



## 2 Project Structure, Objectives and Development

### 2.1 Project Structure and Processes Followed

This Wastewater Consent Project is regarded as extremely important to the WDC. Accordingly, a well developed and resourced approach and programme was put into place in 2007 to ensure all the requirements of the RMA and other statutory requirements met WDC's other commitments.

The overall programme and progress followed for the Project is shown in two simplified schematic figures in Figure 2.1 and Figure 2.2.

The principal Project advisers who assisted the WDC in this Project are:

- GHD and URS – principal consultants - Stage 1 Project.
- MWH New Zealand Ltd – principal consultants for planning, environmental science, resource management and technical advisors – Stage 2 Project.
- Boffa Miskell – tangata whenua matters.
- NIWA – oceanographic information and ecotoxicity.
- Campbell Consulting – project management, technical input and consultation.
- Danish Hydraulics Institute (DHI) – oceanographic and nutrient modelling.
- Golder Associates – Bream Bay benthic survey.
- Cawthron Institute - endocrine disrupting compounds and microbiological pathogens fish and mammals.
- Coastline Consultants – Rama Road block vegetation advisor.
- OCEL Consultants – ocean outfall advisor.
- Voss Consulting – advisor on hydrogeological and land application of treated wastewater.
- Graham Mathias of Thomas Wilson – legal advisor.

#### 2.1.1 Project Advisory Group and Project Management Group

This Wastewater Consents Project is regarded as extremely important by WDC. A significant effort has therefore been made to put in place a robust governance and management structure with WDC's overall objective of:

*“To work in partnership with the community and tangata whenua to obtain the necessary long-term resource consents for the ‘Proposed Scheme’. The ‘Proposed Scheme’ shall encompass a high level of public health and environmental protection and be the best practicable option for Ruakaka’s future wastewater management that is in keeping with sustainable management principles and practices.”*

The structure which has been established to assist in achieving this included a Project Advisory Group ('PAG') the functions and responsibilities of which can be summarised as follows.

#### Project Advisory Group

The PAG was set up to assist WDC in ensuring that thorough, objective and appropriate investigations of all options were undertaken, taking account of community concerns.

Council staff and consultants were advisors to, but not members of the PAG.



Membership of the PAG comprised representatives from the following organisations:

- Whangarei District Council (WDC);
- Department of Conservation (DOC);
- Northland Regional Council (NRC);
- Northland District Health (NH); and
- Bream Bay Land Owners Association (BBLOA).

The PAG met generally on a monthly basis following its establishment in December 2006, with the goal of achieving consensus decision-making. Members of the PAG were encouraged to be supportive of group decisions inside and outside of the group. Membership of the PAG did not tie the individual and/or organisation to the collective output of the group and that each individual and organisation maintained their own rights to be involved in their statutory duties as they may then see fit. Representation on the PAG did also not tie or compromise the ability of Statutory Authorities to carry out their regulatory functions.

The PAG established their Terms of Reference (TOR) on the 23 January 2007. The TOR established an agreement for the members of the PAG to assist WDC in ensuring that thorough, objective and appropriate investigations of all options are undertaken, taking account of community concerns.

The main functions of the PAG included in the TOR are:

- To provide advice on the planning and creation of effective consultation and education activities that will ensure all relevant stake-holders, including the community at large have the opportunity to be involved.
- To provide general advice/information on the key issues that should be addressed from a local and statutory organisation perspective.
- To provide general information concerning treatment and discharge/reuse options that maybe appropriate and should be considered in the assessment of options.
- To comment on the proposed investigations and reports and provide feedback on the output from these.
- To participate as required, in consultation and education activities with other stake-holders including the community at large.
- To assist in facilitating a thorough and objective approach to the project and the associated investigations and ensure that it takes account of stake-holder and community interests and concerns.

The PAG considered a range of technical material which has been produced by the PMG in relation to a number of issues, including:

- Project Objectives.
- Strategic objectives for the Ruakaka Wastewater Strategy and Future Scheme.
- Options for wastewater management, treatment locations and processes, wastewater discharge and wider environmental enhancement.

Separate consultation to the PAG activities was undertaken with the local tangata whenua, the Patuharakeke Te Iwi Trust Board (Inc), and other iwi groups, NIWA Bream Bay Aquaculture Park, community groups and other stakeholders.

On the 5 of May 2008 the PAG activities were discontinued as both NRC and DoC indicated that they were unable to take further part in the group without compromising their role as a Statutory Authorities. From this date onwards, all consultation was undertaken on a one-to-one basis with stakeholders.



## **Project Management Group**

WDC's Infrastructure and Services Group was responsible for project management. For the first part of the Project, staff from the Division acted as the WDC Project Manager. Fraser Campbell of Campbell Consulting was engaged by the WDC to manage the Project on their behalf from May 2008.

The 'Project Management Group' consisted of the WDC's Infrastructure and Services Group being Simon Weston and Curt Martin, Fraser Campbell (Campbell Consulting) and Jim Bradley of MWH NZ Ltd, WDC's principal technical, scientific and planning advisors for the Stage 2 Project. Graham Mathias of Thomson Wilson (WDC's Legal Advisor for the Project) provided legal input and review as required.

### **2.1.2 Project Structure and Inputs**

The project development and programme was based on a logical sequenced approach as diagrammatically illustrated in Figure 2.1. This shows how the Project initially worked first through a 'Stage 1' Project with GHD and URS Consultants advising the WDC and then moving into the 'Stage 2' Project with MWH NZ Ltd being the principal technical, scientific and planning consultants. Other specialist advisors as listed in Section 2.1 above also assisted in specific tasks.

Figure 2.2 expands out a key part of the 'Stage 2' Project that advanced the identified 'Preferred Scheme' through to the finalisation of the 'Ruakaka Wastewater Strategy' and 'Proposed Scheme' for which these resource consents and other approvals including the Department of Conservation concessions for pipeline, and disposal of wastewater on Crown land are being applied for.

Figure 2.2 also illustrates how decisions being made in development of both the 'Ruakaka Wastewater Strategy' and 'Proposed Scheme' were periodically revisited and assessed against the Project Objectives and also took into account the output from on-going consultation and tangata whenua participation.

