Alissa Sluys

From:	Roger Brand>
Sent:	Friday, 29 September 2023 10:44 am
То:	Alissa Sluys
Subject:	RE: FNDC - WWTP Hearings - Extension for Responses to the revised proposed conditions
Attachments:	R.Brand submission to OOWWTP revised conditons.docx

Kia ora Alissa and Commissioners,

Please find attached my submission to the 'Revised Consent Conditions for the Opononi/Omapere Wastewater Treatment Plant Resource Consents'.

I am writing a submission to the Opononi/Omapere WWTP revised conditions <u>only</u>; my previous submission (No.2) to the Hearing provides my opinion concerning the Kohukohu WWTP renewal.

There is also an issue that I would like to raise before the Commissioners and the Northland Regional Council; this concerns the renewals of the OOWWTP and KOHWWTP but also extends to the other wastewater treatment plants at Kaikohe and Rawene which will have, by 31 October 2023 all expired resource consents.

Considering all four WWTPs at the same time within a Hokianga Harbour catchment has been raised on numerous occasions, both at the Hearing and within submissions. It may well be included in the present NRC Hokianga Harbour Moana Remediation Programme.

Here I am suggesting that all four WWTP's resource consents be assessed and renewed not just on the same timeline but also within a similar format and the same environmental standards for both wastewater and septage; e.g. the same resource consent conditions for monitoring at equivalent ecological locations. Furthermore, the inclusion of maps to show major infrastructure and locations of monitoring sites would be welcome.

This action should fit easily with the NRC 'freshwater plan' (due out shortly?) that follows upon the National Policy Statement for Freshwater Management 2020.

Thanking you for your attention in this process and looking forward to the reconvened Hearing 12 October at Opononi Hall

Nga mihi

Roger Brand

On 10/08/2023 14:53 NZST Alissa Sluys <alissas@nrc.govt.nz> wrote:

Tena koe,

EXTENSION FOR RESPONSES TO REVISED PROPOSED CONDITIONS

RESOURCE CONSENT APPLICATIONS APP.003839.01.03 AND APP.002667.01.04

FAR NORTH DISTRICT COUNCIL - OPONONI/OMAPERE AND KOHUKOHU WASTE WATER TREATMENT PLANTS

Further to my below correspondence and Item 3 of Minute No. 2, the Hearing Panel has provided an extension to **12PM**, Friday, **29 September 2023** for any written comments on the conditions.

Please contact me if you have any questions regarding the above.

Ngā mihi

Alissa Sluys

Consents and Hearing Administrator



Disclaimer

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From: Alissa Sluys
Sent: Thursday, August 10, 2023 2:41 PM
To: Alissa Sluys <alissas@nrc.govt.nz>
Subject: FNDC - WWTP Hearings - Extension requested for the revised proposed conditions

Tena koe,

EXTENSION FOR CIRCULATION OF REVISED PROPOSED CONDITIONS

RESOURCE CONSENT APPLICATIONS APP.003839.01.03 AND APP.002667.01.04

FAR NORTH DISTRICT COUNCIL - OPONONI/OMAPERE AND KOHUKOHU WASTE WATER TREATMENT PLANTS

Further to our recent correspondence, the Applicant has requested an extension for the lodgment of the revised set of proposed conditions.

The Hearing Panel has agreed to give an extension to 16 August 2023.

I will circulate the set of conditions as soon as possible.

