

# THE GREEN BARRIER

in Living Willow

Attractive Eco-Friendly and Sustainable

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The traditional use of willow trees has been transformed using modern technology to produce a living Green Barrier. This is the sustainable solution to noise abatement, screening and fencing in both urban and rural situations.



**Quote - Technical Work Manager at Århus Power Station, Jacob Leerhøy:**

"I was somewhat sceptical to begin with as to whether it would grow, but shortly after construction it started to sprout - and today I think I can say that everyone is very delighted with the result. It has been amazing watching it grow."

**ets - Specialists in biodiversity and environmental sustainability, delivering practical and cost effective solutions to industry.**



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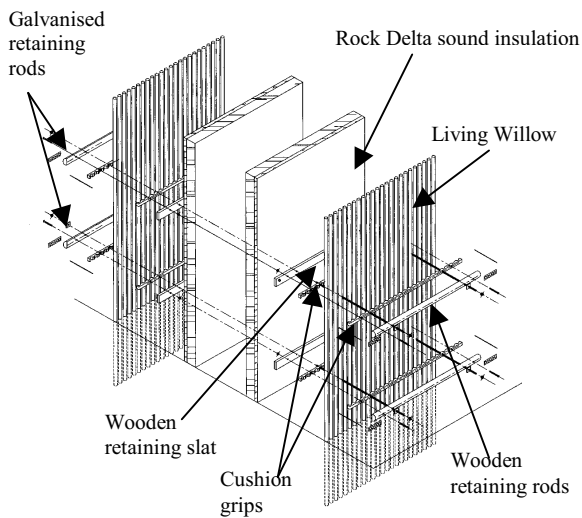


"We're listening on your behalf"

The *only* sound barrier recommended by  
**THE NOISE ABATEMENT SOCIETY**



Shelter and screening with The Green Barrier in living willow. Single units 4 months after establishment.



Construction detail of The Green Barrier in Living Willow.



The Green Barrier in living willow erected as an acoustic barrier between a busy road and a primary school. Spring re-growth after winter trimming.

## TRADITION

Traditional living willow craft is an excellent example of working with nature. The Green Barrier in living willow is an improvement of this tradition and comprises of two different types.

## DESIGN

The Green Barrier in living willow supplied as either:

- Single units - which can be used for domestic or industrial fencing, screening or protective barriers in a variety of situations including industrial sites, parks, public areas, and mazes.
- or
- Double units – which, when assembled incorporating a RockDelta® sound proofing core, create an ideal acoustic barrier.

The Green Barrier in living willow was developed incorporating the natural growth characteristics of the willow tree. The Willow is one of the oldest and most common trees, and over the ages its hardiness and versatile growing power have made it valuable both for practical and decorative purposes when combined with RockDelta®, it offers first class noise abatement and the following advantages.

- Within only a few weeks of installation, the barrier is densely covered over its entirety with strong green side shoots and leaves.
- Within 2-3 months it appears as a long established, natural willow hedge.
- Sound attenuation of Rockdelta® core is proven to be the highest available. It is tested and approved in the highest noise-absorption and noise-reduction class giving a reduction between 25-35 dB's.
- Normal Life expectancy circa 25 years.



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# AESTHETIC APPEAL

What makes the design unique, is that the construction itself, either as a fence or as a sound barrier, is a living, green unit giving the following characteristics.

- Constructed from natural and living materials- the barriers blend into both urban and rural surroundings. They show minimal breakdown or visible signs of ageing.
- The Green Barrier in living willow ages naturally without rusting or sun-bleaching
- The living characteristics of the willow deter the application of graffiti.
- Appearance varies with the seasons and the type of willow chosen. From April to November the barrier displays the colours of summer and autumn. During the winter the bare willow branches with their characteristic brown/orange colour brighten up the winter landscape.



The barrier after leaf fall. During winter time the living Green Barrier work opportunities. Cuttings for decoration and ornamental twigs with catkins can be taken from barriers.

