Waikato Regional Council Internal Series 2012/12

FINAL Environmental Monitoring Management Plan - Whangamata Mangrove Consent

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1 Introduction and Background

1.1 Introduction

The Waikato Regional Council, River and Catchment Services Group (RCS), obtained resource consent 122986 in 2012. That consent authorises RCS:

122986 *To remove approximately 22.91 hectares of mangrove trees and mangrove remnants from the Whangamata Harbour including associated disturbance and vehicle use in the coastal marine area, and ongoing hand removal of seedlings.*

A copy of that consent is included as Appendix A.

Conditions 21, and 31 to 39 of resource consent 122986 (mangrove removal) direct the need for an Environmental Monitoring Management Plan (EMMP) to be prepared, for it to be reviewed by relevant stakeholders, and to be implemented. This document is intended to fulfil those requirements and is the EMMP.

1.2 Background

The Whangamata Harbour and Catchment Management Plan (WHCMP) identified the need for mangrove management works as a component of the implementation of the plans. These works are further supported by the Whangamata Community Plan. Those plans were developed in conjunction with iwi, stakeholders and community members and are a reflection of the perceived issues, desired action and outcomes for change.

The desire for active mangrove management extends beyond plan development timeframes as the rapid mangrove expansion within the Whangamata harbour has been an area of concern for many in this community for more than a decade. For this community, mangroves are just one component of their concerns with the general decline in the health of the harbour.

RCS was tasked with seeking resource consents for mangrove removal and associated activities. The Application which resulted in consent 122986 was lodged on 1 July 2011. A decision was made on the consent on 25 November 2011 by commissioners to the original hearing which was subsequently appealed. The appeals were resolved through informal mediation and the consent order and agreed amended conditions were sealed by the Court dated 14 May 2012.

The consent conditions of the consents granted detail the requirements of this document as set out in the next section of this report.

2 Objective and Requirements

2.1 Objective

The objective of this EMMP, as set out by condition 31 of consent 122986, is:

> **To identify management practices and procedures to be adopted in order to establish a baseline and then monitor effects of each stage of mangrove removal authorised by the consents.**

2.2 Minimum Requirements

Condition 33 of consent 122986 sets out the minimum requirements for what is to be included in the EMMP as follows:

33 The Environmental Monitoring Management Plan shall include, as a minimum, the following:

- *(i) A baseline monitoring programme, including a pilot survey to define sampling parameters and techniques, and an ongoing operational monitoring programme in mangrove removal areas in order to monitor effects on the environment including:*
  - *(A) Sediment character and properties including changes in mud content over time;*
  - *(B) Estuary bed level and compaction;*
  - *(C) Saltmarsh and bank erosion in areas adjacent to mangrove removal areas;*
  - *(D) Mangrove establishment on saltmarsh margins;*
  - *(E) Extent and density of seagrass beds adjacent to mangrove removal locations;*
  - *(F) Benthic community abundance and composition;*
  - *(G) Avifauna use of long-shore strips of mangroves;*
  - *(H) Banded rail use of mangrove removal areas and areas of adjacent mangroves that are retained;*
- *(ii) Methodologies to be used for gathering data;*
- *(iii) Provision for Ngati Whanaunga, Whangamata Ratepayers Association, Whangamata Harbour Care and other relevant user groups to participate in the monitoring if the parties wish to participate and undertake the pre-requisite training;*
- *(iv) Reporting requirements;*
- *(v) Environmental performance criteria to assist Group Manager, Resource Use, Waikato Regional Council in its evaluation of monitoring data;*
- *(vi) Descriptions of proposed weed management and restoration planting initiatives which may be undertaken by the Waikato Regional Council River and Catchment Services Group as components of wider Whangamata Harbour and catchment management programmes and which, while beyond the scope of this consent, will assist the Group Manager, Resource Use, Waikato Regional Council to evaluate monitoring data; and*
- *(vii) Public access to data for independent analysis and reporting.*

Each of the above matters is addressed in this report as follows:

Parts of condition 33 of consent 122986 (see above):	Section(s) of this report that addresses this matter:
(i)	6 and 7
(ii)	6 and 7
(iii)	8
(iv)	9
(v)	6 and 7
(vi)	10
(vii)	11

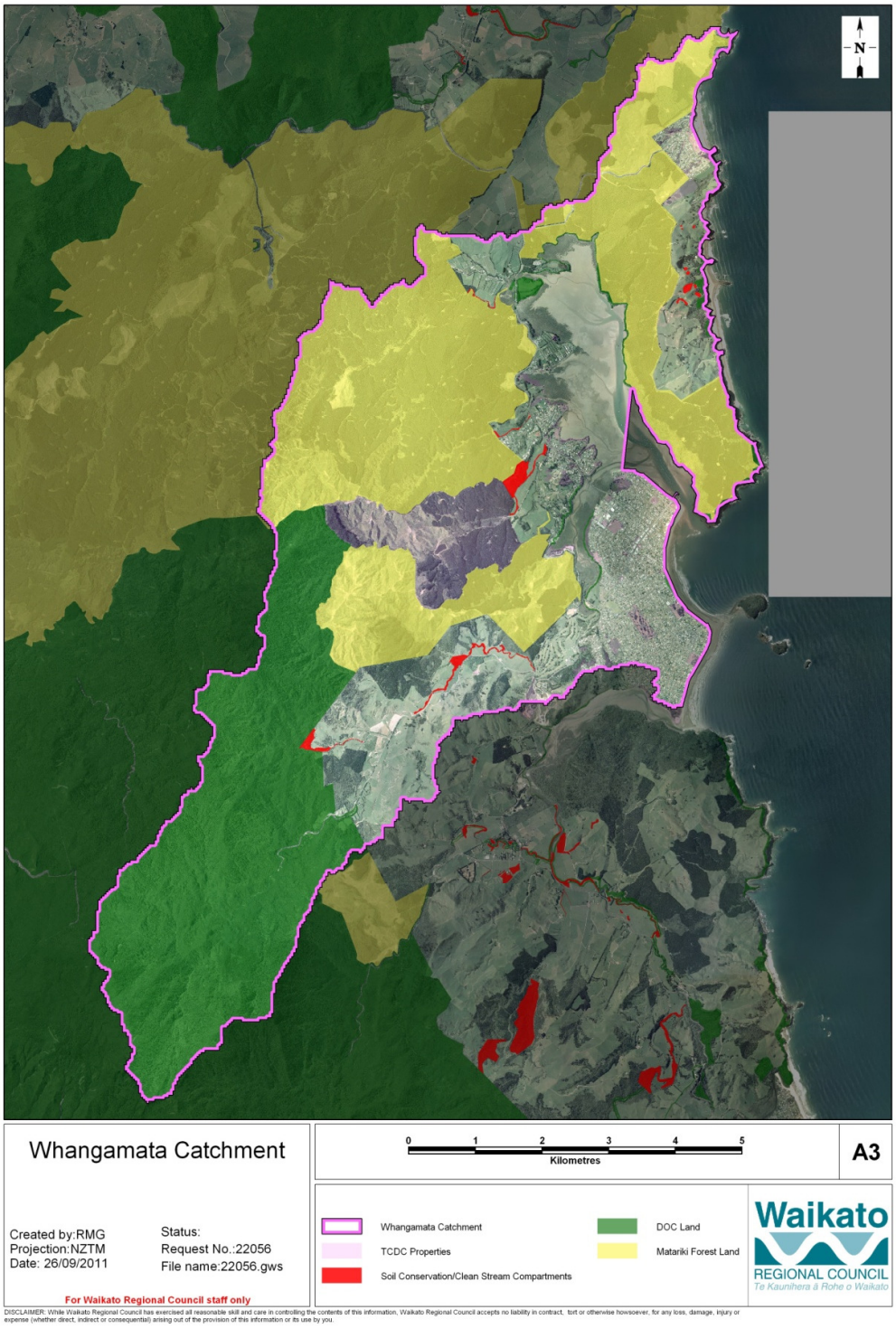
2.3 Key Components

This plan is focussed on monitoring related to mature mangrove removal areas and is not intended to cover operational requirements or seedling removal. Operational requirements for mangrove removal under consent 122986 can be found in the Operational and Air Discharge Management Plan and the Seedling Removal Management Plan.

The general principles of the EMMP are included in the following sections. The decisions on specific site locations will be made in the field when the monitoring commences. Those suitable qualified persons engaged to undertake the work will make some initial decisions based on photos before going into the field (based on the sampling methodology they adopt to meet the requirements of the EMMP) but the final decisions will ultimately be made on the ground.

3 Whangamata Catchment

The Whangamata catchment it is largely vegetated with 40% under plantation forest cover and 30% indigenous. Approximately 10% of the catchment is still managed as primary pastoral. For the purpose of this plan, a modified catchment area is applied, this is an area of 52km² as shown below. The catchment is based on a combination of true hydrological catchment areas and the footprint of the Whangamata community.



The catchment is typical of Coromandel catchments, being short sharp stream systems, prone to intense rainfall periods, highly erodible steep upper catchments with a large proportion of land under Department of Conservation management.

The Whangamata area was deforested some 50-60 years later than most other Coromandel catchments with conversion to pasture occurring in the early 1900's.

Investigation of harbour sedimentation by Swales and Hume (1994) found that approximately 0.25-0.3 mm of sediment had accumulated in upper and middle harbour areas over the last century, representing an infilling rate 10-20 times that prior to human settlement. This reflected exacerbated erosion within the catchment as a consequent of various human land uses. The accelerated sedimentation has raised bed levels, enabling mangroves to establish over large parts of the harbour

Approximately 90% of the harbour (total area of 4.4km^2) is intertidal with mangroves presently occupying about 100 hectares of the harbour. Mangroves have increased at approximately 1 hectare per year for the last 50 years. This expansion rate has halted in the last decade, primarily through human intervention.

Though the Whangamata community has become known for its stance on mangroves it is important to recognise the work of one of the first regional care groups – Wentworth River Care, which was instrumental in retiring streams from stock access and planting large sections of the Wentworth River, the main contributor to the Whangamata Harbour. This work influenced the development of both the harbour plan and catchment management plan which collectively now constitutes the Whangamata Harbour and Catchment Management Plan (WHCMP).

4 River and Catchment Services

RCS (the consent holder) is responsible for the management of rivers and their surrounding catchments in partnership with local communities.

Outcomes sought for various works within the catchment include:

- Reducing sediment entering waterways;
- Improved hill slope, stream bank and land stability;
- Improved water quality through restoration of streams, wetlands and coastal margins;
- Enhanced biodiversity;
- Reduced flood risk and impact on infrastructure; and
- Management of natural hazards and associated risks.

Within the Coromandel Zone the Applicant's responsibilities extend to coastal marine area ('CMA') works and services such as the development and implementation of harbour and catchment management plans, coastal vegetation control (i.e. saltwater paspalum, mangroves and pampas) as well as the restoration of coastal habitats. Animal pest control is also a key component of RCS's works and services in the Coromandel Zone.

Given those responsibilities, RCS has been given the task of investigating appropriate areas and methods of removal of mangroves within the Whangamata Harbour in the context of coastal vegetation control. The outcome of this has been to seek and obtain consent 122986.

5 Mangrove Removal Areas

Map 1: Whangamata Mature Mangrove Removal Areas

6 Baseline Monitoring Programme

Condition 33(i) requires a baseline monitoring programme in all the areas to be cleared, including a pilot survey to define sampling parameters and techniques, to be developed in the EMMP. This includes identification of the methodologies for each monitoring type that will be used for gathering data (as required by condition 33(ii)).

6.1 Sediment Character and Properties

This section addresses baseline monitoring associated with sediment character and properties including changes in mud content over time, as required by condition 33(i)(A) of consent 122986.

- The purpose of the monitoring is to assess changes in sediment character over time, particularly weight-percent mud and approximate Redox Potential Discontinuity (RPD) layer depth (i.e. depth to anoxic sediment). This work is intended to monitor change in sediment characteristics relevant to both ecological and amenity purposes.

- Sampling will be undertaken within mangrove clearance areas and on adjacent intertidal flats with a similar hydrodynamic setting (e.g. exposure, currents, water depths).

- Initial sampling will be undertaken prior to any clearance.

- Following clearance, sampling will be undertaken at three-monthly intervals for the first year, and will then be reviewed at that point (see Section 7.1 of this report).

- Detailed sampling will include:
  - Mangrove clearance sites: three core samples at each site;
  - Sand flats adjacent to mangrove clearance areas: three core samples at each site;
- In addition to the detailed core sampling:

  - Surficial sediment observations over the area of each clearance site: involving at least 10 observations over the full area of sampling (the limited number reflecting the difficulties of sampling amongst mangroves and the fact that relatively similar conditions are expected). In addition, at least five broadly spaced sites over the adjacent intertidal flats. Observations will be recorded using the categories identified in Table 1. GPS coordinates will also be recorded for each site.

Table 1: Categories for sediment observations.

Category	Description
Sand (S)	Sand with no significant mud content evident. Rubbing of sediment between fingers will result in loose grains with little to no cohesion.
Muddy sand (MS)	Primarily sands but with an obvious mud content. Rubbing of sediment between fingers will primarily result in sands but with cohesive content.
Sandy Mud (SM)	Primarily muds but with sand content. Rubbing of sediment between fingers will result in muds (see below) but with sand content.
Mud (M)	Muds. Rubbing of sediment between fingers will reveal muds (smooth, very fine) with little to no sand (<5%).

  - Surficial sediment samples (to approximately 2 cm depth) from five of the surficial sediment observation sites and from two representative sites from the

adjacent intertidal flats. Samples to be analysed for weight percent mud (no further separation of grain sizes required)[1]. GPS coordinates will be recorded for each site.

- RPD measurements at each of the 10 surficial sediment observation sites. The RPD depth will be the depth below the surface at which anoxic sediments are first visually evident (usually a marked colour change to a black or grey sediment).

- Observations of sediment movement will be recorded using the categories in Table 2. It is probable that most baseline measurements will be category N (No bedforms).

Table 2: Sediment movement categories.

Category	Description
Mega-ripples (AM or SM)	Large ripples (crest spacing >10 cm) evident on surface. Note whether crests are asymmetric (AM) or broadly symmetrical (SM), as this is relevant to hydrological processes (current versus wave) and direction of sediment movement
Ripples (AR or SR)	Sediment surface is rippled (crest spacing < 10 cm). Note whether crests are asymmetric (AR) (i.e. one side obviously much steeper) or broadly symmetrical (SR). If it is hard to tell, then use symmetrical.
No bedforms (N)	No ripples are evident on the sediment surface.

6.2 Estuary and Bed Level Compaction

This section addresses baseline monitoring associated with estuary bed level and compaction, as required by condition 33(i)(B) of consent 122986.

