Pond construction on aggregate sites: good practice guidelines

MILLION PONDS PROJECT

A 50-YEAR PROJECT TO CREATE A NETWORK OF CLEAN WATER PONDS FOR FRESHWATER WILDLIFE

1. Keep the water clean and unpolluted

- Don't link ponds to streams or ditches, which will usually bring in pollutants.
- Keep topsoil well away from the pond margins, as topsoil is usually rich in polluting nutrients.
- Keep the surrounds natural - make sure surface water doesn't drain in from buildings, roads or intensive farmland.
- It's better to have less water than have polluted water. Ponds that dry up each summer can be very good for wildlife.

2. Put ponds anywhere, make them different

- Restored aggregate sites often have large areas of open water, but few smaller waterbodies. Ponds and lakes are both important but very different wildlife habitats, supporting different plant and animal communities. Ponds can be created easily and cheaply and can be fitted almost anywhere on aggregate sites. Ponds of all sizes (from 1 m^2 upwards) and depths are valuable for wildlife.
- If space for pond creation is tight, make long narrow groundwater-fed ponds against the boundary of the site.
- If there's more space, create a complex of different types of ponds: large and small, deep and shallow enough to dry out, with areas of marsh or wet grassland between (see Figure 1).

Who should read this factsheet?

This factsheet is intended for quarry managers, consultants, excavator operators, and anyone who wants a quick overview of the principles of creating clean water ponds for wildlife.

Key principles

Ponds are easy to make on aggregate extraction sites and, using a few key principles, give quick wins for biodiversity.

- Keep the water clean and unpolluted.
- Create pond complexes with a variety of shapes, sizes, permanence and depths.
- Create shallow edges and wide drawdown zones.
- Don't put topsoil on the pond banks.
- Don't plant up – leave ponds to colonise naturally.

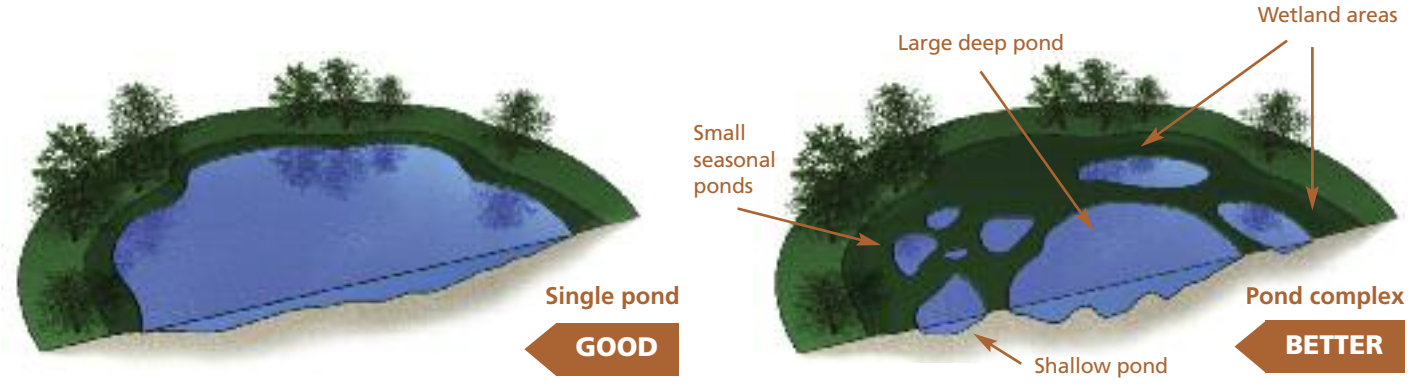

Figure 1. Create complexes of ponds with different depths and surface area – this will increase the diversity of wildlife attracted to the site, and provide a range of habitats in all climate conditions.

- Make ponds on the edges of gravel pit lakes; excavate small pools in shallow lake margins and use the spoil (but not the topsoil) to create islands for breeding birds (see Section 6). Alternatively, build a bund in the corner of a gravel pit lake to form a separate pond.
- Don't directly link the ponds together with channels; different ponds develop different water chemistry conditions and will provide habitats for different species. Keeping the water separate in different ponds will also help to keep the water clean and reduce the potential for spread of any pollutants or alien plants or animals.
- N.B. In some wetland restoration schemes where maintaining permanent water is desirable (e.g. those aimed at water vole or fish), linking some of the ponds to other waterbodies may be beneficial.

BEWARE: Don't make ponds where you'd have to dig up existing wetlands, such as flushes, springs, temporary ponds, marshes or other valuable habitats, such as flower-rich grassland.

