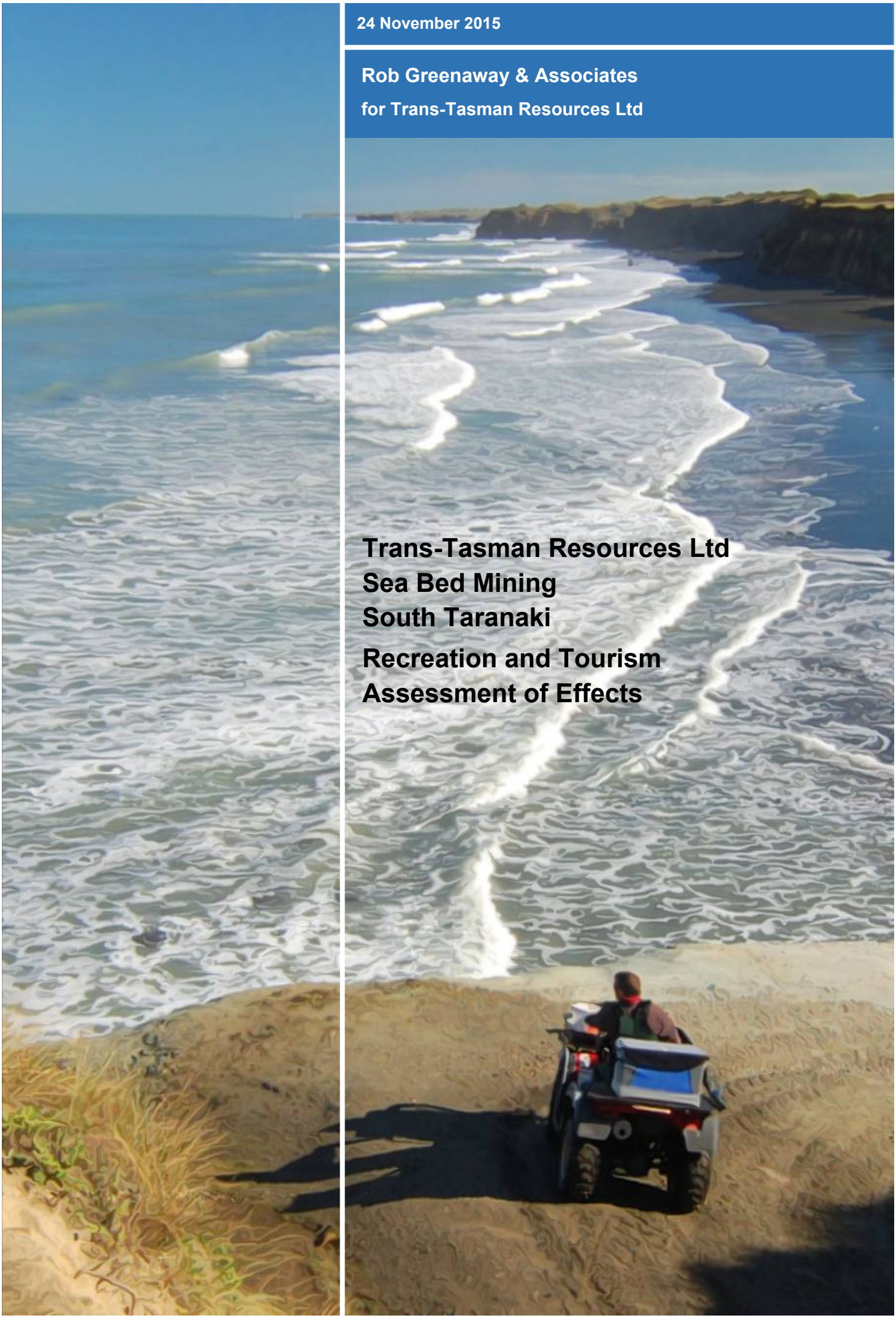
24 November 2015

Rob Greenaway & Associates
for Trans-Tasman Resources Ltd



Trans-Tasman Resources Ltd
Sea Bed Mining
South Taranaki

Recreation and Tourism
Assessment of Effects

Trans-Tasman Resources Ltd
Sea Bed Mining, South Taranaki

Recreation and Tourism Assessment of Effects

Final

24 November 2015

Prepared for:

Trans-Tasman Resources Ltd

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Cover photo: Waipipi Long Beach (Waverley) looking north-west

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Acknowledgements

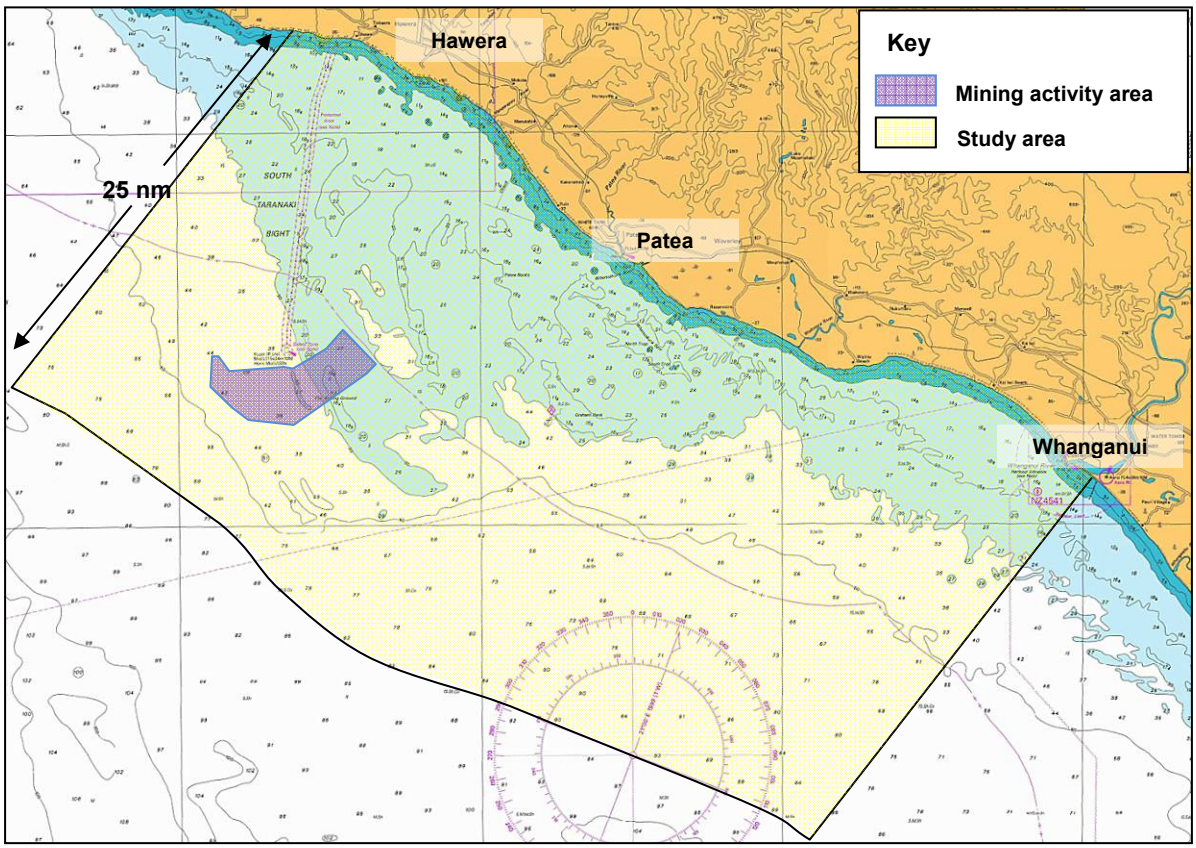
Particular thanks to the interviewees identified in Section 4.1 of this report.

1 Introduction and executive summary

This is an updated version of a report of the same name dated October 2013. The report author has been provided with information (see Appendix 1) relating to additional scientific work carried out for Trans-Tasman Resources Ltd (TTR) since 2014. The conclusions from the 2013 report remain valid as reported in this document, although the scales of effect as originally assessed are likely to have been reduced.

Trans-Tasman Resources Ltd (TTR) is proposing an iron sand mining operation in the coastal and offshore South Taranaki Bight area as shown in Figure 1. This report identifies the recreation and tourism activities which occur in the area that is potentially affected by this activity, defined as the coastal and offshore area extending 25 nautical miles (nm) (46.4 km) out to sea from mean high water springs (MHWS), between Hawera and Whanganui. Ohawe Beach has been defined as the northern-most extent of the 'study area' for recreation and tourism purposes.

Figure 1: Study area



The regionally important coastal marine recreation settings in the study area are based at the main public access and activity points: Ohawe Beach, Waihi Beach, the mouths of the Tangahoe and Manawapou Rivers, Patea, Waipipi, Waiinu, Kai Iwi and Castlecliff, and the fishing and cray-fishing resource up to 20 km offshore. The level of shellfish gathering along the coast is unclear but is a locally important activity.

The section of coast extending from Patea north to Cape Egmont is relatively lightly fished in comparison with the coast south of Patea and in North Taranaki. Very little recreational fishing occurs more than 20 km offshore along the entire west coast of the North Island.

Tourism activity in the study area is largely limited to the six beach camp sites and three fishing charter operations – two operating from Patea and one from Whanganui.

Potential effects of the sand mining proposal of interest to the recreation and tourism community are, as identified from concerns expressed at public meetings and interviewees contacted for this report, and review of technical data prepared for TTR:

- Turbidity effects (underwater visibility and smothering of biota) and the location of the sediment plume and sediment effects on onshore and offshore reef systems.
- Resuspension of returned sand during storm events or other wave action and the potential for long-term turbidity issues,
- Recolonisation rates for biota in the mined area,
- Toxicity of returned sand and effects on biota throughout the study area,
- Changes to coastal wave patterns affecting surfing opportunities,
- 'Sand budget' effects on the replenishment of beaches and sand bars (also an issue for surfing),
- Exclusive use of the marine area in the mining area and interference with navigation routes for recreation craft, and
- Effects on the environmental ('clean green') reputation of NZ.

Review of relevant technical reports indicates the following potential scales of effect:

Potential adverse effect on recreation and tourism due to changes to water clarity are:

- **Minor** in the inshore marine setting where most recreational activity occurs due to the very low scale of effect on water clarity in the inshore environment and the high level of background suspended sediment,
- **Minor** in the important diving setting of the Traps due to a persistent but small scale change in water clarity, which will be most apparent only when the mining activity is occurring in the eastern part of the mining area (that is, not for the full period of mining activity).
- However, there is potentially a **moderate** scale of effect in water clarity at the Traps during the rare periods of extreme water clarity (>10 m horizontal visibility on the bottom for four days per year), which are likely to coincide with ideal settled diving conditions and are therefore likely to be experienced by divers seeking a scenic experience, and when water clarity is marginal (< 5 m) for divers hunting crayfish. Similar effects are also likely at the less important diving setting on the Graham Bank.
- **Minor** on the offshore surface recreation experience in the South Taranaki Bight (fishing, sailing and other boating) due to the large scale of the offshore setting, the relatively low level of activity in the plume area and the transient characteristic of the experience.

Potential adverse effect on recreation and tourism due to changes to marine ecology are:

- **Minor** on recreation and tourism in the mining area due to very low levels of use of the setting and the large scale of alternative and proximate activity areas, although site-specific effects on benthic marine organisms will be greater,

- **Minor** for recreation and tourism activities outside the mining area due to the low scale of adverse effects on marine ecosystems.

There is also:

- The potential for only **minor, if any**, effect on **surfing, and inshore recreation** which relies on natural beach replenishment processes, due to the very low scale of potential adverse effect ('insignificant' changes to wave patterns and only a very weak potential link between the mining setting and inshore sediment levels),
- The potential for **only very minor** effects on recreation and tourism in the South Taranaki Bight due to **exclusive occupation** of the marine environment as proposed due to the very small area occupied by the activity, and
- **Very little potential for adverse effects** on New Zealand's tourism brand as the mining activity has limited adverse environmental effects and occurs well away from internationally and nationally important tourism settings.

Adverse effects of interest to recreation and tourism are therefore likely to be largely local to the mining activity, and will relate to exclusive use of the marine setting, local turbidity effects (up to 10 km from the site) and short-term effects on habitat in recently mined seafloor. The main recreation effects of interest are on diving at the North and South Traps. Adverse turbidity events will be limited to the periods when mining occurs in the eastern part of the mining area and may influence recreation satisfaction when water clarity would normally be extreme (approximately four days per year) and when diving is marginal for crayfishing, with 19 more days of visibility below 2 m in a year with proximate mining activity. Similar effects will occur at the less important diving setting on the Graham Bank.

2 Recreation and tourism values summary

The study area is used recreationally for a variety of purposes. Figure 2 locates those activities identified in this study, including:

Swimming at the main beach settings, including Ohawe, Waihi, Tangahoe, Patea, Waverley, Waiinu, Ototoka, Kai Iwi and Castlecliff.

Surfcasting at Ohawe and Waihi Beach, at the mouths of the Tangahoe and Manawapou Rivers, Waipipi, Waverley, Wainui, Kai Iwi and Castlecliff.

Shellfish gathering at reef areas from Ohawe to the Manawapou River mouth, south of Patea, Whenuakura, Waitotara, Waiinu, Kai Iwi and Castlecliff. Predominantly mussels but also paua, kina and other molluscs and shellfish. The prime regional shellfish gathering areas, especially paua, are generally agreed to be located north of Ohawe.

Beach walking at Ohawe and Waihi Beach (including the tidal coastal walkway along the beach between these two points), Patea, Whenuakura, Waipipi, Waiinu, Kai Iwi and Castlecliff, but also extending along many parts of the coast at low tide.

Diving, predominantly for crayfish, at Ohawe, Graham Bank, the North and South Traps and on rocky seams off Waitotara and Waverley, and at many dispersed sites along the coast where rocky features are on the sea floor. The main site for scenic diving is the North and South Traps. Other sites are predominantly targeted for harvesting.

Picnicking and general beach activities at all coastal access areas, with foci at Ohawe, Waihi Beach, Patea, Waipipi, Waiinu, Ototoka, Kai Iwi and Castlecliff.

Camping at Ohawe, Patea, Waipipi, Waiinu, Kai Iwi and Castlecliff. Beach. Some informal camping may occur on private land along the coast, such as at the Tangahoe and Manawapou River mouths, Waverley Beach and Whenuakura. Although this activity occurs above MHWS, it is associated with recreational beach use for a variety of purposes.

Surfing Ohawe and Waihi Beach, Patea, Waipipi, Waiinu, Kai Iwi and Castlecliff.

Fishing and boating in the marine area offshore, predominantly south towards Patea but throughout the study area. Local boat launching is available at Ohawe, Patea, Waipipi, Waiinu, Kai Iwi and Whanganui, but all are limited by sea conditions.

The regionally important coastal marine recreation settings are based at the main public access and activity points: Ohawe Beach, Waihi Beach, the mouths of the Tangahoe and Manawapou Rivers, Patea, Waipipi, Waiinu, Kai Iwi and Castecliff, and the fishing and cray-fishing resource up to 20 km offshore, and the scenic diving setting of the North and South Traps. The level of shellfish gathering along the coast is unclear but is a locally important activity.