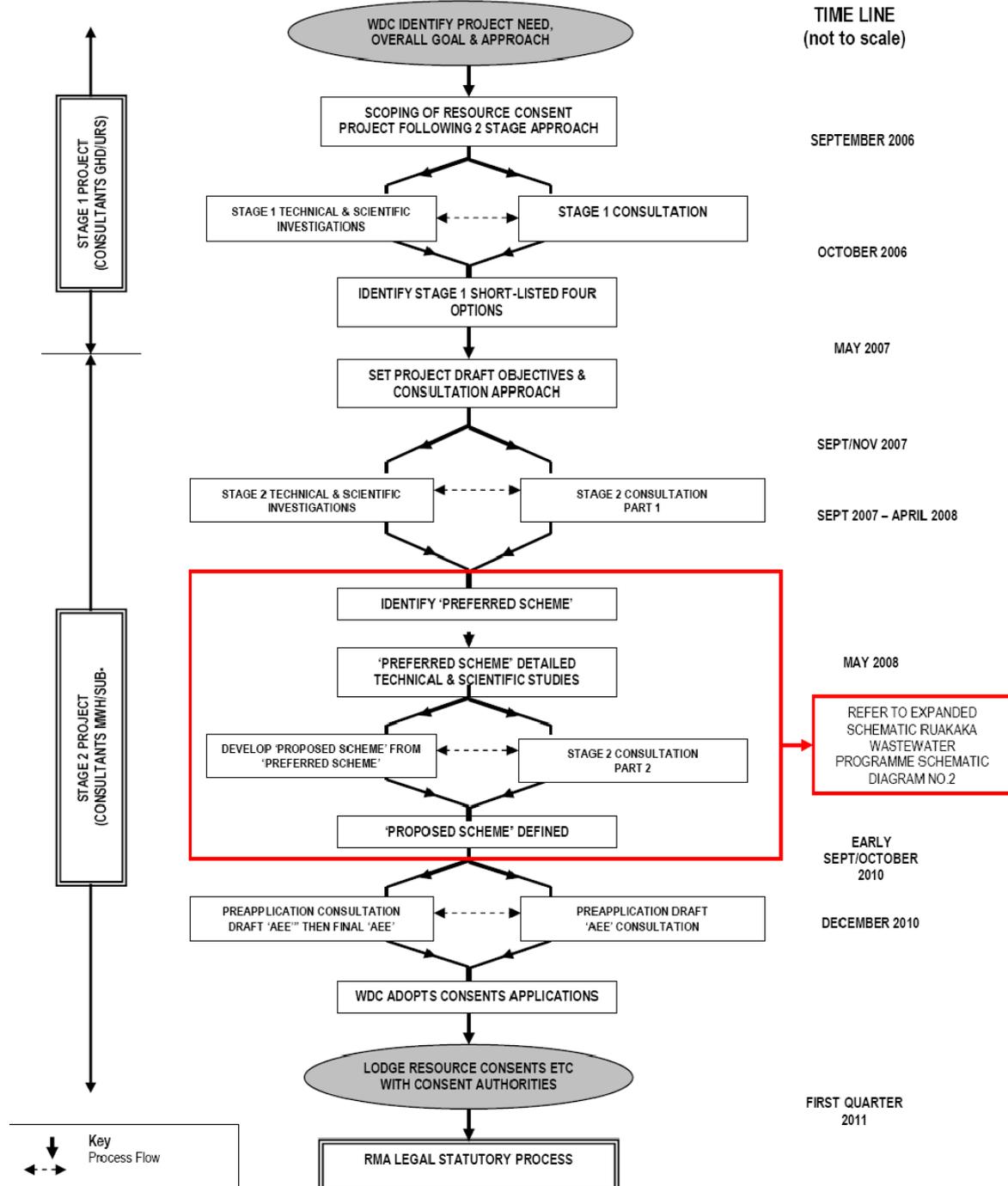
Figure 2.1 and Figure 2.2 were important graphics used throughout the Project consultation. They allowed those being consulted with to gain an understanding of how the Project was being structured and progressively developed over time.

**Figure 2.1 Ruakaka Wastewater Project Schematic and Programme - Schematic Diagram No. 1**

**Ruakaka Wastewater Programme: Schematic Diagram No. 1**

**Options Investigations and Resource Consent Preparation Process**

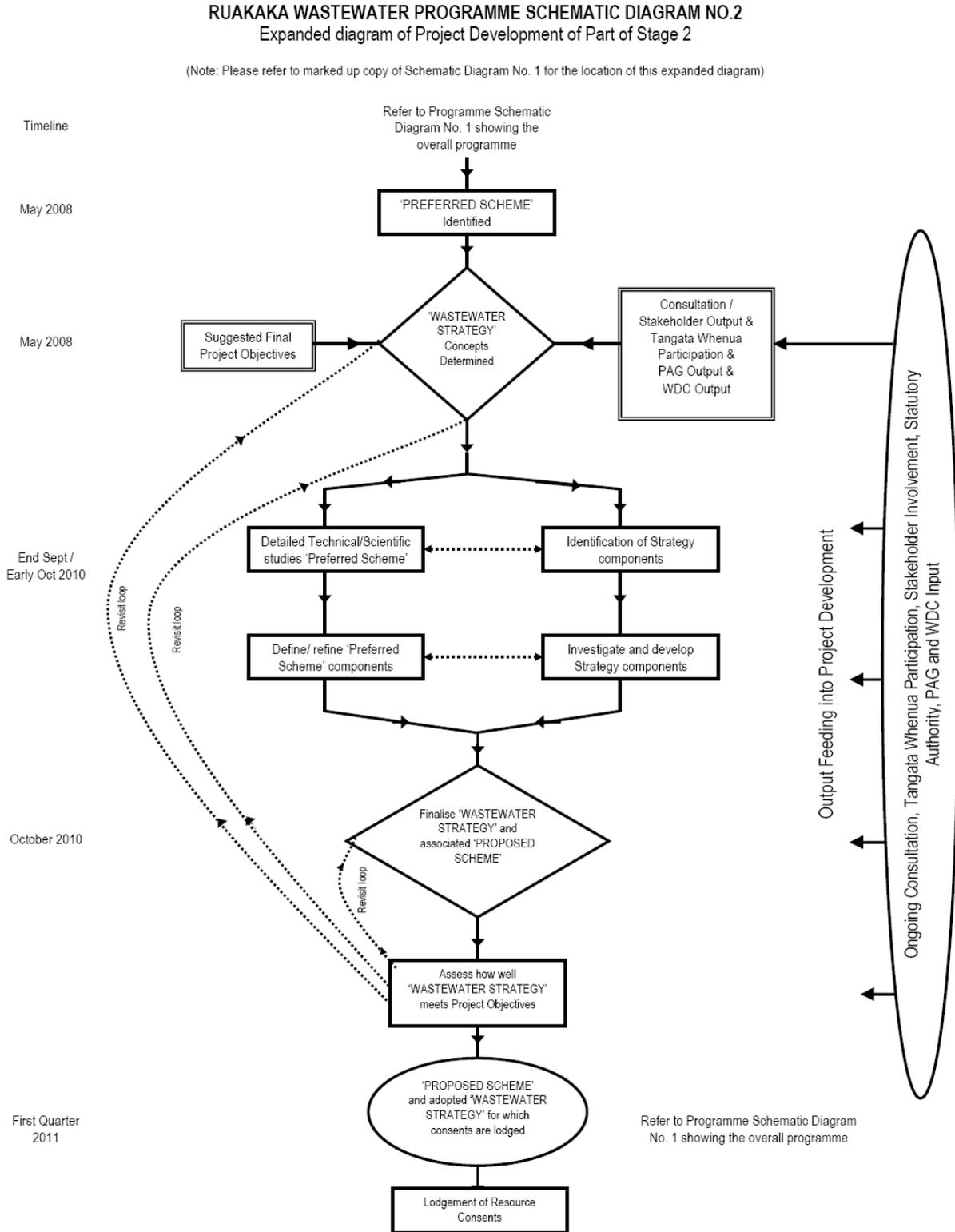
The following diagram sets out the process that is being followed in undertaking the investigations, consultation and preparing the resource consents and other applications up to the point that they are lodged with the Consent Authorities.



