Principles and Objectives: Session 3 : Basic Choices

Module 3 Session 3

Wastewater Management Process

Household

Collection

Sludge

Treatment

Ponds

Disposal

Reuse

Developing the plan
Assessing the options

Determine overall strategy in the light of the local situation and the contribution made by various options to achieving overall objectives.

Consider the following when considering treatment options:

- Removal of organic load and pathogens

  (In relation to possible disposal/reuse options)
- Land requirement and land availability
- Power requirements
- Susceptibility of receiving water body to changes in load
- Management requirements (Available management resources may be limited).
- Acceptability to users

Options Analysis

Is fall available ?	Is space available locally ?	Is power available ?	Options
No	No	No	On-plot sanitation separate grey water disposal
Yes	No	No	Explore availability of space for treatment further a field.
No	Yes	No	Sewered interceptor tank systems to local treatment facility
No	No	Yes	Explore treatment system with pumping
Yes	Yes	No	Local aerobic treatment (ponds, reed beds, bacterial beds)
No	Yes	Yes	Sewage pumped to local treatment.
Yes	No	Yes	Larger system with centralised treatment
Yes	Yes	Yes	Undertake cost/benefit analysis of more/less localised system.

Wastewater Management Options I

- *Start with Household :* Where few sanitation facilities exist promote sanitation facilities that separate black and grey water. In addition sanitary arrangements for sludge removal are also required.

- *Local collection and treatment :* Treat wastewater locally to reduce pathogen content and organic load.

- *Change the disposal point :* Consider alternative wastewater disposal point which allow greater dilution of pollutants and hence reduce oxygen depletion in the receiving water body.

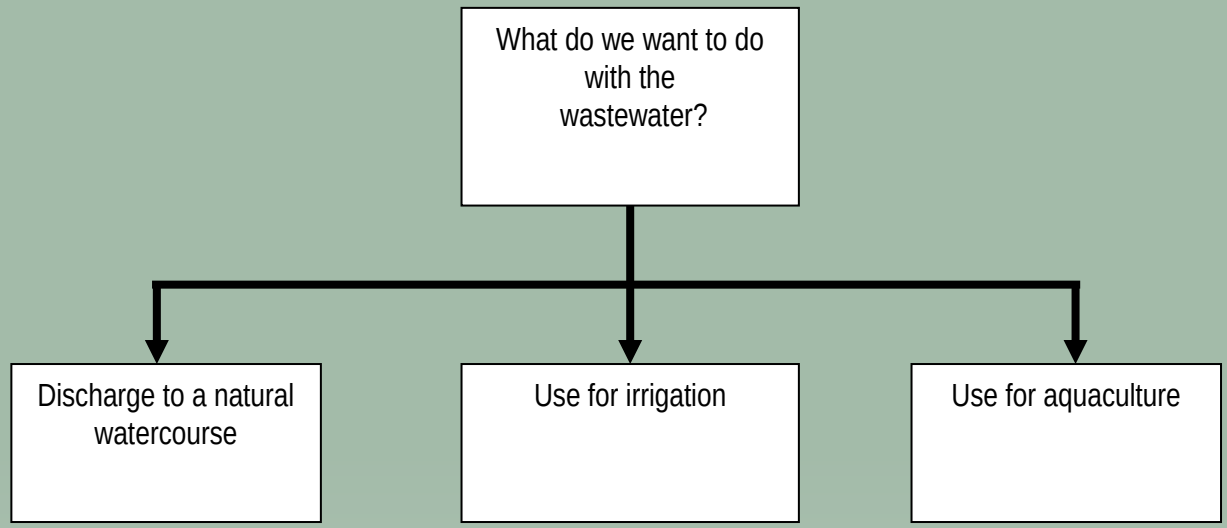
Wastewater Management Options II

- *Where wastewater is discharged to a local pond* consider adaptations to the existing system to introduce primary treatment for aquaculture or effluent reuse.

