ENGAGEMENT SUMMARY

Strategic Review of Wastewater Solids Management



Document prepared for Opus International by James Laurence Group www.jameslaurence.com

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1 Introduction

The cities of Kelowna and Vernon are reviewing options for the economical and environmentally responsible long-term management of wastewaster solids. As populations in and around both centres grow, the cities are seeking to identify sustainable ways to manage an increasing supply of wastewater solids. This is an early planning process, and the next steps in the process will be determined by Kelowna and Vernon City Councils following the strategic review.

This report outlines the community and stakeholder engagement program conducted by the cities of Kelowna and Vernon between April 10 and May 19, 2017 and summarizes comments received from the community.

1.1 Background

Currently, the region's treated wastewater solids are mixed with wood chips and composted at the Regional Biosolids Compost Facility to produce a valued organic soil amendment called OgoGrow. Popular with Okanagan gardeners, landscaping companies, and construction contractors, OgoGrow generates important revenue for the cities and helps keep treated wastewater out of local landfills.

Space limitations at the compost facility, the availability of an affordable supply of wood chips, and the region's increased production of wastewater solids have created a need for the cities to research and evaluate a more diversified and sustainable approach, including examining new processing methods, new beneficial use options and potential new markets.

Following a six-month review to identify the most technically, environmentally and economically viable options, technical consultants, Opus International, identified three processing methods for further consideration. These methods are expected to improve performance at the Regional Biosolids Composting Facility, decrease the number of trucks on the road, reduce production volume, and shorten compost time.



Products processed using these methods could be sold as a nutrient-rich composting product like OgoGrow or as a product that could potentially be used as a soil amendment for forestry, agriculture, landfill closure or mine reclamation.

| 1.2 Goa | als and Objectives |
|--------------|--|
| The goal | of the community and stakeholder engagement program is: |
| | To provide councils with community and stakeholder feedback to inform their decision-making related to next steps in strategic wastewater solids management planning |
| This goal is | s supported by the following objectives: |
| | To inform the community and stakeholders that: |
| | There is a strategic planning process underway |
| _ | • A decision about next steps in the planning process will be made by councils |
| | To increase community and stakeholder recognition of the complexity of managing wastewater solids, particularly relative to population growth, economic and environmental responsibility and sustainability, and create awareness of the alternative pre-treatment and beneficial end use methods that are under consideration |
| | To engage the community and stakeholders in reviewing and commenting on key planning considerations related to economic, environmental and technical considerations |

2 Community Engagement Program

2.1 Approach

Community engagement is an important part of the strategic planning process. The community engagement program conducted by the cities of Kelowna and Vernon followed the approach outlined below:

| 1 | Inform community and stakeholder groups that a planning process is underway and build awareness of the complexity of waste solid management planning and decision-making |
|---|--|
| 2 | Ask the community and stakeholders to share their interests and values relative to key planning considerations, including: A. The importance of having an economically and environmentally responsible long-term management plan for wastewater solids B. The concept of economically responsible and what that means in terms of considering marketable beneficial use options C. Key factors that will inform decision-making, including: Quality of life considerations (odour, traffic, dust, convenience) Environmental sustainability (air, water, soil) Financial sustainability Operational viability (will it accommodate future population growth?) |
| 3 | Employ a mix of targeted communications and engagement techniques, including: A. Web content, presentations, a fact sheet, and a news release* to inform people about the management planning process and notify them of engagement opportunities B. A survey (online and paper-based) and stakeholder meetings to gather community and stakeholder input C. A direct phone and email line to answer questions from the public |
| 4 | Track community and stakeholder input and provide a report to Kelowna and Vernon City Councils |
| | *The project fact sheet and news release can be found in Appendix A and B |

2.2 Feedback

Community feedback was gathered through:

- An online and paper-based survey
- Meetings with key stakeholders
- A community meeting with residents living near the existing compost facility

To ensure widespread awareness of the engagement opportunities, the cities:

- Distributed a news release to local media
- Posted content describing the engagement process on the Vernon and Kelowna websites
- Promoted the engagement program and online survey through social media posts and via the City of Kelowna's new engagement site (getinvolved.kelowna.ca)
- Provided a link to the online survey on city websites and provided a paper-based survey at city facilities
- Distributed fact sheets describing the engagement process at all engagement events
- Sent direct email and mail invitations to residents living near the existing compost facility to participate in the community meeting at Predator Ridge

2.2.1 The Wastewater Solids Management Survey

The Wastewater Solids Management Survey was posted from April 10 to May 19, 2017 to the City of Kelowna's Get Involved web page (getinvolved.ca) and a link was provided on the City of Vernon website (vernon.ca). During that period, a paper-based version of the survey was also available at city facilities.

Summary of Respondents



Summary of Respondents

98% of respondents indicated a long-term plan to manage the growing volume of wastewater solids is very or somewhat important. 2% indicated this is not important.

84% said they are aware or very aware that treated wastewater solids are currently used for beneficial purposes, such as a fertilizer or soil amendment product.

75% indicated revenue generation from the sale of soil amendment products made from wastewater solids is very or somewhat important. 25% said this is not very or not at all important.

54% indicated they wish to see the cities' increase their revenue from wastewater solids by creating and selling more soil amendment products. 18% said they don't want the cities to increase their revenue. The remainder were unsure or did not respond.

89% indicated it is very or somewhat important to continue to divert wastewater solids from local landfills. 11% indicated it is not very or not at all important.

90% said they see high or some value in continuing to produce and sell compost for gardeners, landscapers and construction contractors through OgoGrow and similar products. 10% said they see low or no value.

7

Respondents were asked to indicate the value they placed on the following potential uses for treated wastewater solids:

| Fertilize and grow trees for | Fertilize and develop existing |
|---|---|
| compost operations | forest areas to produce wood |
| 56% - high value | for local economy |
| 29% - some value 9% - low value 6% - no value | 55% - high value 30% - some value 9% - low value 6% - no value |

Reclaim mine sites

58% - high value 31% - some value 7% - low value 5% - no value

The survey included two open-ended questions:

1

What would you like the cities to take into consideration when determining next steps in wastewater solids management?

