FAR NORTH DISTRICT COUNCIL, PRIVATE BAG 752, KAIKOHE 0440

To undertake the following activities associated with the operation of the Kaikohe wastewater treatment system on Lot 2, DP 45233, Blk XV, Omapere SD; Sec 27, SO 40585 Blk IV Punakitere SD; Sec 2, SO 12295 Blk IV Punakitere SD; Sec 30 Blk IV Punakitere SD.

(Note: all location co-ordinates in this document refer to Geodetic Datum 2000, New Zealand Transverse Mercator Projection):

(01) To discharge treated wastewater to an unnamed tributary of Wairoro Stream, at or about location co-ordinates 1674845E 6079488N.

(02) To discharge contaminants to ground via seepage from the base of an anaerobic pond, oxidation pond and a constructed wetland, at or about location co-ordinates 1674525E 6079466N.

(03) To discharge contaminants (primarily odour) to air from the Kaikohe wastewater treatment system, at or about location co-ordinates 1674525E 6079466N.

Subject to the following conditions:

(01) and (02) Discharge to Water and to Ground

1 The volume of treated wastewater discharged to the unnamed tributary of the Wairoro Stream shall not, based on a 30 day rolling average of dry weather discharges, exceed 1,710 cubic metres per day. Compliance with this condition shall be based on the average daily discharge volume of the 30 most recent “dry weather discharge days”. For the purposes of this consent, a “dry weather discharge day” is any day on which there is less than 1 millimetre of rainfall, and that day occurs after three consecutive days either without rainfall or with rainfall of less than 1 millimetre on each day.

Advice Note: *The rainfall measurements used to determine a dry weather discharge shall be based on the nearest appropriate rainfall recorder site. The recorder site shall be selected in consultation with the Northland Regional Council.*

2 The Consent Holder shall maintain in good working order a flow meter on the outlet of the constructed treatment wetland that has an accuracy of ±5% to measure the volume of wastewater discharged to the unnamed tributary of the Wairoro Stream.

3 The Consent Holder shall keep records of the daily volume of treated wastewater discharged to the unnamed tributary of the Wairoro stream, as measured by the meter required by Condition 2, the local daily rainfall measurement, and the 30 day rolling average dry weather discharge volume, as defined in Condition 1. These records shall be recorded in a format agreed to by the Northland Regional Council and shall be forwarded to the Northland Regional Council by 15 May of each year for the preceding six months of November to April, and by 15 November of each year for the preceding months of May to October

4 The Consent Holder shall monitor the exercise of these consents in accordance with the Monitoring Programme in Schedule 1 (**attached**).

5 The Consent Holder shall prepare monthly reports on the monitoring undertaken in accordance with Conditions 3 and 4. These reports shall include, but not be limited to, all the raw data, the averages and/or medians calculated for compliance purposes, and a summary showing the level of compliance with any consent conditions for which limits have been defined. The monthly reports shall be in a format agreed to by the Northland Regional Council and shall be forwarded to the Northland Regional Council prior to the tenth working day of the following month. Where the monitoring is required to be undertaken over a period greater than a month, then the results of that monitoring event shall be included in the next scheduled monitoring report. If the monitoring results indicate a non-compliance with any consent condition, then the Consent Holder shall report the results to the Northland Regional Council within 24 hours of receiving the analysis results.

6 The Consent Holder shall provide and maintain easy and safe access to each of the following sampling points (all shown on NRC Plan 3514, **attached**):

(a) Northland Regional Council Sampling Site Number 100562, discharge point from the wastewater treatment system into natural wetland, at or about location co-ordinates 1674845E 6079488N.

(b) Northland Regional Council Sampling Site Number 100560, unnamed tributary of the Wairoro Stream at the point where the unnamed tributary discharges into the Wairoro Stream, at or about location co-ordinates 1674854E 6079181N.

(c) Northland Regional Council Sampling Site Number 103316, Wairoro Stream approximately 25 metres upstream of the discharge point from the unnamed tributary into Wairoro Stream, at or about location co-ordinates 1674725E 6079148N.