Footnote: 1<sup>st</sup> Quarter 2011 for consent lodgement is now 2<sup>nd</sup> quarter



Figure 2.2 Ruakaka Wastewater Programme - Schematic Diagram No. 2



Footnote: 1<sup>st</sup> Quarter 2011 for consent lodgement is now 2<sup>nd</sup> quarter



## 2.2 Project Inputs and Supporting Documents

This Project has involved a wide range of statutory, planning, technical and scientific input into the Project. Figure 2.3 diagrammatically illustrates these inputs in a summarised manner. The inputs have been categorised into three groupings being:

- Planning/Infrastructure and Monitoring feeding into Specific Study Input Decision Making and AEE;
- Specific Study Inputs to Project Decision-Making and Documentation; and
- Input from Various Parties, Organisations, Stakeholder.

The central grouping of Figure 2.3 is a summarised list of all the 41 Supporting Documents as is included in the Contents Page to this AEE and for completeness included in Table 2.1 following.

Figure 2.3 Inputs Diagram

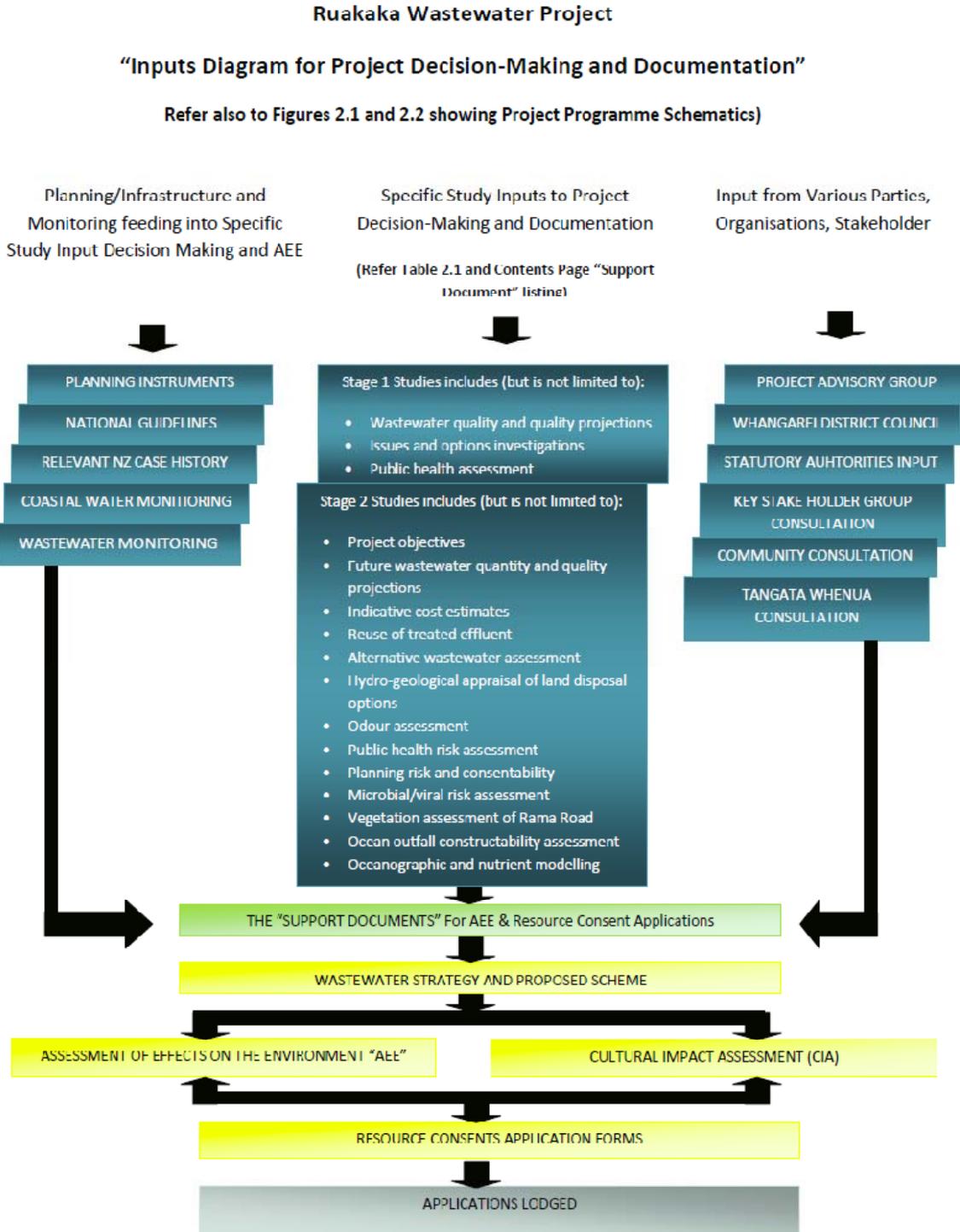




Table 2.1 lists these Support Documents. Cross reference is made to these throughout this AEE.

