SOCIO-ECONOMIC BENEFITS OF
METEOROLOGICAL AND HYDROLOGICAL SERVICES

CASE STUDIES

Urban Stormwater Management – Case Study

ITEM	DESCRIPTION
Sector	Water - Engineering
Sub-sector	Urban stormwater management
Case Study Name	Melbourne Water Stormwater Management
Case Study Description	The case study addresses the Melbourne Water requirement that treatment of stormwater be such that annual pollutant loads achieve targets set out in the Best Practice Environmental Management Guidelines (BPEMG), these are: • 45% reduction in Total Nitrogen from typical urban loads • 45% reduction in Total Phosphorus from typical urban loads • 80 % reduction in Total Suspended Solids from typical urban loads • 70% reduction in Litter from typical urban loads • Maintain discharges for the 1.5 year ARI event at pre-development levels
Location	Melbourne, Australia
Tools employed	Urban Stormwater Improvement Conceptualisation (**MUSIC**)
Description of application	Melbourne Water uses MUSIC to assess the impacts of proposed development against performance targets. If alternative methods or models are used, the developer must demonstrate to Melbourne Water's satisfaction that performance targets can be achieved.
Outcomes of application	Melbourne Water is using MUSIC to plan future and assess land development proposals, and to design stormwater treatment strategies for new and existing drainage schemes. Application of MUSIC has resulted in significant savings on capital works, whilst still satisfying water quality criteria.
Cost/Benefits	http://www.publish.csiro.au/samples/UrbanStorm.pdf
Characteristics of the Case Study	The design intent for any treatment system must be clearly documented and discussed with Melbourne Water early in the conceptual design stage. Melbourne Water uses MUSIC to assess the impacts of proposed development against performance targets. If alternative methods or models are used, the developer must demonstrate to Melbourne Water's satisfaction that performance targets can be achieved. Use of metrological data within MUSIC is a balance between accurate representation and computing time. Testing has shown that the use of an appropriately selected year of rainfall data can approximate the long-term metrological record. Ten rainfall stations across Melbourne have been selected to reflect the rainfall gradient shown in Figure 1 below. The Representative years were selected as the best match in terms of mean annual rainfall and 90th percentile of rainfall when each year was compared with long term records. Melbourne Water recommends that results obtained by the "reference year" method be compared with long term rainfall records as a final check.
Consultation mechanisms	Decision tool developed in a cooperative research environment.
Structural interface	Direct contact to meteorological service for data/information.

Delivery mechanism	Example data provided for incorporation in decision tool, specific data provided on request
Feedback mechanism	Decision tool developed in a cooperative research environment.
Review Mechanism	Decision tool developed in a cooperative research environment.
Other	Data provided are indicative only and used for design purposes.
Lessons learnt	Benefits of urban stormwater design are documented in: http://www.publish.csiro.au/samples/UrbanStorm.pdf
Best Practise Advice	All of the above elements are considered to be best practise guidance, example is: http://www.melbournewater.com.au/content/library/wsud/guidelines_for_the_use_of_music.pdf
Possible future advances	The tool can be expanded to include other potential urban design components as they are developed. The tool may also be able to be used in a real-time mode if stormwater can be managed in this fashion.
Comments	
URL	http://www.melbournewater.com.au/content/library/wsud/guidelines_for_the_use_of_music.pdf http://wsud.melbournewater.com.au/content/resources/presentations.asp http://www.publish.csiro.au/samples/UrbanStorm.pdf http://www.catchment.crc.org.au/archive/news/1000123.html
Other	