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Session C2: Translating Regulation into Outcome

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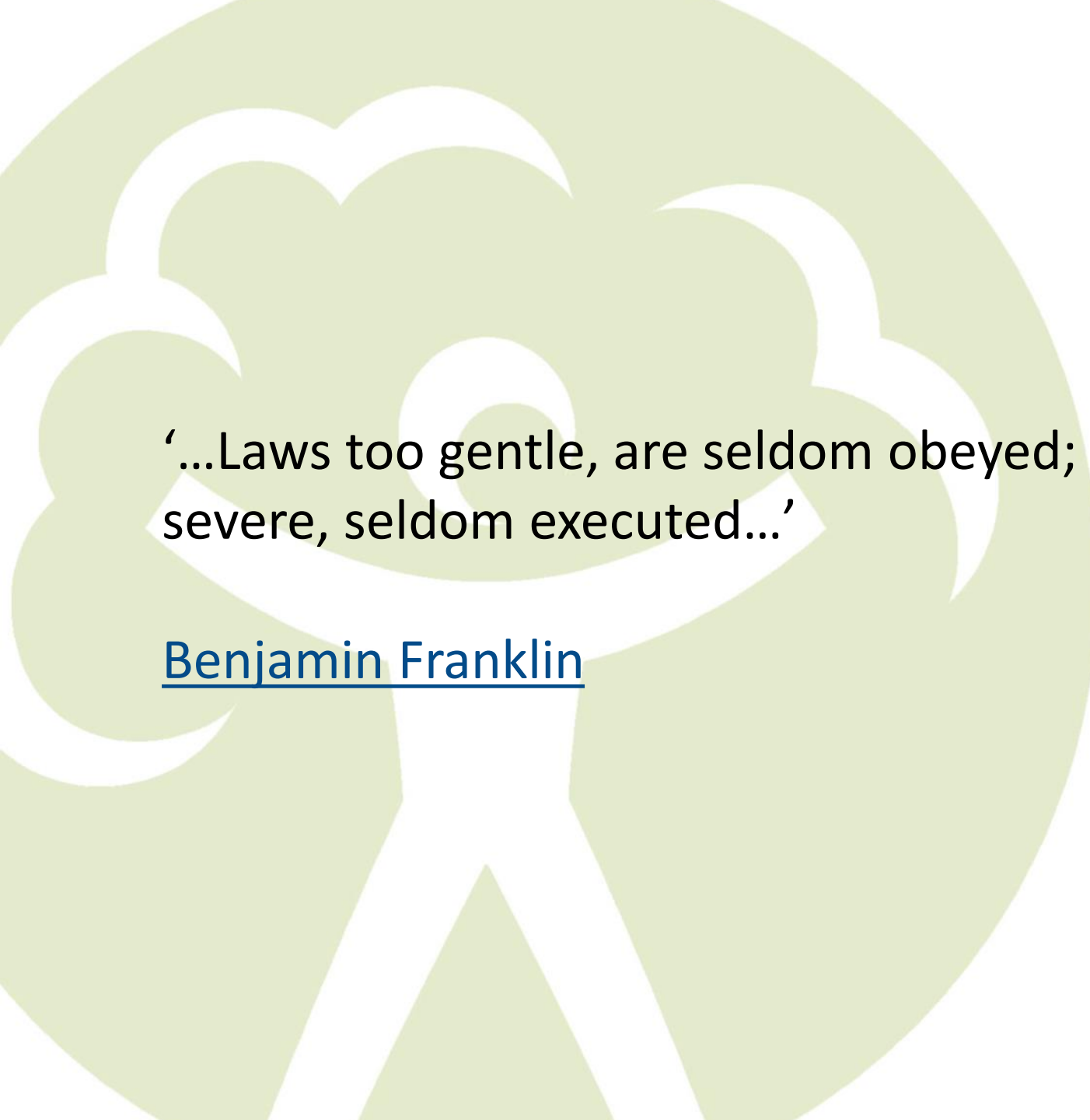
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Translating Regulation into Outcome