Tourism activity in the study area is largely limited to the six beach camp sites and three fishing charter operations – two operating from Patea and one from Whanganui.

Figure 2: Coastal recreation activities identified in the study area – Ohawe to Whanganui

3 Recreation and tourism effects

This section considers the potential effects of the proposal on recreation and tourism values in the South Taranaki Bight.

3.1 Issues identified through consultation

A community meeting with recreation groups was held in Hawera on the 13th of August 2013 to introduce the sand mining proposal and to identify issues of concern. Thirty-seven individuals attended including members of:

- Patea and District Boating Club
- Mako Sub Aqua Club
- Opunake Boat and Underwater Club
- Surfing Taranaki
- South Taranaki Underwater Club
- Ohawe Boat Club
- New Plymouth Board Riders

Interviewees (see section 4.1) also identified potential effects of the proposal of interest to recreation and tourism. These were:

- Turbidity effects (underwater visibility and smothering of biota) and the location of the sediment plume and sediment effects on onshore and offshore reef systems.
- Resuspension of returned sand during storm events or other wave action and the potential for long-term turbidity issues,
- Recolonisation rates for biota in the mined area,
- Toxicity of returned sand and effects on biota throughout the study area,
- Changes to coastal wave patterns affecting surfing opportunities,
- 'Sand budget' effects on the replenishment of beaches and sand bars (also an issue for surfing),
- Exclusive use of the marine area in the mining area and interference with navigation routes for recreation craft,
- Effects on the environmental ('clean green') reputation of NZ,
- Risk of accidents with ships and subsequent marine pollution, and
- How effects will be monitored.

These issues are considered in the following section, besides monitoring and accident risks which are covered in the TTR Environmental Impact Assessment (EIA) (Argo Environmental 2013).

3.2 Effects analysis

The scale of the potential effects identified above are reviewed in the following technical reports completed for TTR:

- Hadfield, M. 2013. *South Taranaki Bight Iron Sand Extraction Sediment Plume Modelling.* NIWA client report for TTR

- Mead, S. 2013. *Potential Effects of Trans-Tasman Resources Mining Operations on Surfing Breaks in the Southern Taranaki Bight.* eCoast Marine Consulting and Research client report for NIWA
- Hume, T. M. 2013. *Coastal stability in the South Taranaki Bight.* NIWA client report for TTR
- Beaumont, J. Anderson, T.J and MacDiarmid, A. 2013. *Benthic flora and fauna of the South Taranaki Bight*. NIWA client report for TTR
- Anderson, T.J. MacDiarmid, A. and Stewart, R. 2013. *Benthic habitats, macrobenthos and surficial sediments of the nearshore South Taranaki Bight*. NIWA client report for TTR
- Vopel K, Robertson J and Wilson P.S. 2013. *Iron sand extraction in South Taranaki Bight: effects on seawater trace metal concentrations*. AUT Client report for TTR
- Boffa, F. 2103. *Seascape and Natural Character and Visual Effects Assessment*. Boffa Miskell Client report for TTL
- The analysis of marine ecology effects by Dr McClary of Gardline Marine Sciences PTY Limited as detailed in the EIA (no stand-alone report has been published).

3.2.1 Water clarity – visual properties

Changes to the clarity of the water in the South Taranaki Bight has the potential to affect visual amenity and natural character (landscape effects) and the quality of the diving experience, particularly at the North and South Traps.

The scale of potential change to water clarity resulting from the mining sediment plume have been assessed by NIWA (Hadfield 2013) and interpreted for landscape effects by Boffa Miskell (Boffa 2013).

The NIWA analysis relies on Secchi depth as the metric to describe changes in horizontal and vertical underwater visibility. A Secchi disc of a defined size and colour is lowered through the water column – or parallel to the surface – until it is no longer visible, and this distance defines the transparency of the water. This means that it is difficult to compare a subjective analysis of water clarity with the NIWA results. A boater might be able to see the bottom in many metres of water, with large rocks and weed beds, but not sight a small Secchi disc of 20 to 30 cm diameter at the same depth. Therefore, the metrics used by NIWA must be treated separately to the visibility assessments made by interviewees in section 4.1 of this report. For example, one interviewee stated a potential for up to 20 m of visibility at the Traps, whereas the NIWA modelling indicates that a Secchi disc metric gives a maximum of 15 m horizontal visibility on the sea bottom and only more than 10 m of visibility on four days per year (although modelling also indicates that horizontal visibility extends to beyond 20 m at the surface at the Traps). The Secchi disc data are therefore likely to be conservative.

Interviewees indicate that water clarity at the Traps is best on settled days, and the NIWA modelling is also based on periods with low background suspended sediment levels. This shows the maximum potential adverse effects of the proposal (that is, putting a sediment plume into relatively clear water). Modelling was carried out for mining at points closest and farthest to the Traps, within the proposed mining area.

Key indications from the NIWA modelling are:

- Modelled bottom[1] horizontal water clarity at the Traps (Secchi disc metric) currently exceeds 10 m on four days per year. With mining occurring as close to the Traps as permitted, the water clarity at the reef (on the sea bottom) would not exceed 10 m.
- This shift in water clarity is reasonably consistent across all periods of defined water clarity. For example, modelled periods of horizontal visibility on the bottom at the Traps of up to 5 m currently occur for 37 days per year, whereas with mining in place as close as permitted, horizontal visibility at the bottom would be 4 m for 37 days per year.
- The reduction in clarity at the surface would be of a similar scale, but with a higher base clarity. Modelling shows background horizontal clarity of 4 m on the surface for 91 days per year, while proximate mining would change the surface clarity to 3 m for 91 days. The scale of reduction in visibility reduces as the natural background water clarity also reduces. The preferred lower limit for crayfish diving as stated by interviewees ranges from 2 to 5 m. Visibility below 2 m would occur on 19 more days with mining proximate to the Traps.
- Mining activity occurring as far from the Traps as permitted shows changes only on the very few days with relatively extreme bottom water clarity – one or two days per year where the horizontal water clarity drops from 15 m to 12 or 13 m, but very little, if any, change in clarity at other times. There are only minor changes for surface level clarity with distant mining activity.

The modelled data indicate that for some time when mining activity is occurring close to the Traps, divers might encounter changes in water clarity at the surface and on the reef. However, the scale of change – approximately a metre less visibility at the most common suspended sediment levels – means that the experience on any one day will not be much different from what would normally be encountered. While the change in water clarity is a real effect, it would be difficult for a diver to identify a change attributable to the proposal as the water clarity levels remain within those commonly experienced. The greatest change is at the extreme levels of clarity – greater than 10 m – which currently occur rarely (less than four days per year). There are reductions in the availability of this scale of clarity for both near and distant mining activities, but both are scales of change measured in very short periods – a maximum of four days per year where visibility drops from 15 m to 10 m.

The NIWA assessment identifies that resuspension of the post-mining deposits on the seafloor, due to wave and current activity, will have less effect on water clarity than that of the mining activity. The modelling therefore accounts for periods when mining is not occurring due to adverse sea conditions. However, there is likely to be very little, if any, marine recreation occurring when there is enough wind and/or wave energy in the Bight to mobilise seabed deposits.

Boffa Miskell (Boffa, 2013) interprets the NIWA data to identify that there will be visual amenity effects resulting from the sediment plume but that these will be most apparent from recreational and commercial aircraft, and only in the offshore South Taranaki Bight setting. From the coastline, cumulative effects of the plume are considered to be unlikely to be visible due to the low scale of effects distant from the mining activity and the naturally high background inshore sediment levels. In the offshore setting near the mining site, and where there is currently no sediment plume, potential adverse effects on visual amenity are considered to be potentially 'moderate', although any experience of these will be transient and occurring in a relatively low-use setting. Natural character effects on the seabed where mining

[1] NIWA modelling has been completed for three depths: surface, middle and bottom. The 'bottom' measurements are for depths beyond those at the Traps, and so modelling for the 'middle' water depths apply to the diving experience at the Traps.

occurs are considered to be potentially 'major', although there will be very little if any human experience of this changed setting.

In summary, the scale of adverse effect on recreation and tourism due to changes to water clarity are:

- **Minor** in the inshore marine setting where most recreational activity occurs due to the very low scale of effect and high level of background suspended sediment,
- **Minor** in the important diving setting of the Traps due to a persistent but small scale change in water clarity, which will be most apparent only when the mining activity is occurring in the eastern part of the mining area (that is, not for the full period of mining activity),
- However, there is potentially a **moderate** scale of effect in water clarity at the Traps during the rare periods of extreme water clarity (>10 m horizontal visibility on the bottom for four days per year), which are likely to coincide with ideal settled diving conditions and are therefore likely to be experienced by divers seeking a scenic experience, and when water clarity is marginal (< 5 m) for divers hunting crayfish. Similar effects are also likely at the less important diving setting on the Graham Bank.
- **Minor** on the offshore surface recreation experience in the South Taranaki Bight (fishing, sailing and other boating) due to the scale of the offshore setting, the relatively low level of activity in the plume area and the transient characteristic of the experience.

3.2.2 Marine ecology effects

Potential effects on benthic and pelagic ecology are of interest to fishers and divers. Both recreational groups are interested in marine organisms for harvesting, and divers photograph and experience the biota of sub-marine setting as a scenic environment.

Dr McClary, of Gardline Marine Sciences PTY Limited, has assessed the potential effects of the proposal on marine biota by considering, for example, antifouling on vessels, mooring blocks and structures, the extraction of sand from the seabed, the deposition of de-ored sediment and other discharges from vessels.

Effects with a 'high' environmental risk rating (a function of the scale of the consequence of an effect, and the likelihood of it occurring) were identified for benthic biota in the immediate mining area (extraction, smothering and burial), and from biosecurity hazards resulting from the potential accidental introduction of non-indigenous species to the local and national marine environment (which are addressed in the EIA).

Recovery rates for benthic biota in the immediate mining area – largely on worm beds – are expected to be between a period of months to several years. Various mitigations are proposed in the EIA to support rapid recolonisation. As these effects are confined to a setting with very low levels of recreational use (the mining area), the 'high risk' effects on biota are considered to be of a minor scale for recreation and tourism.

Dr McClary identifies 'moderate' risk effects on 'near-field' benthos (close outside the mining area) due to deposition of sediment, again primarily on worm beds. The deposition rates are modelled to be less than 1mm per year with high recovery rates. 'Moderate' effects are also indicated for deep-water near-field biogenic habitats – bryozoan beds – due to elevated sediment loads. These have not been identified as recreation settings.

'Low' effects have been identified for all other potential issues for marine biota, including effects on pelagic and inshore marine species and reef habitats. These assessments are due to, for example, low suspended sediment levels at sites of interest, high background sediment levels and high levels of natural seabed disturbance. The effects assessed include, amongst

other things, 'choking' by suspended sediment and deposition on reef habitats – issues which were identified as concerns through consultation.

Toxicity effects due to the release of chemicals in sediment were assessed as having a low probability of adverse effects on pelagic biota.

In summary, the scale of adverse effect on recreation and tourism due to changes to marine ecology effects are:

- **Minor** on recreation and tourism in the mining area due to very low levels of use of the setting and the large scale of alternative and proximate activity areas, although site-specific effects on benthic marine organisms will be greater,
- **Minor** for recreation and tourism activities outside the mining area due to the low scale of adverse effects on marine ecosystems.

3.2.3 Sand budgets and onshore wave effects

NIWA (Hume, 2013) indicate that the beaches of the South Taranaki Bight are characterised by considerable erosion and accretion over short time scales (months and probably years) under natural conditions (with no mining activity) and are adapted to this environmental setting. A large scale change in sand supply and wave action would be required to have an effect on this naturally variable system.

Due to the scale of the mining activity and the distance offshore, impacts on wave heights are considered insignificant with respect to impacts on surfing quality (Mead 2013). Hume (2013) indicates the potential for only a 'weak' connection between sands at the mining site and the supply of sediment at the shoreline.

These data indicate:

- The potential for only **minor, if any**, effect on surfing and inshore recreation which relies on natural beach replenishment processes.

3.2.4 Exclusive use of the marine environment

The proposed exclusion zone in the mining site will include only that area occupied by the mining ships, the dredge unit and their anchoring systems. The remainder of the proposed mining site will be open to use when it is not occupied by mining equipment. This represents a very minor loss of marine access in an area with naturally low levels of recreation activity.

Recreational marine craft are accustomed to – and should always be aware of – impediments to navigation, and the presence of large offshore vessels should not be considered unusual or an adverse effect on navigation when located in an expansive setting.

In summary:

- There is the potential for only **very minor** effects on recreation and tourism in the South Taranaki Bight due to exclusive occupation of the marine environment as proposed.

3.2.5 Effects on New Zealand's 'clean green' reputation

The OECD report *Indicators for Measuring Competitiveness in Tourism* (Dupeyras & MacCallum 2013) describe 'tourism competitiveness for a destination' as about:

> *…the ability of the place to optimise its attractiveness for residents and non-residents, to deliver quality, innovative, and attractive (e.g. providing good value for money) tourism services to consumers and to gain market shares on the domestic and global market places, while ensuring that the available resources supporting tourism are used efficiently and in a sustainable way.*

Measurable issues facing tourism competitiveness are described as including:

- Natural resources and biodiversity,
- Cultural and creative resources,
- Country entry visa requirements, and, amongst other things,
- Purchasing Power Parity (PPPs) and tourism prices.

There is an inter-dependency amongst these and other features of a tourism destination which affect its success. Extractive industries, per se, may have effects on natural and cultural resources, but it is not possible to make a correlation between a country's hosting an extractive industry and tourism failure, considering the level of mining and other resource use internationally. The issue is the scale of environmental effects on a tourism asset. In the case of the South Taranaki Bight and the proposed mining area, there is very little if any international tourism activity considering that the relevant dive and fishing charter vessels are limited by their MSA licences to operating within the 12 nm limit, and the low scale of adverse effect on the diving and fishing resource within that limit.

The Ministry of Economic Development's Tourism Strategy Group described the tourism prospects for New Zealand as largely dependent on external issues (MED 2010):

> *Taking a long-term look at the New Zealand tourism sector allows growth trends and pattern shifts to be identified. In this examination, the picture is of sustained long-term growth, with disturbances caused by major economic or adverse events. Growth rates have slowed as the overall market volume has increased. The market mixes have changed considerably, but then have reverted back as the drivers of market performance have changed over time (e.g. economic conditions, aviation capacity and airfares, travel preference, exchange rates, competition from other markets, etc).*

In summary:

- There is **very little potential for adverse effects** on New Zealand's tourism brand as the mining activity has limited adverse environmental effects and occurs well away from internationally and nationally important tourism settings.

4 Recreation and tourism activity data

This section provides the base data from which the recreation and tourism values descriptions are drawn.

