

# ACEDP Lake Tai Water Pollution Treatment Project

## ACEDP太湖水污染治理项目

### Newsletter

#### 项目通讯

Issue 3 (Feb. 2010~Jun. 2010)

第三期 (2010年2月~2010年6月)



Lake Tai, Huzhou Municipality  
太湖, 浙江湖州

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## Foreword

**WARMLY** welcome you again to open this new edition of the ACEDP Lake Tai Water Pollution Treatment Project Newsletter Issue 3. The Project has now been successfully operated for 12 months and is now beginning to implement its core components of Integrated River Basin Management and Lake Science Management. This newsletter provides an update on the progress of project activities implemented between the period of February and June 2010. The newsletter focuses particularly on the project activities of *Market Mechanism Study Tour to Australia* and *Workshop on Lake Science, Non Point Source Assessment and Management*. Furthermore, similar to previous editions, the newsletter highlights some new interesting developments in Australia related to the Project's components.

**热忱**欢迎您打开新一期的《ACEDP太湖水污染治理项目“项目通讯（第三期）”》。目前，太湖项目已经成功执行了12个月的时间，并逐步进入到其核心内容“流域综合管理”和“科学化的湖泊管理”部分。透过这份通讯，您将了解到项目自2010年2月至6月之间所进行的项目活动。我们将重点关注“水资源市场机制赴澳工作访问”和“基于科学湖泊管理、面源污染评估与管理研讨会”。同时，我们将延续前面几期的做法，继续为您介绍一些澳大利亚在湖泊科学管理和面源污染控制方面的成功经验。



Nigel Murphy

Project Director 项目主任

AUS Cluster Lead by Earth Systems Consulting

Earth Systems公司领导的澳洲都市系统集团



## PROJECT BRIEFING

## 项目简介

**THE** Australia and China Environmental Development Partnership (“ACEDP” hereafter) is a five-year, \$25m Australian Government, AusAID initiative with the objective of supporting and improving policy development in China in the area of environmental protection and natural resources management. ACEDP aims to facilitate enduring partnerships between Australian and Chinese agencies, institutions and individuals engaged in national environmental policy development and implementation through a combination of high level policy dialogue, capacity building measures and collaboration on discreet activities that demonstrate good environmental governance.

Lake Tai (Taihu Lake) is the third largest lake in China, which situated on the border of Jiangsu and Zhejiang Province, with the majority of it lying in Jiangsu Province and a very small slice in the southern part of the lake in Zhejiang Province. Water quality and algal blooms in Lake Tai is recognized as a serious national issue particularly following the severe algae outbreak in 2007. A comprehensive restoration program has been approved by the State Council and it is a priority in the 11th Five Year Plans. On behalf of the State Council, the NDRC has taken a lead role in coordinating

“中澳环境发展伙伴项目”（如下简称“ACEDP”）为期五年，由澳大利亚发展署出资2500万澳元，旨在帮助中国加强环境保护和自然资源管理及在相关方面的政策支持。ACEDP通过高层政策对话、能力建设以及环境整治示范活动等多方面的合作，使中澳两国政府机构、组织和个人参与国家环境政策的制订和实施，促进两国间持续的伙伴关系。

太湖是中国的第三大淡水湖泊，主要位于江苏省和浙江省的交界处。太湖主要水域面积归江苏省管辖，仅有南岸一小部分隶属于浙江省管辖。太湖流域的水环境管理和藻类暴发是一个问题，在2007年太湖流域暴发大规模蓝藻“水华”之后引起了中国政府的高度重视。太湖流域的水环境综合整治已被国务院列入“十一五”规划的重点。在国务院的指示下，国家发改委在太湖流域水环境综合整治中肩负重要的协调职责，在水环境整治的总

## PROJECT BRIEFING

development of the plan and its implementation.

ACEDP Lake Tai Water Pollution Treatment Project (“Project” hereafter) is a 15-month, \$1.8m project, implemented by the AUS Cluster lead by Earth Systems Consulting, and the Chinese counterpart ICC-NDRC. The Project was launched in August 2009. The objective of the Project is to increase awareness of IRBM approaches including institutional governance, science based management, and technical measures for pollution and algal control. The Municipalities of Suzhou and Huzhou respectively located along the bank of the Lake Tai were nominated as the pilot cities of the Project.

