**SUBMISSION RELATED TO PROPOSED KAPITI COAST DISTRICT PLAN 2012 (PDP)**

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## This submission at a glance

The main lines of reasoning in this submission are:

* KCDC are proposing to introduce Coastal Hazard Management Areas (CHMA) in the new District Plan (PDP), primarily to mitigate future adverse effects of postulated climate change, over 50 year and 100 year scenarios.
* The CHMA zones are heavily predicated on estimates of future shoreline erosion, which in turn are strongly influenced by estimates of future sea level rise.
* The sea level rise estimate used for 100 years is 0.9 m.
* This rise is within the mean semi-diurnal tide range for this region, and amounts to 0.9 cm (c. the width of a ballpoint pen) per year.
* It is inconceivable that the community cannot manage a defence against this rate of rise, and that 1800 properties (a figure widely reported) will be in serious jeopardy if not lost in the next 100 years.
* It is even more inconceivable where effective protection barriers are already in place. Structures such as sea walls are proven to be the most effective defence against the sea.
* It is much cheaper to maintain well-built sea walls, even allowing for heavy storms, the future periodicity of which is speculative, than to relocate existing properties and infrastructure.
* A prime example is the area behind the newly re-built seawall at The Esplanade, Raumati south.
* Pragmatic reality and common sense would suggest that there is no need to invoke “managed retreat” in this area for the foreseeable future (at least up to 50 years).
* Even with managed retreat, it is highly unlikely that the sea would encroach as far as the putative 100 year hazard zones in this neighbourhood, especially given the anticipated long-term efficacy of the newly rebuilt sea wall.
* Therefore, the 100 year CHMA (Relocatable build) should be removed from the DP in this area. At worst, it should be relocated seaward, to reflect the on-going protection from the substantial existing sea wall.

## My background

I am a geoscientist with over 32 years of professional work experience. I am familiar with, but not an active practitioner in, the disciplines of coastal geomorphology, sedimentology, climate change, landforms and tectonics. I have considerable experience in scientific publication and peer review.

## Summary of recommendations for amendments to the PDP

This submission relates to the Coastal Environment component (Chapter 4) of the PDP, and the handling in the PDP of the projected 50 and 100 year erosion lines of the 2008 and 2012 reports on Kapiti Coast erosion hazard assessment by Coastal Systems Ltd, particularly in the area inland of the newly rebuilt seawall on The Esplanade, Raumati South.

This submission primarily addresses the following specific provisions:

1. Relocatable build CHMA zone based on 100 year erosion lines of the Coastal Systems Ltd report (2012).
2. Managed retreat
3. Building of sea walls as a prohibited (non-compliant) activity

I oppose the location of the Relocatable build CHMA zone (Policy 4.10 and 4.13) where it has been applied to the area inland of the newly rebuilt seawall on The Esplanade, Raumati South.

I submit that the Relocateable build CHMA zone be dropped along the entire coastline under KCDC jurisdiction until all avenues of consultation and technical considerations (including sea level rise models) have been fully addressed, with a view to implementing a revised provision in the subsequent District Plan. The requirements of Policy 24 (Identification of coastal hazards) of the NZCPS could potentially be accommodated in the DP by way of simply defining a 100 year zone that will be “under review”, and which could become subject to development regulations as a need arises in future district plans.

I submit that all reference to the 100 year erosion lines (CHMA), and any associated language that conveys a premature sense of property risk to be deleted from property LIM reports.

I submit as an alternative (in the event that the Relocatable build CHMA zone designation is not deferred until the next DP), that this zone immediately inland of the seawall on The Esplanade, Raumati South should be modified to be located further seaward than at present, because it is reasonable to anticipate that the seawall will prevent erosion for a significant period into the future. This would eliminate at least one of the anomalies created by the “one size fits all” drawing of the hazard lines.

I submit (again as an alternative) that KCDC document on LIM reports a full account and analysis of uncertainty ranges for the hazards, likelihoods of the hazard occurring over realistic timeframes, current existing factors that are presently mitigating the putative risks (such as seawalls), and Council strategies for management, including alternative options available to it. I specifically want KCDC to make a statement in the LIM reports of all properties currently protected by the sea wall at The Esplanade, that they are so protected.

I oppose any moves by KCDC towards managed retreat (Policy 4.6) in Raumati South when there are alternatives offered in the NZ Coastal Policy Statement (NZCPS) and when this involves physical actions and legislations that defy common sense, are based on speculation rather than any immediate real-world need, and/or appear to be designed in order for KCDC to reduce its responsibilities in terms of future costs and legal liabilities.