**Table 2.1 List of Support Documents**

<b>Ruakaka Wastewater Long-Term Wastewater Consents Project: Support Documents</b>		
<b>Support Document Number</b>	<b>Title</b>	<b>Date</b>
1	The Final 'Ruakaka/One Tree Point Wastewater Options Study, Stage 1 Future Wastewater Quantity and Quality Projections' by GHD/URS	20 April 2007
2	The Final 'Issues and Options Investigations Ruakaka/One Tree Point Wastewater Options Stage 1 Study Report' and accompanying Planning and Consultation Reports by GHD / URS	15 May 2007
3	Public Health, Microbial/Viral Risk Assessment, Stage 1 by GHD / URS	15 May 2007
4	Stage 2 Study Task 2A - Future Wastewater Quantity and Quality Projections, By MWH	November 2007
5	Stage 2 Study Task 2B Part 1 Indicative Cost Estimates, Option Schematics and Key Issues, by MWH	November 2007
6	Stage 2 Study Task 2B Part 3 Alternative Wastewater Treatment Process, by MWH	November 2007
7	Stage 2 Study Task 2B Part 4 Investigate Feasibility of Split Industrial and Domestic Wastewater Schemes, by MWH	November 2007
8	Ruakaka Wastewater Treatment Plant Discharge Options – Initial Assessment of Dilutions, by NIWA	October 2007
9	Whangarei District Council Ruakaka Wastewater Project 'Discussion Paper on Draft Project Objectives', By Whangarei District Council	November 2007
10	Stage 2 Study Task 2B Part 2 Reuse of Treated Effluent, by MWH	December 2007
11	Whangarei District Council, Ruakaka/One Tree Point, Options for Wastewater Treatment, by MWH	7 November 2007
12	Whangarei District Council, Ruakaka/One Tree Point, Options for Wastewater Treatment – Supplementary Information, by MWH	28 November 2007
13	Ruakaka Coastal Environment Recreational Survey, by MWH/WDC	December 2007/ January 2008
14	Whangarei District Council, Ruakaka/One Tree Point, Options for Wastewater Treatment, – Supplementary Information, Part 2 by MWH	20 December 2007



<b>Ruakaka Wastewater Long-Term Wastewater Consents Project: Support Documents</b>		
<b>Support Document Number</b>	<b>Title</b>	<b>Date</b>
15	Stage 2 Study Task 2C - Hydro-Geological Appraisal of Land Disposal Options and Consultation Information/Overheads, by Voss Infrastructure Consulting	December 2007
16	Stage 2 Study Task 2B Part 5 Sludge and Biosolids Management, by MWH	February 2008
17	Stage 2 Study Task 2C – Preliminary Assessment of Terrestrial Ecology Associated with the Options, by MWH	February 2008
18	Stage 2 Study Task 2C – Preliminary Odour and Air Emissions Report, by MWH	February 2008
19	Stage 2 Study Task 2C – Short-listed Options: Initial Technical Studies Report, by MWH	February 2008
20	Stage 2 Study Task 2E – Qualitative Public Health Risk Assessment, by MWH	February 2008
21	Stage 2 Study Task 2F – Planning Risk and Consentability Assessment, by MWH	February 2008
22	Stage 2 Study Task 2G – Detailed Options Evaluation Report, by MWH	February 2008
23	Whangarei District Council, Ruakaka/One Tree Point, Options for Wastewater Treatment, Summary BTF and SBR Comparison Table, by MWH	April 2008
24	Consideration of Alternative Sites for the Ruakaka Wastewater Treatment Plant, by MWH	May 2008
25	Stage 2 Study: Development of the ‘Proposed Scheme’ and a ‘Ruakaka Wastewater Strategy’, by MWH	June 2008
26	Whangarei District Council, Ruakaka/One Tree Point, Options for Wastewater Treatment– Supplementary Information, Part 3, by MWH	June 2008
27	Assessment of Effects of Endocrine Disrupting Compounds and Microbiological Pathogens on the Fish and Marine Mammals of Bream Bay, by Cawthron Institute	January 2009
28	Review of potential effects of endocrine disrupting compounds on marine species at Bream Bay Aquaculture Park by NIWA	July 2009
29	Ecotoxicity information on species cultured at NIWA Bream Bay Aquaculture Park	July 2009
30	Bream Bay Water Quality 2008-2009 prepared for Whangarei District Council, by MWH	December 2009



<b>Ruakaka Wastewater Long-Term Wastewater Consents Project: Support Documents</b>		
<b>Support Document Number</b>	<b>Title</b>	<b>Date</b>
31	Bream Bay Dilution and Dispersion Study, Phase One: Comparative Assessment, Final Report, by DHI	January 2010
32	Bream Bay Dilution and Dispersion Study, Phase One: Comparative Assessment – Addendum, by DHI	February 2010
33	Bream Bay Dilution and Dispersion Study, Phase Two: Comparative Assessment, Final Report, by DHI	May 2010
34	Coastal Vegetation Assessment for the Whangarei District Council, Irrigation of Wastewater Suitability Study, Rama Road Block, Ruakaka, by Alastair Jamieson - Wild Earth Media & Harley Spence - Coastline Consultants	May 2010
35	Bream Bay Environmental Assessment, Bream Bay Outfall and Benthic Survey and Assessment by Golder Associates	July 2010
36	Ruakaka long-term Wastewater Consents Project, Quantitative Public Health Risk Assessment, by MWH	August 2010
37	Ruakaka Ocean Outfall Report, Constructability Assessment and Estimated Costs, by OCEL Consultants and Preliminary Assessment January 2008.	August 2010 Rev. 2
38	Odour Management for Ruakaka Wastewater Treatment: long-term Resource Consent Project, by MWH	August 2010
39	Bream Bay Dilution and Dispersion Study, Nutrient Modelling, Final Report, by DHI	November 2010
40	Study, Task 2I – The Proposed Scheme Outline Concept Design, by MWH	September 2010
41	Consultation Record by MWH	May 2011

Figure 2.3 illustrates how the three groupings (cascades) of input feeds into the determination of the 'Ruakaka Wastewater Strategy' and the 'Proposed Scheme' for which the resource consents and other approvals and being sought.

The above listed 41 Support Documents all provide input to the Project and accordingly should be read together with this AEE when detailed information on specific topics, including particularly the effects assessment, is required.

## 2.3 Project Objectives

In order to advance the Wastewater Consent Project, achieve a robust decision making process and to meet Whangarei District Council's (WDC) statutory obligations it was considered important that Project Objectives be developed. The PAG, Project Management Group and the Patuharakeke Te Iwi Trust Board took a lead role in development of the Project Objectives.