(d) Northland Regional Council Sampling Site Number 100807, Wairoro Stream approximately 80 metres downstream of the discharge point from the unnamed tributary into Wairoro Stream, at or about location co-ordinates 1674866E 6079142N.

7 Notwithstanding any other conditions of these consents, the exercise of these consents shall not give rise to any of the following effects on the water quality of the Wairoro Stream, as measured at Northland Regional Council Monitoring Site 100807, Wairoro Stream approximately 80 metres downstream of the discharge point from the unnamed tributary into Wairoro Stream, when compared with the water quality at Northland Regional Council Monitoring Site 103316, Wairoro Stream approximately 25 metres upstream of the discharge point from the unnamed tributary into Wairoro Stream:

(a) The natural temperature of the water shall not change by more than 3 degrees Celsius;

(b) The natural pH of the water shall be within the range 6.5 to 9.0;

(c) The concentration of dissolved oxygen (daily minimum) shall not be reduced by more than 20%;

(d) The production of conspicuous oil or grease films, scums or foams, floatable or suspended materials, or emissions of objectionable odour;

(e) Acute toxicity, or significant adverse effects of chronic toxicity, to natural aquatic life by reason of a concentration of toxic substances.

(f) The hue of the waters shall not be changed by more than 10 Munsell units.

(g) The waters shall not be tainted so as to make them unpalatable to farm animals, nor contain toxic substances to the extent that they are unsuitable for consumption by farm animals. The microcystin concentration expressed as microcystin-LR shall not exceed 2.3 micrograms per litre and/or the concentration of potentially toxic blue green algae species shall not exceed 11,500 cells per millilitre, for samples taken in accordance with Section 4.2.3 of the Monitoring Programme in Schedule 1 (**attached**).

(h) The increase in the median *Escherichia coli* concentration shall not exceed 50 per 100 millilitres, for samples taken in accordance with Section 4.2.2 of the Monitoring Programme in Schedule 1 (**attached**).

(i) The concentration of total ammoniacal nitrogen shall not exceed the following:

pH of Water at the Time of Sampling	Total Ammoniacal Nitrogen ($[NH_3 + NH_4]$-N) (grams per cubic metre)
6.0	2.57
6.1	2.56
6.2	2.54
6.3	2.52
6.4	2.49
6.5	2.46
6.6	2.43
6.7	2.38
6.8	2.33
6.9	2.26
7.0	2.18
7.1	2.09
7.2	1.99
7.3	1.88
7.4	1.75
7.5	1.61
7.6	1.47
7.7	1.32
7.8	1.18
7.9	1.03
8.0	0.90
8.1	0.78
8.2	0.66
8.3	0.56
8.4	0.48
8.5	0.40
8.6	0.34
8.7	0.29
8.8	0.24
8.9	0.21
9.0	0.18

In the event that the background concentration of total ammoniacal nitrogen, as measured at Northland Regional Council Site Number 103316, Wairoro Stream approximately 25 metres upstream of the discharge point from the unnamed tributary into Wairoro Stream, exceeds the above concentrations, then the exercise of these consents shall not result in an increase of the total ammoniacal nitrogen concentration of more than 0.10 grams per cubic metre.

8 The Consent Holder shall compare actual influent suspended solids and five day biochemical oxygen demand loadings, as required to be monitored in accordance with Section 1 of the Monitoring Programme in Schedule 1 (**attached**), with the design loadings for the wastewater treatment system. The results of this comparison shall be reported in the Annual Review Report required to be prepared in accordance with Condition 15.

9 The Consent Holder shall undertake an assessment of the degree of stormwater/groundwater inflow and infiltration into the Kaikohe sewage reticulation system. If there is unacceptable inflow and infiltration occurring, then a programme for inflow and infiltration reduction shall be provided to the Northland Regional Council. In the event that an inflow and infiltration reduction programme is required to reduce inflow to the sewer, the results of investigations, work undertaken, progress made and priorities for further work, shall be included in the Annual Review Report, required to be prepared in accordance with Condition 15.

