

STDC Coastal Structures  
Monitoring Programme  
Monitoring Report  
2007-2008

Technical Report 2008–43

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## **Executive summary**

South Taranaki District Council hold coastal permits for various structures along the South Taranaki coast. This report for the period July 2007-June 2008 describes the monitoring programme implemented by the Taranaki Regional Council to assess South Taranaki District Council's environmental performance during the period under review.

South Taranaki District Council holds a total of 12 coastal permits relating to coastal structures, which include a total of 64 conditions setting out the requirements that the STDC must satisfy. STDC holds three coastal permits relating to boat ramps/wharves/jetties, two permits relating to access structures and seven permits relating to coastal protection from erosion. A further two coastal permits are held for outfall structures, these are the subject of other monitoring programmes and are not discussed in this report.

The Council's monitoring programme for the period under review included an annual inspection of the various structures.

Most of the structures were found to be well maintained, and there did not appear to be any adverse environmental effects. However, some issues were noted with regards to the seawalls at Bayly Road and Middleton Bay.

During the year, STDC demonstrated a good level of environmental performance and compliance with the resource consents. The seawalls at Bayly Road and Middleton Bay will require maintenance work in the near future.

This report includes recommendations for the 2008-2009 year.



## Table of contents

	Page
1. Introduction	1
1.1 Compliance monitoring programme reports and the Resource Management Act 1991	1
1.1.1 Introduction	1
1.1.2 Structure of this report	1
1.1.3 The Resource Management Act (1991) and monitoring	1
1.1.4 Evaluation of environmental performance	2
1.2 Background	3
1.3 Beach overview and history	3
1.3.1 Bayly Road, Cape Egmont	3
1.3.2 Middleton Bay	4
1.3.3 Opunake Bay boat ramp	5
1.3.4 Opunake Beach	6
1.3.5 Kaupokonui	7
1.3.6 Denby Road, Hawera	8
1.3.7 Patea River groynes, seawalls etc.	8
1.3.8 Patea wharf	10
1.3.9 Patea boat ramp	10
1.3.10 Waverley access-ways	11
1.4 Resource consents	12
1.4.1 Coastal permits	12
1.5 Monitoring programme	19
1.5.1 Introduction	19
1.5.2 Programme liaison and management	19
1.5.3 Site inspections	19
2. Results	20
2.1 Bayly Road	20
2.2 Middleton Bay	20
2.3 Opunake Bay boat ramp	20
2.4 Opunake Beach	21
2.5 Kaupokonui	21
2.6 Denby Road	21
2.7 Patea groynes	21
2.8 Patea boat ramp and wharf	21
2.9 Waverley Beach	22
2.10 Register of incidents	22
3. Discussion	23
3.1 Environmental effects of exercise of consents	23
3.2 Proposed future monitoring programme	23
3.3 Evaluation of performance	27
3.4 Recommendations from the 2002-2007 Report	31
3.5 Alterations to monitoring programmes for 2008-2009	32
4. Recommendations	33

Glossary of common terms and abbreviations

Bibliography and references

Appendix I Resource consents held by STDC

Appendix II Taranaki Regional Council Coastal Survey Procedures Manual

## List of tables

Table 1	Summary of coastal structure permits held by STDC	13
Table 2	Summary of performance for Consent 4566-1 to maintain a boat ramp and jetty at Patea	27
Table 3	Summary of performance for Consent 4567-1 to maintain an accessway at Waverley Beach	27
Table 4	Summary of performance for Consent 4573-1 to maintain various structures in the Patea River mouth	27
Table 5	Summary of performance for Consent 4575-1 to maintain a wharf in the Patea River estuary	28
Table 6	Summary of performance for Consent 4578-1 to maintain a retaining wall and access at Opunake Beach	28
Table 7	Summary of performance for Consent 4579-1 to maintain access ramp at Caves Beach, Waverley	28
Table 8	Summary of performance for Consent 5504-1 to maintain seawall at Middleton Bay, Opunake	28
Table 9	Summary of performance for Consent 5512-1 to place a seawall at Bayly Road, Cape Egmont	29
Table 10	Summary of performance for Consent 5983-1 to place rock rip rap in the Kaupokonui Stream	29
Table 11	Summary of performance for Consent 6736-1 to place a gabion mattress at Denby Road for erosion control and beach access	30
Table 12	Summary of performance for Consent 6791-1 to construct and maintain boat ramp and breakwater in Opunake Bay	30
Table 13	Summary of performance for Consent 6839-1 to reinstate training wall in Patea River mouth	31

## List of photographs

Photograph 1	Construction of rip rap seawall, Middleton Bay July 1999	5
Photograph 2	A section of the Opunake Beach retaining wall	6
Photograph 3	Looking upstream along rock protection works in the Kaupokonui Stream	7
Photograph 4	Accessway to Waihi Beach, Hawera	8
Photograph 5	Patea River groynes	9
Photograph 6	Patea boat ramp	10
Photograph 7	Accessway to Waverley Beach	11
Photograph 8	Access ramp and steps, Caves Beach Waverley	12
Photograph 9	Erosion at the end of the Bayly Road seawall, Cape Egmont	20
Photograph 10	Middleton Bay seawall	21



# **1. Introduction**

## **1.1 Compliance monitoring programme reports and the Resource Management Act 1991**

### **1.1.1 Introduction**

This report is the Monitoring Report for the period July 2007-June 2008 by the Taranaki Regional Council on the monitoring programme associated with resource consents held by South Taranaki District Council (STDC) relating to structures in the coastal marine area. The South Taranaki District covers an area of coast from the mouth of the Stony River just south of Okato in the north, extending southwest to approximately two kilometres south of Wai-inu Beach, a coastline of approximately 140km. STDC administers various coastal reserves situated throughout the South Taranaki District.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by STDC that relate to coastal structures, and is the second report by the Taranaki Regional Council to cover the STDC coastal permits for structures in the coastal marine area and their effects.

### **1.1.2 Structure of this report**

Section 1 of this report is a background section. It sets out general information about compliance monitoring under the Resource Management Act and the Council's obligations and general approach to monitoring sites through annual programmes, the resource consents held by STDC, the nature of the monitoring programme in place for the period under review, and a description of the coastal permits and structures.

Section 2 presents the results of monitoring during the period under review, including scientific and technical data.

Section 3 discusses the results, their interpretation, and their significance for the environment.

Section 4 presents recommendations to be implemented in the 2008-2009 monitoring year.

A glossary of common abbreviations and scientific terms, and a bibliography, are presented at the end of the report.

