

2.3 Moanataiari Project - Response to Public Forum Questions

TO	Moanataiari Governance Group
FROM	Francois Pienaar - Capex Programme Manager
DATE	16 March 2012
SUBJECT	Response to Public Forum Questions

1 Purpose of Report

The purpose of this report is to respond to the action schedule item with respect questions asked of the Governance Group during the public forum agenda item at its last meeting on 16 February 2012 .

2 Background

The Governance Group undertook to report back responses to questions posed during the public forum agenda item at its last meeting. The issues and responses are outlined below.

3 Issue

The following is the response to the questions and statements recorded at the Governance Group meeting on 16 February 2012.

Item 2.2.1 of the minutes - Mr Lawrence raised concern of other elements that may be present that could pose a health risk. Thallium was specifically mentioned.

Response: The list of chemical elements included in the site specific assessments (phase 2) and background concentration assessment (phase 3) are as follows:

- Phase 2 - Elements included are; antimony; arsenic; cadmium; chromium; copper; lead; mercury; thallium; nickel and zinc. Up to 30 selected samples with high mineral content will also be analysed for cyanide, hydrocarbons and polycyclic aromatic hydrocarbons.
- Phase 3 - Samples will be analysed for similar elements as in Phase 2 for comparative purposes. Due to the reduced number of sample sites only up to 10 samples with high mineral content will be further analysed for cyanide.

Mr Lawrence urged that throughout the background assessment work package the criteria followed need to be best case scenario and that all background sample results be made available to the public.

Response: Although the methodology for the Phase 3 - background concentration assessment work package is still to be finalised and presented for approval, it is intended that the selection of sample sites will exclude sites with anthropogenic input. Sample data will be available towards the end of May 2012 along with the report on background which will contextualise the findings.

Mr Lawrence was concerned with the lack of community advocacy for the wider district as this is a wider issue than just Moanataiari. It was noted that the local iwi was involved, but no one representing the wider community.

Response: The current project is concerned with the Moanataiari Subdivision. As such the issue being dealt with concerns the Moanataiari residents, who are represented by Shane Bromley.

The wider Thames and wider district issues are yet to be worked through. The process of dealing with wider issues will involve primarily the local community boards and current political structures.

Item 2.2.2 of the minutes - Mr Tegg asked when the release of the 2011 MfE contaminated sites register could be expected.

Response (MfE): The National Register of Priority Sites is compiled from information provided by regional councils. While the Ministry invited councils to supply information on their known contaminated sites, not all councils have responded to the request for information yet. This means that the Ministry's list of known contaminated sites is incomplete, and a final report prioritising contaminated sites in New Zealand has not yet been completed. It is expected that the register will be made publically available once it has been completed.

Mr Tegg posed two questions regarding public health at the Governance Group meeting and although Dell Hood gave a verbal response at the time. The following is a written response from Dell Hood and provides more detailed answers.

1. Mr Tegg asked why the MOH was not a member of the committee.

Response (Dell Hood, MOH): The MOH was offered membership of the committee but declined for the following reasons:

- There is no current statutory role for the Medical Officer of Health in the Moanataiari situation. The Health Act provisions which might apply at this stage are the nuisances provisions (s29) which are the responsibility of the territorial authority, but there is more specific legislation relevant to contaminated land in the Resource Management Act.
 - Having an advisory role to the entire project, being outside the structure of the committee allows the MOH (and representatives) to give advice independently to all levels of the Council and to the public, rather than via the Committee's chair.
- 2. Mr Tegg felt that a study of the health of Moanataiari residents should be carried out.**

Response (Dell Hood, MOH):

- All humans are exposed to naturally occurring arsenic (As); the concern for Moanataiari residents is a matter of degree of exposure.
- The range of diseases known to have a higher incidence in communities with higher exposure to As is considerable, involving different organ systems, and most are common in the general population.
- The Moanataiari population is small, and individuals vary in the duration and intensity of their exposure. Any form of stratification reduces the study population further.
- A control community would need to come from outside Thames-Coromandel District, which would introduce new confounding factors.
- Study design would therefore be difficult, and however good the design, no clear outcome might be able to be established
- Such a study would require separate funding and other resources.

