

MAORI CULTURAL CONSIDERATIONS IN DEVELOPING AND OPERATING WASTEWATER SYSTEMS – CASE HISTORY EXPERIENCES

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ABSTRACT

This paper shares some of the author's extensive experience over 40 years working with many local authorities and local iwi and hapu groups from Bluff to Northland on a wide range of very small to many of the larger city wastewater development and consenting projects. The universal driver for many of the technological solutions and associated resource consent conditions is the abhorrence to Maori of direct discharge of human waste (domestic wastewater) to natural water almost regardless of the degree of treatment.

This experience highlights the importance of early participation of iwi and hapu in a partnership approach with the local authority and particularly its Mayor, Councilors and Senior Officers, consistent with the Treaty of Waitangi and the development of concepts and technology solutions that address cultural and spiritual matters. This encompasses the Part Two requirements of the Resource Management Act and the development and engineering of technical and non-technical solutions that can meet at least, in a compromised way to at least in part meet the aspirations of local iwi and hapu.

This paper addresses the following topics and illustrates a number of these with case histories:

- Appreciating the position of Maori/tangata whenua cultural background with respect to cultural and spiritual issues associated with human waste - domestic sewage.
- Education and appreciation of different wastewater processes including how different processes use natural processes but in an engineered way.
- Developing holistic and integrated approaches that integrate Maori Science with Western Science.
- Involvement of iwi and hapu groups in developing the project and supporting it through resource consents and other processes.
- The range of Papatuanuku – land contact arrangements now being used to spiritually cleanse treated human waste – domestic sewage before discharge to water.
- The development of resource consent conditions encompassing on-going involvement and associated off-set mitigation with iwi and hapu groups.
- The on-going monitoring of wastewater scheme operation and the capacity building that can take place through appropriate activities.

KEYWORDS

Wastewater, Maori, Cultural Considerations, Wastewater Case History, Hastings, Sludge, Biosolids, Resource Consents.

1 INTRODUCTION

This paper addresses the subject matter from the point of view of local authority municipal wastewater schemes from the development, consultation, alternatives assessment, resource consenting as well as the design and operation. It is evident from the paper that much of the involvement relating to cultural considerations is undertaken with tangata whenua, iwi and hapu groups in the early phases of project development and particularly in the resource consenting processes.

2 STATUTORY DRIVERS

Three key pieces of legislation that set out principles to be followed in relation to Maori-tangata whenua considerations on human waste-domestic sewage and wastewater systems.

The first is the Environment Act 1986 which sets out the principles of the management of natural and physical resources, including intrinsic ecosystem and community values, the Treaty of Waitangi, the sustainability of natural and physical resources, and the needs to future generations.

The second is the Resource Management Act 1991 (RMA), a statute that controls all development in New Zealand. The purpose of RMA is “...to promote the sustainable management of natural and physical resources” where sustainable management means: “...managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety...”

The third significant piece of legislation is the Local Government Act 2002 (LGA) which identifies that purposes of local government in New Zealand is: “... to promote the social, economic, environmental, and cultural well-being of communities, in the present and for the future.” These are the four well beings.

In March 2012, the central government notified of their intentions to refocus the functions of Local Government and change the purpose as stated above to “cover good quality local infrastructure, public services and regulatory functions at the least possible cost”. This purpose has been included in the Bill which recently had its first reading in Parliament. The Local Government association has however unanimously resolved to retain the present local government act purpose of the four well beings.

Whilst the RMA is all about “sustainable management of natural and physical resources” and LGA is all about the “sustainable development of communities”, there is a high degree of alignment between these two pieces of legislation and interestingly.

As previously noted the RMA is an effects based and enabling legislation. Accordingly, the assessment of new and existing water and wastewater infrastructure on the natural and physical environment needs to focus on the various types of effects that are encompassed in the meaning of effect as set out in this legislation. This approach clearly puts the focus on the effects of the water / wastewater infrastructure and service on the natural and built environment, including people and communities, rather than on the technology and infrastructure itself.

Under the RMA, the “Meaning of “effect” also includes probability and potential impact.

In this Act, unless the context otherwise requires, the term effect... includes –

- (a) *Any positive or adverse effect; and*
 - (b) *Any temporary or permanent effect; and*
 - (c) *Any past, present, or future effect; and*
 - (d) *Any cumulative effect which arises over time or in combination with other effects –*
- Regardless of the scale, intensity, duration, or frequency of the effect, and also includes –*

- (e) *Any potential effect of high probability; and*
- (f) *Any potential effect of low probability which has a high potential impact”*

Part Two of the RMA requires “*in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:*

(e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:” The RMA also requires consideration of principles of the Treaty of Waitangi (Te Tiriti o Waitangi) being New Zealand’s founding document signed in 1840 between the British Crown and the Māori chiefs.

The special position afforded Māori under the RMA and other statutes has led to the development of many participatory partnership type approaches in development of resource consent processes and consent conditions and associated technology solutions. For example, in response to Māori abhorrence of direct discharge of treated human waste (domestic sewage) direct to water, no matter how well it is treated, has resulted in a number of land contact type processes where the treated domestic sewage contacts Papatuanuku (earth mother) in a rock channel, riparian strip or pond before discharge to surface or marine waters. The Hastings Wastewater project and some other of the case history projects featured below involve such a Papatuanuku rock channel facility.

There are also a number of Local Authority individual agreements, policies and procedures that are not, strictly speaking of a statutory basis but set out joint working and partnership procedures with tangata whenua and local iwi and hapu groups.