This question was addressed by 94 survey respondents, many of whom provided multiple comments. The following list captures the themes mentioned by respondents:

- Look for ways to increase demand for OgoGrow; this could include reducing the cost to consumers, extending the marketing area, making the produce more accessible by encouraging neighbourhoods to sign-up for a truckload delivery, or supplying it free to seniors, community gardens and low income persons (25 mentions)
- Consider potential impacts to the environment, including drainage or seepage into lakes and impacts on soil quality (13 mentions)
- Ensure the product produced from wastewater solids is thoroughly tested and safe; this includes free from pharmaceutical and factory waste and takes into consideration how it could affect food grown with it and water sources. (10 mentions)
- Consider the highest and most beneficial use for wastewater solids; respondents suggested harvesting wastewater products into biofuel, harnessing the energy to self-power the treatment plant, using it to regenerate forests rather than to support forestry, using it to create environmental benefits, and exploring best practices from around the world (9 mentions)



What we heard:

"OgoGrow is a wonderful product to be used in landscaping. However, it can be rather expensive. Lower the price and sell more. I would double or triple my use if it was more affordable."

- Respondent

- Consider the quality of life for those living near the facilities, including impacts from odour (8 mentions); two respondents indicated the Regional Biosolids Compost Facility should be moved
- Consider potential impacts on public health, including the effects of drugs on the water cycle (8 mentions)

Other comments include consider the sustainability of the solution, the potential for revenue generation, the long-term vision for the cities, and other options such as incineration, biochar and turning biosolids directly into refined products, or providing for at-home compost toilets.

2

What do the cities need to consider when evaluating potentials uses for wastewater solids?

This question was addressed by 96 survey respondents, many of whom provided multiple comments. The following list captures the themes mentioned by respondents:

- Conduct a cost-benefit analysis and identify potential for revenue generation, including looking at return on investment for different options (25 mentions)
- Consider potential impacts on the environment including air and water quality (22 mentions)
- Consider potential impacts on public health (14 mentions)
- Identify ways to increase demand for OgoGrow; considerations include reducing cost for users, increasing public awareness of the benefits, and identifying improved distribution (12 mentions)
- Ensure products produced are throughly tested and safe and free of contaminants (11 mentions)
- Consider quality of life for residents living near facilities, including impacts from odour and potential groundwater and lake contamination (10 mentions)

A few respondents said the cities should consider wastewater solids as a valuable resource that can be used to generate energy and reduce operational costs, others stressed the importance of identifying a sustainable, long-term approach and mentioned the importance of keeping wastewater solids out of the landfill.



Wet Kelowna

WESTBANK

ast Kelowna

Dav

lse Area

Irea

97C

Peachland

What we heard:

"It should not be located close to an area where smell will disturb residents, but shouldn't be too far away to discourage residents from purchasing the final product." - Respondent

Graystokes

Protected Area

2.2.3 Meetings with Stakeholders

A PowerPoint presentation was made at each meeting, followed by an opportunity for participants to ask questions directly to City staff and technical consultants.

The project team met with the following stakeholder groups throughout April and May:

- Kelowna/Vernon Joint Biosolids Advisory Committee (April 4, 2017)
- Vernon City Council (April 10, 2017)
- Kelowna City Council (April 10, 2017)
- Okanagan Water Stewardship Council (April 13, 2017)
- Regional District of North Okanagan staff (May 3, 2017)
- Regional District of North Okanagan Electoral Area Advisory Committee (May 4, 2017)
- Interior Health Authority (May 18, 2017)

The themes that emerged from these meetings include:

- Ensure all decisions consider odour and the potential effects on soil, groundwater, drinking water, and public health
- Monitor before, after, and during operations
- Help increase public understanding of wastewater solid's value as a resource rich in essential plant nutrients, and OgoGrow's value as a soil amendment
- Continue public education on how other communities manage wastewater solids as well as the regulations that promote public safety, health, community values, and the environment
- Continue to engage with key stakeholders as this process continues
- Continue to address interests of residents living near the existing facility

Staff and technical consultants provided information through a PowerPoint

presentation, project fact sheet, and a series of information panels.

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Evaluating options for the economic and environmentally responsible management of wastewater solids

Identifying sustainable options To meet the demands of a growing population, the cities of Kelowna and Vernon are evaluating options for the economically, socially and environmentally responsible long-term management of wastewater solids.

Rich in essential plant nutrients Currently, wastewater solids are mixed with wood chips an composted at the Regional Biosolids Composting Facility to produce a valued organic soil amendment called OgoGrow.

produce a valued organic soil amendment called OgoGrow. A valuable resource The sale of OgoGrow to gardeers, landscaping Companies and construction contractors generates important revenue for the Cities and helps keep treated wastewater solids out of the landflis.

A more diversified and sustainable approach Due to space limitations at the compost facility, a shortage of wood chips, and the region's inCreased production of wastewater solids, the cities are looking for a more diversifi and sustainable approach.

Maximizing value and minimizing community impacts

The cities are committed to working together with the community to maximize the value of the nutrient-rich resource and minimize potential impacts to residents and the environment.

Strategic Review of Wastewater Solids Management



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Reducing truck traffic and odours

Setures the remeater units import summer units moducts processed using these methods Could be sold as nutrient-rich compositing product like OgoGrow or as a product that Could potentially be used as a soil amendment of forestry, agriculture, landfill closure or mine reclamation

Strategic Review of Wastewater Solids Management

2.2.4 Community Meeting

11

Recognizing residents living near the existing Regional Biosolids Composting Facility on Commonage Road in Vernon have a unique interest in the strategic review process, the cities invited residents living near the existing facility to a community meeting May 17, 2017 in the Peregrine Room at Predator Ridge Golf Course.

The meeting was attended by 14 members of the community and provided an opportunity for residents to get valuable information, provide feedback, and ask questions directly to the city staff and technical consultants.

