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Whangateau Catchment and Harbour Study

Summary and Discussion

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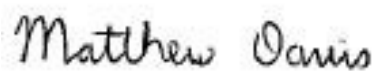

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Summary and Discussion

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Auckland Regional Council

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Contents

Preface

Funding was allocated to scope the development of a Whangateau Action Plan during 2008/09. Three technical reports were commissioned to inform the development of the action plan. These reports document catchment and harbour state, record issues and values, and identify existing and potential threats. The three background studies (1) collate and summarise existing environmental information on the harbour, (2) describe the environmental and social characteristics of the catchment, and its management and planning framework, and (3) document initial consultation to identify iwi and community's views on the values, threats and pressures on the Whangateau harbour and catchment. The principal findings from the three reports are synthesized in a summary document.

The studies indicate that the current state of the harbour is relatively healthy and that there is no single, overall dominant physical threat to the harbour; rather there is a range of small threats that cumulatively have potential to affect the harbour health. All three background studies, furthermore, identified the opportunity to improve integrated planning and co-ordination between stakeholders. Additional work is required to clearly determine the threats and most effective manner to intervene in the catchment and harbour to make short term improvements that contribute to the overall long term protection and enhancement of the catchment and harbour.

Technical background reports

Technical Report TR2009/003

Whangateau Catchment and Harbour Study. Review of Marine Environment Information.

Technical Report TR2009/004

Whangateau Catchment and Harbour Study. Review of Environmental and Socio-economic Information.

Technical Report TR2009/005

Whangateau Catchment and Harbour Study. Review of Stakeholder Information.

Technical Report TR2009/006

Whangateau Catchment and Harbour Study. Summary and Discussion.

1 Introduction

Whangateau Harbour is regarded as one of the highest quality estuaries in the Auckland region. It is the Auckland region's northern-most east-coast mainland estuary and differs from other (mainland) estuaries in that it is connected to a relatively exposed coastal system, and is tidally flushed by the clean, coastal waters from the outer Hauraki Gulf. It contains a regionally-rare mix of habitats, and is well-known for its abundant shellfish beds. As a result, the harbour is an important food gathering area for local iwi, and it also used by a large number of recreational shellfish harvesters.

The potential impacts of land use intensification and the increasing pressure on harbour resources has led to concern about the long-term sustainability of the harbour ecosystem. Intensification and associated land use activities generate sediment, stormwater and wastewater contaminants, which can negatively affect coastal waterways such as Whangateau Harbour. Intensification also leads to coastal and foreshore modifications, which negatively affect the ecology and natural character of an area. Land use in the Whangateau catchment has gradually intensified since the 1960s. Today a significant proportion of the foreshore is urbanised, and the wider catchment contains a mix of agricultural, horticultural, residential and commercial development. At the same time local population growth and changing demographics (local and regional), together with roading improvements that have significantly eased access to the area, are likely to be increasing pressure on the natural resources and conservation values of the harbour.

In response to community concerns about the potential for significant degradation of Whangateau Harbour, the Auckland Regional Council (ARC) is considering the development of a plan which would identify and implement actions required to maintain or enhance its values. Background studies were undertaken to (1) collate and summarise existing environmental information on the harbour (Kelly 2009), (2) describe the environmental and social characteristics of the catchment, and its management and planning framework (Boffa Miskell 2009), and (3) conduct initial consultation to identify the community's view on the values, threats and pressures on the Whangateau catchment and harbour (Cole and Lees 2009).

This report collates the key findings of the three background studies and workshops held at the ARC and Rodney District Council. It highlights the next steps in the process to design an implementation plan of activities for the Whangateau Catchment and Harbour.

Implementation activities and management actions should be underpinned by clearly defined objectives for the environmental management of the harbour's resources. These objectives need to take into account the special ecological, conservation, natural character and landscape functions and values of the harbour, alongside their social, cultural and economic uses.

The information contained within this report provides a summary of information that can contribute to establishing objectives that form the basis of development of an

integrated strategy that addresses the cumulative effects of existing activities, plus those related to future population growth, changing land use, and catchment and coastal development.