3 MAORI / TANGATA WHENUA CULTURAL BACKGROUND

Working with tangata whenua requires some familiarity with how the contemporary Maori world operates. This is because while tangata whenua are likely to have most of the same project concerns and issues as the wider community, the legislative requirements also compel project proposers to:

- provide for the tangata whenua relationship with their ancestral lands, waters and traditions;
- have regard for the kaitiaki or guardianship obligations that tangata whenua have towards the environment;
- take into account the Treaty principles mentioned earlier.

Maori also place great store on personal relationships of long standing while face-to-face communication is the preferred method of dealing with each other. These personal relationships do not develop overnight and a substantial time investment in developing a relationship platform as a prelude to consultation is a normal requirement. A familiarity with the cultural protocols within which most meetings with tangata whenua conducted is strongly recommended.

Consultation with tangata whenua in the particular context of a wastewater project does however present some complex cultural issues that have their origins in Maori spirituality. For example in the traditional Maori world, places or activities related to human wastes were deemed to be tapu or spiritually dangerous. Anything deemed tapu was avoided and people understood that the consequences of tapu violation could range from misfortune to serious illness, even death because of the inherent spiritual danger. Assigning the religious concept of tapu to human wastes therefore protected people from potential health risks through the imposition of the strongest social control (punitive religion) possessed by traditional Maori society.

Some traditional Maori concepts have carried through into the contemporary world and tapu, albeit in many cases in a much modified form, is one of them. Wastewater and human waste in particular is

regarded by Maori as abhorrent and the tapu status that formerly applied to these matters retains its power.

Working with tangata whenua groups in addressing contemporary wastewater issues therefore means needing to understand that the traditional view of tapu is the starting point and furthermore that most Maori believe ANYTHING to do with human waste is therefore spiritually dangerous.

4 COMMON CULTURAL PRINCIPLES

To address this fundamental religious position some modifications of the principles discussed earlier are required. Tangata whenua consultative principles should include:

- Observance of cultural protocols
- Establishment of a reliable line of communication and clear identification of the principal representatives
- Clear introductions and roles identification of consultation personnel
- Projects well illustrated and described in lay terms suited to the attending audience
- Site visits as part of consultation are a must
- Consultation should take place in a venue where tangata whenua feel comfortable – that could often be a marae
- Providing opportunities for tangata whenua to propose or suggest alternative solutions where appropriate.

5 MAORI PERSPECTIVE ON HUMAN WASTEWATER DISPOSAL OF TREATMENT

For tangata whenua, the role of kaitiakitanga in the management of natural resources and the integration of human wastewater into natural resources is a matter of great significance and is taken very seriously. In developing community wastewater solutions, consenting decisions need to provide for the traditional relationship that tangata whenua have with their ancestral lands, waters, sacred places and other “taonga” or things important to them. The intent is to ensure cultural and heritage matters important to tangata whenua are identified and considered as part of any development proposal.

Tangata whenua retain a kaitiakitanga/guardianship role over natural resources and the legislation requires that this role is provided for. This is very important in dealing with such matters as water quality and the treatment and disposal of human waste – domestic sewage - wastewater.

In respect of kaitiakitanga/guardianship, tangata whenua have an environmental protection role that complements the statutory role of local authorities. This point is reinforced by a further requirement that in the administration of the RMA, all participants must have regard for the principles of the Treaty of Waitangi. While the prime responsibility for the proper observation of Treaty principles rests with Government, in development terms project proponents need to consider such things as the principle of partnership, generally interpreted as being met through consultation with tangata whenua; or the principle of mutual benefit where developers need to show what their projects can deliver in terms of beneficial environmental or cultural outcomes

In considering tangata whenua views, what is of fundamental importance is that there is a cultural abhorrence to the discharge of treated human wastewater to natural water almost regardless of the level

of treatment of the wastewater. There is also in some localities the abhorrence of transportation of sludge past Maori meeting houses, cemeteries and sacred Maori land as was the case in the Hastings project.

In considering wastewater management and disposal, the experience is that tangata whenua view the total situation in a holistic manner and do not just focus on the methods of treatment as requested in the brief. The linkage of nature and mankind as one, forms part of the fundamental basis from which this holistic approach is undertaken. In this respect, the requirement of the brief for the consultant to consider the wastewater treatment process should be put into a context of a total scheme in the following Stage 2 tasks.

