




GEOMORPHOLOGY



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CATCHMENT AND RIVER MANAGEMENT



Catchment and river management

- Importance of managing drainage basins/catchment areas
- Impact of people on drainage basins/catchment areas:
 - River pollution
 - Overgrazing
 - Deforestation
 - Human settlement
- Strategies to manage drainage basins/catchment areas



IMPORTANT CONCEPTS

A catchment is defined as the area (drainage basin) that captures rainfall which will drain into a watercourse (river system).

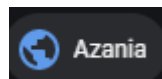
Drainage basin is an area drained by a river and its tributaries.

Catchment management is balancing the use and conservation of natural resources on a whole of catchment basis.

Catchment management is achieved through the combined efforts of the community, government and non-government organisations working together towards common and sustainable targets to achieve this balance.

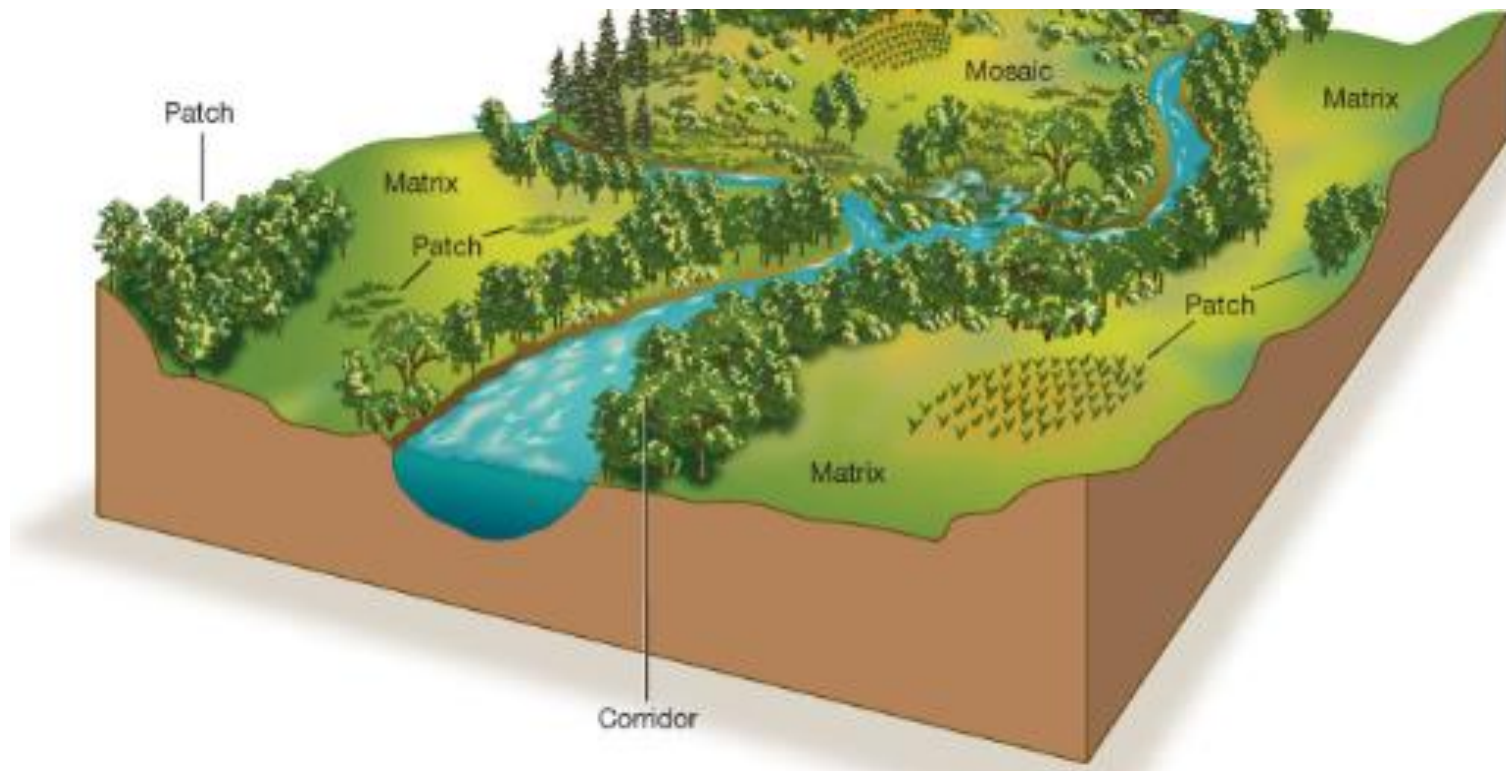
River Management is defined as the management of water resources of a basin as part of the natural ecosystem and in relation to their socio-economic setting.