### **1.1.3 The Resource Management Act (1991) and monitoring**

The Resource Management Act (the Act) primarily addresses environmental 'effects' which are defined as positive or adverse, temporary or permanent, past, present or future, or cumulative. Effects may arise in relation to:

- (a) the neighbourhood or the wider community around a discharger, and may include cultural and socio-economic effects;
- (b) physical effects on the locality, including landscape, amenity and visual effects;

- (c) ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
- (d) natural and physical resources having special significance (eg, recreational, cultural, or aesthetic);
- (e) risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Taranaki Regional Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each discharge source. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the Resource Management Act to assess the effects of the exercise of consents. In accordance with section 35 of the Resource Management Act 1991, the Council undertakes compliance monitoring for consents and rules in regional plans; and maintains an overview of performance of resource users against regional plans and consents. Compliance monitoring, including impact monitoring, also enables the Council to continuously assess its own performance in resource management as well as that of resource users particularly consent holders. It further enables the Council to continually re-evaluate its approach and that of consent holders to resource management, and, ultimately, through the refinement of methods, to move closer to achieving sustainable development of the region's resources.

#### 1.1.4 Evaluation of environmental performance

Besides discussing the various details of the performance and extent of compliance by the STDC during the period under review, this report also assigns an overall rating. The categories used by the Council, and their interpretation, are as follows:

- a **high** level of environmental performance and compliance indicates that essentially there were no adverse environmental effects to be concerned about, and no, or trivial (such as data supplied after a deadline) non-compliance with conditions.
- a **good** level of environmental performance and compliance indicates that adverse environmental effects of activities during the year were negligible or minor at most, items of concern were resolved positively, co-operatively, and quickly, the Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices, there were perhaps some items noted on inspection notices for attention but these items were not urgent nor critical, and follow-up inspections showed they have been dealt with.
- **improvement desirable** indicates that the Council may have been obliged to record a verified unauthorised incident involving significant environmental impacts against the company, and/or abatement notices may have been issued; there were adverse environmental effects arising from activities and intervention by Council staff was required, and there were matters that required urgent intervention, took some time to resolve, or remained unresolved at end of the period under review.
- **poor** performance is used when there were grounds for prosecution or infringement notice

## 1.2 Background

It is commonly assumed that structures such as sea walls, revetments, and groynes have an adverse effect on the coastline, notably by causing sediment losses in front of the structure and accelerated erosion of the adjacent coast due to “end-effects”. However, these assumed effects need to be examined in the context of the lithology, processes and stability of local coastline (Tonkin & Taylor, 2001).

Under the RMA 1991, these processes are required to be avoided, mitigated or remedied. The adverse effects of structures on the foreshore, seabed, and coastal land are addressed under the following policies of the Taranaki Regional Coastal Plan (RCP):

- Policy 6.1 (effect of new or extended structures)
- Policy 6.3 (remedial or mitigation action for existing structures); and
- Policy 7.1 (coastal protection works only allowed if positive effects significantly greater than adverse effects).

Before any adverse effects of existing structures can be mitigated or remedied and the above policies complied with, the effects need to be identified and (where possible) quantified. Hence monitoring is required to assess the nature and extent of these effects (Tonkin & Taylor 2001). Taranaki has a very dynamic, high energy coastline and the degree of natural variability needs to be taken into account.

Monitoring is also required to ensure that the structures comply with general rule C1.1 of the RCP, which permits maintenance on structures, so long as the size of the structure does not increase beyond its original size. It is also implied under the rule that the structures will be kept in good repair. In addition, structures may need to be assessed to ensure they are complying with any special conditions attached to the consents.

## 1.3 Beach overview and history

### 1.3.1 Bayly Road, Cape Egmont

Bayly Road Beach is located just north of Cape Egmont. The beach is composed entirely of rock and cobble with no sand.

Coastal erosion and storm surge events eroded the coastal scarp along the Coast Road at the end of Bayly Road. In order to protect the Coast Road, and the recreational area between Bayly Road and the Cape Egmont Boat Club, the STDC applied for, and was granted, a coastal permit to erect, place and maintain a boulder rip rap seawall on the foreshore on the Coast Road at the end of Bayly Road.

As a result of the works, the boulder protection now extends from the boat ramp in the north to the pre-existing 40 metres of boulder protection south of Bayly Road, with a total length of approximately 290 metres.

### 1.3.2 Middleton Bay

Middleton Bay is a small 500m long, pocket beach at Opunake. The beach is exposed to west and south-west storm waves, but is protected from north-west conditions (Tonkin & Taylor 2001).

The Council had been concerned about the state of the foreshore at Middleton Bay, Opunake for some years. In 1996 the Council was invited by the STDC to be a member of the Middleton Bay Working Party.

In 1998 STDC engaged Dr Jeremy Gibb to investigate and report on the coastal management of Middleton Bay, Opunake. A report 'A coastal management plan for Middleton Bay, Opunake, South Taranaki District', was produced in October 1998 (Gibb, 1998).

The report noted that the 80-metre long rubble revetment northwest of the boat ramp was unsightly and adversely affecting the beach and adjacent foredune. While the underlying boulder substrate was natural, the additional rubble was not. The report recommended that:

- the randomly poured concrete should be removed
- the alignment of the revetment be altered to follow the natural plan geometry of the beach-foredune
- the seaward face up to the level of the car park be reconstructed at a gradient of no less than 1:3 using rounded andesite boulders.

The report also recommended that rubble situated to the northwest of the above mentioned revetment be removed from the foreshore.

Council supported the recommendations made within the Gibb report. The Council noted that the existing coastal erosion protection works were unlicensed, and that therefore the proposed reconstruction and realignment would require a coastal permit pursuant to section 12 of the RMA.

Following an extreme storm surge event in March 1999 the Taranaki Regional Council requested an update from STDC regarding the proposed implementation of recommendations from the Gibb report. It was noted that the Council considered it pertinent that steps were taken to remove all debris (concrete, rubble, asphalt, steel, etc) from the foreshore, and to license the remaining coastal erosion protection works.

Subsequently, STDC applied to reconstruct, and maintain a boulder rip rap seawall on the foreshore at the southeast end of Middleton Bay for coastal erosion protection purposes (Photograph 1). This application was granted as coastal permit 5504.

Due to Middleton Bay being a pocket sand beach, and the location of the revetment being well forward towards the surf zone, there is a high potential for adverse effects to the soft shoreline at the north-western end and in front of the structure. Within a year of the structure being constructed, there was erosion of the foredune at the north-western end of the revetment, which may have been as a result of "end effects" from the structure (Tonkin & Taylor, 2001).



**Photograph 1** Construction of rip rap seawall, Middleton Bay July 1999

### 1.3.3 Opunake Bay boat ramp

In May 2005, the OASR trust was granted consents relating to construction of an artificial surf reef in Opunake Bay. As part of the project the STDC obtained a coastal permit to erect and maintain a boat ramp and breakwater at the northern end of Opunake Bay to assist in the construction of the reef.