The Project concentrates on 3 main components; Integrated River Basin Management (IRBM), Science Based Lake Management, and Technical Measures in Support of Governance and IRBM (approximately 21 activities, workshops & study tours in total) both in China and Australia.

Source (Part): ACEDP Website

<http://www.acedp-partnership.org/en/default.aspx>

## 项目简介

体规划和项目实施中，起到核心的作用。

“ACEDP太湖水污染治理项目”（以下简称“项目”）为期15个月，项目总额约180万澳元由Earth Systems公司代表澳大利亚都市系统集团（AUS）负责实施。本项目的中方合作伙伴是国家发改委国际合作中心。项目于2009年8月正式启动，目的是促进流域综合管理体制的改革，提高机构的科学管理能力，及交流控制蓝藻治污的技术方法。太湖沿岸的苏州市和湖州市被确定为本项目的试点城市。

本项目将重点关注流域综合管理、科学的湖泊管理和支持流域综合管理和环境整治的技术措施等三个领域，预期在中国和澳大利亚相继实施约21个具体活动。

部分资料来源: ACEDP网站

<http://www.acedp-partnership.org/en/default.aspx>

## PROJECT IMPLEMENTATION PARTNERS

**BOTH** the Chinese Partner and its Australian counterpart are included in the project implementation partners.

### **Chinese Implementation Partner**

International Cooperation Center, National Development and Reform Commission (ICC-NDRC)

### **Chinese Local Implementation Partner**

Suzhou Municipal Development and Reform Commission (MDRC) and Huzhou MDRC

### **Australian Implementation Partner**

Aus Cluster Lake Tai consortium lead by Earth Systems Consulting

The Cluster comprises Earth Systems, Hyder Consulting, Melbourne Water, Victorian Environment Protection Authority (EPA), and Victorian Department of Sustainability and Environment (DSE).

For more information, please visit the Website below

ICC-NDRC <http://www.icc-ndrc.org.cn/>

Suzhou MDRC <http://www.fgw.suzhou.gov.cn/>

Huzhou MDRC <http://fgw.huzhou.gov.cn/>

Earth Systems <http://www.earthsystems.com.au/>

Hyder Consulting <http://www.hyderconsulting.com/>

Melbourne Water <http://www.melbournewater.com.au/>

Victorian EPA <http://www.epa.vic.gov.au/>

Victorian DSE <http://www.dse.vic.gov.au/>

## 项目执行方

**项目**执行方包括中方执行机构和澳方执行机构两部分。

### **中方执行机构**

国家发改委国际合作中心

### **中方地方执行机构**

苏州市发改委、湖州市发改委

### **澳方执行机构**

澳洲都市系统集团由Earth Systems公司牵头组成的“太湖项目组”

项目组由Earth Systems公司、Hyder Consulting公司、墨尔本水务、维多利亚州环保署和维多利亚可持续和环境部组成。

更多详情，请访问以下网站

国家发改委国际合作中心 <http://www.icc-ndrc.org.cn/>

苏州发改委 <http://www.fgw.suzhou.gov.cn/>

湖州发改委 <http://fgw.huzhou.gov.cn/>

Earth Systems公司 <http://www.earthsystems.com.au/>

Hyder Consulting 公司 <http://www.hyderconsulting.com/>

墨尔本水务 <http://www.melbournewater.com.au/>

维多利亚州环保署 <http://www.epa.vic.gov.au/>

维多利亚可持续和环境部 <http://www.dse.vic.gov.au/>

## PROJECT ACTIVITIES (FEB. 2010~JUN. 2010)

### Water Market Mechanism Study Tour to Australia

**THE** Project conducted a study tour focusing on the overview of the Australian water market mechanisms in the Australian states and territories of Victoria, Australian Capital Territories and New South Wales from the 12th -23rd April 2010. A total of 13 delegates attended in the study tour, including the representatives from the NDRC in Beijing and Environmental Protection Bureaus, Water Bureaus, Agricultural Committee and Municipal Development and Reform Commissions in Suzhou and Huzhou Municipalities.

The objective of the tour was to present the Australian experience in water markets, including pollutant permitting & trading schemes approaches, offset schemes, accreditation systems, stewardship payments, taxes and tax concessions. Meanwhile, the tour was also to evaluate Chinese methods relative to Australian experiences and address and propose potential follow-up work by the Chinese government authorities and/or donors.