Ngā mihi

Alissa Sluys

Consents and Hearing Administrator Northland Regional Council » Te Kaunihera ā rohe o Te Taitokerau



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Personal submission of Roger Brand (29 September 2023)

To: Hearing Commissioners, Northland Regional Council

Re: Revised Consent Conditions for Opononi/Omapere Wastewater Treatment Plants Resource Consents (AUT.002667.01.04, .02.03, .03.03, .04.02)

Applicant: Far North District Council

KEY TO TEXT COLOURING

Black Text	Original application				
Red Text	Changes proposed to recommended consent conditions contained in				
	Northland Regional Council's Section 42A Report at commencement of hearing (May 2023).				
Green Text	Revised changes proposed by Far North District Council during the adjournment of the hearing (May – August 2023).				
Blue Text	My Commentary (Roger Brand September 2023)				
Dark Blue	My suggested amendments (Roger Brand September 2023)				

<u>REVISED CONSENT CONDITIONS FOR OPONONI/ŌMAPERE WASTEWATER</u> <u>TREATMENT PLANT RESOURCE CONSENTS</u> (16 August 2023)

Note that Clauses extracted from the Revised Consent document are only those for which there are recommended changes.

- 7. The Community Liaison Group must also include a representative(s) of the Consent Holder. The Consent Holder must, maintain a within three months of the commencement of this consent, form and invite representatives from the following groups to form a Community Liaison Group:
 - (a) Te Rūnanga o Te Rarawa;
 - (b) Te Rūnanga A Iwi o Ngāpuhi;
 - (c) Nga Marae O Te Wahapū Nga hapū o Hokianga; and
 - (d) Ōmāpere and Opononi Communities (duly appointed)-;
- 8. The purpose of the Community Liaison Group is to provide a forum to:
 - (e) Share and discuss information on the performance of the wastewater treatment plant and monitoring of the Hokianga Harbour;
 - (f) Discuss and make recommendations on upgrades to the wastewater treatment plant the maintenance programme and opportunities to improve the quality of the wastewater discharge; and
 - (g) Discuss and make recommendations on alternative discharge options; and
 - (h) Address any other matters relating to the wastewater treatment plant as identified by the Community Liaison Group.
- 9. The Consent Holder must:
 - (i) Provide the Community Liaison Group with technical support from an

independent person qualified and specializing in wastewater engineering and land disposal systems (appointed by the Community Liaison Group and approved by the Northland Regional Council's assigned monitoring officer as being independent, suitably qualified and having no conflict of interest);

- (j) Schedule and hold Hold regular meetings (at least annually) for the duration of the Consent, at least annually unless representatives from Te Rūnanga o Te Rarawa, Nga Marae O Te Wahapū or from the Ōmāpere or Opononi communities in the Community Liaison Group request agrees a different less frequent schedule; and
- (k) Prepare and circulate an agenda for each meeting and prepare minutes recording actions. A copy of the minutes must be provided to the members of the group within a reasonable period following a meeting;
- Report to the Northland Regional Council's assigned monitoring officer as to the outcome of each review of the Best Practicable Option (BPO) for the treatment and/or discharge of wastewater; and

Commentary:

The previous Community Liaison Group (CLG) was disbanded by Council in early 2020 and no further meetings or communications have occurred. Proposals to omit the CLG from an earlier resource consent renewal conditions was received with considerable opprobrium at the Hearing; the Commissioners advised that the condition be amended; thence the present offering in Clauses7, 8 & 9.

Following public submissions and presentations at the Rawene Hearing and a public meeting held in Opononi Hall 16 September, the local community and hapu are unified in the belief that operation of the OOWWTP is best served by a CLG that is formed independent of involvement by the far North District Council.

There is no evidence that the Council would/could form the CLG within the three month period when it has failed over the past four years. And the makeup of the CLG, duly appointed from iwi, hapu and community is best determined by iwi, hapu and community of Hokianga and <u>not</u> from a Council prescribed list as in 7(a), (b), (c), and (d)

It is likely that this CLG would choose its' own new title/name.

Core functions of the WWTP would then come under the guidance of a joint 'Working Group' comprising CLG and FNDC.

This newly formed 'Working Group' would operate under Terms of Reference that should be negotiated forthwith/as soon as practicable, depending on the status of the CLG.

It is less desirable for this to happen during the initial three month period of the new resource consent since some/many of the consent conditions (e.g. timelines) are yet to be negotiated and best written into the Terms of Reference. However in the event that the resource consent is to be granted earlier, then an initial Memorandum of Understanding be signed by CLG and FNDC that confirms the intension of establishing a Terms of Reference for the 'Working Group' within the first three months.