The breakwater structure was once part of a fully functional jetty, constructed and used in the early 1900s to transfer cargo from rail to ship. The jetty has since been removed, but piles from the jetty still remain. The rock breakwater is still present, although the sea has moved rocks and levelled out the breakwater structure over many years. There was also a concrete boat ramp above mean low water springs (MLWS) adjacent to the breakwater.

STDC undertook some maintenance of the structures in order to assist in the construction of an artificial surf reef. The maintenance involved:

1. Reconstructing the concrete boat ramp.
2. Repositioning breakwater rocks to build up a section of the breakwater.
3. Moving boulders from the basin at the base of the boat ramp back onto the breakwater structure.

The boat ramp was reconstructed with concrete to a width of 4 metres, and length of 35 metres down to low water spring tide (MLWS, which is a +0.3 tide).

The breakwater is approximately 150 metres long. The works involved building up a section along about a third of the current breakwater in order to stop waves during mid-tide breaking into the boat ramp area. The built up section is approximately 45 metres long, 3 metres wide, and to a height (reduced level) of +2.0 metres.

### 1.3.4 Opunake Beach

Opunake Beach (Photograph 2) is a 500m long pocket sand beach between two significant headlands which shelter the beach from all but direct south-west storm events. Due to this sheltering, the wave energy entering the bay is generally low, and as a result there is a wide flat beach (Tonkin & Taylor 2001).

At the back of the beach, the former sand dune area has been flattened for the development of a surf club and camping ground. Only at the north-west end of the bay is there any remnant of dunes remaining. Over the rest of the bay, the boundary between the beach and the developed area is marked by a sea wall constructed from power poles, consented in 1994 by coastal permit 4578 (Tonkin & Taylor 2001).

The structure covered by this permit consists of a low retaining wall which stretches the length of Opunake Beach. Breaks and ramps in the wall provide pedestrian, vehicular and inflatable rescue boat access to the beach. The structure was constructed in stages, some of which are many years old. The structure was constructed in order to stabilise the natural accretion which has occurred on the beach and to protect and enhance the recreational facilities which exist immediately landward of the beach.



**Photograph 2** A section of the Opunake Beach retaining wall

### 1.3.5 Kaupokonui

The Kaupokonui Stream enters the sea approximately five kilometres west of Manaia. The stream is somewhat enlarged and tidal around the mouth and is popular for whitebaiting and fishing.

Following receipt of a complaint regarding works in the Kaupokonui Stream in 2002, investigation by Council officers discovered that substantial boulder rock rip rap had been placed on the true left bank of the Kaupokonui Stream (Photograph 3).

Subsequent to these investigations, applications for a coastal permit (for those works within CMA, the upstream boundary being 5 metres downstream of the footbridge) and for a land use consent (for those works upstream of the CMA) were received from the STDC.



**Photograph 3** Looking upstream along rock protection works in the Kaupokonui Stream

### 1.3.6 Denby Road, Hawera

In Hawera, locals access Waihi Beach via the track at the end of Denby Road. The track down to the beach is cut through the cliffs from the carpark at the end of Denby Road. Over time, due to storms and erosion, the access to the beach has become difficult, with large sections eroded away.

STDC installed a gabion mattress at the bottom of the access track at the end of Denby Road with the intention of improving pedestrian access to the beach and helping to control the erosion problems (Photograph 4).

The gabion mattress measured 6m x 2m x 0.23m in size and was placed on existing rocks. Surrounding the rocks a geo textile fabric was used to prevent the scouring of sand and to increase the longevity of the structure.

Once completed, the structure was covered in concrete to further aid pedestrian access.



**Photograph 4** Accessway to Waihi Beach, Hawera

### 1.3.7 Patea River groynes, seawalls etc.

The Patea River is the former port that served the freezing works and town of Patea in recent years and provides the most navigable entrance point along the stretch of coast between Port Taranaki and the Wanganui River. The Patea River is used by both recreational and commercial fishermen, as well as companies undertaking surveys for offshore oil exploration.

The Patea River mouth was formed by constructing two concrete block seawalls, or moles, in the late 19<sup>th</sup> and early 20<sup>th</sup> century (Photograph 5) to create a navigable entrance to the Patea River. These moles run seawards from the existing high water

mark for a distance of approximately 325m on the southeast side (true left side) and approximately 112m on the northern side (true right side). At the seaward end of the moles an opening of 60m is present.

Coastal permit **4573** covers the following existing structures within the coastal marine area of the Patea River mouth: river mouth training groynes; rock training wall; Mana Bay seawall; wave guide wall; and the Carlyle Bay rock protection works. While it is recognised that the structures have significant effects on sediment movement both within the river mouth and on the open coast, most of the associated environmental change has already occurred with the structures having been in place for many decades.

Significant levels of erosion have occurred along this coastline during the past 50 years which has led to the river moles becoming seriously degraded. Studies undertaken by consultants (Duffill Watts & King, 2006) have shown that with the current condition of the moles and rate of shoreline change, the river moles could decay, threatening the overall stability of the river entrance. If the stability of the river entrance was changed, it could mean the passage between the river and sea is no longer navigable.

From the studies undertaken by Duffill Watts & King in 2006, it was found that without some intervention process the Patea River will break through behind the southeast mole within 20 to 25 years which would prevent navigable access to the sea. It was proposed that the most effective method to maintain a navigable river entrance for small seagoing craft was to reconstruct the southeast seawall. Consent **6839** was granted, with the works aimed to constrain the river channel to its existing alignment and prevent it from breaking through behind the left mole.



**Photograph 5** Patea River groynes

### 1.3.8 Patea wharf

The wharf (4575) was constructed during the early years of the harbour endowment and was refurbished with upstream batter protection following floods in 1922. The structures extend downstream from the State Highway 3 bridge on the true left bank of the stream.

The sub-structure piling proved to be effective river training works, and in conjunction with an adjacent smaller downstream wharf, caused significant realignment of the downstream river meander pattern. The realigned meander pattern that developed has created a stable regime. It is considered that this stability will remain so long as the left bank flow alignment out from the road bridge bend is maintained, with the batter protection work and wharf now preserving the required flow alignment.

### 1.3.9 Patea boat ramp

The boat ramp at Patea has been in existence for many years, providing one of the few good, effective and safe boat launching facilities on the South Taranaki coast (Photograph 6). The facilities experience extensive use and are considered to be one of Patea's more important recreational facilities.

The launching ramp was an undular concrete pad which extended from the end of the formed roadway of Turi Street, down to approximately the low tide level of the river. Upon granting of coastal permit 4566, the STDC strengthened the existing boat launching ramp by placing a concrete strengthening overlay over the existing ramp. The overlay is seven metres wide and extends a further three metres down into the river than the previous ramp, improving the launching facility.