- The purpose of the monitoring is to assess changes in sediment compaction and firmness, for ecological and amenity (e.g. walking access) purposes.

- Sampling will be undertaken within mangrove clearance areas and on adjacent intertidal flats with a similar hydrodynamic setting (e.g. exposure, currents, water depths).

- Initial sampling will be undertaken prior to any clearance.

- Following clearance, sampling will be undertaken at three-monthly intervals for the first year, and will then be reviewed at that point (see Section 7.2 of this report).

- Sampling will include:
  - Mangrove clearance sites: three core samples at each site (same sites as 6.1).
  - Sand flats adjacent to mangrove clearance areas: three core samples at each site (same sites as 6.1).

In addition, substrate compaction will be measured at each of the 10 sediment observation sites over the mangrove clearance area and each of the five sediment observation sites over the adjacent intertidal flats, using the semi-quantitative

[1] Samples are homogenised and a subsample of approximately 5 g of sediment taken from each and digested in ~ 9% hydrogen peroxide until frothing ceases. The sediment sample is then wet sieved through 63 micron mesh sieve with washings collected. Mud content (<63 micron) then separated from the washings and dried at 60 C until a constant weight is achieved (fraction weighed at ~ 40 h and then again at 48 h).

categories in Table 3. Measurements should be undertaken using an adult individual with a body weight of 70-100 kg, with the weight and shoe size to be recorded of the relevant individual doing the sampling.

Table 3: Compaction categories.

Category	Description
Firm (F)	You sink no more than 1 cm and surface feels firm to walk on. You can walk easily and quickly, even in ordinary shoes.
Slightly Soft (SS)	You sink 1-3 cm and surface feels slightly "slushy", but is still relatively easy to walk on. Shoes might get dirty but can be used to walk on the surface.
Soft (S)	You sink 3-5 cm and surface feels noticeably soft. Difficult to walk on surface in shoes without them coming off. Gumboots or similar required.
Very Soft (VS)	You sink more than 5 cm. Very difficult to walk as feet get stuck. You could not walk on this sediment in shoes and even gumboots could pull off.

6.3 Saltmarsh and Bank Erosion

This section addresses baseline monitoring associated with saltmarsh and bank erosion in areas adjacent to mangrove removal areas, as required by condition 33(i)(C) of consent 122986.

- A brief field inspection will identify all areas presently active or recent erosion and locate a range of representative sites to assess erosion of saltmarsh.
- The erosion inspection will encompass the full length of the shoreline adjacent to the cleared areas and where saltmarsh occurs a minimum of five representative sites will be established for monitoring of saltmarsh erosion.
- At each site of active or recent bank erosion, the following will be recorded/assessed:
  - GPS coordinates;
  - Photographic record, using a standardised photopoint data sheet (see attached);
  - Measurement of shoreline length over which the erosion is evident ;
  - Assessment of whether erosion is currently or recently active (e.g. whether the erosion scarps are bare and fresh or appear weathered and/or are starting to be colonised by mosses/algae/vascular plants; evidence of debris deposited at toe or whether this is beginning to be removed; any other relevant observations);
  - Assessments will be undertaken prior to clearance, three months after clearance and annually thereafter, and following major storms with elevated sea levels and extreme winds likely to cause wave action at the site. .
- At each representative site for monitoring saltmarsh erosion, the following will be recorded/assessed:
  - GPS coordinates of each site;
  - The outer margin of saltmarsh will be marked, for a minimum of 10 m at each monitoring site, using plastic waratahs (cut to an appropriate length) or wooden pegs;
  - Photographic record, using a standard photopoint data sheet (see Appendix C);
  - An assessment of whether there is any change in the 'boundary' between saltmarsh and mangroves;

- Measurement of the elevation of any visible vertical drop in bed level between saltmarsh and adjacent open intertidal flat (the parameter shall be recorded at all sites but noted as “nil” if there is no vertical drop or escarpment).
- Assessments will be undertaken before clearance, three months after clearance and annually thereafter.

- This monitoring may be undertaken at the same site(s) as 6.4 below, or adjacent to such sites.

6.4 Mangrove Establishment on Saltmarsh Margins

This section addresses baseline monitoring associated with mangrove establishment on saltmarsh margins, as required by condition 33(i)(D) of consent 122986.

- Mangrove-saltmarsh margins will be marked, at a minimum of 10 locations in the harbour, using plastic waratahs (cut to an appropriate length) or wooden pegs.

- GPS coordinates will be recorded along the mangrove-saltmarsh ‘boundary’, and of all sample points.

- At each sample location, a 2-metre wide belt transect will be established, oriented perpendicular to the shoreline, at least 10 metres long, crossing the mangrove-saltmarsh ‘boundary’.

- Cover (i.e. canopy cover/density) and height of mangroves and saltmarsh species will be recorded within 2 × 1 m plots along the belt transect (i.e. a minimum of 10 plots at each site). Numbers of mangrove seeds and seedling will be counted, either within the 2x1m plot or a sub-plot.

- Photopoints will be established at each sample point.

6.5 Extent and Density of Seagrass Beds

This section addresses baseline monitoring associated with the extent and density of seagrass beds adjacent to mangrove removal areas, as required by condition 33(i)(E) of consent 122986.

- Existing information on the extent of seagrass beds, if available, will be compiled.

- At each mangrove removal site, an inspection will be made to assess the presence/ absence of seagrass beds.

- The outer extent of each seagrass bed will be delineated, at low tide, using a GPS unit.

- A minimum of ten 0.5 × 0.5 m sample points will be used to record seagrass density adjacent to each mangrove clearance area. Locations of each density assessment will be ‘marked’ using a GPS unit.

- Percent cover will be assessed visually using a 100x100mm grid within each 0.5x0.5m sample point.

- Representative photographs will be obtained at each site.

- Observations will be made before clearance, three months after clearance and annually thereafter.

6.6 Benthic Community Composition and Abundance

This section addresses baseline monitoring associated with benthic community abundance and composition, as required by condition 33(i)(F) of consent 122986.

- The purpose of the monitoring is to determine the communities that are present within mangroves and adjacent intertidal flats, and whether/how they change over time.
- Sampling will be undertaken within mangrove clearance areas and on adjacent intertidal flats with a similar hydrodynamic setting (e.g. exposure, currents, water depths).
- Baseline sampling will avoid seasonal extremes, such as the large recruitment pulses known to occur in spring/summer.
- Initial sampling will be undertaken prior to any clearance.
    - Walk-through assessment of each clearance site, with observations to be recorded at 20-40 points using a 25 cm square quadrat;
    - Vegetation cover within quadrats will be assessed and recorded using the following cover class scale: 0% (no vegetation present), 1-5%, 6-25%, 26-50%, 51-75%, 76-95%, 96-100%;
    - Assess presence of mangrove root mass at each sample point;
    - Measure depth to mangrove root mass at each sample point;
    - Other surface features will be recorded, including holes, molluscs (species, typical size range, and number).
- Macrofauna are to be identified to the lowest level practicable, usually species.
- Following clearance, sampling will be undertaken at three-monthly intervals for the first year, which will be reviewed at that point.
- Sampling will include:
    - Mangrove clearance sites: three core samples at each site;
    - Sand flats adjacent to mangrove clearance areas: three core samples at each site;
    - Standard 13 cm diameter core at 15 cm depth, viewed using 500 micron mesh.

6.7 Avifauna Use

This section addresses baseline monitoring associated with avifauna use of long-shore strips of mangroves, as required by condition 33(i)(G) of consent 122986.

- A series of five-minute count stations will be established within extensive strips of mangroves that extend along (or adjacent to) the harbour margin at various locations.
- Sampling will be done at three separate locations.
- Each count station will be *c.*200 m apart, with five or more stations at each site.
- Each count station will be ‘marked’ using GPS coordinates.
- Observations will be recorded at each station, and all birds heard or seen will be recorded, including species and numbers.
- Counts will be undertaken during the low tide cycle.

6.8 Banded Rail

This section addresses baseline monitoring associated with banded rail use of mangrove removal areas and areas of adjacent mangroves that are retained, as required by condition 33(i)(H) of consent 122986.

- Further walk-through surveys will be undertaken of banded rail presence/absence within each of the larger mangrove clearance areas.
- Surveys will be undertaken at either low tide or on a falling tide.
- Searches for banded rail tracks and listening surveys will be undertaken throughout the clearance areas and adjacent to them.
- Search/survey routes will be recorded using GPS-tracking.
- All sightings of banded rails or their tracks, and locations where calls are heard, will be recorded using a GPS unit.
- Surveys will be undertaken prior to clearance, and then at three-monthly intervals.
- A report will be provided on the work undertaken and the findings from each survey.
- Where banded rail are confirmed as being present in mangrove habitats by baseline monitoring, a minimum buffer of 30 metres width of mangroves from the landward edge will be retained.

7 Operational Monitoring Programme – Stage One Removal

Condition 33(i) requires an operational monitoring programme to be developed in the EMMP. This includes identification of the methodologies for each monitoring type that will be used for gathering data (as required by condition 33(ii)). At the time of writing this version of the EMMP the operational monitoring for the Stage 1 removal activities is set out.

The operational monitoring design has been developed in accordance with the "Monitoring and Trigger Guidelines" document that was developed and agreed upon through the resource consent hearing and mediation process.

To inform monitoring reporting (see section 9 of this report) and to assist in RUG decision making under condition 3 and 4 of consent 122986, the expected trends for each monitoring parameter and the triggers for decision making in relation to that parameter, have each been set out in relation to each category. These are required to be included in the EMMP under condition 33(v) where they are described as "environmental performance criteria".

This plan cannot, at this time, provide the detail for operational monitoring for mangrove removal stages subsequent to the initial Stage One removal areas. This is because, other than hand clearance of Area C and hand clean up of Area D, Stage One comprises a mixture of mechanical and hand removal trials. The commencement of Stage Two (and subsequently Stage Three) including area, location and removal method will be dependant on the outcome of those initial trials and the initial operational monitoring. The detailed design of operational monitoring for subsequent stages utilising the information and understanding gleaned as a result of Stage One,

cannot be designed until implementation and monitoring of Stage One to relevant areas, to a point of decision making, has been completed. This process is recognised and provided for by condition 37, 38 and 39 of consent 122986 as follows:

> *37 The Environmental Monitoring Management Plan shall be reviewed prior to the commencement of Stage 2, and, thereafter, every five (5) years by the consent holder and may be amended accordingly, subject to the approval of the Group Manager, Resource Use, Waikato Regional Council.*
>
> *38 The review of the Environmental Monitoring Management Plan shall assess:*
> *(i) Whether monitoring and management practices recorded in the management plan are resulting in compliance with the conditions of these consents; and*
> *(ii) Whether the objectives of the management plan are being met through the actions and methods undertaken by or on behalf of the consent holder.*
>
> *39 The review of the Environmental Monitoring Management Plan may result in amendments considered necessary to better achieve the objectives of the management plan.*

Therefore, the EMMP will be revised and added to, to address operational monitoring for Stage Two and Stage Three for relevant areas that are approved following the decision making required by conditions 3 and 4 of consent 122986 following Stage One.

7.1 Sediment Character and Properties

This section addresses operational monitoring associated with sediment character and properties including changes in mud content over time as required by condition 33(i)(A) of consent 122986.

7.1.1 Operational Monitoring

- Following establishment of baseline monitoring, operational monitoring will be undertaken at three-monthly intervals for the first year and, subject to a review of findings after one full year of monitoring, annually thereafter.

- Detailed monitoring following initial clearance will involve collection of core samples from the same sites as the baseline monitoring, but only in the cleared areas.

- In addition to the detailed core sampling:

  - Walk-through surficial sediment observations over each clearance site using the categories in Table 1. These observations to be recorded at each of the walk through benthic observation sites. GPS coordinates for sites.

  - Surficial sediment samples (to approximately 2 cm depth) from 5 of the surficial sediment observation sites within each cleared area. The sample sites must be sites at which surficial sediment observations were also recorded and sufficiently widely spaced to broadly represent the cleared area. Samples are to be analysed for weight percent mud (no grain size analysis required). GPS coordinates for sites.

  - RPD measurements at each of the walk-through benthic observation sites. The RPD depth to be taken as the depth below the surface at which anoxic sediments are first visually evident (usually a marked colour change to a black or grey sediment).

- Observations of sediment movement at each of the walk through benthic observation sites using the categories in Table 2.

7.1.2 Trends and Triggers for Decision Making

- The expected trends are:
  - A decrease in mud content over time following clearance, gradually trending towards the mud contents observed on comparable adjacent intertidal flats.
  - A possible increase in the RPD depth, averaged over the cleared area.
  - Possibly, though less widespread, evidence of an increase in sediment mobility.
- In regard to pilot study monitoring, if these trends are evident (or if there is no significant change), sediment characteristics will be regarded as providing no barrier to the next stage of clearance.
- Following the full consented clearance in any area, positive trends will be indicated as follows:
  - Mud content: A decrease in mud content (measured over a period of at least three years) which suggests that mud levels will approach values observed on comparable adjacent intertidal flats within 10 years.
  - RPD: An increase in RPD (measured over a period of at least three years) which suggests that RPD values will approach values observed on comparable adjacent intertidal flats within 10 years. If these positive benefits are not evident within three years following the full consented clearance, then:
    - Serious consideration should be given to whether or not ongoing maintenance of the clearance is worthwhile in terms of sediment benefit.
    - Any consents sought for further mangrove clearance in that area will require strong justification if desired changes in sediment character are part of the rationale for the additional proposed clearance.
- Unexpected and adverse trends will be deemed to have occurred if, averaged over all monitoring sites in the cleared area (i.e. not just 1-2 sites), mud content increases overall by >5% and/or RPD decreases by >10% over a period of three years after full clearance.
- If these unexpected or adverse trends arise (or other unanticipated adverse effects or trends are evident), the reasons will be assessed before further clearance to ensure they are not related to the mangrove clearance.

7.2 Estuary and Bed Level Compaction

This section addresses operational monitoring associated with estuary bed level and compaction, as required by condition 33(i)(B) of consent 122986.

7.2.1 Operational Monitoring

- Following establishment of baseline monitoring, operational monitoring will be undertaken at three-monthly intervals for the first year and, subject to a review of findings after one full year of monitoring, annually thereafter.
- Detailed monitoring following initial clearance will involve collection of core samples from the same sites as the baseline monitoring – but only in the cleared area.
- In addition to the detailed core sampling, walk through observations of compaction will be conducted over the area of each clearance site using the categories in Table

3**Error! Reference source not found.**. These observations to be recorded at each of the walk through benthic observation sites. GPS coordinates for sites.

7.2.2 Trends and Triggers for Decision Making

- The expected trend is an increase in compaction over time following clearance, trending towards the degree of compaction observed on comparable and adjacent intertidal flats.