Themes that emerged from these conversations include:

- Concern about odour and its impact on quality of life, property value, tourism and lake users •
- Recognition that the odour has improved in the last few years but remains a problem in specific areas •
- Recognition that wastewater solids need to be managed in a beneficial way •
- Desire for the facility to be relocated, closed, or not expanded at its current location
- Concern for potential effects on groundwater, drinking water, and Kalamalka Lake and a request for • independent and transparent water monitoring
- Support for improved visual screening as a low-cost, high-value improvement •
- Concern about the potential for pharmaceuticals, metals, and wood fibres in the OgoGrow product •
- Concern that the City of Vernon is accepting the City of Kelowna's wastewater solids •
- Request for more information about why incineration is not being considered .
- Desire for engagement with the broader community and better communication from the cities to the public

We're listening and taking action

Quality of life is a key consideration in our evaluation of potential options. Our strategic review is grounded in the following key principles:

No increase in truck traffic

commitment to

You have told us about your priorities related to the Regional Biosolids Composting Facility. They include:

- Odour reduction
- · Protection of groundwater, ponds and creeks
- Truck traffic
- Safe transport Buffering private property from the facility

In response to your priorities and our commitment to environmental and social responsibility, we have:

- Installed specialized equipment that helps manage odours by predicting odour levels as they relate to changes in the weather
- Implemented a Comprehensive odour management program
- Committed to ensure that any drainage received from the Regional Biosolids Composting Facility is contained and managed in such a manner as to m or exceed all environmental standards
- Invested in trailers with sealed rear gates and closed covers to reduce odours during transport (biosolids are not classified as a hazardous material for transport)

We are committed to continuous improvement and to the economically, socially and environmentally responsible management of wastewater solids.





Your opinion matters!

Your comments will be included in a summary report for Kelowna and Vernon City Councils. Councils will use your input, as well as technical and market reviews, to determine next steps in the planning process. Please make sure you Complete a short questionnaire before you leave.

You can also complete the full survey on the City of Kelowna and City of Vernon websites:

getinvolved.kelowna.ca vernon.ca

Thank you for coming today!

If you have any further Questions or Comments, please contact:

Andrew Reeder, Utility Planning Manager City of Kelowna areeder@kelowna.ca 250-469-8938

Strategic Review of Wastewater Solids Management



3 Evaluation

Participants who attended the stakeholder meetings indicated they found the presentations informative and valued the opportunity to be engaged in the strategic review process. Participants to the community meeting said they appreciated the format and having access to city staff and technical consultants. A few participants asked that the outreach be expanded to include Kalamalka Lake users and other area residents. Some said they would like to see more information about the processing methods and uses under consideration.

Survey promotion was effective, encouraging 126 survey responses. Social media posts promoting this engagement reached 819 people on Facebook and made 689 Twitter impressions. There were 393 page views on the wastewater management project page at getinvolved.kelowna.ca.

4 Next Steps

Managing wastewater solids in a way that is socially, economically environmentally responsible is an important issue for the cities and its residents. Throughout the engagement process, participants encouraged the cities to continue the dialogue and help build widespread understanding of the challenges and opportunities of wastewater solids management.

This summary report, along with the results of the technical and market review prepared by Opus International, will be presented to Council to inform their decision-making about the next steps in the planning process.

5 Appendices

- 5.1 Appendix A: Project Fact Sheet
- 5.2 Appendix B: News Release
- 5.3 Appendix C: Community Meeting Panels
- 5.4 Appendix D: Stakeholder Meeting Presentation
- 5.5 Appendix E: Community Meeting Invitation
- 5.6 Appendix F: The Wastewater Solids Management Survey

5.1 Appendix A: Project Fact Sheet



Strategic Review of Wastewater Solids Management

Evaluating options for the economic and environmentally responsible management of wastewater solids

Identifying sustainable ways to manage wastewater solids

To meet the demands of a growing population, the cities of Kelowna and Vernon are evaluating options for the economically, socially and environmentally responsible long-term management of wastewater solids.

The cities are committed to achieving a sustainable balance that maximizes the economic value of a resource that is rich in essential plant nutrients and minimizes potential impacts to communities and the environment.

Wastewater solids are a valuable resource

In 2016, the region's three wastewater treatment plants processed about 18 billion litres of wastewater from homes and businesses in Vernon, Kelowna and the surrounding communities. During wastewater treatment, solids are settled out of the wastewater stream. Treated wastewater solids, also called biosolids, are recognized as a valuable source of nutrient-rich organic matter and used across B.C. as a soil amendment for land reclamation, parks, forests, tree farms and residential and business landscaping.

Currently, the region's treated wastewater solids are mixed with wood chips and composted at the Regional Biosolids Compost Facility to produce a valued organic soil amendment called OgoGrow. Popular with Okanagan gardeners, landscaping companies and construction contractors, OgoGrow generates important revenue for the cities and helps keep treated wastewater solids out of local landfills.



In 2015, residents and businesses in Kelowna and Vernon produced more than 28,000 wet tonnes of wastewater solids. By 2035, that number is expected to increase to 37,000.

K vernon





Diversifying options

Space limitations at the compost facility, the availability of an affordable supply of wood chips, and the region's increased production of wastewater solids have created a need for the cities to research and evaluate a more diversified and sustainable approach, including examining new processing methods, new beneficial use options and potential new markets.

Strategic Review of Wastewater Solids Management

Evaluating technical, economic and environmental viability

Following a six-month review to identify the most technically, environmentally and economically viable options, three processing methods and two beneficial use options have been identified for further consideration.

The three processing methods under consideration are digestion, thermal drying and chemical treatment.



The two beneficial use options under consideration are to continue to produce and sell nutrient-rich compost through products like OgoGrow, and to produce a product that could potentially be used as a soil amendment for forestry, agriculture, landfill closure or mine reclamation.

Further study is required into the market potential and technical considerations for soil amendment products produced through these methods.

Other options evaluated were not shown to be technically, environmentally or economically viable.

Committed to protecting human health and the environment

Each option must be considered within the current and future regulatory framework. The Organic Matter Recycling Regulation of B.C. (OMRR) governs the production, quality and use of certain types of organic matter and provides guidance for local governments on how to use organic material while protecting human health and the environment. To help align management practices with the interests of communities and First Nations and ensure best environmental practices, the Province of B.C. is completing a scientific and technical review and is taking steps to amend the Organic Matter Recycling Regulation.

The B.C. Organic Matter Recycling Regulation can be found at www2.gov.bc.ca/gov/content/environment/waste-management/ recycling/organics/regulations-guidelines

Key factors that will inform decision-making

The cities of Kelowna and Vernon are committed to wastewater solids planning that balances the beneficial use of the nutrient-rich organic material with continued environmental and public health safeguards.

Key factors that will inform the evaluation process include:

- Quality of life considerations such as odour, traffic, dust and convenience
- Environmental sustainability
- Financial sustainability
- Operational and technical viability

We want to hear from you

Community engagement is an important part of the planning process. Check out the City of Kelowna and the City of Vernon websites to learn more and complete the Wastewater Solids Management Survey to add your voice to the evaluation process. We will be meeting with community groups and combining all the input we receive into a summary report for Kelowna and Vernon City Councils. The Councils will use your comments, as well as the technical and market review, to determine the next steps in the planning process.