4.1 Interviews

Interviews with relevant club and activity representatives were completed to provide locally relevant data. The interviewees are identified below and their comments have been collated by topic in section 4.1.2. Dr Shaw Mead of eCoast Marine Consulting and Research carried out a separate assessment of effects on surf breaks in the South Taranaki area for NIWA as part of the TTR sand mining investigations, and his research included interviews with regional surfing representatives. Only a limited review of this activity has been carried out in this study to avoid duplication.

4.1.1 Interviewees

Neil Ward – Mako Sub Aqua Club

The Mako Sub Aqua Club is based in New Plymouth, owns its own clubrooms, and was formed in 1957. It has had up to 50 or 60 members but is currently having a quiet patch with approximately a dozen members.

Brian Smith – Fluffy Duck Charters Ltd

Fluffy Duck Charters operates a 53ft vessel out of Whanganui, taking up to 13 guests. Brian Smith – and ex commercial fisher with 40 years of experience – operates up to 12 nm off the coast, almost entirely north of Whanganui and up to Ohawe.

Peter Robins – South Taranaki Fishing Charters

Peter launches from Patea and fishes in the Tangahoe area, normally a short distance off the coast, but when there's a northerly will come in within ½ a mile of the beach. He relies mostly on charter work, but also commercial cod-potting in summer, some netting and line fishing.

Eddy Jenkins - HyJinks Fishing Charters

HyJinks Fishing Charters operates out of Patea with a 6.5m McLay boat, and fishes up to Manutahi in the north. The charter offers diving and fishing, with the Traps a popular spot for cray fishing, scenic dives and spear fishing (free diving), particularly for kingfish.

The business runs all year but is usually very quiet over winter – and Eddy has other work to do. His boat can exit the Whanganui River in pretty much any conditions, but clients don't like the sea when it's blowing more than 25 knots. Clients are drawn from throughout the North Island.

Carl Triggs – South Taranaki Underwater Club

The club has 40 members, many of whom are also members of the Patea and District Boating Club. The club has a compressor and offers well-priced tank refills, which is an important benefit of membership. Ninety percent of members would use the coastal area north of Patea. Crayfish and fishing are the main activities.

Geoff Campbell – Opunake Boat and Underwater Club

The Opunake Boat and Underwater Club has 120 to 130 members and is growing. Of those, 40 to 45 are divers (although only about 15 to 25 are active) and the remainder are fishers. Most members are from Taranaki, but include people from throughout the central North Island.

Boats launch through the surf at Opunake, which is a very exposed piece of coast, meaning that access to the sea is quite limited – most likely less-easy than the Patea bar which is usable only about 80 days a year. Forty days a year might be the figure. Most boats are relatively small and therefore have a limited range for fishing and diving, with Manaia the furthest south that most would venture – well north of the mining site.

Glynn Herbert – Ohawe Boating and Angling Club

The club has approximately 60 members with 45 boats registered. Club members often have dual membership with the Cape Egmont and Patea and Districts Boat Clubs so they have access to other launching options. Members rely on the club tractor to launch boats, and due to the weather only one in five days is suitable for boating and fishing activity.

Harley Ogle, Phil Morgan – Patea and District Boating Club

The club has 150 members and 132 boats, and maintains a clubrooms, parking area, jetty and webcam for members. Members are from Patea, Waverley, Stratford and the wider district.

Paddy Walsh – Opunake Surfcasting and Angling Club

The Opunake Surfcasting and Angling Club has approximately 70 members, 45 or 47 of which are family memberships and the remainder individuals. The club focuses on shore-based angling – surfcasting – although motorised kontikis can take lines 1200 to 1500 metres offshore.

The club supports 'take a kid fishing' activities (marine and river), issues a monthly newsletter during the season, runs two fishing days per month, offers a buddy system for new members and runs competitions with trophies. While the club has no special formal arrangements to allow access for members to the coast over private land, there are verbal agreements and club membership will enhance the opportunity to arrange access. Access immediately north of Patea is very difficult with steep coastal cliffs up to and north of Hawera.

Harry James – Opunake Boardriders Club

The Opunake Boardriders Club is one of five incorporated surfing clubs of Taranaki which make up Surfing Taranaki, a regional sports organisation which represents approximately 1,500 surfers throughout the region.

4.1.2 Interview data

Data drawn from interviews has been anonymised and collated by topic. Some comments are repeated under different topics where relevant.

Water clarity

- Photos of the underwater scene at the Traps could easily be mistaken for the Poor Knights when the visibility is good. The water clarity at the Traps can vary from 3.6 or 4.5m to 18.3 to 24.3m. Approximately 50% of the time the visibility is 'spectacular', but it is very rarely so bad as to be not worth the trip.
- Water clarity in the Bight is often good in mid-winter, but it is pretty cold. Spring tides can drag sediment offshore, and algal blooms occur in warm weather.
- Water clarity is an issue for fishing and when it is very poor, there is no point in fishing. However, there is normally a 'bit of sediment' in the inshore fishing areas and it extreme events – storms and high river flows – pose real problems.
- Diving at the Traps is best at slack tide – high or low – due to the strong currents which pass over the reefs. The commercial operator picks the best days to dive there to avoid heavy seas and poor visibility. Water clarity is marginal only occasionally,

and on up to about 20 days a year you can see the bottom from the boat. Such days usually happen in successive sets over short periods during settled weather.

- The Bight has 'reliable' water clarity, meaning it normally has better than 5 m visibility and up to 20m. For cray diving, the lower level of visibility is fine, but for a sightseeing visit to the Traps, the higher levels are required. For seven months of the year the visibility is good, and the most popular times are from late October to April, when the weather is warm and less sediment is coming onto the coast from rivers.
- Excellent water clarity is rare in the South Taranaki Bight generally, but last autumn it was up to 20m at the Traps. Not a lot of visibility is needed for cray hunting, but is important for sightseeing. Windows of opportunity are not common and can take a bit of patience to find. Water clarity at the surface can also be deceiving with the interviewee having experienced clear water at the surface but very low visibility below between 2m and 4m from the bottom. There can also be tides working along the bottom which are not apparent at the surface. The Bight area is a 'fickle' for diving (because of clarity and launching issues) and also for fishing (because of launching issues).
- About half the members are divers and are 'meat hunters' mostly after crayfish. Four Mile Reef, which is about four miles off Ohawe and south a bit, is a productive and popular site (about 3 acres in area), but the Tangahoe area is also good, but often too dirty for diving. Two metres of visibility for cray diving is pretty much the absolute limit, and 5m is preferable. The Traps are popular for sightseeing and 10m plus visibility is good there. However, it is prone to silt from rivers and so is not often ideal.
- Water clarity is better towards the north and around the Cape, and the papa-county rivers south of Ohawe tend to make the southern area a lot less clear almost all the time.
- Changes in water clarity don't normally deter surfing – surfers know the beaches and reefs well and are more concerned about the quality of the wave. However, water quality is of interest.
- Club members mostly spearfish and collect crays and scallops, and do general sight-seeing and photography – the latter requiring excellent visibility (throughout the water column to let light in).
- Water clarity tends to be better north of around the Puketapu River.

Diving

- Club members have few good diving options on the west coast of the North Island – limited to the North and South Traps (the 'Waipipi Shoals'), Kapiti and Mana Islands to the south, and the Sugar Loaf Islands area off New Plymouth. There are 'rocky bits' inshore, but these are generally turbulent and with poor visibility. Otherwise the club charters trips to, for example, the Marlborough Sounds, Cook Straight and the east coast.
- Scallops are thinly distributed in the Waipipi area (and others locations) around 20 to 22m, but divers can easily get their limit.
- The commercial operator is not aware of anything of interest to divers in the proposed mining areas and around the oil rig platform.
- Diving at the Traps is best at slack tide – high or low – due to the strong currents which pass over the reefs. The commercial operator picks the best days to dive there to avoid heavy seas and poor visibility.

- Diving occurs between depths of 8 and 27 m, pretty much where-ever there is a rocky mound that would attract crays, and these are spread all along the coast. There are probably more than 50 suitable reefs for cray diving in the area assessable from Patea and out as far as approximately 9nm in 31m of water.
- The Traps are an important dive site accessed by members of the club for 'a change of scenery', and are described as the west coast's equivalent of the Poor Knights. The diving off Opunake and Ohawe is mostly on boulders – and the diving is mostly for cray fish – while the Traps are a sandstone feature. While fishing is not great at the Traps, divers will grab an occasional cray if they come across one. There are some pelagic fish to be had there, such as kingfish.
- The cray population varies from year to year, but they are generally quite plentiful and are a good size.
- The interviewee dives inshore mostly for crays around Opunake. He only goes when the water is clear, which occurs in northerly conditions. Local rivers can carry quite a lot of silt and discolour the sea locally, but this normally clears up after only a few days.

Fishing

- The commercial operator has a range of preferred fishing spots which are normally well-kept secrets. The Traps are generally too foul for charter operations where clients would lose too much gear, so preferred spots are on the drop-off outside the Graham Bank.
- Interesting fishing (and diving) areas rely on rocky outcrops, and these can come and go as sand moves around. The Bight area is therefore 'full of surprises' for fishing spots.
- For fishing, the Traps and Graham Bank aren't especially special locations. Boaters tend to cruise with their fish finders on and find spots as they go, and record those with GPS. Cod are found on the sand banks in 28 to 30 m of water about 7 nm offshore. The further offshore you go, the bigger the cod – at 5 nm they might be just legal, but at 10 to 11 nm they are up around 3.5 kg.
- While fishing is not great at the Traps, divers will grab an occasional cray if they come across one. There are some pelagic fish to be had there, such as kingfish.
- Fishing occurs pretty much everywhere, including the Graham Bank and Rolling Ground and all along the shelves extending from these. Cod are pretty much sedentary and don't move more than a kilometre from their home area, so if you fish the one location too much there won't be anything left. Fishers therefore need an extensive area over which to spread their effort.
- Commercial operators used to commonly trawl the sand mining area for snapper and trevally, but less so now that stocks are depleted. While there is no foul ground in the area for fish to congregate around, they will be feeding on worm beds.
- The state of the Patea bar and sea limit boating activity to 25 to 30 days per 100, so there is relatively slight pressure on the fish population.
- Club members also go on fishing charters – using Fluffy Duck and South Taranaki Fishing Charters locally. Most good spots are inshore of the 12 nm limit, but the interviewee is aware of some fishing for hapuka occurring further out in 30 to 40m of water.

- On a good weekend day, there can be as many as 150 boats fishing the area out of Whanganui, and most would head north. There is less foul ground to the south and so poorer fishing conditions.
- Some recreational fishing for groper, rig and shark occurs outside the 12nm limit. Groper will congregate around the odd rocky outcrop which are generally permanent features on the seabed.
- Club members fish pretty much everywhere, including around the 12 nm limit. Cod are found on hard surfaces and don't move around much, and snapper on the edge of the hard areas. Fishing spots are scattered throughout the coastal zone near Ohawe. These sites might be only a ¼ acre in size so it's like 'trying to find an oasis in a desert'. Bigger cod are further out, so heading further offshore is worthwhile. Hapuka are not common and are found a long way out, requiring two boats for safety reasons.
- Fishing has been very good over the past five years, perhaps because the water has been warmer. The interviewee notes that marlin appear to be travelling further south than in previous years, as have tuna – down to around Rahotu. Water clarity north of Opunake is very good and these species like clear and warm water. Kingfish have been prolific around the rigs offshore. Locals team up once a year or so in extremely settled weather and take two or three boats directly offshore from Opunake to chase these larger fish, beyond the 12 nm limit.
- No tuna or marlin occur in the waters south of Hawera at least, but the commercial operator does know of tuna off Opunake.
- Spiny dogfish ('spikey sharks') can reach 'plague proportions' over winter and 'you can catch nine of those for every cod'. The main fishing season is from November to May.
- Graham Bank and the 40 m drop-off along the coast is a preferred fishing setting, although there can be good fishing at any site where fish congregate and so there are plenty of options – but also some specific favoured sites. The odd hapuka turns up at the 40 m contour.
- The areas fished by club members is generally between Ohawe and Waverley, but the distance covered depends on the type of boat used. Hard-tops travel further, for example, when compared with open boats.
- Whanganui boaters might fish as far north as Waverley. Fishing access to the sea is limited by the Patea River bar, which is passable on approximately 80 days a year. Fishing depths are up to 25 metres and fishing spots are dispersed. The Graham Bank and the Tangahoe River mouth area from 8 to 14 metres are targeted areas. The location of fishing on any one day is dictated by the wind direction, with boats travelling into the sea on the way out to get a clear run back.
- The commercial operator has looked at the sand mining area in the past as a possible fishing ground but has found nothing of interest. The closest fishing sites he has identified are 5 to 6 nm away.

Inshore activities

- There a several surfcasting clubs throughout the region with their preferred beats. Opunake members tend to range mostly from Awakino in the north to Manaia in the south, although members will fish in any setting. A popular species is spotty sharks, caught using paddle crabs for bait. They tend to be larger south of the Puketapu River – water clarity is lower south of here and paddle crabs more plentiful.

- The Taranaki Open Surfcasting Classic is the largest regional event with a limit of 400 rods over 4½ days. Weigh stations for the event are stationed from Patea to Awakino.
- Paua can be gathered around the Opunake area and mussels are more plentiful from Manaia south. The movement of sand over the paua and mussel reefs is notable, with entire reefs covered occasionally and paua forced to the surface to provide some short-lived good fishing. The sand moves around in a large 'slug' and may be associated with historic erosion events of the 1970s which saw massive amounts of sediment washed onto the coast from local rivers.
- Paua activity occurs further north – around Oeo and Opunake – as the coast north of Patea has little good habitat. Not aware of much mussel or kina gathering occurring, although they are there.
- There are large shifts of sand along the coast after heavy seas, and inshore reefs can change dramatically, being smothered but also recovering over time.

Surfing

- The surf breaks in the Patea to Whanganui stretch of coast are important alternatives to those around the Cape area in north-westerly conditions. In the north, the NW wind is onshore and creates a messy wave, while it more offshore around Kai Iwi, Waipipi and Waiinu, making for clean-faced waves. The waves will be smaller in these areas compared with further north, but better to surf in these conditions. The break at Fences – around Snapper Rock south of Waiinu – is one of the longest (if not the longest) right handed break in the southern hemisphere and the sets can stretch for 2.5 km in the right conditions due to the angle of the local coast and the form of the beach.
- Other breaks in the area are near Whanganui – Castlecliff and Morgan St.

Spearfishing

- Not aware of much spear fishing occurring in the Bight area as the underwater visibility is often too low. However, spear fishers would probably not be members of the interviewee's club.
- Club members mostly spearfish and collect crays and scallops, and do general sight-seeing and photography – the latter requiring excellent visibility (throughout the water column to let light in). Scallops are thinly distributed in the Waipipi area (and others locations) around 20 to 22m, but divers can easily get their limit.