**Photograph 6** Patea boat ramp

The overlay was contoured so it is more consistent with natural beach profiles than the previous ramp and is therefore expected to have less effect on riverbed/beach processes than the previous ramp. In association with expanding and strengthening the ramp, the STDC reinstated and rock protected the eroding riverbank both immediately upstream and downstream of the ramp. The bank protection was wrapped smoothly into the existing bank and aligned in a manner which is compatible with wave refraction/diffraction patterns and which will not adversely affect natural river processes.

### 1.3.10 Waverley access-ways

Waverley Beach is an 8 km long stretch consisting of unique landforms of caverns, ravines, blowholes and eroding stacks carved into the cliffs by wave erosion. Eleven small peninsulas project 5-15m out to sea. This is a dynamic coast with many un-vegetated and unstable dunes, with much of the area continually being eroded by wind and wave action.

The accessway covered by consent 4567 has been in existence for many years (Photograph 7). It was originally formed in order to provide access to the beach down the steep coastal cliffs present in the area. The accessway is basically a bulldozed track which traverses down the mudstone cliffs. The accessway relieves access pressure from the fragile vegetated sand dunes which separate the beach from the Waverley Beach settlement, and as such has a role in protecting the environment.



**Photograph 7** Accessway to Waverley Beach

The structure covered by consent 4579 consists of a concrete public access ramp way, 20 metres in length and 3 metres in width with an associated 2 metre wide by 16 metre long concrete step-way down the western edge of the ramp (Photograph 8). The ramp

extends down to the beach sands from the upper ground level of the mudstone coastal bluffs, providing access to the coastal Caves Beach area for the cave and beach viewers/visitors, again reducing pedestrian damage of the fragile sand dunes.



**Photograph 8** Access ramp and steps, Caves Beach Waverley

## **1.4 Resource consents**

### **1.4.1 Coastal permits**

Section 12 of the Act stipulates that no person may erect, reconstruct, place, alter, extend, remove or demolish any structure or any part of a structure that is fixed in, on, under, or over any foreshore or seabed, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 12.

Table 1 below provides a summary of coastal permits held by STDC relating to coastal structures in southern Taranaki.

**Table 1** Summary of coastal structure permits held by STDC

Consent number	Sub-type	Location	Purpose
5512	Protection	Bayly Road	Boulder rip rap seawall
5504	Protection	Middleton Bay	Boulder rip rap seawall
6791	Boat ramp	Opunake Bay	Boat ramp and rock breakwater
4578	Protection	Opunake Beach	Retaining wall and access
5983	Protection	Kaupokonui	Boulder rip rap
6736	Protection	Hawera	Gabion mattress
4566	Boat ramp	Patea	Boat ramp and jetty
4573	Protection	Patea	Maintain groynes etc
4575	Wharf	Patea	Maintain wharf
6839	Protection	Patea	Reinstate training wall
4567	Access	Waverley	Accessway
4579	Access	Waverley	Public access ramp

### **Bayly Road, Cape Egmont**

STDC holds coastal permit **5512** to erect, place and maintain a boulder rip rap seawall on the foreshore on the coast road at the end of Bayly Road for coastal erosion protection purposes. This permit was issued by the Taranaki Regional Council on 5 August 1999 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2013.

There are seven special conditions attached to the permit.

Condition 1 requires the consent holder shall notify the Council in writing at least 48 hours prior to commencement and completion of initial reconstruction and any subsequent maintenance.

Condition 2 requires that the structure is constructed generally in accordance with the documentation submitted in support of the application, and maintained to ensure the conditions are met.

Condition 3 requires that the consent holder adopt the best practicable option to avoid or minimise discharges of silt or contaminants to the coastal marine area.

Condition 4 states that the consent holder shall ensure that areas and volumes of foreshore disturbance shall be minimised, while condition 5 requires that any backfill material displaced be removed from the coastal marine area.

Condition 6 requires that the structure is removed and the area re-instated when no longer required.

Condition 7 deals with review of the permit.

### **Opunake**

STDC holds coastal permit **4578** to erect, place and maintain a retaining wall and associated accessway structures in the coastal marine area of Opunake Beach. This

permit was issued by the Taranaki Regional Council on 28 June 1994 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2012.

There are two special conditions attached to the permit.

Condition 1 requires the consent holder maintain the structure to the satisfaction of the Council.

Condition 2 requires that the consent holder notify the Council at least 24 hours prior to undertaking maintenance works.

STDC holds coastal permit **5504** to reconstruct and maintain a boulder rip rap seawall on the foreshore at the southeast end of Middleton Bay for coastal erosion protection purposes. This permit was issued by the Taranaki Regional Council on 30 June 1999 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2018.

There are eight special conditions attached to the permit.

Condition 1 requires the consent holder shall notify the Council in writing at least 48 hours prior to commencement and completion of initial reconstruction and any subsequent maintenance.

Condition 2 requires that structure is constructed generally in accordance with the documentation submitted in support of the application, and maintained to ensure the conditions are met.

Condition 3 requires that the consent holder forward plans of the structure to the Council following completion of the works.

Condition 4 requires that all unnatural material be removed from the coastal marine area.

Condition 5 requires that the consent holder adopt the best practicable option to avoid or minimise the discharge of silt or other contaminants to the coastal marine area.

Condition 6 requires that areas and volumes of foreshore disturbance be kept to a minimum.

Condition 7 requires that the structure is removed and the area re-instated when no longer required.

Condition 8 deals with review of the permit.

STDC holds coastal permit **6791** to erect, place and maintain a boat ramp and rock breakwater in the coastal marine area off the northern headland of Opunake Bay. This permit was issued by the Taranaki Regional Council on 22 December 2005 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2024.

There are six special conditions attached to the permit.

Condition 1 requires that the exercise of the consent is undertaken generally in accordance with documentation submitted in support of the application.

Condition 2 requires that the consent holder notify the Council at least 48 hours prior to commencement and completion of initial construction and any subsequent maintenance works.

Condition 3 requires that the consent holder undertake all practicable measures to prevent the discharge of contaminants into the sea.

Condition 4 requires the consent holder to ensure that the area and volume of disturbance is minimal.

Condition 5 states that there shall be no refuelling of construction machinery within the coastal marine area.

Condition 6 deals with review of consent.

### **Kaupokonui**

STDC holds coastal permit **5983** to erect, place and maintain a boulder rock rip rap on the true left bank within the coastal marine area of the Kaupokonui Stream estuary for erosion control purposes. This permit was issued by the Taranaki Regional Council on 13 May 2002 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2017.

There are eight special conditions attached to the permit.

Condition 1 requires the consent holder shall notify the Council in writing at least 48 hours prior to commencement and completion of initial reconstruction and any subsequent maintenance.

Condition 2 requires that the structure is constructed generally in accordance with the documentation submitted in support of the application, and maintained to ensure the conditions are met.

Condition 3 requires that the consent holder adopt the best practicable option to avoid or minimise discharges of silt or contaminants to the coastal marine area.