5.2 Appendix B: News Release





April 10, 2017

For Immediate Release

Cities look for new ways to manage wastewater solids

As the population in the region increases, the cities of Kelowna and Vernon are working together to identify sustainable ways to manage the region's growing supply of treated wastewater solids – and they want to hear from you.

"We are committed to finding a socially, economically and environmentally responsible long-term solution," said City of Kelowna Utilities Planning Manager Andrew Reeder. "We are looking for a sustainable balance that maximizes the value of a nutrient-rich resource and minimizes potential impacts to communities and the environment."

Currently, the region's 28,000 wet tonnes of treated wastewater solids are mixed with wood chips and composted at the Regional <u>Biosolids</u> Compost Facility to produce an organic soil amendment called <u>QgoGrow</u>. The product, which is purchased by Okanagan gardeners, landscaping companies and construction contractors, generates important revenue for the cities and helps keep treated solid waste out of local landfills.

Space limitations at the facility, wood chip supply challenges and the region's increased production of wastewater solids have created a need for the cities to consider new processing methods, new beneficial end-use options and potential new markets.

The cities are looking for community input to the wastewater solids management planning process through stakeholder meetings and a survey that can be completed on the City of Kelowna and the City of Vernon websites and at the region's three wastewater treatment facilities.

"We want to hear the interests and values of the community," said City of Vernon Communications Officer Tanya Laing Gahr, "How we manage wastewater solids is an important part of sustainability planning for the region."

You can learn more about the options that are being considered and complete the Wastewater Solids Management Survey by visiting the cities' websites at:

www.kelowna.ca www.vernon.ca

5.3 Appendix C: Community Meeting Panels



Strategic Review of Wastewater Solids Management

Evaluating options for the economic and environmentally responsible management of wastewater solids

Welcome!

The cities of Kelowna and Vernon are looking for new ways to manage wastewater solids

and we want to hear from you!

Please take a look around, ask questions of the team and let us know what you think.

There will be a short presentation at 4:15 and again at 5:15.



Evaluating options for the economic and environmentally responsible management of wastewater solids

Identifying sustainable options

To meet the demands of a growing population, the cities of Kelowna and Vernon are evaluating options for the economically, socially and environmentally responsible long-term management of wastewater solids.

Rich in essential plant nutrients

Currently, wastewater solids are mixed with wood Chips and composted at the Regional Biosolids Composting Facility to produce a valued organic soil amendment called OgoGrow.

A valuable resource

The sale of OgoGrow to gardeners, landsCaping Companies and Construction Contractors generates important revenue for the Cities and helps keep treated wastewater solids out of the landfills.

A more diversified and sustainable approach

Due to space limitations at the Compost facility, a shortage of wood chips, and the region's increased production of wastewater solids, the cities are looking for a more diversified and sustainable approach.

Maximizing value and minimizing community impacts

The cities are committed to working together with the community to maximize the value of the nutrient-rich resource and minimize potential impacts to residents and the environment.

Strategic Review of Wastewater Solids Management



In 2015, residents and businesses in Kelowna and Vernon produced more than 28,000 wet tonnes of wastewater solids. By 2035, that number is expected to increase to 37,000.









Reducing truck traffic and odours

The cities are evaluating three new processing methods that would improve performance at the Regional Biosolids Composting Facility, decrease the number of trucks on the road, reduce production volume and shorten Compost time.



We're listening and taking action

You have told us about your priorities related to the Regional Biosolids Composting Facility. They include:

- Odour reduction
- Protection of groundwater, ponds and creeks
- Truck traffic
- Safe transport
- Buffering private property from the facility

In response to your priorities and our commitment to environmental and social responsibility, we have:

- Installed specialized equipment that helps manage odours by predicting odour levels as they relate to changes in the weather
- Implemented a comprehensive odour management program
- Committed to ensure that any drainage received from the Regional Biosolids Composting Facility is contained and managed in such a manner as to meet or exceed all environmental standards
- Invested in trailers with sealed rear gates and closed covers to reduce odours during transport (biosolids are not classified as a hazardous material for transport)

We are committed to continuous improvement and to the economically, socially and environmentally responsible management of wastewater solids.

Quality of life is a key consideration in our evaluation of potential options. Our strategic review is grounded in the following key principles:

- No increase in odour
- No increase in truck traffic
- Continued commitment to safeguard the environment and public health



Strategic Review of Wastewater Solids Management







Your opinion matters!

Your comments will be included in a summary report for Kelowna and Vernon City Councils. Councils will use your input, as well as technical and market reviews, to determine next steps in the planning process.



Please make sure you Complete a short questionnaire before you leave.



You Can also Complete the full survey on the City of Kelowna and City of Vernon websites:

getinvolved.kelowna.ca vernon.ca

Thank you for coming today!

If you have any further Questions or Comments, please Contact:



Andrew Reeder, Utility Planning Manager City of Kelowna areeder@kelowna.Ca 250-469-8938

Strategic Review of Wastewater Solids Management





5.4 Appendix D: Stakeholder Meeting Presentation









pusinternational.c

Forestry Biomass Woodlot Biosolids forest fertilization (above). Significant increase in tree diameter can be seen in the tree rings after biosolids fertilization (left). Biosolids fertilize woody biomass plantations on a short rotation to provide carbon feedstock for composting opusinternational.com nal.com SYLVIS Reclamation Biomass Woodlot



Reclamation



Aggregate pit reclamation near 97C Highway, BC. Biosolids add organic matter and nutrients to initiate soil formation. Before biosolids applications photo (left) to the photo taken following biosolids application (right)

SYLVIS



Each coppice results in additional woody biomass (left), tree growth starts from rootless cuttings planted in rows (right) ational.com SYLVIS





5.5 Appendix E: Community Meeting Invitation





Please drop by on Wednesday May 17th to provide input to the region's wastewater solids planning

Dear [Insert name],

To meet the demands of the region's growing population, the cities of Kelowna and Vernon are evaluating option for the economically, socially and environmentally responsible long-term management of wastewater solids.

Community engagement is an important part of the planning process and the cities would like to make sure you, a resident living near the Regional <u>Biosolids</u> Compost Facility, have the opportunity to share your interests and values with the planning team.