(03) Discharge to Air

10 The Consent Holder's operations shall not give rise to any discharge of contaminants at or beyond the legal boundary of the area occupied by the Kaikohe wastewater treatment system, which is deemed by a suitably trained and experienced Enforcement Officer of the Northland Regional Council to be noxious, dangerous, offensive or objectionable to such an extent that it has, or is likely to have, an adverse effect on the environment.

General Conditions

11 The Consent Holder shall, within two years of the date of commencement of these consents, install an appropriately designed influent screen prior to the inlet to the anaerobic pond. For the purpose of this condition, an "appropriately designed influent screen" is one that includes a practical system for removing large solids that would not degrade within the treatment system; is self cleaning and is sized to allow wastewater to pass through the screen under all influent flow regimes. Residues caught by the screen shall be disposed of to a facility for which the necessary resource consents are held.

12 The Consent Holder shall, within six months of the date of commencement of these consents, submit a Management Plan covering all aspects of the operation and maintenance of the wastewater treatment system, including the discharge structure, to the Northland Regional Council for certification of its adequacy. The Management Plan shall include, but not be limited to, the following:

(a) Specification of the design wastewater volume, dimensions, design loading and expected treatment performance of each component of the treatment system in which wastewater treatment occurs.

(b) A schedule of inspection, servicing, and maintenance actions to be carried out on the wastewater treatment system. This will include identification of the timing of desludging of the anaerobic lagoon and oxidation pond, and any required maintenance of the treatment wetland cells.

(c) Where it is not practical to schedule low frequency maintenance activities, such as the desludging of the anaerobic lagoon, oxidation pond, and treatment wetlands, a monitoring programme shall be provided to demonstrate that the design treatment capacity is maintained, and criteria shall be provided to trigger required maintenance. Particular attention shall be given to the method used for measuring the depth of wastewater and sludge in the treatment system components.

When desludging of a treatment system component is required, a detailed plan of the proposed desludging shall be provided to the Northland Regional Council at least one month prior to commencement of any desludging works.

(d) Contingency measures for unauthorised discharges.

(e) Methods to be used to combat nuisances that might arise in the treatment system including midges and other insects, and blue-green algae (cyanobacteria).

Advice Note: *Algicides, including copper sulphate, and insecticides shall not be used within the Wastewater Treatment System without the prior written approval of the Northland Regional Council.*

13 The operation and maintenance of the wastewater treatment system shall be undertaken in accordance with the certified Management Plan required to be prepared in accordance with Condition 12, but also always subject to the conditions of these consents. Any changes to the Management Plan shall be made with the prior written agreement of the Northland Regional Council.

14 The Consent Holder shall, in consultation with the Northland Regional Council, review the Management Plan two years after the date of commencement of these consents, and thereafter at no greater than five yearly intervals. Any changes to the Management Plan, as a result of a review, shall be subject to the prior written agreement of the Northland Regional Council. The Consent Holder shall meet all reasonable costs of each review.

15 The Consent Holder shall forward to the Northland Regional Council by 1 August each year an Annual Review Report covering the previous year (1 July to 30 June) that shall include, but not be limited to, the following:

(a) A summary of all activities required by the Management Plan; and

(b) A summary of the results of all monitoring required to be undertaken in accordance with Schedule 1 (**attached**).

Advice Note: *The Monitoring Programme in Schedule 1 (**attached**) includes a requirement to measure concentrations of total nitrogen and phosphorus being discharged under this consent to the Wairoro Stream. The Annual Review Report required by Condition 16 should identify trends in concentrations and mass loadings of total nitrogen and total phosphorus being discharged from the treatment plant. One of the goals of the district-wide nutrient management programme that the Consent Holder is developing, including management of nutrients discharged from the Kaikohe wastewater treatment system, should be the prevention of any further increase in the mass discharges of total nitrogen and total phosphorus over a specified period of time.*

16 The Consent Holder shall, in consultation with the Northland Regional Council, review the Monitoring Programme in Schedule 1 (**attached**) by 1 August each year. The review shall consider compliance with the consent conditions, and shall also include review of sampling methods, sites, determinands and frequencies. No changes may be made to the monitoring programme without the prior written agreement of the Northland Regional Council. The Consent Holder shall meet the reasonable costs of each review.

