

## Speeches

### **Jackson:**

Today we will propose a theory to help prevent the pollution of our oceans from human waste. This theory will involve the process of treating human waste at sewage plants and then transporting this to farms to use on crops instead of using precious water from dams and lakes that instead could be used for personal needs e.g. drinking, showering and much more.

### **Ayzlin:**

Some people like us would argue that drinking water is more precious than gold in the sense that we don't need gold we just like having it whereas we need water to live.

Nearly 97% of the world's water is salty or otherwise undrinkable.

Another 2% is locked in icecaps or glaciers

That leaves just 1% for all of our needs, agricultural, manufacturing, community, and personal needs.

Of this 1%

70% is for agricultural

22% is used for industry

8% is used for domestic use.

Explain what aspect of the human water cycle we are looking at and targeting on the image

### **William:**

Our problem is that we are treating water as a problem rather than a precious resource. Once waste water is treated in sewage plants it is generally then released back into water ways or the ocean some of the time not having been treated.

Our solution is that waste water and effluent will be converted into power with the treated water being pumped into large dams within agricultural areas to provide water for crops. The pumps will be powered by the energy from the effluent through anaerobic digestion.

This model could gradually be implemented though out the country.

**Joe:**

GE power and water is a global company that is advancing the use of waste water and the technologies required to use the product efficiently.

They use anaerobic digestion to produce a number of products.

In their ideal model on the next slide you will see several uses from waste water. These include:

Water released back into the environment

Fertiliser

Gas/Fuel

Power Generation.

**Andrew:** These are the current examples of waste water treatment in Australia (point at the screen)

Our model tries to combine both models together to create a more efficient and reliable way of treating and using water.

**Jackson:** Our solution problem is to combine the technologies currently in place at both Oakey Meatworks and Dubbo city. Pump the treated effluent from sewage plants to large dams within the rural, agricultural area with power generated from the sludge(anaerobic digestion). Create more pipes for pumping.(point at the model on screen).

The advantages of our model are now displayed on the screen

**William:** The disadvantages of our model are:

The cost of new pipes

The cost of adopting technology capable of converting wastewater into energy.

**Joe:** However we cannot afford to miss the valuable opportunity to invest in the innovative water treatment system. In the long run this system will pay for itself and reduce the strain on the ever depleting amount of fossil fuels.

Overall the advantages outweigh the disadvantages. We believe that our model will be reliable and more efficient than the current models.

**Ayzlin:** Thank you so much. Thank you for listening. Do you have any questions?



## The Botbuilders- Solutions for the future tomorrow

- Today we will propose a model that improves the way that people find, and recycle water.
- We will examine the current situation, traditional models and technology
- Examine global best practice
- Review Australian developments
- Propose a new sustainable model of hydrodynamics

## IS WATER MORE PRECIOUS THAN GOLD?

We the botbuilders would argue that drinking water is more precious than gold.

Nearly 97% of the world's water is salty or otherwise undrinkable. Another 2% is locked in ice caps and glaciers.

That leaves just 1% for all of humanity's needs — all its agricultural, residential, manufacturing, community, and personal needs.

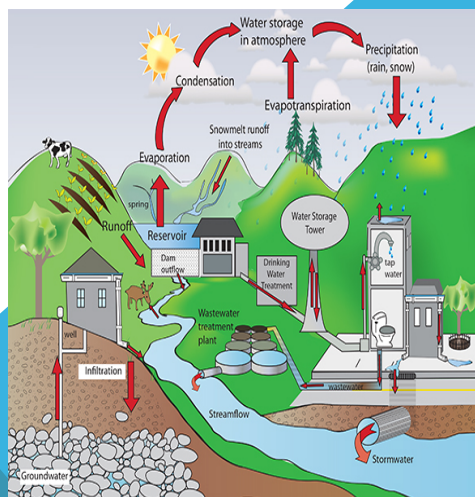
[HTTP://WWW.NATIONALGEOGRAPHIC.COM/FRESHWATER/FRESHWATER-CRISIS.HTML](http://www.nationalgeographic.com/freshwater/freshwater-crisis.html)

**OF THIS 1%,**

- **70% IS USED FOR AGRICULTURE**
- **22% IS USED FOR INDUSTRY**
- **8% IS USED FOR DOMESTIC USE.**

[HTTPS://WWW.IFAD.ORG/TOPICTOPIC/FACTS\\_FIGURES/OVERVIEW](https://www.ifad.org/topic/facts_figures/overview)

