Report No:	RESC12-03-02
File No:	
Date:	1 March 2012
Decision Report	

REPORT SUMMARY

Report to: Engineering Services Committee
Meeting Date: 15 March 2012
Report Author Jeff Cuthbertson, Utilities Asset Manager
Subject: **Takaka Wastewater Treatment Plant Upgrade**

EXECUTIVE SUMMARY

At its meeting of 3 February 2010, the Engineering Services Committee:

> **"endorsed the proposal to form a working party including the Mayor, Engineering Services Chair, Golden Bay Councillors and Golden Bay Community Board members to review issues and options for the proposed Takaka wastewater treatment plant upgrade as outlined in Report RESC11-02-08"**

This report provides a series of recommendations from the working party for the proposed upgrade.

RECOMMENDATION/S

That the report be received.

DRAFT RESOLUTION

THAT the Engineering Services Committee receives the Takaka Wastewater Treatment Plant Upgrade report, RESC12-03-02; and

THAT the Engineering Services Committee agrees that:

1. **The existing site is the most feasible site for a treatment plant.**
2. **The most feasible option for treating wastewater from the Takaka/Pohara/Ligar Bay/Tata wastewater urban drainage areas is to upgrade the existing Takaka Wastewater Treatment Plant.**
3. **Rapid infiltration basins (RIBs) are an acceptable method of discharging treated wastewater.**

REPORT SUMMARY

4. **The recently purchased section of land located between the existing treatment plant and Takaka, is the preferred area for installing the RIBs; and**
5. **The RIBs are based on an open, bunded design.**
6. **The groundwater between the RIBs and the residential area of Takaka in the vicinity of Haldane Road and Feary Crescent will be regularly monitored for faecal coliforms to ensure the groundwater supply to the residential area is not adversely affected.**

THAT the Engineering Services Committee approves the upgrade of the Takaka Wastewater Treatment Plant as recommended by the Takaka Wastewater Treatment Plant Working Group outlined in the report RESC12-03-02.

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1. Introduction

1.1 The Takaka Wastewater Treatment Plant Upgrade Working Group (the Working Group) was formed to discuss and resolve concerns raised by the community over the proposed upgrade to the Takaka Wastewater Treatment Plant.

1.2 Over the course of the last year the Working Group investigated and discussed various topics ranging from alternative treatment options, alternative plant locations and the impact of developing the recently acquired land with rapid infiltration basins (RIBs). The construction and results of a rapid infiltration basin (RIB) trial were used to help the Working Group assess the impact of the RIBs from a community perspective. A community Open Day at the treatment plant also helped in gauging the community's thoughts on the upgrade.

1.3 This report provides a summary of the main discussion topics and a recommendation as to the best means of treating wastewater from Takaka.

2. The Working Group

2.1 The Working Group was formed to address community concerns that were associated with upgrading the treatment plant. A total of six formal meetings were held between February 2011 and February 2012. A seventh informal meeting was held at the treatment plant to inspect the RIB trial while in operation, and a community Open Day was held on 17 February 2012, also at the treatment plant.

2.2 The following goal was established at the first meeting of the Working Group:

"Everyone will act in the best interests of the community to select and construct the most appropriate, cost-effective and affordable option for the treatment of Takaka wastewater."

2.3 The Working Group was made up of the following members (* denotes members with voting rights):

- Mayor Richard Kempthorne*
- Cr Trevor Norriss*
- Cr Martine Bouillir (Working Group Chair)*
- Cr Noel Riley (meetings 1 – 5)*
- Cr Paul Sangster (meeting 6)*
- Mrs Carolyn McLellan (Golden Bay Community Board Member)*
- Ms Karen Brookes (Golden Bay Community Board Member)*
- Mr Mik Symmons (Golden Bay Community Board Member)*
- Mr Leigh Gamby (Golden Bay Community Board Member)*
- Mr Barry Cashman (Takaka Resident)
- Ms Haley Gayle (Takaka Resident)
- Mr Peter Thomson (Engineering Manager)
- Mr Jeff Cuthbertson (Utilities Asset Manager)
- Mr Jonathan Krause (Engineer, MWH)

3. Community Concerns and Consultation

3.1 The primary concerns of the community are:

- Council's purchase of land close to residential properties for the purposes of treatment plant upgrades;
- Potential of contamination of groundwater in Takaka from the disposal of treated effluent through the RIBs;
- Odour generation;
- Visual impacts of the upgraded plant; and
- The potential for increased flooding of private land resulting from the upgrade.