Advice Note: *In the past there has been limited monitoring of the discharge and the receiving environment. This consent imposes a more extensive and intensive monitoring programme and the Consent Holder has requested a review of that programme after 18 months of the date of commencement of the consent with a view to reduction of the monitoring if there is ongoing compliance with the standards set in this consent.*

17 Notwithstanding Condition 13, the wastewater treatment system shall be correctly operated and maintained in an effective and workmanlike manner.

18 The Consent Holder shall, for the purposes of adequately monitoring these consents as required under Section 35 of the Act, on becoming aware of any discharge of contaminants associated with the Consent Holder's operations otherwise than in conformity with these consents, immediately notify the Northland Regional Council of the discharge. In addition, if the discharge of contaminants, excluding those to air, is outside of the area legally occupied by the wastewater treatment plant, the Consent Holder shall also immediately notify the Medical Officer of Health, Northland Health Ltd. The Consent Holder shall then supply a written report to the Northland Regional Council within one week detailing:

(a) The nature of the non-compliance;

(b) The location of the discharge and receiving environment;

(c) The time of discharge;

(d) The duration of discharge;

(e) The quantity of contaminant discharged;

(f) The nature of contaminant discharged (eg. raw sewage, primary, secondary treated sewage);

(g) The measures taken to mitigate the effects on the environment and public health; and

(h) The proposed measures to prevent similar discharges in future.

19 The Consent Holder shall, for the purposes of adequately monitoring these consents as required under Section 35 of the Act, maintain records of any complaints relating to the operation of these consents received by the Consent Holder, as detailed below:

(a) The name and address of the complainant (where provided);

(b) The date and time the complaint is received;

(c) The duration of the event that gave rise to the complaint;

(d) The location from which the complaint arose;

(e) The weather conditions prevailing at that time;

(f) Any events in the management and operation of any processes that may have given rise to the complaint; and

(g) Any actions taken by the Consent Holder, where possible, to minimise contaminant emissions.

The Consent Holder shall notify the Northland Regional Council as soon as is practicable of any complaint received. Records of the above shall also be sent to the Northland Regional Council immediately upon request.

20 The Northland Regional Council may, in accordance with Section 128 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of these consents. Such notice may be served annually during the month of May. The review may be initiated for any one or more of the following purposes:

(a) To deal with any adverse effects on the environment that may arise from the exercise of these consents and which it is appropriate to deal with at a later stage, or to deal with any such effects following assessment of the results of the monitoring of these consents and/or as a result of the Northland Regional Council's monitoring in the area.

(b) To require the adoption of the best practicable option to remove or reduce any adverse effect on the environment.

(c) To provide for compliance with rules in any regional plan that has been made operative since the commencement of these consents.

(d) To deal with any inadequacies or inconsistencies the Northland Regional Council considers there to be in the conditions of these consents, following the establishment of the activities the subject of these consents.

(e) To deal with any material inaccuracies that may in future be found in the information made available with the application. Notice may be served at any time for this reason.

(f) To change existing conditions relating to, or impose new limits on, the quality of the discharges and/or the receiving waters.

The Consent Holder shall meet all reasonable costs of any such review.

EXPIRY DATE: 30 NOVEMBER 2021

This consent was issued by D L Roke on Fourth day of August 2005 under delegated authority from the Council.

This change to consent is granted this Nineteenth day of April 2011 under delegated authority from the Council by:

Robert Lieffering
Consents Senior Programme Manager

SCHEDULE 1

MONITORING PROGRAMME

The Consent Holder (or its authorised agent) shall monitor Resource Consent 2417 in accordance with the following monitoring programme.

