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Friday, 26 February 2010

The Committee Manager
Standing Committee on Natural Resource Management (Climate Change)
Parliament House, Macquarie St, Sydney

RE: Standing Committee on Natural Resource Management (Climate Change): Water Management Inquiry

Dear Ms Buchbach,

Cities and towns in regional Australia are facing major capital demands in coming years as they consider options for upgrading their sewage treatment infrastructure. The conventional approach to sewage treatment is expensive, is carbon intensive and is reliant on substantial ongoing electricity supply. Systems developed by The Water and Carbon Group Pty Ltd (WCG) staff in regional NSW deliver proven high quality treatment at one third the cost requiring zero power to operate. In addition, these systems deliver environmental benefits such as wetland habitat and reusable clean water.

WCG estimate that State and Local Government, and the people they serve, can save up to $500M to $1Billion over the next 15 years if advanced wetlands are integrated into wastewater treatment systems in regional New South Wales.

WCG is an Australian company with specialist capability in water treatment involving low energy, low carbon, low cost, high performance sewage treatment and stormwater systems. Our submission is attached and is summarised in the table below.

Term of Reference	**Key points**
The likely impact of climate change	Climate change is generally forecast to result in lower stream flows, higher nutrient loads and higher temperatures placing greater likelihood & impact of algae outbreaks. Constructed wetlands are the most cost-effective nutrient reduction technology helping to increase receiving waterbody resilience to higher temperatures and lower flows. Constructed wetlands also create habitat for wetland dependent species threatened by climate change related habitat loss. Constructed wetlands produce water that approaches class A standard, thus enabling it to be reused for many productive purposes, thus relieving pressure on traditional water sources.
Approaches to the management of water resources	Constructed wetlands create reusable water thus reducing pressure on traditional water supplies and enabling environmental flows.
Best practice in water conservation and management.	Constructed wetlands' proven performance is the most cost-effective nutrient reduction technology. **Financial:** Savings of approximately 70% on capital and operational costs of sewage treatment. **Reliability:** 10 years data of world's best performance **Reuse Options:** Environmental flows or reuse (fit for purpose) **Carbon reduction:** Zero energy requirement to achieve high treatment performance (futureproofing against rising energy costs).

WCG welcomes the opportunity to present in person to the Committee and we also invite the Committee to visit our three sites to witness Australia's best performing and least cost sewage treatment systems at Byron Bay, Lismore and Casino. The South Lismore sewage treatment plant integrated wetland was designed by WCG at a cost of $0.5million. This has enabled Lismore Council to avoid an estimated $30Million expenditure in a conventional upgrade.

WCG wish to discuss this submission with the Committee and to highlight that barriers to the take-up of this technology exist.

Yours sincerely,
Jim Hunter.

CEO, The Water and Carbon Group Pty Ltd

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…living and breathing infrastructure

Introduction: The Water and Carbon Group

living & breathing infrastructure

High Quality Water from low cost, low CO_2 wastewater treatment

Carbon Credits from biodiverse planted forests

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WCG: Submission relevance

Terms of Reference	WCG contribution
The likely impact of climate change on the availability of water resources under different climatic scenarios;	Climate change is generally forecast to result in lower stream flows, higher nutrient loads and higher temperatures placing greater likelihood & impact of algae outbreaks. Constructed wetlands are the most cost-effective nutrient reduction technology helping to increase receiving water body resilience to higher temperatures and lower flows. Constructed wetlands also create habitat for wetland dependent species threatened by climate change related habitat loss. Constructed wetlands produce water that approaches class A standard, thus enabling it to be reused for many productive purposes, thus relieving pressure on traditional water sources.
Approaches to the management of water resources by all water users including provision for environmental flows;	Constructed wetlands create reusable water thus reducing pressure on traditional water supplies and enabling environmental flows.
Best practice in water conservation and management.	Constructed wetlands' proven performance is the most cost-effective nutrient reduction technology. **Financial:** Savings of approximately 70% on capital and operational costs of sewage treatment. **Reliability:** 10 years data of world's best performance **Reuse Options:** Environmental flows or reuse (fit for purpose) **Carbon reduction:** Zero energy requirement to achieve high treatment performance (future proofing against rising energy costs).

Current sewage treatment environment

High energy use	High capital costs	Not without risks

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Proposed sewage treatment environment

WCG integrated wetland system at Lismore, NSW. Is one of the best performing treatment systems nationally.

