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Solution-Focused Coastal Management

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Anton Trist
Waipu Motor Camp
E-mailed

Dear Anton

WAIPU COVE - DUNE INSPECTION

Further to our inspection of the site in July, I attach as requested a few notes covering some of the key points for your record. I understand that much of the work we discussed has already been completed.

- **Erosion phase:** Coastal erosion along the eastern coast of the North Island is quite strongly influenced by climatic cycles including the Interdecadal Pacific Oscillation (IPO). We are presently in a negative phase of the IPO which may last into the 2020's (judging by the duration of the last negative phase).

During this negative IPO phase, there is higher than normal probability of coastal erosion events on the east coast. It is also quite common for dune erosion to cumulate over time during such periods. For instance, there was widespread erosion during the last negative IPO phase (which extended through to the late 1970's).

These cycles are perfectly natural and the simplest approach is generally to live with the erosion and adjust. It is important to appreciate that this erosion phase will end and the dunes will eventually recover - provided they have a good cover of the native sand trapping species critical to natural dune building and repair. Dune recovery may well start before the end of the present negative IPO phase or it may be delayed until we are in the next positive IPO phase.

- **Dune restoration:** A naturally vegetated dune is critical to natural dune repair when the present erosion cycle is over. Accordingly, it is recommended that you work at restoring a naturally vegetated dune along most of the foreshore over the next few years. This will ensure rapid natural dune recovery once the present erosion phase is over.

Waipu

1

I appreciate the desire to maintain as much width of grassed reserve as possible - but the width of the restored natural dune has to be sufficient to withstand the worst erosion likely in the present phase. This will ensure there is some native vegetation left to repair the dune. The landward edge of the planting we discussed and agreed in the field (the first stage of which has subsequently been planted) should be sufficient. However, keep an eye on this over coming years and extend the spinifex further landwards over time if required.

Dune restoration in your setting will require:

- Spraying out the kikuyu and other exotic grasses over the width to be restored
- Reshaping - once the grass has died, remove the dead vegetation and underlying roots/stolons down to clean loose sands, reshaping the dune to form a more natural shape. Any clay or fill layers in the dune should be removed where practical.
- Planting with appropriate native species
- Ongoing maintenance

The spraying and earthworks are critical to success – as otherwise there will be significant ongoing (and often very difficult) problems with weed reinvasion.

In your plantings, there is no point planting right to the seaward edge of the dune during erosion periods – leave a gap of 1-2 m to allow for erosion. The spinifex will quickly run seaward over this area once the plantings take off (typically by March-April the following year).

On the top edge of the slope landward of the grassed reserve, there is a good cover of native species (particularly *Muehlenbeckia complexa*) along the exotic grass. This native vegetation can readily be encouraged by spraying with haloxyfop (e.g. products like Gallant) to kill off the exotic grass.

Ongoing maintenance of the planting is simple but critical, particularly:

- Spraying the grass along the landward margin of the planting (over a width of up to 0.5m) – to prevent the exotic grass from invading into the spinifex. This typically needs to be done 2-3 times per year (usually spring and late summer – but sometimes more often in warm areas like Northland with extended growing seasons)
 - Careful spot spraying within the planted area 1-2 times per year to remove any exotic vegetation that gets in (particularly things like exotic grasses, gazanias, arctotis, agapanthus, South African ice plant, etc – which can be very invasive). This has to be done carefully and on windless days so that the natives are not also damaged.
- **Fencing and management of pedestrian beach access:** It is important to provide adequate beach accessways to protect the plantings from trampling.

In my opinion, you probably have sufficient accessways already – though it would be useful to complement these with Coastcare signs which ask folk to use accessways and keep off plants.

In my view, the existing accessways are the best option for beach access at this site given the high dunes. There is some exacerbation of the dune erosion in these areas by wave interaction with the structures. However, the slight exacerbation of dune erosion by the structures does not negate their value.

The ongoing dune erosion has outflanked some of the accessways at their landward edge. I would advise against moving the steps landward to accommodate the present erosion – as one day the dune will rebuild seaward and then you would have to extend the accessways seaward again. As long as the piles of the existing structures extend sufficiently to prevent undermining and there is not excessive wave damage to steps during storms, they should be fine.

In order to accommodate the presently ongoing erosion, I suggest building landings to extend each of the accessways back into the grassed reserve. These landings could be piled at their landward margin but are best supported by the existing structure at the seaward end (any shallow piles at the seaward end of the landing would be undermined by ongoing erosion).

I recommend removal of the post and wire fence from along base of dune. There is generally no need for fences on the seaward side of dunes – they are expensive to build and maintain in that area and can be untidy. Leaving some of the vertical erosion scarp when you reshape will be equally effective in discouraging access across the dunes and will encourage use of the accessways.

- **Power-pole sea wall:** Complete removal of this structure is recommended. As discussed, it is not effective erosion protection and is achieving little – it is simply untidy and will become more so with further storms.

I understand the structure was buried and has only been exposed by recent erosion. This illustrates the cycles of dune erosion and recovery discussed above.

- **Rocks on the beach:** There are some rocks on the beach, which are apparently the remnants of ineffective protection works placed near the earlier surf club building (which building was relocated landward in 1960s or 70s due to erosion during the last negative IPO phase).

These rocks have been uncovered by recent erosion and should be removed as soon as possible. Otherwise, storms will scatter them over the beach – creating a hazard and reducing beach amenity. They are most easily removed after storms when they are extensively uncovered.

- **South end of the beach near the stream entrance:** The low clay/fill bank in this area can simply be allowed to erode for the foreseeable future. There is a wide reserve to landward and erosion does not pose any threat to assets such as picnic tables and trees. There is no

need for expensive and ugly engineering structures which would also impede access and reduce amenity.

However, to assist with access from the grassed reserve, occasional sand push-ups against the erosion scarp should be undertaken as required after storms. The fence is unnecessary and can largely be removed. This will enhance amenity and access in this popular area.

If the erosion ever gets sufficiently close to the heavy concrete picnic tables, these structures can simply be picked up and pulled further landward on the reserve.

In the very unlikely event that erosion ever poses a threat to the wide reserve (e.g. say if more than one third of remaining reserve erodes), then you could at that time reconsider the need or otherwise for any engineering. However it is highly unlikely that serious erosion of this nature will be experienced in the near future.

- **Surf Club:** The present building appears to be well-located and is not likely to be threatened by erosion the near future.

This can be confirmed once the present erosion setback review being conducted by NRC is completed. These revised setbacks identify (in a precautionary manner) the areas that could potentially be impacted by erosion over the next 50 and 100 years. Bear in mind however that the setbacks as calculated include projected sea level rise in both the 50- and 100-year projections. This component would need to be subtracted to estimate existing risk to the building.

The NRC erosion setbacks provide a very useful tool and should be taken into account in long term planning of the camp site. The setbacks indicate the potential for significant and permanent shoreline erosion over the next century in the event of projected sea level rise. However, the present erosion is simply cyclic and will recover.

Please do not hesitate to contact me if you have any queries in respect of the above recommendations.

Yours faithfully,

Jim Dahm
Eco Nomos Ltd