

5 Applying the Cultural Health Index

5.1 Capturing an iwi perspective

Because the Cultural Health Index is intended to assist Māori and resource managers to collect data specific to cultural values, it was essential that the index be grounded in the beliefs, values and practices of Māori. As the previous sections confirm, our project originally sought to develop indicators consistent with the values of *mauri* and *mahinga kai*, but resulted in the incorporation or recognition of many other cultural values in the CHI and many unanticipated social and cultural outcomes. The purpose of summarising the values in the following paragraphs is to demonstrate how the goal of recognising, promoting, or protecting cultural values in the design and application of the CHI has been achieved.

5.1.1 Cultural values recognised in the design of the index¹

The design of the CHI, and in particular the decision to have three components, responds to Māori values, as follows.

- *Mauri*: the three components of the CHI collectively represent a way for Māori to measure the present health of the river in a holistic manner and compare it to their recollections of the site's condition in the past, thus enabling them to assess the extent to which contemporary resource management protects the *mauri* of the resource.
- *Wāhi tapu and wāhi taonga*: sites selected may include those considered to be *wai tapu* or *wai taonga*. Those applying the index need simply to identify a site as traditional – they are not required to disclose to resource management agencies the reasons for it being considered *tapu* or a *taonga*.
- *Mahinga kai*: component 2 reflects the need to protect the diversity and abundance of species, and safeguard the ability of *mana whenua* to gather and use these resources, both now and in the future.

5.1.2 Values recognised when *mana whenua* apply the CHI

The CHI has been designed in such a way that it must be applied by Māori. The calculation of CHI scores must be informed by traditional knowledge. Participation of *mana whenua* ensures that the following values are recognised:

- *Mana*: application of the index and use of the information to inform resource management processes recognises that *iwi* have the right to access, use and manage waterways, and the interaction of humans with waterways.
- *Mana whenua*: recognises that those individuals mandated to apply the index will be chosen on the basis of ancestry (i.e. their *whakapapa*).
- *Kaitiakitanga*: imposes responsibilities to manage resources in a manner that protects the resource and the interests of future generations. Application of the CHI represents a means of engaging with *kaitiaki* in management processes.

¹ This framework is based on that presented by Crengle (2002).

5.2 The CHI as a diagnostic and monitoring tool

This report does not contain all the CHI calculations for the 46 sites assessed. This information belongs to the kaitiaki rūnanga, who will now use this information in its discussions with the regional council.

However, to illustrate how the CHI can be used as a diagnostic and planning tool, information collected at five sites has been included in Appendix 2. The CHI scores of these sites are set out below with a brief analysis of each score.

- Site 1: McRaes Creek B-1 / 2.69 / 4.87
- Site 6: Barbours Stream Tributary B-0 / 1.3 / 3.02
- Site 11: Owhiro Creek A-0 / 1.75 / 1.65
- Site 21: Taieri River – Ferry Bridge A-1 / 1.65 / 2.72
- Site 38: Island Stream – Maheno A-0 / 2.56 / 1.06



Photograph 3: McCraes Creek (in the Taieri Catchment). The CHI is B-1 / 2.69 / 4.87.

Photograph 4: Three O'clock Stream – a site in the Taieri Catchment. The CHI score was B-0 / 1.25 / 3.55.





Photograph 5: A site on the lower reaches of the Waiareka. The CHI score was A-0 / 1.44 / 1.97.



Photograph 6: The site on the Silverstream on the Lower Taieri. The CHI score was A-0 / 3.13 / 2.00.



Photograph 7: A site on the mainstem Kakaunui (CHI is A-1 / 2 / 2.86).



Photograph 8: One of the sites on the Waiareka (in the Kakaunui Catchment). The CHI score is B-0 / 1.75 / 1.37.

5.2.1 Site 1: McRaes Creek (B-1 / 2.69 / 4.87)

The assessment confirmed that:

- this is not a traditional site (B)
- despite this, rūnanga members would return to the site (1)
- its mahinga kai values are only average (2.69):
 - an average score for access – it is accessible, although it involves a significant walk
 - a reasonable range of mahinga kai species present, especially plants, but this is a small tributary and there are not many fish species present
 - not a traditional site and therefore species sourced traditionally cannot be compared with those present today (scores 1)
 - scores highly because rūnanga members would return to the site
- it scores very highly for component 3, stream health (in fact McRaes Creek received the highest ratings of all 46 sites), as follows:
 - catchment 4.6
 - modification 4.75
 - riparian 5
 - flow visible 5
 - water quality 5.