Notwithstanding these issues, the possibility of some form of health study has been discussed with the Ministry of Health and remains under their active consideration

Are there other mine tailings contaminated sites on other land and in streams in and around Thames township and what if any testing is proposed? The same applies to literally hundreds of old mining sites throughout the Coromandel Peninsula.

Response (WRC): Yes, it is more than likely that there are other sites around Thames township that are potentially contaminated from mine tailings. However, we do not have soil sampling data to confirm whether or not those sites are contaminated. Currently, Moanataiari is the priority site for investigation. Testing/investigation of other sites in the Coromandel Peninsula and the wider Waikato Region is dependent on funding available and the potential ecological and health risk that the site poses.

When will the testing for arsenic and other contaminants be done on fish and shellfish in the sea adjacent to Moanataiari?

Response (WRC): It is considered that this is a health related matter specific to the consumption of wild food and this should be referred to the Waikato District Health Board.

With regards previous and current monitoring of fish and shellfish in the sea adjacent to Moanataiari:

1. There is a permanent WRC monitoring site at Te Puru (approximately 10 km north of Thames). However, monitoring is ecological based and is limited to pipi and cockle sizes and populations.
2. A report has also been written for WRC on heavy metal contamination in feral mussels from 15 sites around the Waikato Region (Coffey et al., 1996). Concentrations of heavy metals in green-lipped mussels sampled from 15 selected sites within the coastal marine area of the Waikato Region including Thames and Te Puru were determined. No lead was found. Copper, mercury, zinc and cadmium levels were within health standards at those two sites. Arsenic was not analysed.
3. A survey of heavy metal levels in Coromandel shellfish and finfish was undertaken in the early 1980's (Tracey, D.; van den Broek, W.L.F.) and published in a report by the Ministry of Works and Development in 1987. The closest sampling location to Moanataiari was in the vicinity of Tararu Stream (approximately 3 km north). Pipsis in the stream mouth had a mean mercury concentration of 0.03 mg/kg and eels were found to have mercury concentrations of up to 0.52 mg/kg. The Food Standards Code (Standard 1.4.1) for mercury is 0.5 mg/kg for molluscs and 0.5 to 1 mg/kg for fish depending on the fish type and the sampling number. The report provides limited detail on the sampling numbers but it appears that the sampling numbers were small.
4. Sampling for heavy metals was carried out for commercial marine farms on 28 September 2010 at Waikawau River mouth (about 2.3 km north of Moanataiari). Testing is a three-yearly MAF requirement. The samples were tested for compliance with the Food Standards Code (1 mg/kg for inorganic arsenic, 0.5 mg/kg for mercury & 2 mg/kg for cadmium & lead) and were found to comply with all four contaminants tested. Note that total arsenic was actually 1.1 mg/kg but it complies as at least 75% of this is likely to be organic arsenic which is much less toxic.
5. For comparative purposes, arsenic concentrations (presumably total arsenic) in shellfish collected from the mouth of the Waikato River (which receives large volumes of geothermal sourced arsenic) have been found to range from 0.69 to 1.24 mg/kg (Robinson *et al.* 1995) and would also be likely to comply with the food standards if based on inorganic arsenic content

In summary, contaminant tests to date for arsenic and mercury in shellfish and fish in the local Thames area (but not immediately adjacent to Moanataiari) indicates that levels have complied with the food standards and in the case of arsenic, are similar to concentrations determined in other areas susceptible to arsenic contamination such as the Waikato River mouth.

What investigation into the human health effects will be carried out?

Response (WRC): As discussed above, an investigation of human health effects falls outside the Waikato Regional Council's mandate. This is a question that agencies such as the DHB and the MoH are best placed to respond to.

Is there sufficient funding from the Government for these investigations?

Response (WRC): Funding from MfE is limited and therefore detailed investigations have to be prioritised and put on hold until sufficient funding can be secured.

