E07/2622/F

Herefordshire FWAG

POND PLAN

Restoration/Creation

On land at Winthill, Suckley

February 2007

WINTHILL, SUCKLEY **C/o Mr Paul Beaumont, Sindon's Mill Farm, Suckley,** **Worcs. WR6 5EQ** **For Mr A. Manning-Cox, Winthill**	**CPH:** **Designations:** **None**
Date of plan: February 2007	**Grif Reference of pond:** **SO 7195 4955**

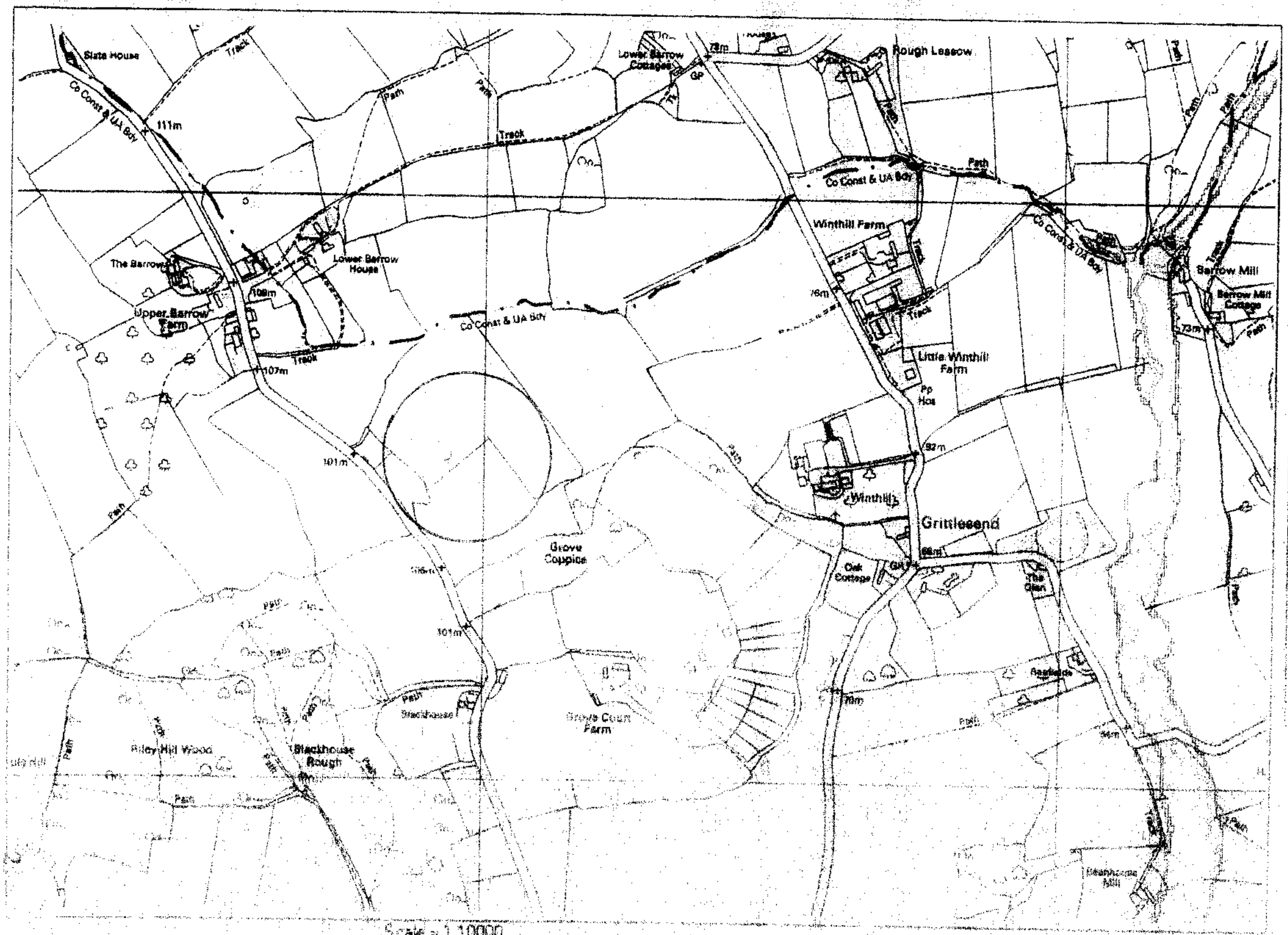
Janet Lomas, Home Farm
Madresfield
Malvern
Worcs
WR13 5AJ