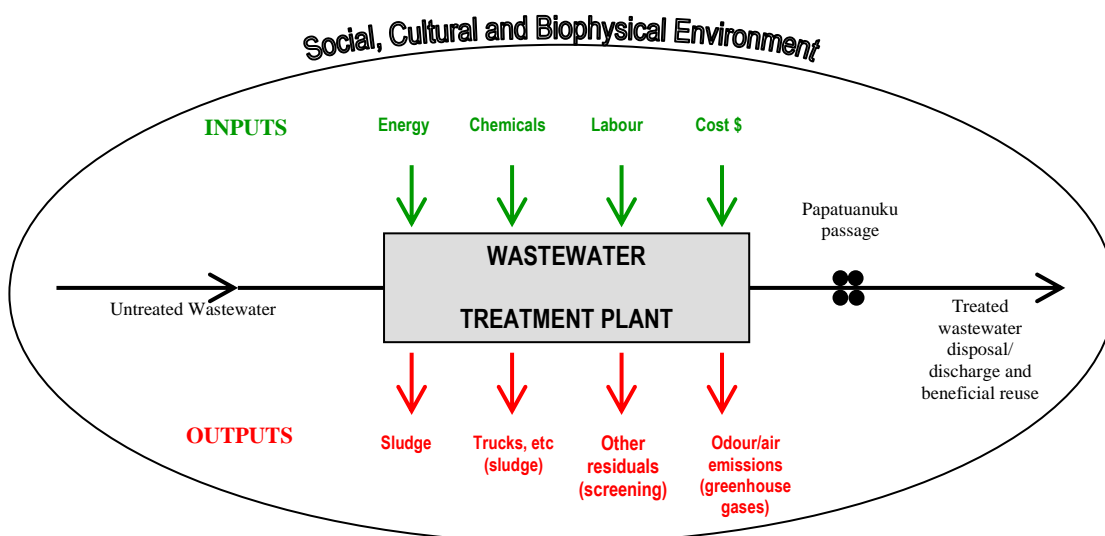
6 HOLISTIC AND INTEGRATED APPROACHES

The RMA requires that Local Authorities (Regional, City and District Councils) objectives, policies and methods “achieve integrated management of the effects of natural and physical resources” of the region or district. For water and wastewater infrastructure and services including important wastewater services, this requirement, to encompass integrated management approaches as it relates to natural and physical resources, necessitates wide ranging consideration of the many inputs to and outputs from the infrastructure and water service itself. Figures 1 and 2 discussing the Whangarei District Council’s Ruakaka Wastewater Resource Consents Project for which new resource consents have recently been issued, provides an example of how an integrated management approach has been implemented on this very recent and leading edge project.

Many new and recently upgraded wastewater management systems exhibit notable progress towards more sustainable practices. This project highlights the approach of integrated resource management encompassing the full range of sustainability criteria, along with the efficient use of resources and involvement of Māori.

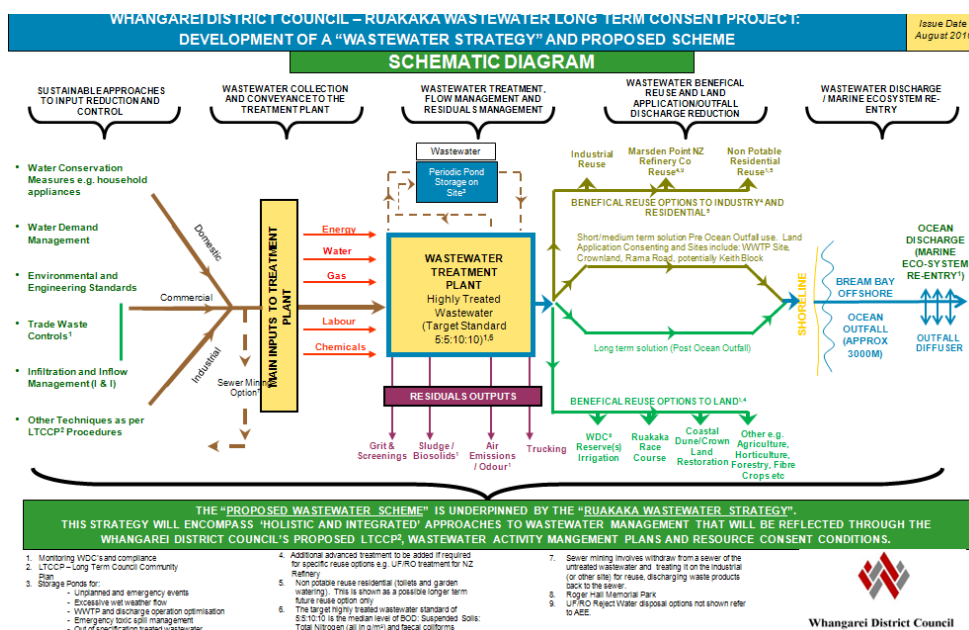
Throughout the Ruakaka project the sustainability criteria were all considered in an integrated and holistic way as diagrammatically represented in Figure 1. All principal inputs and outputs are considered along with the resource efficiency and potential and adverse effects in a quadruple bottom line four well-beings social, cultural and biophysical environment along with the economic considerations. As outlined above, these approaches are in accordance with the legislation governing water and wastewater management, namely the RMA and LGA.

Figure 1: The Generic Integrated and Holistic Approach to Wastewater Management



The Ruakaka Wastewater Resource Consent Project is to allow for extensive growth of a small coastal township into a small city. Tangata whenua were closely involved in the development of the project including identification and evaluation of the many alternatives considered. The project involves a wide ranging suite of consents have recently been issued for durations up to 35 years, (the maximum duration permitted under the RMA) is a leading example of the development of such an integrated approach. This approach is illustrated in Figure 2 which shows the Wastewater Strategy associated with the proposed scheme. This Strategy encompasses the progressive change from land application to an ocean outfall discharge as the wastewater volumes increase with residential and business development over time. A key part of this strategy and associated integrated approach is the beneficial reuse of treated wastewater at New Zealand's nearby Marsden Point Oil Refinery which was enthusiastically supported by tangata whenua. These approaches are appropriately depicted in Figure 2.

Figure 2: Development of the Ruakaka 'Wastewater Strategy' and 'Proposed Scheme'



7 SEVEN CASE HISTORY PROJECTS

The following seven projects have been selected as high profile wastewater consenting projects that well represent the many and often complex parts of the development and resource consenting of new projects and/or the further ongoing consenting of existing wastewater schemes. The author has been closely involved in all projects except the Watercare Mangere Project in which he was involved in the consent review role.

After briefly discussing what the schemes and their development involved this section of the report brings together a number of common success themes in terms of project development and the resource consenting outputs. Section 11 then summarises some of the resource consent condition types.