I submit that, with respect to Policy 4.8 (Coastal hazard risk management) and Policy 4.9 (Hard protection structures), it would be helpful if KCDC declare their strategic intention for the seawall at The Esplanade, Raumati South. The description of generic intended retreat (in Policy 4.8) as being in the “long term”, where “long term” is defined as “up to 50 years and beyond”, tells us nothing. One can only assume that KCDC recognise its strategic importance to the Council as well as the community, given the significant expense that has been incurred in very recently refurbishing it. Its effective engineering design lifespan is presumably longer than 50 years (see below).

I submit that KCDC should also modify the 50 year erosion hazard lines in the area protected behind the seawall at The Esplanade, because Policy 4.12 (No build CHMA) pertains to an unmanaged 50 year scenario for shoreline retreat on open coasts, which by definition does not apply in this area.

I submit that building of sea walls, and/or their maintenance, should be a discretionary activity (rather than prohibited), in order to give the council some flexibility for future management requirements.

# DISCUSSION AND RATIONALE

The overall impression one gets from the PDP, in terms of coastal management in response to sea level rise estimates, is a strategy of gradual abandonment of existing dwellings and infrastructure, and submission to natural processes and the presumed inexorable landward advance of dunes.

But in already well-developed areas, this is plainly not practical. Nor will it even be required, or at least it could be avoided, for virtually all, if not all, areas over the next 100 years. It is unclear whether KCDC expects they will have to progressively abandon urban areas, or whether they are just being compliant in notifying the possibility, however remote. Nevertheless, the net outcome is a sense of unease that is out of proportion with reality.

This submission questions whether there is a need for the idealistic and alarmist reactions to projections of sea level rise in a PDP that will only be current for the next ten years, but which is ironically and prematurely adversely affecting the rights and well-being of the very property owners it is seeking to protect. As well, this submission questions the need to renounce the ability of the built environment to supply effective and sustainable defences against sea level rise within the 100 year scenarios of the PDP. Moreover, in areas where man-made defences are effective and pragmatic, the notion that “natural remedies” are a better option is idealistic and misguided.

## Sea walls (hard protection structures)

There are various statements made on the subject of sea walls:

Policy 25 of the NZCPS states “*discourage hard protection structures and promote the use of alternatives to them, including natural defences*.” This is evidently intended for new structures, with respect to new subdivisions or developments, as opposed to existing.

Policy 27 (Strategies for protecting significant existing development from coastal hazard risk) states that one of the options for reducing coastal hazard risk is: “*recognising that hard protection structures may be the only practical means to protect existing infrastructure of national or regional importance, to sustain the potential of built physical resources to meet the reasonably foreseeable needs of future generations.”*

It also states as an option:”*identifying and planning for transition mechanisms and timeframes for moving to more sustainable approaches”.*

The Regional Policy Statement (2009) Policy 51, states that “*particular regard is given to avoiding hard structural protection works or hard engineering methods unless it is necessary to protect existing development or property from unacceptable risk and the works form part of a long-term hazard management strategy that represents the best practicable option for the future”*.

In the DP Review, section 32, Policy 4.9, p50, it is stated that “*hard protection structures will be actively discouraged by: c) avoiding new development where no specific planning strategy has been developed for areas where there are existing public coastal protection structures*”. What on earth does this mean? In the same section, the analysis has a heavy bias towards “benefits”, yet some of these are idealistic and of somewhat dubious merit. Moreover, the sole “cost” is simply stated as “*potential loss of many beachfront properties if soft options do not prove to be practical or cost effective*”. The council’s own objections to using sea walls relate in part to impracticality and cost, which is ironic. But I contend that the real issue here is that the council has lost sight of what is really important to its rate-paying, house-owning constituents. How can “*minimising restricted (beach) access*” (one of the “benefits”) outweigh the loss of even a single property?