Tel: 01684 578857

Flood Zone 3 (1% annual probability flooding) and 2 Map

Winthill, Cradley

ENVIRONMENT AGENCY



Flood_Zone_3_010k.shp ▢

Flood_Zone_2_010k.shp ▢

POND CIRCLED

MAP OF SITE

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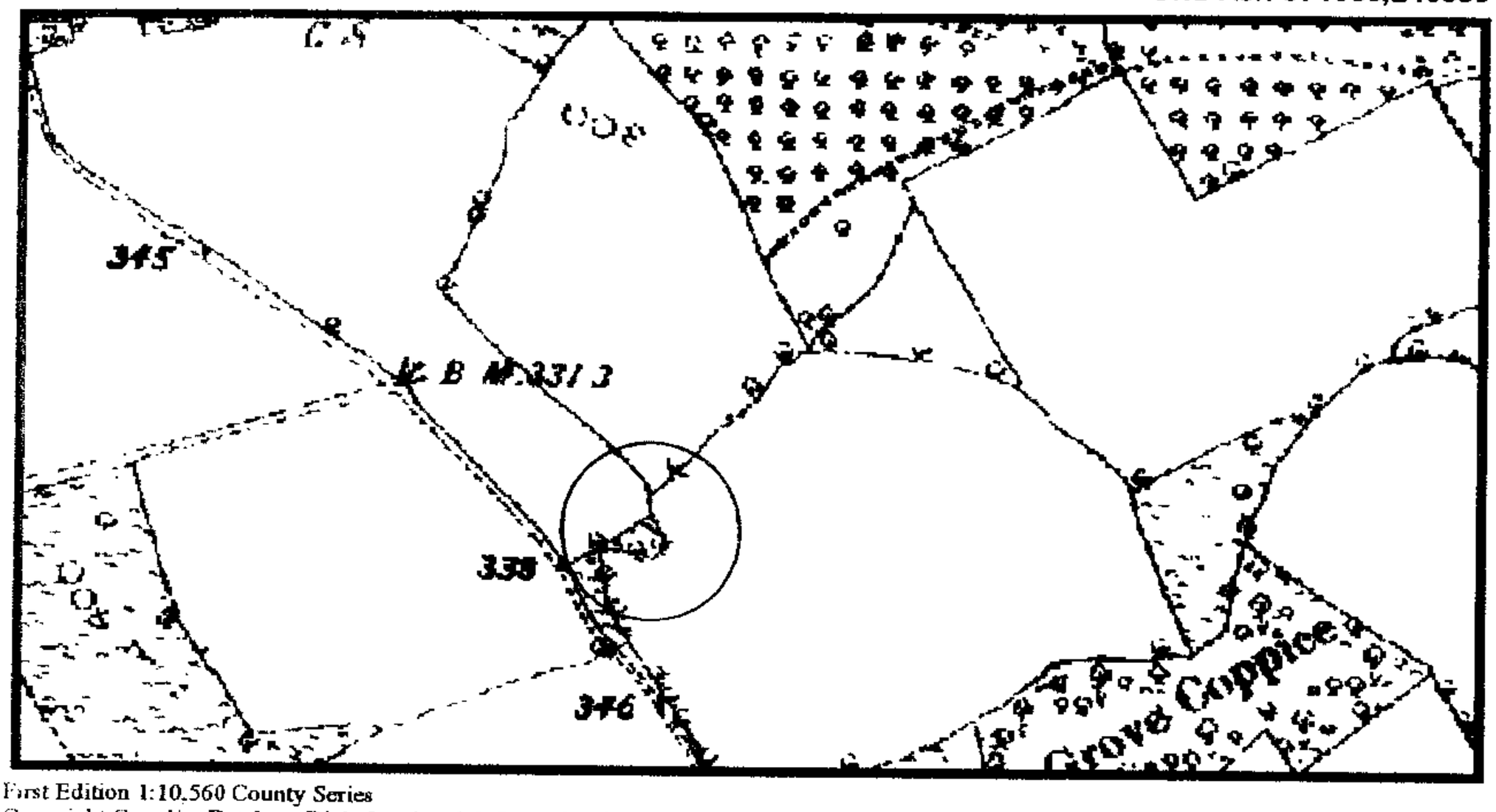
old-maps .co.uk

