including the discharge of contaminants and sediment on the lake bed from adjacent land use and tributary inflow ⁵ .
	5. Yes / No to Ngai Tahu approval being sought for activities involving the lakebed		Ownership of the Te Waihora lake bed was vested in Te Rūnanga o Ngāi Tahu in 1998 as part of the Ngāi Tahu Settlement. Since 1998, there have been a number of difficulties associated with exercising the rights and obligations resulting from this ownership. For example, as noted above, Ngāi Tahu have limited control over how particular activities affect the lake bed. More recently, the community was discussing the option of using alum as an intervention to improve water quality in the lake. This option was placed on the table for discussion at a community forum before it was discussed with or agreed to by the owner on the lakebed ⁶ .

⁴ This was a personal communication to Tipa from the Te Waihora Board in 2012

⁵ Mahaanui Iwi Plan 2013

⁶ Concerns expressed by COMAR Team members and attendees at Selwyn Waihora Limit Setting Workshops.

<p>The cultural health of Te Waihora is restored, including the restoration of mahinga kai species abundance and diversity to a level to enable customary use.</p> <p><i>As manawhenua and kaitiaki, we have to live with the indignity of people speaking of our lake as dead and more recently the lake officially being labelled the second worst lake in the country.</i></p> <p><i>The lake is under significant pressure. Access to mahinga kai is being threatened. What remains is so fragile and important. Waihora is a whole system from where I can exercise my customary right to mahinga kai and be engaging with the tribal property. Our customary lake is a right that is being impeded and must be protected.</i></p>	<p>6. Good health of, and physical access to, mahinga kai sites and places within the Te Waihora catchment is restored, including but not limited to:</p> <ul style="list-style-type: none"> (a) Muriwai; (b) Greenpark Sands; (c) Pākoau; (d) Kaitōrete; (e) Horomaka kōhanga (f) Waikirikiri; (g) Waiwhio; (h) Halswell River; (i) Ahuriri Reserves; and (j) Yarrs Lagoon. 		<p>Abundance of taonga species (including mahinga kai) is the ultimate indicator of cultural health⁷. Populations of the indigenous fish species (eel, flounder, mullet and whitebait) may not be adversely affected currently as these species are tolerant of the current enriched state in the lake and appear to form productive populations if there is the opportunity for successful recruitment from the sea, which should be improved due to increased lake opening frequency in spring and autumn. Successful recruitment is thought to be a key factor influencing fishery productivity.</p> <p>However, abundance alone is insufficient to ensure cultural health. Enrichment of the lake has adversely impacted the <i>quality</i> of customary fisheries, through nuisance algae blooms (including risk of toxic cyanobacteria), and decreased amenity value (e.g. subtle colour effects and more days at low lake level).</p> <p>There remains considerable uncertainty with respect to migrations of taonga species. While the lake opening will benefit the lake based fishery, it is unclear how much of the catchment will be barrier free and of a condition that enables unimpeded passage (e.g. flows, intermittency etc.). For example Hanmer Drain has 18 weirs (barriers) that limit passage.</p> <p>Whanau have to be confident of the cultural health of the lake and streams, the safety of gathering, have aquatic conditions that mean they are physically able to gather, and have to perceive the conditions of the aquatic environment as fit for customary use. There remain concerns that enriched waters and deteriorating aquatic conditions will not enhance the customary fishery.</p> <p>In 2011/ 2012 two teams representing the kaitiaki runanga assessed a number of streams in the catchment⁸.</p> <table border="0"> <tr> <td style="padding-right: 10px;">Kaituna River</td> <td>Visited the site at Kaituna Valley Road - for 28% the state of the site was assessed as being below average health: conversely for 72% of the visits the site was assessed as being in good health.</td> </tr> <tr> <td>Waikirikiri</td> <td>Visited Coes Ford on 17 occasions – 95% of the time the state of the site was assessed as being below average health.</td> </tr> <tr> <td>Waiwhio</td> <td>Visited the site of Lower Lake Road 17 times – for 71% the state of the site was assessed as being below average health.</td> </tr> <tr> <td>Halswell River</td> <td>Visited the site of Tai Tapu 14 times – for 93% the state of the site was assessed as being of average health.</td> </tr> </table> <p>With respect to mahinga kai gathering from the lake, the lake water is currently turbid with very low clarity (~10 cm visibility), and is brown/green in colour due to wind/wave suspended bed sediment and algae (phytoplankton)⁹. Water colour and clarity continually change depending on weather conditions (and thus sediment re-suspension), and also impacts the success of fishing activity, and the method used to gather¹⁰</p> <p>Sadly, there are some whanau members who no longer gather from the lake¹¹.</p>	Kaituna River	Visited the site at Kaituna Valley Road - for 28% the state of the site was assessed as being below average health: conversely for 72% of the visits the site was assessed as being in good health.	Waikirikiri	Visited Coes Ford on 17 occasions – 95% of the time the state of the site was assessed as being below average health.	Waiwhio	Visited the site of Lower Lake Road 17 times – for 71% the state of the site was assessed as being below average health.	Halswell River	Visited the site of Tai Tapu 14 times – for 93% the state of the site was assessed as being of average health.
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⁷ Goodall 2003