7.1 THE INDIVIDUAL PROJECTS

Case History No. 1: Whangarei District Council's (WDC) Ruakaka Wastewater Consent Project

This project for which the suite of nine resource consents have recently (May 2012) been issued provides for the wastewater treatment and reuse and disposal facilities for the large projected residential and business growth in the Marsden Point – Ruakaka area. These projections are for average wastewater volumes to increase from the current 600 cubic meters a day presently to around 16,000 cubic meters per day in 35 year's time – the maximum duration a resource consent can be issued for under the RMA.

The scheme for which the nine consents have been granted is diagrammatically shown in Figure 2 above. It allows for land application in early years and a 3000 m long offshore ocean outfall once wastewater volumes exceed the consented land application volumes which it is anticipated to occur within 15 year's time. Reuse of treated wastewater at the nearby Marsden Point Oil Refinery is a key part of the proposed scheme and one strongly supported by tangata whenua.

Section 6 above uses this resource consent project to illustrate holistic and integrated approaches and how these were identified and worked through with local Maori. Tangata whenua of this area is the Patuharakeke Hapu who were closely involved with Whangarei District Council through the Patuharakeke Te Iwi Trust Board (PTB). PTB's close partnership involvement with WDC resulted in PTB being accepting of the nine resource consents and extensive set of conditions many of which WDC as applicant suggested in their consent application. These include a reasonable extensive set of conditions that provide for the ongoing involvement of PTB, the development of cultural monitoring provision of a monetary fund and preparation of protocol documents.

Case History No. 2: Gisborne District Council's (GDC) Main Wastewater Consent Project

GDC's September 2005 resource consent applications were based on a Stage 1 primary treatment plant (or equivalent plant) and Stage 2 high rate activated sludge (secondary) treatment plant with UV disinfection (or equivalent plant) of the human (domestic) wastewater. The significant quantities of industrial wastewater are to be treated at the industrial premise. Both treated wastewater streams would then combine and continue to discharge out the offshore ocean outfall.

There had been a long history of dissatisfaction and concern by tangata whenua regarding the discharge of untreated (other than milliscreened) human wastewater direct into the marine water of Poverty Bay. Tangata whenua submitted in opposition to the September 2005 consents. The initial hearing for those consents was adjourned and a Wastewater Adjournment Review Committee (WARG) established to work with GDC as the applicant to find an agreed way forward. The WARG included a number of tangata whenua representatives who, along with other members of that group, promoted to Council a staged implementation of a BTF treatment process for the human wastewater with the discharge continuing out the ocean outfall.

The WARG also proposed resource consent conditions that accommodated tangata whenua's requirements. These requirements were subsequently enshrined into resource consents conditions that were proposed by GDC as applicant at the reconvened hearing and agreed to by the Commissioners in the consent issued.

A panel of four independent Commissioners heard the applications. The hearing commenced in April 2006 and subsequently adjourned so that (as recorded above) the parties who submitted against the consent and GDC as the applicant could work together and also consider an alternative BTF treatment process.

During that adjournment WARG members gave consideration to whether a BTF plant would be appropriate and better meet tangata whenua and other party's aspirations and requirements.

The hearing reconvened in March 2007. The WARG and its individual tangata whenua members presented evidence supporting the BFT process as this used natural biological processes. This support was coupled with further recommendations of appropriate resource consent conditions that would assist in meeting tangata whenua's overall objectives during the proposed 35 year duration of the consent.

During the consent process the treatment process and proposed treatment plant site on the Gisborne Airport was changed to a Stage 1 and Stage 2 Biological Trickling Filter (BTF System). Stage 2 included UV disinfection process. Subsequently the BTF plant was changed to an alternative location in an industrial area.

Case History No. 3: Hastings District Council's (HDC) Main Wastewater Consent Project

This project and the associated treated wastewater discharge consent is seen as a paradigm shift in wastewater management in New Zealand that in a significant part was brought about by the collaboration and partnership involvement of tangata whenua with HDC elected representatives and Senior Officers. This has resulted from the proactive involvement of tangata whenua working with HDC in the partnership spirit of the Treaty of Waitangi. The spirit of this partnership is reflected in the resource consent issued and the associated acceptance of the Biological Trickling Filter (BTF) treatment process which provides biotransformation treatment of the human sewage before discharge out the 2.9km long ocean outfall into Hawkes Bay.

HDC originally applied to continue discharge of milliscreened wastewater out its long ocean outfall. Tangata whenua and other parties submitted against this proposal, notwithstanding that it was shown that the adverse effects on the marine environment outside the designated mixing zones were acceptably low. Following the adjournment of the resource consent hearing, HDC subsequently worked with tangata whenua and other parties to agree on a primary treatment plant and a suite of resource consent conditions that would include ongoing involvement of tangata whenua in the project and address their need to significantly (and then at a later date), totally remove kuparu (human waste).

Following granting of the resource consents, the treatment process was changed and re consented to include a BTF process. Installation of the plant along with a Papatuanuku rock passage is currently under construction. The treated human wastewater discharge will be combined with the treated industrial wastewater and continue to be discharged out the long ocean outfall.

There were a significant number of complexities encountered on this project. The main complexity associated with the project was meeting the challenging resource consent conditions imposed in a manner that balanced tangata whenua and wider Maori cultural needs and community needs, particularly in terms of affordability. This challenge required the identification of a Best Practicable Option (BPO) solution as defined in the Resource Management Act, namely a solution that takes account of environmental, technical and economic considerations within the local social and cultural environment.

As this Hastings specific situation to significantly remove human waste (kuparu) had not previously been encountered in New Zealand, in the way it was at Hastings, there was no ready solution available. This made for a very complex technical situation in terms of identifying a robust and affordable treatment solution.