Lower costs

- Cost reduction of 50-70%
- Savings to working families
- Potential for $1B savings on infrastructure (NSW & QLD alone)

Healthier environment

- Nutrient discharge reduced by up to 85% against current levels
- Lower carbon footprint
- Reduced energy consumption
- Iconic wetland habitat that meet & exceed compliance standards

Community appeal

- Lower council rates
- Local employment and skills development
- Community assets (bird watching and interpretative centres)

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Financial example:
Conventional v Proposed sewage treatment

Item	Proposed integrated wetland solution	Conventional high-tech upgrade
Upfront Capital Requirement*	$1.74M	$13M
Annual Operating Costs*	$380,000	$550,000
Total Project Life Net Present Costs	$6.5M	$19.8M
Equivalent Annual Cost per ML	**$635**	**$1,945**

67% saving per treated ML

* Includes alum dosing

- Based on 10,000 equivalent people (flow of 876 ML per year)
- Proposed integrated solution is based on existing trickle filter with integrated WCG wetland
- Conventional high-tech system is based on activated sludge (note: more expensive systems are being deployed)
- Proposed integrated system outperforms the conventional and is more tolerant of variations in flow volume

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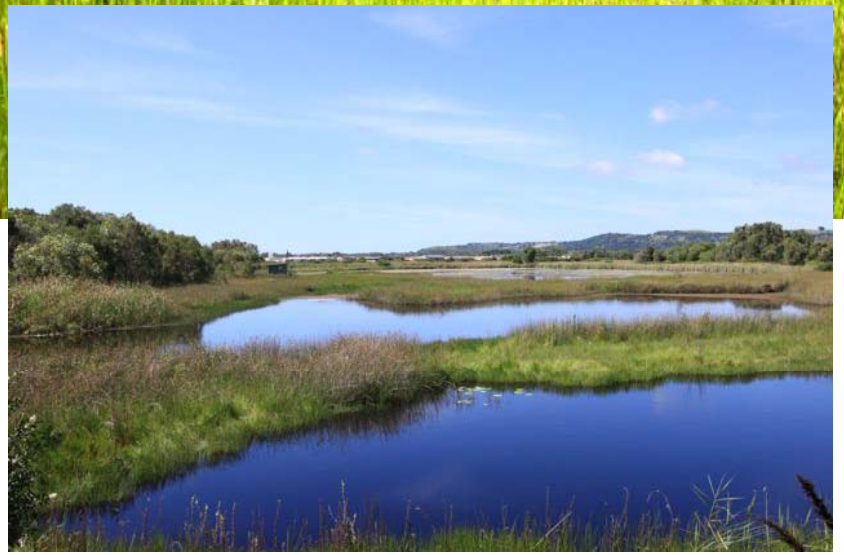
Sewage treatment:
Can be a community, water & biodiversity asset

Paradigm shift

From heavily engineered treatment system to water & biodiversity asset which the community can enjoy.



