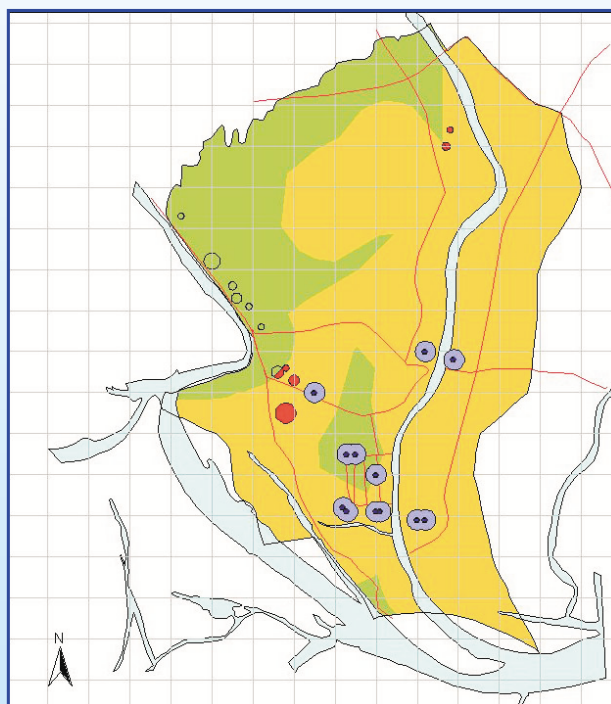


PLANNING REVIEW FOR GROUNDWATER PROTECTION POLICIES



The Link to Planning Institutions

Another link in achieving aquifer protection is with the urban planning framework. The importance of land use planning to the delivery of sustainable development must be stressed. The interaction of activities at the surface with the various forms of urban recharge make it difficult to argue with the author's view that more integrated environmental management of groundwater is needed in urban areas, although there is often a wide gulf between the "should" and the "can" in much urban planning where regulatory enforcement is likely to be weak. In an urban aquifer context this means integration of:

- groundwater protection policies;
- solid and liquid waste management policies;
- pollution prevention policies;
- land use planning.

The practical difficulties of achieving such integration are immense and they have not been adequately overcome yet in much of the developed world, but the integrated environmental management principle is worth defining as an ultimate goal. As part of a sustainable development strategy using an integrated approach, the adoption of environmental capacity is advocated in the report, whereby the groundwater of a city is seen as one of the city's indispensable environmental resources on which all of the city's essential long term needs depend. Environmental capacity forms the baseline set of environmental conditions or standards on which a community relies for its resources, health and quality of life and is a measure of that environment's capacity to absorb and accommodate change without succumbing to irreversible damage.

Key principles include:

- some environmental factors (e.g. groundwater) are essential and have a finite capacity to sustain life;
- the value placed upon these environmental factors is largely subjective and will change over space and time (e.g. the more directly reliant a group are on a specific environmental factor the more value they will place upon it);
- the process of environmental capacity building requires awareness building to aid participatory approaches to decision making and policy implementation.

The purpose of identifying and developing environmental capacity is to establish standards and objectives for policy on the basis of social, economic and cultural realities. Like stakeholder consultation to determine the key groundwater issues and policies to resolve problems, it is a participatory process through which policy makers decide what environmental factors are most valued by a community and how much those factors are valued against other factors.

To do this some assessment of the risks posed by competing factors will be required. This is directly analogous to the pollution risk assessment approach for groundwater described in Stage 3 , only in planning the question 'Does this activity pose a risk to *sustainable use* of the groundwater resource?' translates into 'Is the proposed development a *suitable and environmentally sustainable use of the land*, given the nature of the use and the vulnerability of the aquifer in that location?' (see Figure 1).

A simple checklist and matrix tool to focus data collection needed for a suitable-for-use risk assessment were developed but could not be tested in this project because they would typically be required at a later stage in the Groundwater Management Action Plan, once land-use policies had been agreed and implemented through municipal ordinances or other regulations.

