



**Te Mauri o Rangitāne o Manawātū (Council of Elders)
Tanenuiarangi Manawātū Incorporated (Iwi Authority)**

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Palmerston North

4410

Proposed Plan Change 2 to the Horizons One Plan – Existing Intensive Farming Land Uses

October 21, 2019

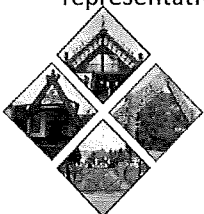
Tēnā koe

Ngā mihi nui ki a koutou i roto i ngā tini āhuatanga o te wā nei.

1. This submission is made on behalf of Rangitāne o Manawātū. It is submitted by Te Ao Turoa Environmental Centre, one of the units of Best Care (Whakapai Hauora) Charitable Trust, the health, social service and environmental arm of Tanenuiarangi Manawatu Incorporated. Tanenuiarangi Manawātū Incorporated is the Iwi Authority for Rangitāne o Manawātū.
2. Kaupapa- Discharge of Grade A Biosolids onto land containing wahi tapu

Rangitāne o Manawātū require a setback for biosolids discharge relevant to the size, importance and definition of the wahi tapu in question.

Plan Change 2 currently proposes to keep full discretion of this activity within Horizons without requiring consideration of cultural impacts on iwi. Attached is a Cultural Impact Assessment completed recently detailing the cultural Impact of biosolids discharge on Rangitāne o Manawātū. The details of setback size based on definition of wahi tapu should be discussed kanohi ki te kanohi with Horizons Regional Council and representatives from Te Ao Turoa Environmental Centre.



*Ka kahutia i te korowai, Te Rangimarie, Te Aroha, Te Whakaiti, Ka Whakapuawai he iwi humaarie
Spread the cloak of Peace and Love, so shall blossom the people of humility*

Rangitāne o Manawatū do not support the use of biosolids on land for agricultural purposes.

3. Kaupapa- Policy 5.8 Management and Regulation of intensive farming land use activities affecting groundwater and surface water quality

Water quality is the single most important value influencing the ability of iwi to connect to their ancestral waterbodies. Rangitāne o Manawatū have no evidence that Policy 5.8 has taken Māori Cultural Values into consideration. Economic Impact Assessments, a Social Impact Assessment, Science and Technical Assessments have been undertaken. However, there is no effort made to understand the Cultural Impacts of this Plan Change on iwi within their areas of interest despite Te Ao Māori Chapter 2 objectives of the One Plan clearly detailing the need to consider Mauri and Kaitiakitanga. A Cultural Impact Assessment is a technical piece of evidence undertaken to inform local and regional Plan Change processes that affect iwi, it is common practice for District Councils Rangitāne o Manawatū work with to commission this work prior to public consultation. It is clear this Plan Change will affect Rangitāne o Manawatū. Without the ability to undertake a Cultural Impact Assessment Rangitāne o Manawatū do not have the opportunity to understand the scope of the proposal and comment on how the Plan Change will impact on the wider iwis ability to provide for their cultural, spiritual, social and economic wellbeing. It is recommended that this work be commissioned to inform Plan Change 2 immediately.

Nāku noa

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Te Ao Turoa Environmental Centre

Cultural Impact Assessment

To

Lowe Environmental Impact

Biosolids Composting Trail

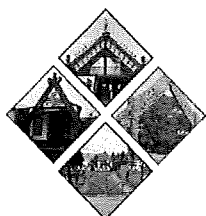
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Nā Siobhan Lynch- Karaitiana

Environmental Planner

Te Ao Turoa

June 26, 2019



*Ka kahutia i te korowai, Te Rangimarie, Te Aroha, Te Whakaiti, Ka Whakapuawai he iwi humaarie
Spread the cloak of Peace and Love, so shall blossom the people of humility*

Mihi

Te Mauri o Rangitāne o Manawatū

E inoi nei ki ngā whakatipuranga a Tanenuiarangi

Kia tū whakapakari me matekitetia mō ngā rā ka

Hekemai mō te oranga tinana, oranga wairua

Teitei Kahurangi.

Whakatuwheratia o hā, me tō hinengaro toro atu

O ringa kia awhitia rātau mā i urumai i waenganui i a mātou,

Manaakitia te katoa ahakoa tō rātou karangatanga maha

Me kaha te tiaki kia pai ai ngā wawata,

Ngā moemoea.

Kia ū ki ngā whakaarotanga

A ō mātou Matua Tupuna.

Kia noho tonu a rātou wairua ki runga ki tēnā

Ki tēnā mō ake tōnu atu.

Ma Ihoa tō tātou piringa me te kaiarahi i runga i to haerenga.