3. Create ponds with shallow banks and wide drawdown zones

- Make some ponds which have very shallow bank angles (1 in 10, i.e. 5° or shallower) at the water's edge. Steep banks can be useful in tight corners, or for some target species, such as water vole and white-clawed crayfish.
- Create a wide drawdown zone with as many bumps and hollows as you can near to the water level and below it (see Figure 2).
- Leave ponds rough and don't smooth away bucket tooth marks, leave areas of compaction and large clods of earth – they all add to small-scale variety.

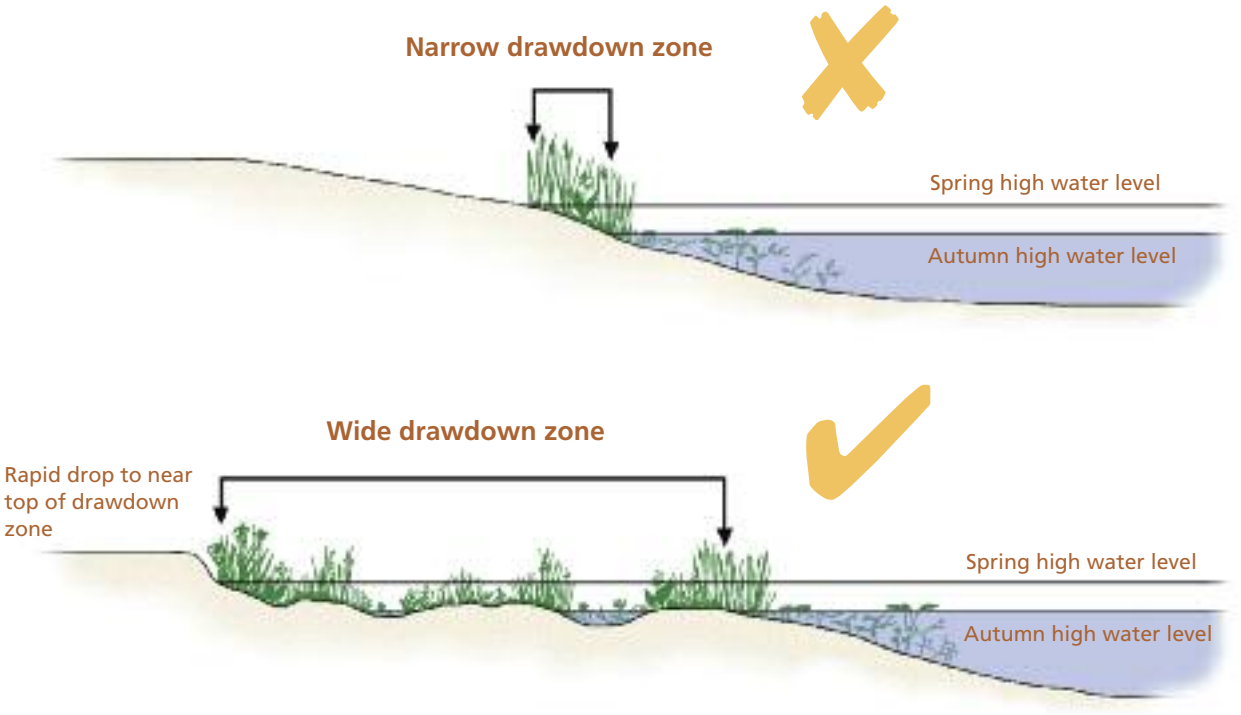

Figure 2. Create broad undulating drawdown zones – they are one of the most valuable areas for wildlife.

4. Dealing with spoil and topsoil

Bear in mind the impact spoil could have on nearby terrestrial and aquatic habitats, and on the success of the ponds being created. For example:

- Don't build a rim or bank around the pond which could interfere with the passage of good quality surface water into the pond.
- Don't use spoil or topsoil to fill in hollows or depressions which could be of ecological or archaeological value.
- Don't spread spoil or topsoil in areas where it can be washed into ponds or other small waterbodies. Temporary bunds can be used to contain any run-off from temporary storage piles of spoil or topsoil.
- Do use excavated spoil (but not topsoil) to construct wildlife habitat such as amphibian hibernation habitat, or to re-profile existing gravel pit lake margins to create shallows, shoals and islands (see Section 6).

5. Finishing off the pond margins

Pond creation is not an exact science, and sometimes ponds don't turn out exactly as planned. Usually this is because water levels aren't exactly where predicted.

Bringing back a digger to the site one year after creation can fix most problems and brings additional benefits:

- Banks can be modified with the pond now full of water. Using the water level as a guide, it's very quick and easy to create pools and hummocks in shallow water areas using a digger (see Figure 3).
- The small amounts of excavated spoil (though not topsoil), can be re-used around the site to make hummocks, spits, islands, underwater bars or shallower slopes in the pond itself.