2 Description of the Whangateau Catchment

The Whangateau Catchment extent is broadly defined by the coastal promontories of Cape Rodney to the north and Tawharanui Peninsula to the south, on Rodney District's north-east coastline (Figure 1). The inland extent of the catchment surrounding the harbour is stongly defined to the north by the ridgelines extending from Mt Tamahunga, reaching a maximum elevation of around 440m. The catchment extends around to the Tawharanui Peninsula to the south, with its watershed defined by the lower ridgelines of the Takatu hillsides. The Whangateau Catchment covers a total area of 4,190 hectres. This is a small catchment area relative to the scale of the receiving harbour environment, which is one of the largest estuaries on Rodney's north-east coastline.

Several streams drain into the Whangateau Harbour; the largest is the Tamahunga tributary, which drains directly into the Omaha River and forms the western arm of the harbour. A number of smaller creeks drain directly into the harbour from the steep hillsides to the north of the catchment, including Birdsall and Coxhead Creeks. The southern arm of the harbour is defined by the broad Waikokopu Creek, which is contributed by a limited number of small shallow waterways of limited reach. The Whangateau Catchment is comprised of waterways with a combined total length of approximately 45 kilometres.

With a maximum distance inland from the harbour shoreline of only four km, the Whangateau catchment is strongly influenced by its coastal proximity. The catchment is also steeply orientated towards the coastline by the elevated hillsides extending from Mt Tamahunga to the north-west, grading into a more gentle relief to the south.

The steep northern hillsides are essentially vegetated with a combination of mixed native bush and pockets of plantation pine forest, with the lower hillsides given to open pasture. Native forest extends from Mt Tamahunga into the Conical Peak and Dome Forests to the west of the Matakana. Collectively, these areas provide a significant block of continuous native forest within north-east Rodney. Fragmented pockets of native forest also extend around the northern and western ridgelines that define the Whangateau catchment. The catchment boundary in the south borders the inland extent of the Tawharanui Peninsula, which also includes significant stands of native forest. Generally, the southern part of the catchment has been cleared for traditional pastoral land use activities, although commercial vineyards and olive groves were established in this part of the catchment in recent years.

The Omaha (Mangatawhiri) Spit, which defines the eastern extent of the catchment and also encloses the Whangateau Harbour as its receiving environment, is today the main focus of contemporary settlement within the wider catchment. The establishment of settlement on the spit has occurred in two main phases, facilitated by the construction of Broadlands Drive across the Waikokopu Creek (in the 1970s), with development of the northern end preceding that of the southern half. Suburban density housing is accompanied by recreational golf courses on the spit's sheltered western shoreline, adjacent to a regionally significant area of Kahikatea Swamp Forest. Omaha

Figure 1

Whangateau Catchment

Beach on the eastern side of the spit is separated from residences by a shallow foredune.

The Omaha Flats at the base of the catchment was also a former focus of settlement, amongst intensive orchard production activities. Today, however, orchard production has largely been disbanded for the smaller scale cultivation of berries, fruits and vegetables more suited to the organic peat soils. However, the original cadastral patterns of the orchard lots and their associated shelter belt plantings still remain. Point Wells, at the tip of the Omaha Flats remains as a key settlement within the catchment.

Including the string of clustered coastal settlements that flank the northern boundary of the Whangateau catchment along the Warkworth Leigh Road, much of the harbour shoreline has been modified by human occupation and activities. Lifestyle rural residential settlement and alternative rural industries and tourism ventures are also focused within the shallow valley base of the Tamahunga Stream, accessed by Omaha Valley Road directly from Matakana.

Matakana and Leigh are the nearest settlements located immediately beyond the catchment, with Warkworth the closest service town, located approximately 10 km to the south-west. This relative remoteness has contributed to maintaining a predominantly rural character within the Whangateau catchment.

The diversity of coastal landforms associated with the harbour enclosure provides an attractive coastal environment for both recreational visitors and permanent residents. The contrast between the elongated sandy Omaha Spit with the rocky shores of Ti Point in defining the entrance to the Whangateau Harbour is particularly striking. The stature of Mt Tamahunga, representing a high point in the Rodney District is also a direct contrast with the level plains of the Omaha Flats.

