WATER CORPORATION ALLIANCE PROJECT | W2W Alliance

SUSTAINABILITY IN THE W2W ALLIANCE

Sustainability Assessment Symposium Fremantle
24-25 September 2008
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Overview

- ❖ W2WA Mission Statement
- ❖ W2WA Sustainability Goals
- ❖ Project Sustainability Assessments in the Design Process
- ❖ Case Study: Odour Control Facility Expansions
- ❖ Conclusions

Challenge

SUSTAINABILITY PRINCIPLES WHEEL

Water Corp Annual Report 2006
"Within 3 years, sustainability underpins our culture – how we do business, from the way we provide water services to the way we purchase supplies"

W2WA: Transformational Leadership Workshop, October 2007
"We declare that it is possible that W2W Alliance develops and adopts procedures and processes that ensure sustainable outcomes and behaviours and implements them in all that we do"

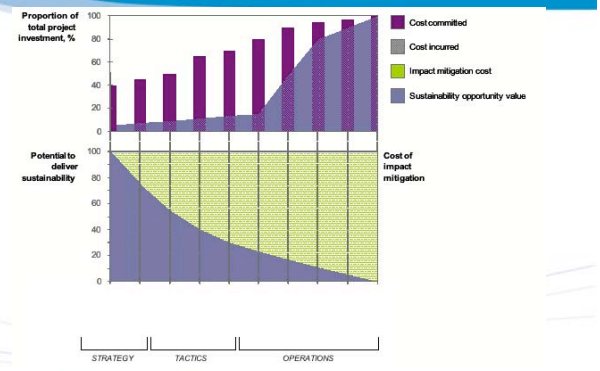
Changing WWTP Design Objectives

Previous design objectives	
✓	**meets capacity**
✓	**reliable**
✓	**meets regulatory conditions**
+ additional objectives for sustainable outcomes	
✓	**water, wastewater and waste are resources**
✓	**reduce the environmental footprint**
✓	**responsive to community expectations**
✓	**fit for purpose effluent quality**
✓	**increased operational efficiency and stability**

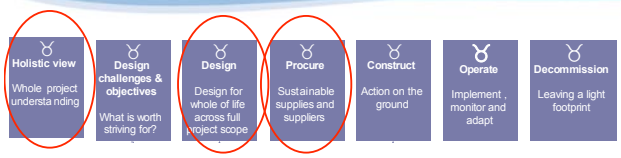
2022 Goals

Zero potable water use (excl. site amenities)
100% re-use of treated wastewater
100% biological control for odour
Carbon neutral plant - GHG emissions reduced or offset
Capacity and operational stability: 10% extra capacity in all processes
Plant seen by the community as an asset to the local area

Early involvement is critical to delivering sustainable outcomes



SA Stop-Points



W2WA Design Management Plan Sustainability Assessment Stop-Points:

1. Concept Development
2. Pre-TOC Assessment
3. Tendering Assessment

Case Study: Odour Control Facility Expansions

- New odour standards (more stringent);
- Upgrades to increase odour extraction rates at Beenyup and Woodman Point WWTPs;
- This size footprint only 2 options: chemical or biological treatment.

Beenyup WWTP: Chemical scrubbers

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135,000 m^3/hr
to
320,000 m^3/hr

Woodman Point WWTP: Chemical scrubbers

70,000 m^3/hr
to
215,000 m^3/hr

Bioscrubber Facility – New (Old) Idea

New to WA: only small scale

Risks:

New for WA WWTPs – only 2 bio-filters in pump stations;

Limited use in rest of Australia;

No project references for these capacities;

No project references for suppliers in Australia;

Chemical VS Biological

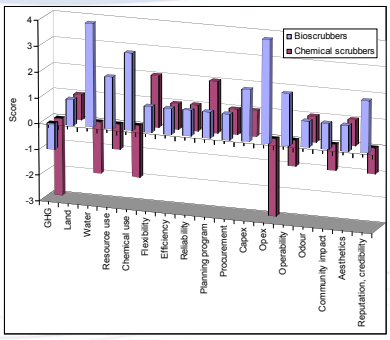
Chemical scrubbers:

+ currently used technology;
+ high reliability;
- high use of chemicals;
- high use of potable water;

Bioscrubbers:

+ no use of chemicals;
+ no need for potable water – uses RE;
- perceived unreliability;
- perceived difficult operability;
- Client not ready to take risk on "new" technology;

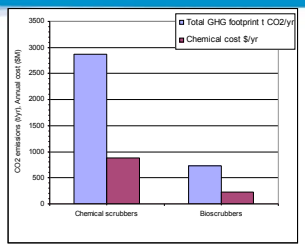
SA workshop: critical stakeholders + designers



Chemical Use: Embodied Energy & Cost

embodied energy in chemicals

cost of chemicals



Reduced GHG footprint for both sites:
current ~2700 tCO_2/yr – reduce to ~700 tCO_2/yr (~1/4)
If 3 trees/tCO_2 then saving ~6000 trees/yr
… **over 20 yr life of facility – saving 120,000 trees!**

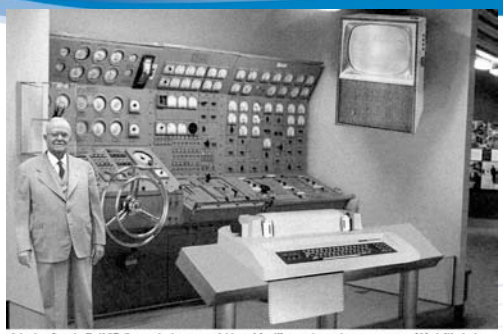
Largest Bioscrubber Facility in Australia

Largest Bioscrubber Facility Under Construction

Conclusions

- Strong mission statement from the client required to provide impetus for sustainability
- First and most critical step to developing sustainability strategy is to develop tangible goals
- SA resulted in complete change of direction for odour control in WA, possibly Australia
- Step change reduction in environmental footprint of Perth's WWTPs

1954: PC in 2004?



Scientists from the RAND Corporation have created this model to illustrate how a "home computer" could look like in the year 2004. However the needed technology will not be economically feasible for the average home. Also the scientists readily admit that the computer will require not yet invented technology to actually work, but 50 years from now scientific progress is expected to solve these problems. With teletype interface and the Fortran language, the computer will be easy to use and only

A Concluding Thought

"We cannot solve our problems with the same thinking that created them".

Albert Einstein