Has the Waikato Regional Council been misleading in its statements about its contaminated site priorities? It has told residents that the Council tests one high priority site a year and says since 2007 other high priority sites investigate have been the Tui Mine, Rotowaro carbonisation plant, and Cambridge gasworks.

Response (WRC): Please see combined response below next question.

However the Tui Mine already had funding approved in 2006, and the Rotowaro carbonisation plant already had a clean-up operation completed before 2006? Further the 2006 Report says that Cambridge gasworks – unlike the Thames site - has “no direct exposure pathway to humans.” The 2006 Report gives the Cambridge site a ranking of 49 and the Rotowaro site a ranking of 53 for environmental and health risks compared to the number one ranking for Thames.

Response (WRC): WRC has investigated four out of the five priority sites for our region since 2007 to varying degrees depending on the resources and funding available at the time and the extent of the investigation and remediation options required. While the annual plan target is to investigate one high priority site or activity per year, the reality is that investigations often have to be staged over an extended period of time. However, the average number of investigations over the period since 2007 would be close to one per year, especially if it is considered that in 2011, a desktop study of military sites and rifle ranges was undertaken.

WRC's top 5 priority sites and rankings as per GHD's methodology and MfE's risk screening process.

Site	2006 GHD Report Rank Total	RSS Score
Tui Mine	19	High
Rotowaro Carbonisation Plant	47	Medium
Moanataiari	3	Medium
Cambridge Gas Works	28	Medium
Waikino Tailings Dam	Not ranked (not eligible for funding)	Medium, WRC consider to be high based on human health risk DM1810965

The RSS Score is MfE's Risk Screening Process (RSS) found in the Contaminated Land Management Guideline No. 3. This is a nationally consistent means of ranking sites that are, or suspected of being contaminated using readily available information for prioritising sites for further investigation. The RSS is a risk equation made up of the hazard, the exposure pathway and the receptor.

The GHD rank uses a Multi Criteria Analysis (MCA) approach assigning scores for risk to human health, risk to the environment, national significance, value for money and achievability against a 'base case' (method provided in the 2006 GHD report). Please note the disclaimer in Section 4 of the GHD report:

We do not recommend the use of the National Priority List for any purpose outside decision making around the Contaminated Sites Remediation Fund. It is important that external (to MfE) stakeholders are aware of the purpose of the list and do not rely on the list in their decision making related to contaminated land.

Moanataiari – The above table shows that the Moanataiari site has a medium RSS Score, and it was this RSS Score that was used by WRC to establish site priority. Note that the Tui Mine was ranked High and was WRC's top priority.

In 2006 the analysis of sediment in the Firth of Thames had been completed and a WRC report was published in 2007 on our website, and included the conclusion that there was little evidence of risk to residents living on the Moanataiari reclamation and that risks associated with this contamination would be primarily to organisms living in the marine sediment. Further investigation was postponed on this basis and on the basis of resource constraints and other priority sites; namely Tui Mine, Rotowaro Carbonisation Plant etc. However, it is important to note that Moanataiari has, over this time, remained in the top 5 priority list for investigation. In 2009, WRC engaged

CSI to undertake a desktop investigation of Moanataiari and this report, which was completed in 2010, recommended further investigation of the Moanataiari site with regards quantification of risk to residents. In 2011, PDP was engaged to undertake soil sampling from 28 locations.

Tui Mine – This site has a High RSS. The remediation of the Tui Mine is not completed. Work is still on-going.

- An initial funding allocation of \$9.88 million was approved in 2007 and this was followed by a scoping study to determine the best remediation approach.
- In June 2008, it was decided to implement the project in 2 Phases.
- Phase 1 was allocated \$4.5 Million in 2008 and was implemented within a total budget of \$5.5 Million.
- Over the period 2009/2010, Phase 2 design was developed at an estimated cost of \$16.2 Million
- A funding agreement was reached in 2010 where the Government provided \$15.2 Million over 3 years, WRC provided 0.8 Million over 2 years and MPDC provided \$0.2 Million in one year.
- WRC took over the responsibility for the project management since the start of the project in 2007. The project management costs are estimated at \$3.0 Million over the 6 year period until 2013/2014.

