

6. NORTH NEW BRIGHTON SAND DUNE VALUES AND MANAGEMENT

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The purpose of this report is to inform the Board on the context within which coastal dunes are managed in the Waimairi/North New Brighton area and review proposals for changes in management and development being suggested by the Coastal Image Group. The report is to be considered by the Parks, Gardens and Waterways Committee.

EXECUTIVE SUMMARY

The North Beach dunes are an area long valued by the community for their recreational, natural and hazard protection values. Through various technical information gathering exercises, public consultation processes for the proposed City and Regional Coastal Plans and Parks Strategies, the Council has decided to manage this regional park for its hazard mitigation values first, followed by its ecological values and finally access and recreational values.

However, a group of local residents would like to see the recreational values of the area changed and to have the dunes lowered to improve access and views of the sea from adjacent properties. Their assertion is that the hazard risk to the area has been overstated and that the dunes could be safely lowered to a height somewhere around five metres above mean sea level and still provide protection from storms.

Many of the elements of the proposal run contrary to the objectives and policies of the statutory and non-statutory plans adopted by the Council and the community. If the proposal were to proceed these plans would need to be amended, involving widespread public consultation.

However, if adopted their proposal would see a large area of dunes along this part of the coast presently managed for their "wilderness" values converted to more formal park land providing a promenade experience. Based on current information, the proposal could also increase the risks of inundation in the area, undermine the ecological and landscape values currently there and cost ratepayers a large amount of money. No citywide recreational need has been proven and the development could be unsustainable in the long-term. It would also represent a risk in terms of further investment in an area which the Council apparently has no legal interest in and so has no way of protecting its possible investment.

BACKGROUND

At the meeting of the Parks, Gardens and Waterways Committee on 9 April 2003 two community groups, Coastal Image Group and SANDS (Supporting a Natural Dune System), presented information on their visions and aspirations for the coastal area in the Waimairi/North New Brighton area. Following on from their presentations the Committee resolved that the Parks and Waterways Unit prepare a report covering the following topics:

- The area between North New Brighton War Memorial Hall and Waimairi Surf Club.
- The opinions of the community as presented.
- The information presented by Gary Tear.
- The positive aspects not just the sand dune height.
- The Environment Canterbury resource consent issues.
- Possible sources of funding.

AREA BETWEEN NORTH NEW BRIGHTON WAR MEMORIAL HALL AND WAIMAIRI SURF CLUB

Physical Coastal Environment

There are many factors influencing the form of Christchurch's coast including tides, currents, waves, wind, sand movement, vegetation and weather. The interaction between these causes a state of constant change.

Despite a long-term equilibrium state in the Christchurch coast, the dunes from South New Brighton to Waimairi appear to be in an erosional phase. That loss is reflected in greater sand removal from the front of these dunes and although they are the highest in the area they are also the most eroded.¹

¹ Christchurch City Council (2000), "Resource Information for the Christchurch Coastal Zone."

Management History

The area has had a varied history from the period of European settlement onwards. Taken up in 1852 as part of the Sandhill Run, continual grazing of sheep resulted in the general breakdown and lowering of the dunes along with periodic encroachments by the sea².

As residential settlement of the area began and the popularity of the area as a beach resort grew it became clear that efforts were needed to protect property from windblown sand. It appears experiments began by locals planting lupin and marram and later trials of sand fencing. These activities later became formalised under the New Brighton Borough Council and then the Christchurch City Council.³

In the last 50 years there has been an increase in the height and width of the foredune system. However, the width is constrained by the position of Marine Parade and interrupted by seawalls. In general the dunes have been characterised during this period, apart from the last ten years, by numerous blowouts and low vegetation cover.⁴

Current Management

With the implementation of the Coast Care programme, coordinated efforts have been established to stabilise the dunes, manage recreational impacts and direct access to appropriate places. The "Christchurch Beaches and Coastal Parks Management Plan" is the policy document adopted by the Council that provides direction to Coast Care's work. The Plan ranks the key benefits of coastal management in order of importance as:

- Coastal protection.
- Planting of native coastal species.
- Wildlife habitat creation and/or enhancement.
- Recreation.
- Visitor attraction.⁵

The Council also holds resource consent from Environment Canterbury, granted in 1995, to enable it to re-contour and manage dunes to a minimum height of eight metres above mean sea level. The background details of the consent are discussed later in this report.