1. TREATMENT SYSTEM MASS LOADINGS

1.1 Wastewater Discharge Volume

The discharge volume from the treatment plant and the local daily rainfall over the same 24-hour period shall be recorded. The Consent Holder shall then use this data to calculate the 30 day rolling average dry weather discharge volume, as defined in Condition 1.

1.2 Biochemical Oxygen Demand and Total Suspended Solids

The influent 5-day biochemical oxygen demand(See Note 1) and total suspended solids daily mass loadings shall be determined annually during February-March, on a minimum of four consecutive days under dry weather discharge conditions. A dry weather discharge day is defined in Condition 1.

24 hour flow proportional influent samples shall be taken for determination of the mass loadings.

1.3 Significant Intermittent Loadings

An assessment of the effects on final effluent quality of any significant intermittent loadings to the Kaikohe wastewater treatment system from activities such as discharges by septic tank cleaning contractors and discharges from sources of potentially high organic loading such as stock truck washing facilities shall be provided in the Annual Review Report.

2. FACULTATIVE (OXIDATION) POND AND TREATMENT WETLAND DISSOLVED OXYGEN MONITORING

The concentration and percentage saturation of dissolved oxygen shall be measured every three months at three points at approximately equal intervals around the edge of the oxidation pond, and at the outlet from each of the five treatment wetland cells.

Dissolved oxygen measurements in the facultative pond shall be taken at least 60 centimetres from the water's edge and at a constant depth of 5 centimetres below the water surface.

Dissolved oxygen monitoring of the facultative pond and treatment wetlands shall be carried out on one of the days on which final effluent and receiving water monitoring is undertaken, and shall be carried out prior to the sampling of the final effluent and receiving water. The time shall be recorded for all samples.

During each visit for monitoring purposes, any significant odours at or beyond the property boundary shall be noted and reported to the Northland Regional Council within 24 hours of the visit. "Property boundary" is defined in Condition 10 of these consents.

3. DISCHARGE AND RECEIVING WATER MONITORING

3.1 Sites

The following sites (shown on NRC Plan 3514, **attached**) shall be monitored.

NRC Monitoring Site Number	Location Description
100562	Discharge from treatment plant (outlet from final treatment wetland at flow monitoring point).
100560	Unnamed tributary, at point where it joins the Wairoro Stream.
103316	Wairoro Stream 25 metres upstream of the discharge point of the unnamed tributary into which the treated wastewater is discharged.
100807	Wairoro Stream approximately 80 metres downstream of the discharge point of the unnamed tributary into which the treated wastewater is discharged.

3.2 Sampling Procedures, Determinands and Frequency

3.2.1 Discharge Monitoring

Two triplicate(See Note 2) samples of the discharged wastewater (NRC Sampling Site 100562) shall be taken at least two weeks apart, during each month between November and April (inclusive), and monthly triplicate samples shall be collected for the rest of the year. The time shall be recorded for each sample and all samples shall be taken between 1000 and 1200 hours and analysed for the following determinands:

- Temperature(See Note 3)

- pH

- Dissolved oxygen concentration(See Note 3) and percentage saturation
- 5 day biochemical oxygen demand
- Total suspended solids
- Total ammoniacal nitrogen
- Dissolved inorganic nitrogen
- Total nitrogen
- Dissolved reactive phosphorus
- Total phosphorus

During the following three two-month periods each year, October-November; February-March; and July-August, 20 triplicate(See Note 2) samples of treated wastewater from NRC Sampling Site 100562 shall be taken during each period, with a minimum of one day between samples. These samples shall be analysed for *Escherichia coli* (See Note 4) concentration.

Discharge sampling shall be co-ordinated with receiving water sampling and the discharge samples shall be taken prior to the receiving water samples.

3.2.2 Receiving Water Monitoring

The flow of the Wairoro Stream, and the flow of the unnamed tributary into which the WTS discharge occurs shall be recorded for each sampling occasion.

