

# **HOWSHAM FISH MONITORING**

## **RESULTS SUMMARY**



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## Method

A range of fish species were electro fished from the River Derwent below Howsham Weir and kept in 1000 litre holding tanks with river water pumped through. The turbine outflow was netted with a bespoke Fyke net and a by wash established to determine if fish have a preference for using the by wash instead of passing through the turbine. Fish introduced to the intake area of the turbine were netted after passing through either the screw or the by wash. They were examined for any signs of damage and kept in tanks overnight for assessment.

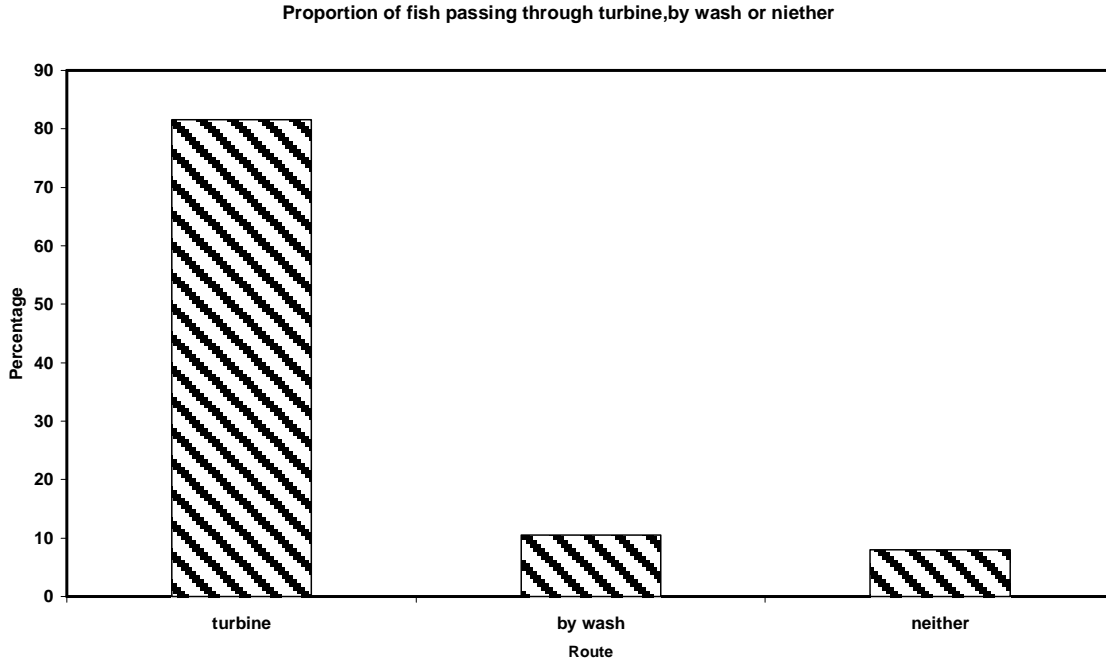
## Results

A wide range of species were electro fished and passed through the turbine as shown in the table below.

Table 1. Species passed through turbine.

Species	Maximum Length (cm)
Pike ( <i>Essox lucius</i> )	77
Barbel ( <i>Barbus barbus</i> )	61
Chub ( <i>Leuciscus cephalus</i> )	48
Perch ( <i>Perca fluviatilis</i> )	30
Trout ( <i>Salmo trutta</i> )	34
Grayling ( <i>Thymallus thymallus</i> )	28
Roach ( <i>Rutilus rutilus</i> )	22
Dace ( <i>Leuciscus leuciscus</i> )	13
R.Lamprey ( <i>Lampetra</i> )	32
Salmon ( <i>Salmon salar</i> )	11
Bullhead ( <i>Cottus gobio</i> )	8
Gudgeon ( <i>Gobio gobio</i> )	15
Ruffe ( <i>Gymnocephalus cernua</i> )	11
Minnow ( <i>Phoxinus phoxinus</i> )	9
Eel ( <i>Anguila anguila</i> )	46

No damage was caused by passage through the screw. Some fish opted for the by wash instead of the turbine and a small number (8%), mainly larger chub and barbel remained in the intake area and did not pass through either the turbine or the by wash.



**Figure 1. Proportion of fish passing through the turbine, by wash or remaining in the intake area.**

**Conclusions**

The turbine did not cause any damage to fish passing through. Stronger swimming riverine species such as barbel and chub may delay for a period before entering the device. However, it is unlikely that they would use a by wash as an alternative route. Fish that are actively migrating downstream are likely to enter the turbine after a relatively short delay of perhaps 15-20 minutes.