Appendix C includes the full Objective Paper. This paper included the next steps in the Project towards finalising the then draft Project Objectives. These steps have been completed and the Objectives as set out below are now adopted as the final Project Objectives.

Appendix C should be referred to for a full discussion on the drivers and other background to the development of the following project objectives.

The purpose of setting Project Objectives for this Project is as follows:

- To ensure consistency with WDC's strategic direction and annual planning process.
- To ensure that public health protection is appropriately addressed.
- To ensure that compliance with environmental standards are appropriately addressed.
- To achieve effective and meaningful consultation with stakeholders, tangata whenua and the wider community.
- To establish benchmarks against which all key decisions can be assessed and measured as they apply to formulating the resource consent applications and any further designations for the Ruakaka Wastewater Scheme (the 'Proposed Scheme').
- To ensure compliance with all legal and environmental requirements.
- To demonstrate that any works subject to the notice of requirement for any new or altered designation are clearly necessary for WDC to achieve its objectives and demonstrate these in terms of RMA procedures.
- To achieve a robust decision making process, in arriving at the 'Preferred Scheme', that is both auditable and defensible in terms of RMA, WDC and Northland Regional Council policies and procedures.

The guiding principles for setting objectives included WDC's Vision and Mission, the Local Government Act 2002 (LGA) and the Resource Management Act 1991 (RMA).

There are also a number of important factors and considerations that must be taken into account in formulating the Project Objectives, including:

- Achieving sustainable management of natural and physical resources in terms of the purpose of the RMA.
- Promoting the social, economic, environmental and cultural well-being of communities, in the present and future. This driver follows directly from the purpose of the LGA.
- Assist in meeting, as far as practicable, Maori cultural and spiritual concerns and also public perceptions and expectations as they may relate to discharge (re-entry) of treated wastewater into the Marine environment.
- Providing opportunities for the beneficial use of the treated wastewater resource be it the liquid (water) component and/or the solid component as a soil conditioner with nutrient and organic value.
- Avoid, mitigate or remedy the potential and actual adverse effects on the natural environment (marine water) by reducing the amount of treated wastewater that needs to be discharged / disposed into that receiving environment.
- Reducing the amount of potable water used and therefore correspondingly reducing the wastewater generated.
- Reducing the contaminant load and concentrations as a consequence of effective trade waste and illegal contaminant discharge management, water supply quality, and other measures.
- Provide economic benefits to those reusing the treated wastewater and/or provides benefits to WDC.
- Reduce the extent and size of the infrastructure needed for management of Ruakaka's wastewater.



- Provide a cost efficient Wastewater Scheme that is affordable to the residential and business communities whilst also meeting WDC's other requirements including the need to produce a high standard of treated wastewater quality.

As noted in Section 2.2, the PAG's key role was to develop the Project Objectives with key input from the Patuharakeke Te Iwi Trust Board (Inc) in the development of the Tangata Whenua Cultural objectives. These objectives take into consideration the Trust Board's Environmental Plan.

Having regard to the guiding principles of the RMA and LGA, WDC's strategic vision, identified key project drivers, the previous consent process and WDC's actions and future actions, the following objectives were developed. The objectives have been reviewed by key statutory bodies and tangata whenua.

### **WDC Ruakaka Wastewater Treatment Plant Consent Project**

#### **Project Objectives**

##### Overall Objective

- To work in partnership with the community and tangata whenua to obtain the necessary long-term resource consents for the 'Proposed Scheme'. The 'Proposed Scheme' shall encompass a high level of public health and environmental protection and be the best practicable option for Ruakaka's future wastewater management that is in keeping with sustainable management principles and practices.

##### Environmental Objectives

- To protect the natural environment and in particular the soil and water quality of the land, Ruakaka River, Whangarei Harbour and Bream Bay and ensure these are not compromised.
- To ensure a high level of compliance with recreational, ecological and water quality standards and guidelines, and Regional and District Planning requirements.
- To promote the efficient use and development of natural and physical resources, and the sustainable reuse of wastewater products.
- To minimise energy use and the emission of greenhouse gases and any other adverse effects on climate change as far as is practicable.

##### Social Objectives

- To ensure that the Ruakaka Wastewater Scheme achieves the greatest practicable protection of public health.
- To provide a suitable wastewater system which will maximise the uptake of the services provided to the existing and growth's communities.
- To work in partnership with the Project Advisory Group (PAG), the community and key stakeholders to achieve a good understanding of this Project, so as to enable genuine and effective consultation.

##### Economic Objectives

- To provide an economically sustainable future 'Proposed Scheme' which will match the anticipated growth in the area, – i.e. affordable for both the existing and growth communities now and in the future.
- To ensure the optimum economic use of the existing infrastructure.
- To promote outcomes that ensure sufficient flexibility to adopt appropriate technology and more sustainable solutions in the future, including treated wastewater reuse, where they provide more effective solutions.
- To apply appropriate technology that will protect public health and meet environmental standards and tangata whenua and community aspirations while achieving lowest whole of life costs.



Tangata Whenua Cultural Objectives

- To recognise and provide for the special role and relationships that Maori have as tangata whenua.
- To work in partnership with tangata whenua to share knowledge and achieve a good understanding of this Project, so as to enable genuine and effective consultation and allow knowledge sharing.
- To promote widespread community awareness and concern for the land and water-based resources and taonga including kaimoana, fisheries, native birds and wildlife, the foreshore, seabed and surrounding estuaries, and indigenous flora and fauna of Te Rohe o Patuharakeke Hapu.

## 2.4 'Ruakaka Wastewater Strategy' and Integrated Development Approach

A key part of the development of a 'Proposed Scheme' that WDC decided to put in place is the identification and implementation of a 'Ruakaka Wastewater Strategy'. In the first instance this 'Ruakaka Wastewater Strategy' is to be used to support this resource consent application process and other approvals needed for the 'Proposed Scheme'. Following that the strategy will guide the ongoing development, operation and review of the Scheme put in place.

The 'Ruakaka Wastewater Strategy' encompasses the Vision, Mission, Goals and Key Principles of the WDC's Waste and Drainage Wastewater Strategy that is currently in its final stages of development as set out in Section 1.3.6.

The purposes of the 'Ruakaka Wastewater Strategy' are:

1. To provide a roadmap for the ongoing development and operation of the Ruakaka Wastewater Scheme from the present time through to at least a 35 year time horizon as consistent with the maximum consent duration allowed under the Resource Management Act 1991 (RMA).

