5.7  Pukehina Beach system
5.7.1 Rodgers Road (CCS 25)

Discussion

This site is located 150m to the east of Rodgers Road. The site consists of a single steep foredune developed in front of Pleistocene cliffs some 20m in elevation (Phizacklea, 1993). The 1978 photograph shows a scarped frontal dune with limited spinifex cover, runners are also present at the base of the dune. A berm is also present although punctuated by beach cusps. The 2006 photograph shows a steeper sloping upper beach as a result of accumulated sand. The presence of a berm is not as prominent as in the earlier photograph.

The beach profile record shows a steep retreating frontal dune. The MHWS plot shows a general retreat of the 1.1m elevation position up until 1996 and some stability since then. The offshore profile show a well developed offshore bar accompanying a deep trough. The profile converge at -6m and from 650m to the extent of the profile reef structures are present (a significant reef is present at 1750m with a variation in depth of 4-5m when compared with surrounding seabed.

The analysis shows a significant trend in the volume dataset with a state tending towards erosion for the period of record. For the section of beach from Otamarakau to Rogers Road, Gibb (1994) states a long-term trend (1927-1994) of shoreline retreat of approximately 15m, ranging from 15 to 25m, with short term fluctuations of 10 to 15m.
CCS 25 - Rodgers Road

State: Erosion?

Location: NZMG 2824669E 6370219N

Period of record: 1990 – 2006

No.of profiles: 63

Morphodynamic type (Wright Short model): Longshore Bar and Trough

Volume p-level – 0.00    TOF p-level – 0.47

Seasonal Profile Distribution

Beach Profile Summary

Offshore Profile Summary

Volume and Toe of Foredune Summary
5.7.2 Pukehina Trig (CCS 26)

Discussion

This site is located 6.5km to the east of the Waihi Estuary. This site has moved in a westward direction due to access issues at the 1978 site which is backed by 40m high vegetated Pleistocene cliffs. The current site shows (2006 photograph) long term erosion, with scarping along the base of the frontal dune caused by berm wash over and a predominant narrow high tide beach width.

The beach profile record shows a steep (near vertical in some cases) retreating frontal dune. The MHWS position is generally fluctuating within a 10m band, with extremes 5m either side of this band. The offshore profiles show a well developed offshore bar, with a position fluctuating between 150 and 300m offshore. At 1800m offshore a reef structure is present, raising ~6m from the surrounding seabed. The variation in shape of this structure is a reflection of varying survey paths. The extent of this feature (and others) is shown in Easton (2002).

The analysis shows a significant trend in both the volume and toe of dune datasets with a state of erosion for the period of record. For Pukehina Beach to the Spit, Gibb (1994) states a long-term trend (1912-1994) of shoreline retreat of approximately 8m, ranging from 2 to 14m, with short-term fluctuations of 10 to 30m increasing to 30 to 60m at the spit tip.
CCS 26 - Pukehina Trig

State: Erosion

Location: NZMG 2821394E 6372745N
Period of record: 1990 – 2006
No. of profiles: 43
Morphodynamic type (Wright Short model): Longshore Bar and Trough
Volume p-level – 0.00  TOF p-level – 0.00
5.7.3 Pukehina East (CCS 27)

Discussion

This site is located 5.3km to the east of the Waihi Estuary. The 1978 photography shows the large frontal dune present at this site (and present in many location along Pukehina Beach), with an elevation of 10m. It is vegetated with *spinifex* and *mulenbeckia*. Zones of faceted dune are present as a result of human and wind influences. The 2006 photograph shows a retreat in the position of the frontal dune. A steep dune face is evident with overhanging vegetation present. Staircases have been installed to help with access to the beach.

The profile record shows the retreat of the frontal dune and also a lowering of the upper and mid beach face. The MHWS position fluctuates between 10m, with a more landward position in the early 1990’s. The offshore profiles show the presence of an offshore bar. The volume of sediment in the inner zone (0 – 250m) shows a marked loss. As with CCS26 there is a reef structure present 1700m offshore.

