



World Bank Melbourne Visit Report

October 22 and 23, 2009

1. Purpose

The World Bank (WB) is currently designing a loan project in Wuxi Municipality Jiangsu Province “**The World Bank Jiangsu Wuxi Lake Tai Environment Project**” which is similar in scope to the AUS Cluster “**ACEDP Lake Tai Water Pollution Treatment Project**”. The WB project is now under the feasibility study process, while the ACEDP project has completed the mobilization phase and is in its early stage.

The purpose of the visit was to further familiarize the World Bank with the ACEDP Lake Tai project, provide a further introduction of Australian experience in Integrated Catchment Management, experience in wetland construction and management, management of Non Point Source (NPS) pollution and techniques for management of algal blooms and explore area of potential collaboration between the ACEDP Lake Tai and World Bank initiatives. The main components of the two projects are listed as follows.

WB Wuxi Lake Tai Project	ACEDP Lake Tai Project
<i>Wetland construction (approximately 148 hectares) along a 10 km creek</i>	<i>Integrated River Basin Management (IRBM) both at city level and basin level</i>
<i>Dredging sediments engineering near Gong Hu Bay, near Wuxi Municipality</i>	<i>Science-based lake management focusing on Lake Tai science management and NPS assessment</i>
<i>NPS pollution control and the treatment of rural wastewater</i>	<i>Technical measures in support of governance/IRBM, including the following sub-components.</i>
<i>Technical assistance and awareness of water pollution in Wu Li Lake, Wuxi Municipality</i>	<ul style="list-style-type: none"> • <i>Source identification and pollution audit for nutrient management (algal bloom control)</i> • <i>Improved wastewater treatment & recycling</i> • <i>Integrated management of algal blooms</i>

2. Participants and Agenda

Earth Systems organized the WB Melbourne visit, and coordinated the AUS Cluster in facilitating meetings with Melbourne Water, the Department of Sustainability and Environment (DSE)’s Catchment Management Council of Victoria, Melbourne University’s Australia China Centre on Water Resources Research and the Department of Innovation, Industry and Regional Development (DIIRD). The participants from WB and Earth Systems are:

- Mr. Mingyuan Fan, Senior Sanitary Engineer, WB Beijing Office;
- Ms. Shenhua Wang, Senior Infrastructure Specialist, WB Beijing Office;
- Mr. James Machin, Project Manager, Earth Systems;
- Mr. Henry Wang, Assistant Project Manager, Earth Systems China.

The visit includes the meetings & site visit with Australian experts and government agencies aiming to achieve the purposes stated above. The brief agenda during the two days visit is summarized below.

Items	Experts & Organizations
Algal Treatment Technologies and Approaches used in Australia and outcomes of the AUS Cluster West Tai Lake Project	Dr Jeff Taylor, Algal Monitoring Expert, AUS Cluster
NPS Pollution Control – the Australian and Chinese Experience	Prof. Deli Chen and Dr Yongping Wei, Melbourne University
The Institutional Framework for Catchment Management in Melbourne	Chris Chesterfield, Waterways Group of Melbourne Water
Site Visits to Examples of Approaches to Control of Urban NPS pollution at Different Scales in the Dandenong Valley Catchment	Phil Edwards, Melbourne Water
Victoria’s Approach on Catchment Management, Legislative Policy Framework and Role of Catchment Management Authorities	Patricia Geraghty, Victorian Catchment Management Council (VCMC)
Wrap up Meeting	Margaret Brett, DIIRD

3. Meeting Minutes

3.1 Meeting with Dr. Jeff Taylor

Dr. Jeff Taylor introduced the Australian experiences in algal treatment technologies, algal monitoring, eutrophication treatment & management, especially the removal of nitrogen (N) and phosphorus (P). He pointed out that the key nutrient element led to algal bloom in freshwater should be P, while N should be the key element in marine water. Jeff briefly introduced the Australian Phoslock techniques in the control of P from the sediment & sediment capping. Some trial studies / small – scale projects are being undertaken in Australia. The techniques / measures of control the metal release from the sediments were also discussed during the meeting. Also, Dr Jeff Taylor shared the AUS Cluster West Tai lake project’s experiences with the WB participants, including the management of sediments with demonstration projects, Algal BLOCK technology, dredging options for West Tai Lake, nutrient control strategies of P, and construction of wetlands.

3.2 Meeting with Prof. Deli Chen and Dr Yongping Wei

Prof. Deli Chen and Dr Yongping Wei made presentations on their researches of the NPS control and management both in Australia and in China. The two Chinese Australian experts from Melbourne University introduced their expertise and research interests, respectively. Prof. Deli Chen's main expertises are water and nutrient dynamics, especially nitrogen transformations, nitrate leaching to groundwater. He pointed out that that not only agriculture but also some other issues in rural areas, like the rural trashes / rural sewage discharge that lead to the NPS pollution in China. Also, Deli introduced his research of using GIS modelling measures in controlling and managing the NPS pollution. Dr Yongping Wei presented her research on Remote Sensing techniques and the applications in Lake Tai. She also focuses on using the environmental economies comparing the NPS pollution status in Australia and in China.