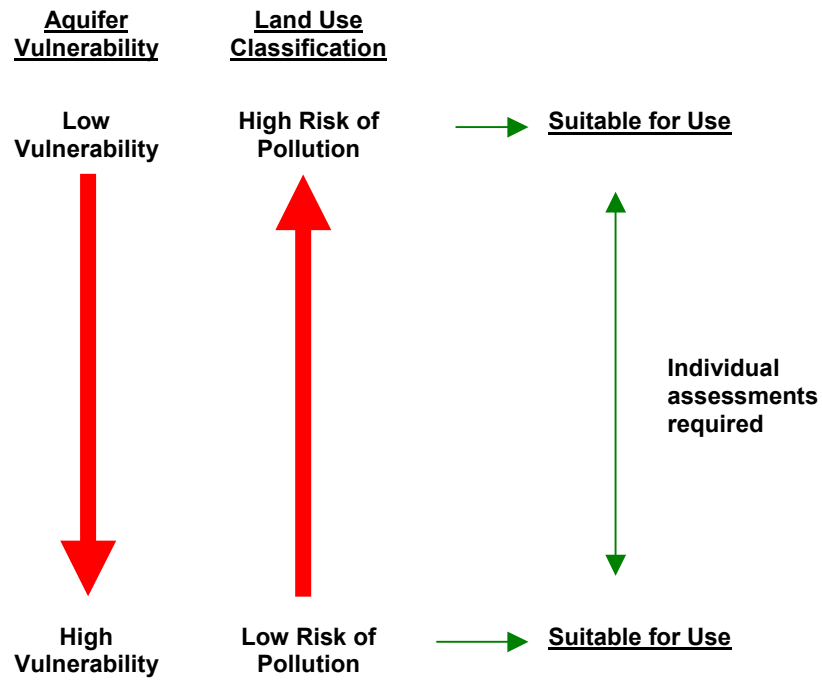


Figure 1 Conceptualisation of ‘suitable for use’ approach in land use planning (from Weston, 2001)

Planning Review Tool

Suitable for Use Information Checklist (from Weston, 2001)

Is the following information about the site available?	Yes/No/NA
Information on the Aquifer	
Aquifer type	
Aquifer vulnerability	
Depth of water table	
Permeability of surface layer	
Information on existing water uses at or near to the site	
Existing end uses of water on-site and by neighbouring uses	
Existing waste disposal upstream and downstream of the site	
Existing water abstraction from the aquifer from the site	
Existing water abstraction from the aquifer from the site	
Existing water abstraction upstream and downstream of the site	
Degree of interaction/connection to shallow aquifer either with nearby water surface (rivers, lakes, springs)	
Degree of interaction/connection to underlying deeper aquifer	
Is the following information about the project/development available?	
Industrial sector (manufacturing/ service/tourism etc)	
Size, scale and other physical details	
Materials to be used in construction and operation	
Materials to be produced during operation	
Materials to be stored on site during operation	
Materials to be disposed of during operation and their means of disposal	
Water abstraction requirements	
Other relevant information on the site and its locality	

Suitable For Use Assessment Matrix

Details Required	Responses	Information sources for responses (including agencies consulted)
Project Details		
Name of Project		
Project Proponent		
New project or extension to an existing project?		
Project type (e.g. waste disposal, manufacturing, retail etc)		
Physical aspects of the project (size, scale etc)		
Materials to be used in construction		
Material to be used in operation		
Waste disposal during operation		
Other relevant details on the project that will assist the assessment		
Site and location		
Existing site conditions and uses		
Characteristics of neighbouring uses (retail, chemical works, manufacturing etc)		
Surface cover		
Aquifer vulnerability (High, medium, Low)		
Site preparation details (including any treatment of existing contaminants)		
Other relevant details on the site and its location that will assist the assessment		
Assessment		
Aquifer Vulnerability Risk Assessment Statement	Can the risks posed by the project be characterised as High, Medium or Low?	
Suitable for use?	Is the site suitable for the use proposed (indicate which option from a, b or c:	a) Yes; or b) Yes but requiring mitigation measures – give details and how they will be enforced; or c) No