

Scoping and Feasibility Study of Coastal Protection Works for the Haumoana – Te Awanga Coastline

**A Joint Project of
Hastings District Council and
Hawkes Bay Regional Council**

prepared by



27 May 2011

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EXECUTIVE SUMMARY

- This report provides an analysis of the feasibility of protecting the Haumoana coastline through the construction of a series of groynes. It considers a current design proposal for these structures, the outcomes of an iterative peer review process on the engineering feasibility and costs of the proposal, and the findings of a cost-benefit analysis of alternatives to arrive at an overall conclusion on project feasibility, within the national and regional policy context of the sustainable management of the coast.
- Important conclusions from the groyne feasibility study were that the most appropriate form of protection for the Haumoana coast is some form of groyne field. Furthermore, that a naturally occurring crenulate or parabolic shape can theoretically be used to predict shoreline shape between groynes, and therefore to design optimum spacing-to-length ratio for the groynes to avoid down-drift erosion.
- If the project was to be proceeded with there are a number of crucial investigations which are needed to confirm the design and to gain a better understanding of the down-drift effects of the proposal. These include a closer analysis of the existing Tukituki and East Clive groyne experience, a repeat run of the shoreline position modeling using the agreed most appropriate wave approach directions, and a desktop sensitivity analysis of the uncertainty limits of the key parameters, such as inshore wave approach direction, shoreline rotation, and effective groyne.
- In undiscounted dollar terms, there remains a \$3.2 million difference in the cost of construction between the project proponents at \$6.7 million and the peer reviewers at \$9.9 million. Most of this difference can be accounted for in the amount of material needed up-front for gravel to fill the beach area south of each groyne (the beach fillets). The alternative is to allow natural filling with a greater risk of down-drift effects. By adopting the higher value in the cost benefit analysis, at least some of the costs of mitigating down-drift effects have been built into the analysis.
- In discounted dollar terms, the costs of the project are estimated at \$7.7 million, compared with the benefits of the project, which range from \$8.4 million to \$12.8 million, demonstrating a net positive outcome for the community. The benefits are comprised mainly of increased property values and avoided infrastructure costs.
- While this report and the accompanying analyses have focused on the quantifiable aspects of the matter, the community costs of uncertainty, not the least being the personal stress of living on the 'front-line' at Haumoana must not be underestimated.
- The New Zealand Coastal Policy Statement 2010, like its predecessor, and the Regional Coastal Environment Plan place a significant hurdle for any coastal protection works. There is a clear policy preference to avoid such structures. Nevertheless, the policy setting is underpinned by a desire to protect the natural

character of the coastline and to ensure that such structures represent a long term sustainable solution. Based on desk-top research and the collective views of Council officers and local people, this report concludes that the affected coastline does not have high natural character. The groyne structures are also compatible with the natural systems, unlike a seawall, which is interruptive of natural systems. As a consequence, the proposal's consistency with the policy framework rests on whether down-drift effects can be appropriately managed and the groynes are acceptable to the community as a long term solution.

- If the resource consent application was to proceed it would be most efficiently and effectively considered by way of direct referral to the Environment Court.
- It is concluded that an application made by HDC, assuming positive outcomes from the additional studies that are recommended in the report, and wide community support, would have a reasonably good chance of success in the Environment Court.
- Notwithstanding the above conclusion, the investigations contributing to the conclusion were focused on the specific coastal systems that affect this part of the southern Hawke's Bay. They do not take into account the wider river and coastal systems and human activities that are interrelated in the risk of coastal erosion and inundation, and the supply and demand for gravel.
- Significantly, this report does not address the distributional impacts of the proposal (i.e. who should pay) in the event that it was to proceed. The majority of the benefits identified above are private benefits. However, a project which involves the management of public resources within the public domain is most appropriately one which is promoted by a public authority. A public authority is able to reflect community wide interests and respond to the long term nature of such an intervention in the coastal environment and its potential effects on wider resources.

THE CONSULTANT'S BRIEF

Haumoana and Te Awanga are subject to serious coastal erosion and the risk of sea-inundation. Over the last 30 - 40 years, properties, particularly in Haumoana, have periodically suffered significant damage from periodic storm events and ongoing coastal erosion. Over the next 100 years these hazards are predicted to increase in severity through ongoing coastal erosion and sea-level rise and increased intensity of storm events.

The Hastings District Council (**HDC**) and Hawke's Bay Regional Council (**HBRC**) have been grappling with this problem for a number of years. Responses have included investigations to establish the nature of coastal processes operating along this coast, the identification of hazard zones, and investigations into options to mitigate the effects of ongoing coastal erosion. These options can be categorised broadly as hard engineering options and managed retreat.

In response to Council reports regarding these two options a community group of concerned property owners and residents formed what is now known as the 'Walking on Water' group (**WOW**) in May 2009. WOW's vision is to establish a hard engineering solution¹ to protect beachfront properties along the Haumoana coastline. Both Councils have agreed to work with WOW to achieve a long term solution to mitigate the impact of coastal erosion on the Haumoana community.

WOW is in the process of preparing a resource consent application for the construction of a series of groynes along the Haumoana coastline. It has engaged a coastal engineering consultant to undertake the feasibility and design aspects of the project. In order to assist WOW in understanding the size and complexity of the process, and to assist their own engagement with the project, the Councils decided on 5 February 2010 to co-fund an independent Resource Management Act (**RMA**) consultant to investigate the following matters:

- The scope of work and level of detail that would need to be completed sufficient to support applications for the necessary resource consents.
- Indicative costs and timeframes to compile the information and specialist consultant advice required to make and pursue a resource consent application for hard engineering works.
- The likelihood of such an application being considered as a nationally significant project which could be directly referred to the Environmental Protection Agency.
- The feasibility of pursuing a hard engineering solution along the Haumoana / Te Awanga coast through the resource consent process given national and regional policies.

¹ While reference is made here to a hard engineering option there is uncertainty about the accuracy of this label for the proposed groynes. This is due to the groynes working together with the existing coastal processes to mitigate the risk of coastal erosion.

SCOPE OF WORK AND PROJECT FEASIBILITY

The scope of work necessary to support an application for hard engineering structures in the coastal environment is extensive. It includes a wide range of social, environmental and economic effects, as outlined in Table 1 below. The matters in Table 1 reflect the dynamic nature of the coastal environment, the coast as a public resource, and the potential effects on a wide range of private and public assets and activities. Due to the national and regional policy settings in relation to hard engineering structures it is also necessary to undertake an analysis to establish the best practicable option for the management of coastal erosion. The analysis must also be undertaken with an assumed time-frame applying to the erosion events, the proposed intervention and the other effects on the environment and community.

Table 1: Potential effects of coastal erosion and interventions at Haumoana

Social effects	Environmental effects	Economic effects
Beach amenity values	Biodiversity	Construction works and maintenance costs
Public access	Natural character	Property costs
Construction nuisance	Coastal processes	Local economy impacts
Public safety	Coastal flooding	Transaction costs
Impact on Councils	Climate change	Tourism
Uncertainty	Environmental footprint	Private capital changes
Public resistance	Reversibility of option	Protection of public infrastructure
Cultural values		
Historic heritage		
Equity		

PROJECT DESIGN AND FEASIBILITY

However, before any of these effects can be considered it is necessary for the applicant to develop a project design that is able to successfully protect the coastal properties and assets at risk. WOW has engaged Moynihan Coastal Consultants Limited (**MCCL**) to investigate the feasibility of a hard engineering response to the coastal erosion at Haumoana. MCCL has designed a series of 13 groynes to prevent the erosion that is currently occurring and future erosion. The groyne design is based on a theoretical model of the coastal system of the southern Hawke's Bay – known as the crenulate bay theory – and existing available information about the wave climate and the actual experience of the existing groyne at the

Tukituki River mouth. MCCL has also prepared an estimated cost schedule for the groyne project.

In order to assess whether the design MCCL proposed by MCCL is sufficiently robust to support an application for resource consent it was decided to subject the design to a peer review process. The review consisted of two parts. Firstly, a review was undertaken of the assumptions about coastal processes and the theory which underpins the design, whether the design would achieve a reduction in erosion and inundation risk and the extent of 'down-drift' erosion effects further north along the coast which might result. This review was undertaken by Derek Todd of Dtec Consulting Limited² (**Dtec**). Secondly, a review by Opus International Consultants Limited (**Opus**) was undertaken of the 'constructability' of the design and the MCCL cost estimates³.

The peer review was an iterative process which included a caucus meeting in January 2011 between MCCL, Dtec and Opus. This was a productive meeting that provided MCCL and Dtec the opportunity to resolve differences in assumptions and understandings on coastal processes and design outcomes, and for MCCL and Opus to compare costing assumptions and inputs. The caucus meeting has led to some further exchanges of information and opinions on the assumptions for groyne length and spacing, and the volume of material needed to fill the fillets or beach spaces between groynes. It has also resulted in a narrowing of cost differences between MCCL and Opus.

The following sections of this report summarise the key points of agreement and identifies matters which still cause uncertainty about the feasibility and cost of the project, including the nature and extent of down-drift effects.

DESIGN FEASIBILITY: THE DTEC PEER REVIEW

Dtec's initial peer review was based on the original MCCL design and costings. The conclusions of the review were as follows:

The purpose of this peer review is to assess whether the proposal is practical in respect to the coastal processes operating on this coast and that it has sufficient likelihood of gaining the necessary resource consents. My conclusion is that the MCCL reports do not provide sufficient information on the details of several key aspects of the methodologies and assumptions of the coastal processes used to quantify both the potential positive and adverse effects to have confidence that it would gain resource consent.

In particular future investigations required include:

- Resolve the discrepancies in the inshore wave approach direction at breaking point for appropriate sites along the south Hawke's Bay coast.
- Confirm that groyne profiles at all groynes in the area extend beyond the groyne toe.