- A positive trend will be judged to be occurring if, after at least 2-3 years of monitoring, the observed trends (averaged over the clearance area) suggest that compaction will approach that on comparable adjacent intertidal flats within 10 years (e.g. change in compaction class in Table 2 towards more compact sediments).

- If this positive trend is not evident after three years, then the value of mangrove clearance in the area in respect to sediment compaction will be in question. More detailed assessment would be required before consenting of any additional clearance where increased compaction was part of the rationale. The value of ongoing maintenance of the clearance may also need to be reassessed.

- A negative or adverse trend will be considered to have occurred if, over a period of at least 2-3 years, the average compaction decreases relative to initial conditions, when, averaged over the sampling/observation sites within the clearance area.

- If these or other unanticipated adverse trends or effects arise, the reasons will be assessed before further clearance to ensure they are not related to the mangrove clearance.

7.3 Saltmarsh and Bank Erosion

This section addresses operational monitoring associated with saltmarsh and bank erosion in areas adjacent to mangrove removal areas, as required by condition 33(i)(C) of consent 122986.

7.3.1 Operational Monitoring

- Following establishment of baseline monitoring, operational monitoring will be undertaken at three-monthly intervals for the first year and, subject to a review of findings after one full year of monitoring, annually thereafter.

7.3.2 Trends and Triggers for Decision Making

- Banks on estuary margins should, year-to-year, remain relatively stable except potential change resulting from major storms. Significant erosion, if it occurs, will be evaluated on a case-by-case basis to assess the role (if any) of mangrove clearance.

- Saltmarsh areas that are known (e.g. from historic aerial photography) to have developed subsequent to mangrove colonisation (i.e. dependent on the mangroves for shelter) might well erode. Similarly, bed levels adjacent to the mangroves may show evidence of a vertical drop following mangrove removal. Accordingly, these effects will not necessarily be judged to be negative or unexpected at such sites.

- In contrast, any erosion of saltmarsh areas known to have been in place before adjacent mangrove colonisation would be an unexpected effect and will be assessed prior to any further mangrove clearance in the area.

- Reasons for change will be determined. Change that cannot be related to a particular significant storm event(s), or human influences (other than mangrove clearance), or other trigger event or process, will be evaluated to determine the relationship(s), if any, with mangrove clearance.

7.4 Mangrove Establishment on Saltmarsh Margins

This section addresses operational monitoring associated with mangrove establishment on saltmarsh margins, as required by condition 33(i)(D) of consent 122986.

7.4.1 Operational Monitoring

- Following establishment of baseline monitoring, operational monitoring will be undertaken at three-monthly intervals for the first year and, subject to a review of findings after one full year of monitoring, annually thereafter.

7.4.2 Trends and Triggers for Decision Making

- Extent of change will be evaluated following each assessment.
- Significant change will be defined as being a change of more than 30 cm in the average saltmarsh-mangrove boundary. Each saltmarsh-mangrove boundary will be evaluated independently.
- If unexpected or adverse trends arise (e.g. a change, landwards, in the saltmarsh-mangrove boundary of more than 30 cm in a 12 month period), the reasons for any negative trends will be assessed before further clearance to ensure they are not related to the mangrove clearance.

7.5 Extent and Density of Seagrass Beds

This section addresses operational monitoring associated with the extent and density of seagrass beds adjacent to mangrove removal areas, as required by condition 33(i)(E) of consent 122986.

7.5.1 Operational Monitoring

- Following establishment of baseline monitoring, operational monitoring will be undertaken at three-monthly intervals for the first year and, subject to a review of findings after one full year of monitoring, annually thereafter.

7.5.2 Trends and Triggers for Decision Making

- Significant reduction in the cover of seagrass beds (for each seagrass bed) is defined as being more than 10% in areal coverage in any three-month period, and more than 20% in areal coverage in any twelve-month period. Decreases in percent cover attributed to seasonal variability will be noted, but will not trigger the consent; whereas, long-term decrease in average seagrass percent cover of >20% over twelve months will be considered to be a significant reduction.
- If unexpected or adverse trends arise, the reasons for any negative trends will be assessed before further clearance to ensure they are not related to the mangrove clearance.

7.6 Benthic Community Composition and Abundance

This section addresses operational monitoring associated with benthic community composition and abundance, as required by condition 33(i)(F) of consent 122986.

7.6.1 Operational Monitoring

- Following establishment of baseline monitoring, operational monitoring will be undertaken at three-monthly intervals for the first year and, subject to a review of findings after one full year of monitoring, annually thereafter.

Monitoring following initial clearance will involve collection of core samples for sieve analysis.

- All trial sites and operational clearance areas will be sampled (refer to Section B of Appendix B).

7.6.2 Trends and Triggers for Decision Making

- A 'positive' trend will be that no change occurs between monitoring periods, or that benthic community composition and abundance trends towards open intertidal sand flat.

- A positive trend will be indicated by an increase in abundance to at least 20% of the abundance of the five top-ranked taxa (in terms of abundance) found on adjacent sandflats. Visual assessment of multivariate MDS plots of benthic community composition indicates mangrove removal sites are trending toward communities typically present in open intertidal sandflat (benthic community trends should be based on univariate metrics (i.e., number of species, number of individuals) to indicate if species are present at a site, and multivariate metrics e.g., MDS plots of community composition) .

- Adverse trends will include minimal colonisation by macrofauna, and presence of macroalgae blooms. Adverse trends will include increased muddiness; evidence of increased anoxia.

- Any such changes will be considered in conjunction with the assessments of:
  - Sediment character and properties; and
  - Estuary and bed level compaction (see 7.1 and 7.2 above).

- If unexpected or adverse trends arise, the reasons for any negative trends will be assessed before further clearance to ensure they are not related to the mangrove clearance.

7.7 Avifauna Use

This section addresses operational monitoring associated with avifauna use of long-shore strips of mangroves, as required by condition 33(i)(G) of consent 122986.

7.7.1 Operational Monitoring

- Following establishment of baseline monitoring, operational monitoring will be undertaken at three-monthly intervals for the first year and, subject to a review of findings after one full year of monitoring, annually thereafter.

7.7.2 Trends and Triggers for Decision Making

- Triggers for decision-making will be based on very significant decreases in avifauna use, if that occurs.

- If unexpected or adverse trends arise, the reasons for any negative trends will be assessed before further clearance to ensure they are not related to the mangrove clearance.

7.8 Banded Rail

This section addresses operational monitoring associated with banded rail use of mangrove removal areas and areas of adjacent mangroves that are retained, as required by condition 33(i)(H) of consent 122986.

7.8.1 Operational Monitoring

- Following establishment of baseline monitoring, operational monitoring will be undertaken at three-monthly intervals for the first year and, subject to a review of findings after one full year of monitoring, annually thereafter.

7.8.2 Trends and Triggers for Decision Making

- Triggers for decision-making will be based on any confirmed discoveries of banded rail within proposed clearance areas (refer to Section 6.8 above).

- If unexpected or adverse trends arise, the reasons for any negative trends will be assessed before further clearance to ensure they are not related to the mangrove clearance.

8 User Group Participation

Condition 33(iii) requires that this EMMP includes:

> *33(iii) Provision for Ngati Whanaunga, Whangamata Ratepayers Association, Whangamata Harbour Care and other relevant user groups to participate in the monitoring if the parties wish to participate and undertake the pre-requisite training;*

8.1 Participation Opportunities

With appropriate training and accompanied by a suitably experienced ecologist, most aspects of the field work (except the detailed core sampling and banded rail surveys) could involve the relevant user groups identified in Condition 33(iii). Initial sampling locations will need to be determined by relevant experts. The involvement of user groups is also highly desirable.

8.2 Participation Management

It is essential that a trained and experienced ecologist is involved in the field work, to ensure appropriate instruction and training and to ensure reliable sampling and recording.

All those who wish to be involved would participate in a training session where they would be instructed in each aspect of the monitoring by appropriate professionals. This training would need to be undertaken in advance of the field work, to enable the monitoring field work to be implemented accurately and cost-effectively.

All groups listed in Condition 33 (iii) will be notified in writing of up coming training and opportunities for participation. All participants must be able to meet the Waikato Regional Council's health and safety guidelines for volunteers

All groups will be informed in writing of the opportunities to participate in monitoring and asked to confirm in writing (or by email) which if any areas they wish to participate in and to provide names and contact details (including email) for those members who wish to participate. A training date will then be organised in consultation with the groups. All those who attend the training will be added to an email register and informed of the dates of sampling at least two weeks in advance. The Regional Council will also provide all parties with information on the Council's health and safety requirements for attendance of the training and monitoring.

9 Reporting Requirements

Condition 33(iv) states that the reporting requirements in relation to EMMP monitoring also be set out in the EMMP.

9.1 Baseline Monitoring Reporting

All data will be collated from the baseline monitoring carried out in accordance with Section 6 of the EMMP. This will be provided to the Resource Use Group of the Waikato Regional Council in the form of a report. Quarterly monitoring reports will be finalised within three months of a sampling survey, and annual reports will be finalised within three months of the final sampling event for the 12 month period.

Copies will also be made available to the Department of Conservation, Ngati Whanaunga, Royal Forest and Bird Protection Society, Whangamata Ratepayers Association and Whangamata Harbour Care for their information.

On provision of the Baseline Monitoring Report the applicant will identify any changes to removal areas and or operational monitoring requirements under the EMMP as a result of the baseline monitoring results. If the consent holder determines that any changes are required to the EMMP after review of the baseline monitoring results, a review of the EMMP will be made in accordance with condition 35 of consent 122986 (which requires provision of proposed changes to key stakeholders and opportunity for their comment and discussion). The comment period will be open for 20 working days subsequent to provision of reports, as required by condition 35,

9.2 Stage One Operational Monitoring Reporting

The frequency of reporting on Stage One Monitoring will be as follows:

- A copy of the raw data from each quarterly monitoring round will be sent to RUG for their information;
- An annual report will be prepared which includes all the quarterly monitoring data and which also discusses the results of the data in light of expected trends.

10 Other Harbour Wide Initiatives

Condition 33(vi) of consent 122986 requires that the EMMP include:

> *33(vi) Descriptions of proposed weed management and restoration planting initiatives which may be undertaken by the Waikato Regional Council River and Catchment Services Group as components of wider Whangamata Harbour and catchment management programmes and which, while beyond the scope of this consent, will assist the Group Manager, Resource Use, Waikato Regional Council to evaluate monitoring data*

This section details, the linkages of the vegetation restoration plan being implemented as part of the activities under this consent, with other vegetation management works in the wider Whangamata harbour and catchment, as required by conditions 33(vi) and 45(vi) of consent 122986. It also highlights the linkages to other works programmes and schemes within the catchment.

10.1 Existing Management Plans and Schemes

This proposal links, and has the potential to bring to life, a number of strategies and visions within the Whangamata community. This reinforces the preferred approach of Waikato Regional Council in its aim for integration and the need to consider four well–beings: environment, social, cultural, and economic.

Existing strategies and actions previously identified include:

Whangamata Harbour and Catchment Management Plan

- Amenity values associated with open space landscapes and recreation are protected:
  - Habitat restoration plans will be developed for Moanaanuanu;
  - Sites in the catchment that could be restored in cooperation with the landowner with a focus on coastal wetlands and salt marsh be identified.
- A reduction in the effects of accelerated erosion across the catchment, less suspended sediment transported by water ways and an increase in the area of indigenous habitats and species:
  - Planting of appropriate native or exotic riparian species to stabilise stream banks and improve shading for in-stream habitat;
  - In cooperation with landowners undertake fencing along water ways to reduce bank erosion and nutrient inputs.
- The community has a greater understanding of coastal and catchment values and how they relate:
  - Investigate opportunity to link harbour and catchment plan actions into schools programme
  - Seek to identify and promote landowner opportunities to achieving the catchment and harbour plan outcomes
  - Implement a public awareness campaign on the impacts of land based activity on the harbour and marine catchment

Coromandel Peninsula Blueprint – Local Area Blueprint for Whangamata

- Natural areas – ecological corridors identified and established.
- To provide water in sustainable quantity and of the highest quality.
- To protect a range of diverse, healthy life in the Harbour.
- To ensure public access will be provided around the harbour margins.
- To provide appropriate recreational amenities to meet community needs.

- To protect riparian areas in the catchment from harmful effects.- Fence and plant stream banks and coastal margins
- Ensure land use in the catchment will minimise erosion.

(Whangamata Reserve Management Plan and Whangamata Community Plan have both been summarised and included in the Coromandel Peninsula Blueprint.)

10.2 Vegetation Management

In addition to the, proposed weed management and restoration planting indentified in this plan, works in the in the wider Whangamata Harbour planned for the next financial year 2012/2013 include;

- Continued implementation of soil conservation new works;
- Support to Whangamata Community Board to look at restoration of the wetland below transfer station. To be determined and undertaken in consultation with Ngati Whanaunga;
- Promotion of new works via targeted mail outs to landowners;
- Continued management, removal and education on pest plan species identified in the Waikato Regional Pest Management Strategy;
- Technical advice and support where needed for walkway project.

Any weed management or indigenous revegetation planting on the harbour margins under the conditions of this consent will include monitoring that assesses the following:

Weed Management:

- Relative success of weed control operations based on observations of planted areas 1 year after planting, recording any significant issues that need to be addressed to ensure ongoing survival of the plantings

Revegetation Plantings:

The various species planted in each general area will be recorded and will be monitored annually during clearance, to visually assess:

- Survival and growth rates (ideally including some counting – but as a minimum assessing and recording which species have survived and which are illustrating good growth rates and vigour).
- Photographs of representative areas taken from standard vantage points.
- Time required for attainment of canopy cover within planted areas.

Monitoring results will be briefly reported with the other monitoring to enable improvement in the performance of riparian planting over time.

10.3 Potential Linkages

One of the attractions for the restoration works to focus on the upper harbour is the number of potential linkages to existing works and the potential to support other initiatives. Potential linkages include;

- Link to community Mountain Bike Park, both in works and in seeking volunteers for planting days;
- Papamaire Island restoration in partnership with Tangata Whenua and DOC;
- Whangamata Harbour walkway project; and
- Potential for the area to become a gateway to the Whangamata Township.

11 Public Access to Data

Condition 33(vii) of consent 122986 requires that the EMMP provide for:

> *33(vii) Public access to data for independent analysis and reporting.*

All data gathered under the EMMP will be formally provided to the Resource Use Group of the Waikato Regional Council as set out in Section 9 of this report. As such it will become public information within the filing system for the consent.

The monitoring reporting will be available on request from the Resource Use Group of Waikato Regional Council by calling the Council's freephone number, 0800 800 401 and quoting consent number 122986.