3.2 Community Consultation

During the course of the Working Group meetings the community was kept updated on the progress of the Working Group through

- An article in the Golden Bay Weekly;
- An article in Newsline on 29 July 2011;
- Fresh FM radio;
- An email to the Takaka business community and a letter drop to the landowners in the vicinity of the treatment plant prior to the RIB trial taking place;
- A community Open Day at the treatment plant on 17 February 2012 which was advertised via the Golden Bay Weekly.

3.3 Feedback from the community was also gathered during the Open Day.

4. Working Group Discussion Topics

4.1 The main discussion topics of the Working Group are discussed below.

4.2 Alternative Treatment Options

Several alternative treatment options were compared against the proposed upgrade for the treatment plant, which consists of a new screening facility, re-use of the existing ponds, a new wetland and RIBs. The alternatives included:

- On-site treatment (including composting/waterless toilets, septic tanks);
- Centralised plants (natural/ponds based versus mechanical/in-tank type);
- Alternative treatment units (including biofiltro/worm farm, constructed wetlands, geotube); and
- Alternative disposal (re-use of treated/reclaimed water)

4.3 It was acknowledged that on-site systems are not appropriate as a replacement for upgrading the treatment plant which currently services 1300 connected properties. With these systems it is difficult to control the risk of contamination of the water supplies. Grey water is still generated with composting toilets and a treatment plant in some form is still required.

4.4 The Working Group acknowledged that it made sense to re-use as much of the existing facility as possible, which primarily includes incorporating the two oxidation ponds into the upgraded treatment plant. Additionally, incorporating new wetlands would likely be favoured by the community as this would help establish an environmentally friendly image.

4.5 There will always be some odour that is produced from the plant, including from the existing ponds. However, improvements can be made to minimise the odour from the plant such as adding a carbon filter to contain odour from the screening facility.

4.6 Re-use of reclaimed water as a supplementary means of treated effluent disposal was not seen as a practical option primarily as a result of the high capital investment required for a new piped reticulation system. It will also likely be difficult to control the risk of contamination of the groundwater supply in Takaka.

4.7 Alternative Treatment Plant Locations

Six alternative treatment plant sites were considered. The general area of these sites included:

- West of the Takaka River
- Kotinga

- South-east of Takaka
- Glenview Road area
- Dry River
- Clifton (single new plant or second small plant)

4.8 After some discussion it was agreed that the additional and significant capital costs associated with installing a new plant at each site would not be agreeable to the ratepayers and that alternative locations should not be pursued any further.

4.9 Location of the Rapid Infiltration Basins (RIBs)

The concerns of the community were predominantly based on the extent of the development on the recently acquired land, located between the existing plant and Takaka, which is proposed for the installation of the RIBs. The location of the RIBs and a better understanding of the RIBs were discussed in detail.

4.10 Several alternative locations and layouts for the RIBs were discussed in an effort to shift the RIBs further away from town. However, this option would require the purchase of additional land and shifting the RIBs closer to the Takaka River. Reducing the distance between the RIBs and river was not desirable since this would likely result in a higher impact to the river and the groundwater system.

4.11 Manawhenua ki Mohua confirmed (in an email to Cr Bouillir) that their preference was to keep the RIBs at the proposed site.

4.12 On the basis of these discussions, it was decided that a RIB trial should be conducted to aid in the assessment of their impact.

4.13 The RIB trial

The Working Group's interest in the RIB trial was to:

- assess the visual impact of the RIB bunding from town;
- assess if offensive odours were generated from the RIBs during dosing;
- confirm Council staff's claim that the groundwater from the RIB site flowed toward the Takaka River in a northwest direction and not toward town; and
- ensure that the discharge from the RIBs would not flow directly to the adjacent old river channel or Te Kakau Creek

4.14 The Working Group visited the treatment plant to inspect the trial RIB while it was in operation. Even though the RIBs were dosed with water from the second oxidation pond (in the future it will be further treated through wetlands), no odour could be detected.