² *Peer Review of Geomorphologic Aspects of Proposed Groyne Field at Haumoana, Hawkes Bay*, Dtec Consulting Ltd, September 2010

³ *Haumoana Te Awanga Coastal Structures Review*, Opus International Consultants Limited, September 14 2010.

- Conduct further high resolution shoreline modelling such as reported in T&T (2009) to confirm:
 - a) Groyne fillet shapes and volumes including the up-drift limits of protection from the Stage 1 and 2 groynes.
 - b) That the groyne lengths and spacing will provide long-term reduction in erosion rates over the whole 2 km shoreline length of the proposal, particularly from East Road to the Tukituki groyne.
 - c) The benefits of artificially filling the groyne cells, versus longer-term down-drift injections of smaller volumes.
 - d) The down-drift effects of the modified groyne layout incorporating the existing East Clive groynes and Hastings sewer outfall.
- Assessments on the impact of the down-drift erosion and sediment transport reduction on the stability and management of the Tukituki river mouth, the operation and stability of the East Clive groynes, the Hastings sewer outfall, and the future sustainability of gravel extraction at Awatoto.

Following the caucus session agreement was reached between Dtec and MCCL on two principal points as follows:

1. Should the Haumoana coast be protected, the most appropriate method is some form of groyne field, which may or may not be coupled with some other protection strategy.
2. That a naturally occurring crenulate or parabolic shape can theoretically be used to predict shoreline shape between groynes, and therefore also to design optimum spacing-to-length ratio for the groynes to avoid as far as possible down-drift erosion.

On the basis of this agreement, the feasibility of the groyne proposal for protecting the coast from long term erosion is accepted in this report.

Notwithstanding the above agreement, the Dtec supplementary report, produced following the caucus session had reservations about the following matters which would need to be resolved in final design and costing:

- The volume of sediment likely to be trapped in groyne fillets,
- The need for artificial filling of the fillets,
- The scale of the groyne field required,
- The scale and significance of the potential down-drift effects on shoreline position.

The Dtec reservations about these matters all derive from the uncertainty of the application of the crenulate bay model in a dynamic situation where continued sediment supply and transport around the ends of the proposed, and existing, groynes will occur. Related to this matter is the uncertainty of the most appropriate inshore wave approach direction to apply to the model.

The Dtec report considers that there are ways in which to address these uncertainties in final design and it has been agreed that, in the event a resource consent application is proceeded with, this work would include the following components:

- An in-depth analysis of the position, shape, and profile changes at the Tukituki and East Clive groynes as the basis for determining performance, sediment by-passing, shoreline rotation, and down drift effects of the proposed groynes. This includes the groyne project without Stage 3.
- A repeat run of the Tonkin & Taylor UNIBEST shoreline position modeling using the agreed most appropriate wave approach directions. The modeling would include the East Clive groynes and the Hastings Sewer outfall, to better determine the likely long-shore extent and cross-shore scale of the down-drift effects of the proposed groyne field.
- A desktop sensitivity analysis of the uncertainty limits of the key parameters such as inshore wave approach direction, shoreline rotation, and effective groyne length in calculating the performance and down-drift effects of the proposed groyne field.

The Dtec report also made a general comment on the effect of the groynes on inundation (the potential for land in the coastal area to be inundated by the sea). The preliminary conclusion was that while the groyne field would not directly address inundation risk, the increasing width of beach buffer should result in overtopping and inundation volumes decreasing. Of course, this benefit would only apply to beach sections which have been widened by groynes and not to the north or south of the groyne area.

THE NEED FOR ARTIFICIAL FILLING OF THE GROYNES AND DOWN-DRIFT EFFECTS

The uncertainties outlined above reflect the dynamic environment in which the groyne proposal is being proposed. For present purposes they also explain the single greatest difference in the costing of the project by MCCL and Opus. Whilst acknowledging during the caucus session that the need for artificial filling of the groynes would be the subject of investigation during final design, the MCCL economic analysis costs the gravel needed to fill the groynes at approximately \$800,000 (undiscounted) based on an overall need of 60,000m³ of gravel.⁴ By comparison the Opus costing, which was supported by Dtec, ranges from \$3.1M for 94,500m³ adopting a mid-point in a range of volumes that will artificially fill the fillets, to \$4.3M for 130,000m³ of gravel, adopting the top end of this range. Notwithstanding these cost differences, it is proposed that the final design would take some of the uncertainty out of the project and that cost differences need to be considered in the context of the overall cost-benefit framework.

Included in the above gravel volumes is 30,000m³ for the filling of fillets in the four Stage 3 groynes. It was agreed between MCCL and Dtec at the caucus meeting that an 'adaptive management' approach to the groyne proposal should be taken, based on monitoring of the effects of Stages 1 and 2 groynes. This monitoring of changes in beach shape and position would also be used to modify groyne design and location as Stages 1 and 2 progressed. It is

⁴ Haumoana Erosion Protection Economic Evaluation April 2011, MCCL p.7

possible that, as a result of this monitoring, Stage 3 would not proceed but that direct beach re-nourishment to down-drift sections of beach might be adopted.

The MCCL proposal considers that Stage 3 would be necessary to halt “background status quo erosion” south of the Tukituki groyne, instead absorbing that erosion to the north of the groyne, up as far as the East Clive sewer outfall. However, the Dtec report expressed concerns about this approach, in particular potential effects on the river mouth functioning, HDC infrastructure (sewer and roading) and gravel supply to the down-drift coast including the Awatoto extraction site. Some of these effects are recognised by MCCL in comments on the peer review.⁵

Finally, in terms of down-drift effects, MCCL and Dtec were in agreement that there would be an ongoing long-term deficit from the groyne intervention in the order of 7,000m³/year. This results from the sections of the shoreline subject to groyne stabilisation no longer passing the same quantities of material north along the shoreline. By way of comparison the current volume of material moving north along the shore is in the order of 40,000m³/year. The deficit could be mitigated, if needed, by direct application of gravel to the potentially affected areas and this would be an ongoing mitigation cost. This cost is not included in the costings, and would have a net present value of approximately \$3.0M, depending on the actual amount needed and its source.⁶

CONSTRUCTION COST COMPARISON

As noted above, the cost of the project prepared by MCCL was peer reviewed by Opus. As a result of the caucus session and later exchanges between the two parties, a schedule of costs has been largely agreed to. In undiscounted terms the MCCL project cost was \$6.7M compared with an Opus cost of \$9.9M. Almost all of the difference is accounted for by the assumptions made on fillet volumes. Further comment on costs is made in the cost-benefit analysis section where, for the purposes of the analysis, the Opus cost has been used. The adoption of the Opus costs which includes a significant additional volume of fillet gravel builds an element of conservatism into the cost figures. It also internalises the costs of some of the short to medium term down-drift effects.

⁵ Comment on Peer Review Reports 2010 by MCCL p.18

⁶ Opus personal comment.

COST BENEFIT FRAMEWORK

While evidence of a successful project design is a necessary component of the information needed to support the application for resource consent, it is just one component to consider in the overall resource consent decision to be made. As mentioned previously, the national and regional policy settings require a comparison of options, and the identification of the best practicable option (**BPO**).⁷ The definition of BPO in the Hawke's Bay Regional Coastal Environmental Plan (**RCEP**) states:

in relation to natural hazards, means the best method for preventing or mitigating the natural hazard having regard, among other things, to:

- (d) the nature of the natural process, or processes, contributing to the hazard and the sensitivity of the coastal environment to those processes; and
- (e) the financial implications, and the effects on the environment, of that option when compared with other options;
- (f) the current state of technical knowledge and the likelihood that the option can be successfully applied.

An economic cost-benefit framework is a recognised means of undertaking this type of analysis, and one which sits well with RMA decision making processes as it adopts a societal perspective on the relevant costs and benefits. HDC engaged Covec Limited (**Covec**) to undertake this analysis and advise on this aspect of the feasibility.

Because cost-benefit analysis is applied from the perspective of society as whole, only those costs imposed on (or benefits received by) one party that are not offset by benefits (or costs) to another party are included. In contrast, 'transfers' from one party to another do not generate a net impact on the overall welfare of society and so do not impact on the estimated costs and benefits. Although transfers have no net impact on welfare, they can raise equity concerns.

COST-BENEFIT SCENARIOS

While the cost-benefit analysis examines three options, the first of these, the 'status quo' is used as a baseline scenario against which to assess the managed retreat and groyne proposal options. In the status quo scenario, no measures to address erosion would be implemented and HDC would not voluntarily carry out any site clean-up of properties affected by erosion. When properties are deemed to be unfit for habitation by HDC, residents would be issued with notices requiring them to vacate their properties. This is likely to occur when sea levels render septic tanks systems unusable and/or building structures become unsafe. It also assumes that HDC would not re-zone any additional land

⁷ See RCEP Policy 18-1; Table 12 and Policy 15-1; Table 9 Item 10.

for replacement properties and that affected residents would be required to establish alternative residential arrangements independently.

IMPACTS ON PRIVATE PROPERTY OWNERS ADOPTING THE STATUS QUO

The status quo leads inevitably to those properties at risk of imminent erosion (the H21 houses) becoming uninhabitable, and this is assumed to occur within five years. The expected value of these properties without any erosion risk is estimated at \$8.5M. Two independent estimates of current values reflect the fact that market values for these properties will already have fallen as a result of the erosion risk. This loss in value is estimated to be in the range of \$2.5M to \$5.7M. The cost-benefit analysis has a 50 year time frame and within this period there are many properties west of Clifton Road and Beach Road expected to suffer from ongoing erosion. Taking into account these additional properties, the Covec report placed a range on the total loss in property value that has already occurred in Haumoana as being between \$6.2M and \$10.0M. Because these losses arising from expected future erosion have already been capitalised into current property values, they are not relevant when considering the status quo when considering this forward looking analysis. In contrast, the Covec report recognises the continued distress being experienced by current owners as a result of the uncertainty regarding their properties and this constitutes a 'cost' to the wider community of the status quo.