During the 12 days tour, the delegation visited Melbourne, Canberra and Sydney and met with different water & environment related stakeholders. The delegates attended presentations, workshops and field trips led by various regional, state and federal agencies. These activities covered governance,

## 项目活动

(2010年2月~2010年6月)

### 水资源市场机制赴澳工作访问

2010年4月12日至23日，“水资源市场机制赴澳工作访问”活动在澳大利亚展开。来自中国国家发改委、苏州和湖州市环保局、水务局、农委和发改委的共13名代表赴澳参加了此次工作访问。

此次访问的目的在于深入了解澳大利亚在水资源市场，包括污染物许可与交易框架措施、补偿措施、授权系统、支付管理、环境税征收与减免等方面的做法和经验。同时，就澳大利亚经验，针对中国的相应做法和实践，提出关于中国政府或其它援助机构在该领域可能开展的后续工作的建议。

在为期12天的访问中，代表团分别访问了墨尔本、堪培拉和悉尼等城市。访问内容包括与联邦、州和地区等各级水资源和环境管理机构举行会谈、研讨会和实地考察，全面了解水资源市场机制在澳大利亚的发展状况。



## PROJECT ACTIVITIES (FEB. 2010~JUN. 2010)

importance of developing a scientific basis, Australian market mechanism examples, the water market framework, surrounding legislation, and policy framework, operational methods and monitoring requirements.

Both sides all agreed that the market mechanisms for the control of pollution can be viable and useful tools that can be used and adapted to almost any region or situation. Using the simplicity of the carrot and stick theory and clear definition of the market mechanism requirements will allow for this application to be developed in China. However it is paramount for the success of a market mechanism that it is supported by the following:

- A market to support the identified commodity
- Supporting Regulatory Framework (carrot and stick)
- Key Driver such as drought, water pollution, algal blooms
- Participant buy-in (education and awareness)
- Supporting independent science and methodology
- Metrics (initial baseline to help Cap Setting and ongoing Monitoring)
- Relevant research to back the legislation and mechanism.
- Transparency and openness.

## 项目活动

(2010年2月~2010年6月)

这些访问内容涵盖政府决策和管理、科学决策水资源市场机制的重要性、澳大利亚市场机制案例、法规和政策框架、环境立法、操作方法和监控需求等。

通过访问，中澳双方均表示污染控制的市场机制是非常灵活和有用的工具，适用于各种情形和几乎任何地区。运用简化的“胡萝卜-大棒”理论和对市场机制的清晰定义将会使其在中国得到更好的应用和发展。市场机制的有效实施将有赖于以下几个方面：

- 支持特定商品的市场
- 法规框架的支持（胡萝卜-大棒）
- 干旱、水污染、藻类暴发等作为驱动
- 参与者跟进（教育和意识的培养）
- 构建独立的科学和方法学体系
- 度量学（利用最初的基线进行阈值的设定和监测）
- 市场机制的立法和运作由相关研究作支撑
- 透明与公开



## PROJECT ACTIVITIES (FEB. 2010~JUN. 2010)

### *Workshop on Lake Science, Non Point Source Assessment and Management*

**THE** project conducted a workshop on lake science, non point source (NPS) pollution assessment and management in Huzhou from June 28 to July 1, 2010. More than 50 participants from National Development and Reform Commission (NDRC), Ministry of Agricultural, Taihu Basin Authority, Taihu Office of Jiangsu Environmental Protection Department, Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences (NIGLAS), Zhejiang University, Nanjing Institute of Environmental Science of Ministry of Environmental Protection, Suzhou and Huzhou Development and Reform Commissions (DRC), Environmental Protection Bureaus (EPB), Water Bureau, Agricultural Bureaus attended the 4 days workshop.

The aim of the workshop was to review existing information on Lake Tai to form the basis for initial recommendations for management strategies, as well as a determination of gaps in key information or data as well as to recommend approaches for improving the science and management link so that scientific studies and information serve the needs of lake managers.