Currently, treated wastewater solids are mixed with wood chips and composted at the Regional <u>Biosolids</u> Compo-Facility to create an organic soil amendment called <u>OgoGrow</u>, Space limitations at the facility, the availability of a affordable supply of wood chips and the region's increased production of wastewater solids have created a need for the cities to research and evaluate a more diversified and sustainable approach to managing wastewater solid

The cities are committed to achieving a sustainable balance that maximizes the economic value of a resource that is rich in essential plant nutrients and minimizes potential impacts to communities and the environment.

Please drop by the Peregrine Room at the Predator Ridge Golf Resort anytime from 4:00 to 6:00 p.m. on Wednesday May 17, 2017 to provide your input to the planning and options evaluation process. Staff from the City of Kelowna and the City of Vernon will be there, along with representatives from Opus International, the engineering firm leading the strategic review.

| Date | | Location | Time |
|--------|-------------------|--|--|
| Wednes | day, May 17, 2017 | Peregrine Room, Predator Ridge Golf Resort | Drop by any time from 4:00 to 6:00 p.m. |
| | | 301 Village Centre Place | |
| | | Vernon, BC | A short presentation will be offered at 4:15 |
| | | | p.m. and repeated at 5:15 p.m. |
| | | | |

Light refreshments will be served. If you are planning to attend, please RSVP to areeder@kelowna.ca before Monday, May, 15.

This meeting is for residents living near the Regional <u>Biosolids</u> Compost Facility on Commonage Road and will foci on options specific to the compost facility operations as well as regional wastewater solids management.

You can also complete the Wastewater Solids Management Survey at Vernon.ca or Getinvolved.kelowna.ca.

I look forward to seeing you at the meeting.

Sincerely,

Andrew Reeder Utility Planning Manager, City of Kelowna Email: <u>areeder@kelowna.ca</u> Phone: 250-469-8876

Attached: Strategic Review of Wastewater Solids Management - Fact Sheet

5.6 Appendix F: The Wastewater Solids Management Survey

Question 1: To meet the demands of a growing population, the cities of Kelowna and Vernon are evaluating options for the economically, socially and environmentally responsible long-term management of wastewater solids. Space limitations at the current compost facility, the availability of an affordable supply of wood chips, and the region's increased production of wastewater solids have created a need for the cities to research and evaluate a more diversified and sustainable approach, including examining new processing methods, new beneficial use options and potential new markets.

How important do you think it is for the cities of Kelowna and Vernon to have a long-term plan in place to manage the growing volume of wastewater solids?

| Response | Chart | Percentage | Count |
|----------------------|-------|-----------------|-------|
| Not at all important | | 0.8% | 1 |
| Not very important | | 1.6% | 2 |
| Somewhat important | | 11.6% | 15 |
| Very important | | 86.0% | 111 |
| | | Total Responses | 129 |

Question 2: The cities of Kelowna and Vernon currently compost wastewater solids at the Regional Biosolids Compost Facility and sell it to gardeners, landscapers and construction companies as a nutrient-rich soil amendment product called OgoGrow. This generates up to \$700,000 in direct revenue to the cities each year. Expanding the market by creating and selling other soil amendment products could potentially increase revenue to the cities. This revenue would be used to help offset the cost of managing wastewater solids.

A) How aware are you that a nutrient value of treated wastewater solids is currently captured and used for a beneficial purpose, such as a fertilizer or soil amendment product?

| Response | Chart | Percentage | Count |
|------------------|-------|-----------------|-------|
| Not at all aware | | 6.2% | 8 |
| Not very aware | | 10.1% | 13 |
| Somewhat aware | | 24.8% | 32 |
| Very aware | | 58.9% | 76 |
| | | Total Responses | 129 |

B) How important do you think it is for the cities of Kelowna and Vernon to generate revenue from the sale of soil amendment products made from wastewater solids?

| Response | Chart | Percentage | Count |
|----------------------|-------|-----------------|-------|
| Not at all important | | 7.0% | 9 |
| Not very important | | 17.8% | 23 |
| Somewhat important | | 41.9% | 54 |
| Very important | | 33.3% | 43 |
| | | Total Responses | 129 |

C) Would you like to see the cities increase their revenue and offset costs by creating and selling more soil amendment products?

| Response | Chart | Percentage | Count |
|----------------|-------|-----------------|-------|
| Yes | | 53.5% | 69 |
| No | | 17.8% | 23 |
| Not sure | | 17.8% | 23 |
| Please explain | | 10.9% | 14 |
| | | Total Responses | 129 |

Question 3: Currently all treated wastewater solids from Kelowna and Vernon are composted and sold to gardeners, landscapers and construction companies as a nutrient-rich soil amendment. This keeps it out of the landfill and reduces greenhouse gas production.

How important is it to you to continue to divert wastewater solids from local landfills?

| Response | Chart | Percentage | Count |
|----------------------|-------|-----------------|-------|
| Not at all important | | 4.7% | 6 |
| Not very important | | 6.2% | 8 |
| Somewhat important | | 14.1% | 18 |
| Very important | | 75.0% | 96 |
| | | Total Responses | 128 |

Question 4: The two beneficial use options under consideration are: to continue to produce and sell nutrient-rich compost through products like OgoGrow; and to produce a new product that could potentially be used as a soil amendment for forestry, agriculture, landfill closure or mine reclamation. Please indicate the value you place on the following potential uses for treated wastewater solids:

Continue to produce and sell compost for gardeners, landscapers and construction contractors through OgoGrow and similar products

| Response | Chart | Percentage | Count |
|------------|-------|-----------------|-------|
| No value | | 4.7% | 6 |
| Low value | | 5.5% | 7 |
| Some value | | 32.3% | 41 |
| High value | | 57.5% | 73 |
| | | Total Responses | 127 |

B) Use treated wastewater solids to fertilize and grow trees on tree plantations so you can harvest the wood to support the existing compost operation

| Response | Chart | Percentage | Count |
|------------|-------|-----------------|-------|
| No value | | 5.6% | 7 |
| Low value | | 8.7% | 11 |
| Some value | | 29.4% | 37 |
| High value | | 56.3% | 71 |
| | | Total Responses | 126 |

C) Use treated wastewater solids to fertilize and develop existing forest areas to produce wood for the local economy

| Response | Chart | Percentage | Count |
|------------|-------|-----------------|-------|
| No value | | 6.3% | 8 |
| Low value | | 8.7% | 11 |
| Some value | | 29.9% | 38 |
| High value | | 55.1% | 70 |
| | | Total Responses | 127 |

D) Use treated wastewater solids to reclaim mine sites where soils have been depleted of organic matter

| Response | Chart | Percentage | Count |
|------------|-------|-----------------|-------|
| No value | | 4.7% | 6 |
| Low value | | 7.1% | 9 |
| Some value | | 30.7% | 39 |
| High value | | 57.5% | 73 |
| | | Total Responses | 127 |

Question 5: The 94 response(s) to this question can be found in the appendix.