Since 1995 approximately 3.7 km, or nearly 36%, of the dunes along the 10.4 km of the City's urban beach frontage, from Sumner to Northshore, have either had their front slopes regraded or their whole profile recontoured. Approximately 75% of the 0.9 km between New Brighton and North Beach was regraded. All this dune regrading or recontouring work has been subsequently stabilised with the planting of sand binding plants. Also within the 10.4 km of urban beach frontage, and totalling approximately 1 km in length, the three high use beach frontages of Sumner, New Brighton and North Beach were managed to maintain their open foreshores despite their vulnerability to storm impacts.

Current dune heights in the area range between a low of 5.72 metres opposite Effingham Street to 11.13 metres between Beach Road and Pandora Street.⁶

Land Tenure

Review of the land tenure status of the dune/beach area between Marine Parade and the Mean High Water Springs line reveals that an area of land from Lonsdale Street to Fleming Street is Christchurch City Council fee simple land. North from Fleming Street to Waimairi Beach appears to be Crown land. Land Information New Zealand (LINZ) has indicated the status of the land is unclear and a formal status check would be necessary to determine who holds the land at present. LINZ indicated that if the land is held by them there are a variety of mechanisms through which management may pass to the Council including LINZ handing the land to the Department of Conservation to then be managed by the Council, or passed on to the Council via Ngai Tahu's right of first refusal.⁷

² Kirk, RM (1979) "Dynamics and Management of Sand Beaches in Southern Pegasus Bay". Report to Christchurch City Council and Waimairi County Council.

³ Kirk, RM (1979) as for 2.

⁴ Kirk, RM (1979) as for 2.

⁵ Parks Unit, Christchurch City Council (1995), "Christchurch Beaches & Coastal Parks Management Plan" policy document.

⁶ City Solutions (2003) New Brighton Dunes Crest Survey 2003.

⁷ Ross Marbec LINZ per comm.

Use/Landscape

Recreational use of this particular part of the coast has not been surveyed separately from the general use of Christchurch's beaches. A need for ongoing research and monitoring of recreation in the Christchurch Coastal Zone has been identified.⁸ However, results from the 1998 Christchurch Residents Survey suggest most visits to the coast occurred during the warmer months and that the majority of residents visited less than once a month or not at all, even during the warmer months.

From a landscape perspective, an independent landscape architect has assessed the North Beach coast. That report is attached as Appendix 1.

COMMUNITY GROUP OPINIONS

It is within the context outlined above that the two community groups expressed their opinions to the Parks, Gardens and Waterways Committee as to the possible future development of dunes in the North Beach area.

Supporting A Natural Dune System (SANDS)

The SANDS group expressed the reasons the dunes are valued in their current form, including natural habitat values, as a zone of transition, a unique recreational environment and as protection from the wind and storms. The group suggested that all of these values are currently being appropriately managed through the resource consent the Council holds and implementation of Coast Care's Beach Park Management Plan. SANDS therefore strongly supported the current management approach.

Advantages

The advantages of retaining the current management regime can be categorised as operational, financial, statutory, and community:

1. Operational - Coast Care has gained a great deal of operational experience in managing dunes under the "formula" which has been applied over the last eight years (trapping sand on sacrificial foredunes, planting with sand binding plants, amenity and ecological based planting of back dunes and directing public access to limit dune erosion). Coast Care comments:

"We have observed that stable and well vegetated dunes of an average minimum height of eight metres are less likely to be smothered by drifting sand. We have found that lower dunes or structures in the range below six metres above mean sea level have all required sand trapping measures in front of them, or regular mechanical excavation, to prevent inundation and smothering. Even the taller dunes at eight metres still need the active sand trapping provided by sand binding vegetation. They also benefit from sand trapping measures in front of them to allow their vegetation cover to thrive without the ongoing stress of sand build up."
2. Financial - The current Coast Care programme is resourced at a level assessed by the Council as being appropriate for the area. This involves limited capital development with the main focus being dune stability through protection and planting.
3. Statutory - Coast Care is currently managing Christchurch's entire coast, including the North New Brighton area, under consent from Environment Canterbury. The process for obtaining that consent went through an extensive public consultation process. Consent was subsequently granted as being consistent with sustainable management of the coast and the way in which the community wished to see the area managed as expressed through the objectives and policies of the relevant plans.
4. Community - The current Beach Park Management Plan and Coastal Strategy 2000-2010 have been through public submission processes and adopted by the Council. They are a vision of the way the wider Christchurch community wishes to see the coastal area restored and maintained, based on the principles of hazard reduction and ecological restoration as top priorities.

Disadvantages

The disadvantage of retaining the current management direction for the dunes in the North New Brighton area is that it does not address the concern expressed by some of the local residents in relation to dune height and increasing the perceived "vitality" of the area.

⁸ Christchurch City Council (2000), "Resource Information for the Christchurch Coastal Zone."

Comments included in a survey of local residents in 1999, as presented by the Coastal Image Group, are based around those surveyed wanting to see a much lower dune with sea views. The current resource consent does not allow this. Allowing sea views from properties along Beach Road could be seen by some as a way of revitalising the area through the potential for increased property values. However, there are other areas of the coast (Northshore and Southshore) that have higher property values without sea views so the rationale behind this argument is unclear.

Coastal Image Group (CIG)

The Coastal Image Group (CIG) presented a concept plan for the North Beach area along with a 1995 petition requesting the dunes in North New Brighton be lowered to five metres or less. Accompanying this was a 1999 list of a few local residents' opinions on an eight metre dune height and City Council work from the previous year.

The CIG proposal consists of a wide paved promenade for cycling/walking along the coast and structures to act as viewing/contemplation points. The path would be separated from a strip of coastal dune indigenous planting by a low concrete wall. Large grassed areas and amenity trees for passive recreation would be located between the promenade and the road with some associated parking areas. All of these developments are proposed to be placed on top of lowered dunes, which would be sculpted to allow view slots for all houses along the North Beach stretch of Marine Parade to the horizon.

In CIG's opinion this development would bring more life to the beach with increased access, enhance the reputation of Christchurch and make the dunes a safer place.

DUNE HEIGHTS

Information from Gary Teear

Gary Teear from OCEL Consultants also presented information on behalf of CIG, focusing on technical information around wave run up models and tsunami risk associated with the height of dunes needed for hazard mitigation.

Comments from Mr Teear follow:

"Mr Teear's presentation was based on his, and residents'/beach users', observations of how the Christchurch coast works as compared to the models that have been used to calculate wave run up heights and storm erosion demand and, by extension, required sand dune heights. In his view the wave run up heights have been grossly overstated and are at complete variance with the wave run up levels actually experienced on the beach. The wave run up models used are not appropriate for use on Christchurch beaches, no attempt has been made to validate or test the conclusions. The observations of beach users were ignored at the time of the resource consent and since.

If as stated in the Tonkin and Taylor report a six metre high dune is required to avoid being over topped by wave run up in the worst storm event then the gaps in the sand dunes at North Beach and New Brighton should be regularly overwhelmed by wave run up in much less severe storms. They are not and the fact that they are not should have lead the individuals presenting the report to question the appropriateness of their models. The wave run up calculations have apparently been done without the benefit of a visit to the beach. A visit and simple observation would show the presence of the erosion scarp that forms when the waves cut into the foredune. The erosion scarp arrests then reflects wave run up.

Mr Teear accepts the tsunami height as the best estimate but notes that the notion that the dunes currently provide tsunami protection is an illusion given the gaps in the sand dune system. There is no point in concentrating on sand dune height and setting it at eight metres above mean sea level if dunes can be outflanked by the sea pouring through the gaps in the dunes.

In his view the proposed CIG plan allows for sufficient sand volume to satisfy storm demand and does not compromise tsunami protection. It could potentially enhance the latter if any sand taken off the top of the sand dunes at North Beach was used to close the gap in the dunes."