⁸ Tipa and Associates Ltd 2013

⁹ Selwyn Waihora Limit Setting Process: An Overview of Current State in 2012.

¹⁰ Pers com from member of Te Waihora Management Board. Also confirmed by evidence of whanau “*There is very little clear water in the shallows of the Lake now, only under certain conditions and never during summer. Some of our customary fishery practices cannot be used now due to very discoloured water*”.

¹¹ Pers com from members of the COMAR assessment teams

	<p>7. Mahinga kai species traditionally gathered still found across historic range</p>		<p>In the absence of stock assessments we have relied on the observations of whanau: <i>there are far less black swans which are a native species. There were previously in excess of 80,000. Now, there are around 8,000. Pressure on land use for breeding areas restricts the ability for cultural gathering of swan eggs.</i></p> <p><i>Inanga Whitebait runs are nowhere near as good as those that the kaumātua talked about, even during my time on the lake. Timing of openings for whitebait is crucial. In my experience, whitebait will be more inclined to enter the lake with better water quality and perhaps breed in and around the lake</i></p> <p><i>There are different types of patiki flounder in the lake. Three corner flounders do not usually prosper in the lake throughout their cycle. There are sometimes lots of small ones, but they do not always grow to useful size. The Timaru whites or Greenbacks are not even present in the lake as juveniles. Something is stopping them growing up and then they completely disappear from the system. This did not happen in the past. It is possible that the timing of recruitment for this species is completely missed by the current opening regime which does not cater for lake opening at optimal times for recruitment.</i></p> <p>With respect to eels, the observation was made that the proportion of longfins in the lake has reduced significantly¹². See comment re eels for Indicator 20.</p>
<p>The customary rights of Ngāi Tahu whānui associated with mahinga kai and Te Waihora are protected mō tātou, ā, mō kā uri ā muri ake nei.</p> <p><i>The lake is under significant pressure. Access to mahinga kai is being threatened. What remains is so fragile and important. Waihora is a whole system from where I can exercise my customary right to mahinga kai and be engaging with the tribal property. Our customary lake is a right that is being impeded and must be protected.</i></p>	<p>8. Satisfaction of whanau that Te Waihora and its tributaries are managed as a customary fishery including but not limited to:</p> <p>(a) A lake opening regime the reflects the needs of the customary fishery;</p> <p>(b) Tributary water quality and quantity that enhances cultural health and mahinga kai, and enables customary use;</p> <p>(c) The use of exclusion zones for commercial fishing / non-commercial fishing areas.</p>		<p>a) Indigenous fish species (e.g. eel, flounder, whitebait) and the customary fisheries associated with them, are tolerant of the current enriched state, and lake openings to the sea, a key factor influencing fishery productivity¹³, are predicted to increase. Increased frequency of artificial openings to the sea has a significant benefit for fish migration (autumn openings) and recruitment (spring openings) for indigenous species (e.g. eel, flounder, whitebait). However, increasing enrichment, are perceived by whanau to have adverse effects on the quality of customary fisheries. Whanau need and want to fish where they have the right to fish. They want to use the methods they are accustomed to using, and know they can fish safely and share the fish gathered safely. At present they are unable to do this to the extent they aspire to.</p> <p>b) In 2011/ 2012 two teams representing the kaitiaki runanga assessed a number of streams in the catchment. For 66% of the streams assessed the current minimum flows are less than the flows sought by whanau. Low flows and the duration of low flows are seen as issues that adversely impact the cultural health of waterways¹⁴. From another perspective, the minimum flows for 65% of these streams are less than what could be recommended as an ecological flow¹⁵.</p> <p>c) In relation to exclusion zones, there are currently zones that are closed to commercial activity</p> <ul style="list-style-type: none"> • Harts Creek Reserve • The Kaituna Lagoon (is managed as the Horomaka kōhanga) • With respect to eels, reserve areas extend throughout the tributaries including a radius of 1.2km around the mouth of the Irwell, Selwyn, L11, Halswell and Harts Creek.