Alternatively, copies of monitoring data can be obtained from the River and Catchment Services Group (consent holder) directly by contacting the Whitianga Office of the Waikato Regional Council on 07 866 0172 and asking for the Whangamata Harbour Manager.

12 EMMP Development Consultation

Condition 35 of consent 122986 requires that a process of consultation be undertaken in the development of this EMMP as follows:

> *35 Prior to submitting the Environmental Monitoring Management Plan (EMMP) required in accordance with the requirements of conditions 34, 37 and 39 undertaking a review of, or amending the EMMP, the consent holder shall:*
>
> (a) *forward to the Department of Conservation, Ngati Whanaunga, Whangamata Harbour Care, Royal Forest and Bird Protection Society and Whangamata Ratepayers Association, a Draft EMMP (or draft changes to the EMMP) requesting their comments in writing within 20 working days;*
>
> (b) *provide at least 10 working days notice of a meeting time to the parties who have commented on the Draft EMMP in which they can meet together with the consent holder (either together or separately) to discuss their comments;*
>
> (c) *consider modifying the Draft EMMP in relation to any comments raised by the parties listed in part (a) of this condition. Where the consent holder determines that some or part of any comments provided by any party listed in part (a) of this condition should not result in a modification to the Draft EMMP commentary justifying this decision shall be provided to the Group Manager, Resource Use Group, Waikato Regional Council when the EMMP is submitted, and*
>
> (d) *provide all feedback received from each party listed in part (a) of this condition to the Group Manager, Resource Use Group, Waikato Regional Council when the EMMP (or changes to the EMMP) is submitted.*

At the time of writing this report, this EMMP has been prepared as a draft and will be forwarded in this form to Department of Conservation, Ngati Whanaunga, Whangamata Harbour Care, Royal Forest and Bird Protection Society and Whangamata Ratepayers Association for their comment. A meeting time will be provided for any of those parties that provide comment on the Draft EMMP within the timeframe provided for.

Following comments and feedback via meetings, RCS will decide what further changes need to be made to the Draft EMMP before making it a final version for submission to the Resource Use Group. All comments and discussions received during the consultation process, and the decision making by RCS in relation to changes to the EMMP resulting from this, will be documented in Appendix D of this report.

13 Certification

Condition 23

> *23 Prior to being submitted to the Group Manager, Resource Use, Waikato Regional Council for certification, each management plan (and subsequent reviews of each management plan) shall be certified by a suitably experienced and qualified expert(s) to confirm that activities undertaken in accordance with the management plan will achieve compliance with the relevant consent conditions.*

The technical aspects of this report have been prepared by the following persons who are suitably experienced and qualified to confirm that the environmental monitoring set out in this report will achieve compliance with condition 33 of consent 122986:

- Willie Shaw of Wildland Consultants Limited; and
- Jim Dahm of Eco Nomos Limited.

14 References

Swales, A. and Hume, T.M. 1994. Sedimentation History and Potential Future Impacts of Catchment Logging on the Whangamata Estuary, Coromandel Peninsula. *NIWA Consultancy Report CHH003, June 1994*.

Appendix A
Resource Consent 122986

Resource Consent Certificate

401 Grey Street
Hamilton East
Hamilton 3216

Private Bag 3038
Waikato Mail Centre
Hamilton 3240

ph +64 7 859 0999
fax +64 7 859 0998
www.waikatoregion.govt.nz

Resource Consent: 122987

File Number: 61 42 85A

Pursuant to the Resource Management Act 1991, the Waikato Regional Council hereby grants consent to:

Waikato Regional Council
Private Bag 3038
Waikato Mail Centre
Hamilton 3240

(hereinafter referred to as the Consent Holder)

Consent Type: Discharge Permit

Consent Subtype: Discharge to air

Activity authorised: To stockpile and burn removed mangrove trees on the foreshore of Whangamata Harbour including associated discharge of contaminants to air and land in the coastal marine area

Location: Whangamata Harbour

Map Reference:

Label	Easting	Northing
F	1853727.491	5880245.034
G	1853751.034	5880692.058
H	1853672.890	5880971.011
I	1853573.096	5881700.769
K	1853978.152	5881242.706

Consent duration: Granted for a period expiring 10 years from the date of commencement of this resource consent.

Subject to the conditions overleaf:

Waikato Regional Council's Freephone 0800 800 401

CONDITIONS

General

1 The exercise of this consent is subject to the conditions listed in Schedule One – Common Conditions.

Air Discharge Management Plan

2 Prior to the exercise of this consent, the consent holder shall prepare and have approved an Air Discharge Management Plan that includes:

(i) Procedures for stacking and drying of vegetation prior to burning;
(ii) Procedures to ensure adequate separation from roadways and residential dwellings;
(iii) Procedures to assess wind direction prior to each burn event to ensure burning only occurs during favourable conditions;
(iv) Procedures for dowsing fires should wind direction change and start adversely affecting residents,
(v) Methods to ensure each fire is completely extinguished with water and will not be left to smoulder,
(vi) Timing for burning activity,
(vii) Maximum number of stacks that will be burnt each day,
(viii) Procedures to ensure all relevant details of burns are recorded, including but not limited to wind direction, number and approximate locations of burn piles, and timing;
(xi) Names and contact details of those responsible for lighting fires and supervising the burns; and
(x) Complaint response procedures.

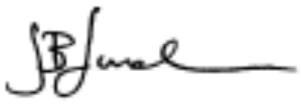
The Plan shall be submitted to the satisfaction of the Group Manager, Resource Use, Waikato Regional Council for approval in a technical certification capacity.

3 The applicant shall implement the Air Discharge Management Plan prepared and approved in accordance with the requirements of condition 2.

In terms of s116 of the Resource Management Act 1991, this consent commences on 14th May 2012

Dated at Hamilton this ***16th*** *day of* ***May 2012***

For and on behalf of the
Waikato Regional Council



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Schedule 1 – Common Conditions

The granting of consents 122986 and 122987 is subject to the following conditions, which shall apply to each individual consent:

General

1 Except as identified by specific consent conditions, the activity shall be undertaken generally in accordance with the application documents for this resource consent including:

- "Whangamata Mangrove Removal Consent Application" dated 27 June 2011 (WRC doc # 1970681), as modified at the hearing commencing 17 October 2011

Should any conflict exist, the conditions of consent will prevail.

2 The consent holder shall be responsible for all sub-contracted operations related to the exercise of this resource consent, and must ensure each sub-contractor is made aware of the conditions of this resource consent and shall ensure compliance with those conditions.

Site Representative

3 All investigations, design and supervision of construction, monitoring and aftercare shall be undertaken by appropriately qualified personnel experienced in such works, or works of a similar nature, to the satisfaction of the Group Manager, Resource Use, Waikato Regional Council.

Notice of Commencement and Timing of Works

4 The consent holder shall inform the Group Manager, Resource Use, Waikato Regional Council in writing of the expected starting and completion dates of each stage of the works at least two weeks prior to the works commencing.

5 The consent holder shall erect notices at each access point to the mangrove clearance and burning activity. These notices shall provide warning of the activities and advice of the period over which these activities will be occurring. The notices shall be erected at least one week prior to the exercise of each stage of this consent, and shall remain in place for the duration of the works.

6 No mechanical clearance works shall be conducted in the coastal marine area in any year during the months of August to December inclusive, unless approved beforehand in writing by the Group Manager, Resource Use, Waikato Regional Council.

Stockpiling

7 Mangrove stockpiles shall not remain in the coastal marine area for a duration exceeding three months, unless as otherwise agreed to in writing by the Group Manager, Resource Use, Waikato Regional Council.

Protection of Tangata Whenua Interests

8 In the event that any archaeological remains are uncovered as a result of the exercise of this consent, the works shall cease immediately and the Group Manager, Resource Use, Waikato Regional Council shall be notified within 48 hours. Works may only recommence with the written approval of the Group Manager, Resource Use, Waikato Regional Council. Such approval will only be provided after the Group Manager, Resource Use, Waikato Regional Council has considered:

(i) Tangata whenua interests and values,
(ii) the consent holder's interests, and
(iii) any archaeological or scientific evidence.

Public Access

9 The consent holder shall ensure that unimpeded access is maintained to and along the foreshore outside of working hours, except through areas where the safety of the public would be endangered as a result of any works in the coastal marine area associated with this resource consent.

Noise

10 The operation of machinery in the coastal marine area shall be carried out in a manner that complies with the noise levels set out in NZS 6803: 1999 "Acoustics - Construction Noise" or any subsequent updated version of that document.

Review

11 The Group Manager, Resource Use, Waikato Regional Council may, within one month either side of each anniversary date of the granting of this consent, serve notice on the consent holder in accordance with the requirements of section 128(1) of the Resource Management Act 1991, of its intention to review the conditions of this resource consent for the following purposes:

(i) to review the effectiveness of the conditions of this resource consent in avoiding or mitigating any adverse effects on the environment from the exercise of this resource consent and if necessary to avoid, remedy or mitigate such effects by way of further or amended conditions; or
(ii) if necessary and appropriate, to require the holder of resource consent 122987 to adopt the best practicable option to remove or reduce adverse effects on the surrounding environment due to the effects of the discharge; or
(iii) to review the adequacy of and the necessity for monitoring undertaken by the consent holder; or
(iv) to reduce the extent of authorised mangrove removal.

Note: Costs associated with any review of the conditions of this resource consent will be recovered from the consent holder in accordance with the provisions of section 36 of the Resource Management Act 1991.

Administration

12 The consent holder shall pay to the Waikato Regional Council any administrative charge fixed in accordance with Section 36 of the Resource Management Act 1991, or any charge prescribed in accordance with regulation made under Section 360 of the Resource Management Act 1991.

Resource Consent Certificate

401 Grey Street
Hamilton East
Hamilton 3216

Private Bag 3038
Waikato Mail Centre
Hamilton 3240

ph +64 7 859 0999
fax +64 7 859 0998
www.waikatoregion.govt.nz

Resource Consent: 122986

File Number: 61 42 85A

Pursuant to the Resource Management Act 1991, the Waikato Regional Council hereby grants consent to:

Waikato Regional Council
Private Bag 3038
Waikato Mail Centre
Hamilton 3240
(hereinafter referred to as the Consent Holder)

Consent Type: Coastal Permit

Consent Subtype: Disturbance

Activity authorised: To remove approximately 22.91 hectares of mangrove trees and mangrove remnants from the Whangamata Harbour including associated disturbance and vehicle use in the coastal marine area, and ongoing hand removal of seedlings.

Location: Whangamata Harbour

Map Reference:

Label	Easting	Northing
C	1854862.867	5880366.300
D	1854189.913	5879079.209
E	1853969.916	5878837.633
F	1853727.491	5880245.034
G	1853751.034	5880692.058
H	1853672.890	5880971.011
I	1853573.096	5881700.769
K	1853978.152	5881242.706

Consent duration: Granted for a period expiring 25 years from the date of commencement of this resource consent.

Subject to the conditions overleaf:

CONDITIONS

General

1 The exercise of this consent is subject to the conditions listed in Schedule One – Common Conditions.

Staged Removal

2 Manual and mechanical mangrove removal authorised by this consent shall be undertaken in stages, as detailed in Table 1:

Table 1:

Site	Hectares	Removal Method	Stage 1	Stage 2	Stage 3
C	0.17	Hand	0.17ha		
D	4.20	Hand – clean up	4.20ha		
E	5.64	Mechanical trial	0.30ha		
		Hand Trial	0.30ha		
		Depending on outcome of trials		1.48ha	
		Depending on outcome of trials			3.56ha
F	2.33	Depending on outcome of trials		2.33ha	
G	4.51	Mechanical trial	2.0ha		
		Depending on outcome of trials		2.51ha	
H	1.12	Depending on outcome of trials		1.12ha	
I	2.50	Mechanical trial	1.20ha		
		Hand trial	0.10ha		
		Depending on outcome of trials		1.20ha	
K	0.472	Mechanical trial	0.72ha		
D,E, F, G, H, I Drains	1.72	Mechanical			1.72 ha
Total area in each stage			8.99 ha	8.64ha	5.28ha
Total Area			22.91 Hectares		

Notes:
All Areas will be accurately plotted using Differential or Real Time Kinematic GPS before removal activities commence.
Area D consists entirely of rectification of previous clearance activities (prior to this consent) and, accordingly, is not considered new clearance area.
Areas F, H and K incorporate some rectification of previous clearance activities as well as full removal activities.
Storm water and river channel clearance is included in Stage three.

3 Mangrove removal Stages 2 or 3 shall not commence unless and until monitoring results from the immediately preceding removal activities satisfy the Group Manager, Resource Use, Waikato Regional Council that the effects on benthic ecology, avifauna and coastal processes, and after taking into account mitigation and/or remediation actions, are assessed to be no more than minor, based on the requirements of the Environmental Monitoring Management Plan and on the advice of an independent suitably qualified and experience person(s).

4 The assessment by the Group Manager, Resource Use, Waikato Regional Council under condition 3 will alternatively result in one of the following decisions:

(i) The level of effect is considered to be no more than minor as determined by an "expected trend" in monitoring, and removal at subsequent stages in some or all areas may proceed; or

(ii) The level of effect is considered to be more than minor, and restoration or operational modification is required to reduce effects to be no more than minor in some or all areas; or

(iii) The level of understanding of removal effects is considered insufficient, and further removal will be put on hold until and unless additional assessment or investigations provide information suitable to support either decisions (i) or (ii) above; or

(iv) The level of effect of particular methods is considered more than minor, or the level of understanding of removal effects of particular methods is considered insufficient, and removal at subsequent stages in some or all areas may proceed but only by means of a specific removal method. The removal method specified for any particular area may limit the removal to one or more method and may included appropriate removal methods(s) or may limit the removal to hand removal only within specified areas.

Note: For the purposes of this condition an "expected trend" in monitoring shall be defined and determined as set out by the document "Monitoring and Trigger Guidelines", Waikato Regional Council Document #2172750.

Environmental Protection

5 Removal of mangroves authorised by this resource consent is limited to a maximum of 22.91 hectares (including 1.72 Hectares drain/channel clearance) as identified from within areas D ,E, F ,G ,H, I and K shown on the plan titled "Whangamata Mangroves, Removal Areas under consent 122986" (WRC doc 2172747).

6 All mangroves shall be cut to a maximum height of 20 mm above the estuary bed.

7 No machinery shall be operated in water, inundated tidal flats or channels as a result of tidal flows, with the exception of small shallow pools left on a falling tide.

8 The consent holder shall take all practical measures to removal all above ground cleared mangrove material from the coastal marine area, other than that stockpiled for burning in accordance with resource consent 122987.