The eel's migration from statutory to physical protection

**Andy Don
National Fisheries Services**

Fish Passage 2015, June 20-24 Groningen, The Netherlands

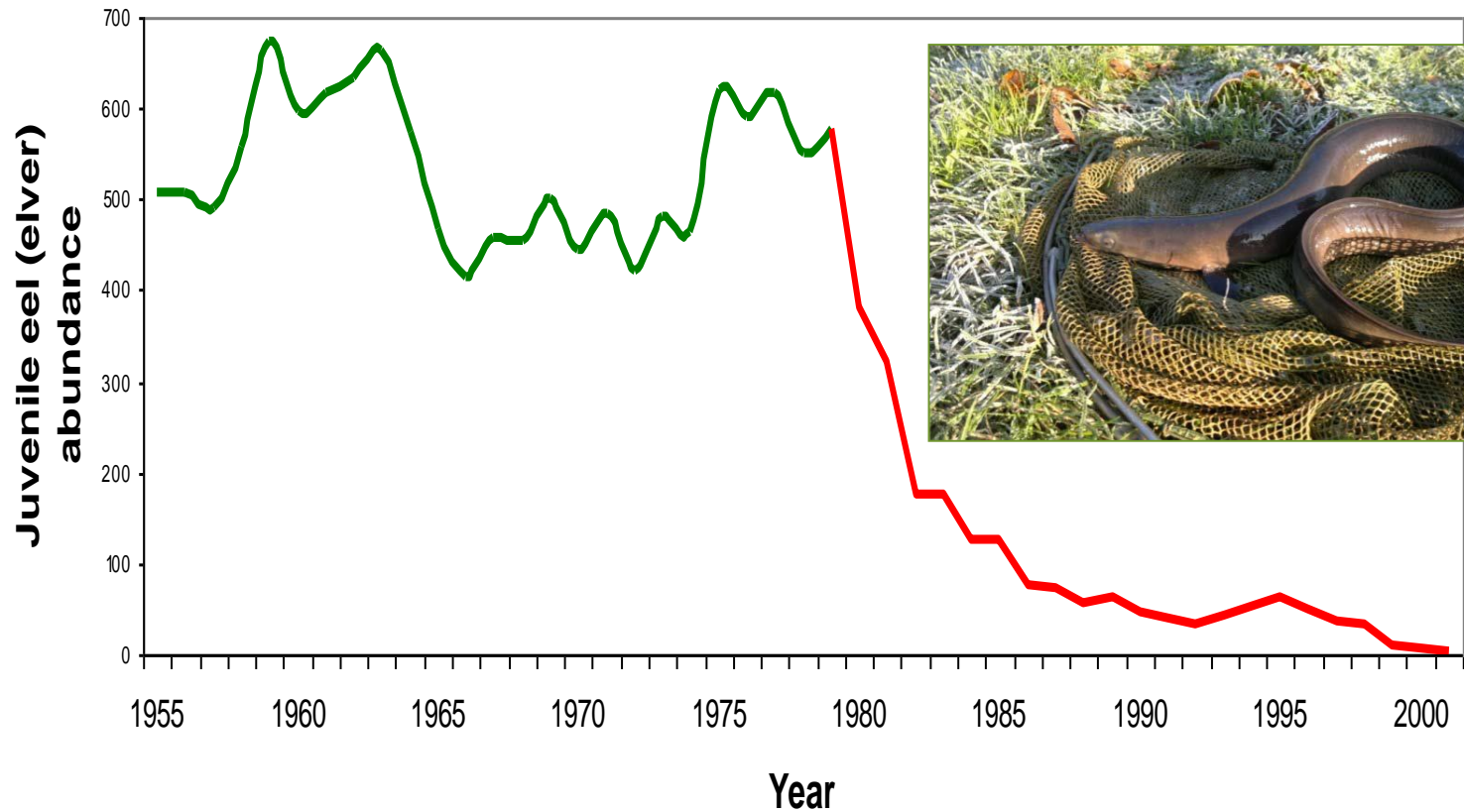


‘...Laws too gentle, are seldom obeyed; too severe, seldom executed...’

[Benjamin Franklin](#)

What is it all about...?

The collapse in European eel recruitment



The European Eel Regulation (EC 1100/2007)



COUNCIL OF
THE EUROPEAN UNION

Brussels, 14 August 2007
(OR. en)

12031/07

Interinstitutional File:
2005/0201 (CNS)

PECHE 241

22.9.2007

EN

Official Journal of the European Union

L 248/17

COUNCIL REGULATION (EC) No 1100/2007 of 18 September 2007

establishing measures for the recovery of the stock of European eel

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 37 thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament ⁽¹⁾,

Whereas:

locations where eel are exploited. Priority should be given to action by Member States through the drawing up of Eel Management Plans adjusted to regional and local conditions.

- (5) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ⁽²⁾ and Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy ⁽³⁾ are intended, *inter alia*, to protect, conserve and enhance the aquatic environment where eels spend part of their life cycle and it is necessary to ensure that there is coordination and consistency between measures taken under this Regulation and those taken under the aforementioned Directives. In particular, Eel Management Plans should cover river basins defined in accordance with Directive 2000/60/EC.

- (1) On 19 July 2004 the Council adopted conclusions concerning the Commission's Communication to the Council and the European Parliament of 1 October 2003 on the development of a Community Action Plan for the Management of European Eel, which included a request to the Commission to come forward with proposals for long-term management of eels in Europe.

- (2) On 15 November 2005 the European Parliament adopted a resolution calling on the Commission to immediately submit a proposal for a regulation for the recovery of European eel stocks.

- (3) The latest scientific advice from the International Council for the Exploration of the Sea (ICES) concerning European eel is that the stock is outside safe biological

- (6) The success of measures for the recovery of the European eel stock depends on close cooperation and coherent action at Community, Member State and local and regional level as well as on information, consultation and involvement of the public sectors involved. To this end support from the European Fisheries Fund may contribute to the effective implementation of Eel Management Plans.

- (7) If river basins lying within the national territory of a Member State cannot be identified and defined as constituting natural habitats for the European eel, it should be possible for that Member State to be exempted from the obligation to prepare an Eel Management Plan.

- (8) In order to ensure that eel recovery measures are effective and equitable, it is necessary that Member States identify

LEGISLATIVE ACTS AND OTHER INSTRUMENTS

Subject: COUNCIL REGULATION establishing measures for the recovery of the stock of European eel



Environment
Agency

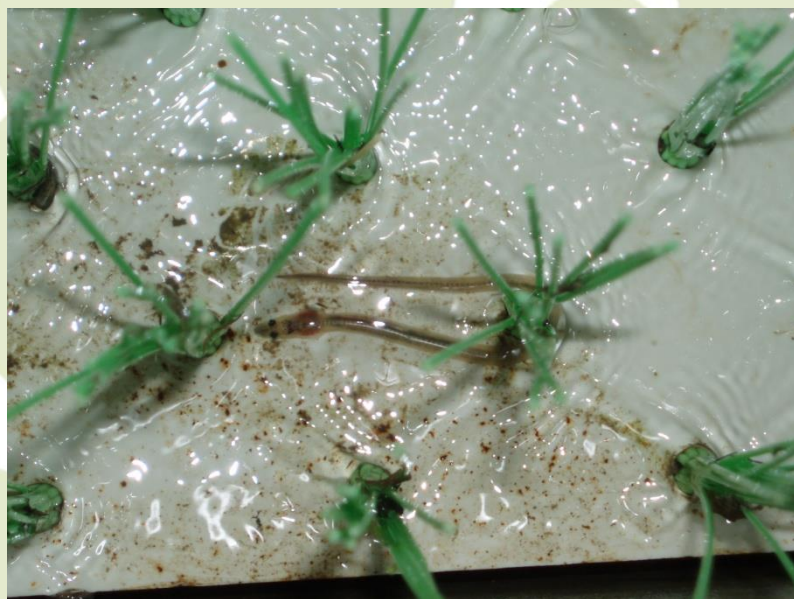
The main impacting factors on eel populations

Exploitation,
Access/migration barriers,
Entrainment, Loss of habitat
Predation, Water quality/pollution,
Pathogens & parasites,
Climate change/oceanic factors



The Eels (England & Wales) Regulations 2009 Statutory Instrument

‘The Eel(s) Regs.’



STATUTORY INSTRUMENTS

2009 No. 3344

FISHERIES, ENGLAND AND WALES

RIVER, ENGLAND AND WALES

The Eels (England and Wales) Regulations 2009

Made - - - - 14th December 2009
Laid before Parliament 21st December 2009
Laid before the National Assembly for Wales 21st December 2009
Coming into force - - 15th January 2010

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The Eel Regs

Part 1 Context and definitions

Parts 2 & 3 Regulation of commercial and recreational eel fishing. Plus 60% for restocking

Part 4 The passage of eels.