CONTENTS

Background

Low Environmental Impact (LEI), Massey University and The Institute of Environmental Science and Research Ltd (ESR) are working in partnership with ten lower North Island Councils to develop a biosolids strategy that includes the potential for a collective approach to sludge management and beneficial end-use. Through earlier phases of the project it was estimated that there are around 80,000 tonnes of sludge produced from oxidation ponds every 30-50 years in the lower North Island, excluding additional sludge from five high rate treatment plants. Currently, most of the sludge removed from treatment plants is disposed of in local landfills.

Rangitāne o Manawatū are a critical stakeholder in waste management through their position as the mana whenua in the Manawatū region. Mana whenua have an intrinsic responsibility to protect, restore and safeguard the world around them for future generations. Furthermore, integrating indigenous worldviews into local decision making is critical in reducing human impacts on the environment, protecting historic heritage, fulfilling Crown obligations as Treaty partners, and maintaining the wairua and mauri of Te Ao Māori.

Rangitāne o Manawatū have never had the opportunity to address the cultural impacts associated with transport and landfilling of biosolids. It is a permitted activity and local landfill receiving environments are located outside of Rangitāne o Manawatū area of interest (Figure 1). Identification of alternative solutions to landfilling of biosolids however will likely require consent and consultation with Rangitāne to identify potential effects that the discharges may have on the iwi and their values. Palmerston North City Council (PNCC) owns and operates a biosolids and wider composting site located in Awapuni. This composting site has hosted the Biosolids Composting Trial. The trial is assessing health and safety of the compost product against New Zealand Biosolids Guidelines, and time taken to reach the safety threshold. The biosolids used in this experiment have come from within the Rangitāne o Manawatū rohe; the disestablished Bunnythorpe wastewater treatment plant and Palmerston North wastewater treatment plant.

Purpose of the Report

This Cultural Impact Assessment (CIA) describes and analyses a range of Rangitāne o Manawatū iwi members perceptions relating to appropriate end use of the composted biosolids and rehabilitation of old pond sites; it identifies values, interests and associations with the Awapuni area where biosolids extraction and composting has taken place. A CIA is usually commissioned throughout a resource consent process and is regarded as technical evidence, however, in this instance it has been commissioned to inform the lower North Island Biosolids Strategy. One of the units of Best Care (Whakapai Hauora) Charitable Trust, the health, social service and environmental arm of Tanenuiarangi Manawatu Incorporated, the Iwi Authority for Rangitāne o Manawatū is Te Ao Turoa Environmental Centre (TATEC). TATEC have generated this CIA.

As Treaty Partners and Kaitiaki, Rangitāne o Manawātū are interested in the outcomes of Lower Manawātū Biosolids Composting Strategy and how they will affect Rangitāne o Manawātū values and wahi tapu in the Manawatu.