9 Where mangroves are contiguous with saltmarsh or indigenous forest or scrub, a buffer of at least 10 metres width of mangroves from the seaward edge of the saltmarsh or indigenous forest or scrub shall be retained. Where banded rail are confirmed as being present in mangrove habitats, a minimum buffer of 30 metre width of mangroves from the landward edge shall be retained. At clearance Area E, a minimum 50 metre width of mangroves shall be retained from the landward edge.

Machinery in the CMA

10 All machinery shall be operated in a manner which ensures that spillages of fuel, oil and similar contaminants are prevented, particularly during refuelling and machinery servicing and maintenance. Refuelling and lubrication activities shall be carried out away from any water body such that any spillage can be contained so it does not enter surface water or the coastal marine area.

11 Operators of machinery shall avoid, where practicable, crossing saltmarsh and seagrass beds. Where this cannot be completely avoided, the consent holder shall minimise impact to saltmarsh and seagrass by accessing across areas that have been previously disturbed.

12 The consent holder shall be responsible for implementing the best practicable option to take the most direct route, and least damage to the seabed and surrounding environment whilst accessing the removal sites.

13 Machinery shall only be operated in the coastal marine area for a maximum period of ten years from the date of commencement of this consent.

Seedling Mangrove Removal

14 Seedling mangroves authorised for removal by this resource consent shall only be single unbranched stems of no greater than 20 cm in height.

15 No seedling mangrove removal shall be undertaken within 10 metres of the landward edge at Area D.

16 Seedling mangrove removal activity shall only take place during the months of 1 March to 31 August inclusive.

17 The consent holder shall ensure all personnel undertaking seedling removal activities under this consent are made aware of the conditions of this consent and the need to comply with them, and are trained in appropriate seedling removal techniques.

18 Mangrove seedling removal activities shall be carried out in accordance with the certified Mangrove Seedling Removal Management Plan required by condition 21 of this consent.

19 The consent holder shall ensure that seedling mangroves are hand cut and that the groups of personnel removing seedlings from a specific seedling removal area in any one day shall be restricted to a maximum of six people per 2,500 m^2 in areas of dense seagrass as advised by a suitably qualified ecologist during the area demarcation and personnel training undertaken pursuant to condition 17 of this consent.

20 Seedling mangrove plant material shall be collected and removed from the coastal marine area.

Note: Subject to compliance with the above conditions, seedling mangrove removal is authorised by this consent within the entire Whangamata Harbour, Moanaanuanu Estuary and Otahu Estuary.

Management Plans

21 Prior to the exercise of this consent, the consent holder shall prepare and submit to the Group Manager, Resource Use, Waikato Regional Council for certification to ensure they satisfy the requirements of this consent, the following management plans for the activity to which this consent relates:

(i) Operational Management Plan;

(ii) Mangrove Seedling Removal Management Plan;

(iii) Environmental Monitoring Management Plan; which shall contain or append the "Monitoring and Triggers Guideline", document #2172750; and

(i) Predator Control Management Plan.

(ii) Vegetation Restoration Management Plan

22 No removal of mangroves shall commence until all the management plans listed in condition 21 have been certified by the Group Manager, Resource Use, Waikato Regional Council for implementation.

23 Prior to being submitted to the Group Manager, Resource Use, Waikato Regional Council for certification, each management plan (and subsequent reviews of each management plan) shall be certified by a suitably experienced and qualified expert to confirm that activities undertaken in accordance with the management plan will achieve compliance with the relevant consent conditions.

24 Following the completion of the process for the certification authorised by condition 22, (and any subsequent review and amendment) of the management plans, the consent holder shall provide to the Group Manager Resource Use, Waikato Regional Council:

(i) The amended management plan;

(ii) The consent holder's review reports on the management plan;

(iii) Any associated expert reports; and

(iv) Any comments made by other consulted parties in accordance with condition 35.

25 A copy of the latest version of each management plan shall be kept at:

(i) The Hamilton office of Waikato Regional Council at 401 Grey Street, Hamilton; and

(ii) The Whangamata Library, Port Road, Whangamata.

26 The copies of the management plans held at the Whangamata Library shall be updated within fifteen (15) working days of any amended management plan being certified by the Group Manager, Resource Use, Waikato Regional Council.

Operational Management Plan

27 The consent holder shall prepare and implement an Operational Management Plan. The objective of the Operational Management Plan shall be to identify management practices and procedures to be adopted in order to minimise adverse effects of mangrove removal and to comply with the conditions of consent.

28 The Operational Management Plan shall include, as a minimum, the following:

(i) Operational parameters, performance standards, procedures and general operating conditions for manual and mechanical removal methods in the coastal marine area;

(ii) Measures to be undertaken to avoid, remedy or mitigate the effects of operating machinery in the coastal marine area;

(iii) Emergency procedures that will be undertaken should an emergency occur in the coastal marine area involving machinery being used to remove mangroves;

(iv) A description of contractor induction and training processes to be completed before commencement of manual or mechanical removal processes to ensure all personnel understand their environmental responsibilities and are fully aware of management practices and procedures and consent conditions; and

(v) A record of contractor responsibilities during the implementation of removal processes.

Mangrove Seedling Removal Management Plan

29 The consent holder shall prepare and implement a Mangrove Seedling Removal Management Plan. The objective of the Mangrove Seedling Removal Management Plan shall be to identify management practices and procedures to be adopted in order to minimise adverse effects of mangrove seedling removal and to comply with the conditions of consent.

30 To achieve the objective specified in condition 29, the Mangrove Seedling Removal Management Plan shall include, as a minimum, the following:

(i) An aerial photograph of the Whangamata Harbour that shows the proposed removal areas, and the location of seagrass and saltmarsh beds, and the proposed access pathways to the seedling mangroves to be removed;

(ii) Methods to be used to minimise disturbance of foreshore sediment, and seagrass and saltmarsh beds; and

(iii) The process to train and brief any personnel who will remove mangroves under this consent.

Environmental Monitoring Management Plan

31 The consent holder shall prepare and implement an Environmental Monitoring Management Plan. The objective of the Environmental Monitoring Management Plan shall be to identify management practices and procedures to be adopted in order to establish a baseline and then monitor effects of each stage of mangrove removal authorised by the consents.

32 The consent holder shall retain appropriately experienced person(s) to develop the Environmental Monitoring Management Plan to determine and report on the impact of the activities authorised by this consent and to provide adequate information to the Group Manager, Resource Use, Waikato Regional Council to enable decisions to be made regarding the approval of each subsequent stage of the proposal.

33 The Environmental Monitoring Management Plan shall include, as a minimum, the following:

(i) A baseline monitoring programme, including a pilot survey to define sampling parameters and techniques, and an ongoing operational monitoring programme in mangrove removal areas in order to monitor effects on the environment including:

(A) Sediment character and properties including changes in mud content over time;

(B) Estuary bed level and compaction;

(C) Saltmarsh and bank erosion in areas adjacent to mangrove removal areas;

(D) Mangrove establishment on saltmarsh margins;

(E) Extent and density of seagrass beds adjacent to mangrove removal locations;

(F) Benthic community abundance and composition;

(G) Avifauna use of long-shore strips of mangroves;

(H) Banded rail use of mangrove removal areas and areas of adjacent mangroves that are retained;

(ii) Methodologies to be used for gathering data;

(iii) Provision for Ngati Whanaunga, Whangamata Ratepayers Association, Whangamata Harbour Care and other relevant user groups to participate in the monitoring if the parties wish to participate and undertake the pre-requisite training;

(iv) Reporting requirements;

(v) Environmental performance criteria to assist Group Manager, Resource Use, Waikato Regional Council in its evaluation of monitoring data;

(vi) Descriptions of proposed weed management and restoration planting initiatives which may be undertaken by the Waikato Regional Council River and Catchment Services Group as components of wider Whangamata Harbour and catchment management programmes and which, while beyond the scope of this consent, will assist the Group Manager, Resource Use, Waikato Regional Council to evaluate monitoring data; and

(vii) Public access to data for independent analysis and reporting.

34 The Environmental Monitoring Management Plan required to be prepared in accordance with the requirements of condition 21 shall be submitted to the Group Manager, Resource Use, Waikato Regional Council at least two months prior to the proposed commencement of any mangrove clearance works.

35 Prior to submitting the Environmental Monitoring Management Plan (EMMP) required in accordance with the requirements of conditions 34, 37 and 39 undertaking a review of, or amending the EMMP, the consent holder:

(i) Forward to the Department of Conservation, Ngati Whanaunga, Whanamata Harbour Care, Royal Forest and Bird Protection Society and Whangamata Ratepayers Association, a Draft EMMP (or draft changes the EMMP) requesting their comments in writing within 20 working days;

(ii) Provide at least 10 working days notice of a meeting time to the parties who have commented on the Draft EMMP in which they can meet together with the consent holder (either together or separately) to discuss their comments;

(iii) Consider modifying the Draft EMMP in relation to any comments raised by the parties listed in part (i) of this condition. Where the consent holder determines that some or part of any comments provided by any party listed in part (i) of this condition should not result in a modification to the Draft EMMP commentary justifying this decision shall be provided to the Group Manager, Resource Use Group, Waikato Regional Council when the EMMP is submitted, and

(iv) Provide all feedback received from each party listed in part (i) of this condition to the Group Manager, Resource Use Group, Waikato Regional Council when the EMMP (or changes to the EMMP) is submitted.

36 The consent holder shall implement the Environmental Monitoring Management Plan prepared pursuant to the requirements of condition 31 and shall forward the monitoring results to the Group Manager, Resource Use, Waikato Regional Council at the intervals detailed in the management plan.

37 The Environmental Monitoring Management Plan shall be reviewed prior to the commencement of Stage 2, and, thereafter, every five (5) years by the consent holder and may be amended accordingly, subject to the approval of the Group Manager, Resource Use, Waikato Regional Council.

38 The review of the Environmental Monitoring Management Plan shall assess:

(i) Whether monitoring and management practices recorded in the management plan are resulting in compliance with the conditions of these consents; and

(ii) Whether the objectives of the management plan are being met through the actions and methods undertaken by or on behalf of the consent holder.

39 The review of the Environmental Monitoring Management Plan may result in amendments considered necessary to better achieve the objectives of the management plan.

Predator Control Management Plan

40 Prior to the commencement of any mangrove removal the consent holder shall provide the Predator Control Management Plan for the approval of the Group Manager, Resource Use, Waikato Regional Council, that has been prepared by an appropriately qualified and experienced party. No removal shall commence until the Predator Control Plan has been approved.

41 The objective of the Predator Control Management Plan shall be to identify management practices and procedures to be adopted to protect banded rail and other indigenous fauna. Accordingly the Predator Control Management Plan shall have a particular focus on the upper harbour for the purposes of wildlife management and shall include, as a minimum, the following:

(i) Identification of predators which utilise mangrove habitat and adjacent landward margins and which, in the specific context of mangrove removal to be undertaken pursuant to this consent, require management in order to protect banded rail and other indigenous fauna;

(ii) Identification of the schedule of control methods, including appropriate seasonal timing of predator control, and identification of the aspects of the programme that will be carried out prior to mangrove removal in relation to relevant removal areas:

(iii) Identification of the outcomes and benefits to be achieved through the predator control programme;

(iv) A management control programme for nominated predators to be undertaken on terrestrial margins of mangrove areas including the control methods to be used and the frequency of implementation;

(v) Identification of parties involved, including roles and responsibilities;

(vi) Details of linkages with other predator control works in the Whangamata Catchment;

(vii) Communication plan;

(viii) Risk identification and management; and

(ix) Activity and outcome reporting.

42 The consent holder shall implement the Predator Control Management Plan prepared in accordance with condition 41.

Note: For the avoidance of doubt, this condition does not require or authorise any predator control physical activities (but may include education) on private land or within the urban environment, but shall relate to management activities on public land and reserves on the land margins adjacent to the consent areas.

Vegetation Restoration Management Plan

43 The consent holder shall prepare and implement a Vegetation Restoration Management Plan for the Consent Area, and its immediately adjoining land. The objective of the Vegetation Restoration Management Plan shall be to identify management practices and procedures to be adopted to identify proposed weed management and restoration planting initiatives in the vicinity of areas of wetland, salt marsh and terrestrial indigenous vegetation which is required to offset the loss of habitat by mangrove removal.

44 The Vegetation Restoration Management Plan may also identify the work that may be undertaken by the Waikato Regional Council River & Catchment Services Group as components of wider Whangamata Harbour and catchment management programmes.

45 The Vegetation Restoration Management Plan shall include as a minimum the following:

(i) Identification of weed pests which inhabit salt marsh and mangrove habitats and which, in the specific context of mangrove removal to be undertaken pursuant to this consent, require management in order to enhance the overall ecology and fauna habitat (especially for protection of banded rail);

(ii) Identification of the schedule of vegetation restoration, including appropriate seasonal timing of works, and identification of the aspects of the programme that will be carried out prior to mangrove removal in relation to relevant removal areas

(iii) Identification of the outcomes and benefits to be achieved through the vegetation restoration programme;

(iv) A management control programme for vegetation removal and enhancement to be undertaken on terrestrial margins of land within salt marsh and mangrove areas including the control methods to be used and the frequency of implementation and monitoring;

Note: implementation of some aspects of the management control programme may be subject to resource consent requirements and shall not be undertaken until such time as the required resource consents have been authorised;

(v) Identification of parties involved, including roles and responsibilities;

(vi) Details of linkages with other vegetation management works in the Whangamata Harbour and catchment;

(vii) Communication plan; and

(viii) Risk identification and management.

In terms of s116 of the Resource Management Act 1991, this consent commences on 14th May 2012

Dated at Hamilton this ***16th*** *day of* ***May 2012***

For and on behalf of the
Waikato Regional Council



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Schedule 1 – Common Conditions

The granting of consents 122986 and 122987 is subject to the following conditions, which shall apply to each individual consent:

General

1 Except as identified by specific consent conditions, the activity shall be undertaken generally in accordance with the application documents for this resource consent including:

- "Whangamata Mangrove Removal Consent Application" dated 27 June 2011 (WRC doc # 1970681), as modified at the hearing commencing 17 October 2011

Should any conflict exist, the conditions of consent will prevail.

2 The consent holder shall be responsible for all sub-contracted operations related to the exercise of this resource consent, and must ensure each sub-contractor is made aware of the conditions of this resource consent and shall ensure compliance with those conditions.

Site Representative

3 All investigations, design and supervision of construction, monitoring and aftercare shall be undertaken by appropriately qualified personnel experienced in such works, or works of a similar nature, to the satisfaction of the Group Manager, Resource Use, Waikato Regional Council.

Notice of Commencement and Timing of Works

4 The consent holder shall inform the Group Manager, Resource Use, Waikato Regional Council in writing of the expected starting and completion dates of each stage of the works at least two weeks prior to the works commencing.