IMPACTS ON INFRASTRUCTURE ADOPTING THE STATUS QUO

The status quo will also have effects on infrastructure as follows:

- Portions of Clifton Road, East Road and Beach Road would be affected by erosion and require replacement or the provision of alternative access to properties. This cost would be borne by HDC and passed on to ratepayers.
- Similarly utility infrastructure owned by Unison or HDC would need to be relocated or replaced, as would a section of the New Zealand Cycle Trail project.

The total cost of infrastructure replacement would be in the range of \$2.2M to \$2.8M.

THE MANAGED RETREAT OPTION

The managed retreat option shows many similarities to the status quo. In the managed retreat option HDC take a more active role in the timing of vacating properties and in remediating sites to a natural condition. This generates some relatively minor costs for HDC and it is assumed that the H21 properties are lost one year earlier than in the status quo option. The total of these costs is estimated to be in the order of \$370,000.

The Covec report identifies a number of unquantifiable benefits that the managed retreat option generates. These include the reduced risk of harm to persons and an improved coastal environment, albeit that this latter benefit might be short term.

Given that the majority of impacts for the managed retreat option are the same as for the status quo, managed retreat would have a relatively minor net impact.

THE GROYNE OPTION

Unlike the managed retreat option, the groyne option introduces substantial costs from structures which prevent the destruction of coastal properties and various infrastructure assets (benefits). The main quantifiable costs are the actual costs of construction and the resource consent process.

Based on discussions with representatives of HDC and HBRC and residents, the Covec analysis assumes that there is no significant natural value to this particular stretch of beach, neither would the marine environment be sensitive to the construction of the groynes. Construction effects such as noise, dust and traffic are assumed to be temporary and negligible for the purposes of this analysis.

The construction costs have been estimated at \$9.9M, adopting the Opus figures which have a greater allowance for the volume of fillet gravel. At a discount rate of 8% this translates into a present cost in today's dollars of \$7.2M (Table 2).

The cost of the resource consent process is valued at \$0.5M. A later section of this report comments on the processing options for a resource consent lodged for the groyne project. The \$0.5M cost is considered to be a mid to high range estimate for the project irrespective of whether there is a Council and Environment Court hearing, or the application is directly referred to the Environment Court.

Table 2: Expected impacts of groyne option

Impacts	Potential magnitude
Costs	
RMA processing costs	0.5m
Construction costs (Stages 1, 2 & 3)	7.2m
Increased erosion risk further north	Unquantified
Total quantified costs	\$7.7m
Benefits	
Increased property values	6.2m – 10.0m
Avoided infrastructure costs	2.2m – 2.8m
Increased recreation	Unquantified
Avoided distress	Unquantified
Total quantified benefits	\$8.4m - \$12.8m

The cost of increased down-drift erosion is not quantified at this time. However, by including the higher construction costs this is recognised to some extent. As set out in the Dtec peer review additional studies are needed prior to the lodging of resource consent in order to better describe and quantify the potential down-drift effects. Irrespective of the investigations undertaken at this time there would remain an element of uncertainty and it would be expected that any consent granted would include fairly onerous monitoring conditions, review conditions and bond conditions in order to internalise known, and unknown, and unquantified risks to the project. This would undoubtedly add to the long term costs of the project as set out in Table 2.

In summary, the cost-benefit analysis demonstrates that the project is likely to have a positive net present value, in other words the expected benefits to the community as a whole outweigh the expected costs.

Given that the majority of the benefits generated by groynes accrue to those private property owners who are most effected by existing and future erosion, the key factor in assessing the distributional impact of this option is the outcome of the decision regarding which parties are to pay for the construction of groynes.

NATIONAL AND REGIONAL POLICY FRAMEWORK

The consultant's brief requires an analysis of the national and regional policy framework and, ultimately, a judgement on the likelihood of the groyne proposal passing the statutory tests established by this framework. Within the overall context of the RMA, in particular section 5, the following documents have been considered:

- New Zealand Coastal Policy Statement 2010
- Hawkes Bay Regional Coastal Plan
- Hawkes Bay Regional Coastal Environment Plan
- Hastings District Plan
- Other Documents

NEW ZEALAND COASTAL POLICY STATEMENT 2010

The applications for resource consents for the groynes would be considered in the context of the national and regional policy framework. The highest level policy is found in the recently reviewed New Zealand Coastal Policy Statement 2010 (**NZCPS**)⁸, the only mandatory national policy currently within the RMA. The NZCPS recognises the use, development, and preservation of coastal resources, thus providing the same balanced approach to sustainable management inherent in section 5 of the RMA. This approach is expressed in Objectives 1, 2 and 6 and Policy 1 of the NZCPS as follows:

Objective 1

To safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas, estuaries, dunes and land, by:

- maintaining or enhancing natural biological and physical processes in the coastal environment and recognising their dynamic, complex and interdependent nature;
- protecting representative or significant natural ecosystems and sites of biological importance and maintaining the diversity of New Zealand's indigenous coastal flora and fauna; and
- maintaining coastal water quality, and enhancing it where it has deteriorated from what would otherwise be its natural condition, with significant adverse effects on ecology and habitat, because of discharges associated with human activity.

Objective 2

To preserve the natural character of the coastal environment and protect natural features and landscape values through:

- recognising the characteristics and qualities that contribute to natural character, natural features and landscape values and their location and distribution;
- identifying those areas where various forms of subdivision, use, and development would be inappropriate and protecting them from such activities; and

⁸ Operative 3 December 2010

- encouraging restoration of the coastal environment.

Objective 6

To enable people and communities to provide for their social, economic, and cultural wellbeing and their health and safety, through subdivision, use, and development, recognising that:

- the protection of the values of the coastal environment does not preclude use and development in appropriate places and forms, and within appropriate limits;

.....

Policy 1 Extent and characteristics of the coastal environment

(1) Recognise that the extent and characteristics of the coastal environment vary from region to region and locality to locality; and the issues that arise may have different effects in different localities.

(2) Recognise that the coastal environment includes:

.....

(d) areas at risk from coastal hazards;

.....

(f) elements and features that contribute to the natural character, landscape, visual qualities or amenity values;

.....

(i) physical resources and built facilities, including infrastructure, that have modified the coastal environment.

These objectives and Policy 1 provide a framework within which to consider the other key relevant provisions of the NZCPS in the following sections.

NATURAL CHARACTER

As with NZCPS 1994, the revised NZCPS has a significant focus on natural character, with many objectives and policies aimed at protecting and restoring this element of the coastal environment. Objective 2 and Policy 13 are referred to below as being the most relevant to the Haumoana proposal.

Objective 2

To preserve the natural character of the coastal environment and protect natural features and landscape values through:

- recognising the characteristics and qualities that contribute to natural character, natural features and landscape values and their location and distribution;
- identifying those areas where various forms of subdivision, use, and development would be inappropriate and protecting them from such activities; and
- encouraging restoration of the coastal environment.

Policy 13 Preservation of natural character

(1) To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:

(a) avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and

(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment;

including by:

(c) assessing the natural character of the coastal environment of the region or district, by mapping or otherwise identifying at least areas of high natural character; and

(d) ensuring that regional policy statements, and plans, identify areas where preserving natural character requires objectives, policies and rules, and include those provisions.

(2) Recognise that natural character is not the same as natural features and landscapes or amenity values and may include matters such as:

(a) natural elements, processes and patterns;

(b) biophysical, ecological, geological and geomorphological aspects;

(c) natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;

(d) the natural movement of water and sediment;

(e) the natural darkness of the night sky;

(f) places or areas that are wild or scenic;

(g) a range of natural character from pristine to modified; and

(h) experiential attributes, including the sounds and smell of the sea; and their context or setting.

Comment: The preservation of natural character is one of the main purposes of the provisions of the NZCPS, this policy being an instrument of the RMA, in particular sections 5 and 6. The preservation of natural character becomes a reason for the establishment of other policies such as the maintenance of amenity values and taking care in the introduction of structures. The NZCPS also recognises that some uses of the coastal environment are important to people and communities and that the protection of natural character need not preclude appropriate use and development. It is therefore important for policies and plans to recognise those areas of the coastal environment which are of particular importance to the region. The RCEP provisions incorporate an assessment of natural character, identifying the Cape Kidnappers area (to the southeast of Haumoana) and the Tukituki River mouth area (to the north) as being significant areas (see more on these significant areas below). The Tukituki River Mouth area could be subject to down-drift effects from the groynes.

The assessment of natural character will be a matter of expert advice in a resource consent hearing, however in relation to matters in the objective and policy above, in my view:

- The Haumoana coast does not have outstanding natural character and its natural character has already been compromised by residential development. The low lying

terrain in the area does not offer a wide appreciation of the landscape/seascape continuum, unlike the more elevated features of Cape Kidnappers to the south, where both land to sea and sea to land views are outstanding.

- The natural character values of Cape Kidnappers will not be adversely affected in more than a minor way by the development of groynes.
- The natural character values of the Tukituki River mouth area are unlikely to change as a result of the development of the groynes, albeit that the groynes could potentially have some effect on the amount and movement of sediment and gravel in the river mouth area. This would need to be assessed in the application.
- Many features of natural character referred to in Policy 13(2) would remain largely unchanged if the groynes were to be built.
- The main elements of natural character of the coastal environment being affected by the proposal are visual appearance of the coast and the dynamic processes resulting from the natural movement of sediment ie gravel. The appearance of the coast and the coastal processes are already modified further north along the coast by the construction of two groynes and the gravel abstraction for construction purposes by Winstone. The outcomes of the groyne design and peer review process would need to confirm that any adverse effects of the groynes on the integrity, functioning and resilience of the coastal environment in terms of gravel supply or movement are able to be mitigated.
- Managed retreat could, over time, be expected to result in the removal of houses from the coastal side of Clifton Road. The potential for this option to restore a more natural character along this part of the coast is a matter for assessment in the cost-benefit matrix, in terms of the value that the community placed on the character of the coast with/without any development.

REGIONAL POLICY SETTING

The NZCPS places obligations on regional policy makers in terms of protecting coastal values and directing future development.