3.3 Meeting with Chris Chesterfield and Site Visit with Phil Edward

The meeting with Chris Chesterfield was scheduled at Dight Falls. Discussions on the topics of urban water supply/discharge, waterways management, river health management, rules of wetland in pollution control, rural catchment management, etc.

Phil Edward from Melbourne Water led the team to have site visits to Carrum lowlands, diversion of the channelized section of Mordialloc Creek into on-line water quality treatment wetlands; upper Dandenong Creek and Dobsons Creek; and Dandenong catchment within Dandenong Ranges National Park.

In each of the site visit, "High priority values & threats" of the catchment management was discussed. According to the experiences of Melbourne Water, they've considered the issue into several sections, including RRHS perspective (biodiversity, social and threats), river health officer perspective, community perspective and threats they have tackled in the last 4 years. Obviously, the experiences indicated that Melbourne Water applied comprehensive measures to assess and manage the river basins. Catchment management should include the water quality, aquatic life, habitat & stability, vegetation and water flow. Catchments should play different rules in upstream and downstream areas. Project works that Melbourne Water did in the past years involve developing & constructing wetlands, removal of fish barrier, weed control, revegetation, etc.

Phil also introduced the group to the experience that Melbourne Water has in developing large constructed wetlands for nutrient uptake from stormwater runoff and the group visited several projects across the catchment where Melbourne Water was conducting revegetation work along creek banks, developing large scale wetlands (43 ha with an estimated cost of AUD20 million) and wetlands established by housing estate developers.



Site Visits to the Catchment

3.4 Meeting with Victorian Catchment Management Council

Ms. Patricia Geraghty together with her colleagues from VCMC hosted the meeting with WB team at their office. The discussion involved the VCMC's responsibilities & duties in the catchment management in Victoria, how to ensure land and water resources are protected as well as improving the region's social wellbeing and environmental quality. Fertilizer management and effluent management to control the NPS was dedicated proposed during the discussion, and the VCMC introduced their experiences and practices. According to the knowledge from VCMC, the water bodies could play multiple roles in the catchment, including water use, sailing, fishing, flood control, recreational functions, etc. Ms. Patricia Geraghty introduced the water flow into Gippsland catchment, and pointed out that the catchment management should be included into the land management.

3.5 Wrap up Meeting with Margaret Brett, DIIRD

The AUS Cluster and the WB delegation held a short wrap up meeting with Margaret Brett from DIIRD and Jackie McLeod from Hyder consulting (another member of the AUS Cluster). Points

discussed at the meeting included areas for potential collaboration between the Lake Tai Water Pollution Treatment Project and the WB project. 3 areas were identified as follows:

Algal Control. There could be potential for joint Lake Tai Project/ WB trials of different technologies in Lake Tai for controlling Phosphorous release from Lake sediments. These could be laboratory trials initially and then in Lake trials at a later stage.

Non Point Source. There could be potential to utilise the technology/ decision support tool model developed by Melbourne University and develop a simplified version as a framework to apply to a demonstration site in Lake Tai. This framework would provide municipal governments with a tool which they could use to develop an understanding of the effectiveness of different potential NPS pollution interventions. Melbourne University appeared to have some useful technologies in enhanced effectiveness fertilisers which could potentially be applied in China to reduce the impact of agricultural non point source pollution on Lake Tai.

Urban Wetlands. There could be potential for the AUS Cluster to assist the World Bank in the design of Component 2 of the Project focusing on the design of urban wetlands for nutrient uptake, and other aspects of Water Sensitive Urban Design. One quick initiative we could help with could be (1) Preparation of a bilingual report on Australian experience in urban wetlands for nutrient uptake including case studies, (2) Translation of guidelines for wetland design into Chinese for Wuxi officials and (3) convening a workshop on design of urban wetlands for Wuxi and bank officials in Wuxi. If required there could be a follow up study tour Australia to examine wetlands currently being designed in Melbourne and Queensland.

4. Outcomes and Potential Collaboration

Based upon the two days Melbourne visit, the outcomes and activities for the potential collaboration are listed as follows.

- Understand the experiences in catchment management in Australia;
- Understand the nutrient treatment & management experiences in Australia, especially the removal of N and P;
- Understand the wetland development in Australia;
- Understand the NPS pollution control in Australia;
- The potential collaboration for AUS Cluster working with WB in China includes, algal control, NPS pollution control, urban wetlands construction, study tours for Chinese government officials, and potentially AUS cluster bid the WB Wuxi Lake Tai Project.