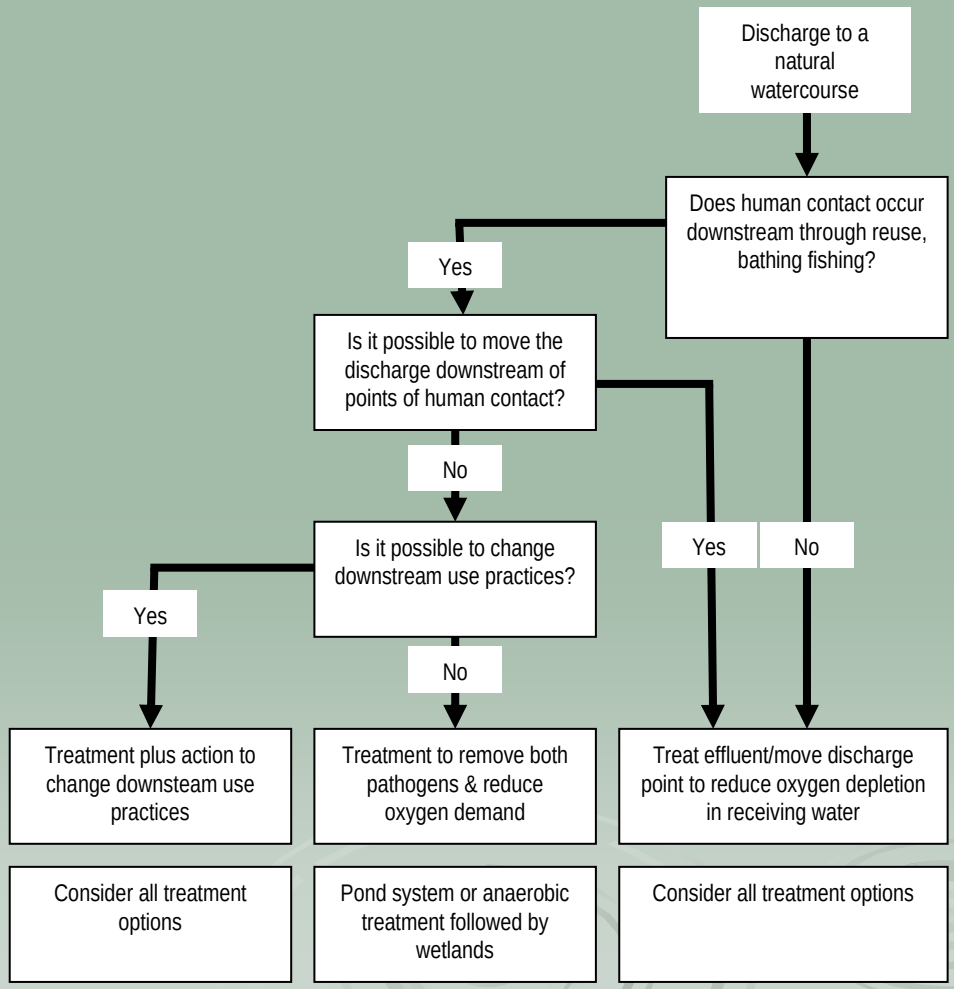
- *Where untreated wastewater is used locally for agriculture and aquaculture* options may be introducing :
  - treatment,
  - irrigation management – *Apply irrigation water in ways that minimize health risks,* - for instance using drip rather than spray irrigation
  - *Control human exposure to wastewater* – provide protective clothing and encourage people to cook food irrigated with wastewater before eating.
  - Place restrictions on crops that can be irrigated with wastewater.