Question 6: The 96 response(s) to this question can be found in the appendix.

Question 7: What is your postal code? Not included

Question 8: How long have you lived in the Okanagan? (number of years) Not included

Question 9: Are you connected to the sanitary sewer system in your area?

| Response | Chart | Percentage | Count |
|----------|-------|-----------------|-------|
| Yes | | 73.0% | 92 |
| No | | 27.0% | 34 |
| | | Total Responses | 126 |

Appendix

Question 5: The cities of Kelowna and Vernon are committed to wastewater solids planning that balances the beneficial use of the nutrient-rich organic material with continued environmental, public health and quality of life considerations.

What would you like the cities to take into consideration when determining next steps in wastewater solids management?

| | Response |
|-----|--|
| 1. | Get rid of all the septic systems that are leaching into the water supply. Forgot the OGOGROW get rid of septic! |
| 2. | The location of the compost facility should not continue in the current location, Smell, groundwater contamination are issues with the current location. |
| 3. | Ongoing research in the implications to the food and water cycle with the affect of prescription drugs and hormone replacements. |
| 4. | That there are far better uses for this material than mines and forestry. This does not represent the highest and best use of this resource. For example, what about the energy value in these materials that could be harnessed to help self power the treatment plant? |
| 5. | This questionnaire is flawed as it does not even talk about some of the most beneficial solutions available, such as reducing the volume of material at the source and/or the potential to create additional energy to help power the plant and save \$\$\$ |
| 6. | That it stinks and people have to live by this new proposed location and it needs to end |
| 7. | Public Health. Keep the product as organic as possible by limiting chemical composting |
| 8. | Consider the neighboring communities like West Kelowna so the solution can be used by the entire region. |
| 9. | Trio Renewable Gas fpsconsulting@verizon.net |
| 10. | not sure |
| 11. | Economic benefits re maximize volume of product usage and revenue. |
| 12. | lower cost per yard to encourage residential use |
| 13. | burn it |
| 14. | You need to lower the price to get rid of your excess!! Spring sale, half price and it will go !! |
| 15. | Accessibility of product for those without trucks could be improved. <u>Perhaps_neighbourhood</u> sign ups with delivery to the property by one large truck. Also, areas of the city that need water/soil improvement could have free access like the project a few years ago in Crawford. |
| 16. | The expense and revenue involved as well any green factor. |
| 17. | City dump already produces biogas, how difficult would it be to harvest wastewater products into biofuel? Plants (mechanical not organic) that will produce electricity and or methane for natural gas |
| 18. | If you are really committed to the environment, then use it to fertilise trees, not for logging, just to regenerate forests. That determines quality of life far more than lining a few people's pockets. |
| 19. | The cities should institute a geared system to reduce the amount of wastes that are produced. A couple could be allowed a pound per day at a monthly rate and the amounts above the one pound up to two pounds would cost 50% more and amounts over three pounds would be at a triple rate. Maybe the revenue from the excess amounts could be given to Fortis. |
| 20. | Costs & Environment |
| 21. | Ogogrow should NOT be sold to gardeners. Vegetables grown in Ogogrow are tainted with drug and chemical residues (both found in Opogrow) and are unfit for human consumption. |

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| 22. | recover the costs and at no increase to the taxpayer |
|-----|--|
| 23. | Ogogrow is a wonderful product to be used in landscaping. However, it can be rather expensive. Lower the price and sell more! I would double or triple my use if it was more affordable. |
| 24. | Start letting us people use Composting toilet so we can make our own compost |
| 25. | Possibly sell to public? |
| 26. | Do not waste the ogo-grow. |
| 27. | reduce costs to users |
| 28. | sustainability |
| 29. | cost |
| 30. | Sustainability and environmental impact. |
| 31. | extend the marketing area of Ogogrow and the increased production costs/facilities will pay for themselves |
| 32. | Safety for the environment and organisms in the existing soil. |
| 33. | best practices from cities around the world. Uses that minimize the final environmental impact of waste solids. |
| 34. | Encourage composting toilets at home for those who are willing. |
| 35. | That tax dollars are not subsidizing this effort, but that this effort is generating revenues / profits. Environmental concerns. |
| 36. | Pass it on to local residents really cheap to eliminate the extra abundance |
| 37. | Trio Renewable Gas fpsconsulting@verizon.net |
| 38. | Slow down the population growth until water and waste water issues are resolved. |
| 39. | new bylaws allowing residential composting toilets |
| 40. | Can the City maximize returns but simply selling the solids to private organizations to create and sell the soil amendment products? |
| 41. | public health |
| 42. | product is over priced needs to be afordableto the public only covering costs |
| 43. | Sell the stuff locally @ cost of production/ to keep supply balanced. |
| 44. | Returning the compost to the soil, have a low cost program for local agriculture to allow farmers to use less fertilizer |
| 45. | Ogo-grow seems to have been a great success. Continuing in this direction is a good idea. |
| 46. | Too many building permits. The valley has to be self sustaining. |
| 47. | Public health; environmental care; quality of life for those living need facilities. |
| 48. | Growing population, long term vision. |
| 49. | Reducing the cost of OGO-Grow would certainly reduce the stockpile. I and many others just can't afford to use it. We have to settle for cheaper soils. It would be win/win as seniors and low income persons could grow more and better veggies and flowers and reduce the cost of living in the long run for them. They could also eat better quality home products. How about supplying it to some of those community gardens free if you are not already doing so. |
| 50. | Consider also what St. Petersburg Florida has done with their waste for over 50 years. They treat it and then use it ONLY for lawn watering throughout the city, private and public lands. There is an extra piping system which is separate from drinking water, obviously. But the grass in St. Petersburg where my parents live grows terrific. |