3 Description of the Whangateau Harbour

The Whangateau Harbour is a sandspit estuary, which drains into the northern end of Omaha Bay in the outer Hauraki Gulf (Figure 2). The harbour is largely infilled, with extensive intertidal sandflats that are drained by relatively simple channels running up the main body of the estuary and Omaha River. It has an area of around 750ha, of wihch, approximately 85% is intertidal. The physical and ecological functioning of the harbour is dominated by tidal flushing with relatively clean, coastal water. In contrast, freshwater inputs have a relatively minor influence on the harbour.

The inner estuary consists of a large, broadly curved main body running approximately 6.5km in a north-south direction (Waikokopu Creek), with two small, northern offshoots (i.e. Tramcar Bay and Birdsall Road), and a larger side branch running approximately parallel to the main body (Omaha River). A permanently exposed sand bar forms a small mangrove fringed island (Horseshoe Island) at high tide, that is located directly off Whangateau Motor Camp.

The main body of the estuary has sandy sediments, with very little mud content. Sediments are muddier in the sheltered side-branches in the north of the harbour. Fine sediments have accumulated behind the road causeways at Birdsall Rd, Tramcar Bay and Omaha, which is likely to have contributed to mangrove growth in these areas.

The main channel of the outer harbour is heavily influenced by strong tidal currents. Sand bodies form part of the flood tide delta. The flood tide delta is major feature of the outer harbour, which is located on western margin of the main channel and extends around 800m into the estuary.

The northern shore of the harbour entrance consists of a rocky headland (Ti Point), which shelters the entrance from ocean generated sea and swell. Rocky reef extends from the open coast, into the harbour as far as Ti Point wharf. The fractured nature of this reef provides a structurally complex habitat that is utilised by a variety of coastal reef species.

Other patches of soft, sandstone reef occur at a number of locations in the inner harbour. The physical structure provided by these reefs has a high ecological value, particularly in areas close to the low tide channel (i.e. off Horseshoe Island and on the southern side of the Omaha causeway).

Figure 2
Whangateau Harbour and Catchment

4 Key Points from the Background Studies

While the three background studies reviewed different components of the human and physical environment of the Whangateau, their findings have much in common. There were differences in emphasis and priority but no points of disagreement between them. This section summarises the information on the values of Whangateau, the perceived threats to those values and gaps in knowledge from the three studies.

4.1 Important Values of the Whangateau Catchment and Harbour

- One of the highest quality estuaries in the Auckland region, with near complete levels of tidal flushing and only isolated points of contamination, making it arguably the Auckland region's most valuable mainland estuary;
- Exceptional ecological values with a regionally rare mix of marine, tidal and terrestrial habitats; rich feeding, roosting and nesting grounds for many international migratory and New Zealand endemic wading birds including a number of threatened species; habitat for threatened plants; and regionally unique plant sequences. Ecological values are reflected by just under half the catchment having sites designated nationally and in District Plans;
- Highly valued by manawhenua, local residents and stakeholders as a 'pristine' harbour, and for its perceived beauty, naturalness, and peacefulness;
- Rich with cultural heritage inclusive of Maori and Pakeha history;
- Abundant cockle beds valued by iwi, local residents and visitors;
- Outstanding landscape values reflected in status of parts of Whangateau as Highly Valued Landscapes in the Proposed Rodney District Plan;
- Fertile alluvial and organic peat soils that cover the Omaha Flats and Omaha Valley area that have historically made a significant contribution to the local economy;
- A safe place for family-based recreational opportunities such as swimming, kayaking and sailing;
- Strong sense of community demonstrated through individuals and groups actively engaged in community-based activities.

3.2 Actual and Potential Threats

The three background studies collectively identified a number of actual and potential threats to the Whangateau. These are listed below. Many of the threats within the Whangateau catchment and harbour are common within the Auckland region.