Condition 4 states that the consent holder shall ensure that areas and volumes of foreshore disturbance shall be minimised.

Condition 5 requires that the structure is removed and the area re-instated when no longer required.

Condition 6 requires that disturbance to parts of the riverbed covered by water shall be undertaken between 1 November and 30 April.

Condition 7 requires that the structure not obstruct fish passage.

Condition 8 deals with review of the permit.

## **Hawera**

STDC holds coastal permit **6736** to erect, place and maintain a gabion mattress for erosion control purposes, and a public access ramp to provide emergency access, in the coastal marine area at Waihi Beach. This permit was originally issued by the Taranaki Regional Council on 5 December 2005 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2025. Changes were made to the consent on 12 March 2008 so that an access ramp could be constructed for emergency access purposes.

There are five special conditions attached to the permit.

Condition 1 requires the consent holder to adopt the best practicable option to prevent or minimise adverse effects on the environment.

Condition 2 requires that the consent holder notify the Council at least 48 hours prior to commencement and completion of construction or maintenance works.

Condition 3 requires that the consent be undertaken in accordance with the documentation submitted in the application.

Conditions 4 and 5 deal with lapse and review of the consent.

## **Patea**

STDC holds coastal permit **4566** to construct, extend and maintain a boat ramp and jetty in the coastal marine area of the lower Patea River estuary. This permit was issued by the Taranaki Regional Council on 7 September 1994 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2010.

There are four special conditions attached to the permit.

Condition 1 requires the consent holder to maintain the boat ramp and jetty to the satisfaction of the Council.

Condition 2 requires that the consent holder notify the Council at least 24 hours prior to undertaking construction or maintenance works.

Condition 3 requires that the consent holder undertakes all practicable measures to prevent the discharge of debris and other contaminants into the receiving water and to minimise disturbance of the estuary bed.

Condition 4 requires that the jetty is constructed and maintained in a manner that does not restrict the flood flow capacity of the Patea River.

STDC holds coastal permit **4573** to place and maintain the following existing structures within the coastal marine area of the Patea River mouth being: river mouth training groynes; rock training wall; Mana Bay seawall; wave guide wall; and Carlyle Beach rock protection works. This permit was issued by the Taranaki Regional Council on 6 December 1996 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2016.

There are three special conditions attached to the permit.

Condition 1 requires the consent holder to notify the Council at least 24 hours prior to the commencement and upon completion of, maintenance works which would involve disturbance of, or discharge to, the coastal marine area.

Condition 2 requires that, during maintenance, the consent holder observes every practicable measure to prevent the discharge of contaminants and minimise disturbance to the bed of the coastal marine area.

Condition 3 deals with review of the consent.

STDC holds coastal permit 4575 to place and maintain the existing wharf and ancillary structures on the true left bank within the coastal marine area of the Patea River estuary. This permit was issued by the Taranaki Regional Council on 20 October 1995 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2010.

There are four special conditions attached to the permit.

Condition 1 requires the consent holder to maintain the structure to the satisfaction of the Council.

Condition 2 requires the consent holder to give 24 hours notice prior to maintenance work.

Condition 3 requires that the structures are removed if and when they are no longer required.

Condition 4 deals with review of the consent.

STDC holds coastal permit 6839 to reinstate approximately 160 metres of the Patea River training wall for river protection purposes on the true left bank of the Patea River mouth. This permit was issued by the Taranaki Regional Council on 24 April 2006 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2022.

There are eleven special conditions attached to the permit.

Condition 1 requires the consent holder to adopt the best practicable option to prevent or minimise adverse effects on the environment.

Condition 2 requires that the exercise of the consent be undertaken in accordance with the documentation submitted in support of the application.

Condition 3 requires the consent holder to notify the Council in writing at least seven days prior to the exercise of the consent.

Condition 4 states that there be no refuelling of construction machinery within the coastal marine area.

Condition 5 requires that noise standards are complied with during construction and maintenance, while condition 6 deals with signage regarding potential safety hazards.

Condition 7 requires that the consent holder minimises the area and volume of foreshore disturbance.

Condition 8 requires the consent holder to liaise with the local Kohanga Reo regarding traffic movements while construction is underway.

Condition 10 requires that the structure be removed and the area reinstated when no longer required.

Conditions 9 and 11 deal with lapse and review of the consent.

### **Waverley**

STDC holds coastal permit **4567** to reconstruct and maintain an accessway in the coastal marine area of Waverley Beach. This permit was issued by the Taranaki Regional Council on 7 September 1994 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2010.

There are three special conditions attached to the permit.

Condition 1 requires the consent holder to maintain the accessway to the satisfaction of the Council.

Condition 2 requires the consent holder to notify the Council at least 24 hours prior to undertaking maintenance works.

Condition 3 requires the consent holder to undertake all practicable measures to prevent the discharge of debris and contaminants into the sea and minimise disturbance of the sea bed.

STDC holds coastal permit **4579** to erect, place and maintain a public access ramp in the coastal marine area at Caves Beach, Waverley. This permit was issued by the Taranaki Regional Council on 28 June 1994 as a resource consent under Section 87(d) of the Act. It is due to expire on 1 June 2010.

There are two special conditions attached to the permit.

Condition 1 requires the consent holder to maintain the ramp to the satisfaction of the Council.

Condition 2 requires the consent holder to notify the Council at least 24 hours prior to undertaking maintenance works.

Copies of the permits are attached in Appendix I.

## **1.5 Monitoring programme**

### **1.5.1 Introduction**

Section 35 of the Resource Management Act sets out an obligation for the Taranaki Regional Council to gather information, monitor, and conduct research on the exercise of resource consents, and the effects arising, within the Taranaki region.

The Taranaki Regional Council may therefore make and record measurements of physical and chemical parameters, take samples for analysis, carry out surveys and inspections, conduct investigations, and seek information from consent holders.

The monitoring programme for the STDC coastal structures consisted of two primary components.

### **1.5.2 Programme liaison and management**

There is generally a significant investment of time and resources by the Taranaki Regional Council in ongoing liaison with resource consent holders over consent conditions and their interpretation and application, in discussion over monitoring requirements, preparation for any reviews, renewals, or new consents, advice on the Council's environmental management strategies and the content of regional plans, and consultation on associated matters.

### **1.5.3 Site inspections**

Structures were visited once during the monitoring period. There were no serious storms during the monitoring period that required follow-up visits.

With regard to permits for coastal structures, the main points of interest were the integrity of the structure(s) and any end effects.

## 2. Results

### 2.1 Bayly Road

An inspection of the Bayly Road seawall was undertaken on 25 February 2008. The northern part of the wall was satisfactory. Erosion of the wall had occurred for a distance of approximately 50 metres just below the power pole at the end of Bayly Road (Photograph 9). It was recommended that this length of wall should be re-instated to comply with the consent and to prevent further erosion.