This type of agreement is already in place for other wastewater treatment plants in Hokianga; for example, for Kaikohe WWTP, 'Terms of Reference for the Kaikohe Wastewater Treatment Plant Consent Renewal Working Group'

Suggested changes to 7.

The Consent Holder must within three months of the commencement of this consent agree a Memorandum of Understanding that provides for the wishes of the Community Liaison Group in co-joining a 'Working Group' with Far North District Council, thence operating under agreed Terms of Reference. The nature and composition of the CLG is to be self- determined by duly appointed hapu and community members.

Suggested changes to 8.

The purpose of the 'Working Group' is to provide a forum to:

- Share and discuss information on the performance and monitoring of the OOWWTP and within the Hokianga Harbour.
- Discuss and make recommendations on the maintenance programme and opportunities to improve the quality of the wastewater discharges.
- Discuss and make recommendations on alternative treatment and discharge options and timelines for achieving appropriate outcomes, including the disposal of treated wastewater to land.
- Address any other matters relating to the wastewater treatment plant as identified by the CLG.

Suggested changes to 9(b). Note, no changes to 9(a), (c) and (d).

(b) Schedule and hold regular meetings for the duration of the Consent at a time and place that is chosen by the CLG and convenient for a majority of the Working Group.

- 12. The 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 annually during the month of May 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 the consents and which it is appropriate to deal with at a later stage, or
 - (b) To require the adoption of the best practicable option to remove or reduce any adverse effect on the environment; or
 - (c) To reduce the term of the consent to discharge to coastal water in the event the Consent Holder has commissioned a land discharge scheme during the

term of the consent and has not surrendered the consent.

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

Commentary:

The previous resource consent (expired 2019) under the previous Clause 24, better defines the brief for annual reviews, as follows:

- 12. The 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 annually during the month of May for any one of the following purposes:
 - To deal with any adverse effects on the environment that may arise from the exercise of the 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 monitoring of the consent and/or as a result of the NRC monitoring of the state of the environment in the area;
 - To require the adoption of the best practicable option to remove or reduce any adverse effect on the environment;
 - To provide for compliance with rules in any National or regional plan that has been operative since the previous expiry (31 August 2019) or since the commencement of the consent;
 - To deal with any inadequacies or inconsistencies the NRC considers there to be in the conditions of the consent, following the establishment of the activity the subject of the consent;
 - To change existing, or impose new limits on conditions relating to the quality of the discharge and the receiving waters of the Hokianga Harbour;
 - To change the monitoring programme in Schedule 1; and
 - 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)

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

13 The quantity of treated wastewater discharged to the Hokianga Harbour shall not exceed 450 cubic metres per day peak 30-day rolling average dry weather flow (ADWF) of treated wastewater discharged the Hokianga Harbour shall not exceed 420 cubic meters per day.

Commentary

Define what the 'peak 30-day rolling average dry weather flow (ADWF)' means. By what means is the 'dry weather' recorded ? If at NRC rain gauge, then a record of the daily rainfall should be included in the 'flow records'.

A record of the volumes of discharge on <u>both</u> outgoing tides (twice daily) should be recorded. At present FNDC records just the total daily discharge, as well as the inflow into the WWTP.

18 The Consent Holder shall calibrate the tidal clock used to control the time of the discharge to the Hokianga Harbour at least annually to ensure that the programmed high tide discharge time is, as far as practicable, the same as when high tide actually occurs at the site. Written verification from a suitably qualified person that this calibration has been undertaken during the previous 12 month period shall be forwarded to the Northland Regional Council's assigned monitoring officer by 1 May each year.must:

Commentary

There is no good reason why this Clause should be deleted. Re-instate the whole of this Clause 18- (this would entail re-numbering of all of the subsequent Clauses).