Policy 7 Strategic planning

(1) In preparing regional policy statements, and plans:

(a) consider where, how and when to provide for future residential, rural residential, settlement, urban development and other activities in the coastal environment at a regional and district level, and:

(b) identify areas of the coastal environment where particular activities and forms of subdivision, use and development:

(i) are inappropriate; and

(ii) may be inappropriate without the consideration of effects through a resource consent application, notice of requirement for designation or Schedule 1 of the Act process; and provide protection from inappropriate subdivision, use, and development in these areas through objectives, policies and rules.

(2) Identify in regional policy statements, and plans, coastal processes, resources or values that are under threat or at significant risk from adverse cumulative effects. Include provisions in plans to manage these effects. Where practicable, in plans, set thresholds (including zones, standards or targets), or specify acceptable limits to change, to assist in determining when activities causing adverse cumulative effects are to be avoided.

Comment: As noted above, the RCEP has undertaken the assessment required by Policy 7 in the plan preparation process. The outcomes of this assessment are recorded in the following section.

COASTAL HAZARDS

The NZCPS 2010 includes Objective 5 and more detailed Policies 24 – 27 on the identification and management of coastal hazards.

Objective 5

To ensure that coastal hazard risks taking account of climate change, are managed by:

- locating new development away from areas prone to such risks;
- considering responses, including managed retreat, for existing development in this situation; and
- protecting or restoring natural defences to coastal hazards.

Policy 24 Identification of coastal hazards

(1) Identify areas in the coastal environment that are potentially affected by coastal hazards (including tsunami), giving priority to the identification of areas at high risk of being affected. Hazard risks, over at least 100 years, are to be assessed having regard to:

- (a) physical drivers and processes that cause coastal change including sea level rise;
- (b) short-term and long-term natural dynamic fluctuations of erosion and accretion;
- (c) geomorphological character;
- (d) the potential for inundation of the coastal environment, taking into account potential sources, inundation pathways and overland extent;
- (e) cumulative effects of sea level rise, storm surge and wave height under storm conditions;
- (f) influences that humans have had or are having on the coast;
- (g) the extent and permanence of built development; and
- (h) the effects of climate change on:
 - (i) matters (a) to (g) above;
 - (ii) storm frequency, intensity and surges; and
 - (iii) coastal sediment dynamics;

taking into account national guidance and the best available information on the likely effects of climate change on the region or district.

Policy 25 Subdivision, use, and development in areas of coastal hazard risk

In areas potentially affected by coastal hazards over at least the next 100 years:

- (a) avoid increasing the risk of social, environmental and economic harm from coastal hazards;
- (b) avoid redevelopment, or change in land use, that would increase the risk of adverse effects from coastal hazards;
- (c) encourage redevelopment, or change in land use, where that would reduce the risk of adverse effects from coastal hazards, including managed retreat by relocation or removal of existing structures or their abandonment in extreme circumstances, and designing for relocatability or recoverability from hazard events;
- (d) encourage the location of infrastructure away from areas of hazard risk where practicable;
- (e) discourage hard protection structures and promote the use of alternatives to them, including natural defences; and
- (f) consider the potential effects of tsunamis and how to avoid or mitigate them.

Policy 26 Natural defences against coastal hazards

- (1) Provide where appropriate for the protection, restoration or enhancement of natural defences that protect coastal land uses, or sites of significant biodiversity, cultural or historic heritage or geological value, from coastal hazards.
- (2) Recognise that such natural defences include beaches, estuaries, wetlands, intertidal areas, coastal vegetation, dunes and barrier islands.

Policy 27 Strategies for protecting significant existing development from coastal hazard risk

- (1) In areas of significant existing development likely to be affected by coastal hazards, the range of options for reducing coastal hazard risk that should be assessed includes:
 - (a) promoting and identifying long-term sustainable risk reduction approaches including the relocation or removal of existing development or structures at risk;
 - (b) identifying the consequences of potential strategic options relative to the option of 'do-nothing';
 - (c) 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;
 - (d) recognising and considering the environmental and social costs of permitting hard protection structures to protect private property; and
 - (e) identifying and planning for transition mechanisms and timeframes for moving to more sustainable approaches.
- (2) In evaluating options under (1):
 - (a) focus on approaches to risk management that reduce the need for hard protection structures and similar engineering interventions;
 - (b) take into account the nature of the coastal hazard risk and how it might change over at least a 100-year timeframe, including the expected effects of climate change; and
 - (c) evaluate the likely costs and benefits of any proposed coastal hazard risk reduction options.
- (3) Where hard protection structures are considered to be necessary, ensure that the form and location of any structures are designed to minimise adverse effects on the coastal environment.

(4) Hard protection structures, where considered necessary to protect private assets, should not be located on public land if there is no significant public or environmental benefit in doing so.

Comment: The coastal hazard policies, Policies 24 – 27 provide guidance on the matters to be taken into account in addressing a situation where existing private and public infrastructure is at risk from a coastal hazard. While, overall, there appears to be encouragement for managed retreat options (Policy 25(c)), there is also an explicit acknowledgement of the need for hard protection structures (Policies 27(1)(d) and 27(3)).

As with all policy setting there is a need to recognise the purposive intention of the policy. In other words, the environmental issues that are being addressed and the broader policy context must be considered. A review of the literature on coastal hazard management identifies that the NZCPS 2010 policy preference for managed retreat is driven by two general areas of concern⁹, which in turn are manifest in the broader policy of the document (Objective 2 and Policies 13-15 on natural character, and Objective 5 and Policy 3 on hazards and the precautionary approach). These are:

- The adverse effects on natural character, ecosystems and other public values that hard protection structures can have; and
- The long term (un)sustainability of hard protection structures in light of ongoing erosion, storm surges and rising sea level and the potential cost to the community. This is characterised in Figure 1 below.

New Zealand has many examples of failed coastal protection structures which have had various adverse effects on the coastal environment including:

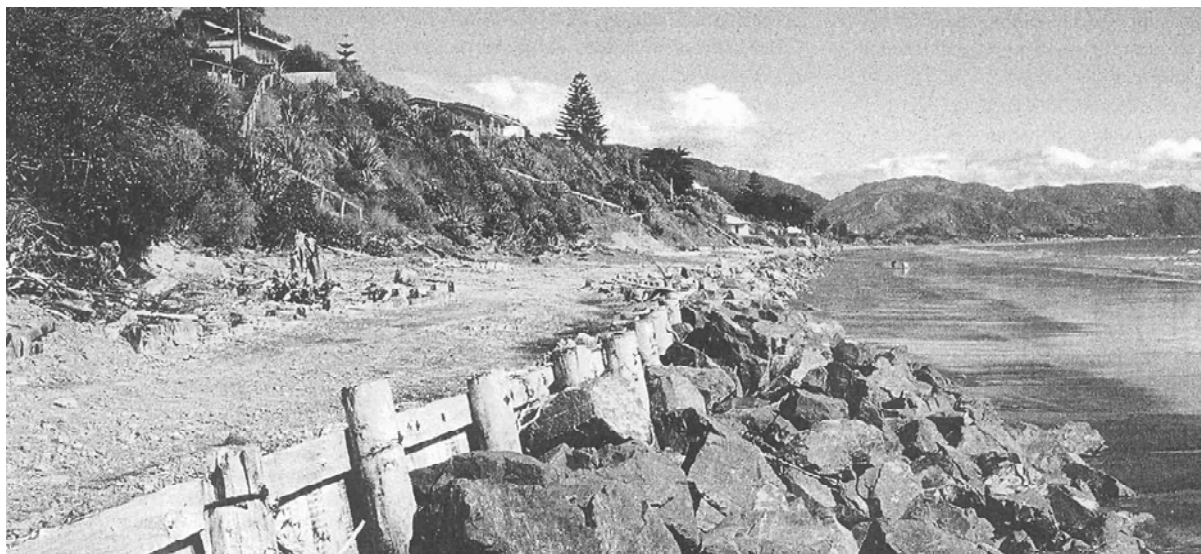
- Unsightly and dangerous debris from failed protection structures
- Reduction in the recreational beach area
- Obstruction of public access to and along the coast
- Interference with kaimoana gathering
- Degradation of estuarine intertidal systems
- Reduction of habitat for migratory birds
- Reduction in the natural character of the coast
- Erosion on adjacent beaches leading to a need to extend protection works to increasing areas of the coast

However the reports on these structures indicate that they largely, if not totally, relate to the erection of seawalls and other structures which are parallel to the shore. These structures have placed a solid barrier within the shoreline system, preventing the foredune

⁹ See for example *Coastal Hazards and Climate Change: A Guidance Manual for Local Government in New Zealand 2nd*. ed. Ministry for the Environment July 2008; Also *The Community Guide to Coastal Development under the Resource Management Act 1991* Raewyn Peart published by the Environmental Defence Society, 2005

from supplying the foreshore with sand or sediment, and leading almost inevitably to the undermining and failure of the protection structure as a result of ongoing erosion^{10,11}.

Figure 1 Advanced loss of the beach in front of the Raumati South Seawall



Unsurprisingly, with numerous examples of adverse environmental effects from these structures, the policy framework has become more explicit about avoiding their use unless absolutely necessary. In summary, unless parallel hard protection structures are set back a sufficient distance from mean high water they are not a response which is in tune with the natural system.

The Haumoana proposal can be contrasted with this experience in terms of most of the bulleted points above. From the information presented and on a first principles assessment basis the following conclusions can be drawn:

- The proposed groynes would be unlikely to lead to any of the public amenity or environmental effects outlined in the first six bullet points. Natural character has been commented on above and is not considered to be a strong consideration against the groyne proposal.
- The need to extend the protection works is the one potential adverse effect where there remains considerable uncertainty. This uncertainty relates to the potential effects down-drift (north) as well as the need to address erosion at Te Awanga.
- While, being an intervention to the natural northerly long-shore drift of gravel, the proposed groynes do not prevent this from occurring and, as a consequence, can be seen as being compatible with the existing coastal processes. The proposed intervention will result in the beach system which is the subject of the intervention maintaining its depth (width) which may also have some benefit to the potential for

¹⁰ For more on this see Jacobson, M. 2004: *Review of the New Zealand Coastal Policy Statement 1994 – coastal hazards*.