¹² Jellyman 2010

¹³ Due to recruitment of juveniles from the sea to the lake in spring and sea-ward migration in autumn

¹⁴ Recorded by members undertaking assessments as part of the COMAR study

¹⁵ Golder and Associates 2012

	9. Whanau can access sites to gather where they wish, and how they wish.		<p>Access remains a significant issue for whanau: <i>I have seen rotting piles of water weeds and thick sediment along with dead eels that have suffocated on the banks from drain cleaning exercises, which has made me have to choose a totally different area to harvest from, or to not gather at all.</i></p> <p><i>I have waded through waist high mud and sediment that lies in places on the bed of our lake and tributary streams, and which has made it almost impossible for me to set nets or access sites for fishing and harvesting.</i></p>
Land and water use in the catchment respects the boundaries, availability and limits of our freshwater resources and the need to protect soil and water resources for future generations.	10. Iwi specific flow preferences identified and provided for in catchment flow regimes.		<p>Whanau are concerned at the current flow regimes and the current water quality. In 2011/ 2012 two teams representing the kaitiaki runanga assessed a number of streams in the catchment. For 66% of the streams assessed the current minimum flows are less than the flows sought by whanau. Low flows and the duration of low flows are seen as issues that adversely impact the cultural health of waterways¹⁶.</p> <p>Whanau are concerned that initiatives being considered (e.g. Central Plains), although having the potential to augment flows, will bring nutrient enriched and contribute to a further deterioration of the existing aquatic conditions.</p>
	11. Level of extraction (groundwater, surface water)		<p>The Selwyn Te Waihora catchment is currently over allocated, which is a concern of whanau. Knowing that one of the options currently under consideration is to prohibit any further allocation is a positive step but whanau want to see the issue of allocation addressed and not simply postponed¹⁷. Further, there are some catchments, such as the Waiekekewai and Pices, where they aspire to have no extractions permitted.</p> <p>There are concerns with the level of extraction from groundwater. Groundwater allocation and abstraction across Canterbury including the Selwyn Te Waihora catchment has increased steadily over the last few decades. It has reached the point where extraction is approaching or exceeded the volume of recharge to groundwater¹⁸. This is a concern for whanau.</p>
	12. No inter-catchment transfers		<p><i>Farming has intensified in the area. I have seen first-hand the pollution, runoff, sedimentation and drain cleaning that has occurred. Some areas are not fenced, stock are getting access to waterways. Many of the drains and waterways are refuges for various species and are influenced by lake level management at different times of the year. Mechanical removal of sediment from these drains and waterways removes adult and juvenile eels.</i></p> <p>Whanau remain concerned at the likelihood of further intensification which may be accompanied by inter-catchment transfers.</p>

¹⁶ Recorded by members undertaking assessments as part of the COMAR study,

¹⁷ Statement from COMAR Team member.