(Sustainable conservation of the river and its drainage basin). **R. Davechand 2020**





IMPORTANCE OF MANAGING DRAINAGE BASINS/CATCHMENT AREAS



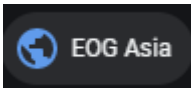


IMPORTANCE OF MANAGING DRAINAGE BASINS/CATCHMENT AREAS


- Store water and protecting for future use
- Reduce discharge and recycle harmful agricultural run-off.
- Agricultural purposes e.g. farming
- Industrial purposes e.g. use in factories cooling systems
- Flood control- control flow of water to reduce chances of flooding
- Domestic use – use by people in homes etc.
- Recreation e.g. water sport
- Hydroelectricity
- Natural vegetation
- Bird and wildlife

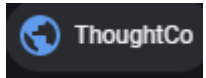


RIVER POLLUTION





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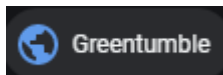


River water gets polluted in various ways e.g. industrial waste, fertilizers and pesticides from agriculture, untreated sewage.

This reduces the quality of water, damages the natural environment both land and aquatic.



OVERGRAZING





Removes vegetation and increases runoff.

It results in:

- Flooding
- More erosion and more soil deposited in the river system, reducing quality and quantity of water and damaging aquatic ecosystems




DEFORESTATION



 Medium



 Live Science



Removes vegetation and increases run-off.

It results in:

Flooding

More erosion and more soil deposited in the river system, reducing quality and quantity of water and damaging aquatic ecosystems

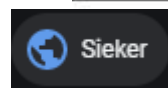


Other impacts by people

- Alter run-off by building dams e.g. less water below dam
- Urban development reduces infiltration
- Agricultural irrigation reduces water for natural environment
- Water projects can reduce water in areas



HUMAN SETTLEMENT





Reduces infiltration and increases runoff.

Could result in more water and more flooding in lower region

Could result in more water usage and less water available in lower region.



Water Pollution





Pollute the catchment area and river

Uses a lot of water and this impact negatively on the ecology of rivers and their catchment areas

Removes vegetation and increases run-off.