OS MAP 1890

County: WORCESTERSHIRE Date :1890 Grid Ref: 371950,249550



First Edition 1:10,560 County Series

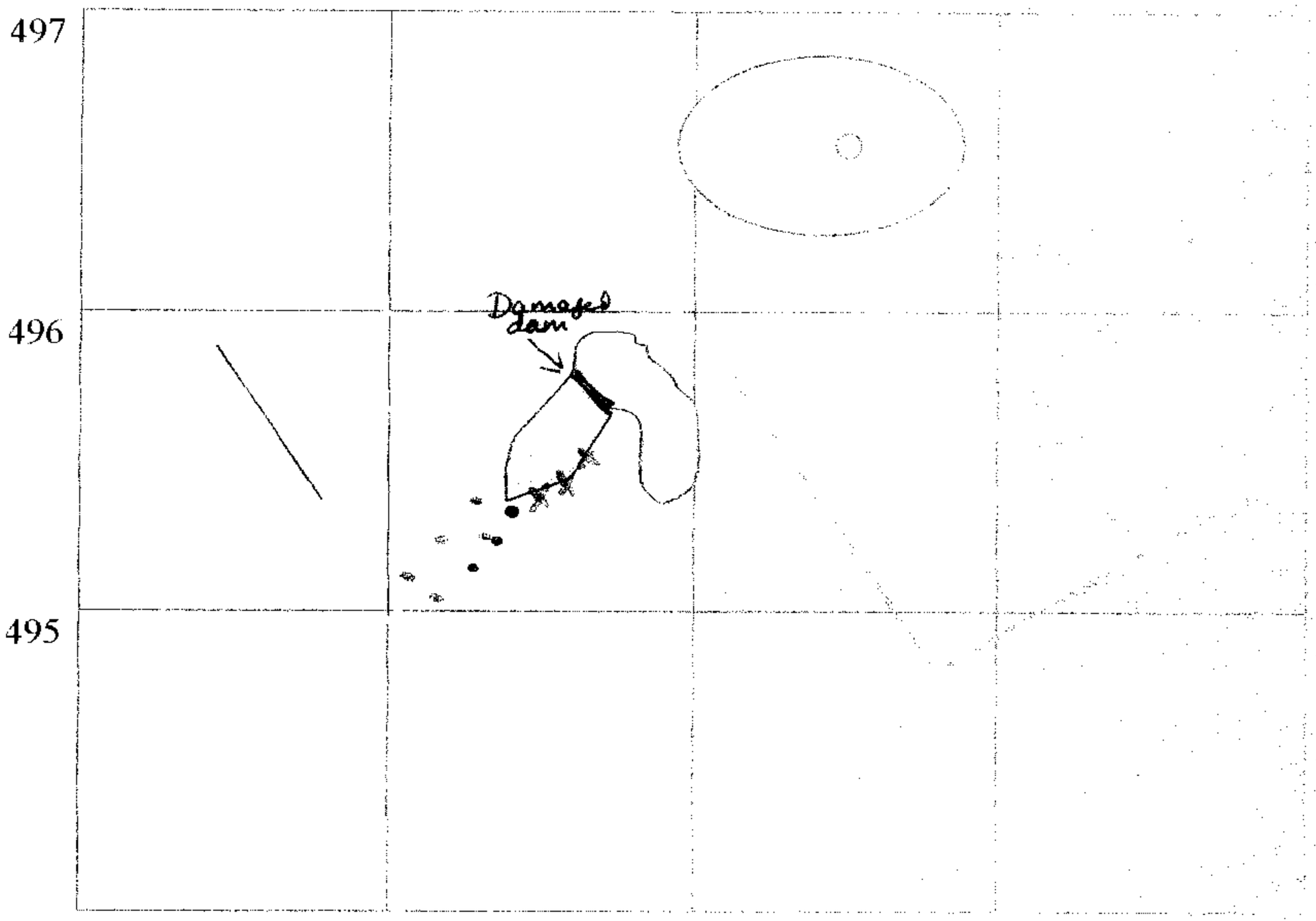
This map can be viewed at the following address:
http://www.old-maps.co.uk/oldmaps/index_external.jsp?easting=371950&northing=249550&countyCode=39

LANDMARK Ordnance Survey

1890 Map shows wooded watercourse, but no pond/reservoir.

DIAGRAM SHOWING PROPOSED EXTENSION OF POND

Not to scale



KEY

- Existing new pond
- Existing reservoir
- Proposed area of extended pond
- Hedge
- Watercourse (water supply)
- Oak tree
- Ash tree
- Native broadleaved shrubs/trees
- New area of broadleaved woodland

BRIEF DESCRIPTION OF EXISTING POND (former reservoir)

Size

There is a pond shown on the diagram above, which was created as a reservoir, probably near the beginning of the 20th century. Its shape is tear-drop, and dimensions are 50 metres long ,by 20 metres wide at the central point. It was created on the line of a small ditch which comes down the sloping land lying in the southwest direction from the poud. This ditch takes a rush of water after rainfall, but is generally otherwise dry. There may be additional supply from a spring, although this has not been confirmed as the pond does not dry up. The watercourse, and land surrounding the pond is lined with native broadleaved shrubs and trees. A larch plantation was planted, and has recently been cleared, amongst the native trees. Some coppice work has taken place, and the light allowed into the pond and adjacent area, which was until recently very shaded. See photos, Appendix B.

Depth/profile/description

The pond is up to 1.5 metres deep at its deepest point near the dam, but has deep soft silt and leaf litter. The pond is leaking through the dam, where large grey willows are compromising the dam. Damage to the steeply sloping dry face of the dam is evident, where soil has eroded. Concrete and rubble has been deposited near the dam, where hollows have formed, possibly by water erosion.

Water supply

The supply of water is via a dry ditch which carries heavy flow after rainfall. The outflow is via a pipe, which takes water to the newly constructed lake which is shown on the plan above, which lies north-east of this pond.

Surrounding habitat

New broadleaved woodland (less than five years old) has been planted in areas roughly shown on the plan above. The trees and shrubs around the pond, and along the watercourse are valuable habitat, with hazel, oak, ash, alder, silver birch hawthorn and grey willow. These show signs of neglect under a conifer canopy, which has now been removed.

Wildlife/setting

Seen in February, there were no plants visible in the pond, which is due to the previous shading. No netting/survey work took place, due to an unfavourable time of year. Wild fowl and other birds and animals which visit and forage by the large new lake nearby are likely to make use of this pond, which has the advantage of adjacent wooded cover.

The surrounding land is managed for wildlife and amenity. Grass is not grazed, due to demands of fencing/stock management, in a mosaic of pond/lake/new woodland. Instead, seeded with wild flower mix, the grassland is topped annually.