5 The consent holder shall erect notices at each access point to the mangrove clearance and burning activity. These notices shall provide warning of the activities and advice of the period over which these activities will be occurring. The notices shall be erected at least one week prior to the exercise of each stage of this consent, and shall remain in place for the duration of the works.

6 No mechanical clearance works shall be conducted in the coastal marine area in any year during the months of August to December inclusive, unless approved beforehand in writing by the Group Manager, Resource Use, Waikato Regional Council.

Stockpiling

7 Mangrove stockpiles shall not remain in the coastal marine area for a duration exceeding three months, unless as otherwise agreed to in writing by the Group Manager, Resource Use, Waikato Regional Council.

Protection of Tangata Whenua Interests

8 In the event that any archaeological remains are uncovered as a result of the exercise of this consent, the works shall cease immediately and the Group Manager, Resource Use, Waikato Regional Council shall be notified within 48 hours. Works may only recommence with the written approval of the Group Manager, Resource Use, Waikato Regional Council. Such approval will only be provided after the Group Manager, Resource Use, Waikato Regional Council has considered:

(i) Tangata whenua interests and values,
(ii) the consent holder's interests, and
(iii) any archaeological or scientific evidence.

Public Access

9 The consent holder shall ensure that unimpeded access is maintained to and along the foreshore outside of working hours, except through areas where the safety of the public would be endangered as a result of any works in the coastal marine area associated with this resource consent.

Noise

10 The operation of machinery in the coastal marine area shall be carried out in a manner that complies with the noise levels set out in NZS 6803: 1999 "Acoustics - Construction Noise" or any subsequent updated version of that document.

Review

11 The Group Manager, Resource Use, Waikato Regional Council may, within one month either side of each anniversary date of the granting of this consent, serve notice on the consent holder in accordance with the requirements of section 128(1) of the Resource Management Act 1991, of its intention to review the conditions of this resource consent for the following purposes:

(i) to review the effectiveness of the conditions of this resource consent in avoiding or mitigating any adverse effects on the environment from the exercise of this resource consent and if necessary to avoid, remedy or mitigate such effects by way of further or amended conditions; or
(ii) if necessary and appropriate, to require the holder of resource consent 122987 to adopt the best practicable option to remove or reduce adverse effects on the surrounding environment due to the effects of the discharge; or
(iii) to review the adequacy of and the necessity for monitoring undertaken by the consent holder; or
(iv) to reduce the extent of authorised mangrove removal.

Note: Costs associated with any review of the conditions of this resource consent will be recovered from the consent holder in accordance with the provisions of section 36 of the Resource Management Act 1991.

Administration

12 The consent holder shall pay to the Waikato Regional Council any administrative charge fixed in accordance with Section 36 of the Resource Management Act 1991, or any charge prescribed in accordance with regulation made under Section 360 of the Resource Management Act 1991.

Appendix B
Monitoring and Triggers Guideline
Document # 2172750

Whangamata Mangrove Removal Consent: Monitoring and Triggers Guideline

A General Guidelines for Pilot Trials.

Mechanical trials will be designed and undertaken to ensure that tracking by machinery is minimised.

Low pressure tracks or tyres will be generally utilised for mechanical clearance but it is expected that compaction will occur even with these (especially in muddy sediments). Accordingly, trials are proposed to look at additional methods of minimising disturbance and compaction, including: :

1) Strip clearing, working perpendicularly into the mangroves clearing 20-30 m wide strips, subject to reach of machinery, minimising area disturbed by machinery to approximately 30%.

2) Strip clearing, working parallel to the channel/seaward margins of mangroves and clearing either side to the maximum reach of the machinery. This approach may result in the least mechanical impact in terms of sediment compaction.

The trial strips are to be located so that they experience full exposure to hydrodynamic processes relevant in each clearance area, to ensure that they provide a useful indication of likely outcomes in each area. The trial design will also ensure that remaining mangroves do not create local sheltering or other effects that could skew monitoring outcomes. These considerations require strips starting at the more seaward or exposed areas and proceeding landward. The applicant team is to agree on the final design of the trial areas before clearance is implemented.

Narrower cleared strips (say 20 m) will be trialled in sheltered areas, with wider strips (up to 50 m) in exposed areas. If there are no significant issues or adverse effects with the wider strip trials, and these transition as quickly as narrow strips, larger width strips could be used in later stages, as considered to be appropriate by the team. In some areas, the exact widths of the strips may need to vary slightly at a particular trial site, to ensure that required exposure conditions are met.

The trials will be designed so that mechanical removal is tested alongside hand/manual removal, to assess the most appropriate (i.e. based on evidence of expected trends) and cost-effective technique for each area. If both methods prove inappropriate (e.g. the area shows no significant evidence of expected trends or there are persistent and significant undesirable adverse effects), the remaining uncleared area will be judged unsuitable for clearance.

A root plucker may be chosen for use in mechanical trials, removing both above ground and below ground biomass of mangroves. Available evidence suggests that removal of below ground biomass is more likely to give rise to desired/expected trends. Past experience with mangrove removals has shown very slow winnowing of deeper muddy sediments (from both manual and mechanical removals). While an initial release of sediment is likely with root plucking, it is considered that these impacts are likely to be minor relative to existing natural sediment inflows and deposition during large floods; even in the unlikely event that all mud sediment moved rapidly from a cleared area. Nevertheless, sediment impacts will be monitored during trials to ensure that significant and/or persistent adverse effects do not occur.

B Monitoring Areas and Principles

This section sets out general principles for the monitoring of clearance areas. Specific detail in relation to monitoring will be provided in the Environmental Management Plan that is required to be prepared by conditions of the consent.

Areas to be monitored.

E1 – Two monitoring sites for each removal method (manual and mechanical) due to length of removal area, with replicate samples within control areas in neighbouring sand flats and mangroves (i.e. four sites in total). Sites are to be agreed in a final monitoring plan but are likely to be located toward either side of the strip (i.e. one site on either side, lengthwise of the cleared area)

G1 – Two monitoring sites on either side of strip (two total sites)

I1 – Two monitoring sites in mechanical clearance, one site in manual clearance area (three total sites)

In the above areas, more intensive (and expensive) monitoring using benthic cores is to be complemented by visual examinations and simpler techniques (e.g. simple indicative measures of muddiness and bulk density; depth of oxic layer) over the entire areas of the trials at all sites.
K, B and C clearance areas should also be monitored, but using the visual monitoring and simple techniques noted above rather than benthic and sediment cores.
Monitoring Principles and General Observations (based on experiences with Tauranga monitoring)
1) "Expected trends" provide the basis for the monitoring. The general expectation with mangrove clearance is, as long as the clearance is maintained, there will be a transition from a mangrove ecosystem towards an open intertidal ecosystem. Clear indicators are required to assess whether a cleared area is on an 'expected transition path'. The characteristics of these ecosystems vary in different areas and the initial sampling will be designed to define the characteristics relevant for each area. It is not anticipated that any cleared area will fully transition to an open intertidal flat environment within a short period (say one to two years), but indicators should show trends consistent with the expected transition (i.e. expected trends). Regardless, all areas are expected to be in a poor state for three or more months after mangrove clearance. It is important, however, to assess whether the trajectories of benthic and sediment characteristics follow expected trends after the initial impacts of removal. What will determine a "positive trend" in monitoring results is that the initial adverse impact does not persist and that trends over time reflect expectations. Multivariate community analyses are more appropriate than total number of taxa or total number of individuals in the determination of an appropriate transition as opportunistic species may colonise in larger numbers, but not necessarily represent a healthy or natural community state.
2) The monitoring will adopt an appropriate mix of more expensive and simpler techniques. Benthic core samples and sediment analyses are expensive, but are necessary to provide useful information on benthic community structure and sediment properties (e.g. mud %) that cannot be observed or quantified accurately through visual methods. Visual examination and simpler techniques (e.g. visual indicators of ecosystem health and sediment character such as depth of the oxic layer in sediment, sediment sinkability, presence of bacterial or algal blooms) will be used to complement the detailed core sampling and provide information over the wider trial area.
Monitoring needs to be designed carefully to ensure that it is both cost effective and that useful results are obtained. If unanticipated adverse effects do occur or are identified with simpler monitoring methods, the need for additional monitoring may be triggered as appropriate. Monitoring at Tauranga (by NIWA) was undertaken based on minimal funding, but was still able to produce useful results. Replication of three core samples per site, at two sites per habitat, was sufficient to demonstrate community trajectories over time. If variability is higher at Whangamata, then consideration of appropriate action will take into account the information required.
3) Baseline monitoring: The purpose of the baseline monitoring is to determine communities that are present in adjacent mangrove and sand flat habitats and their general characteristics. Seasonal variation may occur in some of these (e.g. faunal) characteristics but monitoring of this variation is not likely to be practical or required for the purposes of this project. General community structure (i.e. presence of bivalves, deposit feeding polychaetes) should be adequate to determine whether communities are transitioning in an expected manner at an appropriate rate after mangrove removal. Baseline samples will nevertheless be timed to avoid seasonal extremes (e.g. avoiding large recruitment pulses in spring/summer).
4) Control samples: It is agreed that sampling should take place both within and outside of mangrove clearance areas. An adjacent sand flat (i.e. within 20-50m of mangrove clearance) in a similar hydrodynamic setting (e.g. exposure, currents, depths) is most suitable as a control site outside the clearance area. The biological and sediment characteristics of such a sand flat will provide the most useful indication of the likely endpoint for the expected transition (i.e. if absence of mangrove, at the site cleared, is maintained and the ecosystem transitions following the trends expected).

5) Frequency of sampling: This will be set out and agreed in the final monitoring plan but in the first year could include baseline monitoring, followed by three-monthly sampling to monitor changes in the ecosystem characteristics to assess whether these follow the trends expected. The control and the first three-monthly sampling will include benthic and sediment core samples complemented by visual observations. The six- and nine-monthly monitoring will focus on visual observations to help keep monitoring cost effective. If the visual monitoring suggests that trigger points may have been reached (relevant trigger points are discussed in Section C below), then the 12-monthly sampling will include cores to confirm this (i.e. to enable confirmation of trends using more rigorous data and multivariate analysis). In those areas, where the visual observations indicate that a trigger point is unlikely to have been reached, visual monitoring will be undertaken at three-, six- or 12-monthly intervals based on observed trends (e.g. six- or 12-monthly sampling may be adequate if it is clear that the pace of change is slow). If the ongoing visual monitoring suggests that a trigger point has been reached, this is to be further assessed and confirmed with core sampling.

6) Period of monitoring: Monitoring will continue over at least four years (or as long as the staged clearance occurs) to define the rate of change and the end points reached within those timeframes. If additional areas are cleared within this period (i.e. triggers discussed in Section C below are reached and new stages are approved for clearance) the visual and/or core monitoring will be expanded to include the newly-cleared areas with controls established in these areas before clearance, but with appropriate changes in the monitoring strategy to keep it cost effective. It is envisaged that this will mean greater use of visual observations as the number of sites expands, while also ensuring that core samples are obtained towards the end of the four year monitoring period, to confirm and quantify the changes over the monitoring period. However, if cost-effective approaches (e.g. using a student) are able to be adopted, this may enable the use of coring to be maintained even as the sites increase.

7) Banded rail: Monitoring will involve assessments of the degree to which banded rail utilise planned mangrove clearance areas and whether banded rails continue to utilise sites adjacent to mangrove clearance areas. This will involve change of light (dawn and dusk), low tide and falling tide listening surveys and searches for rail tracks within mangrove stands adjacent to clearance areas.

C Types of Monitoring and Trigger Points

As outlined above, the monitoring will include both detailed (such as benthic core samples) and simple techniques to monitor ecosystem changes following mangrove clearance and these changes will be assessed against expected trends and outcomes with defined trigger points to be adopted for trends that indicate that significant adverse effects have occurred as a result of mangrove clearance and that these adverse effects are evidence of a lack of transition to a state more similar to a healthy sand flat environment.

Expected trends and triggers will be defined for each monitoring and metric adopted in the final monitoring plan. By way of example:

- In the event that expected trends are observed and there are no significant adverse effects, this would be a trigger to proceed with the next stage of mangrove clearance provided for by the consent.

- If rates of change were slow then this could also be a trigger to delay further clearance until it clear that expected changes are occurring and at an appropriate rate.

- If there were no significant changes in relevant metrics within an appropriate period (likely to vary according to site exposure and dynamics) then this could be a trigger for no further clearance in that area (since it would indicate that the mangrove clearance had achieved little in terms of the anticipated environmental change).

- Significant and persistent adverse effects not consistent with expected trends would be a trigger for no further clearance in that area until the matter was resolved.

Final details of the monitoring will be set out in the monitoring plan but discussions to date have agreed broad details and principles to guide preparation of the monitoring plan.

Benthic core samples

This sampling of each site, when undertaken, should include three core samples in each relevant area (i.e. the area within which mangroves are to be removed and an adjacent sand flat judged to be an appropriate control site). The sampling should use a standard 13 cm diameter core to 15 cm depth, sieved on 500 micron mesh, to adequately preserve colonising macrofauna and small infauna that would not be collected on 1 mm mesh.

Cleared mangrove site samples cost three to four times as much to sort and identify compared to sand flat samples due to difficulties of sorting through root material. It was therefore agreed that mangrove communities need only be sampled in the baseline sampling, with simpler (e.g. observational) techniques to be utilised in further mangrove sampling. However, further benthic cores may be required if the visual observations suggest that significant and persistent adverse effects are evident within cleared mangrove sites.

Accordingly, for each of the sites cleared, there will be three cleared mangrove sample core sites and three sand flat cores taken during baseline sampling, and three cleared area and three sand flat cores during each subsequent core sampling.

It is estimated that three to four hours of sorting will be required per sample with mangrove biomass and 1.5 hours for samples without mangrove root biomass. In addition, identification of macrofauna will require up to two hours per mangrove sample (if large numbers of oligochaetes and capitellid polychaetes) and one hour per sand flat sample. The sand flat samples will not have root biomass and, if the root plucking method is used, less root biomass is also likely to be present within the cleared areas, reducing the time required to sort and identify samples.

There is potential for further amendment in benthic core sampling to be achieved through sampling only one of each clearance type at each site (E1, G1, and I1, for total of three mechanical and two manual site replicates, reducing the use of this more expensive method).

It was also agreed that representativeness and edge effects need careful consideration in sampling and may in some cases require additional replicates. For instance, a narrow (e.g. 20 m wide) clearing should be sampled in the middle (i.e. 10 m in from the outer edge of the cleared strip) unless machine compaction or disturbance through the middle of the plot makes this an unrepresentative site. In wide (e.g. 50 m) cleared strips, with the possibility of edge effects, sampling of the cleared area may be required at two or more distances from the edge. It may also be possible that the design of visual observations will be expanded in some locations rather than using cores so long as it can be ensured that the variation is able to be documented appropriately. If notable environmental change is only occurring in the cleared area closest to the outer edge, this should be taken into account in the sampling design. If the cleared area appears homogeneous, sampling of these additional replicates can stop once similarity throughout the cleared area has been confirmed.