## THE TRADITIONAL HUMAN WATER CYCLE



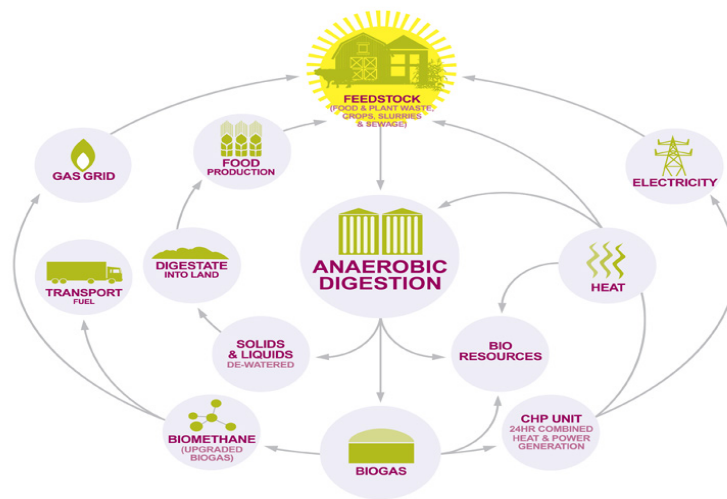
**The Problem:**

We are treating waste water as a problem rather than as a precious resource. Once waste water from showers ,kitchens, toilets and industries is treated at sewage plants, it is generally then released back into water ways or the ocean.

**THE SOLUTION:**

- Waste water and effluent will be converted into power with the treated water then being pumped into large dams within agricultural areas to provide water for irrigation.
- The pumps will be powered by the energy created from the effluence/sludge through anaerobic digestion.
- This is a self sustaining model that could be gradually implemented at all sewage plants throughout the country.

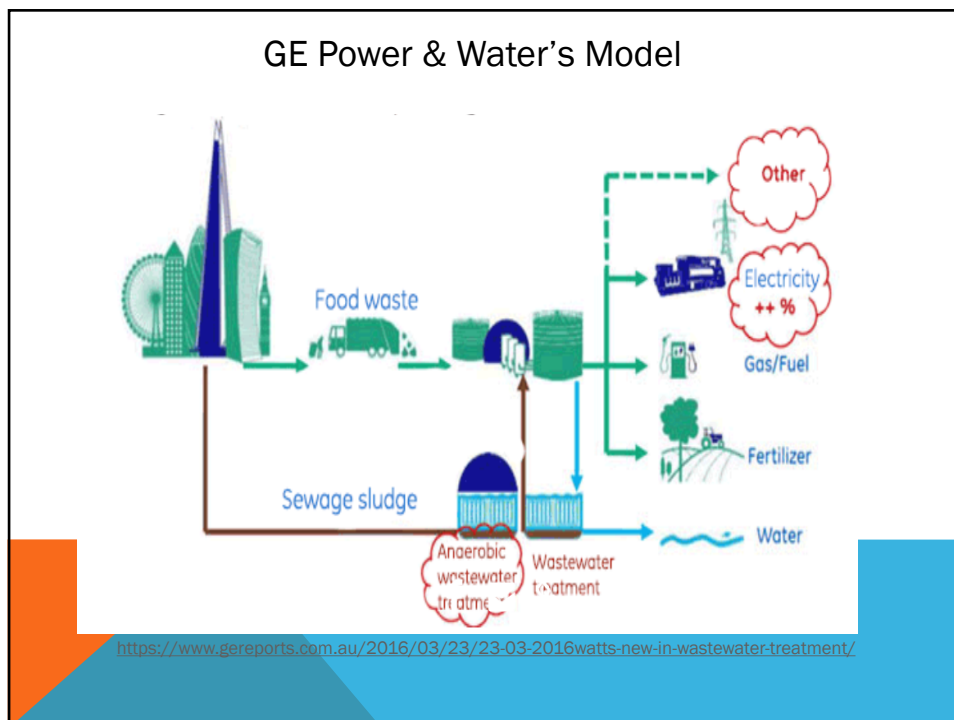
**Anaerobic Digestion:**



Anaerobic digestion is the simple, natural breakdown of organic matter into carbon dioxide, methane and water, by two groups of microorganisms, bacteria and archaea. <http://adbioresources.org/about-ad/what-is-ad/>

GE Power and Water is an example of a global company that is advancing the use of wastewater and the technologies required to use the product efficiently.