However, difference exists within the region on the magnitude of the threats, and the existing state and vulnerability of the streams and harbours.

All three studies identified that the opportunity for added integrated planning and coordination between key players exists. Furthermore, all studies focused on the importance of informed vigilance around what is happening in harbour and catchment to identify trends and any changes.

The remaining threats are not listed in any order of priority or scale, nor are they distinguished within the reports by whether they are current or potential threats. A conclusion of the studies is that the threats are interlinked. While some may be small (comparative to other harbours in the region) or not yet apparent, they will cumulatively degrade the harbour if they are not anticipated and addressed. It is unknown and difficult to determine where the tipping point may be, that is, how much/what level of incremental degradation would be too much.

At the workshop to discuss this report, ARC and RDC identified current work at the ARC and RDC related to improving integrated planning and regulatory and policy gaps identified. Within RDC this work includes the Rodney District Plan final appeals resolution, the natural areas restoration strategy, and new forestry policies. At the ARC, there are reviews of the Auckland Regional Policy Statement, and related reviews of the Auckland Regional Plans: (1) Sediment and (2) Air Land and Water Plan.

The following is a summary of the threats identified. A complete list of threats can be found in the background reports (Boffa Miskell 2009; Kelly 2009; Lees and Cole 2009)

- Rural residential infill leading to an increase in impermeable surfaces and water use, with subsequent negative impact on groundwater supplies and stormwater management; and loss of potential for horticultural diversification when fertile soils are subdivided;
- Future potential for over-harvesting of shellfish beds;
- Loss or lack of recognition of everyday signs of Maori heritage and presence;
- Loss of sense of community and local knowledge through fragmentation of land ownership and ageing residents not being directly replaced by existing communities who are locally knowledgeable;
- Sedimentation of both harbour and contributing fresh water streams (water courses) by removal of vegetation from the catchment, especially timber harvesting. Sedimentation risk in the harbour is potentially increased where causeways prevent complete flushing and enhance sediment trapping;
- Loss of harbour water quality due to lack of regulation for private residential septic tank systems (particularly Point Wells) and seepage from disused landfills;
- Swing moorings causing localised smothering or disturbance of habitat by mooring weights and chains as well as contamination associated with the leeching of toxins from antifoulants;
- Marina development and its likely significant impact on a range of harbour ecological values;

- Saltmarsh and intertidal areas damaged by vehicles and stock;
- Poor riparian vegetative cover, uncontrolled stock access and poorly designed culverts potentially undermining the ecological health of fresh water streams;
- Invasive plants and introduced predators;
- Litter (especially Ti Point);
- Sustained applications of agrichemicals to both horticultural crops, improved pasture lots and plantation forests accumulating within both ground water and soil resources; and
- Sea level rise.

4.3 Gaps in Knowledge

A problem identified in all three studies was knowledge gaps. It is common that knowledge gaps exist. There always is the trade-off in investing in improving knowledge to make more informed decision-making versus using existing information to design and undertake preventative and restorative activities. Furthermore, while gaps still remain, it is recognised that the Whangateau is relatively well studied compared to other locations within the region. Despite this recognition, all three studies recommended that additional monitoring could be undertaken. In addition, an information exchange could be established such that existing information could be more readily shared and more widely disseminated.

The list below collates the identified monitoring and research gaps for the catchment and harbour.

- Location and extent (including detailed and accurate maps) of key species, ecological communities, high value and sensitive habitats, and natural resources (including fertile soil and groundwater). Staff felt that a lot of this information is currently mapped and there existed potential to share this information.
- Sedimentation patterns and mangrove establishment, including an assessment of the long-term effects of the Omaha causeway.
- Harvesting information including the potential impact of increased cockle harvesting and the carrying capacity of harvested shellfish.
- Pollution, including the effectiveness of septic systems at settlement points, and changes in contaminant concentrations at known hotspots.
- Cultural sites record.
- Hydrological, biochemical, habitat provision and biodiversity of freshwater streams (water courses).
- Information on the quality and availability of the Omaha Waitemata Aquifer to determine its potential capacity and contamination by horticultural chemicals.