Advantages

If the CIG proposal were to proceed it could represent an opportunity to link to a proposed promenade at New Brighton. Use of this area for recreational pursuits has a long history and expanding the experience in this way could provide a complimentary area to Sumner.

The proposal also represents a possible opportunity to open up this part of the coast to easier access with direct access from paved pathways and parking areas.

As stated previously, allowing sea views from properties along Beach Road could be seen by some as a way of assisting with the revitalising of the area through the potential for increased property values, although the evidence for this is not conclusive.

Disadvantages

The CIG proposal can be divided into two parts, which are linked for the purposes of development (dune height and recreational development), but are separate in terms of their potential effects.

1. *Dune Height*

Through the process of obtaining resource consent for managing/lowering dunes there was a range of technical information presented before the Court on the height at which dunes in the area should be managed to avoid flooding from storms/tsunami. This information was based on calculations made by experts and backed by previous work from a Lifelines Report. It was further reinforced by a series of peer reviewed studies jointly commissioned by the City Council and Environment Canterbury into wave run up heights and modelling for the Christchurch coastline⁹.

The disadvantage of lowering the dunes is that the Council would have to find technically and scientifically robust information, that has been peer reviewed, to back its change of position. Given the previous widespread support of studies already undertaken by the scientific community and the current policies in a number of documents to maximise hazard protection and adopt a precautionary approach when dealing with the coastal environment, it is difficult to know if any consultant could provide justification for such a change of position while also being in line with current policy.

However, if the Council were to be successful in obtaining consent and lower the dunes, the question of liability then arises if flooding were to occur as a direct result of having lowered the dunes. The Council's legal advisers are currently reviewing this issue.

2. *Recreational Development*

The proposed landscaping and promenade development have been analysed based on knowledge of working in the coastal environment and previous capital development experience. Bearing in mind that CIG suggest the plan they have put forward is only indicative at this stage, the comments below are based on the information provided:

- Experience of Coast Care staff is that establishing and sustaining large grassed areas in the coastal environment is extremely difficult, even more so in areas with lower dunes/walls where wind speed tends to be higher at ground level thereby moving sand to smother plants. Irrigation systems would also be required for all grassed areas.
- The harsh Christchurch coastal environment severely limits the potential species that can be grown on the foreshore to stabilise and enhance the landscape. Most tree species, even coastal natives cannot cope on the exposed foredune. The variations in microclimate even between Sumner and New Brighton create limitations as well. A series of species trials carried out by the Coastal Dune Vegetation Network has reinforced climatic limitation on coastal species.
- In such a windy environment, with such an extremely unstable substrate as loose sand to build on, two alternative and negative outcomes can occur to a standard batten edged path whether it is asphalt or compacted gravel. Firstly, on the windward side of the path undermining by the wind readily occurs. Secondly, the wind transports sand up the face of the dune and buries the path completely. In either case ongoing maintenance is required along with substantial amounts of sand trapping fencing.
- The proposed wall to protect the promenade would have a magnifying effect during storm events. Such walls are known to increase the erosional effects of waves during storms. Given the proposed position of the wall a scenario of beach scouring in front of the wall, wall undermining and loss of most of the planting in front of the wall during a moderate storm event is possible.
- The dune area is currently classified as an Ecological Heritage site under the proposed City Plan. The proposed development of large grassed areas and pathways would destroy much of the ecological significance of the area and undermine the status it currently holds.

⁹ Tonkin and Taylor (1997) Part A "Evaluation of appropriate methodology for the estimation of wave run-up height" and Part C evaluation NIWA (1997) Part B "Extreme waves and sea levels on the Christchurch shore line".