¹¹ See Raumati example.

the beach crest to be overtopped in a storm event, leading to inundation of coastal properties.

PRECAUTIONARY APPROACH

Policy 3 Precautionary approach

(1) Adopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse.

(2) In particular, adopt a precautionary approach to use and management of coastal resources potentially vulnerable to effects from climate change, so that:

(a) avoidable social and economic loss and harm to communities does not occur;

(b) natural adjustments for coastal processes, natural defences, ecosystems, habitat and species are allowed to occur; and

(c) the natural character, public access, amenity and other values of the coastal environment meet the needs of future generations.

Comment: The sediment (gravel) supply and transport processes that are at the centre of the erosion/accretion conditions on this part of the coast are reasonably well understood. The peer review process and expert caucusing has identified that the design of the groynes needs to be finalised and tested to examine its sensitivity to changes in key parameters. This may result in modifications to subsequent stages in terms of groyne spacing and length. However, there remain some elements of the system which require some caution. These include the down-drift effects of the proposed intervention. The project is to be staged so that the intervention is adaptable. This can be considered a response to uncertainty about potential adverse effects. Consent conditions on monitoring, review and the potential to reverse the intervention are other likely precautionary responses.

HAWKES BAY REGIONAL COASTAL POLICIES AND PLANS

The region has a Regional Policy Statement (**RPS**) and both an operative Regional Coastal Plan (**RCP**) and a proposed Regional Coastal Environment Plan (**RCEP**). The latter plan was prepared in 2006 and is at an advanced stage, albeit subject to some appeals which are significant in the context of coastal hazard matters. As a consequence, the provisions of both plans need to be had regard to pursuant to Section 104 of the RMA.

HAWKES BAY REGIONAL POLICY STATEMENT

The Hawke's Bay Regional Policy Statement (**RPS**) is embodied within the Hawke's Bay Regional Resource Management Plan. The RPS sets out a policy framework for promoting the sustainable management of the region's natural and physical resources. Objectives 4 – 10 of the RPS focus on the coastal resources and the most relevant of these state:

OBJ 4 Promotion of the preservation of the natural character of the coastal environment and its protection from inappropriate subdivision, use and development.

OBJ 5 The maintenance and where practicable and in the public interest, the enhancement of public access to and along the coast.

OBJ 8 The avoidance of further permanent development in areas prone to coastal erosion or inundation, taking into account the risk associated with global sea level rise and any protection afforded by natural coastal features.

OBJ 9 Appropriate provision for economic development within the coastal environment, including the maintenance and enhancement of infrastructure, network utilities, industry and commerce, and aquaculture.

These objectives are generally consistent with the NZCPS 2010 and are given effect to in the regional plans. Commentary on them is found in the plan comments below.

HAWKES BAY REGIONAL COASTAL PLAN

The Hawke's Bay RCP regulates activities in the coastal marine area. In accordance with obligations under the RMA, and to give effect to the NZCPS and the Hawke's Bay Regional Policy Statement the RCP contains objectives, policies and methods in relation to natural hazards such as coastal erosion.

Policy 4.1.4 When undertaking its coastal management role generally including assessing a coastal permit application or reviewing conditions on existing coastal permits, the HBRC will:

(b) Have particular regard to:

(iii) The avoidance, as far as practicable, of adverse effects on the physical environment in terms of dynamic coastal processes such as wave action, tidal flow, currents and sediment transport, natural water and air quality and natural substrate composition. Where complete avoidance is not practicable, the adverse effects should be mitigated and provision made for remedying those effects;

(c) Take into account the need to:

(ii) Not increase coastal erosion, inundation or the risk of flooding, or increase harbour sedimentation or siltation through human activities;

(iv) Recognise existing authorised uses and avoid, remedy or mitigate adverse effects on these existing uses;

(v) Recognise and provide for appropriate use and development provided any adverse environmental effects are avoided, remedied or mitigated.

Policy 4.1.5 When undertaking its coastal management role generally including assessing a coastal permit application or reviewing conditions on existing coastal permits regard will be had to natural hazards including:

(a) Erosion - the areas potentially subject to coastal erosion are outlined in Schedule IV;

(c) Sea level rise - the best available estimates of sea level rise, provided by the International Panel on Climate Change, are a 0.2 m rise in mean sea level by 2030 and a 0.65 m rise by 2100. A rise in sea level is expected to exacerbate the level of erosion or inundation in areas already affected by these hazards and to lead to erosion and inundation in other areas that are currently stable or accreting.

Policy 4.1.6 The HBRC will encourage territorial local authorities to recognise and avoid or, where avoidance is not practical, mitigate the coastal hazards identified in Policy 4.1.5 in their District Plans

and take them into account when considering land use consents for activities, particularly subdivision, in areas adjacent to these hazards.

In explanation of these general policies the RCP states:

Policy 4.1.5 identifies the coastal hazards in Hawke's Bay and provides information that will assist the HBRC and territorial authorities to avoid, remedy or mitigate their effects. This is a requirement of Section 3.4, particularly Policy 3.4.1 and 3.4.2 of the NZCPS. The policy also provides for the integrated management of this issue between the HBRC and the territorial authorities.

Policy 4.1.6 recognises that most of the infrastructure and assets that are likely to be affected by coastal hazards are located above mean high water spring. It is important for the territorial authorities to use the hazard information outlined in this Plan to avoid, remedy or mitigate the effects of these hazards on future development proposals in areas adjacent to these hazards. This is consistent with Policy 3.4.5 of the NZCPS.

Chapter 6 of the RCP contains specific provisions for structures in the coastal marine area. None of the objectives and policies provides any more guidance than those listed above and the groynes would be a discretionary activity pursuant to Rule 6.4.14 which states:

Rule 6.4.16 Discretionary activity - Structures not regulated by, or not complying with, other rules

The erection, reconstruction, placement, alteration, extension, removal or demolition of a structure that is fixed in, on, under or over the foreshore or seabed and the associated occupation of space, that is not specifically regulated by any other rule within this Plan, or which does not comply with any condition on a permitted activity rule or any of the standards and terms on a controlled activity rule within this Plan, is a discretionary activity.

While Rule 6.4.12 provides specifically for structures which are perpendicular to the shore, it only applies if the structure or structures are more than 100m in length. This rule makes such activities discretionary activities and restricted coastal activities. While the total length of all the groynes is more than 100m, there is no reason to assume that the rule requires the lengths to be added. It is noted that Policy 29 of the NZCPS requires that all restricted coastal activities are to be removed immediately and without any Schedule 1 process.

Other plan information includes Schedule IV on coastal erosion areas, which includes Haumoana, and the notation of Significant Areas SA9 Cape Kidnappers and SA10 Tukituki River Mouth.

PLAN COMMENTARY

The RCP has a definite policy preference, where practicable, for the avoidance of coastal hazards. The policies seek that human activities not increase coastal erosion. Nevertheless, the policies anticipate that there will be instances where activities will need to interact with wave action and sediment transport. The policies also recognise that existing lawful activities must be taken into account. The integrated management of the areas above and below mean high water springs is seen as important, and in exercising its management role in resource consents HBRC must have regard to erosion in Schedule IV areas and to sea level rise. In summary, the proposed activity is a discretionary activity within a policy setting that will require provision of information to satisfy concerns about the down-drift effects of the proposed intervention. There do not appear to be coastal resources and values, such as

public access, natural character or ecological values which are identified for specific protection.

HAWKES BAY REGIONAL COASTAL ENVIRONMENT PLAN

The RCEP was prepared in 2006 to promote the sustainable management of the natural and physical resources of Hawke's Bay's coastal environment. For the purposes of the RCEP, the coastal environment comprises all of the coastal marine area of Hawke's Bay and the coastal margin. The inland boundary of the coastal margin and the coastal environment in the vicinity of Haumoana is situated approximately 1.5km inland. While the RCEP contains objectives and policies for the entire coastal environment, the plan rules do not extend above mean high water springs (ie the rules apply to the coastal marine area). For this part of the coastal environment, the rules of the Hastings District Plan apply. However, the significance of this is reduced by the fact that most of the proposed structures are within the coastal marine area.

Part B of the RCEP identifies matters of national importance. Listed in Section 2 Natural Character, Section 3 Outstanding Natural Features and Landscapes, and Section 5 Public Access To and Along the Coast are the following objectives and policies.

Section 2 Natural Character

Obj 2-1 Preservation of the natural character of the coastal environment , and the protection of the coastal environment from inappropriate subdivision, use and development.

Policy 2-6 To have particular regard to the avoidance of adverse effects of the following dynamic coastal processes on the physical environment:

- wave action
- tidal flow
- currents and sediment transport
- natural water quality and
- natural substrate composition.

Policy 2-7 To have particular regard to the mitigation of adverse effects of dynamic coastal processes on the physical environment and provision made for remedying those effects where complete avoidance cannot be achieved.

Section 3 Outstanding Natural Features and Landscapes

Obj 3-1 Protection of outstanding natural features and landscapes within the coastal environment from inappropriate subdivision, use and development.

Policy 3-1 To recognise and provide for the protection of the visual harmony coherence of the existing landscape, seascape and outstanding natural features in the coastal environment.

Policy 3-2 To recognise and provide for the avoidance, remediation or mitigation of adverse effects on significant landforms and significant geological features.

Policy 3-4 To protect physical and ecological values of existing wetlands, dune systems, lagoons, estuaries and river mouths in the coastal environment.

Section 5 Public Access To and Along the Coast

Obj 5-1 Maintenance and enhancement of public access to and along the coastal marine area while recognising the need to protect certain areas for ecological, cultural, historic heritage, health, safety, or security (including biosecurity) reasons.