The slightly lower score for ‘catchment’ reflects the presence of some exotic species within a native catchment. The score for modification reflects the presence of a track through the watercourse that is used by mountain bikes and motorbikes.

5.2.2 Site 6: Barbours Stream (B-0 / 1.3 / 3.02)

The assessment confirmed that:

- this is not a traditional site (B)
- because of the degraded condition of the site, rūnanga members would not return to the site (0)
- its mahinga kai values are poor, because:
 - it has poor access – it was be difficult for rūnanga members to find this site without assistance
 - mahinga kai species were absent
 - this is not a traditional site, therefore species sourced traditionally cannot be compared with those present today (scores 1)
 - rūnanga members would not return to the site (scores 1)
- it received an average score for stream health:
 - catchment 2.5
 - modification 2.6
 - riparian 1
 - flow visible 5
 - water quality 4.

The low scores for ‘catchment’, ‘modification’ and ‘riparian’ were because this site is heavily modified by stock. In particular, the riparian margin was considered to be in poor condition. Despite this, a flow is visible in the river and the water quality appears to be high, possibly because of the tussock in the catchment.

5.2.3 Site 11: Owhiro Creek (A–0 / 1.75 / 1.65)

The assessment confirmed that:

- this is a traditional site (A)
- rūnanga members would not return to the site (0)
- its mahinga kai values are low, due to:
 - a high score for access, but
 - the site is so modified there were no mahinga kai species, aside from eel
 - it scores highly because it is traditionally a significant site for eels, and these are still present, but
 - it scores poorly because rūnanga members would not return to the site
- it scores poorly for stream health (in fact it was one of the two poorest scoring sites for this component):
 - catchment 1
 - modification 1
 - riparian 1
 - flow visible 4
 - water quality 1.25.

All scores apart from a visible flow are very low.

5.2.4 Site 21: Taieri River – Ferry Bridge (A–1 / 1.65 / 2.72)

The assessment confirmed that:

- this is a traditional site (A)
- rūnanga members would return to the site in the future (1)
- its mahinga kai values are poor, because:
 - it receives an average score for access
 - there is not a good range of mahinga kai species present
 - not all the species sourced traditionally are still present (scores poorly), but
 - rūnanga members would return to the site (scores highly)
- average scores were assigned for stream health:
 - catchment 2
 - modification 1
 - riparian 2.6
 - flow visible 5
 - water quality 3.

The lower score for ‘catchment’ reflects the fact that the catchment is highly modified. The score for modification reflects the reclamation upstream of the site, plus other types of riverbank protection. Water quality received an average score because of suspended sediments.

5.2.5 Site 38: Island Stream – Maheno (A–0 / 2.56 / 1.06)

The assessment confirmed that:

- this is a traditional site (A)
- rūnanga members would not return to the site (0)
- its mahinga kai values are only average:
 - it receives a high score for access because it is easily accessible, but
 - there is a limited range of mahinga kai species present
 - it scores highly because it was a significance eel fishery and has the highest density of eels within either of the two catchments, but
 - it scores poorly because rūnanga members would not return to the site
- it scores poorly for stream health:
 - catchment 1
 - modification 1.3
 - riparian 1
 - flow visible 1
 - water quality 1.

The consistently low scores for each of the indicators confirm the poor health of this site, which was the worst of the 46 study sites.

5.3 Implementation of the CHI nationwide

During the course of the project, rūnanga members (and subsequently resource managers) identified the need for further work. Three specific areas of work have been identified:

- guidance to improve consistency of assessment by different members and different teams
- testing the applicability of the CHI in river types other than the type in which the CHI was first developed
- testing the acceptance of the CHI methodology by iwi other than the iwi who were involved in initial development of the CHI.

The purpose of this work would be to validate the CHI for nationwide use by iwi and resource managers.

5.4 Incorporating the CHI into resource management processes

The CHI we have developed is based on mahinga kai and stream health indicators identified by kaumātua and rūnanga members from throughout the Ngāi Tahu rohe. Moeraki and Otakou rūnanga members evaluated these indicators for 46 sites on the Kakanui and Taieri Rivers (respectively), two rain-fed hill country rivers.

These two rūnanga can now use the results of the CHI on Taieri and Kakaunui River sites to work with the Otago Regional Council, identifying stream health issues of cultural importance and deciding how these might be addressed.