¹⁸ Selwyn Waihora Limit Setting Process: An Overview of Current State in 2012

<p>Lake management, including lake level management, reflects living with the lake, rather than forcing the lake to live with us.</p> <p><i>A significant pressure was the focus on maintaining the lowest possible lake level to maintain productive land use around the lake. This practice has taken place on a continuous basis for decades.</i></p>	<p>13. Satisfaction of whanau with lake level management – including openings that allow for:</p> <ul style="list-style-type: none"> (a) Increased fish recruitment; (b) Higher and fluctuating lake levels; (c) Salinity maintained at a higher level than current regime allows; (d) Longer duration of openings when required for fish values; and (e) Allowing the lake to be tidal for longer periods of time. 		<p>The lake is periodically open to the sea and therefore varies in how salty it is. The lake height is currently managed through lake opening/ closing to protect wildlife habitat while recognising the needs of farming. Opening to the sea in the spring and autumn is important for fish passage and recruitment and was considered to be unlikely to support optimal migration and spawning requirements for important species, for example eel and flounder. Spring openings are important for flounder recruitment and autumn opening for flounder and eel migration.</p> <p>The Water Conservation Order (WCO) for the lake has specified a new management regime around opening and closing and modelling suggests that it will significantly increase the number of spring⁵ and autumn⁶ openings¹⁹.</p> <p>The impact of the changed operating regime still needs to be determined.</p>
	<p>14. The investigation of opening the lake at the southern end of Te Koru, in addition to, or instead of, the current site.</p>		<p>Lake opening alternatives are being investigated within the Whakaora Te Waihora programme.</p>
	<p>15. Water quality (TLI)</p>		<p>Within the Environment Canterbury Natural Resource Regional Plan (NRRP) the Trophic Level Index (TLI) is set at 6. The current annual TLI is approximately 6.8 mid-lake. This is in the hypertrophic or highly nutrient enriched state. Whanau have been told to expect the lake to become even more nutrient enriched leading to an annual TLI ~ 7.2 and 7.3 respectively (i.e. still hypertrophic) which is likely to result in an increase in the likely frequency of nuisance algal blooms. This is of concern to whanau who, noting the target of 6 in the NRRP, aspire to a TLI more akin to its historic state (in the region of 4 – 5 TLI).</p>
<p>The relationship between land use, groundwater, surface water and Te Waihora is recognised and provided for according to the principle of Ki Uta Ki Tai.</p> <p><i>Kaumātua describe Te Waihora as once clear with a shingle bottom, used as a</i></p>	<p>16. Groundwater quality</p>		<ul style="list-style-type: none"> • The concentration of nitrate in the groundwater of the Selwyn Waihora area is increasing²¹. • For groundwater that is close to the land surface, it can be vulnerable to contamination from micro-organisms from either grazing animals or waste water disposal. • Currently Environment Canterbury detects E. coli in about 5-15% of wells. The risks to the reticulated water supply appear low in general. However the risks to the drinking water supplies from domestic wells are greater, especially where border dyke irrigation is still practiced²². Given the number of whanau that live in the catchment, this risk is of concern.
	<p>17. Quality of drinking water at the marae</p>		<p>The wells around the lake, including those at the Taumutu marae, are not at risk of increased nitrate-N contamination from broad-scale land use change on the plains. Nitrate-N concentrations in groundwater</p>

¹⁹ Selwyn Waihora Limit Setting Process: An Overview of Current State in 2012.