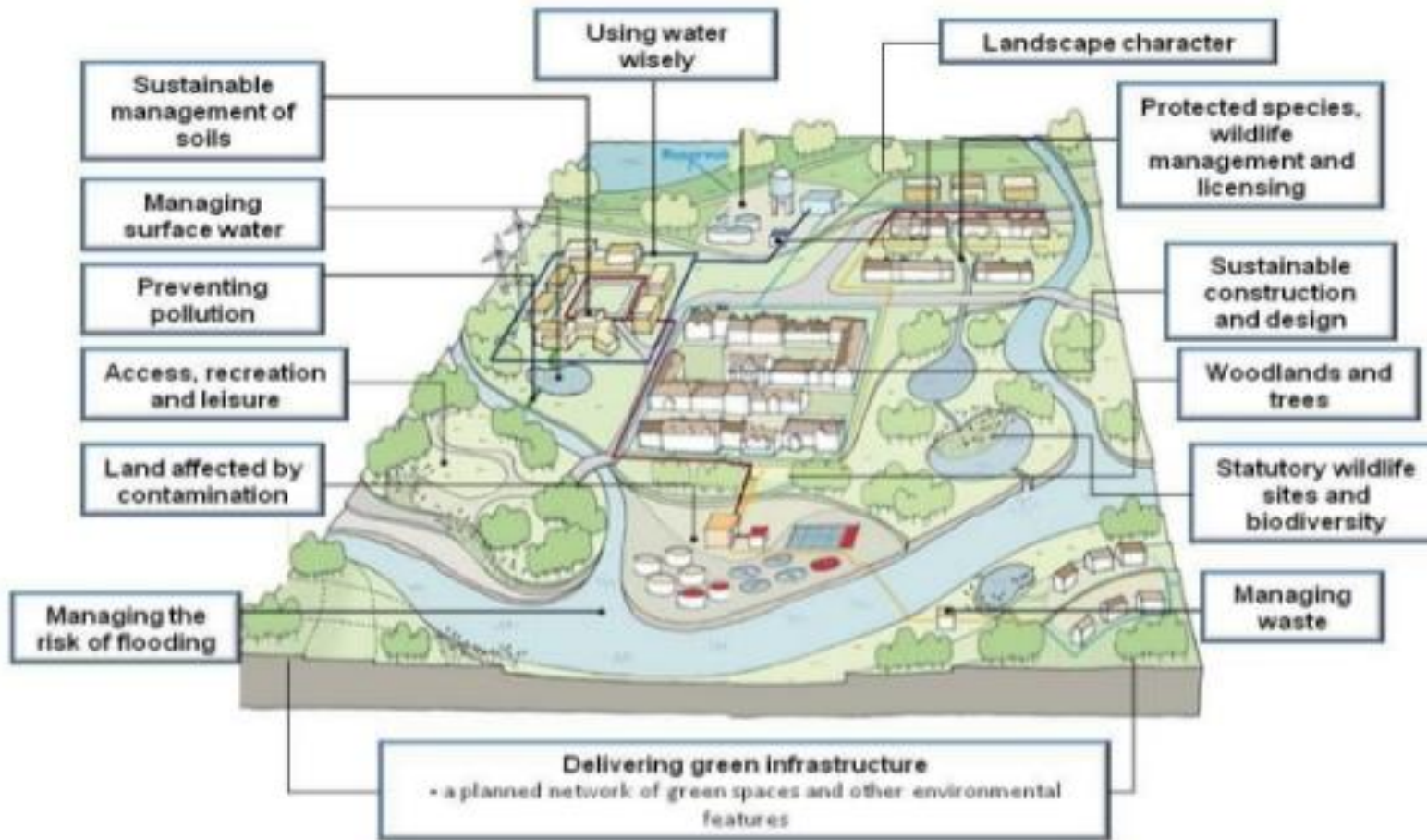
It results in:

Flooding

More erosion and more soil deposited in the river system, reducing quality and quantity of water and damaging aquatic ecosystems



