

CLIFTON TO TANGOIO COASTAL HAZARDS STRATEGY 2120

MINUTES OF THE NORTHERN CELL ASSESSMENT PANEL WORKSHOP 2 HELD AT THE HB REGIONAL COUNCIL, DALTON ST, NAPIER, AT 5.00 P.M. ON WEDNESDAY 15 FEBRUARY 2017

PRESENT

Panel Members:

Craig Daly, Garry Huata, Mark Levick, Steve Loughlin, Mike Penrose, Dorothy Pilkington, Oliver Postings, Martin Rockel, Hoani Taurima, Shaun Thompson-Gray, Tim Tinker, Michel de Vos, Terry Wilson

Observers:

Mike Adye, Paul Bailey, Larry Dallimore, Craig Goodier, Graeme Hansen, Tania Kerr, James Minehan

Facilitation Team:

Peter Beaven (Chair), Simon Bendall, Stephen Daysh, Des Ratima, Jan Seaman (Minutes).

Technical Advisor:

Richard Reinen-Hamill.

APOLOGIES

Douglas Dickson, Tania Hopmans, Russell Moffit, Sarah Owen.

WELCOME AND INTRODUCTIONS

Des Ratima opened the meeting with a karakia. The Chairman briefed the meeting on housekeeping and safety matters, which included emergency procedures.

CONFIRMATION OF MEETING SCHEDULE

An updated list of panel members and revised meeting dates was tabled. Information relating to the Southern Cell was included.

CONFIRMATION OF WORKSHOP 1 MINUTES

Motion

That the Minutes of the Workshop 1 meeting be confirmed as a true and correct record.
The motion was moved, seconded and carried.

THE PROCESS AHEAD

The following points were highlighted.

- Living at the Edge information was included in the Resources section.
- The Draft Stage Two Report: Decision-making Framework, was also contained in the Resources section and information on Pg 14 was highlighted.
- The focus of this meeting would be to present technical information, largely from Tonkin + Taylor.
- Workshop 3 – site visit. This will be a familiarization session. A Vulnerability Assessment will need to be prepared, which will be tabled for discussion at Workshop 4. Recommended that of the sixteen coastal units, efforts should focus on key areas - some are back from the coast and the risk is not as immediate.

- The options developed in workshop 4 will be run through a pathways analysis and the technical team will prepare a pathways plan. This is because some options will have a limited life, and will not provide mitigation throughout the 100 year period to be considered in this review. When the pathways options and criteria are agreed a public meeting will be held to enable the panel members to feedback to the communities they are representing.
- Workshop 6 will review feedback from public feedback sessions and confirm pathways and options.
- Workshop 7 will be a full day evaluation. Recommended that the assessment be carried out in two steps. Pg 15 identified criteria for options.
- It is recommended that all the options be looked at and preferred options identified. An economic assessment will then be carried out and a cost benefit analysis prepared. Preferred pathways will be confirmed after the economic analysis has been prepared.
- The technical team will prepare a working party report and circulate before Workshop 9. The draft report will be taken to another public discussion meeting.
- BCA = Benefit Cost Analysis; ROA = Real Options Assessment. Glossary of abbreviations used in the reports is available on the HB Coast website.
- The process will involve making a decision on a preferred option prior to knowing the cost. There will be a range of options for each unit for which the benefit cost and assessment weighting in terms of their effectiveness and acceptability could show that the most expensive option will provide more benefit, but may not be as cost effective as another option.

It is suggested panel members go through the documents and any matters for clarification can be dealt with at the start of the next meeting.

PRESENTATION ON COASTAL PROCESSES, HAZARDS AND RISKS

Richard Reinen-Hamill, Principal Coastal Engineer, Tonkin + Taylor was introduced and showed a presentation on the overhead entitled "Clifton to Tangoio – Coastal Hazard Strategy 2120 – Northern Cell. A hard copy of the presentation was available. Points and queries raised were noted as follows.

