IDB Biodiversity Action Plan Guidance Note:

Entrainment and Eels

Eel Status

The European Eel population is under threat from a number of pressures, including fishing, poor water quality and barriers to migration.

The European Eel has a migratory life cycle which makes it particularly vulnerable to being entrained, or trapped, by water abstraction pumps.

Abstraction Design Considerations

Screening, approach velocity of water and provision of a by-wash are factors that can effect the entrainment of fish at water abstraction points.

Screens provide a means of physically preventing or deterring fish from entering abstraction points; they can be physical (e.g. mesh screens) or behavioural (e.g. strobe lights, bubble curtains) barriers. Recommended mesh sizes for simple screens vary between 1mm and 200mm (depending on species and life stage). Square section bars are preferred to round, to reduce the risk of fish becoming gilled.

The approach velocity of water upstream of a screen is critical to allowing fish to be able to actively swim away from an abstraction point. Recommended maximum velocities perpendicular to the screen face vary from $10cms^{-1}$ to $75cms^{-1}$, depending on species of fish to be protected.

By-wash provides a sweeping flow that carries fish downstream, away from a point of abstraction. The recommended location for a by-wash when an angled screen is used, is the downstream end of the screen, in the cleft between the screen and the bank.

Legislation

The Eels (England and Wales) Regulations 2009 empower the Environment Agency to serve notice on a person responsible for an abstraction structure capable of abstracting more than 20 cubic metres in a 24-hour period, to install a screen to prevent the entrainment of eels. Land drainage pumps invariably exceed this abstraction threshold.

An abstraction structure is defined as any pipe or channel by which water is abstracted from a waterbody.

The responsible person must then ensure that an appropriate screen is placed in the abstraction structure, on or after 1st January 2015.

Where the screen is not placed across the width of the abstraction structure, the responsible person must also provide an appropriate by-wash. It is an offence to fail to comply with a notice served under these regulations.

The following detailed guidance is available:

Screening at intakes and outfalls: measures to protect eel. Science Report GEHO0411BTQD-E-E. The Environment Agency, Bristol, UK

Turnpenny, A.W.H. and O'Keefe, N. (2005). Best Practice Guide for Intake and Outfall Screening. Science Report SC030231. The Environment Agency, Bristol, UK.

For further information please contact:

Shire Group of IDBs, Chase Park, Redhouse Interchange, Doncaster, DN6 7FE. 01302 337798.
info@shiregroup-idbs.gov.uk