- *Where wastewater is transported via drains or sewers* but there is local demand for irrigated agriculture or aquaculture part of the flow may be diverted to a decentralised system

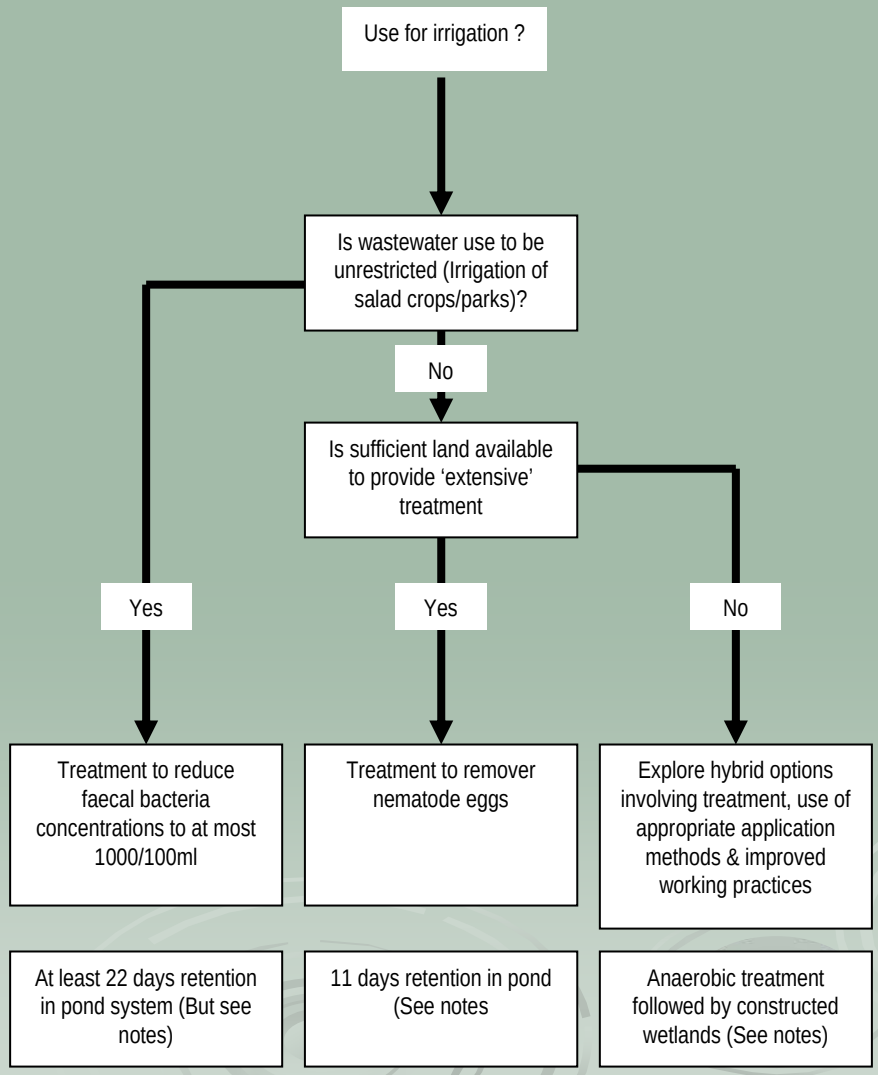
What do we want to do with wastewater?



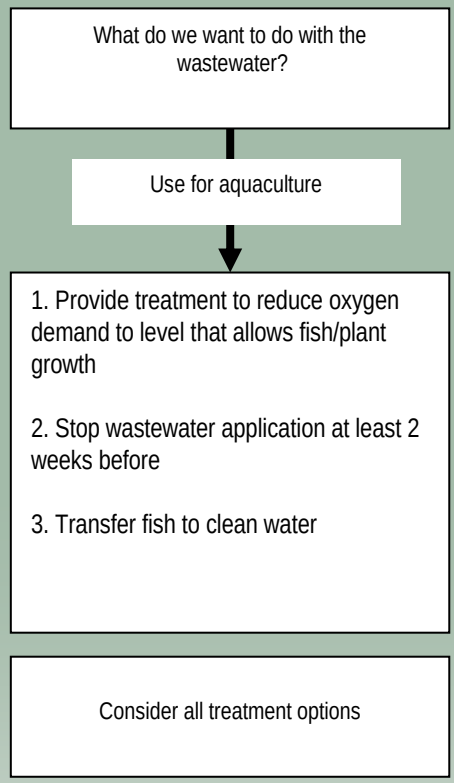
Discharge to a natural watercourse ?