Policy 5-7 To ensure activities and structures occupying coastal space within the coastal marine area are established and operated in a manner that maximises public use and access, except where ecological values, cultural values, health, safety, security (including biosecurity) or other exceptional circumstances require.

Part C Section 15 of the RCEP contains a specific set of provision on Coastal Hazards. The most relevant provisions are:

Obj 15-1 Risks posed by coastal hazards to people and property are avoided or mitigated.

Obj 15-1A The avoidance of new and further development in areas identified as being currently at risk of coastal erosion or inundation (ie: those areas within Coastal Hazard Zone 1).

Obj 15-2 The avoidance of new and further inappropriate development in areas identified as being at risk of coastal erosion or inundation during the next 100 years (ie: those areas within Coastal Hazard Zone 2 or Coastal Hazard Zone 3), taking into account the risk associated with global sea level rise and the level of any protection afforded by natural coastal features and lawfully established coastal protection structures.

Policy 15-1 To manage coastal erosion and inundation risks in accordance with the environmental guidelines set out in Table 9.

1. Management approach

Coastal hazards will be proactively managed in the following prioritised ways:

- i) avoidance of new development in areas that are, or have potential to be, subject to coastal erosion or inundation
- ii) maintaining and enhancing natural values and features that provide a buffer against coastal erosion and inundation
- iii) evaluating the feasibility of relocation and/or retreat of, existing uses and development
- iv) evaluating, then implementing if appropriate, activities which mitigate coastal hazards (for example, beach renourishment); and then
- v) evaluating, then implementing if appropriate subject to Guideline 10, permanent structures (for example, sea walls, groynes, artificial reefs) to mitigate coastal hazards.

2. Identification of coastal hazard areas

With the availability of new or updated information, areas subject to, or likely to be subject to, short and long-term coastal erosion, sea-water inundation, and cliff shoreline instability should be reviewed, identified and managed in an integrated manner. The most recent mid-range IPCC sea level rise scenario should be taken into account in these reviews.

3. Precautionary approach

a) A precautionary approach will be adopted in the assessment of:

- i) areas at risk from short, medium and long-term coastal erosion and inundation hazards and
- ii) potential adverse effects of subdivision, use and development in the coastal environment.

6. Existing subdivision, use and development

a) Where existing subdivision, use and development is subject to, or is likely to be subject to, coastal erosion or inundation, further inappropriate subdivision, use and development within those existing developed areas should be avoided.

aa) Further subdivision, use and development may be appropriate in areas where existing subdivision, use and development is subject to, or is likely to be subject to, coastal erosion or inundation if:

- i) it is for a temporary activity and/or
- ii) it protects or enhances natural features (for example, dunes, wetlands, gravel barriers, intertidal rock platforms) between existing development and the sea and

- iii) it presents less than a minor risk of exacerbating coastal hazards and
 - iv) Council is satisfied that risks from coastal hazards are not increased and
 - v) its location is proposed as far landward as practicable within the subject property.
- b) When assessing options for the management and control of land use activities to avoid or mitigate the effects of coastal hazards, removal of existing uses and avoidance of further development shall be recognised as an appropriate means of managing coastal erosion and inundation hazards.

10. Coastal protection structures

- a) Coastal protection structures should only be used to mitigate coastal hazards when:
- i) it is the best practicable option and
 - ii) no other non-structural alternative is effective or feasible to reduce coastal hazard risk and
 - iii) the structure is to be located and designed so as to avoid adverse environmental effects to the greatest extent practicable, particularly effects on coastal processes, landscape values and the existing natural character of the coastline and
 - iv) the structure is to:
 - a. serve a use with a functional need to locate in the coastal marine area or
 - b. protect areas of existing development and network utility operations from coastal erosion or inundation risks.

13. Decision Making

When assessing resource consent applications the following matters shall be taken into account for activities in CHZ1, and in relation to CHZ2 and CHZ3, the following matters should be taken into account (where relevant):-

- i) site elevation relative to mean sea level
- ii) the presence and long-term effectiveness of any lawfully established coastal protection structures
- iii) sea level rise predictions
- iv) geological characteristics of the site and surrounding environment
- v) the expected life of the proposed activity
- vi) the purpose and intended use of the proposed activity (eg: habitation, storage of goods and materials, commercial activity, essential infrastructure, or some other purpose).
- vii) the reasons for the proposed siting or location of the activity on the property relative to the location of coastal hazard zone(s)
- viii) the findings and recommendations of a site-specific coastal hazard assessment prepared by a suitably qualified person. Site-specific coastal hazard assessments shall address:
 - a. Impacts of sea level rise using the Intergovernmental Panel on Climate Change's most recent assessment, and figures recommended in the most recent version of guidance manuals published by Ministry for the Environment and/or NZ Climate Change Office.
 - b. Shoreline response to storm erosion and flooding: Scientifically appropriate models should be used, such as those based on, but not restricted to, the Bruun Rule or Komar Rule.
 - c. Planning horizon: A 100-year planning horizon should be used.
 - d. Long term trend: This should be derived from cadastral, aerial photography, surveys, or other reliable historic data. The reference shore adopted should be the toe of the foredune where these land forms occur, or elsewhere should be the seaward limit of vegetation or RL 11.0m datum as appropriate.
 - e. Short term fluctuation: This should be derived from the most reliable records available at the time for particular stretches of the coast, and should err on the side of caution.
 - f. Land stability factor: This should be based on the angle of repose (AOR) of the land geology as defined locally.
 - g. Factor of safety: The coastal hazard area assessment should include an appropriate factor of safety, either built into the above criteria and standards, or added on in the final stage in the calculation.
 - h. Any profiles (cross sections) should be carried out to accepted surveyors standards and practice. All levels must be in terms of mean sea level to Hawke's Bay datum.
 - i. For inundation hazards, sea level rise; minimum annual exceedance probability of 2%; tide level; wave set up; wave runup; factor of safety; and the potential for contaminants to mix with flood waters.

Part C Section 18 of the RCEP contains provisions on structures generally. The most relevant provisions are:

Obj 18-1 Adverse effects on the environment arising from the use and development of structures in the coastal marine area are avoided, remedied or mitigated.

Obj 18-2 Adverse effects on the environment arising from the occupation of space in the coastal marine area are avoided, remedied or mitigated.

Policy 18-1 To manage structures and any associated occupation of space in the coastal marine area in accordance with the environmental guidelines set out in Table 12.

Table 12

5. Coastal hazards

a) Structures in the coastal marine area should not be located in, or adjacent to areas that are, or are likely to be, subject to coastal erosion, unless:

- i) it is for a temporary activity and/or
- ii) it protects or enhances natural buffers between existing development and the sea and
- iii) it presents a less than minor risk of exacerbating coastal erosion or inundation.

b) Structures should only be used to mitigate coastal hazards when:

- i) it is the best practicable option and
- ii) no other non-structural alternative is effective or feasible to reduce coastal hazard risk and
- iii) the structure is to serve a use with a functional need in the coastal marine area or is to protect existing development and network utility operations from current erosion or inundation risks and
- iv) the structure is to be located and designed so as to avoid adverse environmental effects to the greatest extent practicable, particularly effects on coastal processes and natural character.

Part 27 of the RCEP contains rules for structures in the coastal marine area. The proposed activity would be a discretionary activity in terms of the 'default' rule, Rule 101 which states:

The erection, reconstruction, placement, alteration, extension, removal, or demolition of a structure in the coastal marine area that is fixed in, on, under or over the foreshore or seabed, that:

- is not specifically classified by any other rule in this Plan as a discretionary, non-complying or prohibited activity;

Rule 115A provides specifically for coastal protection structures as follows:

Any activity involving the erection of a coastal protection structure in the coastal marine area which:

- Is solid (or presents a significant barrier to water or sediment movement) and
 - Sited obliquely or perpendicular in horizontal projection to the line of mean high water springs
- In horizontal projection extends 100m or more in length.

Rule 115A makes such structures a non-complying activity. However, the rule does not require that the 100m length be accumulated over more than one structure. Whether examined in terms of the legislative structure or the effects of activities, it is considered that Rule 115 is not applicable. This interpretation is supported by legal advice obtained by HDC.¹²

PLAN COMMENTARY

The RCEP has, amongst other initiatives, brought a greater policy focus on to the management of coastal hazards. Even given its contemporaneous development with the

¹² Legal advice from Lawson Robinson 17 February 2011

revised NZCPS it gives effect to this national policy document as required by the RMA. While still being subject to a number of appeals on matters which have some bearing on the groyne proposal, it appears unlikely that the overall thrust of the RCEP policy on coastal hazards will change. Collectively the policy framework seeks:

- The prioritisation of coastal hazard management, making permanent structures such as groynes, the last resort.
- The adoption of a precautionary approach, particularly for areas subject to short term coastal erosion and inundation.
- The adoption of updated IPCC sea level rise scenarios.
- That coastal protection structures should only be used in certain circumstances and when they are the best practicable option, and should avoid adverse environmental effects to the greatest extent practicable, particularly effects on coastal processes, landscape values and the existing natural character of the coastline.
- That a long term perspective must be adopted.

In commenting on Objective 5 and Policies 24 – 27 of the NZCPS above the purposive intent of these provisions was analysed in terms of two distinct areas of concern, these being the adverse effects on natural character, ecosystems and other public values that hard protection structures can have; and the long term (un)sustainability of hard protection structures. The RCEP provisions express the same concerns. Sections 2, 3 and 5 of Part B of the RCEP identify matters of national importance in the local context including the protection of natural character, outstanding features and public access. At Haumoana there are no outstanding features, the natural character is already compromised by urban development and existing groynes and public access need not be adversely affected by the proposed groynes. As part of the groyne proposal the existing failed structures in front of many properties would be removed, thus improving natural character and amenity. In summary, there appears to be no fundamental inconsistency with the RCEP policies on these matters.