- The coast is susceptible to major shocks after which a period of adjustment and potential stability occur. Maps showing the Ahuriri Lagoon highlighted the changes that can come about after a large shock, with a slow period of adjustment after that time.
- The Komar 2013 report was valuable as it collated important information from previous reports.
- A coastal hazard assessment was carried out in 2001 which identified gaps in information and recommended a programme of investigation and data gathering. This work has been progressed since providing a better set of information ten years later.
- Minus numbers on the Tectonics photograph show there is subsidence of the coastline. There is some evidence of downward land movement at present but when this is released through a seismic event, there could be uplift. This cannot be relied upon and it was recommended that for planning purposes no ongoing uplift be factored in.
- The gravel barrier on the beach is a coastal marine feature and not necessarily supplied from the rivers. Sediments and gravels originally came down the rivers, however, it is the wave process that creates the shingle barrier. The barrier is the same all the way along the coastline, including the southern end. Cape Kidnappers is eroding and gravels move northwards from there by wave action. The grain size reduces moving from south to north due to the abrasion caused by wave action.
- There is a wave buoy off Port of Napier which gives the ability to calibrate the models for waves. The Komar report contains an analysis of the Port of Napier wave data over ten years, which shows an increase in wave energy. This trend would be worth monitoring.
- The Port of Napier breakwater and its effect on wave action was questioned. The Napier Hill was originally a headland and helped trap sediment at that location. The Port is now situated where the rocky outcrops from the Hill were. The breakwater can make slightly higher intensity waves to a certain point only. There is some sheltering and a localized effect. It causes a change in sediment transport, however, there is still sand transport along the coast. A lot of the gravel making up the beach barrier is believed to have originated when the seas were lower and

the beach crest has rolled landward as the sea level rose several thousand years ago. In relatively recent times (geologically) the hill acted as a groyne. Sand and some small amounts of gravel move past the end of the breakwater and ends up on the beach further along.

- With the tidal lagoon, the natural system prior to the earthquake was more of a breathing lung. The earthquake resulted in uplift of the gravel barrier Westshore and north and the near shore beach environment. The effect of the Port needs to be looked at in conjunction with the natural changes to the coastal systems.
- Deepening of the shipping channel and whether it took sand away from the beach was queried. Dredging the channel would stop material ending up on the near shore, however, some material is put back into the system, thereby providing material to the sandy sea bed just offshore. Sand is still transported to the north and some into the lagoon.
- The deeper the water the less the wave energy on the sea bed and as the seabed rises, so does the seabed wave energy. When waves come in at an angle the sediment is pushed along the beach. The predominant direction of travel is to the north.
- Sediment sources and sinks - Rivers supply very little gravel, rather more muds and silts which move offshore. Over the whole cell abrasion is a key driver of sediment loss, which is occurring at a rate of around 15,000 cu m per annum. Material goes from a gravel to a silt to a mud, and ends up in the offshore mud belt.
- At Westshore the trend is erosion, with reduced erosion further north.
Action: *Monique to send members a link to the Monitoring Report on the HBRC website which shows historical shoreline change.*
- Extraction of gravel at Awatoto near the fertilizer works (in the southern cell) does not affect the northern areas. Gravel extraction would affect the rate of accretion on the beach at that location, which would benefit the beach to the south. The extraction has been justified in the past because it was believed to balance the supply thus keeping the shoreline the way it is. The main erosion process is the northerly drift, i.e. eroding to the south and depositing at Awatoto. When extraction ceases there is expected to be a buildup of gravel in that area, which could increase the challenges with maintaining a good River mouth on the Ngaruroro and Tutaekuri rivers.
- In the north the graphs indicate erosion, however, there is more shingle there than there used to be.
- An increase in sea level rise would result in further erosion due to increased wave height. If a structure was erected the beach would continue to lower in front of the barrier and the structure design life of the structure may be determined by this..
- Fig. HB13 shows a barrier at the current shore, with a lower area behind. If the front barrier was eroded in the future the sea would move back quite a long way. Profiles shown are taken twice a year and sometimes more frequently.
- Putting material dredged from the shipping channel into the near shore area at Westshore would not provide more volume to the gravel barrier, however it would disperse over the area and reduce wave energy. With inter-tidal movement it could move offshore, back into the channel or into the estuary.
- Westshore will be a focus for the panel with different options considered. Use of concrete blocks was queried as a potential mitigation option. It would be costly but could be worked through.
- The probabilistic lines assume an annual 10,000 cu m of nourishment continuing. Sediment is going to HB 15 and 16 from Westshore.
- Sea inundation. There will be areas of permanent inundation, however, because of the uplift in the area inundation is a low risk at the present time particularly in the northern part of the cell. Water is not likely to come over the top even with sea level rise due to the uplift but there would be some effect such as around lagoons and estuaries.
- Tsunami is not a key feature and the focus of the panel should be on inundation and erosion mitigation. This is due to low likelihood of a major tsunami occurring, however, hazard maps and risk assessments have been done. Tsunamis cannot be stopped and planning for tsunami hazard should take this into account. Landward cells were indicate the maximum extent of the tsunami.
- Economic assets include infrastructure (buildings, roads, railways). Social and cultural assets have been included on maps but are not yet valued. There will be other areas not identified on maps and panel members will have a greater knowledge of the local cultural and social assets.