Advice Note: *The Wairoro Stream flow should be determined from the most suitable existing flow monitoring site, and pro-rated to the area adjacent to the Kaikohe WTS. The Far North District Council is to install a weir near NRC Monitoring Site 100560 for measuring the flow of the unnamed tributary including the WTS discharge. The weir shall allow the passage of fish.*

The unnamed tributary of the Wairoro Stream into which the wastewater is discharged shall be monitored at a point approximately 30 metres upstream of the point of where the wastewater discharge enters the main stream of the unnamed tributary (Northland Regional Council Site 100560).

The Wairoro Stream shall be monitored 25 metres upstream of the point of discharge of the unnamed tributary (Northland Regional Council Site 103316), and at the downstream boundary of the mixing zone, this being approximately 80 metres downstream of the point of discharge from the unnamed tributary (Northland Regional Council Site 100807).

Two triplicate(See Note 2) samples per month, taken at least two weeks apart, shall be collected each month between November and April (inclusive) and monthly triplicate samples shall be collected for the rest of the year. Samples shall be analysed for the following determinands:

- Temperature(See Note 3)
- pH
- Dissolved oxygen concentration(See Note 3) and percentage saturation
- Total ammoniacal nitrogen
- Dissolved inorganic nitrogen
- Dissolved reactive phosphorus
- Hue (Munsell units)

The time shall be recorded for each receiving water sample and all receiving water samples shall be taken between 1000 and 1200 hours.

Compliance shall be determined for each sampling occasion.

During the following three two-month periods each year, (October-November; February-March; and July-August) 20 triplicate(See Note 2) samples shall be taken, with a minimum of one day between samples, from the NRC Sampling Sites 100560, 103316 and 100807. Paired samples (See Note 5) shall be taken from Sites 103316, and 100807 and the difference between *Escherichia coli* concentrations shall be determined for each of the 20 paired samples.

The median difference for the set of 20 paired samples shall not exceed an increase of 50 *Escherichia coli* per 100 millilitres.

To assist data interpretation, the monitoring of determinands with different sampling frequencies shall be integrated so that the maximum number of determinands is sampled at one time.

The water quality data from Northland Regional Council Site 100560 shall be considered if non-compliance is recorded, and there is an inconsistency between the wastewater quality data and the Wairoro Stream upstream and downstream data.

3.2.3 Blue-green Algal Toxicity

During periods when blue-green algae are prominent in the oxidation pond discharge, one triplicate sample shall be taken each week from Northland Regional Council Sampling Site 100807 and analysed for microcystins, expressed as microcystin-LR, and for cell counts of potentially toxic blue green algae species.

Notes:

(1) The "total" 5-day biochemical oxygen demand shall be measured and nitrogenous inhibitors shall not be added to the samples prior to analysis.

(2) Triplicate sampling shall involve collection of three separate samples taken at least five minutes apart during the same sampling event. Analysis shall be conducted on a composite sample made up of equal volumes of each triplicate sample.

(3) Temperature and dissolved oxygen concentration shall be measured in the field using a meter in accordance with standard procedures and triplicate measurements are not required for these parameters, apart from the measurement of dissolved oxygen in the facultative pond which is to be measured in accordance with Section 2.0.

(4) *Escherichia coli* shall, unless otherwise agreed to by the Northland Regional Council, be measured using the Colilert™ method.

(5) Paired samples are samples taken from the same body of water prior to and after the addition of the wastewater discharge. Paired samples shall be obtained by marking the upstream water with dye (or small drogues such as oranges) at the same time as the upriver sample is taken, and then sampling the marked body of water when it reaches the downstream boundary of the mixing zone.

4. RECORD OF SIGNIFICANT ODOURS

A record shall be kept of any significant odour at or beyond legal boundary of the area occupied by the Kaikohe wastewater treatment system. The record shall identify the source and cause of any significant odour, duration of the odour, wind strength and direction, remedial action undertaken, and the degree of success of the remedial action.

5. SAMPLE COLLECTION, SAMPLE TRANSPORT, AND LABORATORY REQUIREMENTS

All samples shall be collected using standard procedures and in appropriate laboratory supplied containers.

All samples shall be transported in accordance with standard procedures and under chain of custody to the laboratory.