In KCDC’s list of FAQ the question “What about existing sea wall” is answered thus: “*Importantly, both the 50 and 100 year shoreline predictions assume that all seawalls will fail at some stage during this time. The risk assessment does not presume damaged seawalls will be repaired beyond 50 years because this may become impractical and unaffordable.”*

Also in the FAQ list the question “**What is wrong with seawalls” is answered thus: “***Seawalls and other hard structures have significant negative effects on the natural environment. This includes reduced beach amenity and restrictions to beach access, as well as increased erosion, known as ‘end effects’, on the land at either end of the wall. With sea levels likely to rise sea walls would need to be increasingly stronger and higher, which would be unattractive and very expensive. Development also reduces the ability of natural coastal processes to enable dunes to function as a natural barrier to coastal hazards.*”

These statements are self-serving and idealistic, and not necessarily the best outcome. Clearly man-made structures of any type have “negative effects on the natural environment”. However, they already exist. Seawalls along the coast have steps to the beach, so restrictions to beach access are not unduly compromised except for wheel chairs (and these would struggle on most existing sandy access paths to the beach). But the last sentence is particularly eye-raising. The calculations of erosion in the Coastal Systems Ltd report incorporate a factor for dune instability, with, counter-intuitively, erosion increasing the higher the dunes are. It is contradictory to make such calculations, and then call dunes a barrier to hazards. The end point of the KCDC answer is that we should abandon seawalls, bulldoze all the roads and houses, and let dunes re-establish (or not).

I contend that for the sea wall fronting The Esplanade in Raumati South, which is newly refurbished and high, it is implausible that any storm would render it unrepairable. The cost to council of relocating infrastructure (i.e. the road and facilities) would be much greater than any maintenance of the wall. It makes no sense to abandon an existing effective structure protecting millions of dollars of property and council infrastructure, in favour of promoting “natural defences”. As would be obvious, the Coastal Systems Ltd report (2012) clearly shows that the least erosion occurs where sea walls are present. The council should aim to maintain this wall in its long-term plans.

Where the Council already has a robust seawall protection structure, such as the revamped wall beside The Esplanade in Raumati South, projections for the 100 year scenario should start from the estimated time that the sea wall becomes no longer effective if unmanaged. Presumably the Council have an engineering estimate of the projected longevity of this wall, as a basis for securing budgeting for the recent refurbishment of it. Such an estimate presumably includes an analysis of the predicted damage to be inflicted by storms of varying severity and frequency. It might also consider erosion incursions around the ends of the wall where equivalent protection is lacking, but this doesn’t necessarily negate the value of the seawall, or preclude lateral remediation after a “one-off’ storm event. Moreover, properties that are further distance (parallel to the coastline) from the ends of the wall than even the current 100 year erosion distances (orthogonal to the coastline), are not likely to be affected by lateral incursions around the ends of the wall. If the seawall can withstand “the 100 year” storm, or a series of lesser storms, then logically we don’t need to abandon it. Nor should we be attempting to predict 100 years of erosion opposite it.

Recommendation:

* The Council needs to consider how “long’ (i.e. how far ahead) its Long Term Plan actually means, with respect to abandoning its investment in the Raumati south seawall, and incurring new expense and social disruption and aggravation to move infrastructure. The estimated timeframe should factor in the likely recurrence intervals for mega-storms that might render the wall useless. The erosion prediction calculations should then start from that time on, not now. For the newly rebuilt Esplanade wall, 50 years hence would seem a reasonable start time for erosion calculations. The “one size fits all straight line approach to drawing the 100 year lines doesn’t work in this situation. The 100 year lines need to be redrawn seaward of their present position to acknowledge this, and be commensurate with the actual period that erosion is expected during the next 100 years.

## Collateral damage with CHMA and Managed retreat policies

KCDC seeks to define a coastal environment thus:



The list above is contrary in its subject matter, in that it incorporates natural forms and relic man-made forms. A notable omission from the list above is any factoring in of current human involvement and participation in the coastal environment. The allowance of heritage character omits the notion that contemporary residents should have precedence over things that are past. The policy of managed retreat is predicated on preservation of the natural environment at all cost. By definition this is an impossible task, because humans have to live somewhere, and will always have an imprint on the land.

The focus on natural environment sustenance and natural defences has introduced a number of inconsistent or contradictory policies (such as trying to build up or encourage sand dune growth (even to develop new young dunes) with planting, whilst elsewhere accepting an expert report that even high dunes will erode upon sea level rise (in itself contestable, as argued below). Some of the dune restoration activities championed in Policies 4.3 (a), 4.4 (c) and 4.7, and in chapter 4 page 10 of the PDP, will be ineffective if the Coastal Systems Ltd calculations of impending marine incursion due to sea level rise are to be believed.

The council reverts to directives within the NZCPS to argue for some of its actions. However, this cuts both ways. Policy 3 (Precautionary approach) of the NZCPS includes the item “*avoidable social and economic loss and harm to communities does not occur*”. Policy 25 (Subdivision, use and development..) states “*avoid increasing the risk of social, environmental and economic harm from coastal hazards*”. Both of these should also be taken to include avoiding detrimental outcomes for current property owners in the present day.