Access

- The commercial boat's MSA licence only permits activity up to 12 nm offshore and so the Rolling Bank is never fished.
- Members rely on the Ohawe club tractor to launch boats, and due to the weather only one in five days is suitable for boating and fishing activity. Different launching ramps have different natural restrictions – Patea is difficult at low tide and Ohawe is problematic at high tide. There is an increase in the number of kayak and jet ski-based anglers who can launch in more difficult conditions.
- North-easterly conditions are the best at Ohawe, meaning the equinox period from late September to November or December is pretty hopeless. December to March is the best period, although there is plenty of winter fishing for grey shark.
- Whanganui boaters might fish as far north as Waverley. Fishing access to the sea is limited by the Patea River bar, which is passable on approximately 80 days a year. Fishing depths are up to 25 metres and fishing spots are dispersed. The Graham

Bank and the Tangahoe River mouth area from 8 to 14 metres are targeted areas. The location of fishing on any one day is dictated by the wind direction, with boats travelling into the sea on the way out to get a clear run back.

- When it is busy, the public carpark at the Patea launch ramp with 10 spaces for trailers is full, as is the club parking area.

4.2 Publically accessible land

The DOC online GIS and Walking Access Commission WAMS mapping system indicates the extent of publically accessible land in the study area. Figure 3 shows the data held on the WAMS GIS system, which replicates that provided on the DOC GIS.

There is little public coastal recreation land between Ohawe and Patea, but several formed and unformed legal roads provide coastal access. More extensive areas of coastal reserve are evident between Patea and to east of Waiinu. Kai Iwi and Castlecliff are the key coastal access areas in the south of the study area.

The quality of public access as identified by the TRC coastal inventory (TRC 2004) to 'significant' coastal settings (see section 4.3.5 of this report) is indicated on Figure 9. The same criteria would indicate 'excellent' levels of coastal access at Kai Iwi and Whanganui, and these are also shown.

Figure 3: Publically accessible coastal land (WAMS data) and ease of access (Taranaki only, TRC 2004)

4.3 Other secondary data

This section reviews various reports with data on the recreation values of the South Taranaki and Whanganui Coast.

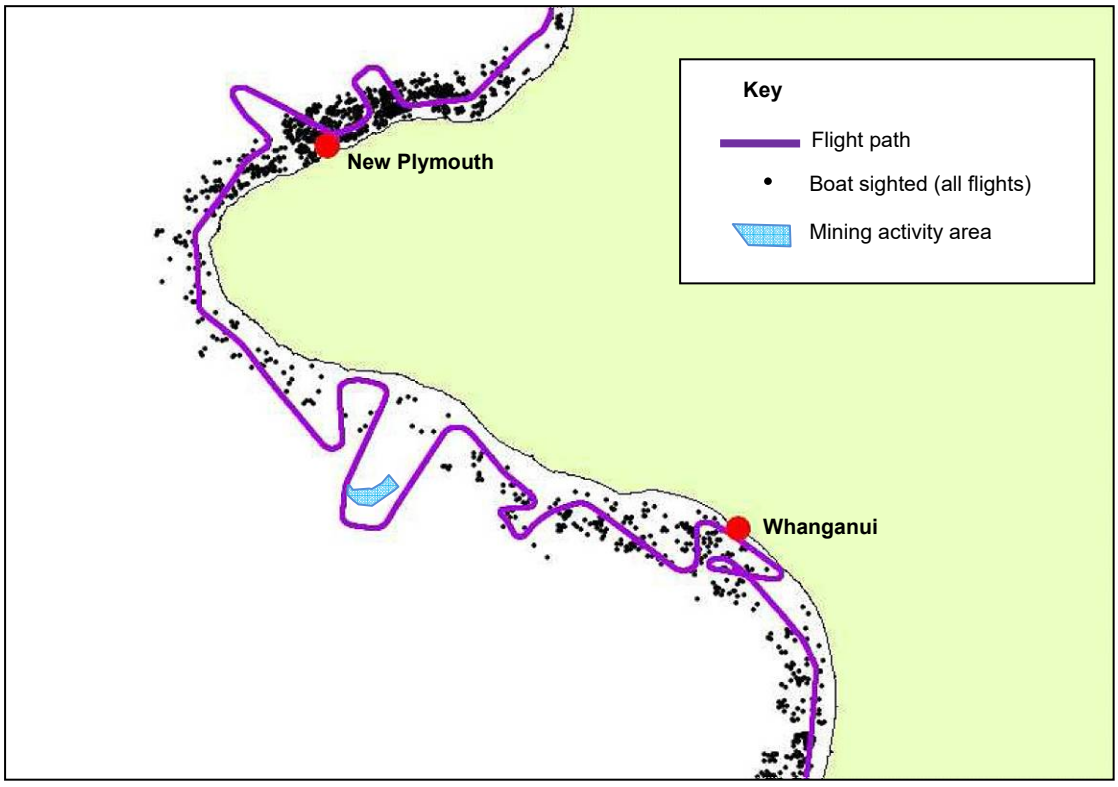
4.3.1 NIWA - Recreational harvest estimates for SNA 8 in 2006–07

In 2011 the Ministry Fisheries published an analysis of the recreational fishing effort and take on the West Coast of the North Island (Hartill *et al* 2011). The method included aerial counts of fishing activity along the coastline, including the main harbours, and included a pilot study in 2005-06 and a full study in 2006-07. Ten days of flights with four counts per day (two flights per survey day with counts on the inward and outward legs) were completed for the pilot study, and 45 flights were completed for the full study (on nine of those days, low cloud limited visibility). The pilot study included counts of shore-based anglers and people fishing from boats, while the full study only included boat activity, with the scale of shore-based fishing inferred from the results of the pilot study. 'Offshore fishing' in the South and North Taranaki Bights was not analysed and the focus was on the area several kilometres from the coast, with the flight path generally 1km from the shoreline with an ability to see vessels up to 3km away. There were some exceptions, including by coincidence the proposed mining activity area (Figure 4).

The pilot study indicated that 79% of anglers in the area spanning Ohawe to Titahi Bay were boat-based, 2% were using shore-based long lines and 19% were surfcasters.

The flight data from the 2006-07 study showed sparse boat fishing activity from Cape Egmont to north of Patea, with more boats sighted south of Patea and around Whanganui. The flight path indicates the survey area in the proposed mining area and that most offshore fishing activity is near the coast at that site.

Figure 4: Inshore boat angling activity, Tongapurutu to Tangimoana. Source: Hartill *et al* 2011



The majority of boats observed were trailer craft. In the 'Taranaki open coast' area spanning the offshore area from just south of Tirua Point to Ohawe, between 92.6% (midweek in winter) to 100% (midweek in summer) of observations were of trailer craft, and between 89.7% (midweek in winter) and 96.9% (weekend summer) of observations in the 'Southern open coast' area spanning Ohawe to Titahi Bay.

Flight data were corroborated, and more information gathered, via intercept surveys at boat ramps at popular launching areas, which suited the method considering the large proportion of trailer craft observed. The closest site to the mining area surveyed was Whanganui, but it would be risky extrapolating such data to the potentially affected area considering the small proportion of data relating to the study area. Figure 5 shows respondents' reported fishing distance for snapper (the focus of the study) offshore by survey area. The proposed mining area is in the 'Southern coast' setting, where a relatively greater proportion of effort (~ 20%) was expended beyond 10 km (5.4 nm) offshore than the other coastal settings, and all activities were within 21 km (11.3 nm) of the shore.[2]

Figure 5: Cumulative proportion of harvested snapper as a function of the reported distance from shore by analytical area. Source: Hartill *et al* 2011

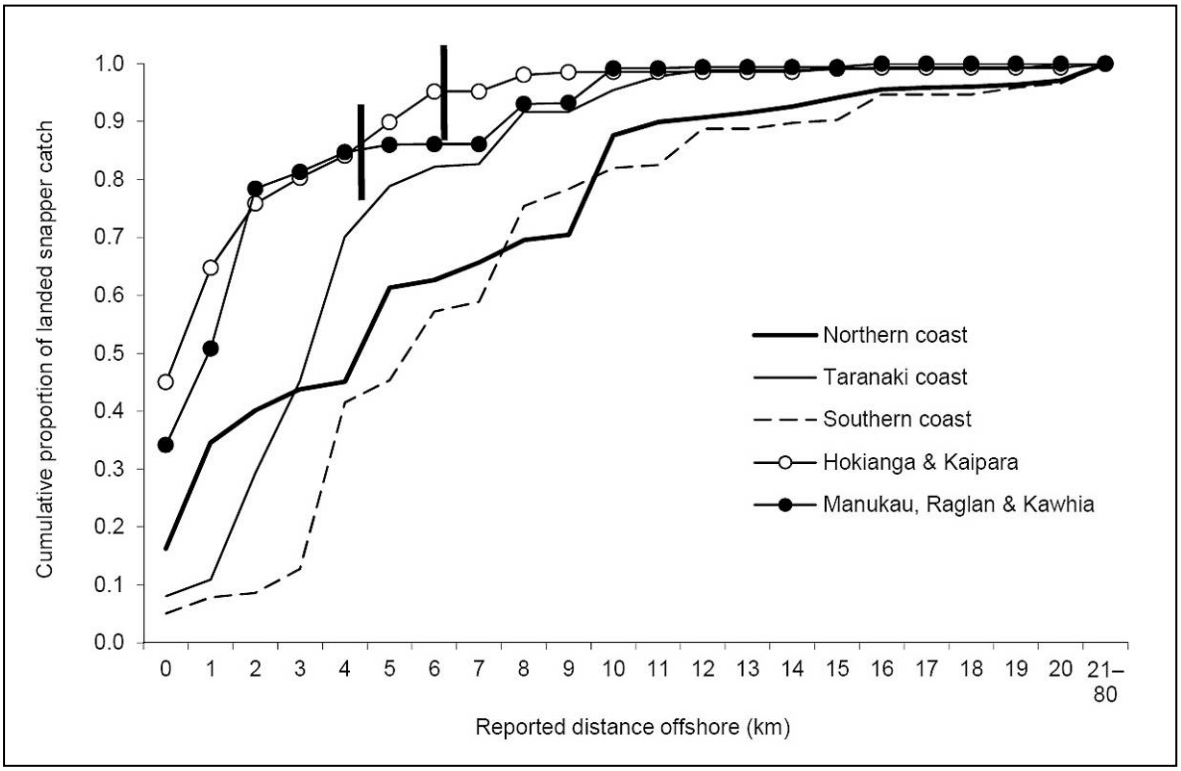
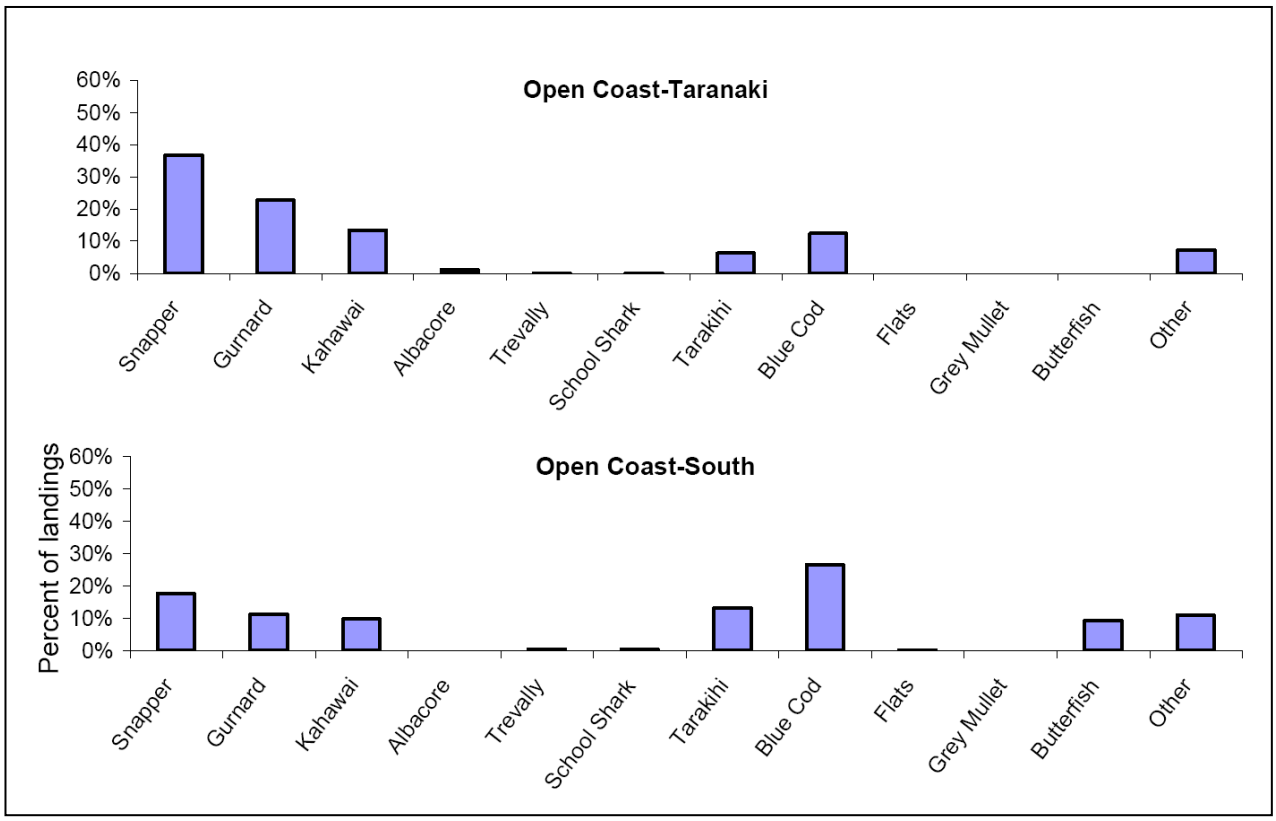


Figure 6 shows the species of fish caught by anglers in the 'Taranaki open coast' (south of Tirua Point to Ohawe) and the 'Southern open coast' (Ohawe to Titahi Bay) areas. Snapper is the primary target in north of Ohawe and blue cod in the south.

The pilot study indicated that in most cases, fishing effort peaked late in the morning, or occasionally early in the afternoon. Similar trends were evident for surfcasters and boat-based fishers. The data suggested that the timing of high tides had limited influence on the intensity of fishing effort observed. However, this might not apply in local areas where boat launching may be easier at certain tides.

[2] One fishing party claimed to have fished 80 km offshore, which was not considered credible. The solid vertical lines on the datasets for the harbours indicates the greatest distance offshore it is possible to fish in these settings, showing that some overstatement by anglers was evident. This might be reflected in the data for other angling settings (overstatement of distance travelled offshore).

Figure 6: Species composition landed by recreational fishers from two regions of SNA 8. Hartill *et al* 2011



4.3.2 Taranaki Regional Council, 2008 – Recreational Use of Coast, Rivers and Lakes in Taranaki 2007-2008

The 2008 TRC coastal recreation study relied on a postal questionnaire of Taranaki residents (a random sample of 500 with a net response of 319, plus 98 responses from four high schools to address a lack of data from youth), and observation counts made at 12 coastal marine locations and 20 lakes and rivers. The observation sites were selected from the most common activity locations identified by respondents to the postal survey. This included one response each for the Tangahoe River, Waipipi and Mokoia, and two for each of Greenmeadows and Waiinu, compared with 39 for Patea Beach, 42 for Ohawe and nine for Waverley. No responses were gained for Kai Iwi, Nukumaru and the Waitotara River Mouth. Only Patea Beach, Ohawe and Waverley (within the study area of this report) were included in the 12 coastal settings where on-site observations were carried out.