source of drinking water, food and cultural resources ²⁰ .			around the lake are kept low by denitrification in anoxic conditions and by dilution by the upward flow of deep, low nitrate-N groundwater ²³ .
	18. % of landuse change		<p>This indicator will be measured over time. Whanau contend that 'Te Waihora has little protection from the effects of land use on its margins. Activities on the margins of the lake such as grazing, sewage discharge, and run-off have effects on lake health through direct environmental impact, and because they influence the lake level management. For example, the location of lake margin communities compromises the ability to raise lake levels and manage for fishery values. The protection of these communities (and what is essentially a non-existent private property right) is given priority over and above the tribal property right over the lakebed. The Te Waihora Management Board refers to this as a 'superimposed priority to keep these settlements dry'²⁴.</p> <p>Although Te Waihora continues to be a productive environment, its mauri is severely degraded as a result of a management regime that has consistently prioritised non-Ngāi Tahu values and interests²⁵.</p> <p>Land use and tributary management in the wider catchment also contribute significantly to the degraded cultural health of Te Waihora. Located at the "bottom" of the system the lake receives contaminated water from its tributaries. Whanau are concerned the possibility of further land intensification and land use change, and the risk of further enriched waters entering the lake.</p>
The cultural health of lowland waterways is restored, through the restoration of water quality and quantity and riparian margins.	19. Water quality parameters		<p>Streams flowing into Te Waihora have moderate to high levels of phosphorus except Harts Creek. In addition the drainage network will carry phosphorus to the lake. Concentrations in the Halswell have increased over the last 10 – 20 years. Concentrations in the L11, Boggy Creek and Selwyn (at Coes Ford) have decreased but remain moderate to high.</p> <p>For nitrogen the 'levels of protection for chronic toxicity'¹¹ indicate what proportion of aquatic life we should expect generally to be protected in current conditions. For all of the lowland sites except Jollies Brook, we currently have less than 80% level of protection, in other words it is likely that some species will not prosper in the streams currently and nitrate tolerant species will dominate.</p> <p>Finally, sediment is a water quality parameter of significance to whanau as it can impact cultural use. As one whanau member explained:</p> <p><i>I have encountered highly discoloured water (sometimes bright green) and the effects of algal blooms at different times in the lake and its tributaries, and I have had to discontinue my activities until it is safer and have also been caused to feel worried for my health and safety, as well as those of my whanau, manuhiri and whanaunga who I may share any harvested food with.</i></p>

²¹ Selwyn Waihora Limit Setting Process: An Overview of Current State in 2012

²² Selwyn Waihora Limit Setting Process: An Overview of Current State in 2012

²⁰ See Mahaanui Iwi Plan 2013

²³ Selwyn Waihora Limit Setting Process: An Overview of Current State in 2012

²⁴ Mahaanui Iwi Plan 2013

²⁵ Pauling 2007

	20. Water quantity parameters		<p>The flows in the lowland streams are mainly sourced from groundwater and are fed by springs that emerge, although some are fed by alpine sources.</p> <p>In 2011/ 2012 two teams representing the kaitiaki runanga assessed a number of streams in the catchment. For 66% of the streams assessed the current minimum flows are less than the flows sought by whanau. Low flows and the duration of low flows are seen as issues that adversely impact the cultural health of waterways²⁶.</p> <p><i>I have experienced the extreme low flows in our streams which impact on the available habitat for our fish, can leave them stranded and which can also result in poor harvests in subsequent years.</i></p> <p>The observations of whanau are supported by other technical assessments: <i>Flows have been impacted by the long term effects of extraction and long term climate variability.... In particular the reduced flows in lowland streams has reduced the habitat available for trout and native fish especially eels.... It is clear to see that flows have decreased and importantly they have decreased below the set minimum flow for Coes Ford in the lower catchment²⁷.</i></p>
Wetlands and waipuna are recognised and protected as wāhi taonga, and there is an overall net gain of wetlands in the catchment.	21. Area of wetlands (ha) restored as habitat		<p>The current extent of wetland habitat in the catchment is minimal and primarily restricted to the shores of Te Waihora/Lake Ellesmere and scattered remnants throughout the plains and foothills¹³, and often occur at the source of streams.</p> <p>The currently modest areas of fringing wetlands around the lake are highly valued. These are restricted in area due to regular lake level control to avoid flooding neighbouring land. Lake level management is important for the success of fringing wetland restoration, so an increase in the frequency of low level periods in summer could be detrimental if the lake opening regime cannot be managed to avoid this. In addition - similar to the case for macrophyte bed re-establishment – fringing wetland restoration could in some areas reduce the amount of wind and wave-generated sediment re-suspension, thus improving water clarity, reducing light limitation and potentially leading to greater phytoplankton growth (e.g. green algae) in those marginal areas as a result of greater nutrient loads which are envisaged in the future.</p> <ul style="list-style-type: none"> • As part of the Whakaora Te Waihora Programme, techniques to aid in the restoration of macrophyte beds are being trialled. • Wetland restoration initiatives are underway in the following areas: ? <p>Wetland habitats in the catchment are all modified to some extent, but they are ecologically significant because of the scarcity of wetlands on the Canterbury Plains²⁸.</p>
	22. Yes / No and number of restoration initiatives spread across the catchment.		<p>In addition to the Whakaora Te Waihora Programme, Environment Canterbury (via its Immediate Steps Programme) is supporting a number of restoration initiatives.</p>

²⁶ Recorded by members undertaking assessments as part of the COMAR study,

²⁷ Selwyn Waihora Limit Setting Process: An Overview of Current State in 2012.