10 In the event the BPO is to change to land disposal, advise the Northland Regional Council's assigned monitoring officer whether or not it is committing to the land disposal option and, if so, the anticipated timeframe to decommission existing infrastructure if it is to take place within the term of this consent.

Commentary

Clause 10 is the only place where reference to 'land disposal' is made in the entire application.

The wishes of Hapu and Community is that a land-based solution is mandated and implemented at the earliest opportunity. It would be reasonable to advise the NRC of the timeframe written into the Working Group 'Terms of Reference' and thus the implementation milestones that needed to be accomplished prior to the decommissioning of the existing infrastructure.

18. The Consent Holder must;, within three years of the date of commencement of these consents, upgrade the wastewater treatment plant so that all wastewater receives treatment within a fully commissioned and operating treatment process specifically designed to reduce the concentration of E.coli, total suspended solids and total ammoniacal nitrogen. These upgrade works shall include, but are not limited to, the following:

(a) Implementing chemically assisted solids removal;

(b) Installing UV disinfection treatment; and

(c) Installing an external ammonia removal technology (either in pond or external package plant).;

- (a) within three years of the date of commencement of these consents, implement chemically assisted solids removal and install UV disinfection treatment; and
- (b) provide an annual update to Northland's Regional Council's assigned monitoring officer by 1 May each year regarding the progress of the planned upgrades to the wastewater treatment system.

Commentary

A most obvious outcome from all the submissions and presentations is that land based disposal for wastewater from the OOWWTP is obligatory and is not optional. Right now the Best Practical Option is to have no more treated water discharged to the Hokianga Harbour; instead this discharge should be to land. Sewage treatment at the OOWWTP is subject considerable inefficiencies as a result

of both excessive storm water influx as well as the deleterious affect from minimal dry-weather inflow, especially during periods of drought. Alternative treatment methods (e.g. Electro-coagulation) can overcome these dilution problems and should be investigated in conjunction with both fluid/wastewater disposal to land and solids/septage disposal within worm farms or centrifuged and pelleted for agricultural/horticultural use.

Clause 18 is one of the most important since it defines the work programme for the three year consent term.

The work plan as detailed in the previous resource consent (granted 31 August 2009) was never accomplished since there was <u>no</u> iwi or hapu consultation. (see below Clauses 20 and 21 from the 2009 consent).

- 20. The Consent Holder shall undertake an investigation into alternative land areas that are **considered by local iwi** to be suitable for the discharge of treated wastewater to land from the Opononi and Omapere townships. The Consent Holder shall, within one month of the date of commencement of these consents, meet with the community liaison group required by condition 21 to discuss the scope, process and timetable of the investigation and final written report. This investigation shall be completed with 18 months of the date of commencement of these consents and the results forwarded to representatives of the Community Liaison Group. A written report shall be forwarded to the NRC's monitoring senior programme manager and representatives of the CLG within two years of the commencement of these consents which includes, but is not limited to, the following:
 - A detailed map showing the land areas that are considered **by local iwi** as being suitable for discharge to land of treated wastewater.
 - Details of the Consent Holder's investigation into these identified land areas being utilized as wastewater disposal areas
 - Conclusions on whether the identified land area can technically be utilized as treated

wastewater disposal areas.

21'Until such time as the investigation into alternative land disposal areas has been completed, the Consent Holder shall meet with the community Liaison Group quarterly to discuss progress with the investigation'

I would suggest that the text of both these previous Clauses be included in the present Resource Consent renewal.

Clause 18 now covers the WWTP upgrades (chemical solids removal and UV disinfection). There is however considerable doubt as regards both the suitability and necessity for these upgrades.

During the period of the previous resource consent (up to recent) there was no critical review of the factors which contributed to the excessive non-compliance of the OOWWTP, mostly including E.coli concentrations in the discharge. A plot of the E.coli sampling values (see Fig.5) shows the degree to which the median consent value (3,000CFU/100ml) was exceeded during the period 2016 to 2022.