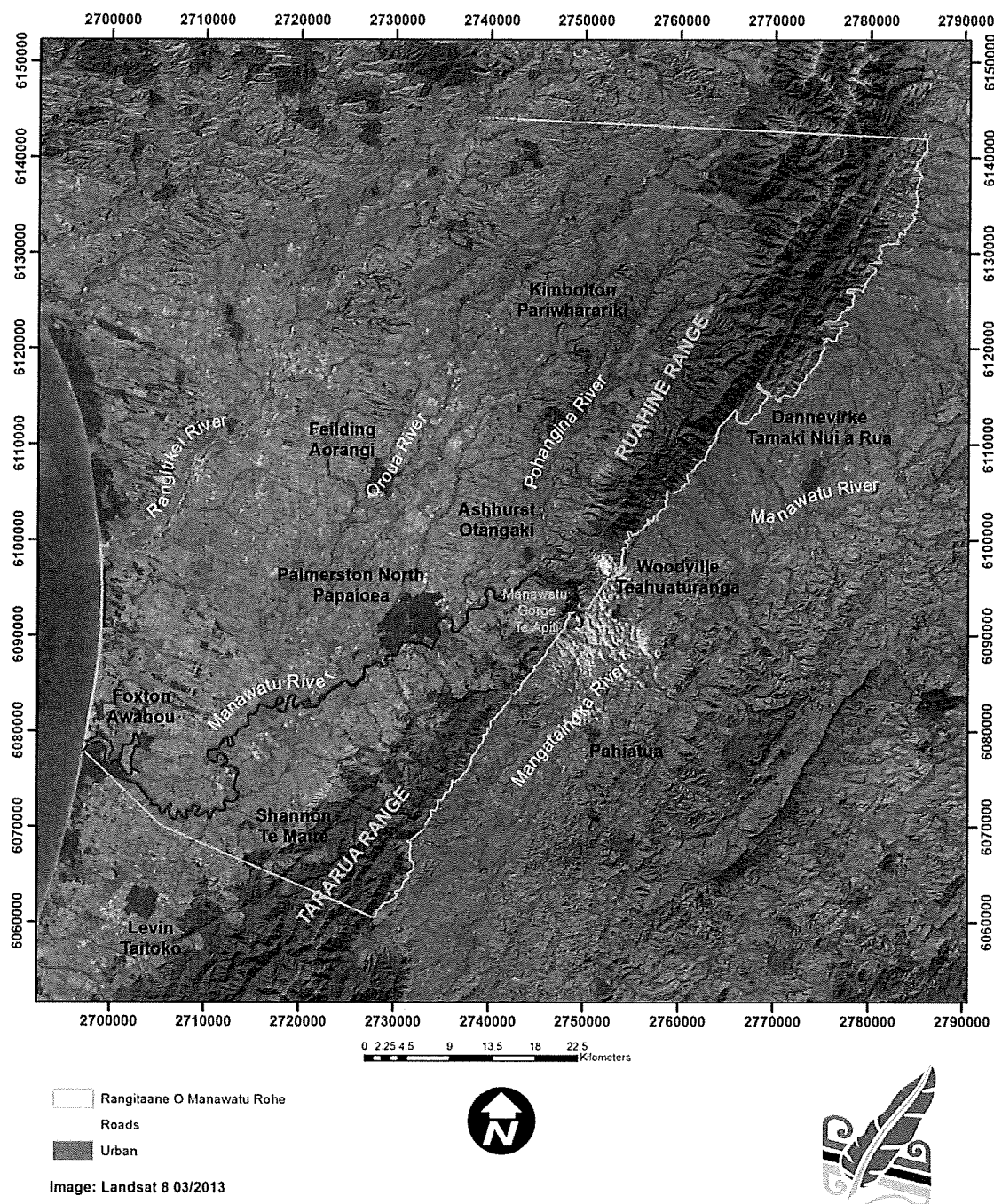


Figure 1: Rangitāne o Manawātū area of interest.

Te Whanonga Pono a te Taiao ō Rangitāne o Manawatū

Te Whanonga Pono a te Taiao ō Rangitāne o Manawatū are key values held by Rangitāne o Manawatū that guide Te Ao Turoa Environmental Centre (TATEC) in conducting CIA's. It is important the reader is familiar with these concepts early in order to understand discussion about cultural impacts related to the Biosolids Composting Trial and wider strategy.

Te Ao Māori

A Māori worldview is based on the holistic principle that all elements are interrelated. Every part of the environment is understood to have a common genealogy, descending from a common ancestor. The principle ancestors being Io matua te kore (Io the Parentless), Ranginui and Papatūānuku (Sky Father and Earth Mother), and their atua tamariki (142 known demigods/goddesses). This genealogy places Māori people as descendants of the land and the environment they inhabit. It reinforces cultural identity and a deep connection to the land.

Tino Rangatiratanga

Tino Rangatiratanga is absolute sovereignty and self-determination, having ownership, rights, control over, and possession of Māori lands, waters, and taonga. Article Two of the Treaty guarantees Māori Tino Rangatiratanga, which is fundamental to Māori wellbeing.

Mana Whenua

The concept of mana whenua is a key to understanding the environmental management philosophies of Māori. Mana whenua as defined by the Resource Management Act (1991) is the customary authority exercised by an iwi to control and manage an area or resource in relation to prescribed customary and cultural practices. The authority is obtained through the relationship of the people and their ancestral connection to the land.

Tangata Tiakitanga

A Tangata Tiaki is a guardian or caretaker. It is the processes and practices people of Rangitāne o Manawatū take in protecting the environment for future generations.

Rangitāne-nui-a-rawa

Is the undertaking of Tiakitanga with a Rangitāne philosophical approach. Rangitāne o Manawatū responsibilities require tangata whenua to guard over all aspects of the natural world, which were created by the Atua children of Ranginui and Papatūānuku.

Wairuatanga

Wairuatanga is a Māori framework that acknowledges the coexistence of the physical and spiritual dimensions. Wairuatanga is an energy force that connects all aspects of life. Rangitāne o Manawatū continue to support the essence of wairuatanga through karakia, rituals and cultural practices.

Tikanga

Tikanga defines the appropriate protocol for undertaking an activity, it sets objectives and processes that individuals and organisations must achieve when undertaking an action.

Mauri

Mauri is the life force of all living and non-living things. It is the essential quality and vitality of a being or entity. Mauri is used in assessing ecosystems subject to human change, any damage, alteration or contamination to the environment will affect the mauri that it possesses.

Taonga

Taonga are tangible and intangible components of Te Ao Māori. Taonga is anything that is of value or treasured including places, people, language, objects, flora and fauna.