- Cost is a further issue in terms of the projected high cost of the proposed development versus the long-term sustainability, which is brought into question by the preceding analysis. A generalised cost analysis of capital and maintenance costs is outlined below:

Brief Estimate of Cost of Development		
Development of the grassed area including levelling topsoiling and grassing. Area 900 metres x 30 metres (2.7 hectares).	Average cost \$5/m ²	\$135,000
Move dune sand forward.		\$110,000
Stabilise front of dune with sand binder planting.		\$95,000
Amenity planting on the road frontage side of development including large trees.		\$74,000
Retaining wall alongside pathway @ 600 mm high, 200 mm wide with 1,000 mm base and compacted gravel - 1,200 metres long.	Average cost \$440/m	\$528,000
Pathway 2 metres wide 1,200 metres long.		\$84,000
Irrigation.		\$60,000
Car parking to view sea: 15 spaces plus access road.		\$60,000
Pedestrian control fencing, sand fencing and signage.		\$25,000
Estimated consultation, planning, consents, legal costs.		\$150,000
Total Cost Development Works		\$1,321,000

Additional Maintenance Costs		
Existing dune cost.	\$2,900 / ha per year	\$7,830
Amenity park cost.	\$8,000 / ha per year	\$21,600
Total Maintenance Costs Per Annum		\$29,430

Given the above analysis, the disadvantages of adopting the CIG proposal could be categorised as liability/increased flood hazard, weakening of current policy, long-term sustainability and cost. However, if any such proposal were to proceed there are also a number of planning issues that would need to be addressed.

PLANNING/POLICY ISSUES

Background

The coastal area including the North New Brighton area is managed within the framework of the Resource Management Act 1991, its implementation mechanisms and Council Policy.

Without going into the detail of all the relevant policies relating to how the coast should be managed, from a national level with the New Zealand Coastal Policy statement, to a local level, a very generalised synopsis of the policy framework could be described as:

“The natural character of the coastal environment should be preserved and the ability of natural features to act as hazard protection measures should be enhanced. If any development is to occur in the coastal environment it should wherever possible be directed away from hazard prone areas and the ecological fragility and threats to coastal ecosystems need to be recognised and provided for.”

The Council also has several internal policies that are of relevance to how the North New Brighton coast is managed. In particular, the Christchurch Beaches and Coastal Parks Management Plan and Coastal Strategy has some general policies relating to management and some site specific ones re North Beach.

Resource Consent Issues

The Council currently holds a consent granted by Environment Canterbury in 1995 to manage the dunes down to a height of eight metres. The granting of this consent was based on technical evidence provided at that time:

“On the evidence available today the adoption of an eight metre hazard barrier is justified, based on theory and not on local observation to date. Accordingly if any consent is granted it should certainly be reviewed in the short term because the evidence other than as it relates to hazard indicates the adoption of a lower minimum height than eight metres would be preferable given sand accumulation, and management and access issues.”¹⁰

Subsequent peer reviewed investigations into wave run up (1998), sea level rise (1999) and dune contouring criteria (2001) supported a conservative approach to hazard by retaining the current eight metre dune height at North Beach in order to retain the sand volume needed for storm protection.

Environment Canterbury

Comments from Environment Canterbury on any review of the current consent are that a new notified consent would be required, and that extensive evidence would need to be provided justifying, in terms of hazard, the safety and sustainability of lowering the dunes.¹¹

Christchurch City Council

Given the current zoning under the proposed Christchurch City Plan, consent would also be required from the City Council for the proposed developments. Comment from the Environmental Services Unit follows:

“The proposal would require resource consent for the following reasons:

- The erection of any building shall be a discretionary activity, Volume 3, Part V, Rule 2.3.1(d). (In this case, this would be applicable to any viewing platforms, and any other structures defined as buildings);*
- The removal and loss of any native vegetation indigenous to the site is a discretionary activity, Volume 3, Part V, Rule 2.3.2;*
- The planting of exotic species or native plants of a non local origin requires a resource consent as a discretionary activity, Volume 3, Part V, Rule 2.3.4. The grassed areas would therefore require consent;*
- Excavation of the sand dunes is a discretionary activity, Volume 3, Part 9, Rule 5.3.2.*

The proposal would be assessed as a discretionary activity under the Proposed City Plan. Overall, the status of the activity would be non-complying due to the status of the activity in the Transitional District Plan.

In light of the above comments, the proposal is fairly likely to be publicly notified because of high community input, and a detailed assessment would be required. A publicly notified process with a high level of public interest would generally take a degree of time and cost to the applicant.”¹²

Without prejudicing any decision a hearings panel(s) may make on this issue, it is clear that in relation to the proposed City Plan in particular, the proposed CIG development is contrary to the policy direction for the coast and the protection intended for the area in having it listed as an Ecological Heritage site. It is therefore doubtful whether a consent application would be successful.