However, the consideration of the long term sustainability of the proposed groynes in the context of the southern Hawke's Bay coastline is more complex. The policies of the RCEP are based on a significant study of coastal hazards, taking into account coastal erosion, rising sea level and the potential for inundation of the coastal hinterland in many areas. The current best estimate of the extent of risk is represented by the Coastal Hazard Zones 1 – 3 as delineated on the planning maps. Taking a 100 year horizon, as recommended in the NZCPS (Policy 24) and the RCEP, there are significant areas of the coastal hinterland which will have eroded and be subject to inundation over the next 100 years. From Clive to Te Awanga there are significant areas of land which are within the CH3 zone, identifying long term risk.

A number of questions therefore arise on the long term viability and sustainability of the proposed groynes, including:

- What are the implications of the groynes for the whole of the southern Hawke's Bay coastline from Napier to Te Awanga? This is particularly the case for the down-drift

properties, and matter such as the supply of gravel to Westshore, and the overall coastal/river gravel budget requires consideration.

- Do the groynes have the capacity to add sufficient width (and height) to the coastal crest so as to provide protection to all the coastal hazard zone areas?
- Are the groynes able to be adapted to respond to changing conditions in the future? e.g. sea level rising faster than previously thought.

HASTINGS DISTRICT PLAN

The Hastings District Plan (**District Plan**) is also a relevant document to consider for an application for coastal protection works. Rule 12.3.7.1.2 has the effect of making coastal protection works a discretionary activity within the Coastal Resource Management Unit overlay. Albeit that most of the proposed structures would be located within the coastal marine area, and therefore governed by the RCEP, the provisions of the District Plan on the sustainable management of coastal erosion would also need to be considered, in particular the provisions of Rule 12.3.9.7 on matters to be considered for coastal protection works. The District Plan provisions must give effect to the RPS.

OTHER DOCUMENTS

HDC has a “Hastings Coastal Environment Strategy” which identifies the strategic issues and objectives for the management of the coast. There are specific provisions for Haumoana which could be referred to pursuant to section 104(1)(c) by any consent authority for information and guidance.

It is noted that there is a Department of Conservation, Conservation Management Strategy for Hawke’s Bay.¹³ That document contains information of general interest to coastal management but does not identify any natural resources of significance to the groyne proposals. The document refers to the implementation of coastal management pursuant to the regional coastal plans.

¹³ Conservation Management Strategy (Volume I) for Hawke's Bay Conservancy 1994-2004

APPLICATION PROCESSING

The manner in which the application is processed is probably as important as the robustness of the design and environmental investigations. There are two potential reasons for this in this case.

Firstly, HDC and HBRC are involved in funding some aspects of this process and potentially the application. Therefore, the independence of the RMA decision or position taken by the Councils from the political/Local Government Act (**LGA**) position is important. The separation of responsibilities can be achieved by independent reporting at a staff level, or at least a separation of those staff with involvement in investigating the WOW application at this time from those undertaking the RMA reporting function. Independent commissioners should be appointed for the resource consent decision.

Secondly, when a controversial proposal has been occupying the minds and absorbing the resources of the parties for an extended time, it is often the case that entrenched positions can be taken. It is therefore important that 'fresh eyes' are brought into the process to ensure that different aspects of the project such as its physical feasibility, the policy framework and the identification and evaluation of environmental effects are objectively undertaken. Again, the appointment of independent reporting officers and commissioners will ensure best practice. It is noted here that section 100A, introduced by the 2009 RMA amendment allows for an applicant or a submitter to a notified resource consent application to request the council to appoint at least one independent hearing commissioner to decide the application.

THE DECISION FRAMEWORK ALTERNATIVES

The decision framework has been made more complex by the 2009 RMA amendments which have added direct referral options to the usual route of a first order decision at the Council level. It is understood that the project would physically span the coastal marine area boundary (across mean high water mark), albeit that most of the structure will be within the coastal marine area. Therefore both of the Councils are expected to be consent authorities. The decision framework options are as follows:

- The conventional decision making process involving both Councils, as consent authorities. This would be a notified consent process followed by a joint hearing. The decision would be made by appointees of the Councils, preferably with some or all appointees being independent commissioners. This decision would be able to be appealed by any party involved in the hearing to the Environment Court.
- The 2009 RMA amendment introduced a new national agency, the Environmental Protection Authority (EPA). One of the EPA's roles is to consider and process applications for resource consent for projects which are of national significance. It is generally agreed by the parties involved with this project that it would not qualify for national significance in terms of the matters set out for guidance in section 142(3) of

the RMA and EPA practice to date. On this basis, the consideration of this option is not taken any further.

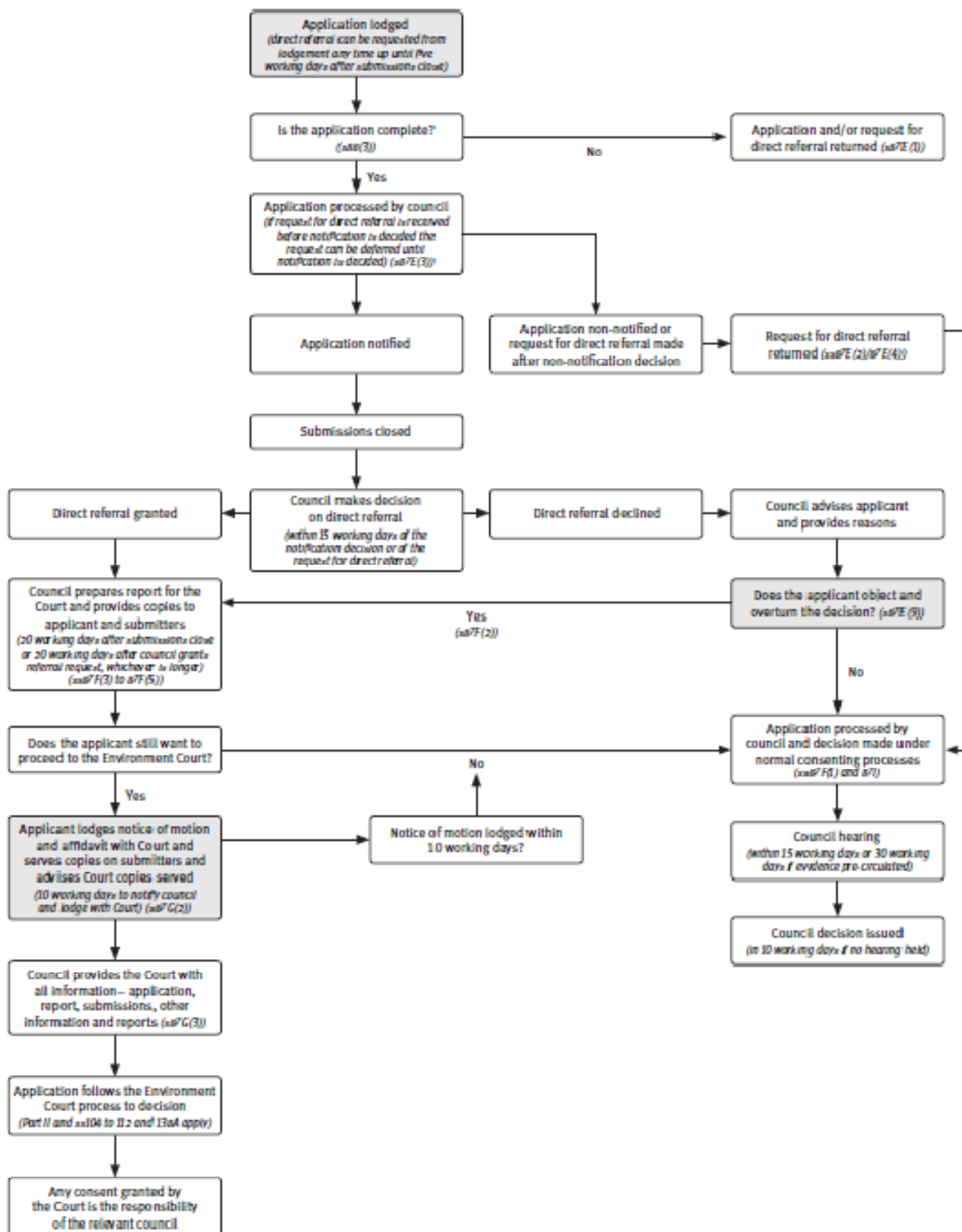
- The 2009 RMA amendment also provided for a second form of direct referral to a higher authority, this being the Environment Court. The referral provides the ability for applicants for resource consents to request that their application be determined in the Environment Court, without the need to first go through local authority consenting processes, provided that the local authority has first agreed. This direct referral process is complementary to the 'proposals of national significance' process, providing an alternative streamlined process path for those applications that may not fit the criteria of being nationally significant.

DIRECT REFERRAL TO THE ENVIRONMENT COURT

At the outset it must be recognised that this process is only needed if it is likely that there is an appeal of the Council decision and that it will take an Environment Court decision to finalise the matter. At this stage, apart from the applicant, it is not known what other parties might be involved in the application. Any party may appeal against a decision to grant or decline consent or against the conditions on a consent that is granted. The direct referral process is set out in the flowchart in Figure 2. Some additional aspects of the direct referral process to consider are:

- Direct referral can be requested from lodgement of the application up until five working days after submissions have closed. This provides the applicant with the opportunity to consider the situation once all parties to the process are known.
- The direct referral is the decision of the local (consent) authority, and there is no appeal from this decision.
- No submitter has a right to be heard by the council about a request for direct referral.
- The council may apply sections 104 to 112 in preparing its report on the application and may suggest any conditions that it considers should be imposed by the Environment Court if the application is granted.
- The council and submitters can become a party to the direct referral proceedings before the Environment Court. Notice must be given to the Court and all other parties within 15 working days from the lodgement of the notice of the direct referral proceedings with the Court.
- The council has all the functions, duties and powers in relation to the resource consent granted by the Court. For example, the council is responsible for monitoring and enforcing consent conditions.
- The council can recover costs for its time under section 36.

