Case studies showing the consequences of historic land use planning processes on unconfined groundwater aquifers used for drinking water supply in Western Australia

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Introduction
It has only been in the last two decades or so that land-use planning and water resource management have been integrated to help protect Western Australia’s limited public drinking water source areas. Prior to this, some land use planning decisions resulted in detrimental water-quality impacts, especially in areas serviced from unconfined groundwater aquifers vulnerable to contamination.

This paper discusses the drinking water protection program in Western Australia, and reports three case studies that demonstrate how land use planning decisions can be integrated with water quality measures to avoid, minimize or manage water quality contamination risks. The key risks in these case studies include: nutrients from agricultural land management, and fertilisers used in intensive horticulture; pesticides from weed control and intensive horticulture; and other chemicals from industrial and commercial land use activities.

Public Drinking Water Source Areas – Western Australia

The Drinking Water Source Protection Plan is currently being prepared. Key recommendations will include:

- Integration of land use planning and water resource management processes
- Establishing special control areas in areas vulnerable to contamination
- Developing a surveillance program for the early detection of any contamination.

Sandy soils are found widely in Western Australia. These soils are known to have a high hydraulic conductivity range, allowing rainfall to infiltrate easily and recharge unconfined aquifers, making them vulnerable to contamination by a range of land uses activities.

Private Drinking Water Source Areas

Public Drinking Water Source Areas

The Drinking Water Source Protection and Land Use Planning Process For Groundwater Sources in Western Australia

Particular investigations identify:
- one or more aquifers
- groundwater vulnerability and susceptibility
- recharge mechanisms
- potential contamination pathways
- potential sources of contamination

K E Y O U T C O M E

Drinking water source protection can be achieved by:
- preparing and implementing protection plans
- proclaiming public drinking water source areas
- assigning appropriate priority areas and protection zones within each public drinking water source area
- supporting local government agencies to incorporate public drinking water source areas as ‘special control areas’ in their town planning schemes.

These actions will ensure the quality of a drinking water source is managed and protected now and in the future to meet the Australian Drinking Water Guidelines’ “catchment to consumer” approach and protect public health. This is particularly important for unconfined groundwater sources that are vulnerable to contamination.

Drinking Water Source Protection Plan

Proclaimed in June 1999 under Country Areas Water Supply Act 1947 and establishment of the Drinking Water Source Protection Plan is currently being prepared. Key recommendations will include:

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