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# River Landscapes

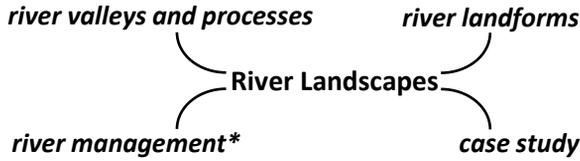
## Hard Engineering



quiz



### The Big Picture



### Hard Engineering

Hard engineering river management involves the construction of structures built to control the flow of water and reduce flooding. Hard engineering strategies work against nature. Decisions about hard engineering solutions are based on cost-benefit analysis.



### Dams and Reservoirs

#### Benefits

- Large storage capacity
- Generate electricity
- Controlled release of water
- Source of drinking water

#### Costs

- Expensive
- People displaced
- Large area of land flooded
- Sediment is trapped behind the dam



### Key Terms



**Channel straightening** – Removing meanders to straighten a river channel.



**Dam** – A structure across a river to control the flow of water.



**Embankments** – Building up the banks of a river creating levees or building walls.



**Flood-relief channel** – An artificial channel to divert water.



**Hard engineering** – building structures, to control natural processes locally.



**Reservoir** – An artificial lake where water is stored.



### Channel Straightening

#### Benefits

- Water moves quickly away from urban areas
- Navigation improved
- Reduces flood risk in prone areas
- Reduces insurance costs

#### Costs

- Expensive
- Looks unattractive
- Increases flood risk downstream
- Aquatic habitats affected



### Embankments

#### Benefits

- Increases river capacity
- New habitats created
- Provides walkways
- Reduces flood risk

#### Costs

- Looks unattractive
- Expensive
- Ongoing maintenance
- If embankments fails flooding more serious



### Flood Relief Channels

#### Benefits

- Flood risk reduced near urban areas
- New habitats created
- Recreation e.g. fishing and paddle boarding
- Reduces insurance costs

#### Costs

- Expensive
- Habitats disturbed
- Ongoing maintenance
- Looks unattractive if concrete used