**Photograph 9** Erosion at the end of the Bayly Road seawall, Cape Egmont

### 2.2 Middleton Bay

An inspection of the Middleton Bay seawall (Photograph 10) was undertaken on 25 February 2008. The wall appeared to be a similar length as consented for, however boulders had been dislodged and were strewn across the beach. It was noted on the inspection notice that it would be the best interests of STDC (though not strictly required by TRC at this stage) to re-form the revetment in order to maintain a sandy beach and reduce the risk of storm surges cutting into the land behind the wall.

### 2.3 Opunake Bay boat ramp

There was no access due to artificial surf reef construction. However, the ramp was observed from the top of the cliff and everything looked satisfactory.



**Photograph 10** Middleton Bay seawall

## **2.4 Opunake Beach**

The retaining wall was inspected on 25 February 2008, and appeared to be sound. There was plentiful sand on the beach and to the north after the wall ended.

## **2.5 Kaupokonui**

An inspection was undertaken on 25 February 2008. The boulder rip rap protection works on the true left bank of the Kaupokonui Stream were satisfactory.

## **2.6 Denby Road**

The structure was inspected on 25 February 2008 and appeared to be sound with no adverse effects apparent.

## **2.7 Patea groynes**

The new training wall appeared to be satisfactory.

## **2.8 Patea boat ramp and wharf**

The boat ramp was inspected on 25 February 2008, no problems were observed. An inspection of the wharf has not been undertaken as yet.

## **2.9 Waverley Beach**

Waverley Beach was visited on 25 February 2008. The access track down to Waverley Beach was satisfactory.

The access steps and ramp down to Caves Beach were satisfactory. It was noted that erosion to the north of the steps may effect access to the structure in the future.

## **2.10 Register of incidents**

The Taranaki Regional Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The register ('unauthorised incident register') includes events where the company concerned has itself notified the Council. The register contains details of any investigation and corrective action taken.

Incidents may be alleged to be associated with a particular site. If there is an issue of legal liability, the Council must be able to prove by investigation that the identified company is indeed the source of the incident. (or that the allegation cannot be proven).

In the 2007-2008 year, there were no incidents recorded by the Council that were associated with South Taranaki District Council coastal structures.

### **3. Discussion**

#### **3.1 Environmental effects of exercise of consents**

Most structures that were inspected during the monitoring period were found to be well maintained, and there did not appear to be any adverse environmental effects.

The seawall at the end of Bayly Road, Cape Egmont is eroding at the southern end and it was recommended that this length of wall should be re-instated to comply with the consent and to prevent further erosion.

STDC was advised to re-form the Middleton Bay seawall in order to maintain a sandy beach and reduce the risk of storm surges cutting into the land behind the wall. Extra monitoring is required at this site as part of the STDC coastal structures monitoring programme (to be undertaken by consultant on behalf of STDC), as described in Technical Report 07-74 .

The extent of environmental effects caused by coastal structures can occur gradually over a long time period, therefore a more intensive monitoring programme is required for some of the structures. This was included in the previous annual monitoring report and is included in this report also, as the previous report was only available to the consent holder one month prior to the end of the 2006-2007 monitoring period.

#### **3.2 Proposed future monitoring programme**

It was recommended in Tonkin & Taylor (2001) that compliance monitoring programmes for structures on the Taranaki coast should include the following five areas:

- Checking to ensure the structure is in good repair
- Checking structure following maintenance involving a change in structure size;
- Checking compliance with any special conditions of the consent;
- Identifying any adverse effects of the structure on the adjacent shoreline position, beach volumes and shore platform at the toe of the structure; and
- Collection of “control’ data from relevant unaffected sections of coast on which to assess the above effects.

Tonkin & Taylor (2001) also recommended that when constructing any structure a baseline “as built” survey of the structure is provided by the consent holder (this should be included as a condition for every new coastal structure consent that is granted). This would include: position, length, width and height and front slope.

In addition the Tonkin & Taylor report (2001) recommended that the consent holder report annually on any maintenance undertaken. This includes information on the location, timing and nature of maintenance undertaken during the year. For revetments, this information should include the volume of rock placed. If this maintenance includes changes to the structure dimensions, then a new survey “as built” for the altered area should be included.

Tonkin & Taylor also recommended that on a five yearly basis, Council undertakes a full audit of the compliance monitoring data, and any SEM data, to determine whether the structures are having any effect on the adjacent coast. This audit needs to be undertaken by a suitably qualified specialist with relevant knowledge of coastal processes. These reports should also recommend changes to the monitoring programme where appropriate, due to either additional effects or the lack of effects.

The report 'Compliance monitoring programme for coastal structures' (Tonkin & Taylor, 2001) sets out specific recommendations for most of the STDC coastal structures. These recommendations are discussed below.

### **Bayly Road**

The Tonkin & Taylor report (2001) recommended that no additional surveys were required at Bayly Road. It is therefore recommended that an annual inspection to assess the integrity of the structure is undertaken, including a photographic record. Additional visits and photographs should be undertaken following any alterations to the revetment, and after major storm events.

Tonkin & Taylor also recommended that a survey of the current revetment dimensions to record length, height, width and slope of the structure is carried out. Records should be kept of the volume and location of any additions of rock, and any major changes to the revetment be verified by a topographic survey following placement.

### **Middleton Bay**

Middleton Bay is susceptible to a large degree of natural variability in shoreline position and beach volumes. It is therefore difficult to distinguish the effects of the revetment. Hence, Tonkin & Taylor recommended that an annual topographical survey of the beach area north-west of the boat ramp be undertaken. This survey should extend landward to the top of the revetment or foredune, and seaward to the MLWS contour (1.5m RL). The survey should be undertaken at the end of winter using GPS.

Tonkin & Taylor (2001) recommend that the need for the continuation of this form of monitoring should be reviewed in 10 years.

For alterations and reconstruction as permitted maintenance the report recommends that STDC undertakes a baseline survey of the current revetment dimensions to record length, height, width and slope of the structure. In addition, the report recommends that records are kept of the volume and location of any additions of rock, and the major changes to the revetment verified by a topographic survey following placement.

It was also recommended that Council staff undertake an annual monitoring inspection, including taking photographs. Additional visits and photographs should be taken following any alterations or additions to the revetment, and after major storm events.

### **Opunake**

Due to the wide, flat, profile of the beach and the low wave energy, there do not appear to be any significant adverse effects of the sea wall. The Tonkin & Taylor report (2001) recommended that no additional surveys were required at Opunake Beach. However it was recommended that an annual inspection to assess the integrity of the structure is undertaken, including photographs. Additional visits and photographs should be taken following any additions or alterations to the seawall (as notified by STDC), and after any major storm events.

In addition, it is recommended that STDC provide the Council with 'as built' plans of the structure.