Furthermore, the strength of feeling by tangata whenua regarding the importance of finding a culturally acceptable solution, together with the establishment of the Joint Committee with an express requirement for equal decision-making between HDC and tangata whenua, created additional emotional and governance process challenges. These unique constitutional arrangements had never previously been implemented in New Zealand and therefore required fresh thinking in consultation approaches to achieve success.

Case History No. 4: Palmerston North City Council's (PNCC) Main Wastewater Consent Project

The scheme included the upgrading of the secondary biological (aerated lagoon) treatment plant, the introduction of UV disinfection and the provision of a phosphorus removal system using chemical dosing and clarification. The phosphorus removal is required to be operated at times of low river flow when weed growth in the river can occur.

The scheme also included the following facilities through which the treated wastewater flowed before discharge into the river, a wetland pond, rock papatuanuku passages and diffuse rock papatuanuku river discharge system. These facilities were proposed and the concepts devised by the Marae Ohu Working Party that was formed during the project consultation and development.

Section 10 of this paper includes further information on this unique project and the extensive involvement of tangata whenua in developing it.

Case History No. 5: Watercare’s Mangere (Auckland) Main Wastewater Consent Project

The scheme decided on and for which the suite of resource consents were applied for was based on extending and upgrading the Mangere Wastewater Treatment Plant and removing the oxidation ponds. The scheme includes an ebb tide shoreline discharge through a pipe structure.

Key treatment requirements for effluent quality as suggested in the resource consent application documentation included provision of a high degree of treatment and associated disinfection of the treated wastewater in order to protect shellfish resources in the vicinity of the discharge into the Manukau Harbour. In addition there is a high degree of treatment to remove the solids, organic matter and nitrogen levels in the wastewater.

Case History No. 6: Tauranga City Council’s (TCC) Main Wastewater Consent Project

The scheme involves a high level of wastewater treatment at both the Chapel Street (main Tauranga City plant) and the Te Maunga (Mt Maunganui) plant. The Chapel Street contact stabilisation secondary treatment plant has UV disinfection. The Te Maunga activated sludge secondary treatment plant and the wetlands has recently been upgraded. UV disinfection will soon be added. The former Mt Maunganui oxidation ponds are now used to store treated wastewater and further reduce the microbiological count before discharge through the 900m long ocean outfall. The ponds and wetlands provide significant storage and buffering of high wet weather flows and are available for some emergency storage if need be.

The consents allow for irrigation of up to 8% of treated wastewater during dry periods when there are soil water deficiencies. Irrigation includes the Omanu golf course, some of TCC’s reserves and in the future the Tauranga Airport’s grass runways.

The Wastewater Strategy, prepared in part to support the consent application includes a number of measures such as the above mentioned irrigation, water conservation and waste minimisation. These measures are all part of more sustainable methods of managing the wastewater.

Case History No. 7: Dunedin City Council’s (DCC) Main Tahuna Wastewater Consent Project

The scheme on which the consents applied for was a staged one:

- Firstly, construct an offshore 1100m ocean outfall near the St Kilda beach coupled with a papatuanuku rock passage at the Tahuna treatment plant. These works were completed in 2010.
- Secondly, by 2012 install a secondary treatment plant should that be proven necessary from the environmental monitoring in the marine environment once the outfall is in use. DCC subsequently decided to install a secondary treatment plant with UV disinfection regardless of the environmental monitoring. The construction of the secondary treatment plant is currently in progress.

7.2 COMMON SUCCESS THEMES IN PROJECT AND CONSENTING OUTPUTS

The following summarises the common themes coming out of the seven case history projects. The common themes relate in the authors opinion to the successful outcomes of the consultation and tangata whenua – iwi and hapu participation in scheme concept determination and the resource consent processes including particularly the development of suggested resource consent conditions involving tangata whenua ongoing involvement and off set mitigation measures. They can therefore be considered as ‘success factors’.

The summary is prepared under five headings.

Project Investigations and Options

All seven projects included an extensive assessment of a wide range of options (alternatives) before the scheme selected as the proposed one was determined.

As part of the Assessment of Alternatives (required under RMA), all projects included consideration of full land disposal systems that were based on total disposal of all treated wastewater onto land. In all cases, full land disposal 365 days a year was found to be unsustainable over the long term and was not the best practicable option. Many other schemes, particularly the larger community and city schemes have arrived at similar solutions.

The Assessment of Alternatives also included approaches where treated wastewater has land contact through facilities such as wetlands, papatuanuku rock passages etc before discharge into the receiving water. Namely, the Manawatu River in the Palmerston North case and the marine environment in the other five cases.

In all projects the investigations also assessed more sustainable methods of wastewater management, including water conservation and trade waste management procedures.

In all projects the then determined along with (beneficial) reuse of treated wastewater 'Proposed Scheme' for which consents were sought included provision for beneficial reuse of a proportion of the treated wastewater, biosolids and other treatment plant by products. These provisions are all part of a Wastewater Strategy developed to achieve a more sustainable approach to wastewater management within the terms and conditions of the consents sought and granted.

Wastewater Treatment and Disposal/Discharge

In six of the seven cases a high level of wastewater treatment is required to meet the granted resource consent conditions. All six cases include secondary wastewater treatment and UV disinfection except for Hastings which does not include UV disinfection. The Hastings consent is based on 'significant removal' of kupa (human waste) and this is achieved by biotransformation using a biological trickling filter (BTF).

The level of treatment that has been set is at least consistent with protecting and in some cases enhancing the receiving water quality and ecology with treated wastewater parameters.

