

## Reedbed Management and Yields

### 1. Reedbed management

To provide maximum benefit for biodiversity reedbeds are harvested to remove litter build up and maintain wet areas. Without management when reedbeds drop their leaves these fall to the ground and can form a thick mat at the base of the reed stems, this limits wet areas and the movement of food such as fish and amphibians. The result is the build of dead material and the drying out of the bed, and the conditions become suitable for the invasion of drier species such as willow scrub, which then only serve to exacerbate the problem. By cutting and removing the cut reed and litter layer, reedbeds are maintained as wet habitats and so being of maximum benefit to the specialist biodiversity they support.

Reedbeds are typically harvested on rotation, for thatching they are either cut every year or every other year, however those cut to maximise the benefit for nature conservation are cut on a longer rotation, such as a 3 to 5-year time period, but can be as long as between 7 and 15 years. This means that there are different ages of reed present in the bed which is beneficial to the wildlife that relies on the habitat.

Table 10: The effects of winter cutting rotations on reed and the benefits for wildlife and thatching

Cycle length (yrs)	Reduces scrub invasion	Maintains vigour	Reduces litter accumulation	Increases stem density	Increases flowering & seed production	Thatching	Wildlife
1	■■■■	■■■	■■■■	■■■■	■■■	■■■■	■ ■■
2	■■■■	■■■■	■■■	■■■	■■■■	■■■ ■■■■	■■■
3-5	■■■	■■	■■	■■■	■■■■	■	■■■■
7-15	■	■	■	■■	■■		■■■■

These ratings are generalised and are based on a number of sites. Variations may occur between sites and within a site depending on soil type, water regime and weather  
 ■ = minimum effect   ■■■■■ = maximum effect

### 1.1 RSPB Ham Wall Reserve, Somerset

Ham Wall sits in the heart of the Avalon Marshes, a 1,500ha complex of wetland habitats. Based on the old peat-extracted moors, the Avalon Marshes offer excellent opportunities for wetland creation. Ham Wall is one of the largest reedbed creation sites in the country and due to the success of such restoration work it is now nationally important for breeding bird species, (bittern, water rail, Cetti's warbler, pochard, gadwall and garganey) and over 20 aquatic invertebrates. It is the largest reedbed in Southern England and supports an important assemblage of wetland species including otter and watervole, many of which face serious decline due to habitat loss and lack of management. Restoration works have now been completed over the complete reserve, at a rate of approximately 20ha per year. This now provides various stages of maturity across the site resulting in a dynamic and diverse system.

As an illustration, the current annual reedbed harvesting targets at RSPB Ham Wall Reserve, which is a 240ha in size, are:

- Annual 3ha reed cut for thatch / bundles
- Rejuvenate 15ha over the course of the 5-year management plan
- Annual summer cut 1ha
- **Winter cut 7ha on 12-year rotation** (but take into account any cutting done as part of rejuvenation)

Ham Wall reserve is the RSPB that is currently delivering the largest number of breeding bitterns, (bitterns rely exclusively in the UK on reedbeds) in the UK on the RSPB estate and as illustrated above it works to a 12-year rotation.

The length of rotation best for conservation whether it be 3 or 15 years and anywhere in between, will ultimately be decided by the nature of the reedbed itself and factors such as water control, surrounding scrub areas, which as a source of seed, etc.

## 2. Yields

The age of the reedbed will determine the amount of dry biomass that it will generate, the table below illustrates how this varies from 1-year to 15-year-old beds. This can mean that a longer rotation can be more beneficial as when cut it will generate more material.

Vegetation Detail	Site	Location (County/ Country)	Dry matter tonnes/ha	Notes
1-yr old common reed	Ham Wall RSPB Reserve	Somerset, UK	6.2	Reed litter layer depth – no more than 20cm Average reed stem height - between 150 and 200cm Reed stem density percentage of reed coverage in a 2m <sup>2</sup> – 93%
3-yr old common reed			7	Reed litter layer depth – no more than 30cm Average reed stem height - between 175 and 270cm Stem density percentage of reed coverage in a 2m <sup>2</sup> – 90%
15-yr old common reed			8.76	Reed litter layer depth – 70 to 90cm Average reed stem height - between 250 and 300cm Reed stem density percentage of reed coverage in a 2m <sup>2</sup> - 86%

### 2.1 Reedbed area needed

Based on the estimate annual requirement of 32 tonnes per year<sup>1</sup> of pellets for the proposed boiler at Dunball, it is estimated that the following areas would need to be harvested for different aged standing reed to generate the biomass required:

1. 1-year old reedbed a 5.1-hectare area of would need to be harvested. (See point below)
2. 3-year old reedbed a 4.5-hectare area of would need to be harvested.
3. 15-year old reedbed a 3.6-hectare area of would need to be harvested.

However, it should be noted as with many types of vegetation, yearly harvesting could reduce the vigour in growth of the reed stems. As a result, reed harvested every year could become thin and spindly and the result could be a lower yield, so a longer rotation to safeguard against this would be advisable and beneficial.

<sup>1</sup> Estimate from David Mason, Skanska, based on 155,000kWh of gas currently used annually

## **2.2 Size of reedbed needed**

To accommodate the length of rotation, it is estimated that the following size reedbed areas would be required to satisfy the reed requirement for the Dunball boiler:

### **1. 1-year old reedbed - 5.1-hectare area.**

The same area would be harvested each year; however, it should be noted as referred to above that harvesting reed every year could potentially make the reed thin and spindly which could result in a lower yield of material generated.

### **2. 3-year old reedbed - 13.5-hectare area.**

This rotation is at the minimum size to be of benefit for nature conservation, longer if possible, would be advantageous

### **3. 15-year old reedbed - 54-hectare area.**

This rotation is at the extreme of management for conservation and again would need to consider other factors such as water control capability and the potential vulnerability of the ground to scrub invasion.

A recommendation based on the above and the rotation timeframe used by RSPB Ham Wall Reserve would be for a 9-year rotation, which estimated at a yield of 8 tonnes per hectare would require a 36-hectare reeded, with 4 hectares harvested each year.

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08/03/20