## 项目活动

(2010年2月~2010年6月)

### *基于科学湖泊管理、面源污染评估与管理研讨会*

2010年6月28日至7月1日，“基于科学湖泊管理、面源污染评估与管理研讨会”在浙江省湖州市成功召开。来自国家发改委、农业部、太湖流域管理局、江苏省太湖水污染防治办公室、中科院南京地理与湖泊研究所、浙江大学、环保部南京环境科学研究所、苏州和湖州市发改委、环保局、水务局、农业局等单位的50多名代表参加了此次为期四天的研讨会。

作为项目的重要组成部分，此次研讨会主要关注科学化的湖泊管理措施与理念，以及面源污染的评估与管理，目的在于识别太湖管理战略和决策中的薄弱环节，不断改进湖泊



## PROJECT ACTIVITIES (FEB. 2010~JUN. 2010)

More than 10 presentations delivered from Australian and Chinese consultants and experts, speeches focused on the topics of background of Lake Tai water environment, lake nutrients management, algal monitoring condition, mechanism of algal blooming, non point source pollution control and management.

In the lake science session, Australian expert Prof. Barry Hart introduced the experiences in nutrients management of fresh lake and provide details on science based management plans for water environments. Mr. Liu Wenbao (Deputy Director of Suzhou EPB) and Dr. Yao Enqin (Huzhou EPB) introduced the Lake Tai algal blooms conditions of Suzhou and Huzhou respectively. Prof. Justin Brookes and Dr. Jackie Qin made speeches of their research on the mechanisms of algal bloom and provided a detailed overview of Lake Science relationships with Lake Eutrophication.

In the NPS pollution assessment and management session, Dr. Liu Hongbin and Dr. Zheng Xiangqun from Ministry of Agriculture presented the background of NPS pollution conditions in China and in the area of Lake Tai. Dr. Michael Waters made a presentation named as *Urban Non Point Source Pollution (NPSP)*

## 项目活动

(2010年2月~2010年6月)

科学管理的水平，满足决策者不断提升的整治需求。

中澳专家和政府官员就科学化的湖泊管理和面源污染问题展开了专题介绍和讨论，先后共作了“太湖水环境背景状况”、“湖泊营养物质管理”、“藻类监测现状”、“藻类暴发机理研究”和“面源污染控制与管理”等10余个专题报告。

研讨会首先进行为期2天的“基于科学湖泊管理”部分，澳大利亚专家Barry Hart教授着重介绍了澳大利亚在淡水湖泊营养物质管理方面的经验；苏州市环保局刘文保副局长和湖州市环保局姚恩亲博士分别介绍了各自城市的太湖藻类暴发的总体情况、监控情况等；阿德莱德大学教授Justin Brookes博士



## PROJECT ACTIVITIES (FEB. 2010~JUN. 2010)

*Control with Australian and International Case Studies.* The “TERRIFIC” theory in his presentation led a remarkable impression to the attendances. Mr. Shen Guoqiang from Huzhou Agricultural Bureau and Mr. Qin Wei from Suzhou Agricultural Committee introduced their working experiences in controlling the NPS pollution. Ms. Zhai Shuhua from Taihu Basin Authority delivered a speech titled as *Integrated Lake Tai Basin Management Masterplan*. Prof. Deli Chen from Melbourne University and Ms. Sharyn RossRakesh from Melbourne Water delivered speeches on *NPS Pollution Control Measures in Australia* and *NPS Pollution Management in Melbourne*.

Each topic was discussed by the participants, using when possible small groups that would deliver after discussion a quick presentation on their findings to the audience. A summary was provided by the chairman to point out the



## 项目活动

(2010年2月~2010年6月)

和中科院南京地理与湖泊研究所秦伯强博士也分别介绍了藻类暴发的机理和控制手段，并专门分析了湖泊科学管理与富营养化湖泊管理之间的关系。

在“面源污染评估与管理”部分，来自农业部的专家刘宏斌博士和郑向群博士的联合报告主要关注中国尤其是太湖流域的农业面源污染问题；澳大利亚面源污染控制专家Michael Waters博士做了题为“城市面源污染控制——介绍澳大利亚和其他国际案例”的报告，在他的报告中提出的“TERRIFIC”理论给与会者留下了深刻的印象；来自湖州市农业局的沈国强先生和苏州市农委的秦伟先生结合他们的工作实际，分别介绍了湖州和苏州在面源污染和控制方面的经验；来自太湖流域管理局的翟淑华女士详细介绍了“太湖流域水环境综合治理总体方案”的编制背景、内容及实施近况等；墨尔本大学教授Deli Chen博士和墨尔本水务流域管理专家Sharyn RossRakesh女士分别做了题为“澳大利亚面源污染控制措施”和“墨尔本的面源

## PROJECT ACTIVITIES (FEB. 2010~JUN. 2010)

main results and provide guidance for the future activities. A well-organized report on Conceptual Model of Lake Tai Ecosystem and a comprehensive database of scientific studies and reports conducted for Lake Tai and its catchment will be prepared as results of this workshop.