Part 5 Notices and Appeals

Part 6 Enforcement and Penalties

Obstructions (!Relatively straightforward for eel!)

‘.....where the Agency determines that the passage of eels is impeded or likely to be impeded by....’ ‘....the Agency may require....’

We may therefore serve notice to:

- Remove an obstruction
- Construct an eel pass
- Alter an existing eel pass

At their own cost including concomitant maintenance responsibilities ‘....in an efficient state...’

➔ EA specifies deadline with notice

Abstractions (!Less straightforward!)

By 1st January 2015

↓
All abstractions > 20m³ per day must be screened or exempted unless in part of catchment not naturally colonised by eel

→ Costs again borne by the 'Responsible Person' plus maintenance duties for the screen

‘....any discharge to a channel, bed or sea (out to 6 nautical miles) in order to protect eels....’

In Part 4 a responsible person ‘...is the owner, occupier or person in charge of the land on which a dam, diversion structure or obstruction lies....’

Therefore the definition of ‘responsible person’ includes private landowners, power companies, water companies, IDBs, other large organisations (e.g. National Trust, RSPB) **and the Environment Agency.**

We had to:

- Design a process
- Train and support staff
- Get 'responsible persons' to understand The Regulations, the process and their obligations.....and act on them(!)

Scale of the challenge:

Qualifying sites range from this:



to this:



Needed to adopt a 'risk-based approach' to implementation

Prioritisation: A Two Stage Approach

Stage 1. Filter **26,000** potential obstructions / **21,000** abstractions down to a “useable” number.

- Standardized Process
- identify those with highest geographical significance.
- Use Nationally managed and maintained Datasets and GIS tools

Based on criteria such as:

Distance from Head of Tide

Relative Size

Predicted presence of Eel from Fisheries Classification Scheme (FCS2)

Water body abstraction “Sensitivity” (from CAMS)