The decision to have a Wastewater Strategy was made by the Council's Works and Services Committee at its meeting on 13 August 2008. The WDC's Reporting Officers report to that Committee and the Committee's Resolutions is included as Appendix A to this AEE.

2. To ensure a sustainable management and sustainable development approach is undertaken in the development and ongoing operation of Wastewater System that meets the requirements of the RMA and the Local Government Act 2002 (LGA) respectively.
3. To ensure that the 'Proposed Scheme' is underpinned with appropriate resource consent conditions that ensure key components of the Strategy will be implemented throughout the duration of the resource consents.
4. To support the resource consent applications and the issue of 35 year resource consents.
5. To ensure that appropriate procedures are put in place for "*avoiding, remedying or mitigating any adverse effects of activities on the environment*" as required under Part 2 of the RMA.
6. To ensure that the 'Proposed Scheme' underpinned by the 'Ruakaka Wastewater Strategy' provide a good fit with the Project Objectives.
7. To ensure that the 'Proposed Scheme' was the 'Preferred Scheme' by undertaking on-going consultation with a range of statutory organisations and key stakeholders, including NIWA/Aquaculture Park and its commercial operations, Patuharakeke Trust Board, other tangata whenua, local communities, and other parties (refer consultation record document).
8. Provide strong direction towards beneficial treated wastewater reuse options being implemented where it is appropriate to use these both initially and throughout the duration of the scheme.



9. Ensure WDC periodically reviews environmental, social, cultural, economic and technology matters in order that the development growth in the Ruakaka area and environs and other changing factors are addressed. This includes the periodic reassessment of beneficial reuse for treated wastewater, biosolids and other residual/by-products from the wastewater scheme.

## **2.5 Drivers and Rationale for the ‘Ruakaka Wastewater Strategy’ and ‘Proposed Scheme’**

In defining the ‘Ruakaka Wastewater Strategy’ and ‘Proposed Scheme’ it is important to strive to meet the Project Objectives (refer to Section 2.3), WDC’s Strategic Plans (refer to Section 1.3.6) and also meet WDC’s other key drivers including those set out in Section 2.3 above, and in the Project Objectives Paper which is included as Appendix C to this AEE.

These drivers and rationale that have been developed are consistent with the Vision, Mission, Goals and Key Principles of the WDC’s Waste and Drainage Wastewater Strategy that is currently in its final stages of development as set out in Section 1.3.6.



## 3 Ruakaka's Wastewater - Current Context

### 3.1 Background

The projected growth in the Ruakaka/One Tree Point area necessitates WDC to plan for, and implement a medium to long-term solution that will cope with the significantly increased amounts of wastewater that will be generated in the area. Section 4.3 includes information on these projected wastewater increases from the present time through to 2056.

Resource consents have been granted and a programme of upgrading work had been embarked on by WDC and the BBLOA to accommodate the growth through to 2018. This is referred to as the interim/short-term scheme. This consisted of upgrading the existing ponds and wetlands and disposal to land on a mixture of a WDC, private and Crown land (subject to a concession being granted). It is expected that this short term scheme will be subsumed by the 'scheme' that emerges from the Stage 2 Study.

The process being followed in this Stage 2 Study is to identify a 'Preferred Scheme' from the investigations of the four short listed options that were determined in the Stage 1 Study.

Once identified, the 'Preferred Scheme' was further developed and consulted on. Then further investigations were undertaken to assess the potential and actual positive/adverse effects, and identify how any adverse effects will be avoided, remedied and mitigated in terms of Resource Management Act 1991 (RMA) procedures. Section 6 traverses the process worked through in assessing alternatives and arriving firstly at the 'Preferred Scheme', and then finally the 'Proposed Scheme'.

The outcome of the further consultation and investigation of the 'Preferred Scheme' lead to the development of the 'Proposed Scheme', for which the resource consents and other approvals are being sought.

Due to the importance of providing long-term security for the 'Proposed Scheme', WDC has decided to seek long-term resource consents. Such an approach is prudent and nowadays commonly followed by local government in order to provide to security and sound financial management of infrastructural assets. Accordingly, WDC is applying for the maximum 35 years for key resource consents.

### 3.2 Existing Wastewater Treatment Plant and Wastewater Disposal

The current Ruakaka Wastewater Treatment Disposal Scheme currently consists of the following:

#### Incoming Pump Stations

- The untreated wastewater is pumped from terminal pumping stations, in Sime Road (Ruakaka) and at Marsden Cove (One Tree Point) via rising mains. The incoming flows are measured by electronic flowmeters at the Sime Rd pumping station and on the rising main from One Tree Point.

#### Inlet Screen

- This involves a new automated screen and by-pass chamber with screenings being disposed in a waste bin for removal. This facility was commissioned in 2010.

#### Oxidation Ponds

- Two oxidation ponds totalling approximately 3.1ha provide a natural biological treatment. These ponds are run in series. A permanent aerator has been installed in the first pond and this has recently been connected to the permanent power supply to the site.



### Wetlands

- The wetlands are designed and operated as engineered wetlands with close planting of the wetland vegetation. The treated wastewater discharge from these is conveyed to the ground soakage facilities on the site.