Through the CHMA designations the Council is placing an impost on existing property owners (who have already purchased on a “buyer beware” basis. Part of this impost is a potential drop in current property values, part a reduced ability for properties to be sold, and part a reduced ability to improve properties. But in the case of properties within the 100 year lines, no damage might occur in theory for 100 years. Renovations undertaken tomorrow, will have utility for 100 years

. There is no need to impose undue restrictions based on modelling that looks so far into the future. Even renovations done in say 40 years time will be good for 60 years, but in this case the ability to do the renovations will be predicated by the physical environment at that time (and no doubt controlled by a contemporary District Plan that has been revised accordingly). The point is, property owners of the day should bear this impost, not current residents. In future decades, properties will have physical attributes that reflect the coastal processes of the time, and any revised projections for the effects of climate change. Their property market value will in turn reflect these. A very recent example was a property in southern Wairarapa that is subject to coastal erosion, which received enquiries from many interested purchasers overseas, but sold at a modest sum commensurate with the hazard risk (DomPost, Saturday 23 March). The “buyer beware” principle should still apply.

The KCDC appears to be taking a defensive position in terms of protecting itself against future liabilities, should properties be damaged by natural coastal erosion events. But there are ways in which Council could provide legal caveats. It is a shame that the council appear to want to inhibit the gentrification of coastal neighbourhoods, when it ought to be possible for the council to have legal caveats attached to the building consent process that would protect it from any liability caused by future coastal hazard-related damage, in perpetuity.

Recommendation:

* The Council should consider whether they are unduly influencing the free market, and whether this is appropriate for putative circumstances extending as far ahead as 100 years.

With their strategy of “managed retreat” in their long-term plan, the Council is taking the “Coast” out of “Kapiti Coast”. The essence of the region is the coastline, which lures people to the region. Many of the most desirable areas that people want to live are on or very near to the coast. These areas consequently have intrinsic high value, which is accentuated by wealth that is brought in to enhance and improve existing properties, resulting in whole neighbourhoods being slowly gentrified, and hence even more desirable. However, the reverse will happen under “managed retreat”. Whilst a lot of discussion is given on the need to protect visual elements of natural aspects of the coast, little thought appears to have given for the potential for built areas to become derelict and an eyesore.

The explanation for Policy 4.6 that managed retreat is likely the only way to achieve a natural shoreline implicitly assumes that reversion to nature is what the council wants (ahead of maintaining existing habitats for humans). So, again with reference to Chapter 4, page 10, it is implicit that the KCDC intends for the hard protection structures at Raumati South to be abandoned in due course, so that there will be a return to having “dry beach above the mean water mark”, and “improved visual effects”. These things are purported to be detrimentally impinging on “human values”, yet there is no consideration of the human values that would be more detrimentally affected by laying waste to one property after another. Moreover, dozens of people happily use the walkway provided by the seawall each day, so where is the loss of “human value” there? And as a brilliant example of how a council can create a fantastic public amenity, I draw KCDC’s attention to the walkway that extends from Port Taranaki to Bell Block at New Plymouth, which encompasses any manner of native habitats, recreational use facilities, and which is used by hundreds of people daily. That walkway also includes a massive sea wall.

Recommendations:

* That the Council considers the effect of their policies on the perceptions of people considering moving into the region, especially those for whom proximity to the coast itself is the appeal.
* That the Council similarly considers what effects their policies will have on the physical character and appearance and desirability of already built areas along the coastline.

## Calculations

The 2012 Coastal Systems Ltd report, repeated in KCDC documents, states that the hazard assessment is “empirically-based”. However, the calculations include predictions, so in fact are not entirely empirical.

The approach used is a generic one, and there is an acknowledgement that some results are inconsistent due to natural variations along the coast and varying management regime. On this very admission, it is clearly too simplistic to apply the CHMA zones in the manner the council has.

The report states that the assessment incorporates hazard magnitude and probability, yet there are no values supplied on the probability of such hazards occurring.