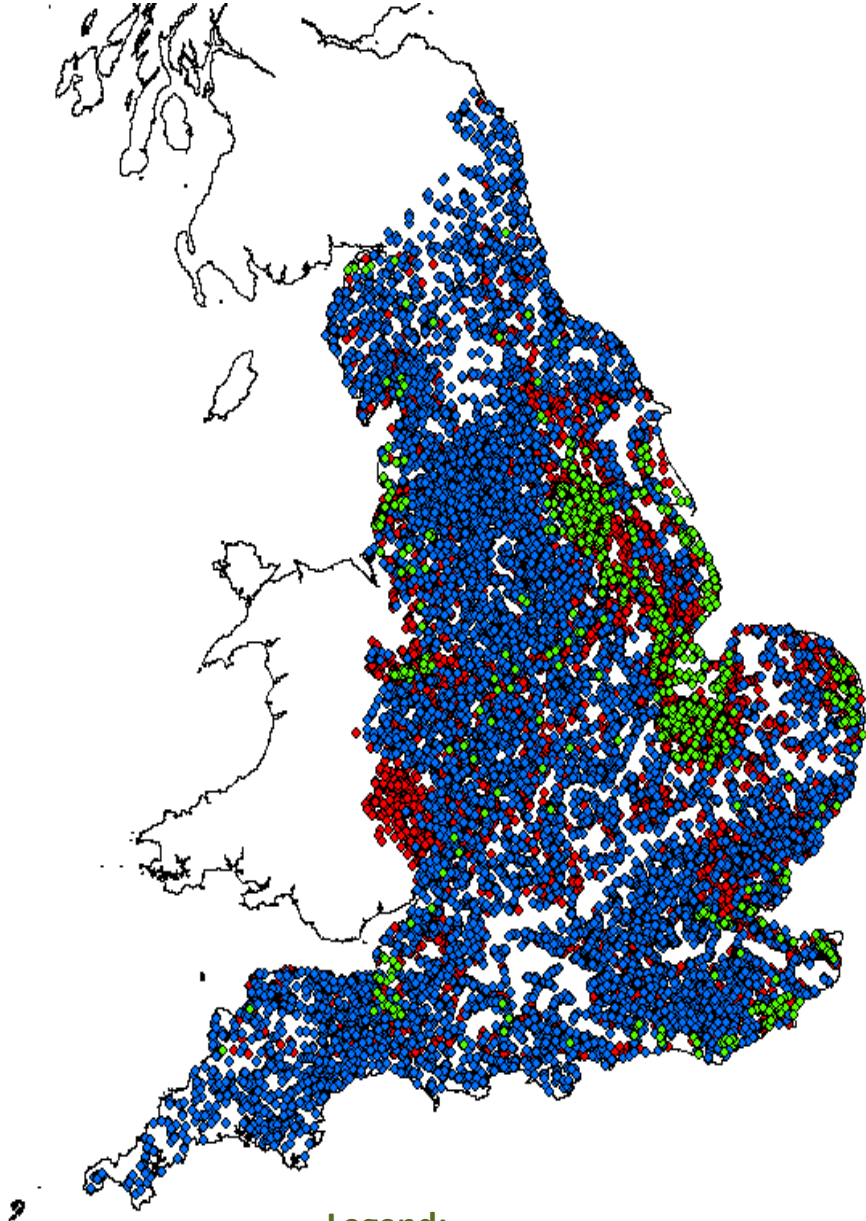
Length of stream opened

Proportion of catchment opened

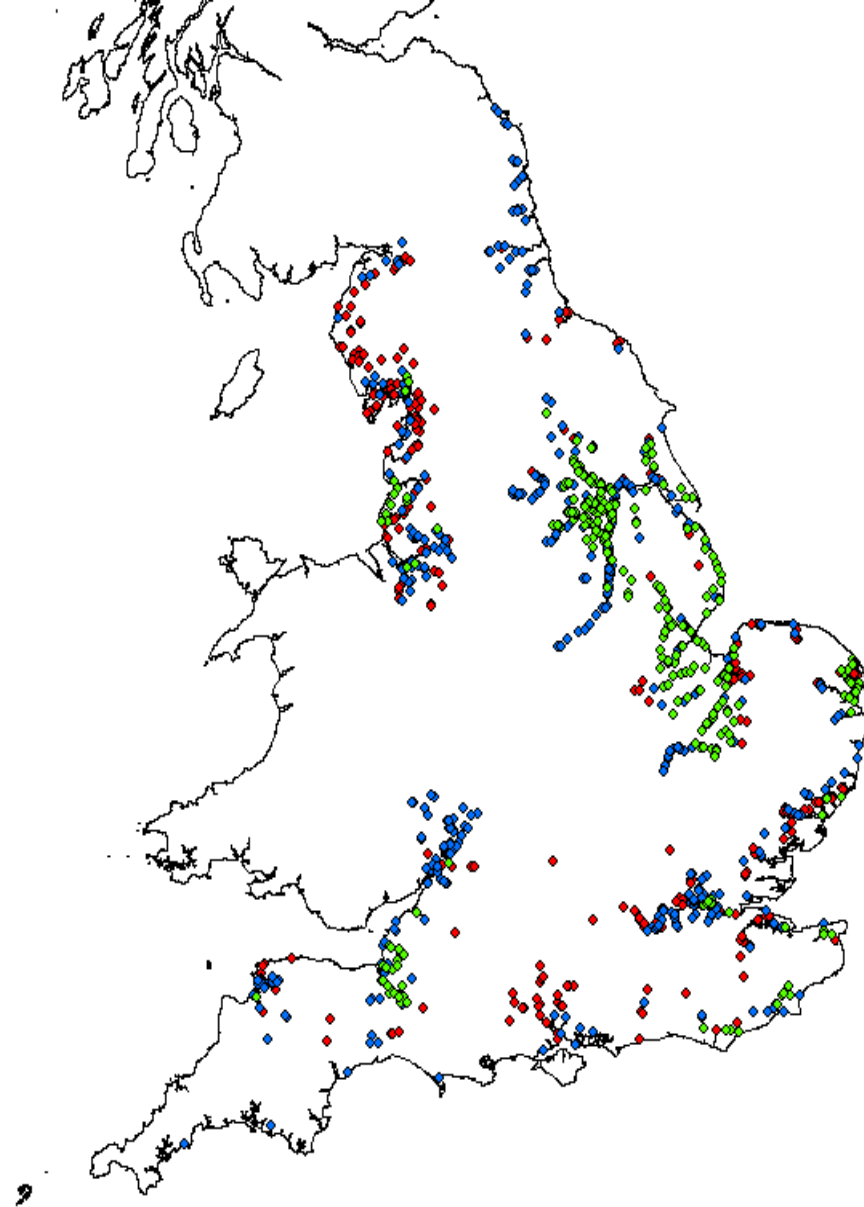
Number of barriers downstream

Stage 2. Local Consultation

“Wise up” the filtered list.

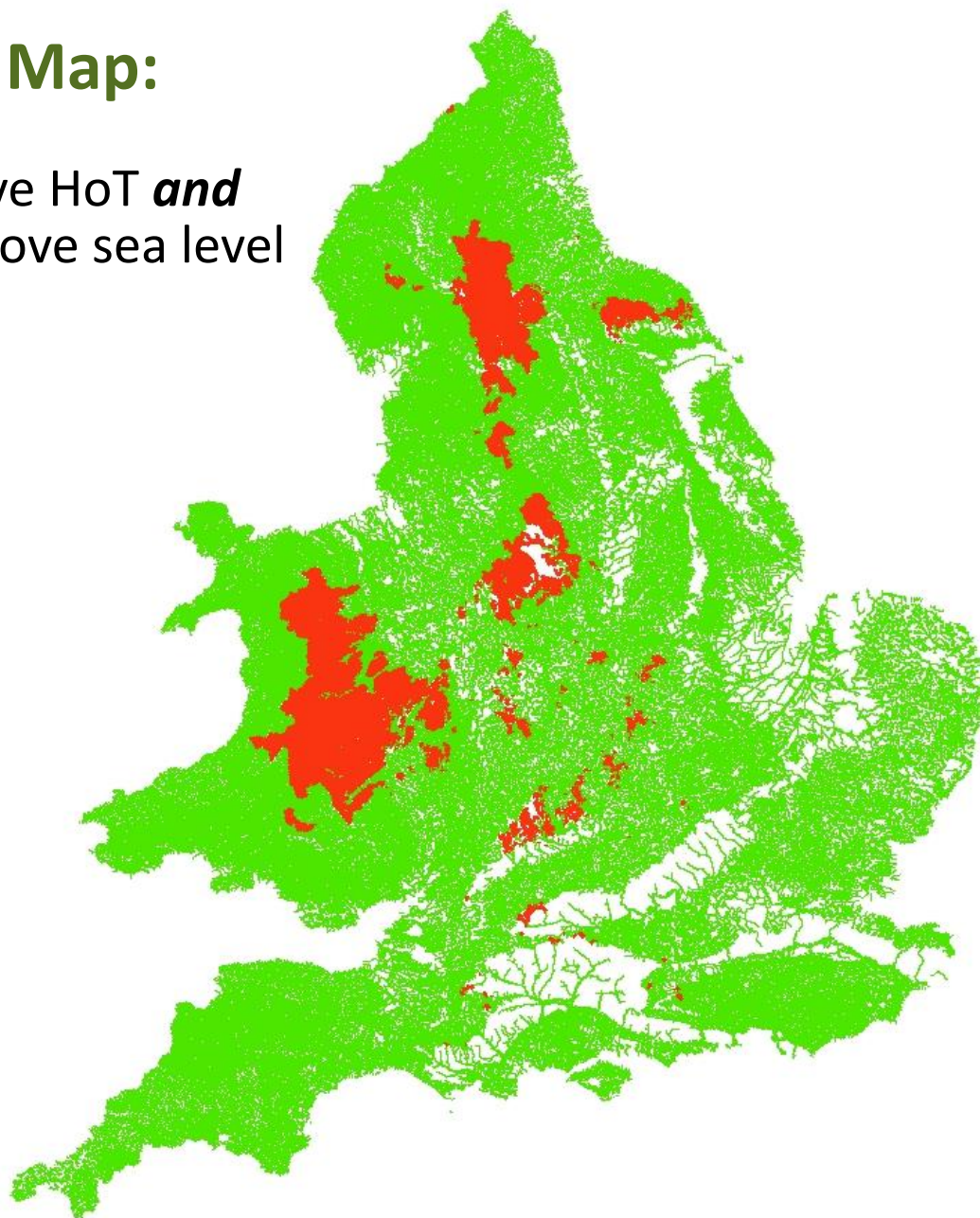


Legend:
Abstractions – Red
Obstructions – Blue
Pumping Stations – Green



Eel Risk Map:

Sites >100km above HoT ***and***
>150m altitude above sea level





Environment
Agency
Asiantaeth yr
Amgylchedd

Safe passage for eel

Operational instruction 63_13

Issued 14/01/2014

What's this document about?