Mātauranga Māori

Mātauranga Māori is the knowledge, comprehension, or understanding of everything visible and invisible existing in the universe. Pūrākau and maramataka, forms of Mātauranga Māori, comprise knowledge generated using methods and techniques developed independently from other knowledge systems.

Taonga tuku iho

Taonga tuku iho is the intergenerational transmission of Mātairanga Māori. Taonga that are handed down from generation to generation.

Ritenga

Ritenga are everyday rituals and practices that sustain the well-being of people, communities and natural resources. Everything is balanced between regulated and de-regulated states; wahi tapu is to be restricted or sacred with specific associated tikanga; rahui is to temporarily restrict; and noa is relaxed or unrestricted. Appropriate protocols such as karakia (prayer) can shift the regulation of states from being tapu to noa in appropriate situations.

Perceptions Study

Methodology

Site visits were undertaken at Awapuni Resource Recovery Centre with representatives from Rangitāne o Manawatū, LEI and PNCC to discuss the Biosolids Composting Trial. TATEC was invited to put forward a proposal to assess the cultural effects of Biosolids Composting at Awapuni Resource Recovery Centre, and high-level considerations for Beneficial Reuse within the Rangitāne o Manawatū area of interest. The scope was expanded to consider the rehabilitation of old pond sites. A final iteration of the framework can be found in Table 1, with description found in Appendix A.

An information package was developed (Appendix B) so that iwi members contributing to the assessment understood all terminology and key details necessary to be able to participate effectively. A range of iwi members were interviewed, including four rangatahi, two University students, five pakeke, and two Kaumātua. The thirteen participants kōrero was recorded for use in the CIA (Figure 3). Participants were asked to give a score between 1-5 dependant on how they felt about each kaupapa/topic (Figure 2). Three pakeke and the four rangatahi were interviewed in a group therefore a single score was given according to agreement from the whole group. Notes taken during the assessments were verified against an electronic recording, any points lacking clarity were reviewed by participants to ensure the kōrero was interpreted correctly by the author. Quantitative data was recorded in an excel spread sheet and basic statistics were calculated to express an overall score for each question.

Table 1: Biosolids Composting Perceptions Framework– Ecological, Cultural and Social indicators

Questions					
1. Have you heard about biosolids before today? If yes from which sources?	1~ No I haven't heard of biosolids before today.	2~	3~ Understanding of biosolids and environmental management issues.	4~	5~ Very good understanding and biosolids environmental management issues.
2. Are you concerned about how biosolids are managed?	1~ No concern for what happens to biosolids.	2~	3~ I am concerned about the way biosolids are being managed.	4~	5~ I am very concerned about management of biosolids.
3. How important/significant do you think biosolids management is to your whanau/hapū?	1~ Not significant	2~ Somewhat significant	3~ Significant	4~ Quite significant	5~Extremely significant, hapū should be involved with management of local sites.
4. How important/significant do you think biosolids management is to your Iwi?	1~ Not significant	2~ Somewhat significant	3~ Significant	4 ~ Quite significant	5~ Extremely significant. Tikanga should be overseen by Iwi leaders.
5. Would you visit a site containing composted biosolids for recreation (hiking, swimming, picnic) or cultural activities (wānanga or healing)?	1 ~ No I wouldn't visit for anything.	2 ~	3 ~ I would visit for limited recreation and cultural activities eg while hiking.	4 ~	5 ~ Yes I would visit a site with my tamariki/moko/teina for a swim and a picnic.
6. Would the length of time since application of composted biosolids affect whether you feel comfortable recreating at a site or undertaking cultural activities?	1~ No amount of time would make me feel more comfortable.	2 ~	The length of time since the last biosolids application would increase the likelihood I would feel comfortable.	4 ~	5~ Yes, the length of time since the last biosolids application would increase the mauri of the site to where I would feel comfortable.
7. Would you visit a site containing composted biosolids and collect kai or rongoa?	1 ~ No I wouldn't harvest there.	2 ~	3 ~ I would collect limited resources eg leaves or berries on a tall tree.	4 ~	5 ~ Yes I would visit a site with my tamariki/moko/teina for harvesting.
8. Would the length of time since application of composted biosolids affect whether you feel comfortable harvesting at a site?	1~ No amount of time would make me feel more comfortable.	2~	3~ The length of time since the last biosolids application would increase the likelihood I would harvest some resources.	4~	5~ Yes, the length of time since the last biosolids application would give me the ability to freely harvest resources.
9. What should be done with composted biosolids?	1 ~ Status quo	2 ~	3 ~	4 ~	5 ~ Full beneficial reuse.
10. Name any acceptable reuse options:					
11. Name any unacceptable options for reuse:					