All samples shall be analysed at a laboratory with registered quality assurance procedures[#], and all analyses shall be undertaken using standard methods, where applicable.

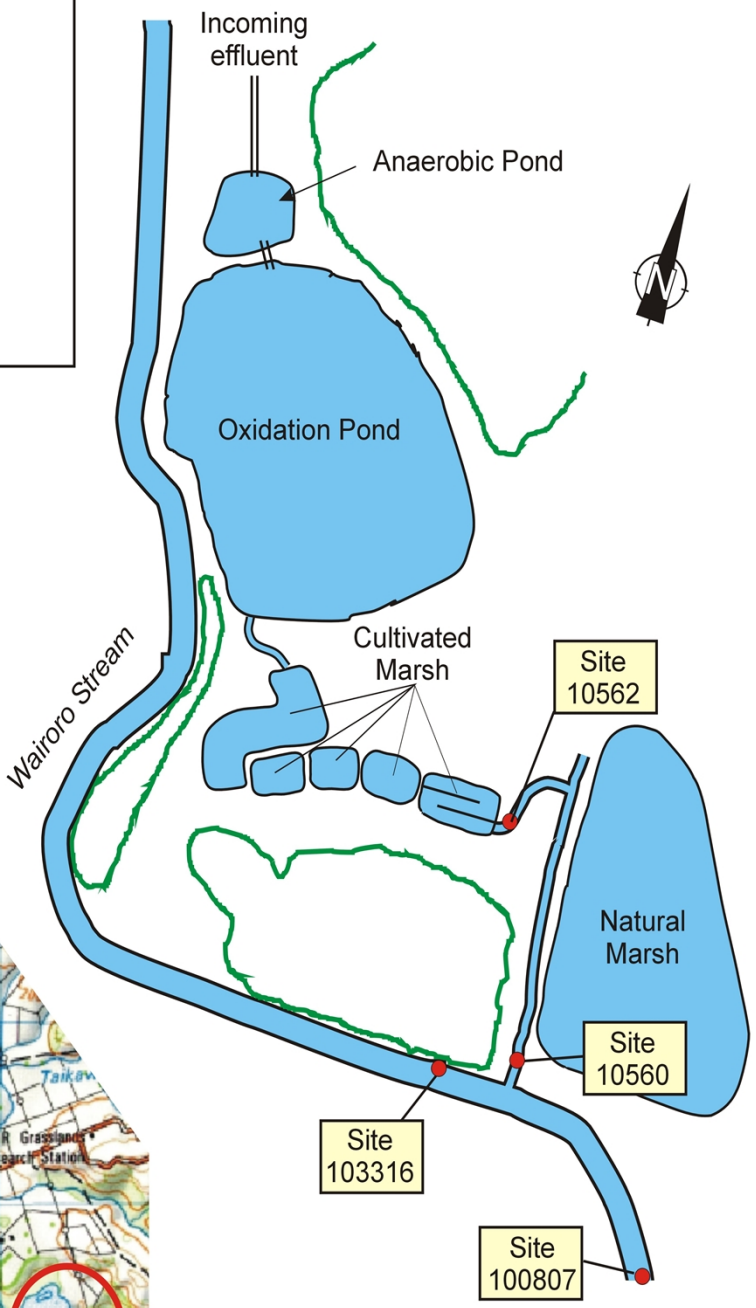
[#] Registered Quality Assurance Procedures are procedures which ensure that the laboratory meets recognised management practices as would include registrations such as ISO 9000, ISO Guide 25, Ministry of Health Accreditation, IANZ.

Site 100562
Constructed Wetland Discharge at weir

Site 100560
Final Wetland Discharge

Site 103316
25 m u/s of final discharge

Site 100807
80m d/s of final discharge



NORTHLAND REGIONAL COUNCIL

RESOURCE CONSENT CON19990241701
for
Far North District Council
Kaikohe Waste Water Treatment Plant
Sampling Sites

Scale:	N.T.S.	
Drawn:	CNA	05/05
App'd:		
Plan No.	**3514**	