The Government established Part 4 of the [Eels \(England and Wales\) Regulations 2009 Statutory Instrument](#) No. 3344 (**the Eels Regulations**) to provide safe passage for eel in inland waters. These Regulations took effect in January 2010.

This document outlines how to apply our powers under the Eels Regulations.



Document details



Related documents



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Home

Knowledge and training

Legislation & Case Law

Legislation

Fisheries

European Eel

Implementing the eel regulations

Implementing the eel regulations

Useful documents for implementing the eel regulations.

- Eel regulations: where to go for information (PDF, 257KB)
- Safe passage for eel: operational instruction (Word, 312KB)
- Regulatory position statement: safe passage for eels (PDF, 677KB)
- Safe passage for eel: guidance on exemptions (PDF, 428KB)
- [Alternative measures \(where best practice screening is not cost beneficial\) \(PDF, 7KB\)](#)
- Eel screen exemption notice (Word, 44KB)
- Eel exemption for no abstraction notice (Word, 48KB)
- Eel risk map (PDF, 45KB)
- Eel regulations: engaging with the national estates team (PDF, 210KB)
- Estates service guide (PDF, 595KB)
- General guide for eel pass licensing for existing structures (PDF, 1MB)
- Our ambition for eel in England (PDF, 95KB)
- Protection of European eel when determining hydropower applications (PDF, 398KB) ~

► Eel regulations: guidance on cost-benefit analysis for eel management

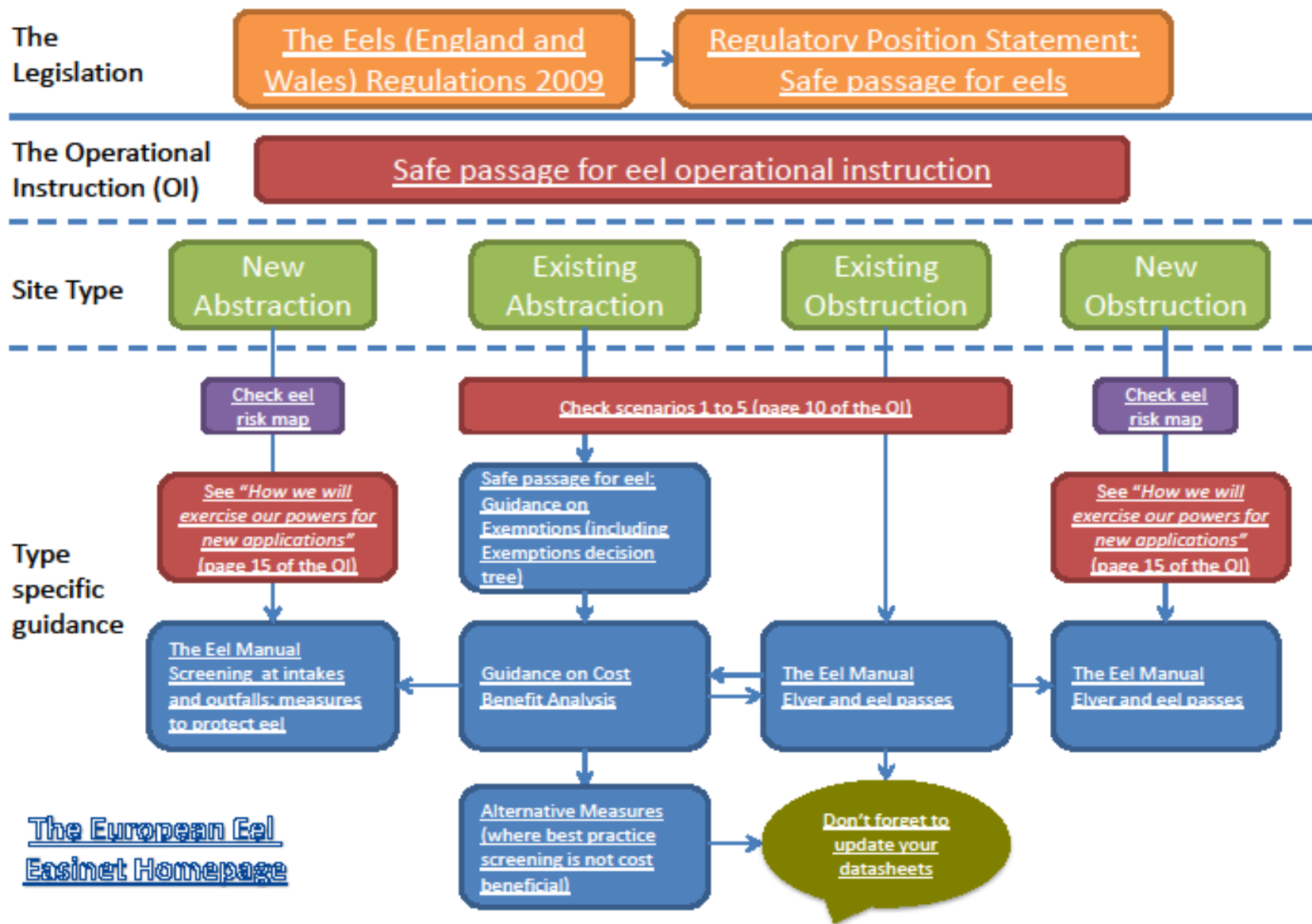
Implementing the eel regulations: project updates

- May 2014 project update: eel regulations (Word, 13.1KB)
- October 2013 project update: Eel regulations (PDF, 62KB)
- September 2013 project update: Eel regulations (PDF, 57KB)
- August 2013 project update: eel regulations (PDF, 138KB)

Page tools

- Email
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READ ME.....Eel Regs: Where do I go for information?



The Eel Manual: an overview

GEHO0211BTMU-E-E

The plight of the European Eel (*Anguilla anguilla*)

Scientists estimate that the number of eels has fallen to less than 1% of their original numbers throughout the world.