12. Would you visit a site containing a decommissioned pond for recreation or cultural activities?	1 ~ No I wouldn't visit for any type of activity.	2 ~	3 ~ I would visit for limited recreation.	4 ~	5 ~ Yes I would visit a site with my tamariki/moko/teina.
13. Would the length of time since decommission affect whether you feel comfortable recreating at a site or undertaking cultural activities?	1~ No amount of time would make me feel more comfortable.	2 ~	The length of time since the pond was decommissioned would increase the likelihood I would feel comfortable.	4 ~	5~ Yes, the length of time since the pond was decommissioned would increase the mauri of the site and I would feel comfortable.
14. Would you visit a site containing a decommissioned pond and collect kai or rongoa?	1 ~ No I wouldn't harvest there.	2 ~	3 ~ I would collect limited resources eg leaves or berries on a tall tree.	4 ~	5 ~ Yes I would visit a site with my tamariki/moko/teina for harvesting.
15. Would the length of time since decommission affect whether you feel comfortable harvesting at a site?	1~ No amount of time would make me feel more comfortable.	2~	3~ The length of time since the pond was decommissioned would increase the likelihood I would harvest some resources.	4~	5~ Yes, the length of time since the pond was decommissioned would give me the ability to freely harvest resources.
16. What should be done with a decommissioned pond?	1 ~ Nothing should be done.	2 ~	3 ~	4 ~	5 ~ It needs a full environmental and cultural restoration.
17. What should be done if a sewage pond was located on a waahi tapū?	1 ~ Nothing should be done.	2 ~	3 ~	4 ~	5 ~ It needs a full environmental and cultural restoration.
18. Name any acceptable use options for old sewage pond sites:					
19. Name any unacceptable options for old sewage pond sites					

Results

Participants had a wide range of prior knowledge about biosolids and biosolids management ranging from little to an in depth understanding. Biosolids management was important to participants, but even more important to their whanau, hapū and iwi identity. Participants perceptions and considerations were similar for both biosolids application sites and rehabilitation of pond sites. Participants were slightly more comfortable interacting with the sites over harvesting kai in both scenarios. There was strong support for beneficial reuse for biosolids and full environmental and cultural restoration of pond sites, and an absolute resolve for setback from and environmental and cultural restoration for wahi tapu.

Quantitative Results

Table 2. Summarised scores of Rangitāne o Manawatū perceptions towards biosolids composting and wastewater treatment pond rehabilitation.

Question Number	Mean	Min	Median	Max
1	2.7	1	2	5
2	4.0	3	4	5
3	5.0	5	5	5
4	5.0	5	5	5
5	2.5	1	2	4
6	4.7	4	5	5
7	2.2	1	2	3
8	4.7	4	5	5
9	4.7	3	5	5
10	-	-	-	-
11	-	-	-	-
12	2.8	1	3	5
13	4.7	4	5	5
14	2.0	1	2	3
15	4.7	4	5	5
16	4.7	3	5	5
17	5	5	5	5
18	-	-	-	-
19	-	-	-	-

Qualitative Results

Table 3: Summarised Responses of Rangitāne o Manawatū perceptions towards biosolids composting and wastewater treatment pond rehabilitation.

Question	Summary
1	Participants had little to no understanding of the term biosolids. However, were very aware of other high-level issues around wastewater management, especially pollution of freshwater and climate change. This understanding came from whānau discussions, lack of access to unsafe sites that used to be safe, being exposed to an increasing number of adverse weather events, social media and news outlets.
2	All participants were moderately to very concerned about how biosolids management affected them personally. There was a strong desire for knowledge and education about the topic to increase.
3	All participants identified a strong need for hapu representatives to be engaged in local biosolids management. "They are the caretakers of the land and waterways for their children". Tikanga: Hapu have specific wahi tapu that should be considered and protected.
4	All participants identified a strong need for Iwi representatives to be engaged in biosolids management, especially strategically across the rohe (area of interest). "Iwi have the responsibility to protect the river (Manawatū River), wahi tapu and Te Ao Māori, they are our taonga for future generations".
5	An even split of participants identified that they would be comfortable undertaking limited recreation such as walking, hiking or passing through a site containing biosolids. Others said they would not like to interact with biosolids at all. "If I knew that it (biosolids) was surrounding me I wouldn't feel right, I would move on quickly", "The tapu side of me is saying no dont go there, no kids in there playing". Tikanga: Wharepaku traditionally well away from whare; Historically whānau would use the slope of the whenua to filter wastewaters through vegetation and wetlands, these areas were not used for any other purpose and kept separate.