| 51. | it needs to be thoroughly tested to see if pharmaceuticals, etc. are present in the product. when it is determined completely safe this needs to be advertised that it is safe and available. It needs to be the cheapest alternative in order to get people to try it. |
|-----|---|
| 52. | competitive pricing |
| 53. | Drainage/ seepage into Okanagan Lake, not using product on naturally forested areas, utilizing what you are producing avoiding stock piles (how about a free day), the continued growth of the city with a plan in hand for expansion |
| 54. | Make it more readily available to local <u>gardeners</u> . <u>Currently</u> , I have to pay a considerable fee for Ogogrow from Art Knapp's or drive a considerable distance to purchase it for a lesser fee from the Glenmore Landfill. I would like to use it more in my organic garden and flowerbeds but the logisitics of obtaining it are challenging so I rarely get any. I dont have a truck so I have to bag it and transport it in my vehicle trunk. If you could make it more available (and cheaper) for local gardeners, you'd get rid of more and our gardens would benefit. |
| 55. | lower price or no charge |
| 56. | more research on heavy metals, persistant pollutants, CoC's and effects on the environment, public health and quality of life of neighbours. |
| 57. | Consider the use of waste as a biofuel, either via gas generation, direct incineration or various other conversion technologies. |
| 58. | Beneficial use, extending the life of the landfill by diverting water streams, consider cost to consumer for the product (ie if a reduced price point will make it more competitive with other commercial products on the market even if at a slight operating loss) |
| 59. | Environmental protection |
| 60. | apply the most efficient and productive use of all materials and resources, waste or otherwise |
| 61. | saving money by hiring private compost operations to take overflow of sewage waste to process |
| 62. | Stop selling pharmacuitical and metal laced products as "beneficial". They are not. |
| 63. | Availability of OgoGrow to gardeners, seniors, those with no truck/trailer to pick up. Would love a truck to come to neighbourhoods and dump a load on the lawn. I would pay. Just cannot come and get it |
| 64. | Make the shit cheaper. It's good but too expensive in bulk |
| 65. | Houses and or parts of the city that are still on septic. Get us on the sewer systems! |
| 66. | Selling the product to cover costs rather than make a profit would ensure costs are being offset, however, making it affordable for homeowners to use it to beautify their yards. I would also suggest partnering up with West Kelowna, Peachland, Summerland to set up a seasonal deposit in those communities. |
| 67. | making analysis results transparent to the public. Explores adding microbials to the compost process that could break down metals or other emerging elements of concern. |
| 68. | ROI. Making sure that we aren't losing money |
| 69. | Cost, environmental impact |
| 70. | Used for re forstation |
| 71. | Relocation of the existing facility to somewhere where it does not affect the quality of life for the local residents living near the facility |
| 72. | Cost |
| 73. | The current Ogogrow facility was located adjacent to my house without my prior knowledge or input. In the years that it has been in production my family and I have been subjected to intense and unpleasant odours and I have serious concerns about the effect of this plant on the quality of the water in Kal Lake. The plant was located here for political reasons and convenience with very little attention paid to applicable regulation or recommendations. The end product likely poisons the land and the process to produce it has undesirable impacts on the local environment and the plants |

| | neighbours. I find it laughable that the City of Kelowna is making such a big deal about being environmentally sensitive but won't locate this plant within its own boundaries. |
|-----|--|
| 74. | sustainability. environmental health. public health. |
| 75. | Seriously consider and research biochar from agricultural, gardening and forestry waste. The additional benefit is that burying biochar as a soil amendment is a long term CO2 sink that will attract green house gas <u>credits</u> . |
| 76. | I like ice cream |
| 77. | I have heard that there is an abundance of ogogrow, why don't you lower the price or even give smaller amounts away if you can;t get rid of it |
| 78. | How many people are not even on a municipal sewer system yet |
| 79. | The solids should be tested for Endocrine Disrupting Compounds to ensure they are <u>do</u> not contain potentially harmful chemicals that would be introduced into those environments. |
| 80. | Cost effectiveness, diverting from the landfill, and reducing/eliminating negatve impact on surroundings |
| 81. | Consider odours, effect on rivers and lakes & fack that ogogrow is full of drugs metals etc which are harmful |
| 82. | Public safety with regards to the accumulation of pharmaceuticals and factory waste. By creating a marketable product it's easy to lose sight of the goals of health, safety, and environmental impact when it's possible to make 100,000s of dollars from an uneducated public. |
| 83. | Public health, and education of the product. Go into detail on all possible repercussions of using the product. Extensive testing on how it could affect the food being grown in it, and how it might affect nearby water sources. |
| 84. | Smell! It can get a bit high in some areas of Sunset properties |
| 85. | Long term sustainability and cost certainty of the selected option(s) |
| 86. | Turning biosolids into different or refined products directly |
| 87. | cities have a footprint in development of nutrient lands, need to assist creating nutrient rich soils to offset development |
| 88. | set the price low for city residents so that it helps recover the cost but not make a proffit of the sale of OGOgrow |
| 89. | All products must be safe for people to use and handle. |
| 90. | Regional facilities for surrounding communities |
| 91. | Safety of final product including presence of pesticides, pharmaceuticals and heavy metals including full disclosure of analyses. |
| 92. | Long term and public impact - land application is not popular anywhere! |
| 93. | Environmental benefit |
| 94. | Consider population growth |
| | |

Question 6: What do the cities need to consider when evaluating potential uses for wastewater solids?

| | Response |
|----|---|
| | |
| 1. | Cost vs benefit. |
| | |
| | |
| 2. | Smell, groundwater contamination, compensation should relate to how close the facility is to a community. Vernon |
| | |
| | should get more revenue if it is closer to vernon, likewise. Kelowna should get more revenue if it is closer to Kelowna |
| | 0 |
| | |
| 3 | Health implications to our ecosystem |
| | nearch impleations to our ecosystem. |
| | |