In four of the seven cases the treated wastewater contacts land through wetlands/ponds and/or papatuanuku passage before discharge. Watercare's Mangere WWTP and Gisborne's WWTP the treated wastewater does not contact land. This was acceptable to tangata whenua as in the Mangere case a very high level of treatment was the key consideration, along with the best engineering solution for the discharge. In the Gisborne case the biotransformation of human waste to non human material using the BTF was considered appropriate by itself, when coupled with the UV disinfection.

Tangata Whenua Participation and Collaboration

In all seven cases there was a high level of participation between tangata whenua and Council personnel, including the Mayor, Councilors and Officers. In the Hastings and Gisborne cases this level of participation was not initially in place and accordingly the history and early parts of those projects were fraught with difficulties in the relationship between the Council and tangata whenua. Once participation in the partnership spirit of the Treaty was achieved, considerable progress was made in developing solutions that could be accepted by both tangata whenua and the Council.

The participation in all cases involved Councilors and tangata whenua elders and iwi and hapu group leaders, and was undertaken in a partnership approach endeavoring to encompass the spirit of Te Tiriti o Waitangi.

In each case the participation was through a journey of knowledge sharing. In some cases the parties jointly went on hikoi to other parts of New Zealand to learn about different approaches and other wastewater plants how tangata whenua had been involved.

Tangata whenua were closely involved in the concepts and development of the components of the wastewater schemes that related to (albeit in some cases as a compromise) meeting their spiritual and cultural aspirations.

Resource Consent Conditions

In all seven cases the resource consent conditions set up a (statutory) mechanism whereby tangata whenua remain involved in liaison and monitoring of the wastewater scheme throughout the duration of the resource consents. In most cases these specific conditions were developed between the applicant local authority and tangata whenua, iwi and hapu and submitted as suggested conditions.

Three of the cases have offset or enhancement conditions that put in place activities that will enhance tangata whenua's understanding of the environment and the effects of the wastewater scheme and/or enhance the natural environment itself. These conditions include research grants, capacity building, monitoring, riparian strip enhancement etc.

All seven cases require that during the term of consent, further investigations relating to the beneficial reuse of treated wastewater and/or the byproducts, as well as periodically reviewing wastewater treatment, disposal and reuse techniques are undertaken.

Ongoing Involvement of Tangata Whenua

All seven cases include resource consent conditions that make provision for tangata whenua to be involved in the wastewater scheme operation performance and ongoing development of the scheme and in many cases periodic technical and environmental reviews relating to the scheme.

The conditions set out the type of involvement, the frequency of involvement, and in some cases detailed terms of reference about what that involvement shall address. Section 11 below traverses the context of a number of these conditions.

8 PAPTUANUKU – LAND CONTACT ARRANGEMENTS

There are a significant number of Local Authority domestic sewage (municipal wastewater) treatment and disposal schemes that include often as a final stage arrangements where the treated human wastewater contacts land – Papatuanuku (earth mother) before discharge to natural water be it coastal waters or fresh waters. The rationale for many, if not all these facilities is to provide a spiritual cleansing of the otherwise treated human wastewater by the contact removed back with Papatuanuku (land). In a number of cases tangata whenua and iwi and hapu have appreciated that the arrangements used do not necessarily improve the measurable quality of the treated wastewater, and in some cases such as wetlands and ponds can deteriorate the quality by algae growth and bird deposits for example. There are now cases where tangata whenua have decided not to require such land contact arrangements but to instead adopt an enhanced standard of treatment. This occurred for example in the Hamilton City Wastewater case where a “best for river” approach was adopted rather than a land contact Terra 21 wetland..

Below is a list of a number of Papatuanuku – land contact arrangements – that are, it is understood by the author substantially if not totally for the spiritual cleansing through land contact of the otherwise treated human waste – domestic sewage.

- Cultural/wildlife wetlands –Tauranga, Whangarei, Cambridge
- Wetland pond – Palmerston North
- Rock (land) Papatūānukū passage – Hastings, Te Awamutu, Taumaranui
- Riparian strips – Te Puke
- Overland flow – Oamaru
- Gravel beds – Ngaruawahia, Huntly, Otorohanga
- Rapid Infiltration Beds – Motueka, Takaka, Cambridge

9 OTHER CASE HISTORY – BIOSOLIDS AND CONVEYANCE

There are also a number of other case histories in New Zealand where Maori cultural considerations have involved key aspects of the wastewater management other than that associated with wastewater and disposal. Three examples of these are: -

Wellington City Council - Biosolids

The sludge treatment systems for wastewater from the main Mōa Point and Kaori (western) wastewater treatment plant previously involved production of significant quantities of compost biosolids. Maori concerns about the use of the compost biosolids on land (turf culture, parks, reserves, household gardens, agriculture, revolved around the fact that the waste stream contained blood products (from hospitals, dentist surgeries and similar) and possibly body parts (from morgues, funeral parlours and hospitals). Even though these “materials” might be present in minute, undetectable quantities, nevertheless it was a cultural concern taken very seriously. The matter was largely resolved when it was demonstrated that the “materials” on entry into the waste stream were very quickly broken down so that they were unrecognisable. The compost itself was appropriately labelled warning users of its content. This latter action was to meet Maori concerns that the compost would be used for food production and in Maori traditional thought could mean that Maori, in consuming those food products, they might also be consuming “minute portions of family members.” The solutions were the result of a major consultation effort and the pragmatic acceptance that the traditional Maori way of doing things – arising as they have from a small village hunter-gatherer society - was insufficient to deal with the volumes of waste produced by a modern urban society. Cultural evolution was the only sensible response.