Monitoring elver and eel populations

The Eel Manual — GEHO0211BTMY-E-E



Stocking European Eel (*Anguilla anguilla*)

The Eel Manual - GEHO0211BTMX-E-E



Screening at intakes and outfalls: measures to protect eel

The Eel Manual — [GEHO0411BTQD-E-E](#)

Elver and eel passes

A guide to the design and implementation of passage solutions at weirs, tidal gates and sluices

The Eel Manual— GEHO0211BTMV-E-E

Regulatory position statement

Safe passage for eel *February 2013*



WE WILL FOLLOW THE APPROACH SET OUT IN THIS STATEMENT TO USE THE POWERS GRANTED TO US BY THE EELS REGULATIONS 2009 TO REQUIRE FISH PASSES, REMOVAL OF OBSTRUCTIONS AND/OR SCREENING AT WATER INTAKES AND OUTFALLS FOR THE PROTECTION OF EELS.

BACKGROUND

The Eels (England and Wales) Regulations 2009 (the Regulations) came into force on 15 January 2010 to support the UK in implementing EC Council Regulation (1100/2007) (the EC Eel Regulation). Under this European Regulation, the UK must take actions to halt and reverse the decline in the European eel stock, aiming to meet a target set for the number of mature adult eels leaving each river basin to return to spawn at sea. The EC Eel Regulation requires UK to consider eel passage as part of the solution.

We have prepared *Eel Management Plans* for Defra/Welsh Government for each River Basin District in England and Wales. These outline the current situation and how we intend to achieve the EC target. The Regulations give us powers to help achieve this target. *Part 4 of the Regulations provide us with new powers to ensure safe passage for eel as follows.*

PASSES. We may serve notice on a responsible person to, at their own cost, construct an eel pass on a dam or other obstruction where eel passage is or likely to be impeded. This applies to existing structures and to the construction of a new dam/obstruction, and to alterations or maintenance to an existing dam/ obstruction. Where eel passage is or likely to be impeded, we may require the person responsible for the site to, at their own cost, make alterations to an existing eel or fish pass or to remove an obstruction. We may serve notice requiring a responsible person at their own cost to operate an existing eel pass in accordance with any conditions stated in the notice. *A responsible person must, at their own cost, maintain an eel pass in an efficient state.*



SCREENING. Up to 1 January 2015, we may serve notice requiring the responsible person to, at their own cost, place a screen at any diversion structure capable of abstracting at least 20 cubic metres per day or any discharge to a channel, bed or sea (out to 6 nm) in order to protect eels. After 1 January 2015, it will become an offence not to have a screen on any such intake or outfall, unless we specifically issue notice to exempt the requirement. A by-wash may be required for screens sited other than at the entrances to intake channels. *The responsible person must, at their own cost, ensure an eel screen or by-wash is maintained in an efficient state.*

A 'responsible person' in these regulations is defined as the owner, occupier or person in charge of the land on which the obstruction, intake or outfall lies.

FOR EXISTING OBSTRUCTIONS, INTAKES OR OUTFALLS, WE WILL ADOPT A PHASED APPROACH to requiring action for eels as outlined in the table and paragraphs a - e below. This may require us to issue time limited exemptions that fit into planned work programmes. Priorities will be determined from a combination of:

***POSITION IN THE CATCHMENT (FURTHER DOWNSTREAM = HIGHER PRIORITY);
UPSTREAM USEABLE EEL HABITAT OBSTRUCTED;
VOLUME AND RATE OF WATER ABSTRACTED
PREDICTED PRESENCE OF EEL***

Regulatory phases for requiring action on eel passage and screening

Action to be required for:	Phase 1 To 2015	Phase 2 2015 to 2021	Phase 3 2021 to 2027
High priority sites Solution low cost and non-complex	-----		
High priority sites Significant cost and/or complexity	-----	-----	
Lower priority sites Low cost, non-complex	-----	-----	
Lower priority sites Significant cost and/or complexity		-----	-----
New developments posing a risk	-----	-----	-----