As to the follow up activities of the workshop, it was proposed a four-day NPS pollution control & management training workshop that will be both conducted in Suzhou and Huzhou in the late period of this year. The objective of this training is to assist the scientific understanding and management of rural NPS pollution management, which will include NPS identification and risk assessment, NPS accounting and assessment for agricultural systems, and NPS Management options.

## 项目活动

(2010年2月~2010年6月)

污染管理”的专题报告。

在听完各专家的报告之后，与会者被分为几个小组对每个专题报告进行讨论，形成本小组的共识，并向大会作汇报交流。“太湖流域生态系统概念模型”以及“太湖流域基于科学的综合研究和报告数据库”将会成为此次研讨会的重要成果，相关的报告和模型等也正在整理和准备之中。

此次研讨会的后续活动包括一个为期4天的面源污染管理的小型培训，预计将在2010年年底分别在苏州和湖州举行。培训目的旨在帮助加深对农业面源污染管理的科学理解；培训活动将包括面源识别与风险评估、农业系统面源核算与评估、面源管理措施等。



## PROJECT COMMUNICATION ACTIVITIES

## 项目交流活动

### *AusAID Independent Mid Term Review*

**THE** Lake Tai Project was selected as one of the two case studies of the AusAID Independent Mid Term Review (MTR) to the ACEDP. The MTR was conducted between late February and early March 2010, aiming to timely guide the remainder of the program and importantly guide the potential focus and structure of any future environment development cooperation program in China.

The case study activities to the Lake Tai Project were both held in Beijing and Suzhou, including the onsite meetings, telephone interviews and discussions with the Chinese implementation agency ICC-NDRC, relevant government agencies in Suzhou and Huzhou, the Project local experts and other stakeholders like Lake Tai Basin Authority.

### *澳发署ACEDP项目中期评估*

**太湖项目**被澳发署确定为中澳环境发展伙伴项目(ACEDP)中期评估的两个案例项目之一。作为整个中期评估的一部分,2010年2月底至3月初,澳发署协同有关各方专门对太湖项目进行了项目评估。评估的目的旨在及时了解 and 掌握当前的项目援助和合作模式,对中澳环境项目在未来的运作提出指导意见,并为未来项目发展的方向找出依据。

对太湖项目的评估活动分别在北京和苏州进行,主要通过现场会议、电话访问及与中方执行机构国家发改委国际合作中心、苏州和湖州的相关机构、项目地方专家和太湖流域管理局官员等展开讨论,具体了解项目进展等有关情况。



## PROJECT COMMUNICATION ACTIVITIES

### Project Follow-Up Activities Working Conference

**THE** AUS Lake Tai Cluster led by Project Manager Mr. James Machin visited Suzhou Municipality in May 2010 aiming to discuss with the cities to clarify and detail the project follow up activities of the Integrated Management of Algal Blooms Workshop & Wastewater Treatment & Recycling Study Tour. Representatives from Suzhou authorities of DRC, EPB, Environmental Monitoring Station, and Water Bureau attended the half day working conference.

The conference went well and productive; both two sides agreed to implement a total of five follow up activities in the two trial cities. The *Sewage Sludge Reuse & Disposal - Pyrolysis Using Hydrothermal Upgrading (HTU) Process* and the *Wastewater Treatment Plant (WWTP) Optimization Study* were required to be commenced soon. Follow up activities of the algal blooms workshop, including *Alert Levels Framework Study*, *Algal Blooms Early Warning System* and *Sediment Capping Study* would be further discussed and are expected to be conducted in the year of 2010.

The tasks of Sludge HTU Trial and WWTP Optimization Study will be started since the early of July.