5.4.1 Process for applying the CHI on the Taieri and Kakaunui Rivers

1. The rūnanga approves the use of the CHI and confirms the rūnanga team that applied the tool and determined the CHI scores at sites on the Taieri and Kakaunui Rivers.
2. Inform the Council about the CHI.
3. For each river site, rūnanga members interpret the scores assigned to the three CHI components and identify priority issues.
4. For each river site, rūnanga identify the sensitive information that is to be protected by silent files (or a similar type of system).
5. Rūnanga members work with the Council to identify priority issues within each catchment.
6. The Council and rūnanga members discuss ways of addressing these issues and set objectives.
7. Remedial actions are initiated.
8. Monitoring requirements are identified and the rūnanga/Council undertake monitoring at appropriate intervals.

5.4.2 Process for deriving and applying the CHI on other rain-fed hill country rivers in the Ngai Tahu rohe

Because the five indicators that best describe stream health in the Taieri and Kakaunui Rivers apply to rain-fed hill country rivers, the CHI is ready to be implemented on this type of river throughout the rest of the Ngāi Tahu rohe. The following process outlines the steps involved to achieve this.

1. Inform the relevant rūnanga about the CHI.
2. The rūnanga approves the use of the CHI and selects the rūnanga team that will apply the tool and determine the CHI scores at selected river sites.
3. Train the rūnanga team in the use of the CHI.
4. Inform the resource managers about the CHI.

5. Select sites on the river(s) of interest. Site selection will depend on the reason the CHI is being applied. However, selection will require identifying traditional sites, and should include sites that reflect ki uta ki tai. Other factors that might be important in site selection include: land use, channel manipulation, water abstractions and discharges. (Note: sites may be selected in conjunction with the water managers.)
6. The rūnanga compiles available information about mahinga kai and stream health for the sites of traditional significance.
7. The rūnanga team carries out the CHI evaluations. For the stream health component only the five indicators need to be rated.
8. Electric fishing is carried out to identify mahinga kai fish species present.
9. Each component of the CHI is rated/calculated and the CHI determined for each site.
10. Rūnanga members interpret the scores assigned to each component of the CHI and identify priority issues, if this is relevant.
11. For each river site, rūnanga identify the sensitive information that is to be protected by silent files (or similar type of system).
12. Rūnanga members work with regional councils to identify priority issues, if this is relevant.
13. Regional council and rūnanga members discuss ways of addressing these issues and set objectives.
14. Remedial actions are decided and implemented.
15. Monitoring requirements are identified and the rūnanga / regional council undertakes monitoring at appropriate intervals.

5.4.3 Process of deriving the CHI for other river types within the Ngāi Tahu rohe

For other river types, such as gravel braided rivers or glacial-fed rivers, the mix of indicators defining stream health may be different to the five identified for rain-fed hill country rivers. To check this, the 18 indicators identified by kaumātua and rūnanga members (section 3.3.2) need to be validated, and the form to be used in the field finalised on the basis on the validated indicators. The final list of indicators will be rated by the rūnanga team at each stream site on a different river type. For the comparison between stream health indicators on rain-fed hill-country rivers and other river types to be valid, the sampling design must be comparable. Accordingly, site selection must conform to the criteria used for selecting sites on the hill-country rain-fed rivers: small, medium and large, traditional sites and a variety of land uses.² If the same five key stream health factors are identified from the analysis it indicates that the CHI can be applied with confidence on rivers throughout the Ngāi Tahu rohe irrespective of river type.

² This requirement is necessary because the CHI is still under trial. Selecting a range of sites of differing sizes and land uses may not be needed in the future when iwi are choosing the sites they want to assess.

The steps required to validate the stream health component of the CHI are as follows:

1. The rūnanga approves the development of the CHI for different river types and selects the rūnanga team that will evaluate river sites for stream health.
2. Train the rūnanga team in the use of the CHI.
3. The kaitiaki rūnanga and regional council select a river that is different to a hill-country rain-fed river and is culturally significant.
4. Select sites on the basis of stream size (ki uta ki tai), traditional association and land use that will provide sufficient data to identify key stream health indicators.
5. The rūnanga team records their ratings of the 18 stream health indicators at each site.
6. The regional council samples invertebrates and determines the MCI at each site (optional, but recommended).
7. Rūnanga stream health ratings are analysed according to the process described in section 4.3 and significant indicators are identified.
8. Scores are calculated for the stream health component of CHI at each site.
9. Relationships between stream health component scores and MCI scores are investigated.