customer service line
03708 506 506

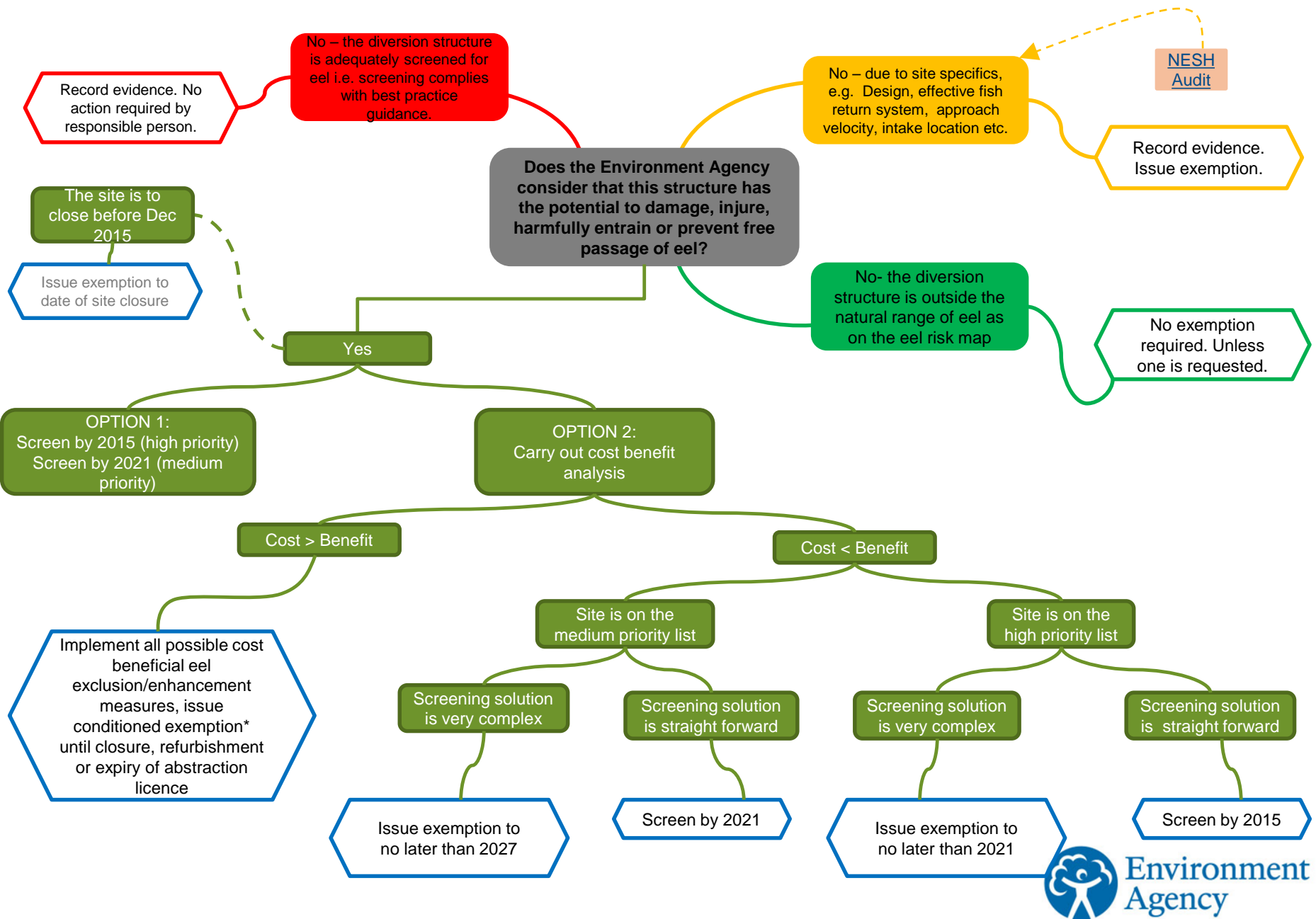
incident hotline
0800 80 70 60

floodline
0845 988 1188

www.environment-agency.gov.uk

Safe passage for eel: Exemption decision tree for existing sites

[NESH Audit](#)



* See [Alternative Measures \(Where Best Practice Screening is not Cost Beneficial\)](#)

Safe Passage for Eel:

Alternative Measures (where best practice screening is not cost beneficial for existing sites)

What's this document about?

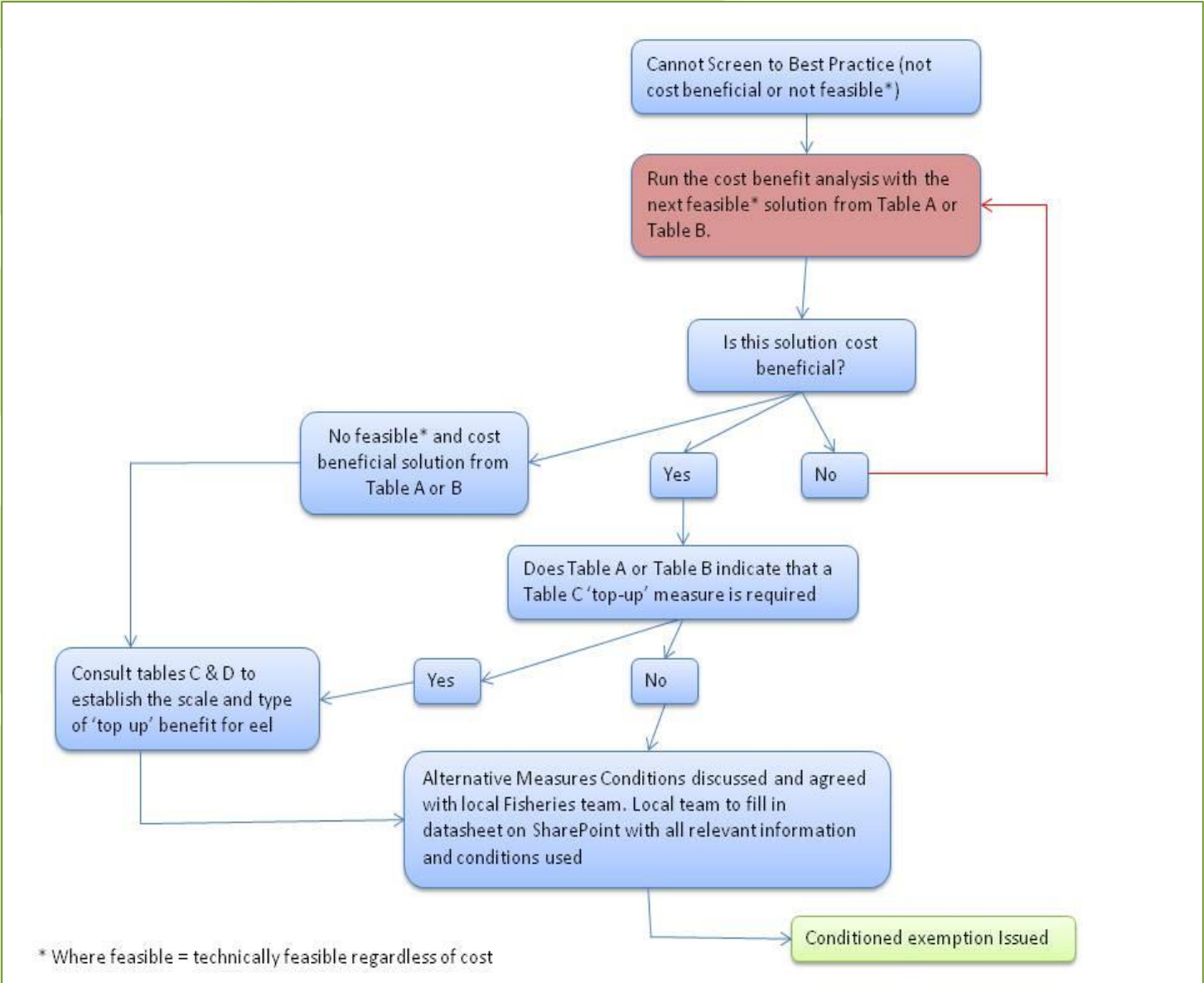
This guidance supports the [Safe Passage for Eel Guidance of Exemptions](#) and it should be read in conjunction with this management system document. This document specifically deals with sites that require works under Part 4 of the Eels (England & Wales) Regulations, 2009 but via the [economic appraisal process](#), are deemed not cost beneficial for best practice screening. We have introduced Alternative Measures to ensure that asset owners do all that is reasonable to protect eel.

When should I use this guidance?

This document has been written for existing sites only. If, having carried out a [cost benefit analysis](#) for the **existing site**, the results show that it is **not** cost beneficial to achieve best practice screening, you will need to refer to the following guidance to decide what Alternative Measures are appropriate at the site and should be included as a condition on the exemption notice. It may also be necessary to use this document if you believe that best practice screening is not feasible for another accepted reason (for example health and safety at nuclear plants).