Historic

The 1890 map shown on page 3 shows that there was no pond on the site at that time, but the watercourse is shown. The land once belonged to Winthill Farm, and older locals believe that the pond was created as a reservoir in the 1920s, and it is referred to as a reservoir on maps. The outflow pipe-work in the dam is cast iron, and likely to date from that time. Winthill Farm was a large progressive hop and fruit farm at that time, and it is likely that the creation of the reservoir was for agricultural purposes.

AIMS & OBJECTIVES

- To prevent further deterioration of an existing landscape and wildlife feature, which is losing water through a root-damaged dam, and in fear of losing the characteristics of open water. Restoration work necessitates the removal of the dam, and trees growing on it.

- To take this opportunity to extend the pond, creating in the process a larger body of water of irregular shape determined by the natural land form, to compliment the other creation projects on the holding.

- To create a wildlife habitat and landscape feature.

- To encourage the native broadleaves on the surrounding wooded banks by management to control shading of the pond and by encouraging natural regeneration.

WORK PROPOSALS

The shape of the extension of the pond has been marked out on the ground by posts. The boundary of the extension has been selected in order to make use of the natural land form. The approximate size is shown on the plan above.

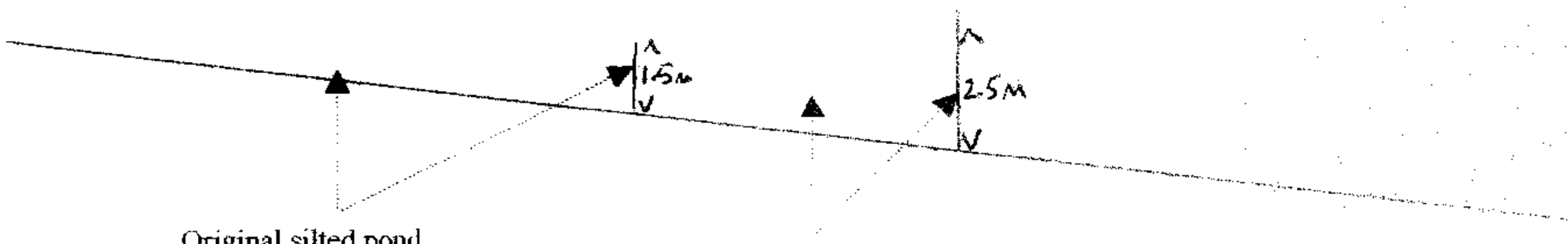
No spoil from the restoration/creation will be moved off the site. Spoil will be used to form a new dam. The dry slope of the new dam will be gradual, no steeper than 1:4, which will allow the extended pond to blend in with the naturally rolling topography. See diagram below. The new pond's greatest depth will be a maximum of 2.5 metres at the dam.

A stone perimeter wall will be created on the pond edge, at and below the water-line, in order to prevent erosion of the shore-line. This will be created with 3-6 inch boulders forming a wall, 10 inches deep, sloping inwards towards the centre of the pond. The use of this technique has proved very successful in the larger lake, created 3 years ago.

The overflow system will take water via a pipe to the existing lake. Gradually sloping banks will be created, and varied depth. Notes are included in Appendix A to incorporate in the design of the extended area.

Further native broadleaved trees and shrubs will be planted to help the new pond blend into the landscape.

Plan below shows proposed new dam, and gradual dry slope.



APPENDIX A

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CREATING NEW PONDS

- **Legal aspects**- The legal requirements largely depend on the size of pond, its water supply and the use to which it will be put. Contact your local Environment Agency office to see if you need any licences or consents from them, for example for abstracting or impounding water or for spreading spoil in a flood plain. You may also need to obtain Planning Permission. Check this with your Local Authority. Ensure that you have obtained all necessary permissions and licences before you commence work.
- **Location** - You may well have in mind what appears to be the perfect location for a new pond, but make sure that the following points are considered:
  Ponds within "natural" habitats are better for wildlife than, for example, ponds within arable fields, but care must be taken to ensure valuable habitats are not lost through pond construction.
  Pond excavation should not be undertaken where it could damage or destroy archaeological features. Consult the County Sites and Monuments Record (kept by the County Council).
  The pond should be of a type and in a location appropriate to the local landscape. For instance, a large pond on chalk downland, as well as being difficult to construct, would be unlikely to be in keeping with the area.
  An adequate supply of unpolluted water will be needed for the pond.
  Creation of a pond could affect the surrounding land, e.g. by lowering the water table, or by influencing the way in which it can be farmed. For possible farming implications consult the Code of Good Agricultural Practice for the Protection of Water.
  The nature of the soil will determine whether an impermeable lining will need to be laid. This could have large cost implications.
  The removal or spreading of spoil may require permission from the Local Authority or from the Environment Agency.
  Public safety must always be carefully considered. The effects of disturbance to wildlife should also be borne in mind.

POND DESIGN

When designing your pond, make sure you know what your aims are. For example, is the pond primarily intended to attract wildlife, to make the area more attractive to people, or to be used for watering livestock? Ensure the design is appropriate to the locality.