STRATEGIES TO MANAGE DRAINAGE BASINS/CATCHMENT AREAS



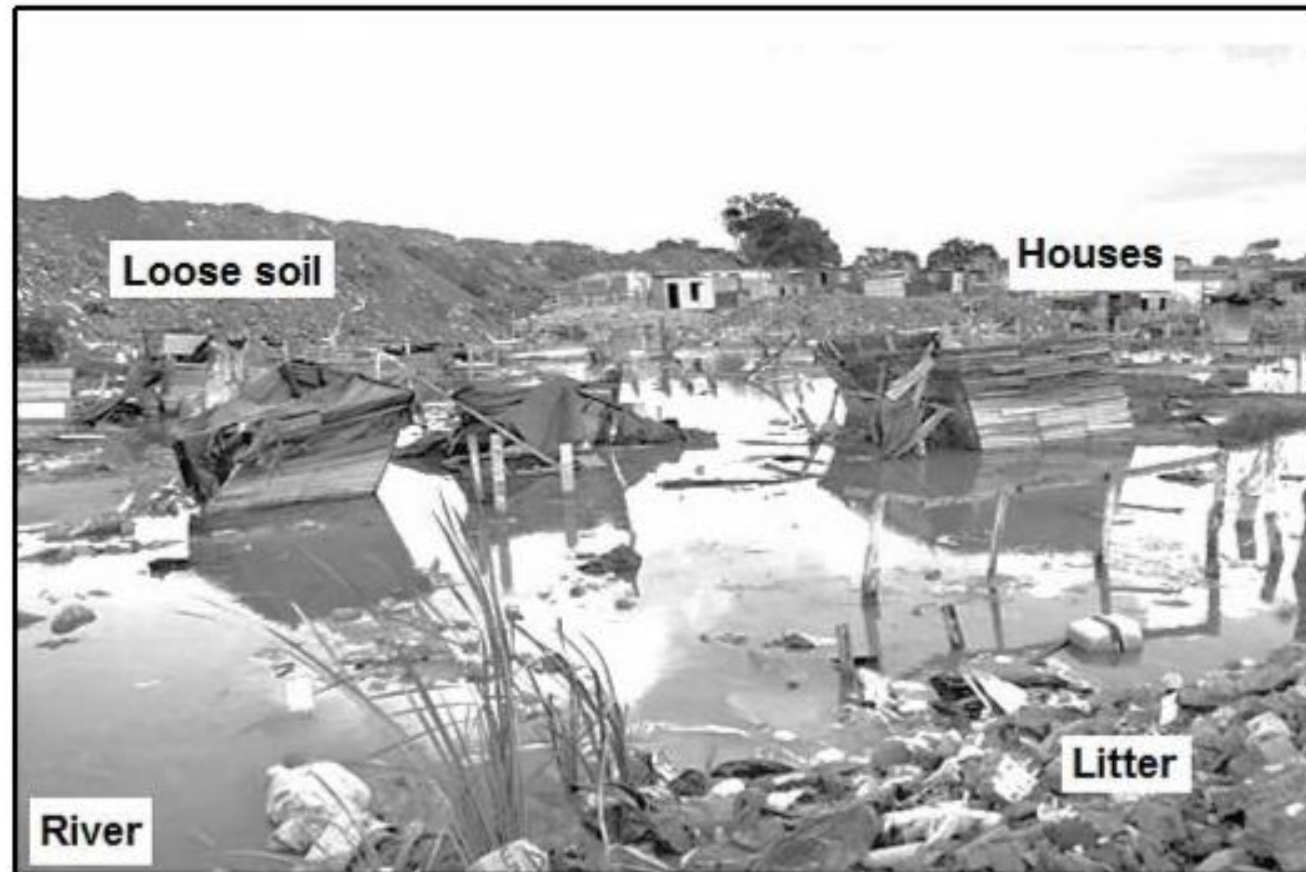


- Improve wastewater treatment
- Maximizing wastewater re-use for irrigation and other purposes of generation
- In the dry season release stored water to keep ecosystems as natural as possible
- Remove alien vegetation
- Monitor overgrazing to reduce erosion
- Proper sewage treatment
- Educate people on the importance of catchment and river management
- Monitor and improve water purification works



DBE PAST PAPER

FIGURE 1.6: IMPACT OF PEOPLE ON RIVERS



[Source: <http://www.groundup.org.za>]



1.6 Refer to FIGURE 1.6, a photograph showing the impact of people on rivers.

1.6.1 What does the term *river management* mean? (1 x 1) (1)

1.6 1.6.1 Sustainable conservation of the river and its drainage basin (1)
[CONCEPT] (1 x 1) (1)



1.6.2 Which government department is responsible for the health and sustainable use of rivers? (1 x 1) (1)

1.6.2 The Department of Water Affairs (1) (1 x 1) (1)



1.6.3 What evidence in the photograph indicates poor river management?
(2 x 1) (2)

- 1.6.3 Development of informal settlement on the river bank (1)
Littering of all types of wastes in the river (1)
Removal of vegetation which results in loose soil (1)
Disposal of domestic waste as people are living on the river bank (1)
Remains of buildings in river (1)
[ANY TWO] (2 x 1) (2)



1.6.4 Recommend TWO ways in which the municipality can reduce the impact of informal settlements on rivers. (2 x 2) (4)

1.6.4 Move the settlement above the flood line/away from the river (2)
Educate residents about management of river resources (2)
Provision of refuse removal services (2)
Proper sanitation (2)
Running water in houses (2)
Alternative/RDP housing to relocate the people away from the river bank (2)
Vegetating the bare slopes (2)
Creating a buffer zone to prevent pollution of the river (2)
Legislation and fines (2)
[ANY TWO] (2 x 2) (4)



1.6.5 Write a paragraph of approximately EIGHT lines in which you give reasons why it is crucial (very important) to maintain the health (or quality) of rivers in South Africa. (4 x 2) (8)

- 1.6.5 Limited water resources in South Africa (2)
Rivers are our only source of fresh drinkable water (2)
Supply clean water that is essential for human health (2)
They are fresh water reservoirs that supply people with food e.g. fish (2)
Clean water needed for farming/irrigation (2)
Clean water needed for industrial activities (2)
Clean water for domestic purposes (2)
Ensure that the ecosystems remain healthy and in balance (2)
Maintain aesthetic appeal (2)
Essential for water recreation activities (2)
They are used for tourist attractions (2)
[ANY FOUR] (4 x 2) (8)