## 项目交流活动

### 太湖项目后续活动安排工作会议

**2010**年5月，项目澳方团队在项目经理James Machin先生带领下赴苏州，就开展“水华综合管理研讨会”和“废水处理和循环利用技术赴澳工作访问”的后续活动的内容和安排等，与试点城市的官员和代表展开讨论和协商。来自苏州市发改委、环保局、环境监测站、水务局等单位的负责人和代表等参加了为期半天的会议。

此次会议是积极并富有成效的，双方一致同意尽快实施总共5项后续活动。“污泥回用/高温热解试验”和“污水处理厂系统优化”2项将尽快启动；其它3项水华管理研讨会的后续活动，包括“警告级别框架”、“水华早期预警系统”和“底泥固化藻类控制技术试验”，待进一步的讨论后，将在2010年年内尽快实施。

七月初，污泥热解试验和污水处理厂系统优化的后续活动将陆续启动。



## PROJECT COMMUNICATION ACTIVITIES

### *The 4<sup>th</sup> National Sludge Treatment, Disposal and Reuse Technologies and Market Development Conference*

**On** behalf of AUS Cluster, EARTH SYSTEMS CHINA was invited to attend the *4<sup>th</sup> National Sludge Treatment, Disposal and Reuse Technologies and Market Development Conference (NSC)* in late of May. More than 100 participants from government authorities, universities and research institutes, WWTPs, and environmental engineering firms attended the 2 days conference in Nanjing.

During the conference and representing AUS Lake Tai Cluster, Mr. Henry Wang, Senior Environmental Engineer of Earth Systems was honored to deliver a speech on HTU Technology and its potential of being applied in the sewage treatment plants in Lake Tai basin and other regions of China.

The purposes of participating the NSC were to introduce our ACEDP Lake Tai Project, present the HTU technology and know some update sludge treatment and disposal knowledge. The purposes were almost met and it was confirmed that HTU technology was welcomed and understood by the participants. For more details of the conference, please link to the following ACEDP website:

<http://www.acedp-partnership.org/userfiles/Report%20of%20The%204th%20National%20Sludge%20Conference%20Nanjing.pdf>

## 项目交流活动

### *第四届全国污泥处理处置及资源利用技术与市场创新大会*

**澳思**中国分公司受邀参加了2010年5月下旬在南京召开的“第四届全国污泥处理处置及资源利用技术与市场创新大会”。与污泥处置和资源化利用相关的政府机关、大学、科研院所、污水处理厂和环保公司等大约100余代表出席了此次为期2天的会议。

在会上，澳思公司高级环境工程师王耘先生有幸代表澳洲都市系统集团太湖项目组，向大会做了“高温热解(HTU)——澳大利亚新型污泥处理技术”的报告，并介绍了该技术在中国和太湖流域污水处理厂应用的前景。

项目组参加此次大会的目的基本达到，与会者对HTU技术表现出浓厚的兴趣。关于此次会议的更多详情，见以下ACEDP网站：

<http://www.acedp-partnership.org/userfiles/Report % 20of % 20The % 204th % 20National % 20Sludge % 20Conference % 20Nanjing.pdf>



## AUSTRALIAN HIGHLIGHTS

### Port Phillip and Westernport Decision Support System (DSS) – PortsE2

**THE** E2 catchment modeling software was used to build a decision support system, named PortsE2, to support catchment management scenario investigation being undertaken as part of the 'Better Bays and Waterways' initiative. The model developed covers the catchments of Port Phillip and Western Port Bays (Victoria).

PortsE2 has 189 sub-catchments, with a network that supports sub-catchment and basin scale load estimation. It has 12 Functional Units (FU) based on land use, and one Point Source FU. Five years of climate data (1994-98) drive the default scenario. This period contains dry (1997), average (1998) and wet (1995) years. Five climate-land cover groups (forest west, non-forest west, forest east, non-forest east, and urban) were used to support regionalised flow calibration. Water quality (TN, TSS, TP, Pathogen, Toxicant) parameters were obtained from field data and literature.

Management scenarios tested in PortsE2 include land use change, water sensitive urban design (WSUD) interventions, adoption of agricultural best management practices, intensification of agricultural practices, changes to point sources, climate change, and septic tank management.

