Overview

• Water Corporation’s business activities

• Our focus for drainage R&D

  a. Validation of management practices that provide maximum benefit for least cost

  b. Clarification of factors contributing to nutrient dynamics in urban main drains

  c. Collaboration with other agencies on chosen restoration programs
Our business activities

- **Across Western Australia**
  - Manage water supply catchments,
  - Source & supply drinking water,
  - Collect and treat wastewater,
  - Manage irrigation and drainage infrastructure

- **Deliver services in commercial manner**
  - Majority of profits returned to Govt as dividend

- **Perth metro – urban drainage** (licensed)
  - Provide flood protection to minimise impacts on properties
  - Manage most urban **main drains**
    - some 500 kms across 76 main drain catchments
  - Some of the 3,000 kms local drains managed by Local Govt connect into our urban main drains
Activities mitigating risk of nutrients entering Swan & Canning river system

• Perth’s wastewater system
  – Collects more than 300 ML wastewater every day
  – Extending wastewater services to meet urban growth
  – Industrial waste service
  – Infill Sewerage Program
  – Investment to reduce risk of overflows
Research focus
Urban drain maintenance

- **Objective:**
  - To investigate a more feasible and environmentally sustainable approach to urban drain maintenance for the Water Corporation
  - Several revegetation trials established since June 2009 to determine most successful & cost effective approach
    - improve visual amenity
    - control bank erosion
    - reduce drain maintenance over time
    - improve ecological habitat / biodiversity where practical

Without impacting the hydraulic capacity of the drain
Research focus
Urban drain maintenance

Paterson Rd BD (Kewdale) established June 2009
- Different densities of planting, jute matting
- Additional mulching & infill planting next month to cover loss of seedlings during long dry summer 2009/10
Research focus
Urban drain maintenance

High Wycombe Branch Drain
- High success rate of seedlings, with mulch
- Great interest from community

Original Jan 2009
Planting Sept 2009
April 2010
Research
Focus Defining Water Quality Issues

• Objective:
  - understand the nutrient reduction targets that may realistically be achieved
  - determine the management practices that may be effective
  - estimate costs & effort that may be required
  - share the information across agencies

• Funded by the Water Corporation and CSIRO
  - CSIRO Land & Water (Perth) undertaking technical analysis
  - 3 year project, commenced Oct 2008
Research Focus
Defining Water Quality Issues

- Year 1 focus:
  - evaluate characteristics of urban catchments
  - factors contributing to nutrient dynamics
  - Drain water quality of 4 main drain catchments analysed

Bayswater, Bannister Creek, Forrestdale, Mills St
Research focus
Defining the water quality issues

• Since groundwater contributes
  – More than 50% annual flow to main drains, AND
  – Is the sole contributor to drain flow for at least 80% of the year

• Work in 2010 is continuing on groundwater investigations:
  – Groundwater/Surface Water Interaction
    • Investigate groundwater and nutrient discharge to urban drains & natural attenuation in zone of interaction
  – Groundwater Monitoring Plan
    • to provide data for future systematic understanding of groundwater characteristics
Review of Mills Street Catchment Groundwater Treatment Trial

- Determining cost-effectiveness of Mills St Main Drain Groundwater Treatment Trial
  - Peer review undertaken by CSIRO
    - Effectiveness of nutrient removal
    - Compare and contrast media
    - Evaluation of assessment procedures
    - Lessons to be learnt
Review of Mills Street Catchment Groundwater Treatment Trial

Following review of the water quality data pre-installation (2005) and post-installation (2005-2010) it was concluded:

- the trial achieved limited nutrient reduction
- did not appear to be effective method for large scale reduction of nutrients
- given temporally & spatially variable nutrient concentrations delivered to drains via groundwater discharge
- Consider more sampling points & frequency of sampling if further trials undertaken
Research focus - working with others

• Biosolids management strategy
  – LaBC: lime amended biosolids to acid sands in Ellenbrook

• Bayswater Brook (Main Drain)
  – collaboration to optimise catchment management

• Urban Waterways Renewal
  – contribution to additional work on Bannister Creek
Conclusion

• The Water Corporation continues to encourage
  
  – Water Sensitive Urban Design
    • maximises the use of drainage & stormwater to recharge groundwater, replenish lakes and wetlands and to help naturally irrigate streetscapes, parks and gardens.

  – Stormwater Science Plan launched today
    • Excellent summary of activities underway to fill knowledge gaps
    • With the framework providing rigour to support research and address the identified risks