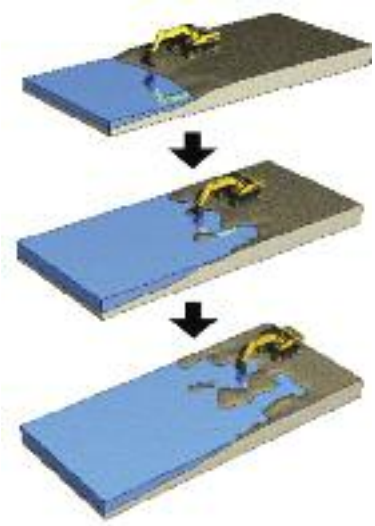

Figure 3. How to improve pond margins after creation. Digger driver works backwards from the water's edge, creating undulating edges and using the water as a natural 'level' to see the shapes made.

6. Creating ponds and re-profiling gravel pit lake margins

Ponds can be added at the end of gravel pit restoration, or in later years. The spoil (but not the topsoil) can be very usefully used to re-profile adjacent gravel-pit lakes; creating shallows, spits, low islands, submerged bars or new swamps or pools at the water's edge (see Figure 4).

Warning: The Environment Agency should be consulted prior to the use of excavated spoil in re-profiling existing lakes or ponds.

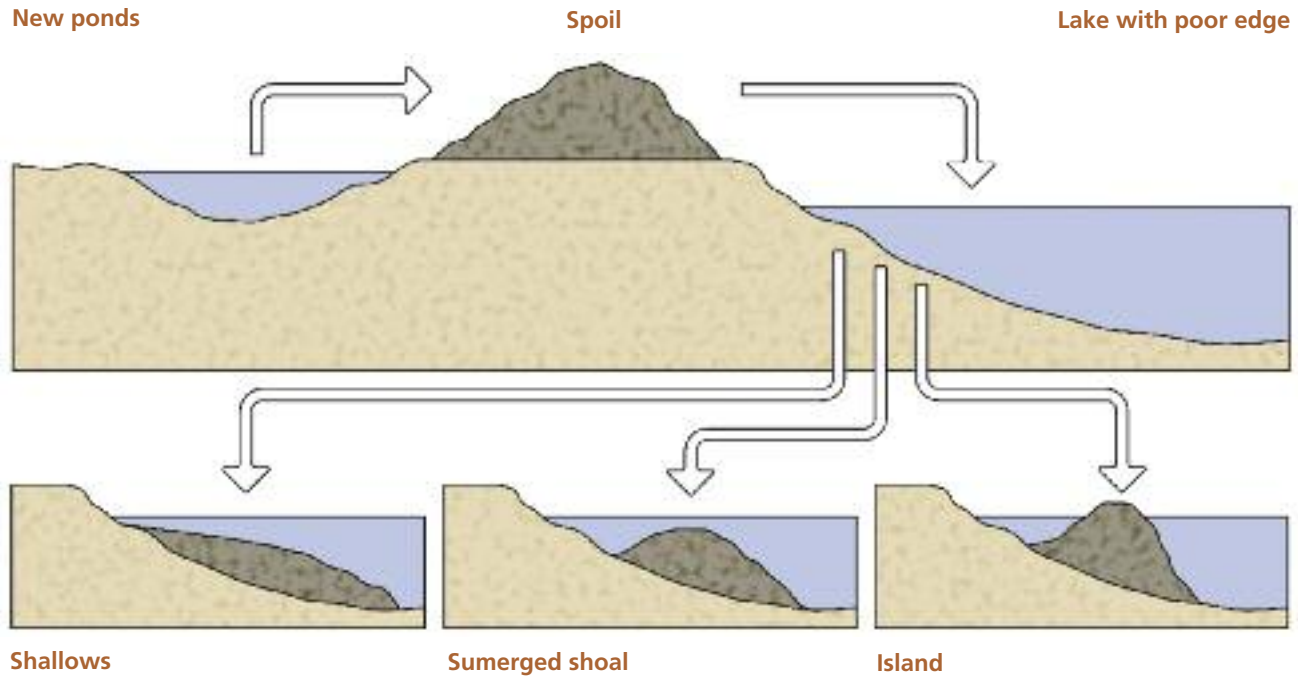

Figure 4. **Features such as shallows, shoals and islands, can be created in the margins of gravel pit lakes using spoil excavated from new ponds.**

7. Aftercare and management of new clean water ponds

- Don't add plants to new ponds – let them colonise naturally. Ponds colonise quickly, particularly where there are other wetlands around.
- The benefit of clean water ponds is that they are less likely to suffer from common management issues such as duckweed and algal blooms. However, a little management can be really valuable in the first year or two, so keep an eye on the pond during that time and make sure that alien invasive plants don't become established.

For further information about the Million Ponds Project and to consult the other Factsheets from the Aggregates Toolkit, please visit *www.freshwaterhabitats.org.uk/projects/million-ponds* or email *info@freshwaterhabitats.org.uk*