(Source from: University of Melbourne)

## 澳大利亚湖泊整治经验

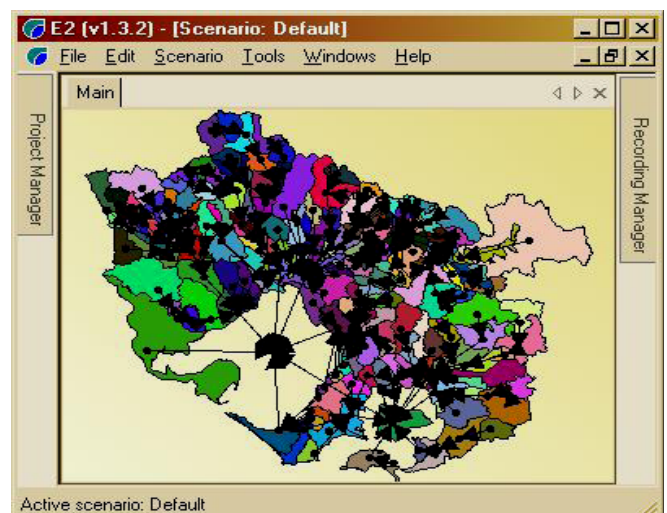
### 菲利普港和西部港海湾决策支持系统

**PortsE2** 是以流域模型软件E2为基础构建的用于支持流域管理的决策支持系统，并成为了“健康的海湾与水系”项目的一部分。该决策支持系统将面向维州的菲利普港和西部港海湾提供信息决策支持。

PortsE2覆盖189个小流域，可以对整个流域及小流域的污染负荷进行预测。包括基于土地利用的12个功能单元和1个点源功能单元。5年的气候数据（1994-98）被设置为默认情景，这个时间段包括干旱年份（1997）、正常年份（1998）和多雨年份（1995）。使用5个气候-土地组合（西部森林区、西部非森林区、东部森林区、东部非森林区、城区）支持地区化的流量测定。水质参数由实地测定数据和文献数据组成。

PortsE2测试的管理情景包括土地利用改变、水敏感性城市设计介入、农业最佳管理措施的采用、农业生产活动加剧、点源变化、气候变化和化粪池管理。

(资料来源：墨尔本大学)



## AUSTRALIAN HIGHLIGHTS

## 澳大利亚湖泊整治经验

### Water Sensitive Urban Design (WSUD)

**WATER** Sensitive Urban Design (WSUD) is about integration of water cycle management into urban planning and design. The key principles of WSUD as stated in the Urban Stormwater - Best Practice Environmental Management Guidelines are:

**Protect natural systems** - protect and enhance natural water systems within urban developments.

**Integrate stormwater treatment into the landscape** - use stormwater in the landscape by incorporating multiple use corridors that maximise the visual and recreational amenity of developments.

**Protect water quality** - improve the quality of water draining from urban developments into receiving environment.

**Reduce runoff and peak flows** - reduce peak flows from urban development by local detention measures and minimising impervious areas.

**Add value while minimising development costs** - minimise the drainage infrastructure cost of the development.

(Source from: Melbourne Water)