4.15 Based on the results presented to the Working Group, it is understood that:

- The direction of groundwater in the vicinity of the proposed RIB site and the existing treatment plant is toward the north-west (toward the Takaka River, not toward Takaka's residential area). There is a low risk of contamination of groundwater in the vicinity of the residential areas.
- Discharge of treated effluent to Te Kakau Creek through short-circuiting is unlikely as a result of the perched nature of Te Kakau Creek. Groundwater and surface water level measurements indicated that the water level in Te Kakau Creek was above the groundwater levels in the surrounding area.
- Continuous dosing of treated wastewater into the RIB resulted in very minor groundwater mounding (reported as up to 25mm at a distance of 35m from the dosing point). These levels of mounding are unlikely to locally change the direction of groundwater flow, and thus, treated effluent discharged through the RIB is unlikely to discharge to the adjacent old river channel.

4.16 It is the Working Groups preference that groundwater is regularly monitored for faecal coliforms between the RIB site and in the vicinity of Haldane Road and Feary Crescent to confirm that the residential groundwater supply is not contaminated by discharging treated effluent through the RIBs.

4.17 Flooding and the RIB Design

4.18 Two options for a RIB design were discussed. These were an open, bunded design similar to the trial RIB, and a closed, covered RIB.

4.19 The open, bunded design is technically a better option and is estimated to be approximately $500,000 less expensive to construct. The disadvantage to this option is that flood modelling, conducted by Aurecon has indicated that the bunding associated with the RIBs will increase flood water levels in certain parts of Takaka by 20-50mm for a 100-year modelled storm event. The Working Group acknowledged that such an increase is likely immeasurable in practical terms.

4.20 An open, non-bunded RIB design is not a feasible option as a result of the risk blocking of the RIB infiltration surface by sediment deposited by flood water during flood events.

4.21 A closed, covered RIB design has the advantages that flood levels in the residential areas in Takaka are not adversely affected (since there isn't any bunding) and that the cover protects the infiltration surface from flood water sediment deposition. The disadvantages are higher capital costs and greater maintenance requirements as a result of the covered aspect of the design.

5. RECOMMENDATION/S

5.1 Based on the discussions and decisions by the Working Group, the following recommendations are proposed for the treatment of wastewater from the Takaka/Pohara/Ligar Bay/Tata wastewater urban discharge areas:

- That improvements to the existing method of wastewater treatment are required (ie, do nothing is not an option).
- The existing site is the most feasible site for a treatment plant. Alternative sites should not be pursued primarily as a result of the additional costs to ratepayers associated with moving the plant.
- The most feasible option for treating Takaka wastewater is to upgrade the existing plant.
- Odour control units should be provided on the intake screen and the septage receiving facility.
- Rapid infiltration basins (RIBs) are an acceptable method of discharging treated wastewater.
- The land located between the existing treatment plant and Takaka, while not ideal from a community perspective due to its close proximity to town, is the preferred area for installing the RIBs. Alternative locations for the RIBs in the vicinity of the plant are less preferable.
- While aeration lagoons are no longer part of the proposed upgrades, the Working Group does not support the installation of these on the land located between the treatment plant and Takaka.
- The groundwater between the RIBs and the residential area in the vicinity of Haldane Road and Feary Crescent should be regularly monitored for faecal coliforms to ensure that the groundwater supply in the residential areas is not adversely affected from the RIBs.
- The RIBs should be based on an open, bunded design

6. DRAFT RESOLUTION

6.1 THAT the Engineering Services Committee receives the Takaka Wastewater Treatment Plant Upgrade report, RESC12-03-02; and

6.2 THAT the Engineering Services Committee agrees that:

6.2.1 The existing site is the most feasible site for a treatment plant.

6.2.2 The most feasible option for treating wastewater from the Takaka/Pohara/Ligar Bay/Tata wastewater urban drainage areas is to upgrade the existing Takaka Wastewater Treatment Plant.

6.2.3 Rapid infiltration basins (RIBs) are an acceptable method of discharging treated wastewater.

6.2.4 The recently purchased section of land, located between the existing treatment plant and Takaka, is the preferred area for installing the RIBs; and

6.2.5 The RIBs are based on an open, bunded design.

6.2.6 The groundwater between the RIBs and the residential area of Takaka in the vicinity of Haldane Road and Feary Crescent will be regularly monitored for faecal coliforms to ensure the groundwater supply to the residential area is not adversely affected.

6.3 THAT the Engineering Services Committee approves the upgrade of the Takaka Wastewater Treatment Plant as recommended by the Takaka Wastewater Treatment Plant Working Group outlined in the report RESC12-03-02.