6	All participants identified that time since biosolids application would make them feel more comfortable being around the site for recreation (such as walking, picnics, swimming) and cultural activities (such as wānanga, mahi toi). Tikanga: Comfort levels increased depending on the perceived ecological/cultural health of the area being presence of indigenous species.
7	Participants were slightly less comfortable taking kai (food) and rongoa (medicine) from an area containing biosolids. However, some participants were comfortable with the idea of limited harvest, where the resource had not been in direct contact with the biosolids eg leaves or berries from a tree. Others were very uncomfortable with the idea. "It would be like taking kai from the urupa".
8	All participants agreed that time since application of biosolids would increase their comfort levels for harvesting kai and rongoa. However, a longer timeframe was identified, multiple decades instead of a single decade or less for recreation and cultural activities. Tikanga: An ecologically/ culturally healthy area would heal the tapu of biosolids faster than leaving the area in a degraded state.
9	Its was unanimously agreed that full beneficial re-use of biosolids needed to occur. "Composting will make it (the biosolids) environmentally and culturally healthier, but it needs to be used in appropriate places".
10	In materials, forestry and for restoration of biodiversity. Tikanga: "Our responsibility as kaitikai is to leave it (any place) in a better state than what we found it in". A single or few large sites were preferred rather than many small sites.
11	Direct contact with food or medicine, on wahi tapu, landfilling, waterways need a setback, children's playgrounds, vege gardens or gardens where the public interact closely.
12	As with question 5. Limited recreation was identified by some participants as acceptable, while others were uncomfortable being in an old pond site for recreation or cultural activities.
13	All participants agreed that time would increase their comfort to be in a rehabilitated pond site. Tikanga: Dont swim or collect kai from old pond sites.
14	Unanimously "no"
15	Most participants said time would increase their comfort.
16	All participants identified that a full cultural and environmental restoration should be undertaken in old dis-used or inappropriately placed pond sites. "Trust papatuanuku, that she can turn the bad back into good, and ensure health going forward for area".
17	All participants identified the need for full cultural and environmental restoration for wahi tapu used as wastewater treatment pond sites. "A comprehensive team of cultural and ecological experts would be required to deal with issues on wahi tapu". Most participants feel that pond sites on or adjacent to wahi tapu should be restored immediately instead of waiting until the end of the ponds life. "Māori would feel disrespected if biosolids or wastewater treatment pond sites were impacting the mauri of their wahi tapu, especially urupā".
18	Cultural and environmental restoration for biodiversity. "The mauri of pond sites must be restored before the site can be used". "It shouldn't just be left and abandoned".
19	Grazing, growing food, for urupā.

Discussion

Bio-indicators are a common way Māori assess the health of the world around them, this concept has strong support in this investigation. All participants identified that restoring biodiversity and undertaking karakia in parallel to discharging biosolids and during pond rehabilitation would make them feel more comfortable interacting with a site because they could see and feel the environment healing the waste. They also identified that the presence of biodiversity and occurrence of karakia would speed up healing time so that the land could be used again in the future. There was no noticeable difference between participants views on biosolids discharge and pond rehabilitation management. This strong theme gives guidance on what Rangitāne o Manawatū see as appropriate beneficial end uses. Conditioning soil during restoration projects was strongly supported, however it was important that biosolids were not applied around waterways and wahi tapu. The presence of a buffer could likely alleviate this concern, the buffer width dependant on how important and well spatially defined the wahi

tapu. Growth of plants for materials was also strongly supported by all participants, building evidence that plants transfer the tapu around biosolids into noa.

In contrast all except two participants felt uncomfortable about the concept of animals grazing on land containing biosolids, or 'cut and carry' where produce is grown and fed to animals that will then be consumed by people. Following the premise that plants can heal tapu then it is surprising to find that this does not alleviate Rangitāne concern around grazing animals on land or feed conditioned with biosolids. It is likely that time is the significant factor dividing the evidence. Application on restoration sites and forestry for materials implies that tree growth and healing of biosolids will occur over decades. It is through this lengthy process that tapu can be lifted whereas biosolids application to land for cropping allows only one or two seasons of healing time. Based on participants indication of 'time required before they would feel comfortable interacting with biosolids', one or two seasons would be insufficient for tapu to be lifted. This raises an interesting piece of counter evidence to the widely held view that iwi overwhelmingly support wastewater discharge to land so that the Papatūānuku/ Earth Mother can filter, recycle and reuse nutrients contained in the product. Often land identified for wastewater irrigation is agricultural. While this study did not directly assess this, it could be argued that biosolids and wastewater have similar associated tikanga. Importantly identified in this study is a piece of traditional tikanga; wetlands and natural land passage was a traditional way for managing human waste discharges.