### **Kaupokonui**

The rip rap protection works were constructed after the Tonkin & Taylor report was written, therefore there are no recommendations regarding this site. The rip rap is of a fairly minor nature and it is therefore not anticipated that surveys are necessary. However, it is recommended that an annual inspection, including taking photographs of the structure, is undertaken, and that STDC provide the Council with 'as built' plans of the structure.

### **Denby Road**

The accessway/protection at Denby Road was constructed after the Tonkin & Taylor report was written, therefore there are no recommendations regarding this structure. The accessway/protection is relatively minor and it is not anticipated that surveys are required. However, it is recommended that an annual inspection, including taking photographs of the site, is undertaken and that STDC provide the Council with 'as built' plans of the structure.

### **Patea**

Tonkin & Taylor (2001) found that due to problems in distinguishing between effects of the mouth structures and natural changes in the mouth environment, it would be difficult to design a monitoring programme that is purely for compliance monitoring. Tonkin & Taylor recommended a monitoring programme be put in place which can cover all changes in the mouth environment and respond to issues in an appropriate time period.

The Tonkin & Taylor report recommended that an annual topographical survey of the adjacent beaches be undertaken at Patea as follows:

- West Beach for a distance of 500m NW of the West Groyne
- East Beach and adjacent cliff line for a distance of 500m to the SW
- Sand beach in front of the Mana Bay seawall
- Shoreline position in Pipeline Bay
- Shoreline position in the bay at the upstream end of the East Groyne

These surveys should be undertaken using GPS at the end of winter. Tonkin & Taylor recommend that the need of this form of monitoring be reviewed when the consent comes up for renewal in 2016.

The report also recommends ten yearly aerial photography of the coast for a distance of 1 km either side of the mouth to determine the magnitude of natural changes in shoreline position away from the influence of the groynes, and hence determine the effects of the groyne structures. However, as aerial photography of such a small section of coast is impractical, it is recommended that this monitoring be undertaken as part of SEM monitoring (programme yet to be developed). The consent holder can then purchase the required photographs for use in compliance monitoring of their structure at an appropriate rate.

A site visit by Council staff to check the structures and take photographs should be undertaken, with any additional visits as required following additions or alterations, and any major storms. The wharf and boat ramp can also be visited and photographed at this time.

### **Waverley**

The Tonkin & Taylor report (2001) did not provide any recommendations for the access structures at Waverley Beach. These structures are fairly minor and it is not anticipated that they require surveying. However they will be visited on an annual basis by Council staff, including the collection of a photographic record.

It is also recommended that STDC provide the Council with 'as built' plans of the Caves Beach structure.

### **Other**

Other key points of the recommended programmes include:

- The timing of the annual surveys should be standardised to the end of the winter so that they follow the period of maximum potential annual erosion.
- The need to continue the various monitoring surveys be reviewed at appropriate times, reflecting the long-term nature of some of the effects being monitored.
- The consent holder should follow standardised data collection and naming procedures for the various types of monitoring (refer to Appendix II).
- Independent five-yearly audits of survey data should be undertaken by a coastal scientist to determine the nature and scale of effects of the structures.

STDC needs to ensure that works are notified to the Council prior to taking place (usually 48 hours or seven days as stipulated in consent conditions), this should be as an email to [worknotification@trc.govt.nz](mailto:worknotification@trc.govt.nz). This will ensure that Council staff can inspect the work during construction (if required, for example certain consent conditions for silt input etc are imposed) and following construction to ensure there are no environmental effects of the works, and that work has been carried out as proposed.

In summary it is recommended that each programme should include the following standard features:

- A baseline “as-built” survey of the current structure;
- Annual site inspections and photographs by Council staff
- Topographic survey where applicable, as discussed above
- Annual reporting by the consent holder of maintenance undertaken; and
- Annual audit by Council staff of information provided on behalf of the consent holder.

### 3.3 Evaluation of performance

A tabular summary of STDC’s compliance record for the year under review is set out in Tables 2-13.

**Table 2** Summary of performance for Consent 4566-1 to maintain a boat ramp and jetty at Patea

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Boat ramp and jetty to be maintained	Inspection	Yes
2. Notification prior to maintenance		N/A
3. Consent holder to minimise environmental effects during maintenance		N/A
4. Construction in such a way so that flood flow is not restricted	Not yet monitored, scheduled for 2007-2008 period	Yes

N/A = not applicable

**Table 3** Summary of performance for Consent 4567-1 to maintain an accessway at Waverley Beach

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent holder to maintain accessway to satisfaction of Council	Inspection	Yes
2. 24 hours notification required prior to undertaking maintenance works		N/A
3. All practicable measure to prevent discharge of debris and contaminants into the sea		N/A

**Table 4** Summary of performance for Consent 4573-1 to maintain various structures in the Patea River mouth

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. 48 hours notification required prior to undertaking maintenance works		N/A
2. All practicable measure to prevent discharge of debris and contaminants into the sea		N/A
3. Optional review of consent	Next scheduled for 2010	N/A

**Table 5** Summary of performance for Consent 4575-1 to maintain a wharf in the Patea River estuary

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent holder to maintain structure to satisfaction of Council	Not yet monitored, scheduled for 2008-2009 period	N/A
2. 24 hours notification required prior to undertaking maintenance works		N/A
3. Structure to be removed if no longer required		N/A
4. Optional review of consent		N/A

**Table 6** Summary of performance for Consent 4578-1 to maintain a retaining wall and access at Opunake Beach

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent holder to maintain structure to satisfaction of Council	Inspections	Yes
2. 24 hours notification required prior to undertaking maintenance works		N/A

**Table 7** Summary of performance for Consent 4579-1 to maintain access ramp at Caves Beach, Waverley

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent holder to maintain ramp to satisfaction of Council	Inspections	Yes
2. 24 hours notification required prior to undertaking maintenance works		N/A

**Table 8** Summary of performance for Consent 5504-1 to maintain seawall at Middleton Bay, Opunake

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. 48 hours notification required prior to construction and maintenance works		N/A
2. Structure constructed in accordance with documentation submitted in application	Site inspections	Some deterioration of seawall
3. Plans of structure to be sent to Council following completion	Plans not received	No
4. Unnatural material to be removed from the coastal marine area	Site inspections	Yes
5. Best practicable option to minimise discharge of contaminants	Site inspections	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
6. Area and volume of disturbance to be kept to minimum	Site inspections	Yes
7. Structure to be removed if no longer required		N/A
8. Optional review of consent	Next scheduled for 2012, if required	N/A

**Table 9** Summary of performance for Consent 5512-1 to place a seawall at Bayly Road, Cape Egmont

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. 48 hours notification required prior to construction and maintenance works		N/A
2. Structure constructed in accordance with documentation submitted in application	Site inspections	Some deterioration of seawall
3. Best practicable option to minimise discharge of contaminants	Site inspections	Yes
4. Area and volume of disturbance to be kept to minimum	Site inspections	Yes
5. Unnatural material to be removed from the coastal marine area	Site inspections	Yes
6. Structure to be removed if no longer required		N/A
7. Optional review of consent		N/A

