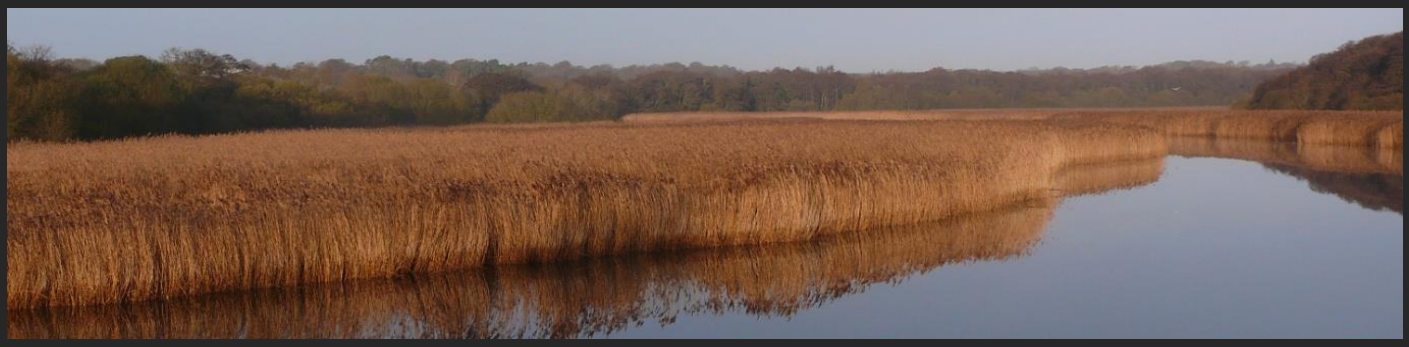
AquaticEngineering

Working Above Water, On Water & Under Water

AquaticEngineering Wetlands and Reedbeds



It would appear that society, after millenniums of neglect and even destruction, is now beginning to appreciate not only the ecological value of reedbed wetlands, but also their flood control benefits along with the water quality improvements they provide, whilst in tandem offering significant recreational and educational value.

Wetlands are the link, the transitional zone, between land and water and are some of the most productive and biodiverse ecosystems on the planet. They are extremely important habitats, providing an extensive and complex food chain which support a wide variety of wildlife – mammals, birds, reptiles, amphibians, fish and invertebrates

Reedbeds are wetlands dominated by common reed (Phragmites). Nationally there are about 5000ha of freshwater reedbed, covering 900 sites however only 50 of these sites are larger than 20 ha. Bitterns require reedbeds of this sort of coverage to breed, although they will overwinter in much smaller beds.

As said reedbeds can be extremely rich and biodiverse, in the UK there are 700 invertebrate species alone associated with reedbed habitat, 40 of these are entirely dependent upon reedbeds. Many beetles, spiders and parasites predate on the reed-feeding invertebrates which live in the stems, including gall-forming flies and solitary wasps. With this abundant food source many other birds, apart from the bittern, are also dependant on good stands of reeds, these include reed bunting, water rail, reed warbler, sedge warbler and bearded tits to name just a few, making reedbeds one of the most important habitats for birds in the UK. Reedbeds are therefore a priority habitat under the UK Biodiversity Action Plan. Many reedbeds are classified as Sites of Special Scientific Interest (SSSIs), or as Wetlands of International Importance under the RAMSAR Convention.

Natural reedbeds are not a permanent feature of our landscape, they are a transitional environment, one between the aquatic and terrestrial, unless they are managed, they can be short lived in nature. Once reeds colonise open water and thrive they produce an abundance of organic matter (due to their vigorous nature), this organic matter builds up in the reedbed eventually creating a substrate which allows the reedbed to become more terrestrial than aquatic. Once this stage has been reached rapid deterioration of a reed stand can occur. As the bed dries out and alder and willow start to dominate, this is known as fen carr, or wet woodland, itself a very valuable habitat but it is formed at the expense of the open aquatic reedbed

Along with their biodiverse abundance. Reedbeds were traditionally maintained by reed cutting for the thatching industry, in recent years this industry has become a very small percentage of what is required for reedbed maintenance in the UK, most of our thatching reed is now imported from Eastern Europe where labour is more willing to undertake such work for a smaller return.