In summary, funding began in 2007 and is on-going through a staged process that is aligned with the various phases of the remediation project.

Rotowaro – The remediation of this site is not completed. This site has a medium RSS, the same as Moanataiari. Some remedial works have been undertaken by WRC since 1991 with funding from MfE. WRC applied for funding from MfE's contaminated site remediation fund (CSRf) in 2006 for a detailed investigation to identify possible management options. Tonkin & Taylor prepared a report in 2007 which identified tanks of poor condition containing contaminants. The report considered remedial options for the site. Following recommendations made in a 2009 Tonkin & Taylor report another application was made to MfE for CSRf funding for a more detailed assessment of the remediation options and prioritisation of different aspects of contamination for future action. URS prepared a remediation action strategy with Stage 1 providing for coal tar removal. WRC made an application to the CSRf in January 2009 seeking funding for Stage 1 of the remedial works. However, more CSRf funding was diverted to the Tui Mine project and the application is currently on hold pending further funding.

Cambridge Gas Works – This site has a medium RSS, the same as Moanataiari. It was determined that a site investigation could be undertaken for minimal cost and resources and as WRC had the funding and resources available at the time, a detailed investigation was undertaken in 2011. Tonkin and Taylor has recommended a management plan based approach for this site rather than full remediation.

Waikino Tailings Dam – this site has also been formally ranked through the RSS process and remains on the top 5 priority list for WRC. Unfortunately this site is unlikely to be eligible for CSRF funding as the land is currently Crown Owned.

Why was only one location soil tested in 2007? (The Moanataiari school grounds which are raised up above the surrounding subdivision and clearly have a much deeper layer of fill?) Is testing just one location at that time rigorous science?

Response (WRC): Only one location was tested in 2007 since this sampling was undertaken as part of a separate region wide study of contaminants in urban soils (i.e. the study was not specific to Moanataiari). Results showed only background concentrations of the key trace metals indicative of clean soil.

This school ground result along with general observations of the wider reclamation site i.e. the presence of healthy trees and vegetation (trees don't grow on tailings, so the tailings must be reasonably deep) suggested that there is a reasonable depth of clean soil between any contaminated material at the base of the reclamation and residential properties on top. The balance of evidence was that potential risks to residents were low, but that further investigation was justified to establish the depth to contaminated material and to determine whether excavation management plans might be advisable.

Mr Tegg also suggested that with the background study which is to be based on TP153 the 50 year criteria needs to be increased to 150 years.

Response: This related to the identification of sites which excludes anthropogenic influence. TP153 makes provision for the selection of sites with historic anthropogenic input as the entire area has been affected in one way or another by human activity. TP153 in the Auckland setting states a 50 year period, but also makes reference to natural lithological processes and the avoidance of sites with known contamination.

The same principles will apply to the Thames background study and even though the suggestion to increase the 50 year to 150 years doesn't seem practical for this specific area and its historic activity the intention is still to find sample sites which display natural lithological processes and have no known or visible human interference (specifically mining and mining related activities).

Item 2.2.3 of the minutes - Mr Jensen stated that the elevated levels of arsenic wasn't just due to mining activity and that natural elevated levels of arsenic and other minerals would be found due to historic geothermal activity. Mr Jensen was concerned that in blaming mining for the issue and not considering the wider context a lot of ratepayer money will be wasted in remediation.

Response: The Moanataiari Subdivision Project will be put in context with the completion of the background concentration assessment. The intention is not to waste ratepayers' money, but to complete the work in line with managing the risk to human health.

4 Discussion

The responses provided above were provided by the agency considered most appropriate or best placed to respond. The responses have been pre circulated in draft form to all agencies and approved and have been reproduced unaltered in this report.

5 Suggested Resolution

That the Moanataiari Governance Committee:

1. Receives the report.