| 4. | That this valuable resource be directed to highest and best use to maximize value for both beneficial use and to generate energy to help power the plant and reduce operational costs. |
|-----|---|
| 5. | Highest and best use, maximization of the material via robust, resource recovery, landfill diversion and being part of the "circular economy" |
| 6. | How it affects home sna dtheir property values in the area due to the nasty smell |
| 7. | location of compost facility. It should not be located close to an area where smell will disturb residents, but shouldn't be too far away to discourage residents from purchasing the final product. |
| 8. | public safety and protection of the environment. |
| 9. | Energy production options |
| 10. | not sure |
| 11. | What uses best reflect previous comments. |
| 12. | environmental impact and public health such as making products that are safe for gardening for food cheaper. perhaps an educational campaign touting benefits |
| 13. | of course toxins in the waster and into eco system |
| 14. | cost |
| 15. | You may op.at a loss in the process but the enviro.gain is worth it. |
| 16. | Benefit beyond the income generated. |
| 17. | The economy and eco factor |
| 18. | Current costs of shipping to other markets and long term reduction of costs associated. Look at issues Vancouver is having |
| 19. | Sustainability is key. Use human waste to generate electricity or LNG and get off fossil fuels. See https://www.engineeringforchange.org/10-ways-to-put-human-waste-to-use/ |
| 20. | Odour. |
| 21. | Environmental, Health and Cost Risks. All things you are already considering thankfully. |
| 22. | Ogogrow should NOT be sold to gardeners. Vegetables grown in Ogogrow are tainted with drug and chemical residues (both found in Ogogrow) and are unfit for human consumption. |
| 23. | how much growth in the future |
| 24. | Composting toilets |
| 25. | The ability of residential delivery of ogogrow for those that have no means of pick up . |
| 26. | What individual city needs are |
| 27. | Possibly reduce the price for "local" gardiners: The current price is reasonable but a bit less may encourage more sales |
| 28. | reduce cost to users |
| 29. | avoid putting in landfill |
| 30. | not use a lot of tax money lol |
| 31. | public health and environmental impact. |
| 32. | public health, production costs covered by sales rather than City subsidies, increased capacity/production creating more job opportunities here in Valley |
| 33. | How to deal with the wastewater solids in a way that promotes the agriculture and forestry industries safely. |

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| 34. | Issues related to compounds not broken down in the composting process (i.e. pharmicuticles) and the impact of the concentrating of heavy metals in the waste and other pollutants |
|-----|---|
| 35. | Create even more garden space in the city to fertilize with ogogrow |
| 36. | Profit generation / self-sustaining. Be creative. Sell to other communities? |
| 37. | If it is used to the best potential |
| 38. | Energy production options |
| 39. | Request citizens to avoid dumping undesirable materials such as chemicals and toxins into the sewage system. |
| 40. | potential risks and their management |
| 41. | How to maximize returns on the sale of the wast while minimizing infrastructure investment |
| 42. | not sure |
| 43. | cost to public |
| 44. | Better marketing/ make it more consumer friendly. |
| 45. | safety, the environment , water quality |
| 46. | Bringing wastewater solids into a natural environment should be looked into for any possible negative impacts to the natural environment. |
| 47. | Potential health hazerds to its citizens |
| 48. | a priority for me would be to find a revenue generating solution |
| 49. | Safety/health. Long-term sustainability. Cost to taxpayers. |
| 50. | Human, environmental and economic impacts |
| 51. | Impact on human health, impact on environment |
| 52. | Consider offering this product to other smaller communities at a reduced cost at the very least. Small cities are hampered by lack of sewage treatment plants to offer such a product to the public. |
| 53. | Check out all options such as above. And I am totally in favour of using this waste to rehabilitate mines such as what we have out here near Lake Windermere BC. |
| 54. | environmental impact |
| 55. | impact on human use. Impact on the environment. potential odor. |
| 56. | Increase public awareness |
| 57. | When utilizing bio solids outside of city, natural areas, you are changing the compositions of the soil, less interference in natural areas should be a mandate. |
| 58. | The cost of producing it and the cost to the citizen to purchase it. |
| 59. | open more centrally located outlets for free pickup |
| 60. | Environmental issues and costs |
| 61. | the risks and benefits to society and how they are unequally distributedsee this 2016 paper, "Biosolids are wicked to manage: Land application regulations in Sweden and Canada", |
| 62. | Minimizing volumetric amount of waste, generating revenue to offset processing costs. Environmental impact. |
| 63. | See above. Reducing environmental footprtint, extending life of landfills by diverting waste streams, creating recycling options for wastes, etc |
| 64. | Environmental protection |

| 65. | lack of public understanding |
|-----|---|
| 66. | only allow class A compost to control smell and public fear of the end product |
| 67. | Stop polluting the valley and our ground water. |
| 68. | Distribution and availability |
| 69. | Offer it as free options for residential use, it's our pool |
| 70. | Health safety |
| 71. | distance to need for residuals |
| 72. | how can the public access this gold mine of compost bring up a bucket? how much does it cost? |
| 73. | ROI |
| 74. | Effect on human health, cost |
| 75. | Common sense! |
| 76. | The direct impact the facilities have on the residents near them |
| 77. | Community needs ,cost of business |
| 78. | Environment, public health, return on investment |
| 79. | The effect of the plant on its neighbours and Kal Lake. |
| 80. | the health impact upon people and the environment. |
| 81. | Use of vegetation wastes to generate long term carbon sinks for greenhouse gas credits. Talk to Kelowna Councillor Charlie Hodge whom I have briefed, michaelirwin @shaw.ca |
| 82. | Contamination |
| 83. | Contaminants in it from heavy metals to drugs |
| 84. | Cost & environmental impact |
| 85. | Cost and sustainability |
| 86. | How to dispose of without puluting lakes and rivers and air |
| 87. | Public safety especially with the accumulation of of pharmaceuticals, fire retardants and other hard to detect |
| | properties of the biosolids building up in crops or livestock that are for human consumption |
| 88. | Public health, and education of the product. Go into detail on all possible repercussions of using the product. Extensive testing on how it could affect the food being grown in it, and how it might affect peachy water sources |
| 80 | Cost effectivess |
| 00. | Desitive public percention and acceptance of calerted option(s). Minimize impact on residents in proofs) where |
| 50. | processing of biosolids occurs. |
| 91. | poor public acceptance of Ogogrow product - need to convert into something else or new |
| 92. | Ensuring the products produced are completely safe for people to use and handle. |
| 93. | Cost-benefit analysis, class of biosolids produced |
| 94. | See previous response. Use on food source soils should be limited. Commercial sales opportunities should be used to generate revenue however products for residents should be available at lower or discounted rates as we are already paying for sewage treatment. |
| 95. | needs to be long term, sustainable and publically acceptable - Not all land use applications are. |
| 96. | Is there any negative environmental impact |
| | |