Profile analysis shows a state of erosion. Strong negative trends are present for both toe of foredune position and beach volume for the period of record 1990 to present. For Pukehina Beach to the Spit, Gibb (1994) states a long-term trend (1912-1994) of shoreline retreat of approximately 8m, ranging from 2 to 14m, with short-term fluctuations of 10 to 30m.
CCS 27 - Pukehina East

State: Erosion

Location: NZMG 2820517E 6373465N

Period of record: 1990 – 2006

No. of profiles: 68

Morphodynamic type (Wright Short model): Transverse Bar and Rip

Volume p-level – 0.00  TOF p-level – 0.00

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5.7.4  Pukehina Middle (CCS 28)

Discussion

This site is located 2.3km to the east of the Waihi Estuary inlet. The 1978 photograph shows the presence of high (10m+) frontal dunes. Spinifex runners are present along the face of the scarped dune. The 2006 photograph shows spinifex present in the foreground of the dune with muelenbeckia covering the upper back slope. Access points have been defined to confine human traffic across the lower dune section, as the photograph suggests this section is still suffering from an erosional pattern.

The profile history shows dynamic movement in the mid beach section, berm development and elimination is a common pattern at this site as sediment supply permits. The offshore profile record shows active offshore bar development and fluctuation. No offshore reef is present at this site as measured at the 3 sites to the west. Easton (2002) records fine featureless sand morphology offshore for this site.

Profile analysis shows a state of erosion. Strong negative trends are present for both toe of foredune position and beach volume for the period of record 1990 to present. For Pukehina Beach to the Spit, Gibb (1994) states a long-term trend (1912-1994) of shoreline retreat of approximately 8m, ranging from 2 to 14m, with short-term fluctuations of 10 to 30m.
CCS 28 - Pukehina Middle

State: Erosion

Location: NZMG 2818211E 6375393N
Period of record: 1990 – 2006
No. of profiles: 43
Morphodynamic type (Wright Short model): Longshore Bar and Trough
Volume p-level – 0.00    TOF p-level – 0.00
5.7.5 Pukehina West (CCS 29)

Discussion

This site is located 1.3km from the Waihi Estuary entrance, and 250m east from the end of residential development at Pukehina Beach. The 1978 photograph shows the dune in an eroded state with a developed scarp and spinifex occupying this face. A narrow high tide beach is present. The 2006 photograph shows a small incipient dune forming which is densely populated with spinifex. No berm is present in either photograph. At this distal end of the spit the beach flattens in profile and a low tide terrace morphodynamic type is predominant.

The profile record shows a general retreat and lowering of the profile at this site. The MHWS position is more landward when compared with the position at the start of the investigation period (early 1990’s). The offshore data shows a variety of offshore bar forms. In the 1997 profile no bar is present, the 1990 profile shows a slight bar formation at 200m offshore, in 2003 a significant trough has developed 250m offshore. This variability suggests the influence and interaction of the Waihi Estuary ebb tidal delta interacting with the nearshore beach system along this spit section of Pukehina Beach.

For the period of record analysed a state of erosion is shown in the toe of foredune and beach volume records. Gibb (1994) states a long-term trend (1912-1994) of shoreline retreat ranging from 2 to 14m, with short-term fluctuations of 10 to 30m increasing to 30 to 60m at the spit tip.
CCS 29 - Pukehina West

State: Erosion

Location: NZMG 2817361E 6376269N

Period of record: 1990 – 2006

No. of profiles: 51

Morphodynamic type (Wright Short model): Low Tide Terrace

Volume p-level – 0.00  TOF p-level – 0.00
5.7.6 Maketu Headland Beach (CCS 30)

Discussion

This site is located on the western side of the Waihi Estuary entrance, 330m from the inlet. The beach is commonly known as Newdicks Beach (1.2km long), situated on the eastern flank of Okurei Point. The 1978 photograph shows the dune to be in a prograding state with a well colonised (spinifex) face. The 2006 photograph is taken further seaward but shows a depleted lower profile frontal dune still colonised with spinifex but exhibiting a reduced volume.

The profile record shows a frontal dune retreat with an associated reduction in beach elevation. The horizontal position of this beach has varied markedly over time evidenced by up to 3m separation between the minimum and maximum beach envelope positions. The offshore profile show that as with CCS 29 profile the 1997 measurements show an absence of predominant offshore bar. The MHWS position has shown stability since 2002.

For the period of record analysed a state tending towards erosion for the period of record is shown in the toe of foredune and beach volume records. A long-term trend (1931-1981) of shoreline retreat of approximately 3m, ranging from 12 to 15m with unstable slopes extending about 25m inland from MHWS.
CCS 30 - Maketu Headland Beach

State: Erosion?

Location: NZMG 2816434E 6377453N
Period of record: 1990 – 2006
No. of profiles: 20
Morphodynamic type (Wright Short model): Longshore Bar and Trough
Volume p-level – 0.02      TOF p-level – 0.00

Seasonal Profile Distribution

Beach Profile Summary

Offshore Profile Summary

Volume and Toe of Foredune Summary