Figure 2 Direct referral process for resource consents



Source: Ministry for the Environment Quality Planning website: <http://www.qualityplanning.org.nz/consents/direct-referral/direct-referral-doc-1.pdf>

ADVANTAGES AND DISADVANTAGES OF DIRECT REFERRAL

The direct referral process has been introduced by the 2009 RMA amendment with the purpose of avoiding duplication of process, substantial costs, and time delays as a result of applications going through the council hearing process and then being heard again in the Environment Court. These factors are all seen as advantages by applicants.

Although the process is as yet largely untried, the idea of direct referral is not a new one and its concept has had some disadvantages associated with it. The main ones relate to the exercise of democracy at a local level. Firstly, there is the perception by some local authorities that they are abdicating their responsibilities in not making a decision. Secondly, there has been the concern expressed by community interests that direct referral takes the process beyond the 'comfort zone' and financial reach of individual submitters.

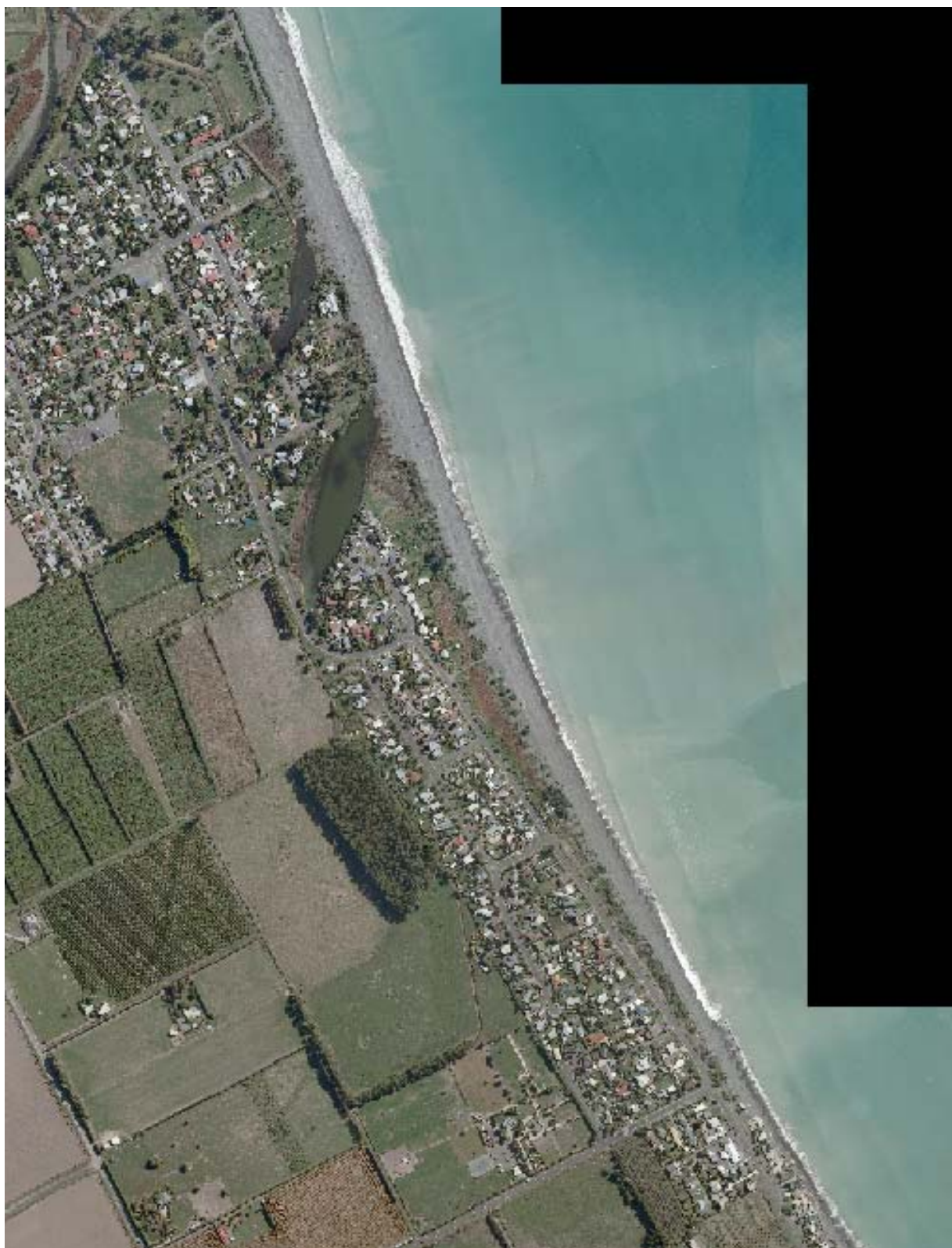
Both of these disadvantages deserve closer examination in the context of the proposed application. The direct referral process provides the opportunity for both Councils to be parties to the proceedings, advising the Court of their position on the matter. A decision to grant a request for direct referral should not be taken in any way as a weak position or signalling that a Council is supportive of the proposal. It simply recognises an opportunity to achieve a more streamlined process, which is the intent of the amending legislation.

The elevation of the hearing to the Court could also be seen as putting participation beyond the reach of individual submitters. It is currently uncertain on this application as to whether there will be any submitters in this category. If there are, then it is considered that the Councils should act in an advisory role to the extent necessary. The Environment Court sits locally for Hawke Bay applications, so this does not make attendance by individual submitters logistically difficult.

While there are time and cost advantages to the applicant from direct referral, the process is not without its disadvantages for the applicant. The main disadvantage is that in most cases of an application being appealed, the applicant takes the opportunity to amend the application and to strengthen areas of evidence from that presented to the original consent authority. For example, it is often the case that an area of contentious or highly technical evidence which was addressed by one witness at the Council hearing, has additional or peer review evidence when the case gets to Court. This 'dress rehearsal' is not available with direct referral, so that an applicant needs to be very sure that a robust case is presented.

There are also opportunities for the process to be actively managed by the Court in terms of expert caucusing. For example, in this case, a key matter for the Court will be the extent of down-drift effects. An agreed expert statement on this would save a great deal of Court enquiry time, and evidence writing time. The Court then only needs to hear from the experts as to their differences in opinion.

Figure 3 Aerial photos of subject area





ADDENDUM

The Haumoana Coastal Erosion Scoping and Feasibility Study Final Report analysed the provisions of the Proposed Regional Coastal Environment Plan. HBRC staff have pointed out that this analysis omitted reference to rules in the RCEP which control building in the Coastal Hazard Zones (i.e. landward of MHWS). Pursuant to section 30 (1)(c) (iv) of the RMA the regional council's functions include:

“the control of the use of land for the purpose of—... (iv) the avoidance or mitigation of natural hazards:...

As a consequence of this, there are effectively two sets of rules which address structures in the Coastal Hazard Zones, the District Plan rules referred to above, and the rules contained in the RCEP. As noted above, Rule 12.3.7.1.2 of the District Plan has the effect of making coastal protection works a discretionary activity within the Coastal Resource Management Unit overlay. However Rule 85¹⁴ of the RCEP lists the following activity as a non-complying activity:

Except as otherwise provided for in Rule 53, Rule 83A, Rule 114A, or Rule 115A, any of the following activities wholly or partly in CHZ1 or CHZ2:

- (a) the replacement, erection placement, construction (including extension) demolition or removal or any coastal protection structure;
- (b) the maintenance or repair of an existing lawfully established coastal protection structure that does not comply with all relevant conditions in Rule 83A.

None of the other rules referred to in Rule 85 make provision for the construction of groynes landward of MHWS so Rule 85 has effect. The words “wholly or partly” also extend the rule over any structure that spans MHWS, so that this would obviate the need to rely on the general discretionary rule, Rule 101, referred to previously. Ironically, if the groynes were situated entirely within the CMA, they would be a discretionary activity.

Pursuant to section 75 (4)(b) of the RMA a district plan must not be inconsistent with the regional plan on any matter specified in section 30(1). On that basis it is considered that the regional rules that would be more authoritative with regard to activity status, and the construction of groynes would be considered as a non-complying activity.¹⁵

Notwithstanding this correction to the activity status, the analysis undertaken above in relation to the RCEP referred to the objectives and policies of key sections: Section 2 Natural Character, Section 3 Outstanding Natural Features and Landscapes, and Section 5 Public Access To and Along the Coast, to provisions of Part C Section 15 on Coastal Hazards including the guidelines in Table 9, and to the provisions in Section 18 on structures including the guidelines in Table 12. These provisions, while being consistent with NZCPS on the preference for avoiding hard engineering structures, provide a prescription for establishing the best practicable option for managing the coastal hazard at Haumoana.

¹⁴ The Regional Council advises that Rule 85 will be operative by the end of July 2011.

¹⁵ Legal advice may be needed to confirm this however, this addendum proceeds on the assumption of a non-complying activity status.

They do not prohibit hard engineering structures.

The report analysis was undertaken on a section 104D basis. In other words, as the environmental effects of the groyne proposal would be unlikely to be minor, if the proposal was to pass the gateway test of section 104D, it would be reliant on a finding that the proposal would not be contrary to the relevant objectives and policies. Importantly, there are no aspects of Sections 2, 3 and 5 that the groyne proposal would be contrary to. Section 15 contains strong objectives on avoiding new and further development in the Coastal Hazard Zones. Such avoidance is important at the current time and until any future protection works are in place, but Section 15 does not seek the avoidance of the works themselves. Section 18 objectives and policies provide for the proposed groynes to avoid, remedy or mitigate any effects on the environment. Sections 15 and 18 establish a methodology for evaluating the best practicable option for the sustainable management of the coast. The groyne proposal is not contrary to these provisions.

As stated above, in the absence of adverse effects on natural character, outstanding features and public access, it remains for the community to be satisfied that the groyne proposal is part of the most appropriate overall solution for managing coastal hazards on this part of the Hawkes Bay coastline. Subject to the further analysis recommended in the peer review, it was concluded that a proposal would be able to appropriately define down-drift effects and their mitigation. This addendum confirms the conclusions of the main report.