# ENVIRONMENT

- All materials used in the barriers can be fully recycled.
- Willow improves the air quality as a result of CO<sub>2</sub> absorption and by the release of oxygen.
- It forms natural habitats for local flora, fauna and wildlife.
- The Willow is produced from non-intensively cropped coppice plantations.



The living Green Barrier providing extremely effective noise abatement from train tracks next to a housing area.



Car Park view @ Arhus Powerstation. Three months after construction The Green Barrier is now a natural part of the landscaping surrounding the car park at the power station.



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# CONSTRUCTION

The GREEN BARRIER in living willow consists of 2 to 3 year old willow rods, of selected species and types of willow, held firmly together within a wooden frame. This ensures both fast and simple construction with the growth being controlled. The construction is installed directly in to the ground to a depth of 60cm.

# MAINTENANCE

The Green Barrier in living willow, as with all living materials, the barrier benefits from maintenance and attention.

- Drip irrigation in summertime during the first years ensures strong and healthy growth.
- Fertilising during the spring.
- Due to the natural characteristics of the barrier it is rendered vandal and graffiti resistant.

Conditional to construction and maintenance being undertaken by the suppliers a sprouting guarantee will be given for the first 2 years.

# SPECIFICATIONS

<b>Newly constructed barrier</b>	45cm	Max 2,5 - 3.0m
<b>Continual Trimming</b>	Approx 1m	Construction height + 40 cm
<b>Trimming twice a year</b>	1.45m	Construction height + approx. 1m
<b>Trimming once a year</b>	2.95m	Construction height + approx. 2m
<b>Trimming every 3rd year</b>	Year 2 after Trimming: approx 3.55m Year 3 after Trimming: approx. 4.15m	Year 2 after Trimming: Construction Height+ approx. 2.4m Year 3 after: Trimming Construction Height + approx. 2.8m
<b>Erection</b>	Spring - March, April, May, perhaps June	
<b>Maintenance routine :</b>	Drip irrigation in May, June, July, August, at least during years 1+2 Trimming Ideally every year. (Absolute minimum every 3rd year, otherwise no guarantee) Fertilising - Ideally every year, using liquid or solid fertilisers.	

## ets

ets designs, constructs, supplies and assembles Green Barriers in the UK and Ireland. ETS works in partnership with Pilebyg Ltd., a Danish company that has been involved with willow production since 1938. At Pilebyg efforts are directed toward continual development of new ways of utilising willows, and inspiration comes largely from past traditions. Pilebyg are Denmark's largest growers of willow, with a unique arboretum of willow species from all over the world, and considerable expertise in willow production, all made available to ets as a resource.



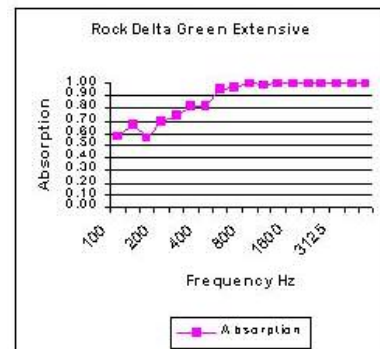
Single units are delivered, ready for construction. Sound barriers do however need to be erected by professionals.



Proper maintenance is essential if the barrier is to stay in an attractive condition.

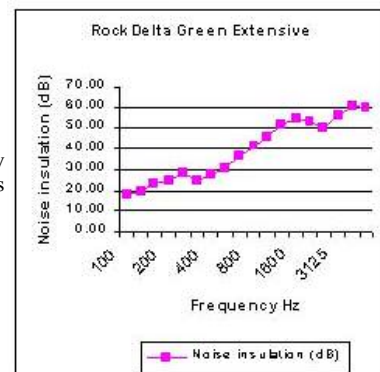
## NOISE ABSORPTION

According to the CEN standard, EN 1793-1, the noise screen belongs in category A4( $Dl\alpha > 11$ dB), which is the highest absorption class.



## NOISE INSULATION

According to the future CEN standard, EN 1793-2, the noise reduction screen belongs in category B3( $Dl_R > 24$ dB), which is the highest reduction class. The noise insulation value is 31 dB.



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