There needs to be a KPI (Key Performance Indicator) assessment that should include:

- Analysis of influx volumes to WWTP of all components (sewage, grey water, storm-water and rainfall) at both the oxidation ponds and wetlands ; correlation with episodes of non compliance can then be assessed.
- Review the management strategy and effectiveness of treatment within the initial oxidation/settling ponds and the adequacy of both septage removal and wetland maintenance.
- Review of the monitoring strategy (including the statistical analysis) to determine whether one monthly sampling results in an accurate picture of the variability present in the discharge quality.

Once this review has been completed, can suitable upgrades be recommended. Given that the new consent term is three years, the upgrades ('within three years of the date of commencement of these consents') may not be necessary especially given the imperative of developing an alternative treatment process and landbased discharge of wastewater.

For Clause 18, it is only (b) which may be relevant.

19. Prior to the completion of the upgrade required by Condition 17, Once the plant is upgraded, tThe quality of the treated wastewater at the final outlet from the treatment plant prior to the discharge pipeline, must meet the following standards based on the results of samples collected in accordance with Schedule 1 (attached):

Determinant	Median	90 th Percentile	90 th Percentile
	Concentration	Concentration prior to	Concentration after
		completion of upgrade	completion of upgrade
		required at Condition 0	required at Condition 0

5 day Biochemical Oxygen Demand (grams per cubic metre)	20	35	35
Escherichia Coli (per 100 millilitres)	3,000 4,400	5,500 24,000	3,000
Total ammoniacal nitrogen (grams per cubic metres)	30	38 43	43
Total suspended solids (grams per cubic metre)	35	80	35

if any monitoring results show that any of the following determinants in the treated wastewater are exceeded, as measured at Northland Regional Council Sampling Site 101580 (final outlet from the treatment plant prior to the discharge pipeline) the Consent Holder must, within one month of becoming aware of any exceedance, forward to the Northland Regional Council's Compliance Monitoring Manager a written report that provides the following:

- (a) Reasons for the exceedance; and
- (b) What actions are intended to be undertaken by the Consent Holder to correct the exceedances and timeframes for prompt implementation of actions.

The Consent Holder must keep the Northland's Regional Council's assigned monitoring officer informed regarding the progress of the implementation of actions and confirm once actions are completed.

This condition ceases to have effect once the wastewater treatment plant has been upgraded in accordance with Condition 17.

Commentary

Since a large part of Clause 18 has been deleted, the part of Clause 19 that deals with the 'pre and post upgrades' is no longer needed.

The changes to the median and 90th percentile concentrations of E.coli and Total Ammonia are not warranted and the values used in the previous consent should not be altered.

It is worth noting that the E.coli values for the Rawene WWTP at 1,500 CFU/100ml (median) and 5,000 CFU/100ml (90th Pc) are those that I would recommend.

Raising the 90th percentile for E.coli to 24,000 CFU/100ml is totally unacceptable as this figure provides no useful upper limit to the exceedances. From previous E.coli monitoring there were 20 records greater than 24,000 CFU/100ml during the period 2016 to 2022 (see Fig.5). In fact, the upper limit to values was arbitrarily set at 24,196 CFU/100ml. The median value from the same dataset is 3352 CFU/100ml.

This result underlines to need to improve the performance of the OOWWTP; but until we know the reasons for the exceedances there is no rationale for changing the consent values, neither the E.coli nor the 'total Ammoniacal Nitrogen'. 22. The discharge of contaminants to land via seepage from the base of the treatment system shall not result in any adverse effects on the water quality change to the concentration of Escherichia Coli in of the Waiarohia Stream at NRC Sampling Site 100756., as measured immediately downstream of either the treatment ponds or the constructed wetland system. For compliance purposes the downstream water quality concentration of Escherichia Coli at NRC Sampling Site 100756 shall be compared with the background concentration of Escherichia Coli upstream of the constructed wetland system at NRC Sampling Site 101579. The error of the analytical method, or and measuring instrument, at the 95th 90th percentile confidence level shall be taken into account included in determining all parameters.