Case study 1: Lismore
Alternative to conventional upgrade

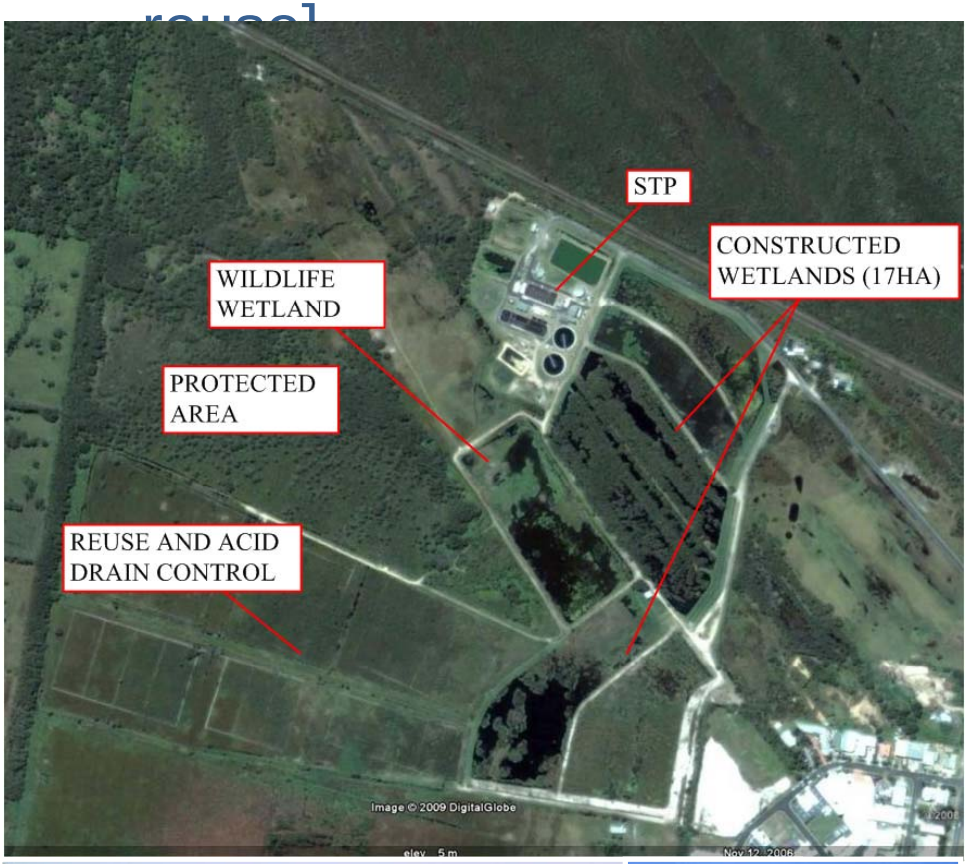
The Challenge

- Existing wetland system (1990's) with design and operational problems

Outcomes

- Capital savings of approximately $30Million
- Best performing system of its kind
- Improvement achieved at relatively low cost far exceeding DECCW requirements
- Unprecedented performance
- No additional energy consumed (powered by gravity)

Case Study 2: Byron Bay
[Effluent treatment, biodiversity, rehabilitation and reuse]



The Challenge

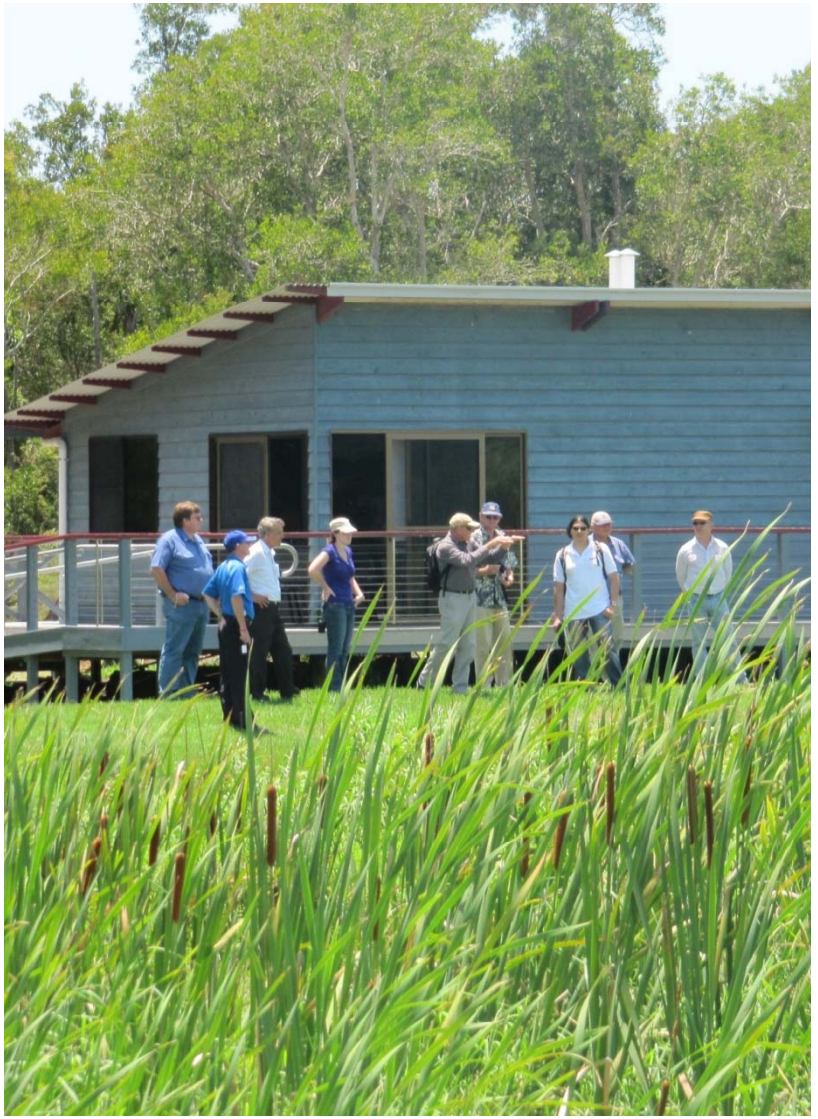
- Increase in effluent flows
- Large scale effluent irrigation impractical
- Acid Sulfate Soils pollution

Outcomes

- Award-winning system built
- Carbon sequestration on 24ha
- Healthier estuary (measured reduction in nutrients)
- Acidity neutralised

Barriers to adoption of proposed solution

- Wetlands historically have had varied results
  - Poor designs, poorly constructed and poorly managed.
- Results submitted in this presentation show unprecedented results from well designed & managed systems
- Results demand re-think of their application
- Past 15 years has seen strong movement to high-tech engineered solutions (high cost, high energy use)
- High-tech engineered solution do have limitations & risks
- Wetlands pose no greater risk, provide more reliable & consistent treatment at a third the cost.