**Table 10** Summary of performance for Consent 5983-1 to place rock rip rap in the Kaupokonui Stream

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. 48 hours notification required prior to construction and maintenance works		N/A
2. Structure constructed in accordance with documentation submitted in application	Site inspections	Yes
3. Best practicable option to minimise discharge of contaminants	Site inspections	Yes
4. Area and volume of disturbance to be kept to minimum	Site inspections	Yes
5. Structure to be removed if no longer required		N/A

Condition requirement	Means of monitoring during period under review	Compliance achieved?
6. Work involving discolouration of stream to be undertaken between 1 November and 30 April only	Site inspections	Yes
7. Structure not to obstruct fish passage	Site inspections	Yes
8. Optional review of consent	Next scheduled in 2011, if required	N/A

**Table 11** Summary of performance for Consent 6736-1 to place a gabion mattress at Denby Road for erosion control and beach access

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to minimise environmental effects	Inspections	Yes
2. 48 hours notification required prior to construction and maintenance works		N/A
3. Exercise of consent in accordance with documentation submitted in application	Inspections	Yes
4. Lapse of consent 5 years after date of issue if not actioned		N/A
5. Optional review of consent	Next scheduled in 2019	N/A

**Table 12** Summary of performance for Consent 6791-1 to construct and maintain boat ramp and breakwater in Opunake Bay

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Exercise of consent in accordance with documentation submitted in application	Site inspections	Yes
2. 48 hours notification required prior to construction and maintenance works	Notification received	Yes
3. Best practicable option to minimise environmental effects	Site inspections	Yes
4. Volume and area of disturbance minimised	Site inspections	Yes
5. No re-fuelling of machinery in coastal marine area	Site inspections	Yes
6. Optional review of consent	Next scheduled 2012, if required	N/A

**Table 13** Summary of performance for Consent 6839-1 to reinstate training wall in Patea River mouth

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to minimise environmental effects		N/A
2. Exercise of consent in accordance with documentation submitted in application		N/A
3. Written notification 7 days prior to exercise of consent	Notification not received	No
4. No re-fuelling of machinery in coastal marine area		N/A
5. Activity to comply with noise standards		N/A
6. Signage for public safety during construction		N/A
7. Volume and area of disturbance minimised		N/A
8. Consent holder to liaise with Kohanga Reo re traffic movements		N/A
9. Lapse on 5 years if not actioned		N/A
10. Structure to be removed if no longer required		N/A
11. Optional review of consent	Next scheduled 2010, if required	N/A

During the year, STDC demonstrated a good level of environmental performance and compliance with the resource consents. The seawalls at Bayly Road and Middleton Bay will require maintenance work in the near future.

### 3.4 Recommendations from the 2002-2007 Report

In the 2002-2007 Report, it was recommended:

1. THAT an annual site visit is carried out by Council staff on all coastal structures in the South Taranaki district. These visits should include photographs from pre-determined photo control points.
2. THAT additional visits and photographs should be taken following any alterations or additions, and after major storms.
3. THAT topographic and additional surveys are undertaken by STDC at Middleton Bay and Patea, as described in section 3.2.
4. THAT STDC should notify the Council via email to [worknotification@trc.govt.nz](mailto:worknotification@trc.govt.nz) prior to and following any maintenance work on coastal structures.

5. THAT STDC should provide a summary of maintenance of coastal structures on an annual basis (preferably at the end of the monitoring period in July)
6. THAT STDC should provide the Council with baseline “as built” plans for all existing coastal structures (where these are not already provided in consent file).

Recommendation 1 was implemented. Recommendation 2 was not required to be implemented.

Recommendations 3, 4 and 5 were not implemented as the recommendations were only published one month before the end of the monitoring period. It is anticipated that STDC will action these recommendations during the 2008-2009 period.

### **3.5 Alterations to monitoring programmes for 2008-2009**

In designing and implementing the monitoring programmes for coastal structures in the region, the Taranaki Regional Council has taken into account the extent of information made available by previous authorities, its relevance under the Resource Management Act, the obligations of the Act in terms of monitoring coastal structures and effects, and subsequently reporting to the regional community, and the scope of assessments required at the time of renewal of permits.

In the case of coastal structures in the South Taranaki District, the programme for 2007-2008 was altered from that for 2006-2007. It is now proposed that for 2008-2009, the programme continues to include annual inspections of each structure, including photographs, a record of maintenance supplied by STDC annually, and topographical and other additional surveys undertaken of specific structures, as discussed in section 3.2. A recommendation to this effect is attached to this report.

## 4. Recommendations

1. THAT an annual site visit is carried out by Council staff on all coastal structures in the South Taranaki district. These visits should include photographs from pre-determined photo control points.
2. THAT additional visits and photographs should be taken following any alterations or additions, and after major storms.
3. THAT topographic and additional surveys are undertaken by STDC at Middleton Bay and Patea, as described in section 3.2.
4. THAT STDC should notify the Council via email to [worknotification@trc.govt.nz](mailto:worknotification@trc.govt.nz) prior to and following any maintenance work on coastal structures.
5. THAT STDC should provide a summary of maintenance of coastal structures on an annual basis (preferably at the end of the monitoring period in July)
6. THAT STDC should provide the Council with baseline “as built” plans for all existing coastal structures (where these are not already provided in consent file).

## Glossary of common terms and abbreviations

The following abbreviations and terms are used within this report:

Andesite	is an igneous, volcanic rock, of intermediate composition
CMA	Coastal Marine Area defined in the RCP as the area of the foreshore and seabed: <ul style="list-style-type: none"> <li>(a) of which the seaward boundary is the outer limits of the territorial sea;</li> <li>(b) of which the landward boundary is the line of mean high water springs, except that where the line crosses a river, the landward boundary at that point shall be whichever is the lesser of:           <ul style="list-style-type: none"> <li>(i) one kilometre upstream from the mouth of the river; or</li> <li>(ii) the point upstream that is calculated by multiplying the width of the river mouth by 5.</li> </ul> </li> </ul>
Lithology	the scientific study of rocks
MLWS	Mean low water springs, the lowest of the low tides.
Mole	a massive structure, usually of stone, used as a pier, jetty, breakwater, or junction between places separated by water
RCP	Regional Coastal Plan for Taranaki 1997
Resource consent	refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15)
Revetment	structures placed on banks or cliffs in such a way as to absorb the energy of incoming water
Rip Rap	A type of revetment style using loose but interlocked boulders
RMA	Resource Management Act 1991 and subsequent amendments

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## **Appendix I**

### **Resource consents held by STDC**



## **Appendix II**

### **Taranaki Regional Council Coastal Survey Procedures Manual**