In Coastal Systems Ltd 2008 report (Part 3, Database, p. 6), it is interesting to note the following comment with respect to existing structures: “…. *it is not anticipated that these structures will cease to be maintained, or that other management practices be discontinued….”.*

There are several ambiguities in the Coastal Systems Ltd 2012 report, with respect to definitions and predicted managed and unmanaged 50 year erosion distances (page 3). The term “managed” is defined as maintenance and repair of community seawalls. However, areas with seawalls are modelled as “managed” and ‘unmanaged”, the latter apparently to simulate “a natural state”. Conversely, localities that don’t have seawalls are cited (e.g. QEII coast, Te Horo Beach etc) for the 50 year managed scenario. Perhaps the managed scenarios are hypothetical, but this is odd given the councils preference not to create new sea walls. Moreover, the highest erosion distance in the 50 year managed (120 m) is much higher than the maximum for unmanaged (72.2 m).The mean erosion distances for each of the two scenarios are only 1.4 m different, which also seems very odd.

The Coastal Systems Ltd calculations for the 100 year scenario are not consistent. They adopt calculation input values at the high end (worst case) of the possible range (the precautionary principle), whereas the 50 year does not. One example was the use of the lowest 2008 guidance value (rounded) for sea level rise for 50 years, but using an additional increment to the lowest guidance value for 100 years. They should be done the same way. Moreover, the range of possibilities is not expressed in terms of probabilities (or likelihoods). Thus the stated calculations run the risk of being interpreted as an absolute fait accompli, which they are not.

There are a host of other variables used to amplify the precautionary principle (page 19 of 2012 report). One example is a weighting factor in the long-term shoreline analysis to emphasise more recent erosion. This should only be done if that erosion is significantly greater than the long-run range of short-term erosion fluctuations, which are otherwise already accounted for.

At face value, the calculation for predicted erosion distance seems flawed. It is additive, and appears to double count some factors. The 2012 Coastal Systems Ltd report says the variables are independent, yet the long-term historical rate is the net outcome of the various physical parameters in combination in the past, and intrinsically incorporates factors such as short-term variations, dune stability and past sea level rise. Therefore, one could simply project the long-term trend forwards, with perhaps an upwards modifier to cater for the assumption that the rate of sea level rise will increase over time. Perhaps the results will be similar. However, the addition of “combined uncertainty” for the future predictions should also be balanced by a subtraction of “combined uncertainty” (to allow for the possibility that the projected rates of change and/or their impacts are less than those used in calculation).

The combined uncertainty values (section 3.2.5, page 23, 2012 Coastal Systems Ltd report) are again additive, which creates a worst-case calculation. There is no attempt to balance this with “subtractive” errors. Overall, the uncertainty values are much higher than the individual components, and therefore add a significant bias to the end result (i.e. predicted erosion distances).

It seems counter-intuitive for there to be any uncertainty value where shore-parallel protection structures are present (page 23, 2012 report).. Surely if the rate of sea level rise is 0, the advance is 0? And it is special pleading to argue for an additional 5 m of uncertainty to allow for scour ahead of the structures, especially as this means the uncertainty value ends up being greater than for natural coasts!

The erosion prediction lines appear to be predicated on a calculation that factors in the need to flatten high dunes to an equilibrium elevation profile, which has the effect of translating the hazard line tens of metres inland. It again seems counter-intuitive that the greatest shoreline advance will be where the dunes are highest (dune scarp adjustment, page 23, Coastal Systems Ltd report 2012). Stormy seas are more likely to encroach over low-lying dunes in the first instance, leaving higher dunes intact, but probably with an eroded seaward scarp. The dunes on the shoreline at QEII park show this. So it becomes a question of how much time is required to cut back the larger dunes, which in turn is dependent on the periodicity of the most severely damaging storm events. It is implicit in the calculations that there will be enough such events over the modelled period(s), but this won’t necessarily be the case.

It is extremely difficult to follow the calculations, explanations, figures and figure annotations in Appendix C, Profile Extrapolation analysis (Coastal Systems Ltd report 2012).

## Physical parameters

The sea wall in Raumati South was built in the 1950’s and improved in the late 1970’s after a storm in 1976. So parts of the wall appear to have lasted over 60 years, and other parts are still operative after c. 35 years. These timeframes are close to the duration of the 50 year modelled period. The Esplanade part of the wall was rebuilt in 2010, presumably because of the council assets adjacent, and because storm surges had recently overtopped the wall as it was. However, there was no catastrophic physical failure of the wall. Now that this part at least has been so substantially re-built, it seems very unlikely that houses/properties going back 4 deep from the shore (plus a road) will be lost (implicit in the proposed management scheme) within a timeframe of just over twice that periodicity (i.e. 100 years).