A successful reedbed will have a permanent water level of around 35 cm deep, however reeds once established will grow in about 1m of water if the conditions are good, anything less than 20cm becomes difficult to maintain long term. It is highly advantageous to have a water control system in place to allow water levels to be dropped to allow for seasonal reed cutting and disposal.
Aquatic reedbeds encourage invertebrates such as pond louse which helps control the build-up of organic material, also fish, amphibians, reptiles and mammals will become residents in a mature reed stand.

Although common reed is the main species associated with reedbeds, many other plants coexist among the reeds. Species rich margins are often seen in our older reedbeds: reedmace (2), iris, bur-reed, purple and yellow loosestrifes, hemp agrimony, myosotis, mentha, caltha, rushes and sedges are often abundant and provide pollen and nectar sources for insects. The yellow loosestrife (above) in particular is an important species for the rare solitary bee *Macropis europaea*, which uses oil from the plant to line the cells of its subterranean nest.

For millennia humans have drained, dredged, dammed and channelled our wetlands and converted them into agricultural cropland and pasture, or even worse used them as a dumping ground for the waste created by society.

It's only recently that the life supporting importance of reedbeds and wetlands has been understood. Many government backed agencies, charities, councils and private land owners have realised the link between healthy and abundant wetland environments and the quality of human life. By restoring unmanaged wetland habitats or creating new ones, slowly square metre by square metre we will restore and improve the biodiversity of the UK whilst at the same time the quality of life for generations to come.

AquaticEngineering's consultants have decades of experience designing, installing and maintaining reedbeds & wetlands. We supply and plant hundreds of thousands of phragmites and other suitable wetland and remediation species annually.

Please contact us and speak to the experts in their field.

Contact us and speak to our reedbed consultant, who over the decades has provided millions of reeds throughout the UK for the restoration and creation of some of the country's best loved reedbeds & wetlands, whilst also providing design and consultancy for many phytoremediation / biosequestration reedbed systems.

A 2.7ha reedbed for treating mine water discharge – design input, reed production, planting and initial maintenance were all undertaken by the consultants of AquaticEngineering

AquaticEngineering are here to assist you with all of your reedbed needs

Reedbeds are a proven as well as cost effective technology for the remediation of contaminants such as waste water effluent. Reeds release oxygen through their roots deep into the reedbed which assists microbial action and compound breakdown by the root colonising microbes and by the plants themselves, these processes degrade the toxic compounds to further non-toxic metabolites. Following treatment water is usually clean enough to be discharged to a watercourse.

For over two decades the principal consultants of AquaticEngineering have been involved in developing many hundreds of the country's reedbed and constructed wetland projects for a wide range of applications. Aquatic Engineering's wealth of experience in this field, particularly in plant selection, filterbed design & construction as well as subsequent aftercare management puts them at the forefront of this rapidly emerging industry.

Benefits include but are not isolated to:

- Low capital and operational costs
- Very low maintenance
- An environmentally sustainable process, no chemicals
- Frequently a strong bias towards minimal carbon impact
- No operational noise
- Aesthetically pleasing
- Often more biodiverse than mature naturally established reedbeds

Areas of application

- Human sewage (single use to communities of upward of 700 people)
- Fish farming waste; marine & freshwater
- Mine water discharges & Landfill leachates
- On site silt remediation
- Abattoir & Vegetable processing waste
- Farmyard slurries & nutrient rich field runoff
- Firefighting foam
- Airport runway & Motorway runoff… cadmium, lead, mercury & hydrocarbons
- Car parks & vehicle standing areas
- Golf courses
- Balancing ponds, attenuation ponds, SUDS (sustainable urban drainage systems) & lagoons
- Constructed wetlands, bird and nature reserves

AquaticEngineering's consultants have been involved in the wholesale production of aquatics for over 30yrs and can supply most major contracts from mature stock.

All plants are guaranteed to be of UK origin/provenance and local/regional provenance plant material is often available or can be grown to order with a reasonable lead in time.

With our many years working in aquatic environments AquaticEngineering are best placed to offer you impartial advice whatever your contract or problem

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