Hastings Project: Sludge Transportation Considerations

Section 6 above and Section 10 below discuss the Hastings paradigm shift “no sludge” domestic wastewater treatment system. Important considerations by tangata whenua in the development of this “no sludge” natural treatment Biological Trucking Filter (BTF) solution was the question of sludge transport and disposal or reuse if the earlier proposed natural settling (primary treatment) solution was proceeded with. The following newspaper article headline highlights this matter by commenting on the abhorrence of trucking sludge (going to landfill) past houses and waahi-tapu sites.

Figure 3: Hastings Wastewater Newspaper Article



Watercare Mangere Wastewater Treatment Plant to the Conveyance

In New Zealand’s largest city, Auckland, the growth of the city required the construction of a new main trunk sewer line to bring wastewater for treatment to a central treatment plant. The proposed route of the pipeline passed over the remnants of an extensive historic gardening village complex known as “the Stonefields”, the name being derived from the use of local volcanic stone cleared from the gardens and used for building walls to protect crops. Local Maori objected to the desecration of the site because of

construction activities and the fact that raw sewage would also be passing over the site. Some of the objectors felt so strongly about the issue that they occupied the area. Their objections were driven by what they perceived as a lack of respect for this ancestral site that through other developments in the area – including quarrying – had already been severely diminished and in their view, damaged. Resolution came through extensive consultation, a sympathetic design that effectively disguised the above ground pipeline and the creation of a reserve that served to protect the remnant Stonefields. The fact that the pipeline contained raw sewage was dealt with by an appropriate traditional ceremony.

10 THE HASTINGS PROJECT AND TANGATA WHENUA VALUES

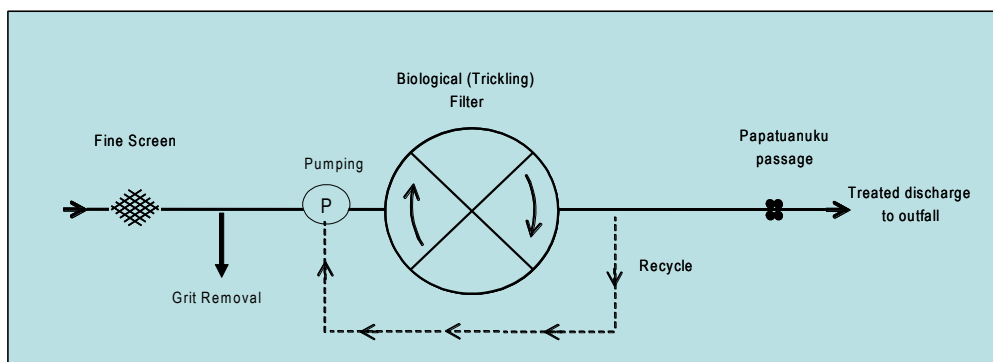
Further to the case history discussion of this project in Section 7 above the following text gives more information on this project which is a unique paradigm shift for wastewater planning, treatment and discharge in New Zealand and probably internationally. It encompasses established biological treatment processes without the separate generation, treatment and subsequent disposal of either primary or secondary (biomass) sludge. Hastings District Council’s Mr Bob McWilliams presented to this forum in 2011 - The Journey to the Biological Trickling Filters. Refer references to this paper.

The unique solution was developed by the Hastings District Council (HDC), local Māori and consultants MWH NZ Ltd to meet the cultural and spiritual aspirations of local Māori (New Zealand’s indigenous people) in addition to providing treatment of human wastewater. The treatment system provides for a domestic population of 53,000 using a lowly organically loaded randomly packed media Biological Trickling Filter and a Papatuanuku (earth mother) rock passage without primary or secondary clarification. Treated wastewater is discharged into the Pacific Ocean via a 2,750m long offshore outfall. The treatment process, which comprises fine screening, followed by two Biological Trickling Filters each 37m diameter with a packed media depth of 10m and following this contact with selected and blessed stones in the Papatuanuku (rock) passage.

As outlined previously, these cultural and spiritual concerns related principally to the key matter that, simply put, Māori are deeply offended and disturbed by the discharge of kupāru, particularly to natural waters (sea or rivers) and also under certain circumstances to land (although Hawke’s Bay Māori originally expressed a preference for disposal to land rather than the sea).

The treatment process, as shown schematically below, not only provides significant treatment of the human waste (kupuaru), but also through biological transformation and spiritual cleansing produces a non-human (treated) wastewater that local Māori can accept as suitable for return to the natural environment without having to be disposed onto land.

Figure 4: Hastings Domestic Wastewater Treatment Plant Schematic



Financially, the Biological Trickling Filter is “win-win” all the way. In addition to capital cost savings over other secondary / Biological Treatment Options, it is saving the community well over one million New Zealand dollars a year (mainly due to the elimination of an expensive sludge (energy intensive) drying and disposal process that was necessary for an earlier considered primary treatment option).

The operating results from the first 15 months of full scale plant operation and compare most favorably to the Pilot and the European reference Plants including the Larraga Spain plant that was rearranged to trial the then proposed Hastings treatment arrangement used in this project. The desire was clearly however, to achieve complete removal of kupāru before discharge to the sea. From a pragmatic viewpoint this was seen as a longer term (ultimate) goal. The project has also highlighted how the accord and partnership between the Hastings District Council and local Māori has worked most successfully.

Photograph 1 below is a story board recently prepared for the HDC open days which are part of the consultation associated with HDC's new resource consent process. This representation depicts tangata whenua's Maori dimension of the integrated form of the treatment process.

Photograph 1: Hastings Wastewater Treatment Plant



The rectangular channel in the center of the plant is the Papatuanuku rock channel and the two large dome roofed tanks are the Biological Trickling Filters (BTF's).