Also, hydraulic modelling of exchanges between surface and groundwater flows as potential inputs to the harbour environment; and

- Landscape values and factors affecting those values.

4.4 Summary Statement on Key Findings

The Whangateau is a highly valued harbour and catchment with outstanding ecological, habitat, heritage, recreational and landscape values. While the harbour is still of high quality, that status is threatened by a number of specific but interlinked problems.

5 Designing a strategy for ARC engagement in Whangateau

It is desirable that any ARC engagement in the Whangateau catchment and harbour be strategic, focused and effective. Decisions on programme objectives, focus, priorities, design, implementation, monitoring and evaluation all need to be made in a strategic context.

These points were raised by ARC staff interviewed through the stakeholder consultations for Whangateau. Staff comments discussed what a successful programme of action might comprise for the Whangateau. Comments included:

- Having clear objectives, outcomes and priorities from inception;
- Improving understanding and articulation of Whangateau's environmental and cultural heritage values to guide resource consents and improve public awareness and understanding of these values;
- Becoming a learning experience particularly for the Sustainable Catchments Regional Programme;
- Practicing adaptive management, that is incorporating project learnings, and additional monitoring and information as the project develops;
- Effectively engaging the harbour community;
- Achieve action on the ground, including small successes up front;
- Ensuring programme and individual project impact is understood by establishing baseline conditions and ongoing monitoring of the state of the catchment and harbour at inception to track progress and trends; and
- Aligning ARC resources and teams from inception.

5.1 Principles of a Successful Strategy

Developing a successful programme strategy for Whangateau will:

- Be clear and specific about the issue or problem ARC wants to address for the harbour and catchment;
- Understand the context in which the project will take place;
- Plan the programme, including conducting a sound analysis of the causes of the problems to be solved and how a programme will resolve those causes, developing a goal and objectives, deciding on a governance structure, strategically selecting projects that will accomplish the goal and objectives, and developing an implementation plan to deliver the projects; and

- Plan monitoring and evaluation of the project's impact and effectiveness; and
- Ensuring that the ARC engagement is co-ordinated with community and other organisation activities within the catchment and harbour for added benefit.

5.2 Being Clear about the Problem

This principle helps clarify the focus and scope of the programme in the context of the ARC's mission, bearing in mind that the two key issues identified by the three studies were the opportunity for improved integrated planning, regulation and policies; and coordination and consultation between key players.

The other threats identified above are primarily potential threats, given the current high quality status of the harbour. This is likely to mean that a successful environmental programme for Whangateau will place a strong emphasis on anticipating and avoiding threats (generally a less costly and more effective approach than having to solve problems that arise in the future from lack of action today).

5.3 Understanding the Context

This principle ensures that the programme is appropriate to its specific context and therefore more likely to be successful. By understanding the perspectives and desires of iwi and stakeholders there is a better chance of designing a programme that is acceptable to and supported by them. By clearly understanding the ecological and political context - and the relative importance of the various threats and opportunities – contributes to enabling which interventions are most likely to succeed. By identifying who could join strategic partnerships, which groups could collaborate and what they could contribute allows more opportunity for collaborative projects that often provide cost efficiencies and added likelihood for success. By learning from similar projects, both within the Auckland region and outside it, chances for error is diminished and effective mechanisms can be more readily incorporated into the Whangateau projects. It is also important to take into account the regional context of harbours– how Whangateau's problems and threats rank with other harbours regionally and how work on all harbours links together to enhance outcomes.

Information from the three background studies can be used for implementing this step.

5.4 Project Goal and Objectives

The goal[1] will describe the desired future status of the Whangateau harbour and catchment, and iwi and communities in relationship to this.

[1] A goal is a general summary of the desired state that a project is working to achieve. A good goal is visionary, relatively general, brief, and measurable. It should be ambitious yet realistic.

The objectives[2] will describe the desired future status of threats to and ecological restoration of the Whangateau that contribute to the attainment of the goal. They might also describe other desired outcomes (such as the project acting as a point of learning for the regional Sustainable Catchments Programme).