The postal survey indicated that Ohawe was the eight most-visited coastal setting in the region, Patea Beach was the ninth and Waverley was the 24th. No respondents to the survey who lived in New Plymouth visited Patea Beach or Ohawe and those beach users were only from Stratford and 'South Taranaki'. Table 1 shows the activities undertaken by all respondents.

Table 1: Activities undertaken by respondents when visiting beaches. Source: TRC 2008	
Walk	60.9
Swim	50.3
Relax	43.9
Fish	25.0
Picnic	24.2
Scenic	20.2
Drive	13.0

Table 1: Activities undertaken by respondents when visiting beaches. Source: TRC 2008	
Watch	12.2
Surf	12.0
Camp	8.5
Jog	6.9
Whitebait	6.1
Kayak	5.6
Shellfish gathering	5.1
Sail	2.1
Windsurf	1.6
Waterski	1.3
Boat	1.3
Cycle	1.1
Horseride	0.8
Surf lifesaving	0.5
Jetski	0.5
Quad bike	0.3

Ninety percent of respondents considered marine water quality to be 'good' or 'excellent' and 10% considered it fair. None considered it to be 'poor'.

Observations of beach use were carried out at Patea (Mana Bay and Beach Road), Ohawe and Waverly. Table 2 shows the relevant results for activities observed, and the number of observations completed at each setting (only one at Waverley, for example). The category 'other' included picnickers, kayaks and surf skis, and cyclists.

Table 2: Activities observed at three beaches (average counts). Source: TRC 2008								
Location	*Number of observations*	**On beach**	**Sea swim**	**Surfing**	**Fishing**	**Dogs**	**Other**	**Average total users**
Patea Beach	*3*	13			8	1	10	**26**
Ohawe Beach	*13*	6	2	2	1		5	**10**
Waverley Beach	*1*	6			3		1	**10**

The analysis described Patea thus:

> *Walking, fishing and picnicking were frequently observed activities at this beach. There were often spectators in the car park or on the beach itself. The picnic areas were well used. Fishing boats were commonly launched from the boat ramp and people were often fishing off the breakwater.*

4.3.3 Department of Conservation, 2006 - Netting Coastal Knowledge, a report into what is known about the South Taranaki-Whanganui marine area

The 2006 DOC study reviewed coastal marine values between Manaia and Whanganui, and was based on:

- Workshops with regional fishing, diving and boating clubs (including Patea and Districts Boating Club, Ohawe Boating and Angling Club and South Taranaki Dive Club),
- Face-to-face interviews with 85 participants,
- A written questionnaire completed by 55 members of, mostly, relevant regional recreation clubs, and
- An extensive literature review.

The study identified several values ascribed to the South Taranaki Coastal area by respondents:

- Naturalness (ruggedness, uniqueness, beauty and unspoilt nature),
- Fishing,
- Diving, particularly the North and South Traps and 'reefs beyond the Traps',
- Walking,
- Swimming, particularly around Patea,
- Access – its availability at specific locations, and
- The weather – as a limiting or controlling factor for access and fishing.

The main recreation values reposted by DOC (2006) are summarised below.

Fishing

Figure 7 shows the level of fishing activity off the South Taranaki Coast as reported by workshops and interviewees. Activity was reported as occurring somewhere within 7 x 9.25 km grids. Respondents indicated that most fishing effort occurred offshore from Patea, but that some fishing occurred throughout the inshore coastal study area, including that occupied by the north-eastern part of the proposed mining area (the map scale and position of the mining area in Figure 7 have been added to the original figures in DOC (2006)).

People fishing the South Taranaki area were mainly described as 'locals'. Popular targeted species include blue cod, gurnard, kahawai, snapper, red cod, tarakihi and trevally. More than 50% of respondents thought fishing had become harder in 'recent years' – largely due to increased fishing pressure, although 'erosion, sand covering reefs and pollution' was included in the response set (but not quantified in the report) – while 25% thought fishing was 'the same' but perhaps with some species variation, while 25% considered that fishing was easier.

Shellfish

The report notes that 'a number of respondents' commented that there were fewer shellfish available from the shore. Specific gathering sites mentioned were all south of Patea and included:

- Tuatua between Wanganui and Waitotara
- Tuatua and cockles at the Waitotara River mouth
- Mussels off Ototoka Beach
- Paua from Waitotara Beach (in the past)

- Mussels ‘past Snapper Rock’ south of Waiinu (in the past)

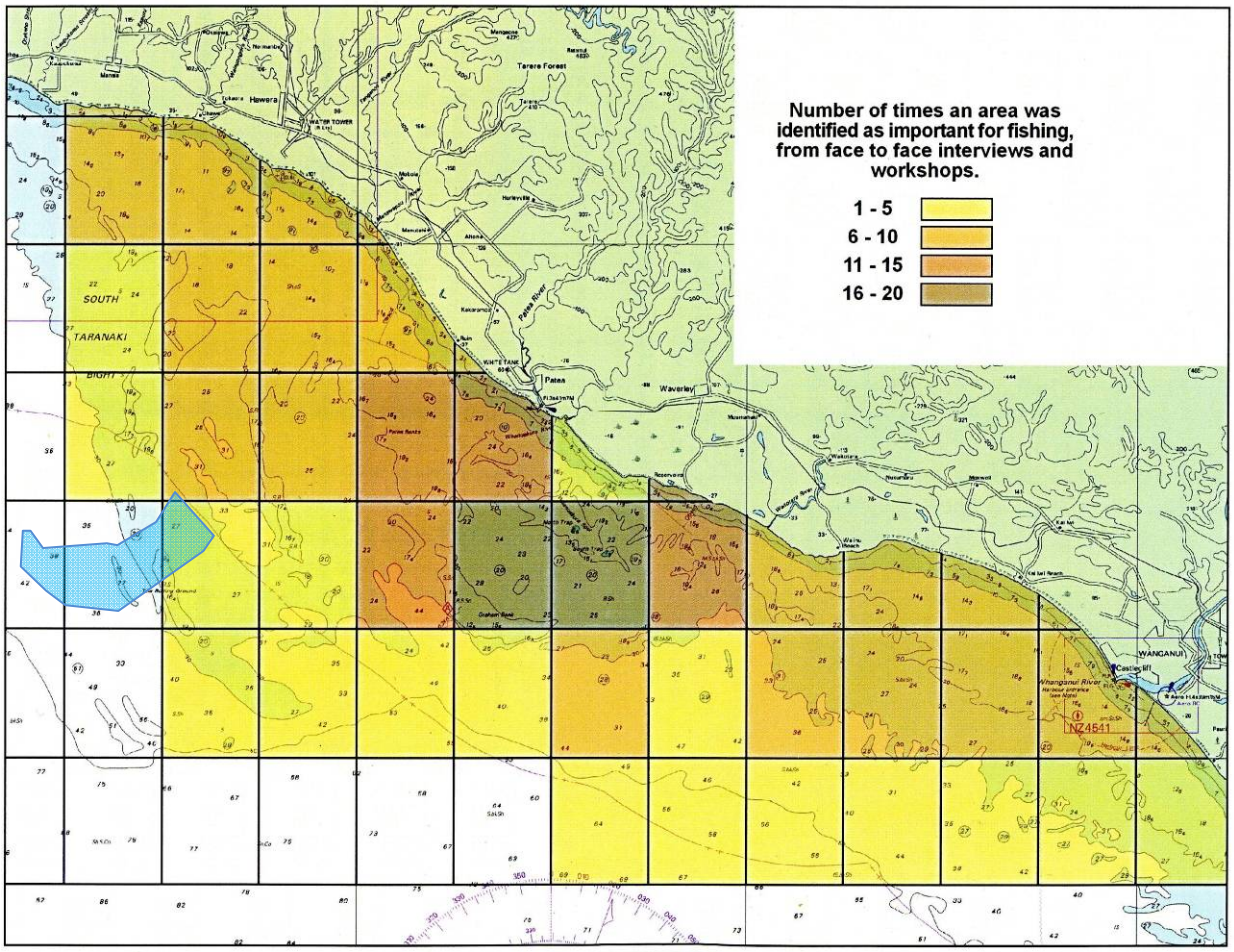
Shellfish ‘die-offs’ were reported in the decade prior to the report date. The DOC (2006) report relied on the 1983 TRC and Regional Water Board study (see section 4.3.4 of this report) to describe reefs of importance to iwi for shellfish gathering.

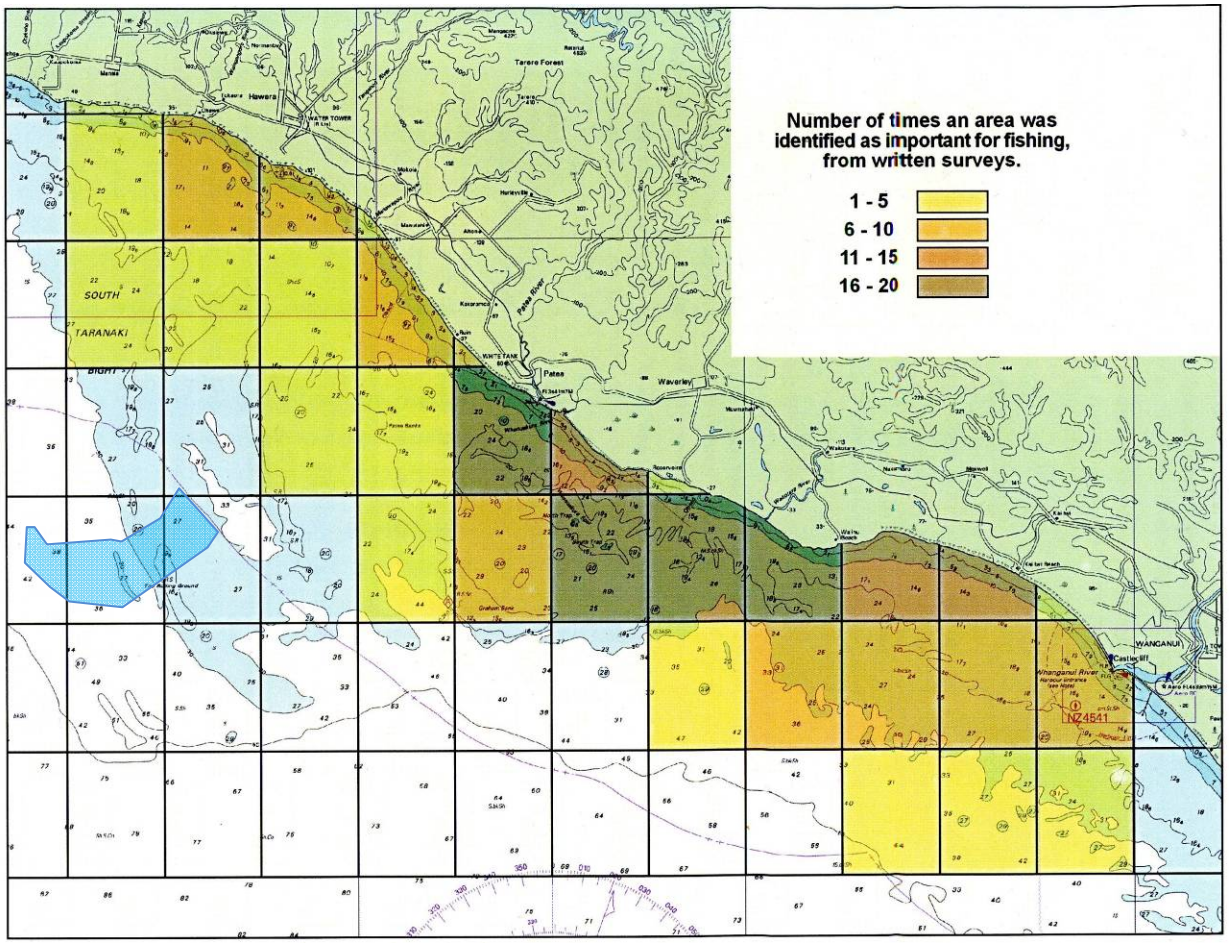
The study notes that (p 57), “shell middens are rare compared with other areas of northern New Zealand. This reflects relatively unfavourable conditions for shellfish along the coast as far south as the Rangitaiki River”.

Diving

Important diving locations were reported to be the North and South Traps and rock mounds and papa rock ledges off Patea, Waverly and Waitotara and the Graham Bank (located in Figure 2 on page 8). The stock of crayfish – and young crayfish – was considered to be healthy and possibly improving.

Figure 7: 'Areas identified through workshops and interviews as being important for fishing'. Source: DOC 2006





4.3.4 *Taranaki Regional Council and Regional Water Board, 1983 - Study on Seafood in South Taranaki*

The intent of the 1983 TRC and RWB study was to, ”attempt to assess the edible seafood resource available to the Maori community of South Taranaki. The report sets out to identify, locate and map coastal reefs used for seafood gathering.”

While this is not a cultural impact assessment, the use of the coast for cultural harvesting has recreation components to it, and the resources required are common to both cultural and recreation values.

