

# **Control of aquatic vegetation on streams in Galbally.**

**A report for Galbally Tidy Towns**

Prepared by

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## **1. Introduction**

Galbally is a village in South-east County Limerick, situated at the foot of the Galtee Mountains. There are a number of watercourses in the Galbally area including the River Aherlow which flows to the south of the village and a small stream that flows along the Eastern edge of the village before joining the River Aherlow to the south-east of the village.

During the summer months this stream is often clogged by excessive growth of aquatic plants, particularly the section of stream downstream from the R663 and school road junction.

This report was produced for Galbally Tidy Towns and provides management plans for the control of the weed growth in the stream and explains why such management plans are necessary.

## **2. Aquatic plants**

Aquatic plants are a natural and valuable part of the aquatic ecosystem. They provide habitat, food and shelter for a variety of wildlife including fish and invertebrates. They help stabilise the banks of streams and rivers, preventing erosion and they can also absorb pollution and improve water quality.

Aquatic plants become a problem in watercourses when there is excessive growth of plants that adversely affects the natural functions of the water channel and the associated wildlife within the channel.

### **2.1 Reasons for weed control**

The two main reasons for the control of the excessive weed growth in the stream in Galbally are: 1) Flood prevention, 2) Wildlife value.

The stream in Galbally is choked with weeds during the summer months from June – September. This results in a reduced water flow rate and channel capacity which in turn increases the risk of flooding. Agriculture and urbanisation have exacerbated the problems caused by water weeds. Runoff of fertilizer from the surrounding farmland increases the nutrient levels of the

water which in turn leads to excessive weed growth during the summer months. This excessive weed growth completely chokes the stream in Galbally during the summer and results in reduced flow rates and silt deposition, allowing silt beds to build up, which further exacerbates the problem by providing additional habitat for weeds to colonise. The low water levels during the summer months also contribute to the establishment of weeds in the stream. The extent of the weed growth in the stream during summer can be seen below in **fig.1** and the stream in winter can be seen in **fig.2**



**Fig.1.** Stream in Galbally during summer.



**Fig.2** Same section of stream in winter.

Excessive weed growth is also detrimental to wildlife, as plants grow they take oxygen from the water and an excess of aquatic plants can result in deoxygenation of the water which can lead to fish kills. Excessive weed growth is usually comprised one or two species of plants which outcompete other plant species resulting in a monoculture of one particular species. This has the effect of decreasing the biodiversity value of the stream as few other plant species are able to grow, which in turn decreases the diversity of invertebrates which a more diverse range of plant life would support.

## **2.2 Identification of weeds**

In order to put effective management plans for weed control in place it is necessary to identify the types of weed that are causing the problem.

### ***2.2.1 Emergent weeds***

The type of weeds that are causing the problems in the stream in Galbally can be described as emergent weeds.

Emergent weeds are a group of plants that grow with the majority of their stems and leaves above water level during the summer months. The plant that is most problematic in the stream in Galbally is Water-cress *Rorippa nasturtium-aquaticum*.

### ***2.2.2 Water-cress ecology and lifecycle***

Water-cress *Rorippa nasturtium-aquaticum* is a perennial wetland species with creeping stems (up to 1 m) and erect flowering shoots. Its leaves are dark green in colour and hairless. It has a complex leaf composed of a number of leaflets which are arranged slightly alternately along the stem, with a single leaflet at the end. These leaflets vary in size with broader leaflets at the bottom. The leaflets are also very rounded and untoothed. This species has small white flowers (4–6 mm across) and forms distinctive seed pods with two clear rows of seeds visible within the pod. It flowers from June-September. It can grow from seed or vegetatively from fragments.

### **2.3 Cause of the weed problem**

Generally, one of the main causes of increasing weed problems is a rise in the quantity of nutrients in the water known as eutrophication. Nutrients enter the water from sources such as sewage, industrial effluents; as fertilizers in run-off; and drainage from farmland and forestry.

In Galbally the excessive growth of Water-cress in the section of stream highlighted is probably due to fertilizer run-off from the surrounding farmland. It is noticeable that some of the adjacent farmland comes right up to the edge of the stream with no buffer zone of rough grassland between the stream edge and

the improved agricultural grassland. This makes it easier for fertilizer run-off to enter the stream during periods of heavy rainfall.

Also the excessive weed growth is in itself a cause for further weed growth as the excess growth causes a reduction in water flow which allows silt beds to build up, increasing the availability of new habitat for colonization by water-cress.

### **3.0 Recommendations for weed control**

There are a number of techniques commonly used for control of aquatic weeds including chemical, mechanical, environmental and biological methods. The species of plant that is problematic in the stream in Galbally has been identified as Water-cress *Rorippa nasturtium-aquaticum*. This is a perennial emergent plant that flowers from June-September and can overwinter.

Initially there may be a tendency to remove as much weed as possible in the interests of short term efficiency and with the intention of reducing the frequency of weed control. However, this creates space, which may be invaded rapidly by other troublesome species.

Therefore, the best practice of weed control in rivers and streams must recognise that, no matter how effective a control measure may be initially, weeds will return and some form of regular control will be required.

The frequency of control will depend on the following factors:

- The effectiveness of controlling the existing weed
- The rate of recovery or recolonisation of the weed
- The size of the area controlled

Two techniques are being recommended to control the excessive weed growth based on the species of plant present and the reluctance to recommend chemical methods due to environmental implications. The two methods recommended are 1) Mechanical controls, 2) Environmental controls.

### **3.1 Control methods**

#### ***3.1.1 Mechanical control***

Mechanical control methods include physically removing the weed by pulling and cutting. This method is labour intensive and time consuming but is a better alternative to spraying with chemicals. Rather than trying to clear the entire section of affected stream it may be better to clear a smaller section initially and monitor for regrowth and repeat control methods as required.

Watercress should be cut or pulled from the stream bed and the waste plant material should be disposed of properly. It should be cut as near to the stream bed as possible. Initial removal should begin in July when there is good growth and prior to flowering, with follow up removals in August and September. The frequency will depend on the effectiveness of the initial removal. Removal can also be carried out over the winter months if necessary.

#### ***3.1.2 Environmental controls***

Environmental control methods can be used to reduce the optimal growth conditions for excessive weed growth. The section of stream downstream of the bridge at the school road and R633 junction has very little vegetation growing along the banks of the stream. By planting native trees such as Alder or Oak along the banks of the stream this would eventually shade the stream and reduce light levels. This would be an effective method in controlling Water-cress as it is not shade tolerant.

It is recognised that this is a slow process and long-term project and that will require community involvement and landowner cooperation.

### **3.2 Timing of weed control operations.**

Table 1. below gives an indication of when weed removal should be carried out. It should be noted that follow up removals will depend on the success of the initial weed removal.

<b>Time</b>	<b>Weed type</b>	<b>Technique</b>
July	Emergent weeds	1 <sup>st</sup> cut
August- September	Emergent weeds	Follow up cuts
October- December	Emergent weeds	Channel clearing/cutting
Autumn	Emergent weeds	Environmental Tree planting

#### **4. Conclusion**

The control of the excessive weed growth in the stream in Galbally will be an ongoing project. There is no quick fix to the problem but it is a very worthwhile project that will benefit the local community through flood prevention and wildlife by allowing a diverse range of plants to establish along the stream instead of a monoculture of Watercress.