- They use anaerobic digestion technology to produce a number of products.
- In their ideal model on the following slide you will see several uses from wastewater. These include:
  - Water released back into the natural environment
  - Fertiliser
  - Gas/fuel
  - Power generation



### Current examples of waste water treatment in Australia

- Dubbo city council currently has the Greengrove Effluent Irrigation Facility where treated effluent is then pumped 12 km to a property on the outskirts of town to irrigate crops. The pumps are powered by underground electricity cables.

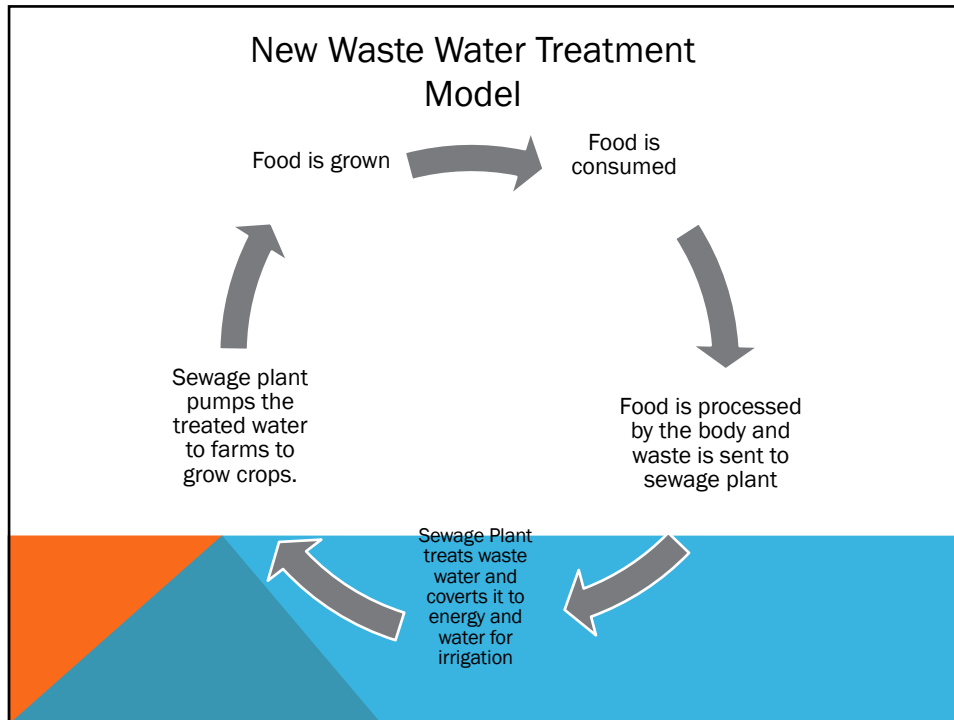
<http://www.teamirrigation.com.au/greengrove.html>

- The Oakey Meatworks on Queensland's Darling Downs is using Australian technology by CST Wastewater solutions to take wastewater from the processing floor and use it to partly power its own plant.
- Anaerobic digestion creates a biogas. This gas is then used to power their boilers.

<https://www.cstwastewater.com/oakey-abattoirs-world-environmental-initiative/>

### Solution Proposal

- To combine the technologies currently in practice at both Dubbo and Oakey to create a new model of waste water treatment across multiple sites in both cities and rural towns.
- Pump the treated effluent from the sewage plants to large dams within the agricultural sector with the power generated from the sludge-anaerobic digestion . This combines the two current practices mentioned.
- Develop a new network structure of pipes to reach large dams.
- Construct new dams where necessary which farmers can access.
- Create and further establish piping connections between large dam sites.



### Advantages

- Reduces the percentage of drinkable water being used for agriculture as this represents the largest usage of water worldwide.
- Reduces the strain on no-renewable energy resources.
- Less reliance on groundwater by farmers as ground water supplies are diminishing worldwide. (United Nations – Water Development Report 2015).
- Population growth and urbanization is increasing, this creates a prominent need for the current solution that we have proposed.
- **Anaerobic digestion produces reliable and predicable base load power – unlike some other green energy technologies, it is not dependent on the wind blowing or the sun shining.**



Disadvantages

- Construction and maintenance costs of new dams
- Significant investment costs for new piping infrastructure
- Initial setup costs of adopting technology capable of converting wastewater into energy.
- Return on investment may take several years

However!

- **We cannot afford to miss the opportunity to invest in the innovative water treatment system. In the long run, this system will pay for itself whilst reducing the strain on the ever depleting amount of fossil fuels.**

**Overall the Advantages outweigh the disadvantages**