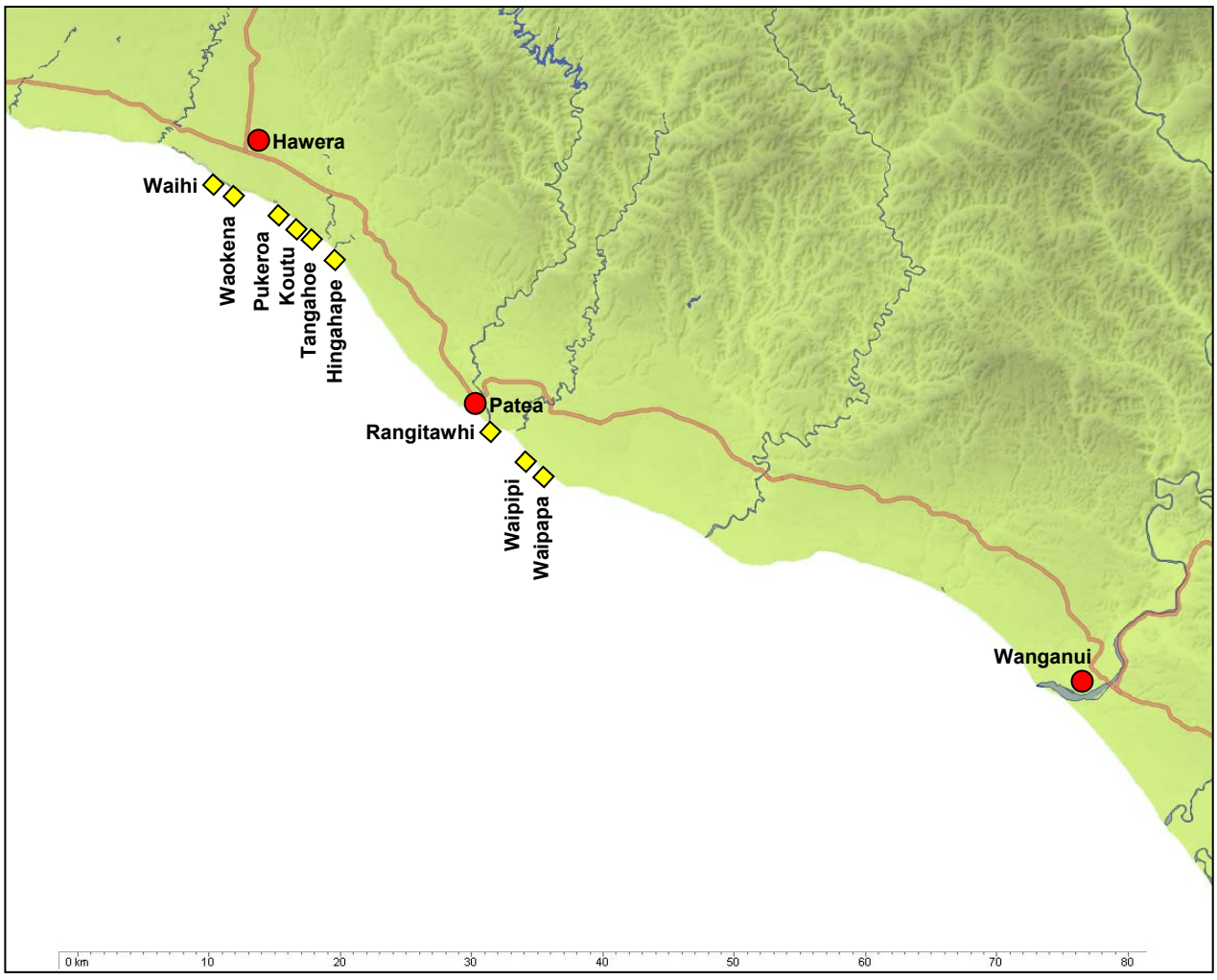
The report notes that (p 33), “It has been recognised by all Taranaki Maori that the area Opunake to Manaia, is one of the prime sources of seafood in the province.”

The South Taranaki coastal area was described as within the Ngati Ruanui tribal area, and the stretch of coast from Taungatara Stream to south of Whenuakura River (south of Patea) as within the Nga-Ruahine-Rangi, Tangahoe and Ngati-Hine sub-tribal areas.

Nine reefs where shellfish harvesting occurred in the study area were identified, in the Taranaki region. These are shown in Figure 8.

The Koutu reef was described as “extensive, covering several hectares, while Tangahoe and Hingahape are much smaller”.

Figure 8: Reefs in the Tangahoe and Ngati-Hine territory. Source: TRC and RWB 1983



4.3.5 Taranaki Regional Council, 2004 – Inventory of coastal areas of local or regional significance in the Taranaki Region

The TRC coastal inventory (TRC 2004) identifies 13 coastal areas of local or regional significance between Opunake and Patea (Figure 9). Three are near the outfall and have assessments of recreation value:

- Ohawe Beach, Waingongoro River mouth, Four Mile Reef:

  Amenity – regionally important.

  This area consists of a beach settlement and is a popular recreational area. The Waingongoro River is the southern-most stony stream in Taranaki. The high cliffs at the river mouth and coast consist of mudstone, shell beds and sands overlaid with tephra. Offshore is a reef system.

  Recreation value: High. Popular for swimming, whitebaiting, surfcasting, surfing and seafood gathering. Scuba diving, and boat fishing near the reef.

  Public access: Excellent – Access to Ohawe Beach is via Rangatapu Street from the Ohawe Beach settlement. Public toilets and a boat ramp are provided. Access to the Waingongoro River Mouth is via the beach from Rangatapu Street.

- Waihi Beach

  Amenity – moderate

  The coastline is stony, with sandstone and siltstone cliffs. Herbfields that exist on the cliff face are dynamic communities, often disturbed by weather and erosion.

  Recreation value: High. Fishing, surfing and beachwalking.

  Public access: Excellent – There is good access from Denby Road, with a parking area, and a walking track to the beach. Signposted from State Highway 45.

- Manawapou-Tangahoe River Mouths and Cliff Tops

  Amenity – high

  Areas of turf community extend over the cliffs near the Tangahoe River and Manawapou River mouths. Both of the rivers have small areas of indigenous vegetation on their banks upstream from the coast.

  Recreation value: Moderate. Fishing

  Public access. Good – Access to Manawapou River mouth along Manawapou Road (accessed via Manutahi), which is a formed metal road across farmland. The track has gates across it, however signs advise that it is a public road and access is provided to the river mouth. Access is also provided from Mokoia Road to both river mouths. There are two signs at the end of formed Mokoia Road, which advise that the public, by the most direct route, may have access to the Manawapou River and Tangahoe River passing through the privately owned land. One of the routes follows a paper road, the other is over private land.

- Kakaramea Beach

  Amenity – moderate

  A coastal area with 25 m high cliffs with a series of 'fingers' that extend out to sea which are approximately 50 m long and 10-15 m across, with bays in between.

  Recreation value: Moderate. Recreational fishing from the cliff tops

Public access. Poor – A paper road exists from the end of Powerhouse Road which connects to the marginal strip along the coast. Pine trees are growing on the unformed road and the location of the unformed road is unclear.

- Patea Beach and River Mouth

  Amenity – moderate

  The area is popular for recreation and includes a campground.

  Recreation value: High. Camping, fishing, surfing, and golf

  Public access. Excellent – The beach is signposted from the main road, with access to the right bank via Taranaki Road, through Patea township. There is a car park, playground, toilets, and a riverside walkway.

- Whenuakura Estuary

  Amenity – moderate

  A small but relatively unmodified estuary with extensive mudflats.

  Recreation value. Moderate

  Public access. Poor – An unformed road leads to the right bank. On the left bank an unformed road stops approximately 100 m from the river bank. The unformed roads are not discernible on the ground.

- North and South Traps

  Amenity – moderate

  Two large adjoining reef systems approximately 6 km offshore from Patea. This is an important marine habitat in a sandy environment. tall underwater pinnacles, an unusual feature on sandy coast.

  Recreation value. Moderate: used for recreational diving and fishing

  Public access. Poor – Offshore, access via boat.

- Waipipi Dunelands

  Amenity – moderate

  Waipipi Dunes is a 40 hectares area, consisting of small wet sand flats, low dunes of less than 4 metres, and dunes extending inland to taller (15 metres) more stable relict foredunes.

  Recreation value. Moderate: fishing, walking, tramping

  Public access. Poor – Off Rangikura Road unformed Drydon Road crosses farmland and continues to the coast, however the location of the road on the ground is unclear.

- Waverley Beach

  Amenity – high

  A beach with unique landforms of caverns, ravines, blowholes and eroding stacks carved into the cliffs by wave erosion. Regionally important amenity values, outstanding natural landscape.

  Recreation value. High: walking, offroad vehicles, camping, boat ramp, fishing.

  Public access. Excellent - Direct access via Waipipi Road from Waverley. There is no beach sign at the main road.

- Waitotara Estuary and Dunes

Amenity – high

The area includes a regionally significant protected wetland comprising of a dune lake, wetland in dune slacks, sand dunes, and river margins of Waiau Stream and Waitotara River. There are also sand dunes south of the river mouth.

Recreation value. Moderate: whitebaiting.

Public access. Good - Walking access from the end of Hawken's Road, via Hawken's Lagoon Conservation Area.

- Waiinu Beach and Reef

  Amenity – high

  Waiinu Beach is the southernmost beach in Taranaki. There is a small settlement and camping area. Nearby are steep eroding coastal cliffs, approximately 46 metres high. The beach is long and sandy with extensive sand dunes. Waiinu reef is offshore, and features limestone outcrops extending from Mean High Water Spring to 3-5 kms offshore. Reefs in the area are made of an extremely hard rock (resistant calcareous conglomerate of Pleistoncene orgin) containing abundant well-preserved fossils of oysters, toheroas, cockles, paua and barnacles.

  Recreation value. High: Snapper rock, local fishing spot, and surfing, large sandy beach.

  Public access. Excellent - Located at the end of Waiinu Beach Road is a large recreation reserve which stretches from the mouth of the Waitotara River to three km south of Waiinu Beach settlement. A parking area and information sign about the area are provided in the reserve.

A setting was assessed as having 'high' recreation values where the:

- Site provides outstanding passive or active recreational experiences;
- Site provides unique recreational experiences or opportunities;
- Site provides for a variety of often competing recreational experiences; or
- Site is widely used by a large number of people for recreational purposes.

A setting was assessed as having 'moderate' recreation values where:

- Common passive or active recreational experiences or opportunities are available.

A setting was assessed as having 'high' amenity values where the:

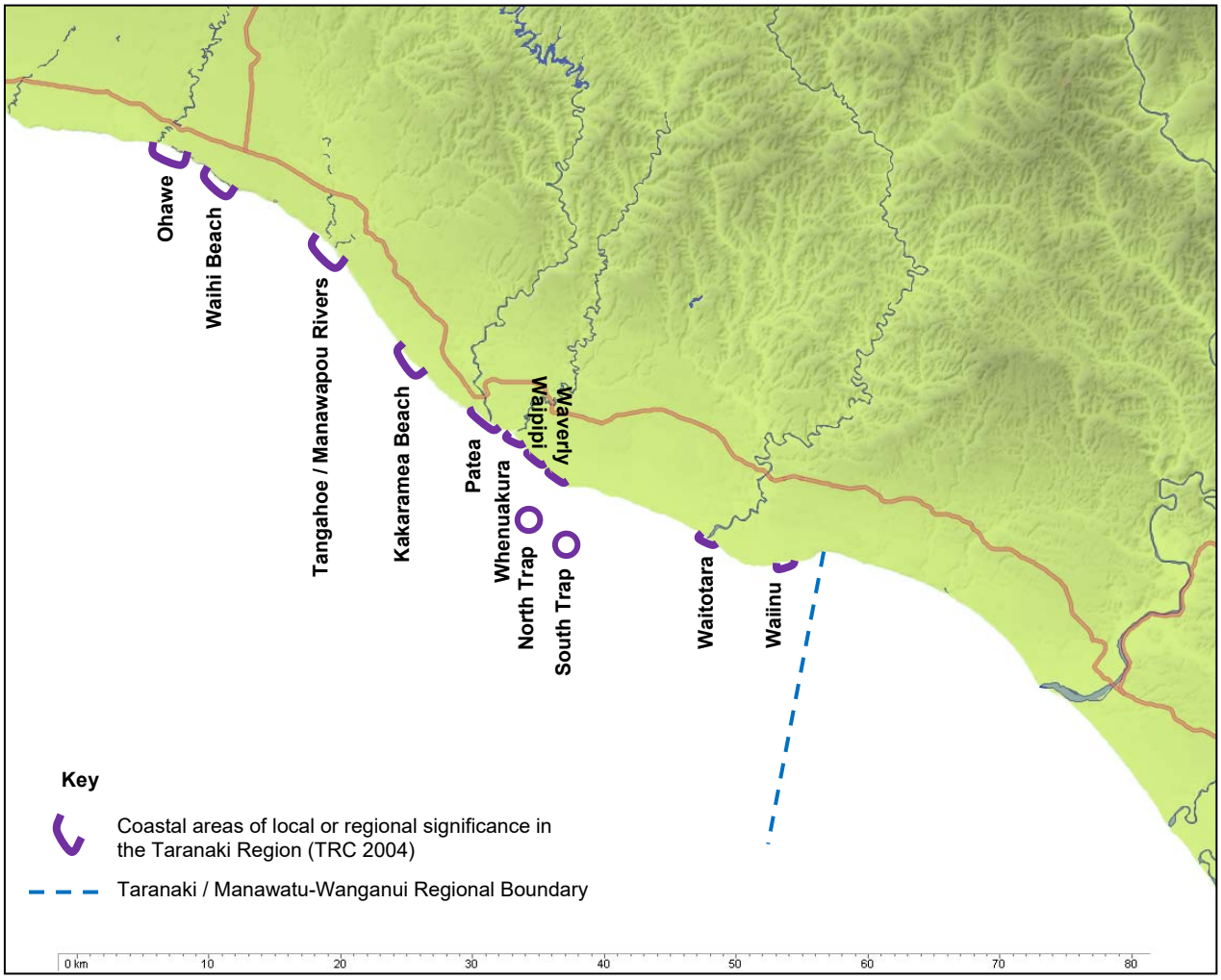
- Site is identified in regional or district plans as an area having local or regional importance, or outstanding amenity values or features; or
- Site has outstanding, unique or dramatic seascapes, extensive views; or
- Site has been declared a scenic reserve.

A setting was assessed as having 'moderate' amenity values where the:

- Site contains common features that occur frequently throughout Taranaki.

The TRC coastal inventory is represented in Appendix 2 of the TRC Regional Policy Statement for Taranaki (2010) which is discussed in the following section.

Figure 9: TRC Inventory of coastal areas of local or regional significance in the South Taranaki Region



4.3.6 Taranaki Regional Council: Regional Policy Statement

The TRC Regional Policy Statement 2010 (RPS) identifies in its Appendix 2 "High quality or high value areas of the coastal environment". The areas are identified based on the 2004 TRC Coastal Inventory as well as national surf break data and consultation with surfers. The RPS states (Appendix 2):

> *Taranaki is recognised nationally and internationally for its surfbreaks. Surfbreaks depend on the presence of a combination of suitable seabed shape, swell direction and power, swell corridors that allow swells to arrive at the surfbreak and wind direction and force. High quality or high value surfbreaks in Taranaki attract surfers from throughout New Zealand and overseas as well as locally.*

The surfbreaks are not ranked according to national or regional status, but are identified as "high quality or high value surfbreaks" in a set of figures. South of Ohawe, breaks are identified in three locations:

- Pid's Point (at Waipipi)
- Waiinu Reef (immediately west of Waiinu Beach)
- The Point (immediately east of Waiinu Beach)
- Fences (immediately east of The Point)

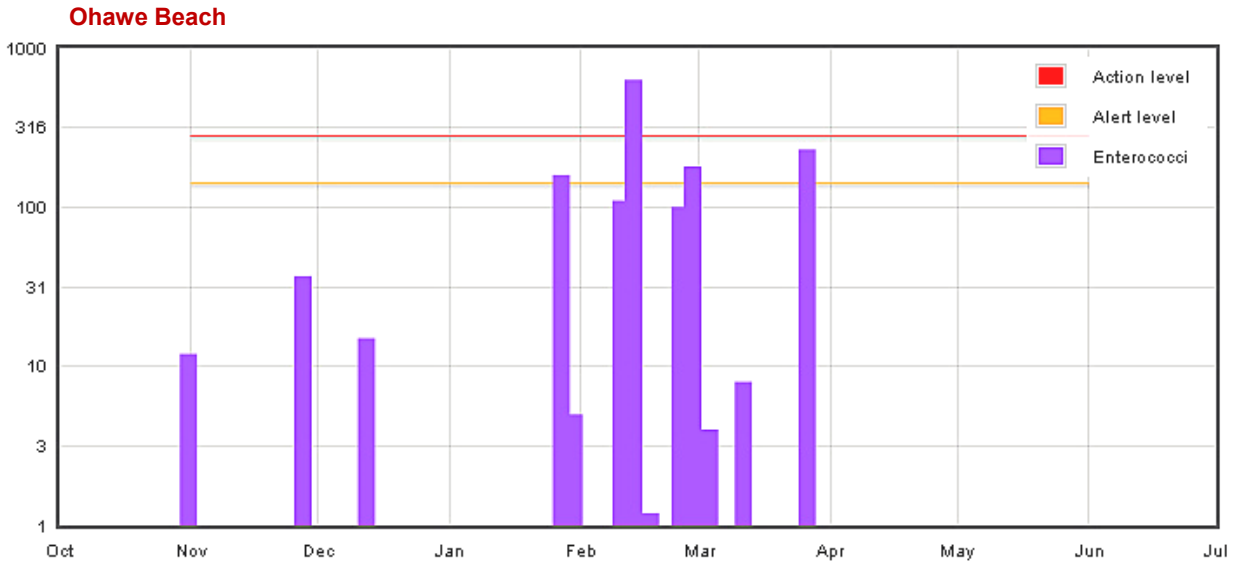
These surf areas are all within areas of coastal significance as identified in TRC (2004).