Commentary:

The NRC Sampling Site 100756 (coordinates 1635728E 6069372N) is <u>not</u> downstream of the Oxidation /Aeration Pond (coordinates 1635620E 6069420N, AUT.002667.02.03) as shown in Fig.3 & 4. A new sampling Site on the Waiarohia Stream is required to fully record the effects on the stream water down-stream of the WWTP, but within the boundary of the WWTP and near the wooden reservoir (See Figs.1 & 4).

A continuous, in-stream monitoring system (e.g. The Mighty Waka- A Real-Time Water Monitoring) is recommended here also that records physical parameters (N, P, conductivity, Ph & T, clarity, BOD) plus the continuous flow rate. The E.coli needs to be measured separately from water samples that should be taken at the same time as sampling from the other OOWWTP NRC Sites, also shown in Fig.4.

This monitoring is particularly important as it informs the review of Key Performance Indicators suggested in Clause 18 (above).

Recommended Clause 22 as follows:

22. The discharge of contaminants to land via seepage from the base of the treatment system (AUT.002667.02.03 at or about location coordinates 1635620E 6069420N and 1635800 6069350N) shall not result in any adverse effects on the water quality or changes to the concentration of Escherichia Coli in the Waiarohia Stream. For compliance purposes the downstream water quality, including concentration of Escherichia Coli shall be compared with the same parameters from upstream of the constructed wetland system at NRC Sampling Site 101579 (coordinates 1635907E 6069331N). A 90th percentile value to be derived from statistical probability analysis of twelve current and previous samples.

The downstream water quality (including E.coli concentration) of the Waiarohia Stream is to be monitored at a location downstream of all wastewater ponds (including the Oxidation and Settling Ponds) in the vicinity of the wooden water reservoir (see Fig.1); this **is a new Site, coordinates 1635565E 6069400N (see Fig.4**) The sampling here to take place at the same time as that from NRC Sites 101579 and 101580. Furthermore this new sampling Site should also be a continuous real-time monitoring site provided by an in-stream monitor (e.g The Mighty Waka by RiverWatchSolutions) that would give measurements of Total Nitrogen, Phosphorus, Ph, temperature, salinity (conductivity), clarity, and Biological Oxygen Demand. These data would be then compared and contrasted with the single monthly water sample values thus allowing a 'reality check' and guide to appropriate statistical treatment of the results from monitoring elsewhere.

- 23. Notwithstanding any other conditions, the discharge of any contaminant (either by itself or in combination with the same, similar or other contaminants or water) shall not result in any of the following effects in the water quality of the Hokianga Harbour, as measured at any point at, or down-current of, where the treated wastewater first contacts the surface of the Hokianga Harbour:
 - (a) The production of conspicuous oil or grease films, scums or foams, floatable or suspended materials;
 - (b) Any conspicuous change in the colour or visual clarity;
 - (c) Any emissions of objectionable odour;
 - (d) Any significant adverse effects on aquatic life; and
 - (e) No more than minor adverse change in either the Escherichia coliform or Entercocci concentration.

For compliance purposes, the down-current water quality shall be compared to the background water quality of the Hokianga Harbour at an up-current site that is not affected by this discharge of the above parameters. The error of the analytical methods and measuring instrument at the 95th 90th percentile confidence level shall be included in determining all parameters.

Commentary:

The 'zone of effective mixing' was discussed at the Hearing. It is not stated in the resource consent application where this zone is located other than 'at any point, or down-current of, where the treated wastewater first contacts the surface of the Hokianga Harbour' (see Fig.2). The question then arises, how and where can the down-current water quality be measured that would enable a comparison with up-current quality to be made ?