Historically Māori did not interact with human waste products in day to day life. Wharepaku/toilet areas were located well away from food gathering, storage and cooking areas, sleeping and working quarters. The tikanga around division of activities has revealed itself in this study where Rangitāne are generally uncomfortable with biosolids products being applied in areas with considerable public interaction such as children's playgrounds and town gardens, and in areas associated with food production. Urupā are particularly sensitive and should not be considered as receiving environments for biosolids. Landfilling of biosolids was strongly rejected based on both environmental and cultural concerns, and support was unanimous for full beneficial reuse of the biosolids. The quantum of biosolids produced in the lower North Island is significant. Rangitāne o Manawatū iwi members were committed to fully realising their duty as kaitiaki in supporting local Councils to find the best practicable beneficial reuse option that acknowledges and negotiates both western science and traditional tikanga.

Lower North Islands Biosolids Strategy Assessment

The three broad biosolids strategies (the Strategies) were not accessible during design and implementation of the Perceptions Study (the Study). The recommendations made in this section take learnings from the Study and apply them to assessing The Strategies.

Strategy 3

Strategy 3 (Table 4) is the least desirable strategy to Rangitāne o Manawatū. The status quo discharges biosolids in a way that is both culturally and environmentally damaging.

Cultural Issues

- No effort is made to lift the tapu from biosolids before discharging them to Papatūānuku. The Cultural Impact of poor biosolids management on Rangitāne o Manawatū is significant according to Section One (questions 1-4) of the perceptions study. Values such as Rangitāne o Manawatū ability to fulfil Tangata Tiaki duties, apply their traditional Mātauranga, protect the Wairua of the iwi and Te Ao Māori are currently being impacted in a way that is considerably more than minor.

Environmental Issues and Contemporary Mātauranga

- Mātauranga Māori is not static. It develops and grows over time in response to environmental change. Rangitāne o Manawatū broadly understand the historical and contemporary issues associated with landfills; toxic leachates and greenhouse gas discharges continue to impact on natural processes in Te Ao Māori. A conservative estimate of 80 000 tonnes of biosolids has gone to landfill in the past 50 years. Collective Strategies 1 and 2 have the potential to develop and support Mātauranga in a positive way, moving beyond the negative perceptions around current and past biosolids management practices.

Strategy 1 and 2

Strategy 1 identifies the use of one or more main treatment facilities. Rangitāne o Manawatū assessment addresses the effects of this activity at the Palmerston North City Council composting site, Awapuni.

Cultural Issues

- The Awapuni composting site is located immediately adjacent to the Manawatū River and three significant wahi tapu; Maraea Tarata and Māraratapa were fortified Pā, and Iwihi was the local village of these Pā (Figure 2).
- Runoff from the composting operations enters the pond south west of the site. The pond is exchanging water with the Manawatū River and on the margin of the pond was Māraratapa Pā.

- The discharge pond does not recognise an appropriately sized setback from biosolids runoff, the pond also does not support bio-indicators of a healthy environment.

Strategy 2 identifies a common end use for biosolids discharge. A broad set of principals are given for consideration under this option.

Cultural Issues

- Set back is allowed for wahi tapu and waterways.
- Urupā are not considered for receiving environments of biosolids.
- Biodiversity can be monitored by Rangitāne o Manawatū using a 'Rangitānenuiarawa Cultural Health Framework', with allowance for activities that will increase biodiversity.
- A single or few larger sites are preferred over many small sites. Tikanga can be more adequately managed in fewer locations.

It was clear from the Perceptions Study that Rangitāne o Manawatū iwi members supported Strategy 1 and 2 significantly more than Strategy 3. Transfer of biosolids between rohe to a centralised composting site or to a common discharge site was not assessed in the Perceptions Study, however TATEC support this approach above transfer of biosolids between rohe for landfilling. TATEC would be happy to reaffirm this position with Rangitāne o Manawatū iwi members.



Figure 2: Wahi tapu affected by the Awapuni Composting Site.

Table 4: Proposed Broad Lower North Islands Biosolids Strategies

Strategy 1	The principle basis of Strategy 1 is the communal use of existing infrastructure at an identified high rate WWTP for the dewatering and treatment/stabilisation of sludge from smaller community WWTPs. It was determined that by utilising one (or more) main treatment facility the chance of producing a high-quality end-product with greater potential for re-use is more likely. In this scenario a 'high quality end-product' is defined as meeting Grade A in the current NZ Guidelines for the Safe Application of Biosolids to Land (NZWWA, 2003).
Strategy 2	Strategy 2 (Figure 3.3) focuses on independent treatment but with a common end-use; in this case a communal land discharge site is suggested. The main driver for Strategy 2 is a common, beneficial end-use with less associated costs than landfill or independent discharge. Geobags have been highlighted as a valuable de-watering and stabilising technique (Stage 1 T2b, Site and field investigations) and have been recommended here.
Strategy 3	Strategy 3 (Figure 3.4) represents the 'status quo' in terms of discharge practice in many cases. Including the use of a common contractor and utilising one preferred discharge site (i.e. Bonny Glen or Levin landfill) may reduce associated costs through a reduction in consenting requirements and reduced landfill fees.