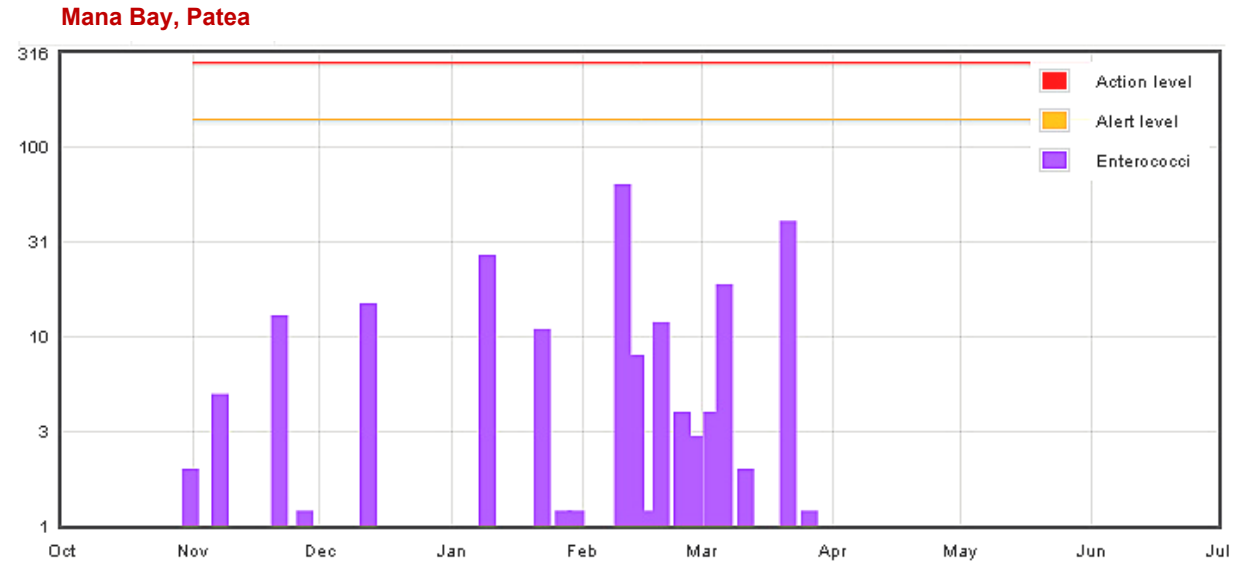
4.3.7 *Taranaki and Horizons Regional Councils bathing water quality monitoring*

The Taranaki Regional Council publishes coastal water quality monitoring data for 'popular bathing sites in Taranaki'.[3] This includes Ohawe Beach, Mana Bay in Patea, Waverly Beach and Waiinu Beach..

Figure 10 and 10a show TRC coastal water quality monitoring results for the 2012/13 bathing season for four of the ten bathing beaches reported online, as examples. While Ohawe Beach has three alert and one action level exceedances, all other beaches have consistently good quality water. A bathing site is considered safe for swimming unless two consecutive sample counts for marine water are more than the Action Limit of 280 enterococci/100ml at beach sites.

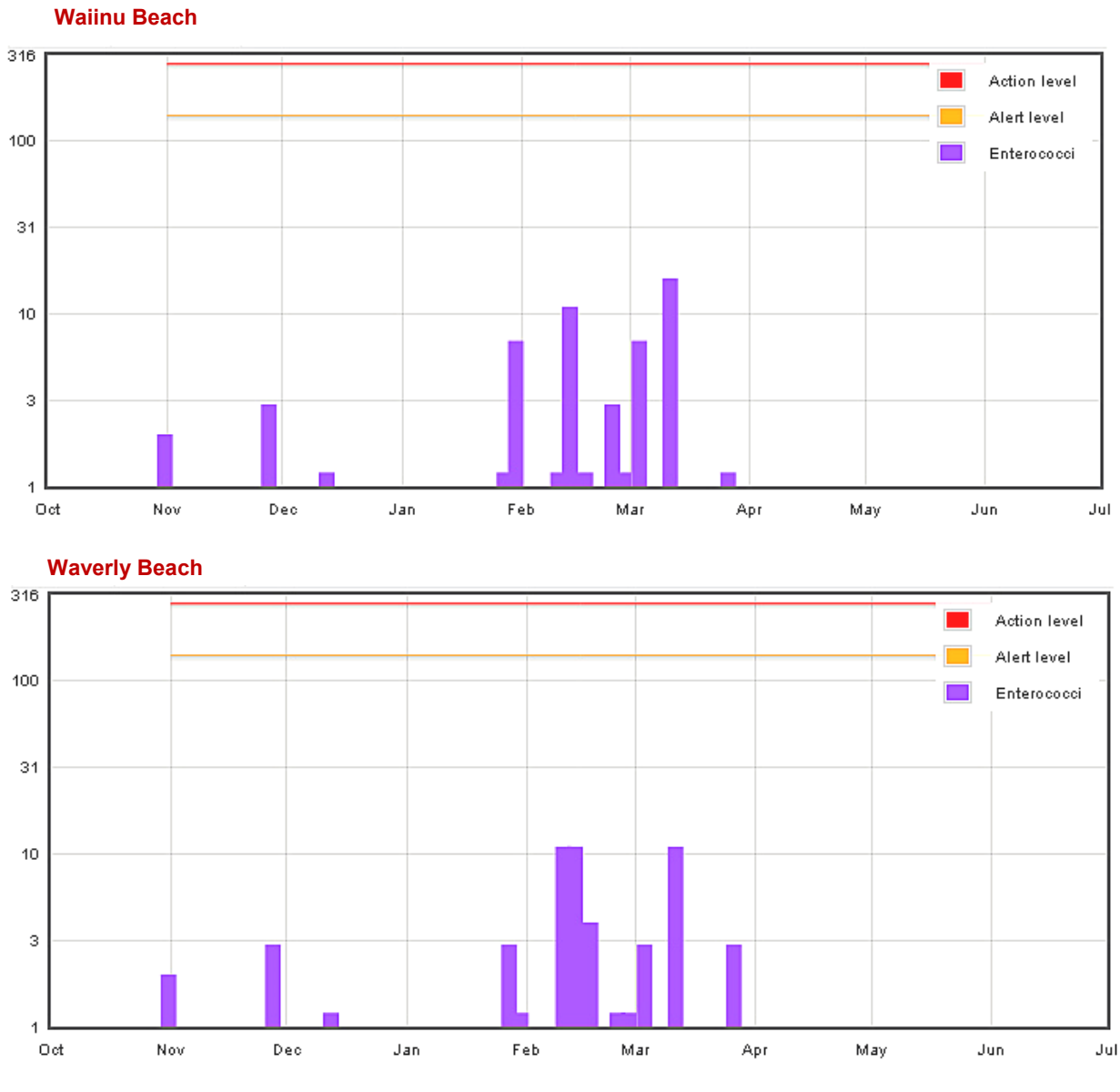
Figure 10: Coastal Water Quality monitoring results for four Taranaki beaches October 2012 to mid-April 2013 Enterococci (nos/100ml). Source: TRC online coastal water quality reporting retrieved 17 April 2013





[3] http://www.trc.govt.nz/coastal-water-quality/

Figure 10a: Coastal Water Quality monitoring results for four Taranaki beaches October 2012 to mid-April 2013 Enterococci (nos/100ml). Source: TRC online coastal water quality reporting retrieved 17 April 2013



The Horizons Regional Council carries out water quality monitoring for only two coastal settings in the study area: Kai Iwi Beach and Castlecliff Beach. Castlecliff had a 'good' water quality grading ('satisfactory for swimming most of the time except following rainfall') while Kai Iwi had a 'fair' grading ('generally satisfactory for swimming, though there are many potential sources of faecal material').[4]

[4] http://www.horizons.govt.nz/managing-environment/resource-management/water/safe-swim-spots/grading-and-general-rules-of-thumb/. Retrieved 18 April 2013.

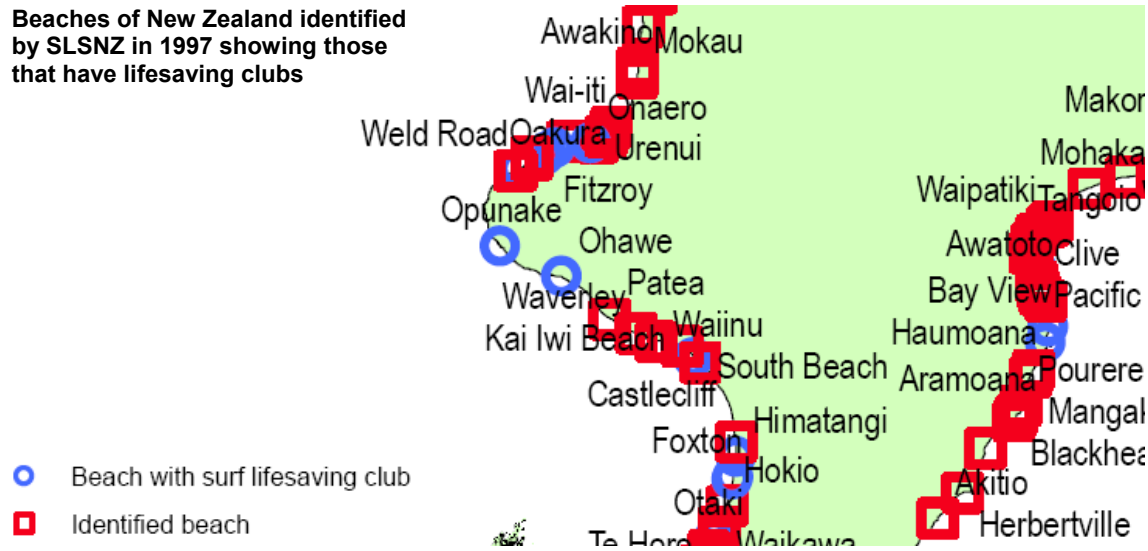
4.4 Biosecurity NZ – Mapping the Values of New Zealand's Coastal Waters

Biosecurity New Zealand released a review of coastal social values in 2009 (Allen *et al* 2009). This indicated that, at the national level, there is only a very coarse understanding of the distribution of marine recreation. The study considered beach recreation, surfing, diving, boating and seafood gathering, but, in the main, only proxy information was used to identify where these activities occur – such as the presence of a surf living saving club to identify swimming locations or a yacht club for sailing. This resulted in only broad descriptions of activity patterns.

Figure 11 and Figure 12 are regional extracts from national maps of coastal recreation activities from Allen et al (2009) for beaches, lifesaving clubs, surfing, diving, yacht clubs, shellfish gathering, coastal water quality monitoring sites, recreational line fishing and fishing clubs. The study also identified sea kayak companies and iconic coastal landscapes, but none of either as located in the South Taranaki area. The 2009 analysis omits various activities identified elsewhere in this report, such as the locations of the Patea and District Boating Club and the Ohawe Boating and Angling Club, and the coastal water quality monitoring activities carried out by the South Taranaki District Council. At best, these data indicate activities which are evident at only the national level, albeit with some omissions at that level.

Figure 11: Beaches, surfing sites and diving sites from Allen et al 2009

Beaches of New Zealand identified by SLSNZ in 1997 showing those that have lifesaving clubs