Figure 6: Hastings 2012 Wastewater Consent Consultation Project – Open Day Story Board

HERETAUNGA TANGATA WHENUA VALUES

*“Heretunga Hauku nui, Heretunga Ararau, Heretunga Haaro o te Kāhu, Heretunga Takoto noa!
 Heretunga of the life giving dew, of the hundred pathways, the vision of the far-sighted hawk, left to
 us the humble servants”*

The current wastewater treatment process combines:

- innovative engineering infrastructure,
- applied science, and
- the customary practices and values of mana whenua.

The diagram below attempts to show the Maori dimension being expressed in an integrated form, against a backdrop of the current wastewater system.

1 Tane Mahuta - The deity of the flora and fauna.
 Provides the bugs in the biomass in the biological trickling filter. Through the biomass, the kuparu is transformed by the removal of the *mauri* (life essence) of the human wastes.

2 Papatuanuku - The earth element in the creation; the female element.
 The earth mother, receives the transformed waste and the contact with *papatuanuku* proceeds to re-establish the *mauri* (life essence) to the transformed waste.

3 Tangaroa- The male deity of the oceans.
 Receives the transformed waste (after passage through Papatunuku), and in his vastness, tidal movements and currents he makes himself clean. Tangaroa has the natural capacity to cleanse himself.

4 Tamanui te Ra and Tawhirimatea - The deity of the heavens and the deity of the winds
 By agitating the surface of the ocean (Tangaroa), and through the very synthesis of air and water, the cleansing process is completed with any odours being dissipated aerobically

- the discharge of wastewater from the WWTP into the sea, including specific cultural values that may be affected.
- To identify the potential effects (both favourable and adverse) on cultural values of the proposed activity.
- To identify appropriate measures to avoid, remedy or mitigate, where practical, any adverse effects of the proposed activity on cultural values.

WASTEWATER TREATMENT PLANT

BTB BTB

Domestic Wastewater
Industrial Wastewater

Do you have any thoughts on this view?

**WASTEWATER
RESOURCE CONSENT**

**HASTINGS
DISTRICT COUNCIL**

11 RESOURCE CONSENT CONDITIONS

Section 7 and elsewhere in this paper highlights the appropriateness and case history now available of obtaining resource consents with conditions that, at least in part, assist Maori – tangata whenua in having their concerns including the fundamental one of abhorrence of discharge of human waste to water addressed.

In each of the seven case histories referred to in this paper, and in many other consents, such consent conditions cover a wide range of approaches. There are however a number of common themes with many of these conditions.

The following gives a grouping and some examples of these common themes, particularly as they relate to the seven case history projects discussed in Section 7 above.

- **Formation of Tangata Whenua and Iwi Wastewater Liaison Groups**

All seven projects and many others in New Zealand have consents that require establishment of ongoing liaison groups with terms of reference often being set out.

In some cases the group is formed as a wider Wastewater Management Group or Committee, of which tangata whenua representatives make up a key part.

The Hastings condition is of a special nature as is highlighted above because it requires a “Hastings District Council Tangata Whenua Joint Wastewater Committee” to be set up under the provisions of Section 107 of the Local Government Act as a full committee of Council itself.

- **The Establishment of Research Activities**

A number of consents include either monetary funds or processes to establish research activities that have a connection with the receiving environment to which the treated wastewater is discharged or for technical and trialing developments. Examples of these include:

- The “Turanganui A Kiwa Water Quality Enhancement Project” in the Gisborne consents
- The “Fisheries Enhancement Research and Grants” which include for native fish in the Palmerston North consents.
- The “Environmental Mitigation and Enhancement Fund” on the Tauranga consent.
- The monetary fund to assist PTB develop a cultural monitoring programme in the Whangarei District Council’s Ruakaka consent.

- **Environmental Enhancement by way of Offset Mitigation**

A number of consents have offset mitigation requiring the consent holder to undertake, or support in one way or another certain activities not directly associated with the physical aspects of the wastewater scheme. For example:

- The Palmerston North consent in terms of riparian stream enhancement.
- The Ruakaka consents in terms of establishment of memorial pou / kohatu / plaques to commemorate the significance of Te Poupouwhenua to tangata whenua.
- The involvement of tangata whenua, iwi and hapu groups in wastewater monitoring and in the ongoing periodic reviews of technology and environmental matters as are set out in the resource consent conditions.

Many consents have these arrangements which are often included in the functions of the Liaison Groups as are referred to above.

- **Preparation of Protocols and related to the construction and ongoing operation of the wastewater scheme.**

For example:

- The Dunedin consent includes development of a protocol with Te Runanga O Otakou.
- The Ruakaka consent includes for the development of a range of protocol documents including tikanga protocols, archaeological site identification and cultural training for contractors.

12 REFLECTIONS AND CONCLUSIONS

Reflecting on the projects included in this paper and the journey we have been on in New Zealand to better understand Maori cultural considerations as they relate to human waste – domestic wastewater, highlights to the author that considerable progress has been made in many situations. Almost without exception where good progress has been made, that progress has been underpinned by early involvement between a Council and tangata whenua and with such involvement working in a partnership way in the spirit of the Treaty of Waitangi. When such procedures have not occurred, conflicts and drawn out and costly resource consent processes have often resulted.

In many cases development of the wastewater treatment and disposal schemes have been based on integrated and holistic approaches and incorporate land contact and other features specifically implemented for Maori cultural and spiritual reasons.

Resource consent processes including the applicant suggesting specific conditions that are developed with tangata whenua and iwi and hapu groups are now providing sound, and in some cases notable examples of how Maori cultural and spiritual considerations can be successfully taken account of and allowed for in the development and ongoing operation of wastewater systems.

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