Christchurch Beaches and Coastal Parks Management Plan and Coastal Parks Strategy 2000-2010

Both of the above documents set the direction for “on the ground” management of Christchurch’s coast in terms of policy and proposed development plans. Both documents have been through a public consultation process and adopted by the Council. The proposed CIG development is contrary to the general policies within both plans and as such any decision to move forward with the CIG proposal would require the redrafting, consultation and hearing of submissions of the Coastal Strategy in line with that proposal. There is no guarantee public submissions would support such development at North Beach given that the previous citywide submission process resulted in the plans the Council has in place at the moment.

¹⁰ NRW Davidson (1995) Decision of Commissioner in the matter of an application by Christchurch City Council for land use consent for coastal works between Heyders Road, Spencerville and Caspian Street, South New Brighton.”

¹¹ Brodie Young, Environment Canterbury per comm.

¹² Jane Kerr, Environmental Services Unit, “Scoping report in respect of a proposal to lower the dunes at North Beach”.

SOURCES OF FUNDING

The cost estimates which have been made in relation to the CIG proposal would represent a large increase in expenditure over and above the current Coast Care programme.

Operating under the Council's current substitution policy, any new proposals will require resources to be taken at the expense of other projects.

In terms of capital development, the current five-year budget for foreshore projects is around \$220,000 per annum. Based on earlier cost estimates of approximately \$1.1 million for CIG's proposal, the whole of the capital budget for all of Christchurch's foreshore would need to be spent on this proposal in order to fund it. In terms of planning costs, the current consultants budget for all parks planning and landscape design for all of Christchurch is \$117,000. This fund has been prioritised at present toward the demands from area planning and subdivision for at least the next three years.

CONCLUSION

The North Beach dunes are an area long valued by the community for their recreational, natural and hazard protection values. Through various technical information gathering exercises, public consultation processes for the proposed City and Regional Coastal Plans and Parks strategies, the Council has decided to manage this regional "park" for its hazard mitigation values first, followed by its ecological values and finally access and recreational values.

Before the Council could consider the adoption of a change in direction of the management and development of this area, further citywide consultation would be necessary to establish if there is a need for and support for such a development in an area used by people from across the City.

If adopted, the CIG proposal could increase access to this part of the coast, modify and formalise an area of presently "wild" park land and provide a promenade experience. However, based on current information, the proposal could also increase the risks of inundation in the area, undermine the ecological and landscape values currently there, cost ratepayers a large sum of money for which no citywide recreational need has been proven and for a development which could be unsustainable in the long-term. It would also represent a risk in terms of further investment in an area which Council apparently has no legal interest in and so has no way of protecting its possible investment.

In comparing the CIG proposal and the current development plan for the area, there are a number of elements that are common to both, apart from the lowering of the dunes. The similarities include grassed areas toward the rear of the dunes for passive recreation, shade trees, native plantings and a walking pathway along some part of the dunes. It may be possible that through a consultation/dialogue process some of the CIG visions for the area could be implemented under the current development plan.

Staff

Recommendation: That the Board recommend to the Parks, Gardens and Waterways Committee:

1. That the Council not review its consent to manage dunes along the Christchurch coast to a minimum height of eight metres above mean sea level at this time.
2. That the Coast Care team initiate discussions between Land Information New Zealand, the Department of Conservation and the Council with a view toward rationalising land tenure in the Christchurch coastal environment.
3. That the Coast Care team discuss with the Coastal Image Group how aspects of their vision for the area might be provided for within the Coastal Parks Strategy 2000-2010.
4. That Council representatives on the Lincoln University Liaison Group include in their list of joint venture research topics a recreational needs analysis for Christchurch's coast.
5. That the Parks and Waterways Unit investigate jointly funded research of local coastal conditions.

Deputy Chairperson's

Recommendation:

That the Board recommend to the Parks, Gardens and Waterways Committee that, in the interests of the community who have varying opinions on the lowering and development of the sand dune area in North New Brighton, the Council pursue a new resource consent that will address all the community's issues and the scientific and technological information.