Conclusions

Perceptions Study

- Rangitāne o Manawatū are concerned about the status quo of biosolids management and consider that it is important for hapu and iwi to have a strong role in decision making around biosolids management.
- Supporting biodiversity and undertaking karakia in parallel to discharging biosolids and during pond rehabilitation will speed up healing time so that the land could be used again for a range of purposes in the future.
- Iwi members are generally concerned about the integration of biosolids into the food chain.
- Fully transitioning the tapu of biosolids into noa can take up to a decade.

Lower North Island Biosolids Strategy

- Strategy 3: is the least desirable strategy to Rangitāne o Manawatū, it has the highest level of cultural impacts that are not able to be mitigated or offset.
- Strategy 1: A centralised composting point is supported by Rangitāne o Manawatū, however the current location of the Awapuni composting site leachate pond is located inappropriately and poorly managed for Cultural Health.
- Strategy 2: A centralised discharge point is supported by Rangitāne o Manawatū, with appropriate tikanga considered and provided for.

Disclaimer

This report is the intellectual property of TATEC. LEI can use this report to inform the Lower North Island Biosolids Composting Strategy and shall consult with TATEC if this report is going to be used for other purposes.

This CIA was undertaken on behalf of Rangitāne o Manawatū. Rangitāne o Manawatū encourage parties undertaking biosolids management to consult directly with all iwi that have interests in the affected area.

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Appendix A

Component One- Questions 1-4

This component of the Framework explores the significance of the kaupapa (biosolids management) to Rangitāne o Manawatū and distinguishes between personal, hapū and Iwi values. The first and second questions “Have you heard about biosolids before today?” and “Are you concerned about how biosolids are managed” considers personal knowledge and values. Questions three and four “How important/significant do you think biosolids management is to your whanau/hapū or Iwi” considers the different levels of identity that exist for Rangitāne.

Component Two and Three- Questions 5-19

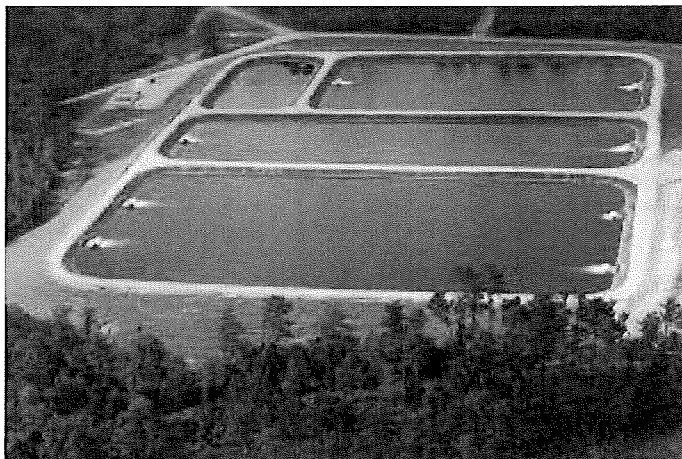
The second and third component of the Framework looks at the Cultural Practices and Values vital to the physical, spiritual, social and emotional wellbeing of Rangitāne o Manawatū, which are provided for by Tāne, Rongomatāne, Haumietiketike and Tūmatauenga. This component explores tikanga around the appropriateness of site use and ability for cultural activities to take place on sites containing composted biosolids and decommissioned ponds, and whether time may be able to restore Noa. The following three broad categories of activities are considered.

- A. Wellbeing
- B. Harvesting kai and rongoa
- C. Reuse options

Appendix B

Biosolids Background Information- Perceptions Study

Biosolids are a technical word for the sludge that builds up on the bottom of sewage treatment ponds. They are the solid component of human wastewaters.



Picture 1: Wastewater treatment pond containing biosolids

Sewage treatment ponds build up with biosolids over time. The biosolids must be extracted from the pond for it to continue to treat sewage waters effectively. Biosolids are often sent to landfill for disposal. Another option is to compost the biosolids with green waste and use it as a fertiliser. Before biosolids can be used as a fertiliser they are tested to make sure they are safe from any contaminants that might affect people or the environment, such as heavy metals and pathogens.

Sometimes sewage ponds must be retired because the pond may be in an inappropriate place such as next to a river that floods into the pond, or the pond is no longer needed. Retirement means the pond is filled in with soil or stays as an unused wetland. The area is either abandoned, integrated into surrounding land uses such as forestry or agriculture, or they can be made into recreational zones.



Picture 2: Removing biosolids from a sewage treatment pond.

Local councils and an environmental consultancy are developing a 'Lower North Island Biosolids Composting Strategy'. It has been requested that Rangitāne undertake a research program to support this strategy development.