Benthic community **triggers** will be determined by expected transition trends becoming apparent, based on multivariate community analyses. An **appropriate transition trend** can be assumed to be occurring if sampling (cores and visual methods) show changes trending towards adjacent sand flat community characteristics, but this must be confirmed by core sampling.

Sediment samples

Grain size, mud percent, organic content and chlorophyll *a* have been useful indicators of trends in sediment characteristics in previous mangrove clearance and are reasonably inexpensive. Predicted trajectories include a decrease in sediment mud content, a decrease in organic content, and a decrease in chlorophyll *a* over time following clearance, though an initial spike may be observed in all three sediment metrics after clearance. Three replicate samples per habitat are recommended at each site for the baseline and the first post-clearance sampling. If variability is low, one composite of three replicates could be analysed, to reduce cost.

A standard surficial sediment sample is a 2 cm core diameter to 2 cm depth. However, the core sampling should include sampling of sediment characteristics (particularly mud percent) to at least 15 cm depth. Consideration should also be given to baseline and subsequent periodic measurements of bulk density.

An **appropriate trend** could be assumed if sampling over time shows decreases in percent mud content, organic content and/or chlorophyll *a*. It is anticipated that reduction in at least mud content will be a **relevant trigger** at most sites.

Simpler Techniques

(i) *Quadrat sampling for visual indicators*

These are inexpensive, requiring field survey and data entry and analysis only.

Previous discussions have agreed that a 50cm × 50cm quadrat will be used for all visual metrics, with three replicate quadrats at each distance along a transect and sampling every 10 m from the seaward edge to the inner edge of the cleared area, to assess changes with distance from the seaward edge of the clearing where recovery should occur quickest. It was suggested that transects start at 25 m outside the cleared area, with sampling every 10 m until 5 m past the edge of the cleared area into remaining mangroves. Each quadrat should take about five minutes to assess and record, for a sampling team of two people.

The visual metrics most appropriate in each area will be outlined in the final monitoring plan. Useful visual metrics in Tauranga were: 1) sediment sinkability (a simplistic measurement of footprint or other depth, using a consistent weight); 2) number of crab holes; 3) number and type of epifauna, usually gastropods; 4) number of large infauna (hand raking of quadrat for bivalves, e.g. cockles); 5) depth of oxic layer; 6) presence and depth of remaining mangrove biomass (e.g. root biomass depth, presence and number of pneumatophores); 7) presence of seeds and seedlings; 8) presence of algae, particularly green algal species that have thus far been observed blooming on mangrove removal patches.

The rate of change in these various metrics will provide a useful indication of the types and rates of transition in different areas.

(ii) *Other potentially useful measurements*

There is a wide variety of other relatively simple measurements that might be useful to monitor changes and trends within and/or adjacent to cleared areas and which may be relevant to the final monitoring plan. These include:

- Remaining biomass of mangroves. It was agreed that root biomass could be measured over time to monitor decay, as past work has suggested this may significantly or restrict expected sediment changes at depth. Benthic core samples of 13 cm to 15 cm depth, sieved with all mangrove biomass retained and weighed, are suitable to get a standard measurement size, with suitable replicates per site, subject to variability (there will be higher variability with patchy mangroves than dense forest).

- GPS coordinates and observations within cleared areas to record the location, length and/or area of visually disturbed areas (e.g. tractor marks) to see if these disappear or reduce over time.

- GPS coordinates and visual observations in adjacent areas. For instance, the edge of adjacent seagrass meadows might be mapped to ensure these have not reduced in extent following mangrove clearance. Studies in Tauranga have shown no impacts on nearby seagrass patches (no changes in 12+ months) and no effect on cockle condition in nearby shellfish beds, so impacts on adjacent areas are not anticipated.

- Bed level measurements. Sediment erosion plates could be used in appropriate areas (e.g. E1) where changes in bed elevation are relevant to assessment of benefits and/or trends. These measurements can be used in combination with sediment sampling to assess whether bed level is changing over time, which is predicted with erosion and/or compaction of fine sediments after mangrove

removal. Decreasing bed levels can result from compaction and/or erosion and it is difficult to separate how much of the decrease is from each possible cause by measuring only depth of sediment. Nevertheless, in combination with other measures (e.g. mud percent; sinkability) some judgment is likely to be possible on the relative contribution of each factor to any observed bed level changes.

- Other triggers. If other unanticipated impacts occur (e.g. algal blooms on surface of removal area), other samples are warranted. For example, algal blooms imply a nutrient source and would trigger surveys of sediment nutrient content, water column nutrients, and oxygen saturation in pore water and water column (though note that the oxic depth in sediment pore water can usually be determined visually quite easily to the nearest mm, and more expensive sediment sampling is not cost-effective for sediments).

Banded Rail

The trigger for banded rail will be based on the degree to which banded rail utilise planned mangrove clearance areas, which will be determined by surveys undertaken using the methods set out in Section 7 above. It would also be of potential concern if rails vacated all areas of saltmarsh and mangroves adjacent to clearance areas, and this will be taken into account, where relevant, in the staged clearance programme.

Appendix C
Photopoint Record Sheet

Site Name and No. _____

PHOTOPOINT RECORD SHEET

Date:		Recorder:		Photographer:	
GPS co-ordinates:		Grid Ref:			
Date Established:		Aerial Photo No:			
Camera and Film Details:					
Photo No.				Light:	
Time:		Compass bearing (mag):		Altitude:	

Route to Photopoint:
Vegetation Description (photographed part):
Notes:

Sketch-map of Photopoint Location:

Appendix D
EMMP Development Consultation

Responses to Consultation on Draft EMMP (2 July 2012) from Key Stakeholders

Meeting was held with;

- DOC on 4 September 2012
- Ngati Whanaunga – Nathan Kennedy 31 August 2012

Meetings were offered to;

- Whangamata Ratepayers Association (email)
- Whangamata Harbour Care (email)
- Forest and Bird (by phone)

Department of Conservation			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
1 The timeframes for undertaking baseline monitoring for most of the parameters are not clear. For example what period of baseline monitoring will be undertaken before the commencement of mangrove clearance? In some cases repeated measures may be necessary to understand baseline trends and variability.	The baseline monitoring is not intended to assess baseline trends and natural variability within a mangrove ecosystem. This is part of effects monitoring relevant to consent to remove the mangroves. The baseline sampling will reasonably establish the original condition prior to clearance – against which we can assess any trends or changes post clearance. The trends we are expecting post clearance are generally markedly different from those one would expect to see in a mangrove ecosystem. For instance, we anticipate a general trend for mud content to decrease rather than increase and markedly different benthic faunal assemblages. We have agreed through the monitoring and trigger guideline the sorts of changes and trends we expect post-clearance. The proposed monitoring will determine if these expected changes or trends are occurring and the rate at which they are occurring.	N/A	N/A

Department of Conservation			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
	So, there is no benefit in repeated measurements to establish natural variability within the mangrove ecosystem prior to clearance. The request for "baseline trends" within the mangrove system is also not necessary or realistic. We would need years of data to realistically identify those and separate them from natural variability. And these trends are not relevant to the consent and associated effects monitoring. The mangrove removal will obviously change processes operating and result in quite different processes and trends. **Meeting 04/09/12 with DoC:** DoC accepted that they had agreed that the EMMP would follow the Monitoring and Trigger Guidelines document and that that was to be the basis for the EMMP. However DoC reiterated their expectation of greater prescription in the EMMP. Fairly comfortable with benthic and sediment monitoring information but still some concerns regarding rail monitoring. See below.		
2 6.7 Avifauna Use - There is no indication of how many bird counts stations will be established or the time or season and frequency that they be monitored. We note reference on page 6 which indicates 'suitably qualified persons' would decide survey locations in the field and based on review of photographs prior. We consider that approximate survey locations and minimum replicates should be included as part of the EMMP.	The draft EMMP is quite prescriptive: • "A series of five-minute count stations will be established within extensive strips of mangroves that extend along (or adjacent to) the harbour margin at various locations. • Each count station will be *c.*200 m apart. • Each count station will be 'marked' using GPS coordinates. • Observations will be recorded at each station, and all birds heard or seen will be recorded, including species and numbers.	N/A	6.7

Department of Conservation			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
	• Counts will be undertaken during the low tide cycle." As such, listening stations are to be established in all larger areas of mangroves. There is no need, at this stage, to mark out the survey transects which will be orientated parallel to the shoreline, and a sufficient distance from the shore to avoid recording of birds in terrestrial habitats. As such they will generally comprise single transects in each of the larger areas of mangroves in the harbour system, with listening stations at 200m intervals. It may be feasible to establish two parallel transects in each of the two larger areas of mangroves towards the head of the harbour, subject to attaining 200m of separation between each of the listening stations. In my (Willie Shaw) opinion, it is not justified to put a listening station in small areas of mangroves, as these sites will only provide very limited habitat for birds that rely of 'tree' or shrubland habitat. The same applies to banded rail, as noted below. **Meeting 04/09/12 with DoC:** DoC indicated they would like more detail. Not detail on how 5-minute bird counts are carried out but around survey efforts. Eg time of year, number of stations, how long the surveys would go for, how often the sites would be checked, where they would be, how many stations, frequency, time of day, tide time.		
3 Section 6.8- Band Rail indicates it will be possible to determine banded rail absence and surveys are limited to "larger mangrove clearance areas". To achieve this it would be necessary to be certain that birds present are always detected and does not account	Some of the mangrove clearance areas are very small, are not connected to saltmarsh, and will not be used by banded rail. As such, monitoring of these sites will be a waste of effort. All of the larger clearance areas will be monitored: E1, E2,	N/A	6.8

Department of Conservation			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
for movement of birds between sites. It would be preferable if all mangrove clearance areas were monitored rather than 'the larger mangrove clearance areas' only. Or at least that "larger mangrove areas" are defined and agreed upon. There is no indication of how many pre-clearance surveys will be undertaken or any indication of observer effort required in order to minimise the chances of a false negative result.	G1, G2, I1, and I2. At least two (2) pre-clearance surveys will be undertaken for banded rail. Banded rail surveys will be undertaken on a falling tide, by experienced observers, and careful searches will be undertaken for rail footprints. Banded rail are territorial residents and there is therefore no particular need to undertake surveys in different seasons. It will be more important to undertake multiple surveys (a minimum of two), to ensure that sound information is gathered on habitat use in particular parts of the harbour. It is important to remember that rail habitat is to be retained at all sites where mangrove clearance is to be undertaken. **Meeting 04/09/12 with DoC:** DoC expressed concern that rail surveys were not proposed in the vicinity of Areas K and H as rail had been detected around the periphery of those areas. The assumption that rail wont be found in those areas is not fact. RSC response is that the area of actual mangroves within those removal areas is not large and there is little habitat there that rail might use. Rail were not identified inside those areas specifically in previous surveys.		
4 In general the baseline programme seems light on the details on the amount of pre-clearance monitoring to ensure real effects can be detected (as opposed to existing variability and trends) and the specific	Refer to Point 1	Refer to Point 1	N/A

Department of Conservation			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
locations of the monitoring.			
5 The consent condition states that pilot surveys be conducted to define the sampling parameters and techniques (and implicitly the sampling locations and effort) - has this been done? And if not how will this inform the EMMP?	This pilot work will be conducted before and after the small pilot clearances planned. The EMMP is already fairly detailed in terms of the parameters and techniques but this work will inevitably result in some refinement. **Meeting 04/09/12 with DoC:** Discussed that the pilot surveys would in practice be the first round of monitoring following the Stage 1 removal trials, particularly the parameters focussed on benthic, sediment and odour. The terminology may have gotten confusing through the process because at one stage RCS had thought of doing some small permitted activity mangrove removal around structures (eg boat ramp) to monitor some of the physical changes, however this wasn't carried out.	N/A	N/A
6 What is the status of the other plans required by consent conditions (e.g. vegetation restoration and predator control plans)? Is it envisaged that they will be implemented simultaneously?	Not relevant to the review of the EMMP. However, for your information the other plans have been lodged with RUG for review and certification. Each has its own implementation timing in appropriate seasons to best cater for what they are to achieve (ie timing for predator control is prior to rail nesting, for restoration is timed for best planting, operational plan relates to the operational matters associated with removal when that begins). As required by the conditions of consent the predator and restoration plans identify what aspects of the plans will be implemented prior to mangrove removal occurring. **Meeting 04/09/12 with DoC:** Emily O'Donnell gave DoC an outline of the content of the Restoration and Predator Control Management Plans. DoC see those plans as containing key mitigation measures for	N/A	N/A

Department of Conservation			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
	the consent.		
7 Overall it is not clear what type or level of adverse effect would halt further clearance activity.	The Triggers and Guidelines document provides some guidance on this but it is not possible or desirable to be prescriptive. By way of example, adverse effects that could halt mangrove clearance include significant prolonged anaerobic conditions, unexpected 'sealing' of the surface sediments, major odour resulting in significant human disturbance issues, or major unexpected adverse effects. These effects are not anticipated based on past experience. The small areas of pilot clearance planned will enable further judgment on this matter.	N/A	N/A
8 7.7.2 - The trigger for decision-making is ambiguous: What does 'very significant decreases in avifauna use' mean and who decides this?	This is a matter in which reasonable professional judgment has to be exercised. It will require some data, interpretation of that data, and expert judgment. The judgment will be made by the ecologist engaged to undertake the monitoring. **Meeting 04/09/12 with DoC:** Discussed that monitoring reports will contain monitoring data as well as specialist interpretation of that data but that all that information will be fed to RUG for actual decision making under the consent conditions. Linked to point 7 and comments regarding rail monitoring. Want confidence in the robustness of baseline monitoring.	N/A	7.7.2
9 7.8.2 - Reads as if any band rail use of mangrove habitat to be cleared triggers RUG to make a decision on proceeding. Is that correct?	Condition 9 of the consent requires (amongst other things) "Where banded rail are confirmed as being present in mangrove habitats, a minimum buffer of 30 metre width of mangroves from the landward edge shall be retained". So a response to the presence of banded rail in clearance areas is required by the conditions.	N/A	7.8.2
10 Section 10- Weed Management and Restoration planting does not refer to any	RCS considers that condition 33(vi) is essentially a duplication of condition 45(vi), although worded slightly	See Attachment 1 for redrafted (and re-titled)	Section10

Department of Conservation			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
actual descriptions of proposed weed management of planting initiatives and is therefore unclear how the information that is provided will assist the Manager of RUG to evaluate monitoring data, as required by condition 33(vi).	differently. Section 10 of the EMMP was developed alongside development of the Vegetation Restoration Management Plan (VRMP) and the sections dealing with these conditions should have been duplicated in each plan as relevant. Some of the detail in the VRMP which was added later has not found its way into the EMMP. Therefore we suggest a revision of Section 10 of the EMMP as shown in Attachment 1 to this document. Two additional subsections of information have been provided. The level of detail with regard to these works is considered appropriate for inclusion of the EMMP as this is supplementary information not directly related to the activities for which consent is authorised. **Meeting 04/09/12 with DoC:** DoC consider the Vegetation Restoration and weed control to be key mitigation matters in relation to the consent.	Section 10 of the EMMP.	