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Key points of WCG submission

- Reduced costs by up to 70%
- Nutrient reduction of 85% - allowing for environmental flows
- Expanded reuse options
- Green & indigenous jobs
- Economic returns to the community
- Positive action in carbon-based projects
- Sets precedent for national initiatives

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WCG Invitation

WCG invite the Committee to a site visit, hosted by WCG experts, to experience Australia's best practice sewage treatment systems located in Northern Rivers region, NSW.

Key WCG Contacts

Jim Hunter CHIEF EXECUTIVE OFFICER – Located Brisbane Head Office

B. Ag Ec, University of New England; MBA, Queensland University of Technology; GAICD

Jim has 18 years commercial experience spanning numerous industries with companies such as leading global agribusiness Monsanto and has held CEO and operational roles in The Farmshed, Centrogen, and Genos. His early career was in sales, marketing and product development. Jim has developed and implemented the commercialisation strategies for several university and CSIRO created technologies.

David Pont WATER MANAGER – Located Lismore Office

BAppSc (Environmental Resource Management) (Hons)

David Pont has extensive experience in the design & project management of wastewater and stormwater solutions, new generation constructed wetlands, modern waste stabilization ponds, Water Sensitive Urban Design, effluent reuse projects, on-site wastewater management systems, natural wetland rehabilitation and integrated catchment management.

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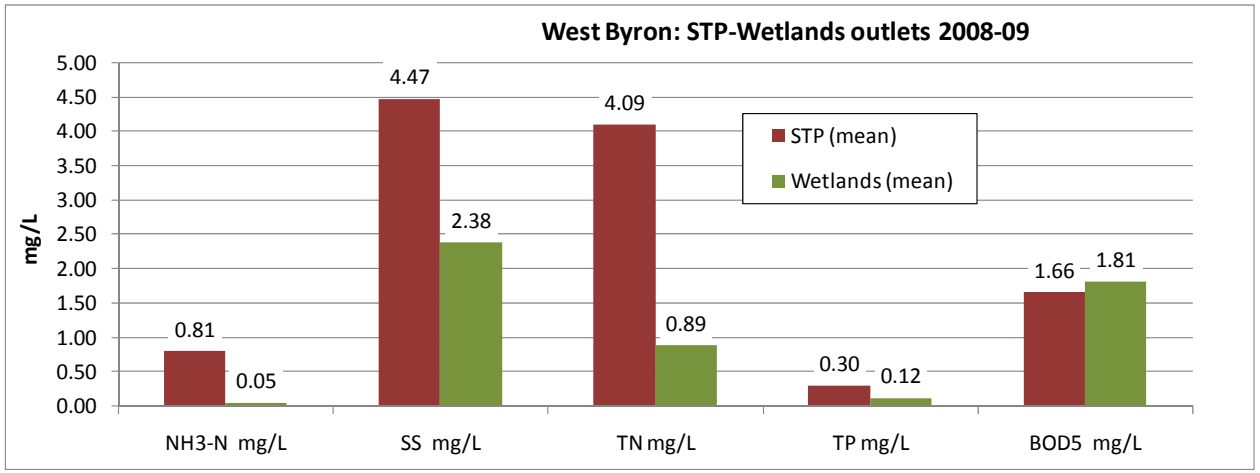
Appendix: WCG performance case study (data collected for DECCW)

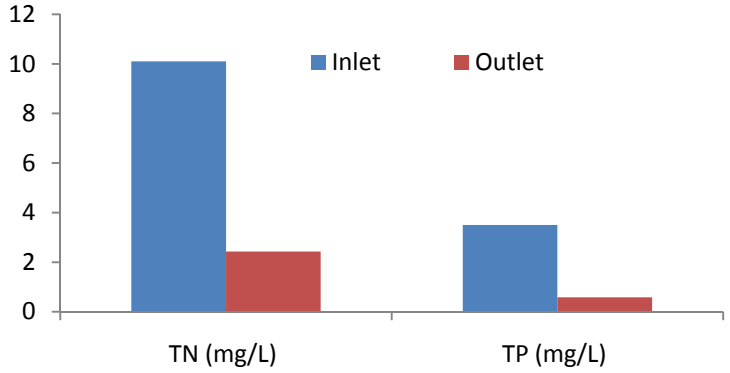
West Byron Sewage Treatment Plant



NH3-N: Ammonia
SS: Suspended Solids
TN: Total Nitrogen
TP: Total Phosphorus
BOD5: Biological Oxygen Demand

Wetland	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)
Inlet	10.1	3.5
Outlet	2.43	0.58
% Reduction	85%	83%

South Lismore Sewage Treatment Plant



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