Use for irrigation ?



Use for aquaculture ?



Developing Proposals

Screen options in order to confirm that:

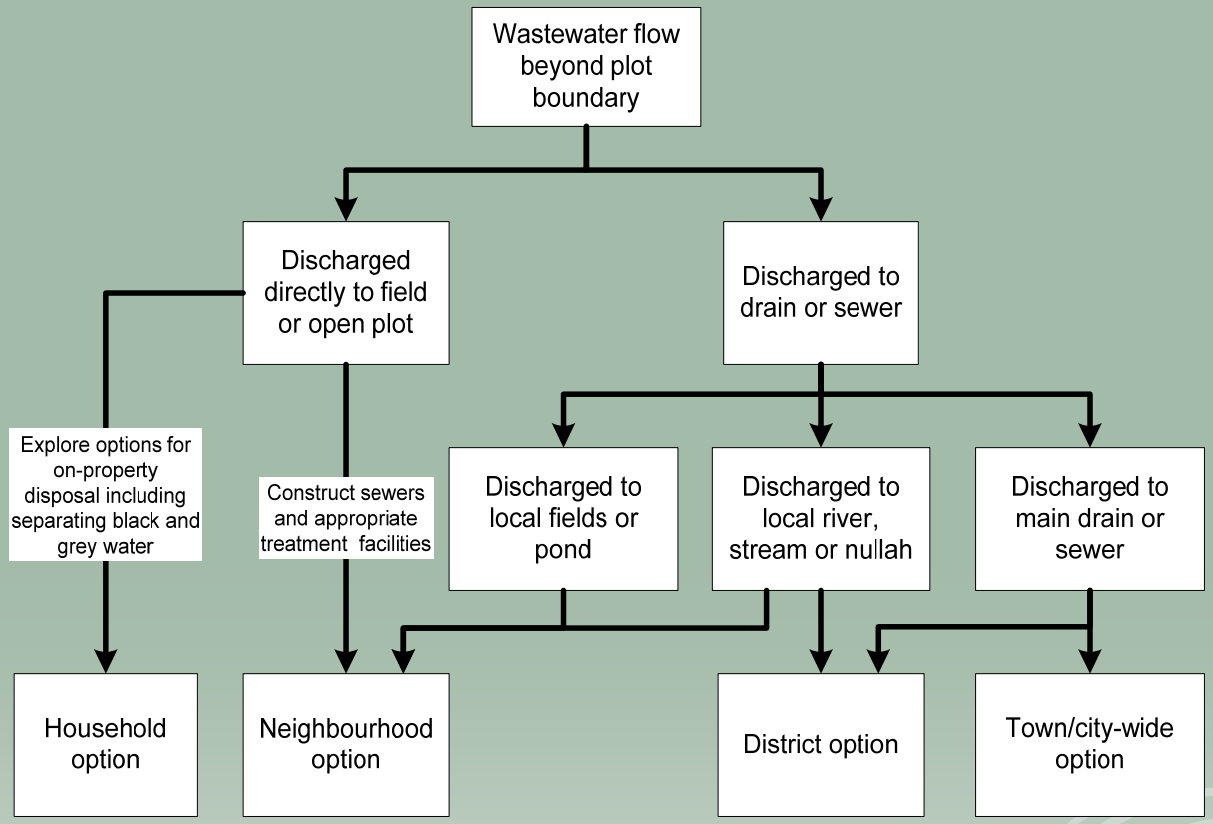
- They achieve intended objectives
- They are permissible/acceptable
- The resources they require are available.

Consider how they might fail and take appropriate action to counter potential problems.

(Be particularly concerned about financial sustainability and the reliability of proposed management arrangements.

Consider the scale at which options might be applied. (See next slide).

Determining an appropriate scale for treatment



New institutional arrangements may be required to support the neighbourhood option