- **Size** - Even the smallest of ponds can support a wide range of wildlife. Larger ponds will support different species including wildfowl. Bear in mind the costs of construction (particularly if you need to line the pond), the amount of spoil which will be produced and the quantity of water needed to fill the pond. Also consider the management implications of having a large pond. An alternative to one large pond is to construct a series of smaller ponds, each of which can provide a slightly different habitat.
- **Shape** - The edge of a pond is a very important area for wildlife. Broadly speaking, the more shoreline you have for a given area, the more wildlife you will attract. Thus an irregularly shaped pond would be preferable to a circular one of the same area. On larger ponds, small bays can be of particular value, because they provide areas sheltered from the effects of wave action. From a practical and an aesthetic point of view this should not be taken to extremes - ponds with very convoluted shorelines look artificial and out of place in the countryside.
- **Profile** - For the greatest wildlife benefits the pond margins should slope gently, to provide a large area of warm, productive, shallow water. A range of depths is desirable, but there is no need to have water deeper than about 2 m. In practice, a maximum depth of 1 m will be sufficient for most plants, invertebrates and amphibians. The depth of smaller ponds will in any case be limited by the need to have gently sloping banks (necessary from a safety point of view as well as for wildlife). A marshy edge will greatly increase the range of wildlife attracted to the pond.
- **Islands** - In the largest ponds, islands provide wildfowl with some protection from predators. They can also ensure that there are areas of calm water even in windy conditious. However, islands are favoured nesting sites of Canada geese, which can cause serious damage to grass and other crops.
- **Water supply** - Ensure that there will be enough water, either by using your own knowledge of the site or by monitoring the water flow and ground water table throughout the year. The quality of the water supply will be critical to the success of your pond. If the supply is a water course, "on-

stream" ponds have several disadvantages and "off-stream" ponds are preferred. Contact the Environment Agency for more information

CONSTRUCTION

- **Excavation** - Most new ponds will be dug by mechanical excavator, hydraulic or dragline. Before starting, peg out the edge, so it is clear what shape is wanted. Ensure the machine operator also knows what sort of profile is required. Working conditions can be very difficult and de-watering pumps may be needed during construction. To minimise damage to surrounding vegetation, plan machinery access routes in advance. Also decide what you will do with spoil from the excavation. Disposal can be very expensive, but you may need consent to spread spoil within a floodplain. Create islands by excavating around them during pond construction.
- **Pond linings** - Ponds dug on suitable clay soils may hold water sufficiently well without a liner, but in most cases where a pond relies on a source of water other than the ground water table an impermeable lining is needed. **Puddled clay** is the traditional lining material and will not decay or leak, providing that it remains wet. It is very important that a puddled clay lining is at least 15 cm thick. If cattle will have access to part of the pond, the lining must be thicker, to reduce the risk of puncturing. Althongh puddled clay has a number of advantages over other linings, it is not an easy material to work with. **Bentonite clay** is available as a fine powder which swells on contact with water, forming an impermeable gel. It is relatively easy to use to form the lining, but is expensive and less robust than puddled clay. Livestock access to ponds with Bentonite or with flexible liners should be prevented. The cheaper **flexible liners**, such as polythene and PVC have a life expectancy of only a few years, but the more expensive butyl liners may last for several decades. Great care must be taken that these liners are not punctured, for example during routine pond management. Stones or plant growth underneath the liner may cause punctures, so ensure the area is correctly prepared before the liner is laid. These liners will become very slippery and are potentially dangerous.
- **Water control structures** - Depending on the source of pond water, various combinations of pipes, dams, sluices and weirs may be needed. Silt traps installed at the construction stage can greatly reduce the need for subsequent management. If you have any doubts about what is required, seek advice. You must take expert advice if constructing dams. Contact the Environment Agency for information.

STOCKING PONDS

- **Planting** - In natural situations it is usually unnecessary to introduce wildlife as ponds will colonise with plants and animals incredibly quickly. If it is felt necessary to plant-up a pond, use only native species occurring naturally near where you live. Avoid plants from nurseries, as they may not be of native stock and you may inadvertently introduce problem species such as Swamp Stonecrop or Water Fern. It is illegal to uproot plants from the wild without the landowner's permission. In addition, some very rare species are further protected and may only be moved under licence. Do not deliberately collect rare or uncommon species, except as part of a planned conservation project. One possible source of water plants is from river dredging or ditch maintenance work. If you have a local IDB, they may be able to help. Avoid introducing very vigorous species such as Reedmace or Bulrush, as they may smother other plants.
- **Trees and shrubs** - Planting trees close to the edge of a pond will ultimately result in shading of the water and build-up of leaf litter. Tree planting may make the pond less attractive to waterfowl and make management more difficult. Tree roots may puncture the pond lining. As a general rule, do not plant trees close to small ponds. With large ponds, only very limited planting is advised. Avoid tree planting on the southern side, to minimise shading.
- **Fish** - The introduction of fish is often detrimental to other freshwater animals, including invertebrates and amphibians. Overstocking with fish tends to reduce the breeding success of wildfowl by reducing the ducklings' food supply. Bottom feeders such as Carp also uproot plants and increase turbidity. If fish are to be introduced, contact the Environment Agency, as their consent will be needed.