There are currently no NRC water quality measuring sites downstream (outgoing tide) of the WWTP pipe discharge point (Coords. 1634768E, 6069462N)

Upstream water quality is measured by NRC weekly during the summer months (December to February) at the end of the Opononi wharf, in order to provide guidance for recreational swimming. Here Enterococci and Faecal Coliform concentrations (CFU/100ml) are determined as well as observations on seaweed and numbers of birds and swimmers.

Within the present application there are no provisions for complying with Clause 21; there are no measurements 'at any point at, or down-current of, where the treated wastewater first contacts the surface of the Hokianga Harbour'.

It is recommended that:

Water samples be collected within a reasonable zone of mixing (c. 50 meters; see Fig.2) downstream of the outfall (coords: 1634768E 6069462N); this would allow comparison with the Enterococci and Faecal Coliform values obtained from sampling at the same time, on an outgoing tide from the NRC sampling site at the end of the Opononi wharf. Times of the tides and periods of discharge from the OOWWTP would also be recorded. This monitoring needs to be extended throughout the whole year and not just the three summer months as occurs at the Opononi wharf.

27 The Consent Holder shall undertake inspections of the bed of the Hokianga Harbour where the pipeline is installed and also the outlet of the pipeline at least on one occassion within the duration of the consentevery two years. The Consent Holder shall give the representatives of the Community Liaison Group as required by Condition 5 at least seven days notice of the proposed inspection of the pipeline. A written report on the results of the inspection shall be forwarded to the Northland Regional Council's assigned monitoring officer and the representatives of the Community Liaison Group and made available on the Consent Holder's website by 1 May every two years from the date of commencement of this consent

Commentary:

There is no current report on the condition of the seabed and pipeline; and doubt as

to whether there exists a marker buoy.

The pipeline inspection should be carried out at the commencement of the term of the

consent with a report provided within three months to the NRC and CLG (Working Group).

The report should include GPS coordinates and photo record of the discharge outlet; the previous report is now 14 years out of date (Reyburn and Bryant (Planners, Surveyors, Project Management) 2009 *GPS Survey - Opononi Wastewater Discharge Pipe*)

The following Figures 1 to 4 are recommended to be included in the renewed resource consent; they serve as maps to illustrate the location of significant Opononi/Omapere WWTP infrastructure and water monitoring sample sites. Fig.1 is copied from the Mott Macdonald 2014 report, while Figs. 2-4 are screen shots from the NRC maps database (Google Earth images) with my additions of sample locations.

Note: a map of sampling sites is included in the original Kohokohu Resource Consent but not for Opononi/Omapere.

Fig. 5 is included for information only.

Opononi Ompapere Wastewater Treatment Plant





AUT.002667.01.04 To discharge treated wastewater into the coastal marine area of the Hokianga Harbour, at or about location co-ordinates 1634768E 6069462N



Fig.2

Opononi Ompapere Wastewater Treatment Plant

AUT.002667.02.03 To discharge treated wastewater to land (seepage) from the base of a wastewater treatment system, at or about location co-ordinates 1635620E 6069420N (Oxidation Pond) and 1635800E 6069350N (Wetland 3)



Fig.4

Fig.3

Existing water sampling Sites 100756: 'downstream'. 1635728E 6069372N 101580: 'NRC sample site'. 1635749E 6069370N 101579: 'upstream'. 1635907E 6069331N

Proposed new Stream sampling site 1635565E 6069400N, downstream of all WWTP facilities



Fig.5 E.coli values: Comparison of Wastewater with Harbour water Sampling period 2016-2022



FNDC Opononi WWTP Median 3352 90 percentile 24196

Note: 20 records of >24196 MPN/100ml

Fig.5 plots of E.coli values from water samples measured at the OOWWTP and at the upper end of the Hokianga Harbour, at the NRC Utakura site over the same period (2016 to 2022).

These plots show very clearly how poorly treated is the wastewater that is to be discharged into the Hokianga Harbour.

The median value for all data at the WWTP is 3352; this is well above the consented median compliance value of 3000.

Compare this with the median of 251 CFU/100ml for the river water at Utakura.