The ARC needs to articulate what a successful project for Whangateau means to the organisation. It will need to determine its own goal and objectives for the Whangateau. However, if the project is to proceed cooperatively, then the goal and objectives for the programme itself should be determined cooperatively with the project partners.

In addition to the key points highlighted in the sections above, the following conclusions from the three independent studies are relevant to the section of a goal and objectives:

- A desire from iwi, communities and stakeholders as well as advice from scientists that any work for the Whangateau encompass the entire catchment and harbour rather than one part of it or any single cause of environmental decline. This reflects the understanding that potential problems facing the harbour are interlinked with multiple causes, that effective solutions cannot be developed without a holistic approach to the local environment and that no one settlement or group around the harbour should be exclusively linked into a specific project.
- Any integrated strategy needs to address the cumulative effects of existing activities, as well as those related to future population growth, changing land use and catchment and coastal development.

5.4.1 Feedback from ARC and RDC staff workshop

The goal or vision should be broad and encompass concepts such as 'maintain', 'protect', 'restore', 'enhance', the health and water quality of the Whangateau catchment and harbour.

The objectives should ensure that the programme will:

- Increase our understanding of both the Whangateau and other harbours and catchments. This includes taking advantage of the Whangateau as a scientific benchmark or reference point for the health of other harbours.
- Improve our understanding of how to identify future threats to environments like the Whangateau.
- Integrate and build on local community actions and commitment, and learn from this process so we better understand how community values can be built into the planning context. Document both the process and the learnings for future use, such as applying the Air Land and Water Plan.

[2] An objective is a specific statement detailing the desired accomplishments, milestones or outcomes of a project. A good objective is impact oriented, measurable, time limited, specific and practical.

- Include specific focus points on: preventing sedimentation; cultural surveys, protection of sites and education; increasing public understanding of the values of the harbour.

5.5 Selecting Projects

Projects should be selected on the basis of:

- Urgency
- Alignment with goal and objectives with explicit links to show how they will contribute to achieving goal and objectives;
- High likelihood of achieving success (impact potential);
- Feasibility (cost, technical issues); and
- The opportunity for 'instant projects' – work with an immediate return in terms of visibility and action.

The following projects are highlighted as options in the three background studies.

- Planning mechanisms: protect the most vulnerable of remaining habitats; prevent piecemeal fragmentation of land ownership; protect fertile horticultural quality soils; control chemical land-based applications to protect ground water; acknowledge and protect manawhenua heritage.
- Prioritise from the list of desired monitoring and research subjects listed in section 3.3. (Monitoring mentioned as specifically desirable from the staff viewpoint includes baseline data for monitoring and evaluating the impact of the programme, key species habitat, sedimentation, water course monitoring, and shellfish harvesting);
- Coordinate and share ecological survey and monitoring data between agencies and local groups. (Sharing information about existing regulations and policies is also important and easily done.)
- Assess the extent of stock access to the harbour and the effects of stock entering the coastal zone;
- Assess the effects of direct and indirect human disturbance on coastal birds and decide on options for minimising impacts;
- Restore the natural character to the coastal edge to the harbour to slow the loss of sediments from the land as well as restore landscape values. This might include providing information to landowners for protecting the harbour edge on privately owned land;
- Sponsor a hikoi around the harbour, hosted by different groups to share their special areas and celebrate their projects;
- Bait or trap for predators of endemic birds;

- Ensure greater surveillance and more education (including more signage) for shellfish harvesting;
- Identify and raise the profile and interpretation/ celebration of heritage sites. This could be linked to planning mechanisms for protection.
- Provide training to local groups and individuals to gain key skills such as facilitation, advocacy, leadership and monitoring.
- Staff added forestry as a 'project' requiring urgent attention, in relation to monitoring and assessing the effects of forestry operations.

Appendix 1 provides a sample matrix for decision-making about projects by the groups who are to implement the programme.

5.6 Developing an Implementation Plan

Once the goal, objectives and projects are selected, an implementation plan can be written that develops the specific tasks required to complete each project, as well as allocating roles, responsibilities and resources required.