Royal Forest and Bird Society			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
Feedback received on Draft EMMP indicates RFBS are happy with the draft with no specific comments.		N/A	N/A

Ngati Whanaunga			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
1 Ngati Whanaunga is wanting to be involved in all monitoring. We have limited capacity to participate, as you will recall from the previous Wharekawa Harbour removal, and are asking whether the council will provide any resourcing to assist us. In this regard we point out that we are tangata whenua not just an interest group, but the document makes no distinction between us and various community groups. Is there a reason we might not accompany the ecologist for banded rail surveys? We would also want to observe trial works, such as strip clearing machinery trial as discussed on page 46 (Appendix B, Monitoring and Triggers Guideline, Document # 2172750)	Opportunities for stakeholder groups to participate in monitoring as per the resource consent refers to participation in a volunteer capacity. Emily O'Donnell has committed to liaise with WRC Tairanga Whenua unit at Resource Information Group to look at; • What monitoring is occurring in the Whangamata Harbour in relation to benthic communities; • What financial assistance exists (outside of the resource consent) for Ngati Whanaunga to carry out monitoring. Ngati Whanaunga have been advised that they are welcome to join the contracted ecologists when carrying out monitoring, but that this will not be paid for through the consent.	NA	Section 8, User Group Participation.
2 I could not find discussion of the proposed monitoring sites (see p.46 of above noted doc where it says these " are to be agreed in a final monitoring plan"	Refer to section 2.3 of the EMMP which states that the EMMP sets out the detailed principles (ie spacing and vantages required) on which monitoring sites are necessary but that the final decisions on the sites will be made on the ground in the field when the baseline monitoring commences. Monitoring sites will be recorded in plans at		

Ngati Whanaunga				
Issue Raised (refer to original for full text)		**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
		that time so that ongoing trend monitoring can occur at the same sites. He has a point though about p46 in the Monitoring & Trigger Guideline (under "areas to be monitored" for E1) … possibly where I also got the impression from that sites would be pin pointed in EMMP		
3	Although not detailed here, we would like to be consulted and involved in predator control activities.	An electronic copy of the predator and vegetation management plans has been provided to Nathan Kennedy on behalf of Ngati Whanaunga		N/A
4	We note the provision - Support to Whangamata Community Board to look at restoration of the wetland below transfer station. Ngati Whanaunga would expect to be involved in any such project - and indeed as we have previously discussed, we would prefer to undertake this work ourselves, in combination with other groups. We would want this section of the document to reflect this expectation. Ngati Whanaunga would also expect to be involved monitoring any weed removal or re vegetation if we were not directly involved in those activities.	Clarification was provided at meeting with Ngati Whanaunga on the location of the wetland and that this activity along with numerous others, are part of general and ongoing catchment and soil conservation new works initiatives. These works are routinely carried out and promoted by land management staff. The detail of this is not appropriate to be included is yet to be determined in any case. A modification to the bullet point will be made to reflect the expectation of Ngati Whanaunga involvement in this. Ngati Whanaunga's interest and desire to be involved in wetland restoration activities is acknowledged.	Suggest "Support to Whangamata Community Board to look at restoration of the wetland below transfer station. <u>To be determined and undertaken in consultation with Ngati Whanaunga.</u>"	Section 10, Weed Management and Restoration Planting. Third bullet. See also Attachment 1 for other revisions to Section 10 in response to DoC query.
5	Vegetation restoration management plan. We are keen to view this plan, and have the opportunity to have input.	The Vegetation Restoration Management Plan was lodged with RUG for their review and certification prior to obtaining these comments. Electronic copies have been provided to Ngati Whanaunga	N/A	N/A
6	11 - Public Access to Data We would like protocols established for all monitoring and other consent related data to	Monitoring data and reports will be provided to Ngati Whanaunga and to the Department of Conservation at the end of the first year of the stage one trials. Need to ensure	Monitoring data and reports will be provided to Ngati Whanaunga	Section 11

Ngati Whanaunga			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
be provided as a matter of course, rather than requiring ongoing requests.	that this action in loaded in to RCS data base 'Conquest'.	and to the Department of Conservation at the end of the first year of the stage one trials..	
7 Other matters We note that the consent allows for stockpiling of removed material within the CMA for up to 3 months. We would be offended by rotting vegetation being left for anything like this time. and would seek an undertaking from Council that every effort will be made to remove material ASAP and certainly within days rather than months.	The intent is not that mangrove material will be stockpiled to rot but rather to dry out. The consent as granted provides for this activity as set out in the original application and discussed at the hearing to which Ngati Whanaunga was a submitter.	N/A	N/A
8 Protection of tangata whenua interests We would want to establish protocols with Council such that Ngati Whanaunga is notified immediately should any such discovery occur, and detailing council's response and involvement of the iwi.	This is a matter which is dealt with by a condition outside of the EMMP (condition 8 of Schedule – common conditions), which requires tangata whenua interests and values to be considered in the event any archaeological remains are uncovered. Any additional protocol with Ngati Whanaunga would be outside the scope of the EMMP.	N/A	N/A
9 Kaimoana Neither the consent nor this plan discuss effects on kaimoana, nor propose any monitoring regarding kaimoana. If Council does not intend to evaluate effects on kaimoana where in Councils wider programme will this take place. We are mindful that after the marina we brought to Council's attention that our adjacent kaimoana beds were being impacted and TCDC, WRC and DOC all went to great efforts to refuse to investigate because they argued the marina consents didn't require	The Ministry of Primary Industry carries out shell fish bed monitoring in the Whangamata Harbour. This information along with other monitoring (ie marina and this consent) was discussed with Nathan Kennedy. It is felt that if additional monitoring is needed in regards to shellfish populations this should not be tagged directly to any one resource consent so as to ensure the wider influences and impact on shellfish are looked at rather then the direct impact of one activity. Again this will be referred to RIG for further input and discussion. Sediment changes will be monitored as per the EMMP.	N/A	N/A

Ngati Whanaunga			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Reference**
this. How are we to address the potential for disturbed sediment to effect adjacent kaimoana, and what assurance will Council give that if effects are identified by us that you will investigate?			
10 Tio There will be thousands of tio (oysters) disturbed by mangrove removal. What does Council intend to do to address the loss of this taonga? Has any thought been given to this? What potential exists for our people to recover tio as mangroves are mown?	Discussion had with Nathan about the lack of presence of Tio in the areas identified for clearance and that no mechanical mulching will occur in the harbour. Have asked Willie Shaw to look at presence of Tip within the areas and advise of presence.	N/A	N/A
11 We have previously asked for a meeting with Council to discuss these matters, and to make arrangement for our involvement and to develop protocols. We reiterate our desire for such a meeting.	RCS have offered meetings during application and appeal process and remain open to further meeting and discussion. Additionally, condition 35(b) requires meetings to be offered to any of the stakeholders that provide comment on the draft EMMP. Emily O'Donnell replied to indicate that if Nathan Kennedy would like to set a date and time for a meeting then that would be prioritised. A meeting time was also formally offered as part of the formal EMMP review process and a meeting was held on Friday the 31 August.	N/A	N/A

Whangamata Ratepayers Association Incorporated			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Section Reference**
1 Our Association has one major problem with the plan as we do not consider the Group	RUG is the regulatory authority with the role of ensuring resource consent compliance. The certification of matters	N/A	N/A

	Manager, Resource Use Group, to be the proper person to oversee the monitoring. In our view this group's implacable opposition to the removal of any mangroves while the Rivers and Catchment Group were preparing the resource consent application greatly increased the costs (which we are paying), and also played a major part in the commissioners reducing the area applied for from 38 hectares to 22 hectares. Given their track record we fail to see how they can now be impartial overseers.	within the resource consent by RUG in a technical certification matter, and their decision making role in relation to allowing subsequent stages to go ahead, is formalised in the consent conditions and therefore must be adhered to. It is noted that RUG's decision on allowing subsequent stages to go ahead is to be based on the requirements of the EMMP and on the advice of an independent and suitably qualified and experienced person(s) as required by condition 3.		
2	The monitoring allows for the increase in buffer zones due to changes in banded rail behaviour based on pretty unscientific observation. There is also no mention of the lateral extent of such an extended zone.	The monitoring will not detect any changes in banded rail behaviour. It will detect the sites that they utilise, and that information can be used to interpret whether it appears that banded rail use of any particular site is significant. Based on that assessment, expert judgment will advise whether a particular site where banded rail were detected, should be protected, and the physical extent of any such protection. This is a reasonable scientific approach. As a minimum, condition 9 of the consent requires (amongst other things) "Where banded rail are confirmed as being present in mangrove habitats, a minimum buffer of 30 metre width of mangroves from the landward edge shall be retained". So a response to the presence of banded rail in clearance areas is required by the conditions.	N/A	N/A
3	The monitoring would also appear to allow for delays in continuing with removal to be made fairly readily.	The process by which subsequent stages will be allowed to proceed is set out in the conditions of consent and the Monitoring and Triggers Guideline. The EMMP must be based on those documents and fulfil the requirements of the consent conditions.	N/A	N/A
4	Given the testing required we doubt that the budget of $20,000 pa will be adequate.	Outside the scope of the EMMP	N/A	N/A
5	Item 6.5: Extent and Density of Seagrass Beds. While seagrass beds sometimes stay in one place for a long time, they can and do	The draft does not assume this to be the case. Rather, that any change in seagrass beds will be a reason to assess any possible relationship to the mangrove removal (e.g.	N/A	6.5

move around the harbour. Any movement in seagrass beds after removal of mangroves may not necessarily be related to the removal, although your draft assumes that to be the case.	effects of sedimentation). This is a reasonable and precautionary approach. We do not anticipate that the mangrove removal will impact the beds as any mud release will be a slow process – but it is important to monitor this aspect.		

Whangamata Harbour Care			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Section Reference**
1 We do not agree with the scope and content of the Monitoring and Triggers Guideline (WRC Document 2172750 appended to the Draft Environmental Monitoring Management Plan). In our opinion, this document is programmed to identify reasons why mangrove clearance should not proceed after Year /Phase 1 clearance activities and we consider that bias has been carried over into the Draft Environmental Monitoring Management Plan. Moreover, we consider the Plan will generate irrelevant data that has not been identified as important in the very detailed monitoring work carried out for mangrove clearance in Tauranga Harbour. Most importantly, it fails to address the two essential issues involving the rationale and justification of maintaining buffer zones of mangroves and the potential but unproven potential benefits mangrove habitat may provide for banded rail. In this regard, there is no mention of complementary studies WRC have agreed to undertake on these matters.	The Monitoring and Triggers Guideline was developed as part of the process of resolving appeals on the consent applications and is now part of the basis of the consent conditions. The basis of the applications, the Monitoring and Triggers Guideline, and subsequently the consent conditions and now the EMMP was always to be that mangrove removal would be on a staged basis and that the subsequent stages after stage 1 would be dependent on the monitoring results of the previous stages. The EMMP is specifically designed to ensure that the relevant data is obtained to determine any effects of mangrove removal. The process for decision making on subsequent stages is set out in the consent conditions and this is the process within which RCS must now operate to comply with the consent. The complimentary studies that WRC has agreed to undertake in relation to rail and buffers is outside the scope of the consent conditions and more appropriately dealt with as a separate matter to allow multiple stakeholders to contribute funding to it so that the study can be broad enough to obtain results that will be relevant to other sites, not just Whangamata.	N/A	N/A
2 We are most concerned that it will be staff of	RUG is the regulatory authority with the role of ensuring	N/A	N/A

Whangamata Harbour Care			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Section Reference**
the Resource Use Group, Waikato Regional Council (WRC), that will make the decision on whether Year / Phase 1 monitoring data determines whether mangrove clearance will proceed or be stopped in Year / Phase 2. In our opinion, WRC staff demonstrated their opposition to mangrove clearance in Whangamata Harbour throughout the application and hearings process and are clearly advocates for no or minimal mangrove clearance. On this basis WRC staff should not be in the position of interpreting and ruling on the outcomes of what we consider to be a biased monitoring programme. An independent and appropriately qualified group such as NIWA should assume that role.	resource consent compliance. The certification of matters within the resource consent by RUG in a technical certification matter, and their decision making role in relation to allowing subsequent stages to go ahead, is formalised in the consent conditions and therefore must be adhered to. It is noted that RUG's decision on allowing subsequent stages to go ahead is to be based on the requirements of the EMMP and on the advice of an independent and suitably qualified and experienced person(s) as required by condition 3.		
3 We are aware that Waikato Regional Council staff have consistently advocated for some 8 - 9 ha of mangrove clearance in Whangamata Harbour with an absolute upper limit of some 26 hectares. Again, on the basis of their opposition to more widespread mangrove clearance, we are genuinely concerned that the current Draft Environmental Monitoring Management Plan could be used as a mechanism for staff to limit the scale of mangrove clearance in Whangamata Harbour.	Concern noted, however the EMMP must be designed and implemented in accordance with the requirements of the conditions of consent granted and this is the basis on which the EMMP has been drafted.	N/A	N/A
4 HarbourCare Inc. is also concerned that a budget of $20,000 a year (of ratepayers money) cannot be justified to generate	Does not relate to EMMP.	N/A	N/A

Whangamata Harbour Care			
Issue Raised (refer to original for full text)	**Comments/Discussion**	**Text changes to Draft EMMP (2 July 2012)**	**EMMP Section Reference**
irrelevant and biased information that is most likely to be used to thwart the expectations of the community. HarbourCare considers it most unlikely the un-necessarily detailed and largely irrelevant monitoring programme proposed could be funded with $20.000 per year.			
5 In summary, following the original consultation programme conducted by the Waikato Regional Council where the community expected that Council would progress mangrove clearance back to the 1944 line, we have suspected that in house staff have had a separate agenda to block and oppose mangrove clearance. Our submission wishes to place on record our genuine concern that the current Draft Environmental Monitoring Management Plan provides a mechanism by which the Waikato Regional Council can close down mangrove clearance in Whangamata Harbour after clearing a token 8 - 9 hectares in Year / Phase 1. In the event this outcome arises, we wish to make it clear to our local community that we were not a party to this expensive and self-serving ploy by your in house staff.	Position noted.	N/A	N/A