PONDS, FENCING AND LIVESTOCK

Permanent fencing can look very out of place around a pond and should not usually be necessary. Light grazing and trampling by livestock helps to maintain open water and areas of bare mud around the margins, which is important for maintaining plant and insect diversity. However, very heavy grazing and trampling should be avoided. If it is felt necessary to fence, site the fenceline very close to the water's edge, allowing stock access to some wet areas, while leaving other areas undisturbed

Alternatively, part of the pond may be fenced off, giving animals access to the remainder. If livestock are in the field for part of the year only, e.g. aftermath grazing of a hay meadow, a single strand of electric fencing may be all that is needed.

WADER SCRAPES

- **What is a scrape?** - A scrape is simply a shallow excavation, creating an area of very shallow water which will provide a good feeding area for wading birds.
- **Location** - If possible, choose a site at least 100 m from the nearest hedge or trees as many waders prefer open sites. Sites that regularly hold winter flood water may well be the best location but, as with ponds, make sure that you are not destroying an existing wildlife habitat.
- **Size and depth** - The scrape should slope very gently from the margins to a maximum depth of 50 cm, with about half the area having a depth of less than 25 cm.
- **Water levels** - Wader chicks need water less than 5cm deep in which to feed. As the level drops during the spring and summer, the scrape's shallow profile ensures that there are always suitable conditions for waders around the water's edge. If you can control water levels, ideal conditions for the birds can be maintained, even in exceptionally dry years when the scrape might otherwise dry out before the young have fledged. Being able to raise or lower water levels also makes it easier to undertake management.
- **Management** - Scrape management differs from pond management in a number of respects. The aim of scrape management is to maintain extensive areas of shallow water where waders can feed. Sites with a high nutrient status will support large populations of a few species of insect larvae and other invertebrates on which the birds feed. (High nutrient levels are not desirable in conventional ponds.) The scrape will be colonised by emergent vegetation. This will provide some cover for waders, but it should not cover more than about 25% of the scrape area. Excessive plant growth should be controlled mechanically. Cut material need not be removed as it will increase the organic matter content of the water as it rots.

- **FURTHER READING**

Andrews, J. & Rebane, M. (1994) *Farming & Wildlife. A practical management handbook.* RSPB, Sandy.

British Trust for Conservation Volunteers (1994) *Waterways and Wetlands. A practical handbook.* British Trust for Conservation Volunteers, Wallingford.

English Nature, Pond Action & National Rivers Authority (1996) *Managing ponds for wildlife.* English Nature, Peterborough.

MAFF (1996) *Code of good agricultural practice for the protection of water.* MAFF, London.

Kirby, P (1992) *Habitat management for invertebrates.* RSPB, Sandy.

Sansom, A. & Walmsley, R. (1993) *Ponds and Conservation. A rough guide to pond restoration, creation and management.* Environment Agency, Northumbria and Yorkshire Region.

Williams, P., Biggs, J., Whitfield, M., Thorne, A., Bryant, S., Fox, G. and Nicolet, P. (1999) *The Pond Book: A guide to the management and creation of ponds.* Ponds Conservation Trust

Pond Conservation Trust (2001) Leaflets on 'Good Wildlife ponds', 'Problem Pond Plants' and 'Planting up Ponds'.

ANNEX B PHOTOGRAPHY

Red arrows show view of photographs below.