5.7 Monitoring and Evaluation

The project partners need to determine what data needs to be collected as part of ongoing monitoring and evaluation efforts. Monitoring and evaluation serves as the backbone of effective adaptive management. It generates the information needed to determine if the projects and overall programme is on track and early warning coupled with what remedies are required if not. It can also provide information that can enable revision of the project to ensure that the goal and objectives are achieved.

Monitoring and evaluation needs to be explicitly linked to the programme's goal, objectives and projects. The target audience for the monitoring and evaluation needs to be identified. If the project is expected to be a learning experience with relevance beyond the Whangateau, then the mechanism to capture the learnings is most effectively incorporated into the monitoring and research from the onset of the project.

6 Conclusion

The three Whangateau studies all conclude Whangateau is a highly valued harbour and catchment with outstanding ecological, habitat, heritage, recreational and landscape values. While the harbour is still of high quality, that status is threatened by a number of specific but interlinked problems. These are primarily threats to maintaining the pristine nature of the harbour into the future. Any integrated strategy to address these problems must encompass the entire catchment and harbour, and address the interlinked causes of these problems, and the cumulative effects of existing and future activities. Quantifying cumulative effects and tipping points is difficult and provide a challenge to designing projects.

Any ARC engagement in the Whangateau catchment and harbour must be strategic, focused and effective. Decisions on programme objectives, focus, priorities, design, implementation, monitoring and evaluation all need to be made in a strategic context.

Because the focus is on a coordinated strategy to address cumulative effects of potential threats, there is no single issue to be addressed by one organisation. The key is to strengthen coordination and knowledge sharing and stewardship to be aware early of any changes and trends, and to act on them.

It is therefore recommended that a forum be established of all interested paries, as the key primary step in any Whangateau Catchment and Harbour project.

The next steps in the process to establish a Whangateau Implementation Plan include:

- Present the findings from the background studies to the Whangateau Community and ascertain community priorities.
- Workshop the background studies with ARC and RDC staff and ascertain priorities.
- Develop a draft implementation plan of activities.
- Present the draft implementation plan of activities to the Whangateau Community and receive feedback.
- Develop the Whangateau Implemenation Plan that incorporates the final implementation plan activities for 2009/10.

7 Acknowledgements

The Whangateau Catchment and Harbour community, iwi, staff at the Auckland Regional Council and Rodney District Council are thanked for their time and input.

8 References

BOFFA MISKELL (2009). Whangateau Catchment and Harbour Study. Review of Environmental and Socio-economic Information. Prepared for Auckland Regional Council. Auckland Regional Council Technical Report 2009/004.

KELLY, S. (2009). Whangateau Catchment and Harbour Study. Review of Marine Environment Information. Prepared for Auckland Regional Council. Auckland Regional Council Technical Report 2009/003.

LEES, A.; COLE, J. (2009). Whangateau Catchment and Harbour Study. Review of Iwi and Stakeholder Information. Prepared for Auckland Regional Council. Auckland Regional Council Technical Publication 2009/005.

Appendix 1

Project selection table: a preliminary matrix for decision-making

Project or monitoring study	Urgency (High, Med. or Low)	Fit with objectives (Strong, Weak)	Impact potential (High, low)	Feasibility (cost, technical)	Quick returns (Yes, no)
Planning mechanisms					
Monitoring or research:					
• *Mapping key spp and habitats*					
• *Sedimentation & mangrove estab.*					
• *Shellfish harvesting*					
• *Pollution*					
• *Cultural sites*					
• *Fresh water courses*					
• *Aquifer and groundwater*					
• *Landscape values*					
Coord. & share info					
Stock access & damage					
Coastal bird impact					

Project or monitoring study	Urgency (High, Med. or Low)	Fit with objectives (Strong, Weak)	Impact potential (High, low)	Feasibility (cost, technical)	Quick returns (Yes, no)
Restore harbour edge					
Hikoi					
Predator control					
Surveillance & signage for shellfish harvesting					
ID heritage sites					
Capacity development					