For **new build sites** we expect best practice screening to be intrinsic to the design of the scheme. Please refer to the Safe Passage for Eel Operational Instruction section - [Applying the regulations, New abstractions, impoundments and in-river works](#).

Figure 1: Process for applying Alternative Measures
See Appendix A for some example scenarios.



Key

Denotes suggested Alternative Measures by sector
(NB: the split by sector is for guidance only. There may be sites that fall outside of this sector split).

Table A: Alternative Measures by Engineered solutions

Most to least Preferred Option	Alternative Measures Options by Engineered Solution	Is Table C required?	Sector							
			Nuclear	Combustion	Water	Environment Agency	Hydropower (must also consider existing hydropower guidance)	Agriculture, Canal & Rivers Trust, NGOs, National Trust, Private Landowner	IDBs	Refineries, Chemical Works, Steel Works, Incinerators Paper & Pulp
	Improve existing screening but to a lesser standard than Best Practice, for example increasing the slot width or the intake velocity and including a Fish Recovery Return (FRR) system and monitoring*	No								
	FRR installed onto existing drum/band screen	No								
	Fish friendly pump or turbine installed (where through-passage is beneficial)	No								
	Improve existing screening but to lower than BP gap size/approach velocity specifications inc. monitoring*	Decided via Local Area Assessment **								
	Improvements made to existing FRR system	Decided via Local Area Assessment **								
	Eel-specific bypass added e.g. bed bypass, Venturi attracting flows	Decided via Local Area Assessment **								
	KLAWA (or other approved) silver eel bypass system added	Consult Screening Helpdesk								
	Intake flows altered by the addition of flow deflectors/baffles	Yes								
	Intake location altered	Yes								
	Behavioural deterrent added with monitoring*	Yes								

Accessible Solutions:

Efficiency of "Eel Tiles" for upstream migrating glass eel (*Anguilla anguilla*) ascending an experimental Crump weir

Andrew Vowles, Andy Don, Peri Karageorgopoulos and Paul Kemp

Background

In the UK, studded boards, commonly referred to as 'Eel Tiles' (Figure 1a), are being installed on low-head barriers to facilitate more efficient upstream eel migration. To date, efficiency of 'Eel Tiles' has not been evaluated and the behaviour of eels as they attempt to ascend the tiles is unknown.

This study focused on glass eel (Figure 1b), the earliest developmental stage expected to utilize eel passes. Restricted upstream migration of glass eels represents a bottleneck for recruitment, alleviation of which is considered a principle target for conservation efforts.

Aim

To assess the effectiveness of 'Eel Tiles' for facilitating upstream passage of glass eel (*Anguilla anguilla*) at an experimental Crump weir.

Objectives

- Quantify eel behaviour when attempting to ascend an unmodified (control) and modified with eel tiles on the downstream face (treatment) Crump weir.
- Compare passage efficiency between setups.
- Determine whether stud configuration (large or small) influenced passage efficiency.

Methods

An experimental Crump weir (Figure 2) was installed in an indoor flume (12m long, 0.3m wide, and 0.4m deep) at an International Centre for Ecohydraulics Research (ICER) facility (University of Southampton).

Ten 10 min trials were conducted between 10:00 and 17:00 on 7 - 9 May 2013 for each setup. Thirty fish were released 2.2m downstream of the weir at the start of each trial. Overhead CCTV cameras monitored eels as they approached and attempted to ascend the weir. Mean water velocities on the downstream weir face were approx. 57.4 and 34.7 cm s⁻¹ for the control and treatment setups, respectively.

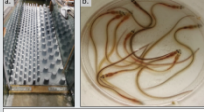


Figure 1a. 'Eel Tiles' installed on the downstream face of an experimental Crump weir.

Figure 1b. Sample of European glass eel used during trials to assess efficiency of 'Eel Tiles'.

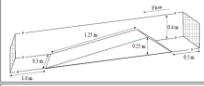


Figure 2. Dimensions of the Crump weir used to assess the ability of glass eels to pass upstream when unmodified (control) and modified with 'Eel Tiles' (treatment).

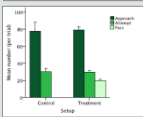


Figure 3. Mean ($n=100$) number of glass eels that approached, attempted to, and successfully ascended the weir.

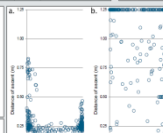


Figure 4. Relationship between the number of approaches and attempts to pass the weir for control and treatment setups.

Results

- Mean number of approaches and attempts to pass the weir did not differ between setups (Figure 3).
- No eels ascended the control weir, but when tiles were in place an average of 20 per trial successfully passed (Figure 3).
- Eels were edge oriented and progressed further up the weir when tiles were in place, largely as a result of successful passage (Figure 4).
- Passage efficiency increased from 0% to an average of 66.7% per trial when the weir was modified with 'Eel Tiles'.
- Higher passage efficiencies were attained for the small (8.75) rather than large (41.35) stud configuration.

Figure 4. Relationship between the number of approaches and attempts to pass the weir for control and treatment setups.

Figure 4. Relationship between the number of approaches and attempts to pass the weir for control and treatment setups.

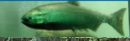
Conclusions

'Eel Tiles' may provide a cost effective solution for mitigating barriers to juvenile eel migration. However, as eels were observed burrowing upstream in a single attempt, resting locations may be required on longer / larger barriers.

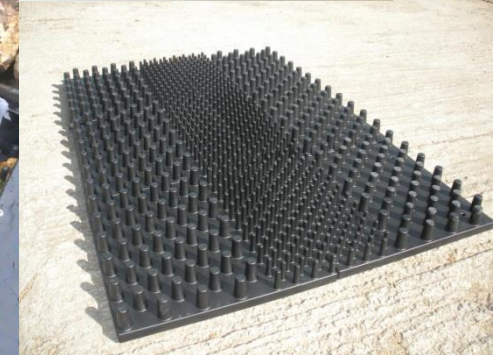
Figure 4. Relationship between the number of approaches and attempts to pass the weir for control and treatment setups.

Figure 4. Relationship between the number of approaches and attempts to pass the weir for control and treatment setups.

ICER



Dr Andrew Vowles
Email: asv104@soton.ac.uk



Estimate >600 eel passes since 2009 opening up many thousands of km of habitat

Sector compliance and implementation