If the same five indicators describe stream health in this type of river, one process can be used to implement the CHI on all rivers within the Ngāi Tahu rohe (see 5.4.1 above).

If different indicators are identified, they will make up a different stream health component of the CHI to be used for that type of river throughout the rohe.

5.4.4 Process of deriving the CHI for other iwi

It is necessary to determine whether another iwi feels the three components of the CHI appropriately reflect their values. The CHI component that requires particular attention is the stream health measure (component 3). If differences are revealed, these will probably originate in the beliefs of kaumātua about what makes a healthy stream. However, it is important to validate the overall design of the CHI if it is to provide iwi around the rest of the country with a useful tool.

Only those steps that are required to validate the stream health component of the CHI with different iwi are documented below. Please note that focus groups will be used to assess the overall design of the CHI.

1. Observe protocols to gain entrance to the iwi. Time should be taken to ensure that appropriate mandates are obtained.
2. Inform the iwi about the CHI in a forum of their choice.
3. Iwi support the extension of the CHI into their rohe.
4. Kaumātua and other iwi members are interviewed, and the transcripts used to identify stream health indicators. Once iwi mandate is obtained, guidance should be sought as to which kaumātua or iwi members should be interviewed.³
5. A list of possible indicators is compiled, refined, and listed on recording sheets.

³ A list of the questions used for this project is included in Appendix 3.

6. Iwi select the team that will evaluate river sites according to the list of indicators.
7. The iwi team is trained in the use of the recording sheets.
8. Inform the regional council about the CHI.
9. The iwi select a culturally significant rain-fed hill-country river (this could be in conjunction with the regional council).
10. Select sites on the basis of stream size (ki uta ki tai), traditional association and land use that will provide sufficient data to identify key stream health indicators. Where possible, it would be advantageous to utilise the databases of resource management agencies, in particular regional councils.
11. Iwi team records their ratings of the listed stream health indicators at each site.
12. Regional council samples invertebrates and determines the MCI at each site (optional but recommended).
13. Iwi stream health ratings are analysed according to the process described in section 4.3 and significant indicators are identified.
14. Scores are calculated for indicators that make up the stream health component of the CHI at each site.
15. The relationships between stream health component scores and MCI scores are investigated.

If the indicators making up the stream health component are the same as those identified by Ngāi Tahu, the current CHI for rain-fed hill-country rivers can be applied to other rivers of that type throughout the country. If the indicators differ, it implies that the stream health component of the CHI must be tailored to individual iwi.

Assuming the stream health component of the CHI proves common across river types and across iwi, the relevant process for working with the regional councils on water resource issues is documented in 5.4.1. The CHI is a tool that potentially can be applied throughout the country to facilitate the input and participation of iwi into resource management planning and decision-making processes.

6 Combining Cultural and Scientific Perspectives

Two distinct knowledge bases were combined in this study to develop a resource management tool that has the potential to significantly enhance the effectiveness of freshwater management practice. Participation in a collaborative process has enabled the project team to identify the advantages and benefits of such an approach, and we have taken the opportunity to outline these below.

- Neither Ngāi Tahu nor the Stream Team could have developed the CHI on their own. One of the major advantages of this project was the way the two knowledge systems complemented each other. Linking Western scientific design and analytical skills and cultural knowledge has been shown to be an innovative way of developing a potentially effective tool for iwi.
- It helps to think laterally about the organisations that can assist in the realisation of iwi goals. Ngāi Tahu, if asked at the start of the project to identify a ‘partner’ that could help advance their management aspirations, would have concentrated on fostering relationships with the regional councils. However, developing the CHI required cultural knowledge and scientific skills rather than management skills. The need for collaboration with resource managers comes at the implementation stage – after the tool has been developed. This highlights the need to clearly identify the skills required for the task rather than assuming the agency with responsibility for the area will be able to provide them.
- Ensuring the project team has the mandate to work with iwi is a prime consideration. Of equal importance is the need to have individuals within the project team who can operate within the Western scientific domain. This project benefited from having personnel who could ensure entry to either domain – cultural or scientific.
- Respecting the values and beliefs of each party is fundamental. For instance, when respect of sensitive tribal knowledge was demonstrated, mutual trust and respect grew, which enhanced relationships.
- A shared commitment to stream health and to the kaupapa was a key underlying component of the collaboration.
- Capacity building is a logical consequence of projects such as this, in that it:
 - enabled rangatahi and pakeke to learn from kaumātua
 - enabled iwi members and scientists to increase their understanding of each other’s values and perspectives
 - sought to build linkages between cultural and Western scientific perspectives.
- The relationship between the CHI and Western health measures confirmed that iwi members are an invaluable resource and their knowledge can add a positive element of major significance to resource management.
- For any new resource management tool to be accepted, the research design on which it is based needs to be comprehensive and robust. Seeking advice on methodology and design helps to develop the foundations for a collaborative relationship.
- Validation is necessary before broadening the application of a tool.