²⁸ Selwyn Waihora Limit Setting Process: An Overview of Current State in 2012.

	23. Satisfaction of whanau with the level of protection afforded waipuna		<p>For 31% of streams assessed during the 2011/2012 assessments, protection of the source springs was identified as a management priority.</p> <p>Because of the loss of access in the catchment, whānau are unsure of the health of some of the larger springs²⁹. With respect to springs that emerge in the lake, there is concern that these are adversely impacted by increased sedimentation³⁰.</p>
All waterways have healthy, planted riparian margins, and are protected from stock access.	24. <i>Index of Riparian Condition</i>		<p><i>This measure is unable to be reported at this time.</i></p> <p>However, in the interim we are able to draw on the assessments undertaken by whanau who, during 2011/2012, assessed sites in 16 streams across the Te Waihora Catchment. Of these streams, 69% were in need of riparian restoration and/or stock exclusion.</p>
	25. <i>Kilometres (%) of river/waterway length without stock access</i>		<p><i>This measure is unable to be reported at this time.</i></p> <p>However, in the interim we are able to draw on the assessments undertaken by whanau who, during 2011/2012, assessed sites in 16 streams across the Te Waihora Catchment. Of these streams, 69% were in need of riparian restoration and/or stock exclusion.</p>
	26. <i>Kilometres (%) and/or hectares of river/waterway length with riparian protection</i>		<p><i>This measure is unable to be reported at this time.</i></p> <p>However, in the interim we are able to draw on the assessments undertaken by whanau who, during 2011/2012, assessed sites in 16 streams across the Te Waihora Catchment. Of these streams, 69% were in need of riparian restoration and/or stock exclusion. Responding to this, current sites and areas being replanted and actively managed to create or recreate natural riparian zones as a buffer include the Lower Waikewai stream, Te Pa o Moki, Orariki, Te Awapunapuna, Muriwai, Te Waiomākua, Ahuriri Greenpark, Pakoau and Waikirikiri Delta.</p>
<p>The discharge of contaminants to the lake and waterways in the catchment is eliminated.</p> <p><i>Furthermore, we have dealt with the direct discharge of sewage following the recent earthquakes.</i></p>	27. Water quality parameters		<p>Please see the comments for indicators 15 and 16.</p> <p>As noted previously, land use and tributary management in the wider catchment also contribute significantly to the degraded cultural health of Te Waihora. At the bottom of the catchment, Te Waihora is a sink for nutrients and sediment from its large and predominately agriculturally based catchment. Historically, extensive wetlands around the lake margins acted as a nutrient and sediment filter and played an important role in maintaining water quality, but these have been largely drained or degraded.</p> <p><i>“We shouldn’t be using the word ‘nutrients’ to describe what is going into our lake. Nutrients are associated with health and wellbeing. What is going into our lake is pollutants and toxins.”</i> Uncle Donald Brown, Te Taumutu Rūnanga.</p> <p><i>Furthermore we have dealt with the direct discharge of sewage following the recent earthquakes.</i></p>

²⁹ Pers com. From a Taumutu Kaumātua.

³⁰ Pers com from a member of the COMAR assessment team.

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Mahaanui Iwi Management Plan 2013 Published by: Ngāi Tūāhuriri Rūnanga, Te Hapū o Ngāti Wheke (Rāpaki), Te Rūnanga o Koukourārata, Ōnuku Rūnanga, Wairewa Rūnanga, Te Taumutu Rūnanga ISBN: 978-0-473-23667-0 accessed at <http://mkt.co.nz/mahaanui-iwi-management-plan/>

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