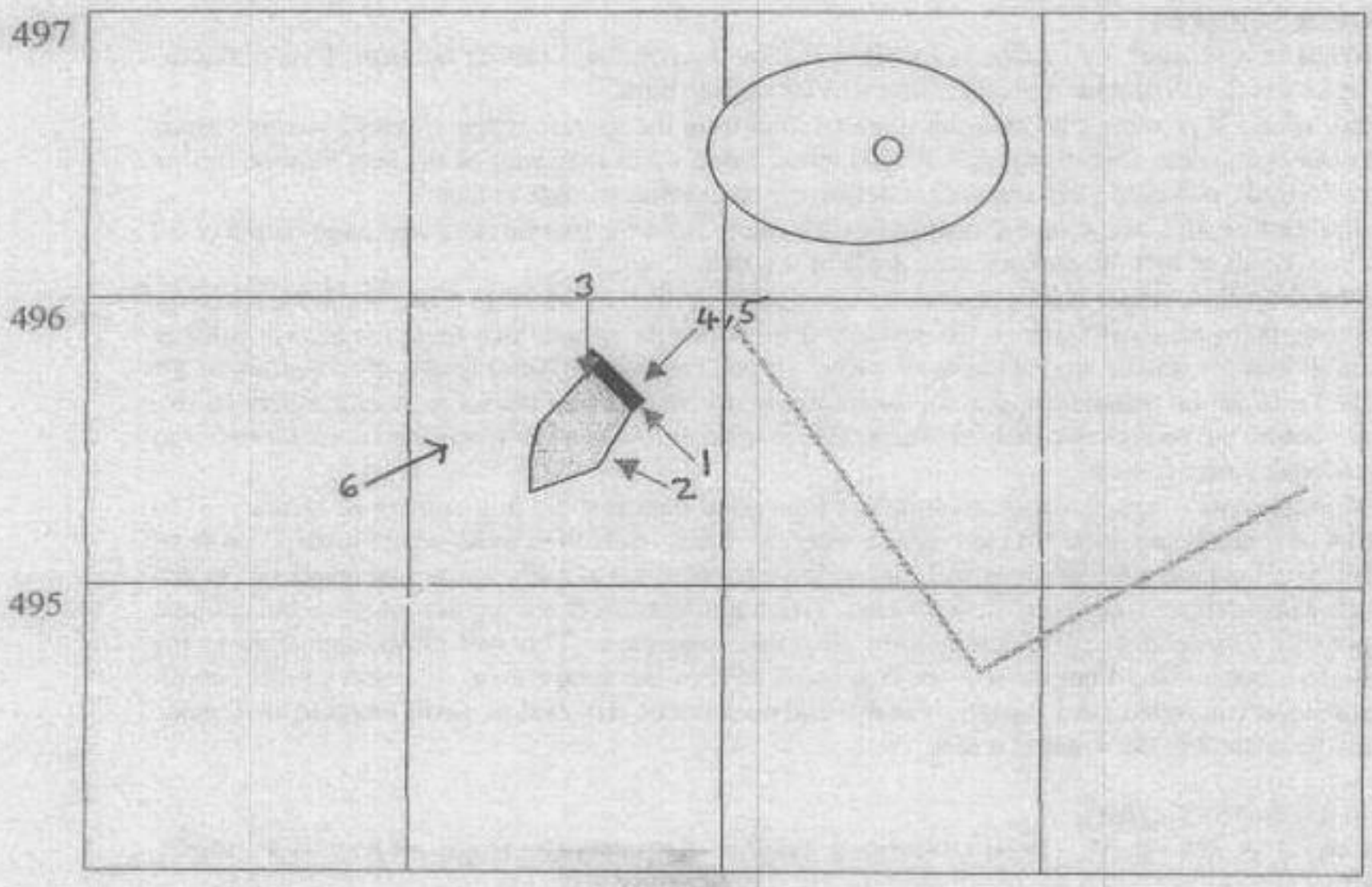

Photo 1 looks along the existing pond's damaged dam.