### Ground Soakage Facilities

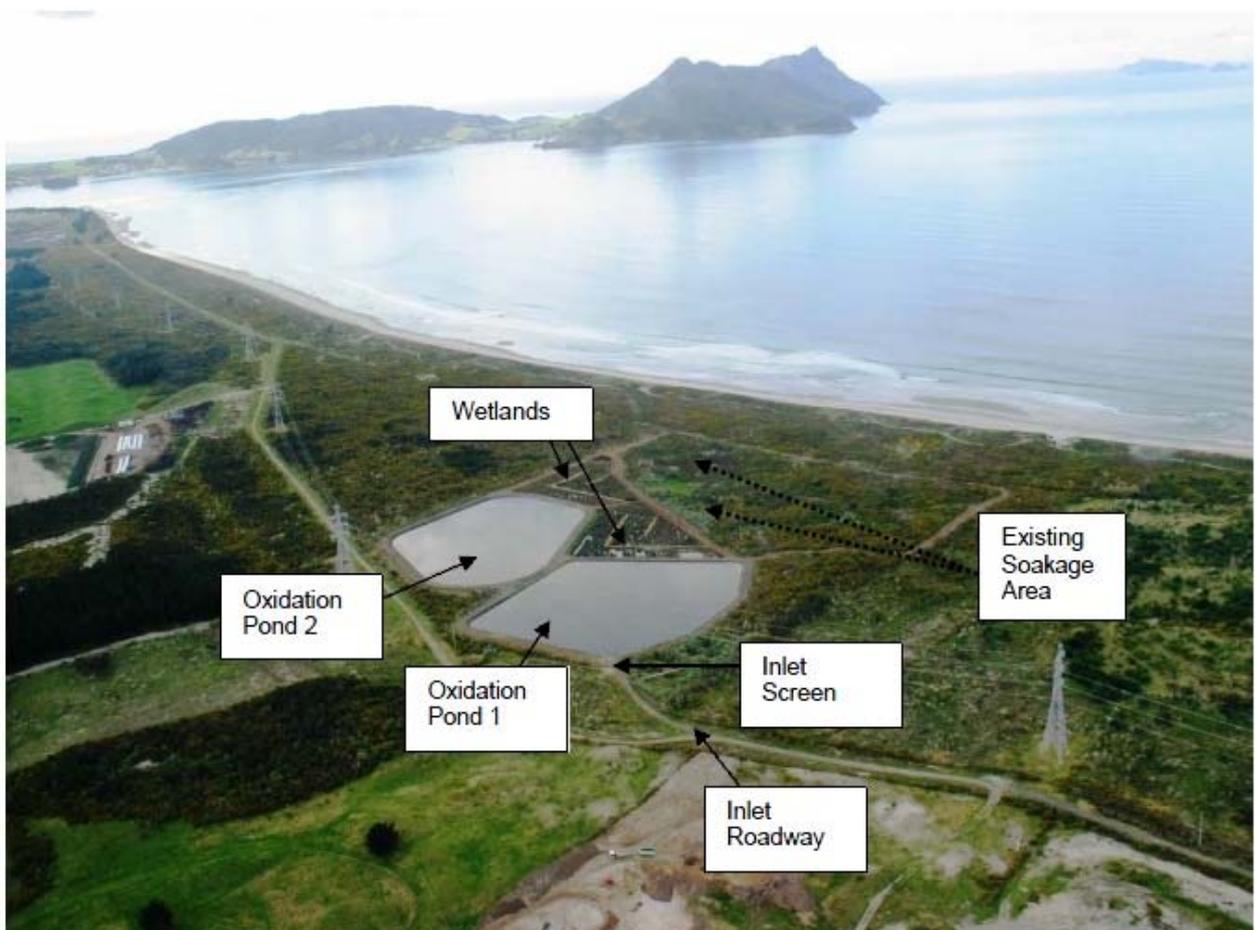
- The first of these is on the seaward side and lower part of the site. This is denoted as Zone 3 in the zoned approach to wastewater disposal areas. The second recently developed area referred to as Zone 6B is on the western boundary of the WDC treatment plant site.

Information from WDC's Wastewater Activity Management Plan (2005-2009) includes statistics on the present Ruakaka and One Tree Point Wastewater Scheme. These are:

- Connections – 985;
- Gravity mains (sewers) – 21.6km;
- Pumping stations – 17;
- Rising mains – 12.2km; and
- Discharge (disposal) – to land.

An aerial photograph of the site is shown below in Photograph 3.1. Photographs of the facilities are shown in Photograph 3.2.

**Photograph 3.1 Aerial Photograph of Existing Wastewater Treatment Plant and Disposal Area**





**Photograph 3.2 Ruakaka Wastewater Treatment Plant and Ground Soakage Facilities**



Inlet Screening System



Oxidation Pond Inlet and Aerator



Oxidation Ponds



Wetlands



Wetland Discharge to Ground Soakage Area



Ground Soakage Area



### 3.3 Existing Resource Consents, Designations and Other Approvals

These are covered in Section 1.4 above.

### 3.4 Performance and Consent Compliance

Table 3.1 below summarises recent treated wastewater quality leaving the wetlands.

**Table 3.1 Existing Treatment - Wetland Discharge Monitoring Results from 8 August 2008 to 9 September 2010**

Parameter	Unit	No. of Samples	Median	95%ile	Range (Min-Max)
cBOD <sub>5</sub>	mg/L	51	24	51	9 – 82
Suspended Solids	mg/L	57	44	145	4 – 178
Faecal coliforms	cfu/100ml	57	2,600	82,600	91 – 373,000
Total Nitrogen	mg/L	54	28.5	45.4	5.8 – 50
Ammonia	mg/L	56	22.6	41.3	0.7 – 43.5
Total Phosphorus	mg/L	54	9.0	11	5.5 – 12
pH	--	57	--	--	6.8 – 8.6

#### January to March 2011 Quarter

	CBOD <sub>5</sub>	FC	TN	Ammonia	TP	DO	pH	Temperature
	mg/l	cfu/100ml	mg/l	mg/l	mg/l	mg/l		°C
Median	11.0	1148	16.0	16.6	7.1	0.2	7.3	21.9
Maximum	12.0	8091	27.0	24.5	9.1	1.4	7.3	22.1
Minimum	8.0	909	13.6	12.6	7.0	0.1	7.1	20.6

As a requirement of the resource consent to discharge treated wastewater to land, WDC is required to provide the Consent Authority, Northland Regional Council (NRC) with a Quarterly and Annual Compliance Reports. Campbell Consulting Limited provided the monitoring reporting results on the 2nd of July 2010, which covered the results from August 2008 to March 2010. This Report is included in Appendix E. WDC supplied the Annual Report 1 April 2010 to 31 March 2011. This Report along with the January – March 2011 Quarterly Report is also included in Appendix E.

As the existence and performance of this site, both for the existing wastewater treatment facilities and the proposed future long-term wastewater treatment plant, are important components of this Project and the 'Ruakaka Wastewater Strategy' and 'Proposed Scheme', the compliance monitoring results set important benchmarks for future site use and consents and consent compliance. Accordingly, the main results from this Compliance Report are listed below.

#### Quarterly Report August 2008 to December 2009

From August 2008 to December 2009 inclusive the monitoring results were as follows:

- Inflows to the plant ranged from 348 to 529m<sup>3</sup>/day with an annual average of 519m<sup>3</sup>/day.
- All wastewater was disposed to Zone 3, which is consented to a maximum annual average of 660m<sup>3</sup>/day.
- The Zone 3 disposal area continued to operate over the reporting period with loading cycling between the northern and southern areas.
- There were no reported odours from the WWTP site.