Photograph 9: A headwater stream in the Taieri Catchment. The CHI score was B-0 / 1.38 / 3.86.

Photograph 10: A site on the Waipori River – a reach that is regulated by the dams upstream. The CHI score was A-0 / 2.38 / 3.81.





Photograph 11: The team having morning tea in the field.

Photograph 12: Two of our team (rangatahi and kaumatua) discussing a site in the Upper Taieri.



7 Conclusion

For generations, Māori have voiced their concerns at the continual development of the waterways within their rohe. Māori perceive many as being degraded as a result of inappropriate use and development. In the last two decades Māori have been seeking greater recognition of their cultural beliefs, values, and practices. They are concerned that a failure to recognise their cultural values, and their customary and Treaty rights, will constrain tribal development and could damage many of the foundations of their culture and identity. This concern has surfaced in many forums in recent years, particularly resource consent hearings. Here Māori, as kaitiaki, are obligated to identify the effects (positive and negative) of resource use and development on their cultural, beliefs, values and practices.

There are major benefits for resource managers of working with iwi and applying the CHI. Irrespective of these, Māori remain committed to:

- protecting sensitive headwater catchments
- supporting abundant mahinga kai resources, particularly in important wetlands, backwaters, tributaries and mainstem rivers
- protecting the quality of the waters
- protecting other wāhi tapu / wāhi taonga
- protecting cultural landscapes
- developing more appropriate flow regimes
- ensuring variability in river levels
- providing a sufficient buffer, or safety margin, to mitigate the adverse effects of changing land uses on waters
- undertaking the restoration, enhancement and creation of wetland areas, to act both as flow moderators and habitats for mahinga kai species
- enhancing access throughout the river system
- addressing issues relating to changing land uses in catchments
- protecting habitats in estuaries.

Many Māori associate their well-being as individuals and as members of whānau, hapū and the iwi with maintaining the health of the natural environment. The following philosophy underlies the desire by iwi to deliver on kaitiakitanga obligations: *if you do not sustain the waterways, the mahinga kai sourced from them, and sites of significance in the wider environment, then you cannot sustain yourself, honour your ancestors, or provide for the children of your children into the future.* Thus sustainability and the long-term well-being of Māori are seen by some Māori as one and the same thing. We consider that this study shows that the CHI is a move towards enabling Māori and resource management agencies to fulfil their obligations to manage New Zealand's freshwater resources sustainably.

Glossary

Hapū	Sub-tribe, extended whānau.
Iwi	Tribe.
Iwi authority	The authority that represents an iwi, and which is recognised by that iwi as having authority to do so. Pursuant to section 15 of Te Rūnanga o Ngāi Tahu Act 1996, resource management agencies are to consult with Te Rūnanga o Ngāi Tahu, as the iwi authority.
Kaitiaki	Specifically appointed guardians who are responsible for protecting taonga resources. Their obligations include enforcement of tikanga and customary practices.
Kaitiakitanga	The exercise of guardianship.
Kaumātua	A respected elder within the tribe.
Ki uta ki tai	From the mountains to the sea.
Kōhanga	A breeding and rearing ground for young mahinga kai species.
Mahinga kai	Food and other resources, and the areas that they are sourced from or in which they are propagated.
Mana whenua	Those who hold rangatiratanga for a particular area or district.
Mauri	The essential life force or principle; a metaphysical quality inherent in all things, both animate and inanimate.
Ngāi Tahu whānui	The wider tribal membership base (i.e. all Ngāi Tahu).
Nohoanga	Settlement.
Pakeke	Adult.
Papatipu rūnanga	The First Schedule of Te Rūnanga o Ngāi Tahu Act 1996 lists the 18 papatipu rūnanga of Ngāi Tahu whānui and their respective takiwā.
Papatuanuku	Earth Mother.
Rāhui	Restrictions or controls that are put in place by kaitiaki to manage a resource or area.
Rangatahi	Teenager, young adult.
Rangatira	Chieftainship.
Ranginui	Sky Father.
Rohe	Area.
Takiwā	Area/region/district.
Tapu	Sacred.
Taonga	Treasured possessions, both tangible and intangible.
Tikanga	Customary values and practices.
Tino rangatiratanga	Full chiefly authority.
Wāhi tapu	Places of sacred and extreme importance.
Wairua	Life principle; spirit.
Whānau	Family.
Whakapapa	Genealogy.