Surfing locations and surf competition sites

Diving sites

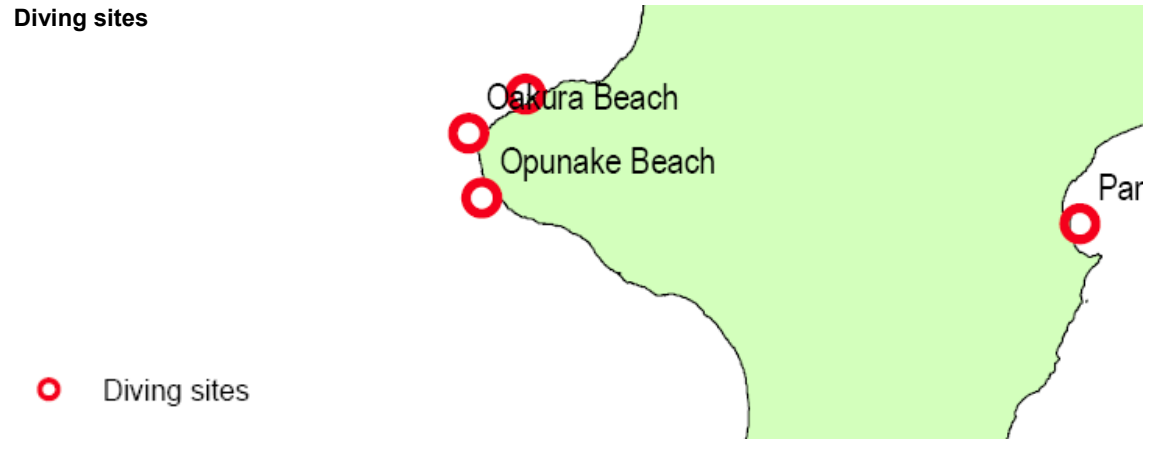
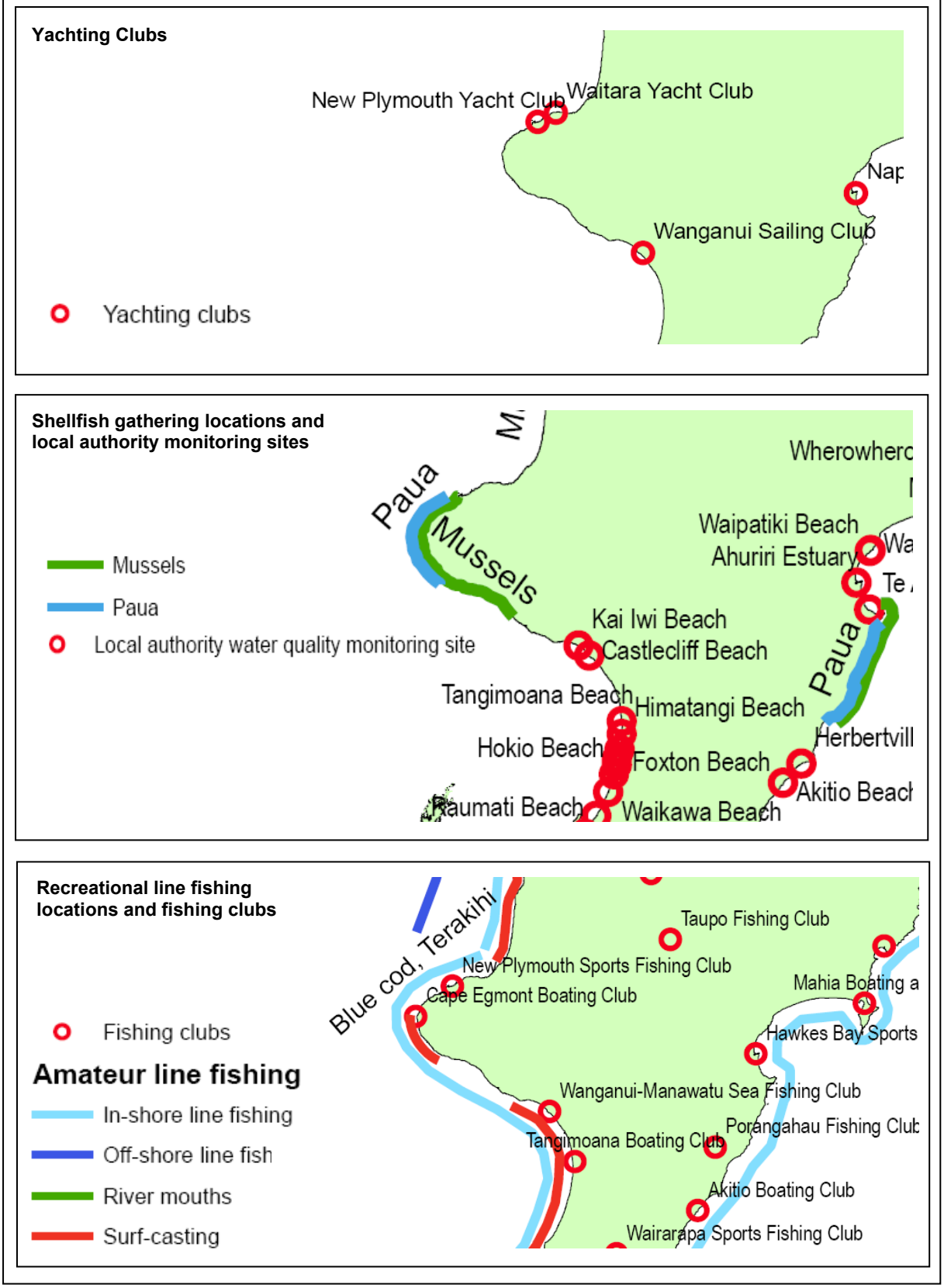


Figure 12: Yacht clubs, shellfish gathering, water monitoring, recreational fishing from Allen et al 2009



4.5 Other data sources

Figure 13 summarises references to coastal and river recreation from four data sources:

- Venture Taranaki Surf Highway 45 guide (no date)
- Surf -Forecast.com – an online surfing weather forecast site (retrieved April 2013)
- Surfcasting sites recommended by the national SpotX surfcasting guide (Draper & Airey 2010)

Each is discussed below.

Surfcasting

Forty-eight surfcasting sites are identified in the Taranaki region, six between Opunake and Patea, by the national SpotX surfcasting guide (Draper & Airey 2010). In the study area, the following fishing recommendations are made:

- *Ohawe Beach: Through the spring and early summer, kahawai will follow whitebait and yellow-eyed mullet up inside the [Waingongoro] river mouth, but generally only on a rising tide....*
- *Denby Road (Waihi Beach): To target spotty sharks, you will need crabs or crayfish for bait....*
- *Manawapou Road: From the Manawapou River mouth you can walk north along the beach to the Tangahoe River mouth, but the tide must be out a bit as the waves wash up against the cliffs. This is a fairly featureless beach and deeper water is around the river mouths.*
- *Patea River Mouth:*

Surfing

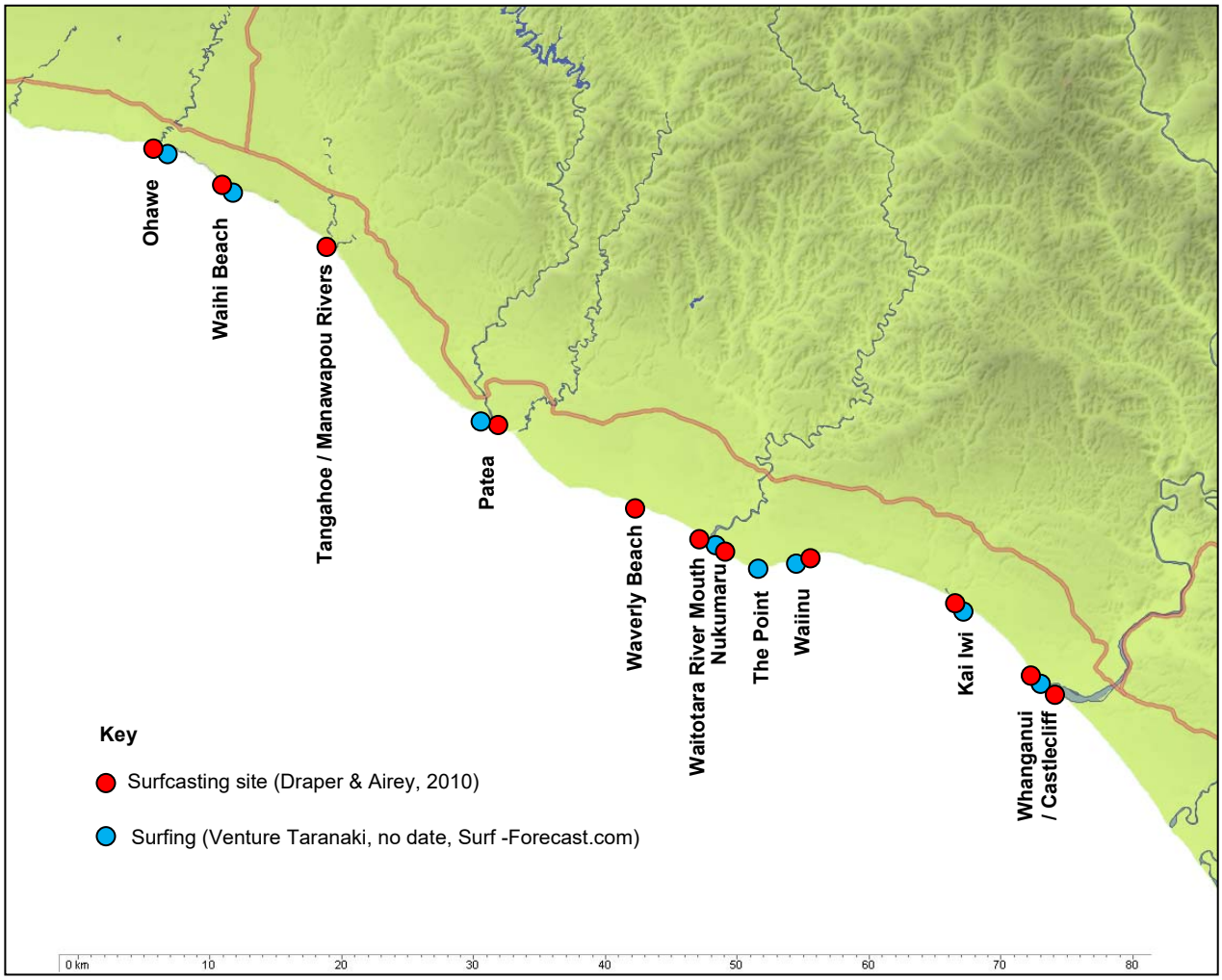
State Highway 45 extends from New Plymouth to Hawera and has the tourism touring route title of Surf Highway 45.Thirteen surfing sites are identified in the relevant promotion pamphlet (Venture Taranaki, no date), including Ohawe and Denby Road (Waihi Beach). Ohawe Beach is described as:

> *South Taranaki's popular main beach ... offers a range of swimming, surfing and fishing spots, along with a powered camp site and toilet facilities.*

Waihi Beach is not described.

Surf-forecast.com presents a comprehensive summary of international surfing locations. This source identifies four sites in addition to those on the Surf Highway publication, and also identifies Opunake Beach in common (and many more north of Opunake): Sky Williams, Mangahume, Greenmeadows and the Patea River Mouth. All are described as 'fairly consistent' surf breaks. The website does not identify Ohawe or Waihi Beach.

Figure 13: Coastal and river recreation activity references from two sources



5 Conclusion

The mining site is a very low use recreation setting which may be used only rarely for marine fishing. Sites of interest to this assessment of effects are the inshore recreation setting (surfing, swimming, walking, surfcasting and shellfish gathering), the near-coast diving sites, particularly the North and South Traps and the marine fishing opportunity within 20 km of the coast. At a national level, the scale of recreation activity in the relevant coastal setting is relatively slight, with higher levels of activity north of Cape Egmont and south of Patea.

The main conclusions in relation to recreation and tourism are:

- Turbidity effects will be similar to existing background turbidity approximately 10 km from the mining activity area, and so there are unlikely to be any noticeable effects in inshore recreation settings. This also indicates little if any effect on fishing opportunities in all but the immediate periphery of mining activity (which features very little existing fishing pressure).
- At the key diving sites of the North and South Traps there are likely to be moderate effects on scenic diving on the few days when water clarity would normally exceed 10 m (Secchi disc measurement), and when water clarity is marginal for crayfish harvesting. These effects would only occur when mining is taking place in the eastern part of the mining area and would not persist for the life of the mining project.
- Resuspension of mined material will have lesser effects than the original mining activity and will occur during weather events when little recreation occurs.
- Changes to wave patterns onshore are likely to be very slight and very unlikely to change surfing amenity or onshore beach replenishment.
- There are no toxicity effects on marine biota from the activity.

Adverse effects of interest to recreation and tourism are therefore likely to be largely local to the mining activity area, and will relate to exclusive use of the marine setting, local turbidity effects (up to 10 km from the site) and short-term effects on habitat on recently mined seafloor. There appears to be very little fishing activity in the mining site, being so far offshore, and so exclusion from the mining site is unlikely to have any effects on recreation opportunities at the regional level.

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Appendix 1: Basis for 2016 application

The following data have been provided by TTR:

Basis for 2016 Application

Operational aspects of the project remain are as they were for the previous application.

Since the 2014 decision, TTR has undertaken a range of analyses and investigations directed at reducing uncertainty around the prediction of environmental impacts; and has engaged in a range of stakeholder engagement initiatives.

TTR's 2016 application package is based around the outcomes of these new investigations and initiatives. In particular TTR undertook additional scientific analysis into plume modelling, optical properties primary productivity and marine ecological effects, with the following broad conclusions:

Plume Modelling

Peer review and testing of the earlier NIWA plume modelling work undertaken by UK-based HR Wallingford Ltd (HRW) has allowed for more accurate modelling of the plume in relation to the following:

Flocculation - the original plume model neglected flocculation, a mechanism whereby fine sediment combines into faster-sinking aggregate;

Sediment settling rates - the extent to which the fine suspended sediment would settle to the bottom and be trapped in the matrix of discharged sand is predicted to occur to a greater extent than previously assumed; and

Sediment re-suspension - the testing by HRW found that the shear stress required for re-suspension of freshly deposited material was in the range 0.2–0.3 Pa rather than the 0.1 Pa (minimum value), as originally assumed by NIWA.

These elements were used in new NIWA modelling with indicated differences shown in the attached summary document. There is a significant reduction in the extent and intensity of the predicted plume.

Optics

Predicted changes to the optical properties in the South Taranaki Bight have been interpreted in light of the above modelling changes, with the following conclusions:

The optical effects of the iron sand recovery operations are likely to cease very quickly after the operations cease;

There is substantial natural variability in optical properties in the modelled area, with greater turbidity at the coast;

The optical effects of the plume decrease away from the iron sand recovery operations;

The optical effects of the plume will be greater in the offshore area than in the nearshore area, with effects being minimal close to the coast (i.e. within approximately 5km of the coast);

Average light in the water column averaged over the domain of the sediment model (an area of 13,000km2) is predicted to be reduced by only a small amount - approximately 1.9% based on ore recovery at Site A and 1.6% based on ore recovery at Site B; and

The total amount of light received by the seabed in the domain of the sediment model is predicted to reduce by 23% (Site A) and 16% (Site B), and this reduction will occur primarily east of the proposed iron sand recovery operation.

Primary Productivity

Analyses of field data and modelling in relation to effects on primary production strongly support the conclusion that the overall effects of iron sand recovery operations on short-lived organisms (i.e. those living less than a year or two) will be indistinguishable from changes due to natural oceanographic variability. Effects at a local scale proximal to the iron sand recovery operations will be limited to decreases in microphytobenthos production and organic carbon availability to benthic consumers. This may exceed natural variability and may propagate locally to organisms that feed primarily on microphytobenthos and in turn to their predators.

Marine Ecological Effects

TTR has also commissioned NIWA to provide an assessment of the effects of the proposed iron sand recovery activities on key zooplankton, fish, seabird and marine mammal species - taking into account the spatial and temporal scales relevant to different components of the ecosystem. This assessment has also taken the latest sediment transport and optical modelling results into consideration.

This assessment identified that the environmental effects will be negligible for all zooplankton, seabird, and marine mammal species, and most fish species. For coastal kaimoana species, the proposed iron sand recovery activities should not add significantly to the levels of suspended sediments currently experienced inshore in frequently turbid waters.

The assessment did identify that eagle ray may be affected by iron sand recovery activities. Although the area potentially impacted by iron sand recovery comprises less than 1% of the area of distribution of eagle ray in Fisheries Management Area 8, approximately 8% of its core area of distribution (>50% occurrence) overlaps with the area where suspended sediment concentrations will be elevated above 3mg/l. Using this threshold, a minor to moderate proportion of the eagle ray stock could be affected by mining through displacement of fish, or decrease in prey abundance or availability.

During summer and autumn eagle rays tend to concentrate inshore in water less than 10m deep where background suspended sediment concentrations may naturally reach over 100mg/l. This means that eagle rays may be tolerant to significantly higher suspended sediment concentrations than the threshold of 3mg/l used to assess the impact of the proposed iron sand recovery activities.

This is a substantially reduced level of effect than may have been inferred from the previous application.