- The seaward groundwater bore monitoring results showed that Bore 2 was the only bore that exceeded any of the trigger levels. The determinant in this case was total ammoniacal nitrogen (ammonia)
- The peak monthly level of ammonia in Bore 2 occurred during May 2009 after which the concentrations trended downwards.
- The exceedance of the ammonia trigger level at Bore 2 occurred in October to December 2009 and is a consequence of the lag associated with using a rolling median to determine compliance.
- The inland bores groundwater monitoring results showed that Bore 17 was the only bore that had monthly results which exceeded the nitrate and nitrite limit as measured by the median of the 12 consecutive samples.
- Bore 17 is located on Crown land between Zones 6B and 7. The bore was installed to monitor the effects of wastewater between the two zones and it is outside the expected zone of influence in respect to wastewater disposal on Zone 3.
- The elevated nitrate + nitrite levels identified in respect to Bore 17 are considered to not be related to the wastewater discharge but effects of other activities in the area.
- The surface water monitoring results were taken from two points, Marsden Point Road (DR01) and downstream of Lot 10, J&R Keith pine tree block (DR02). DR01 had higher faecal coliform levels than DR02.
- The beach profile survey was undertaken during November 2009 and no significant variations in the beach profile were noted between the various transects and the isopach plots.

#### **Quarterly Report January 2010 to March 2010**

From January 2010 to March 2010 inclusive the monitoring results were as follows:

- Inflows to the plant from the Ruakaka Rising main ranged from 205 to 293m<sup>3</sup>/day with an annual daily average of 237m<sup>3</sup>/day.
- The flow meter on the One Tree Point Rising main was out of service during this period.
- All wastewater was disposed to Zone 3, which is consented to a maximum annual average of 660m<sup>3</sup>/day.
- The incoming wastewater was sampled as required with cBOD<sub>5</sub> ranging from 163 to 330mg/l with a median of 247mg/l.
- The Zone 3 disposal area continued to operate over the reporting period with loading cycling between the northern and southern areas.
- There were no reported odours from the WWTP site.
- The seaward bore groundwater monitoring results again showed Bore 2 as being the only bore with a median for ammonia that exceeded the respective trigger level.
- The rolling median exceeded the trigger level by 0.7mg/l or 3.5% between October 2009 and March 2010. In April 2010 the rolling median had reduced to 17.4mg/l which is below the trigger level.
- The inland bore groundwater monitoring results noted that both Bores 17 and 18 had become dry.
- Borehole 24 located at the middle of the J&R Keith pine tree block was below the trigger level of 3.4m during the period of reporting.
- The surface water monitoring was monitored at the same two points as previous. The drain was dry at DR01 during February and March and at DR02 when the monitoring occurred during the quarter.
- The beach profile survey was undertaken during February 2010 and no significant variations in the beach profile were noted between the various transects and on the isopach plots.



- The beach between November 2009 and February 2010 had been cut down in the mid tide area and built up in the upper and lower tidal areas.

### **Annual Report April 2009 to March 2010**

From 1 April 2009 to March 2010 inclusive the annual monitoring results were as follows:

- In respect to seaward bores the only incidences of exceedance was at Bore 2.
- In respect to the inland bores the only incidences of exceedance was at Bore 17.
- Maintenance work has included grass mowing, noxious weed control and track maintenance over the last 12 month period.
- The One Tree Point rising main flow meter was taken out of service as it was established that the meter head cabling was faulty. A new meter has been installed.
- The Ruakaka Rising main flow meter was not calibrated during the reporting period.
- The treatment plant was upgraded over the summer months and consisted of a new inlet structure, automatic and manual screens and the permanent installation of an aerator. A permanent power and water supply has been established together with a cabled telecommunication link to service the WWTP.
- Access to the WWTP has been made easier via the establishment of a proposed subdivision road, and a security fence been erected around the entire WWTP site and disposal area.
- Further upgrading works include wetlands, constructing a new disposal area Zone 6A and the provision of a recycled wastewater line for washing the inlet screen and commenced in July 2010.
- The Ruakaka Wastewater Consent Liaison Group met on three occasions during the reporting period.

As there has been two years of clear trends available for review from the monitoring the consent holder is proposing to lodge a variation to the consent to decrease the frequency and scope of monitoring. Consultation has taken place on this information and no variation to the consent has been lodged on the monitoring review as to date.

### **Annual Report**

From 1 April 2010 to 31 March 2011 inclusive, a summary of the annual monitoring highlights the following. The full report along with the more detailed January – March 2011 quarter is included in Appendix E.

- No incidence of exceedance recorded on any of the seaward bores.
- Borehole 22, Bore 17 and Bore 7 have the monthly nitrate+nitrite levels that are exceeding the limit as measured by the median of a 12 consecutive samples.
- Borehole 25 which is closer to the treatment plant than these three boreholes has low levels of nitrate+nitrite. Bore 7 and Bore 17 are located outside the zone of influence of the wastewater disposal on Zone 3. This suggests that high nitrate+nitrite levels recorded at Bore 22, Bore 17 and Bore 7 are not a result of the exercise of this consent but perhaps also caused by the change of land use and other activities in the area of these bores.
- Maintenance works undertaken over the last twelve months have included grass mowing, noxious weed control and track maintenance. Maintenance of the new screens and aerator as well as general site maintenance such as weed spraying and track upkeep are carried out according to the Operation and Maintenance Manual.
- The addition of Zone 6A provides an alternative and/or additional disposal area. Flow meters were installed to monitor the flows to disposal zone 6A as well as to the inlet screen wash facility. The flow to Zone 3 will generally be the difference between the inflows and zone 6A flow.
- A new flow meter for One Tree Point rising main has been installed and has been operational since August 2010. The Ruakaka rising main flow meter was calibrated at the beginning of 2011.



New flow meters have been installed to measure the flows to Zone 6A and also the volume of wastewater used by the screen wash

- The following treatment plant upgrade works have been completed at the end of March 2011.
  - Wetlands upgrade
  - Construction of a new disposal area, Zone 6A
  - Provision of recycled wastewater line for washing the inlet screen
- A meeting was held on the 7<sup>th</sup> May with the Ruakaka Wastewater Consent Liaison Group to discuss the following:
  - Concession notification
  - Proposal to vary Consent Conditions with respect to the monitoring frequency.
  - The use of Zone 6A (part of Zone 6 owned by WDC)
  - Treatment plant upgrade works
  - NZRC reuse options
- Beach profile survey which is required by Section 6 of Schedule 1, Monitoring Programme was not carried out for the month of February 2011. This is because there has not been noticeable change to the beach profile during the previous two years beach profile surveys. WDC is in a process of applying for a variation to this Condition along with other Resource Consent Conditions.