### 充分考虑水体敏感性的城市设计

**充分**考虑水体敏感性的城市设计（WSUD）将综合的水循环管理融入进城市规划与管理之中。来源于城市雨水管理的最佳环境管理实践指南的WSUD的重要原则包括：

**保护自然系统**——保护和强化城市发展中的自然水资源系统。

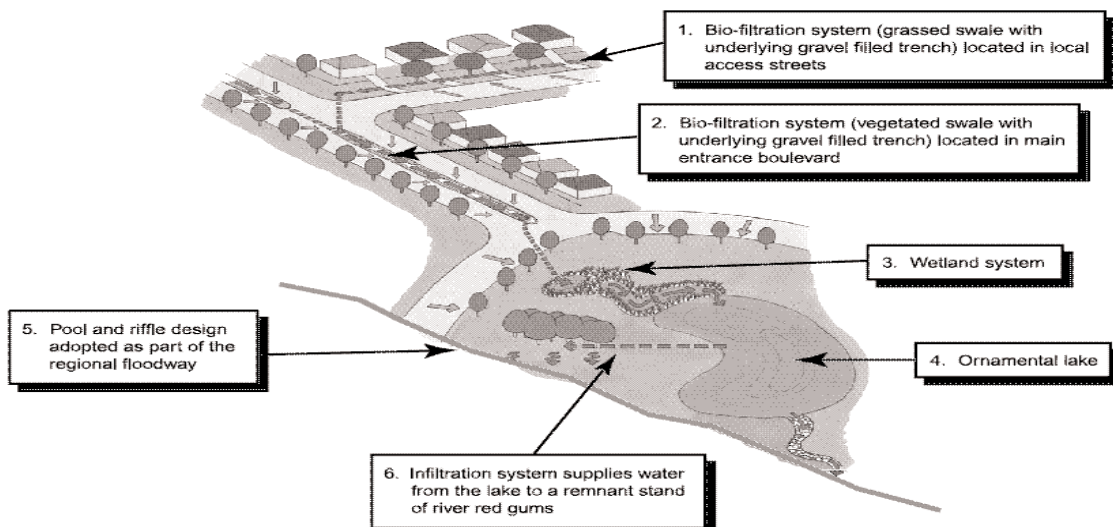
**将雨水处理功能融入城市景观设计**——城市景观设计中结合多重的植物回廊最大化景观效果的同时处理雨水。

**保护水质**——提高从城市进入环境中的排水水质。

**减少城市地表径流**——通过减少城市的固化区域来减少城市地表径流。

**增值的同时最小化发展成本**——使城市排水系统的建造成本最小化。

(资料来源：墨尔本水务)



## AUSTRALIAN HIGHLIGHTS

### How to Build a Raingarden?

**BUILDING** a raingarden is a simple way to help the environment and the health of our local waterways while providing a self-watering garden for your backyard.

A raingarden is a specially prepared garden designed to receive and filter rain run-off from roofs or hard surfaces such as driveways or paving. You can even create a raingarden in a planter box, positioning it to collect water from a disconnected downpipe or rainwater tank overflow.

Featuring layers of soil for filtration, gravel for drainage, and plants that can tolerate periods without rain, a raingarden help to protect our streams and rivers from stormwater pollutants.

Raingardens can be created to look and feel however you would like your home garden to look and feel. They are incorporated as part of your overall garden landscaping and can be complete gardens or just a simple planter box. Raingardens can be designed with any soil type. They have a layer of mulch and planting soil, are typically planted with native vegetation and have an underdrain to take excess stormwater directly into the stormwater drain to reduce the risk of flooding.

(Source from: Melbourne Water)

## 澳大利亚湖泊整治经验

### 如何建造一个雨水花园?

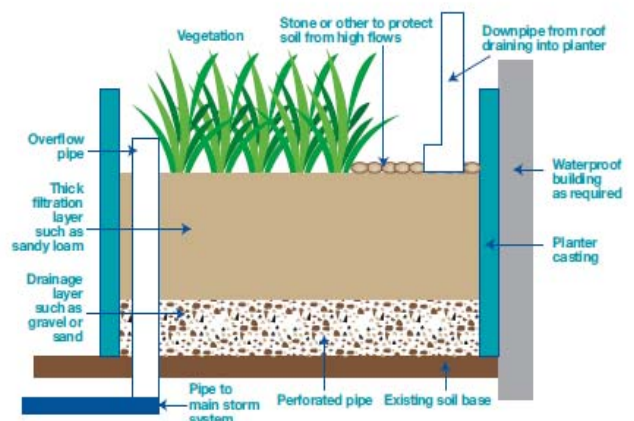
**建造**雨水花园是保护环境和当地水系健康的最简单的方法之一，同时也能为您的后花园提供水源。澳大利亚在这方面有许多经验。

雨水花园是通过特定的设计收集和过滤屋顶或道路雨水的装置。可以建造花草箱，并使其与雨水收集箱相连。

填充层由用于渗透的土壤层和用于排水的砾石层组成，使得植物有一定的抗旱能力，能在旱季较好的生存。雨水花园能减少雨水污染物对河流的污染。

雨水花园可以依照您对花园的景观要求进行建造。雨水花园可以是花园的一部分或是全部，或仅仅只是一个简单的花草箱。雨水花园可以使用任何种类的土壤。植物的选择通常使用本土植物，利用敷设的排水管道把过多的雨水排出系统。

(资料来源: 墨尔本水务)



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