- Inundation and tsunami mean water coming over land (which would then drain out again), resulting in a range of damage. Increasing water depth causes more damage and creates a rise in the number of potential injuries and fatalities. A natural crest is more resilient than an artificial crest in relation to tsunamis.
- Inundation. Road route security becomes an issue around the Whirinaki Bluff.
- Timing and increased frequency and intensity of storms due to climate change is not easy to predict.
- Economic effect of erosion. There will be an increasing impact with a half-meter sea level rise, particularly at Westshore, as it will impact on residential property.
- Economic range. If the economic cost is less than \$1 m it is classed as negligible. Anything over \$100 m is classed as very high. Economic impact is based on structures and associated damage, with business continuity and community wellbeing not being covered in the figures.
- Resilience planning, i.e. how to recover quickly from an event, is a key consideration.
- Information presented for the erosion hazard was for a 1% probability of occurrence, however, looking at other probabilities was also important.
- There have already been big events in this area (the 1931 earthquake and cyclone Bola) however the predictions are based on an assumption that things will be much the same for the next 100 years.
- Economic impact on assets, e.g. the airport, in the case of inundation was confirmed as being on the book value and did not factor in the costs of disruption. These questions need to be asked and can be dealt with in an economic assessment. Zone N could be a unit to focus strategy (roading and the airport) and looking at what other hazards and affects may need to be addressed. It would be good for the managers of infrastructure to consider these risks before the asset is up for renewal or when major investment is required.
- Zone F is the Port.
- Rising sea level and the effect on groundwater. There could be some effect, however, the erosion assessment did not take into account the effect on the Heretaunga Plains aquifer or hinterland.
- Extraction of shingle from the rivers. Gravels supplied to the barriers did not come directly from the rivers, but rather a coastal marine process. If there was major gravel transport by the rivers to the coast a delta would have formed. There is not much river sediment getting to the coast as it is reaching the Heretaunga Plains and filling up there. The process is now a buildup of silt in the rivers and lack of gravel on the beaches. Only the Tukituki River is providing some gravel.
- Moving the outflow of the Tutaekuri River away from Ahuriri did not have much effect in terms of gravel supply to the system. There have been breaches in the gravel barrier in the past and river mouths do not always discharge at the same location – eg the Esk used to discharge into the Ahuriri Lagoon, and the Tukituki and Ngaruroro used to build up landward of the beach barrier before breaking out at the weakest spot.
- Sediment coming out from the inner harbor would cause an accretion over a period of time and the area would get shallower, however, the 1931 earthquake reduced the volume of water flowing in and out of the Lagoon, reducing the amount of sediment flowing in and out of the Lagoon. Prior to the earthquake the Westshore barrier/beach was shingle but the sea bed rose in the earthquake providing a source of sand for the beach. This built up for 30 years after the earthquake and has since changed back to an erosion phase.

Panel members were encouraged to think about possible effects on other cells when actions were planned. There will be opportunity to ask further questions and seek clarification over the course of the next meetings. Further information is available on the website and if required members should contact Monique to have information printed. The Komar report is available on the HB Regional Council website.

Payments. Panel members were offered two methods of payment and were requested to contact Monique with their preferred option.

EDGE EVALUATION SHEET

The Edge science team supporting the project requested a short evaluation be carried out at the end of each meeting to evaluate progress. Survey forms were circulated for voting members only to complete. There will be an online link to the survey, which has the same questions. If panel members were unable to complete the forms at the meeting these could be filled in online.

If any information is required throughout the process then Emma Ryan should be contacted in the first instance.

NEXT MEETING

The next meeting (site visit) will be on 2 March. Members to meet at the aquarium for an 11.00 am start. The Southern Cell will be doing a site visit on 16 February and if members cannot attend on the 2nd they would be welcome to join this group.

Des Ratima closed the meeting with a karakia.

The meeting closed at 7.40 p.m.