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Appendix 1: Draft River Health Assessment Form

Indicators	Unhealthy	2	3	4	Healthy
1. Catchment land use	1 Land and margins grazed	2	3	4	5 Appears in an unmodified condition
2. Riverbank condition	1 Banks eroding	2	3	4	5 Banks appear stable
3. ⁴ River shape	1 Shape modified	2	3	4	5 Natural shape (pools, riffles, etc)
4. Riparian vegetation	1 Little or no riparian vegetation	2	3	4	5 Complete cover of indigenous margin
5. Indigenous species	Exotic vegetation visible: 1 on adjacent land 1 on riparian margins	2	3	4	Indigenous vegetation visible: 5 on adjacent land 5 on riparian margins
6. Mahinga kai species (birds)	1 No birds are present	2	3	4	5 Range of native birds present
7. Riverbed condition	1 Mud and sands present	2	3	4	5 Cobbles and gravels appear clear
8. Use of the river	1 Evidence of modification (e.g. stopbanks, straightening, etc)	2	3	4	5 Appears unmodified
9. Use of the river	1 Evidence of takes/discharges	2	3	4	5 No takes or discharges
10. River flow	1 Cannot see movement	2	3	4	5 Movement of water is visible (whitewater and ripples)
11. River flow	1 Flow cannot be heard	2	3	4	5 Noise of the flow is obvious
12. Water quality	1 Unpleasant odours present	2	3	4	5 Clean freshwater smell
13. Water quality	1 Appears polluted (e.g. foams, oils etc)	2	3	4	5 No pollution evident
14. Water clarity	1 Water badly discoloured	2	3	4	5 Water is clear
15. Sediment	1 Sediment covering riverbed	2	3	4	5 Riverbed free of sediment
16. Use of the riparian margin	1 Margins grazed	2	3	4	5 Margin appears unmodified

17. How safe would you feel tasting the water at this site?

1 Completely unsafe 2 3 4 5 Completely safe

Please explain your answer:

18. How would you feel about fishing at this site?

1 I would not fish here 2 3 4 5 This is a great place to fish

Please explain your answer:

19. How safe would you feel eating fish caught at this site?

1 Completely unsafe 2 3 4 5 Completely safe

Please explain your answer:

⁴ Factors 3 and 20 were removed from the analysis because they could not be rated consistently. Factor 6 was included in the mahinga kai component.

20. When you look at the adjacent land and the waterway together, does everything seem to be in balance?

- 1 No continuity – no balance between land and river 2 3 4 5 Continuity – land and river in balance

Please explain your answer:

21. How would you describe the overall health of the river at this site?

- 1 Very unhealthy 2 3 4 5 Very healthy

Please explain your answer:

Birds

22. Please list the mahinga kai bird species that you can see at this site.

1. _____ 2. _____ 3. _____
4. _____ 5. _____ 6. _____
7. _____ 8. _____ 9. _____

23. Are there abundant numbers of birds present at this site?

- 1 No birds present 2 3 4 5 Abundant numbers of birds present

24. Is there a diverse range of birds present at this site?

- 1 No diversity of species 2 3 4 5 Very diverse range

Plants

24. Please list the mahinga kai plant species that you can see at this site.

1. _____ 2. _____ 3. _____
4. _____ 5. _____ 6. _____
7. _____ 8. _____ 9. _____

25. Are there abundant numbers of mahinga kai plants present at this site?

- 1 No mahinga kai present 2 3 4 5 Abundant numbers present

26. Is there a diverse range of mahinga kai plants present at this site?

- 1 No diversity of species 2 3 4 5 Very diverse range

Fish

27. What mahinga kai fish species would you expect to find here?

1. _____ 2. _____ 3. _____
4. _____ 5. _____ 6. _____

Access

28. Do you feel as if you have access to this site to harvest mahinga kai?

- 1 Not able to harvest at this site 2 3 4 5 Able to harvest – no restrictions

Please explain your answer:

29. Would you harvest mahinga kai at this site?

- 1 Not harvest at this site 2 3 4 5 Yes, definitely harvest

Please explain your answer:

Final comments

Any other comments about this site?