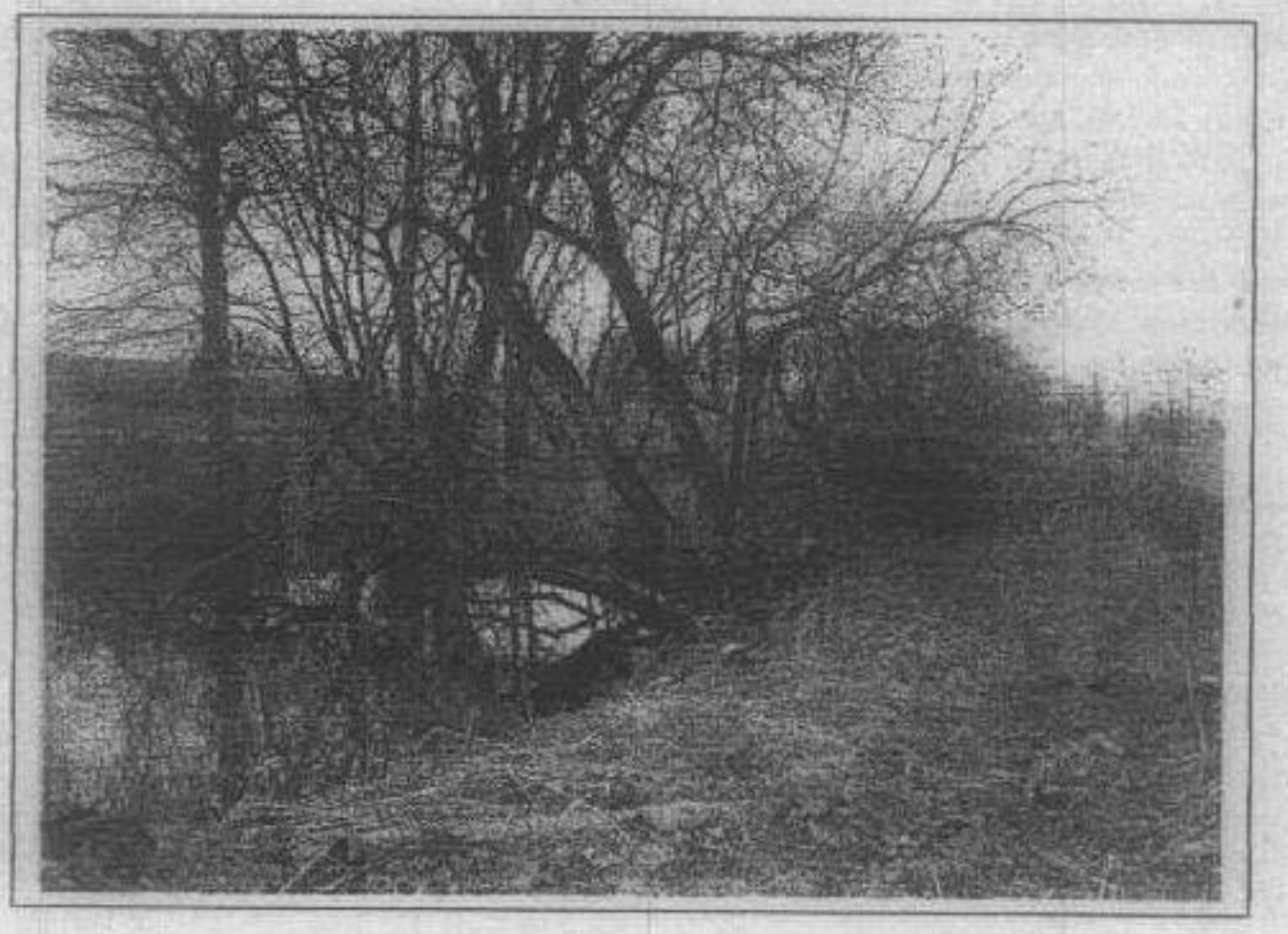

Photo 2 look s across existing pond, recently opened up to the light.

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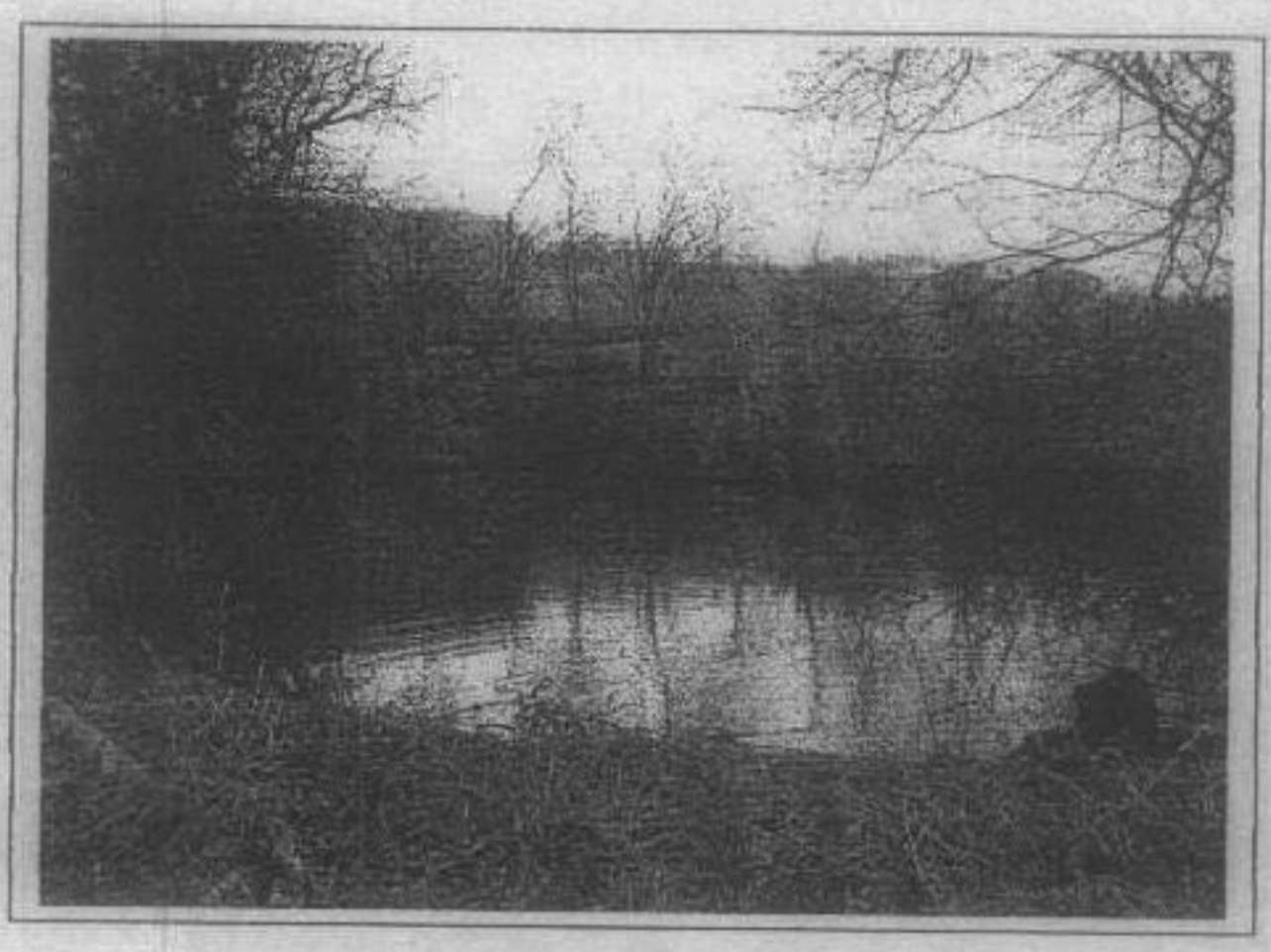

Photo 3 shows view from dam looking south-west.

Photos 4 and 5 below show the weakened dam, from the dry side, showing hollows and damage

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Photo showing post marking the distance between existing dam and new dam. Top of the post shows planned the new water level, with new dam height to be the same height as the dam on original pond.

Damaged dam on existing pond, to be removed.

Photo 6.
View of existing pond and new lake in distance.