The argument that sea level rise is compounded by increased storminess is speculative and alarmist. There is real uncertainty as to modelled projections of windiness, storminess and rainfall for this region in future (see <http://www.niwa.co.nz/our-science/climate/information-and-resources/clivar/scenarios>). Even if there was an increase in rain, this would lead to detrital runoff and replenishment of sand stocks for beaches. Only in winter do climate models predict increasing westerly flow over New Zealand (with decreases predicted for summer and autumn), and even then the implications for frequency and severity of storms is completely uncertain. Recent (but perhaps less authoritative) articles in the press have talked about New Zealand getting a more Mediterranean climate with less wind.

The daily tidal range at Waikanae River mouth is up to 1.9 m (max. high at 1.9m, min. low at 0m, mean sea level at 0.9 m); source LINZ [http://www.linz.govt.nz/docs/hydro/tidal-info/tide-tables/sec-ports/port-taranaki.pdf]. Thus the maximum high tide is 1 m higher than present mean sea level which is virtually the same amount as expected sea level rise modelled over 100 years in the Coastal Systems Ltd report. Moreover, the mean high tide is 0.9 m above mean sea level (http://www.kapiticoast.govt.nz/Documents/Downloads/District-Plan-Review/coastal-hazards/reports/Wellington-Region-Storm-Tide-Modelling.pdf), which is the same amount as predicted sea level rise. This puts future projections of sea level rise into perspective. The rate of projected rise is 5 times greater than the rate of c. 1.8 mm/yr over the past 120 years (http://www.kapiticoast.govt.nz/Documents/Downloads/District-Plan-Review/coastal-hazards/reports/Sea-level-rise.pdf), but is still only a mere 9 mm a year. On a comparative basis, the maximum high tide in 100 years would be only 1.8 m above present mean sea level. This is hardly a cause for concern with respect to the height of the sea wall at The Esplanade which is several metres higher still. The wall should also cater to “the perfect storm”, in which high tides, low atmospheric pressure and strong winds combine to give powerful sea height surges. Even if some minor damage was inflicted, such storms are sufficiently infrequent that any remediation required should be quickly dealt with.

According to the PDP, the current long term shoreline retreat in areas some distance south of the cuspate foreland is 0.25m/yr (or 25 m in 100 years (PDP, Chpt.4 page 9). This distance barely encroaches about one third into the width of the proposed CHMA no-build zone (Map 14C hazard lines). Given that projected sea level rise is within the existing range of semi-diurnal tide heights, why is the 100 year line on the hazard map(s) approximately three times further inland than the current long-term retreat? Moreover, after considering sea level rise, the 100 year projection for retreat is 40-60 m (PDP, Chpt.4 page 9). Again, why are the 100 year hazard lines on the maps so much further inland than these estimates?

## Comments on peer review of the 2012 Coastal Systems Ltd update report on erosion hazard assessment

In the FAQ, the statements responding to the question **“How was the coastal hazard assessment peer reviewed” are misleading.** Dr [Mike Shepherd is listed as the principal reviewer. He may well be an authority; over 40 years he has published some papers relevant to this coastal region, although he does not appear to have published much research (as first author) in the past decade. He is not explicitly included in the references to previous work on hazards along the Kapiti Coast in the report by the Focus Group, commissioned by KCDC (District plan Review – coastal Hazard Provisions, p. 3). The Council lists Dr Shepherd as being a coastal geomorphologist at Massey University, but he appears to have retired from this post. Rather, Dr Shepherd is a colleague of the author, and](http://www.coastalsystems.co.nz/who_we_are_shepherd.html) is an Associate of Coastal Systems Ltd CachedYou +1'd this publicly. [Undo](http://www.google.co.nz/), the company of the main report author (Roger Shand). Dr Shepherd was the main supervisor of Dr Shand’s PhD dissertation. The one page “public” review by Dr Shepherd contained in the Coastal Systems Ltd report (2012) for the most part simply regurgitates and paraphrases what the author has written in his summary. There is very little in the way of analysis or objective technical critique in Dr Shepherd’s public statement, and he ends with a plug for doing more work. One of the other reviewers, Dr Bob Kirk, is also an Associate of Coastal Systems Ltd. It is sound practice to have immediate colleagues review research, and this is appropriate for consultancy work. It is even better practice to solicit external peer review. This was evidently done, but it is not clear what the other listed reviewers commented on, or to what level. The report itself has several typographical errors, and (at least) one glaring error in one of the figure captions. Overall, this implies that the report was done in a hurry, and was not thoroughly reviewed, which allows speculation as to its accuracy and rigour.