- Achieving ecological continuity at hydro sites in high energy rivers.

- Gerry Mc Cafferty (Inspector)


• Donegal's Natural Resources
• Coastline
• Lakes
• Rivers

Hydro Applications on Donegal Rivers, Issues for consideration

- Location within catchment
- Species present
- Species requirements
- Identify Possible impacts
- Continuity of river dynamics
- Problems with technology
- ‘guaranteed’ compensation flows

Mountain lakes & rivers

- Spawning in many cases is in the upper reaches of catchment
- Important to maintain unhindered access for all species

Remote mountain streams & Rivers

- Very high gradient
- Subject to huge fluctuations in volume
- Most lacking verifiable flow data
- Majority with best spawning/juvenile habitat in the system

Glenveagh National Park

- SALMON
- SEA TROUT
- BROWN TROUT
- CHAR
- Eels


Gweebarra River
Salmon
Sea trout
Brown trout
Eel


Lowerymore Fish Pass/Compensation Flow
•INSUFFICENT COMPENSATION FLOW
•TURBINE STILL OPERATING

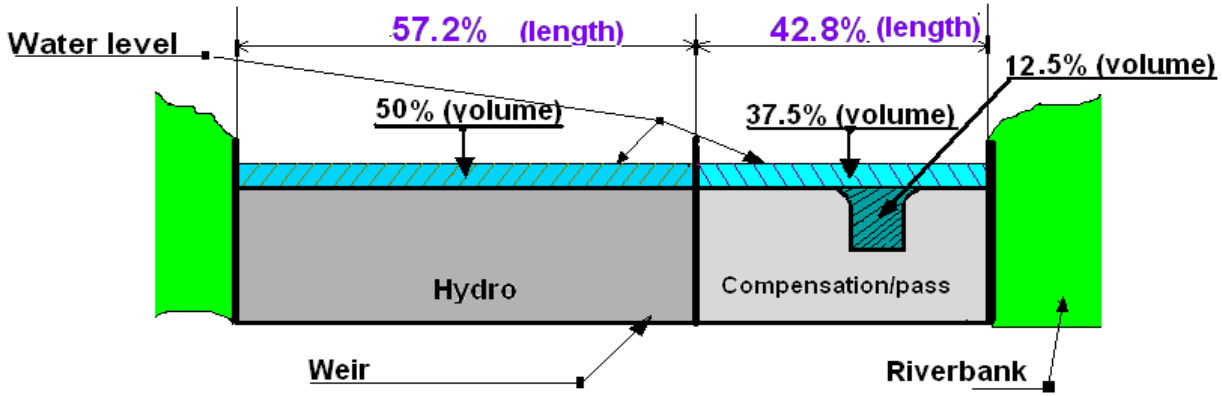

Mink damage (caused when insufficient compensation flow left fish stranded in shallow pools)


Damaged weir on Mill River
with a proposed hydro scheme

NATIONAL GUIDELINES
RIVER / SITE CATEGORIES

- **Category 1 Rivers:** Where there is no upstream migration in the river channel in the depleted stretch due to an impassable natural barrier.
- **Category 2 Rivers:** River channel sections that include an impassable barrier but within which fish movement is possible.
- **Category 3 Rivers:** River channel sections where there is internal movement within the depleted stretch, where there is spawning and nursery potential and where there is also fish movement through the stretch.
- **Category 4 Rivers:** River channel sections of high fisheries value where the impacts of the proposed hydro scheme development would be unacceptable from a fisheries perspective.

Typical volumes/lengths at abstraction weir



Typical abstraction Weir

with a 12.5% or 50% (whichever is greater) compensation requirememt

elevation at annual average flow

N.T.S.

Total annual average river flow

12.5% of total annual average flow through notch
37.5% of total annual average flow available to compensation/fish pass (over cill when notch is full)
50.0% of total annual average flow available to hydro (over cill when notch is full)

} 100% Total average annual flow

Total annual average flow over cill

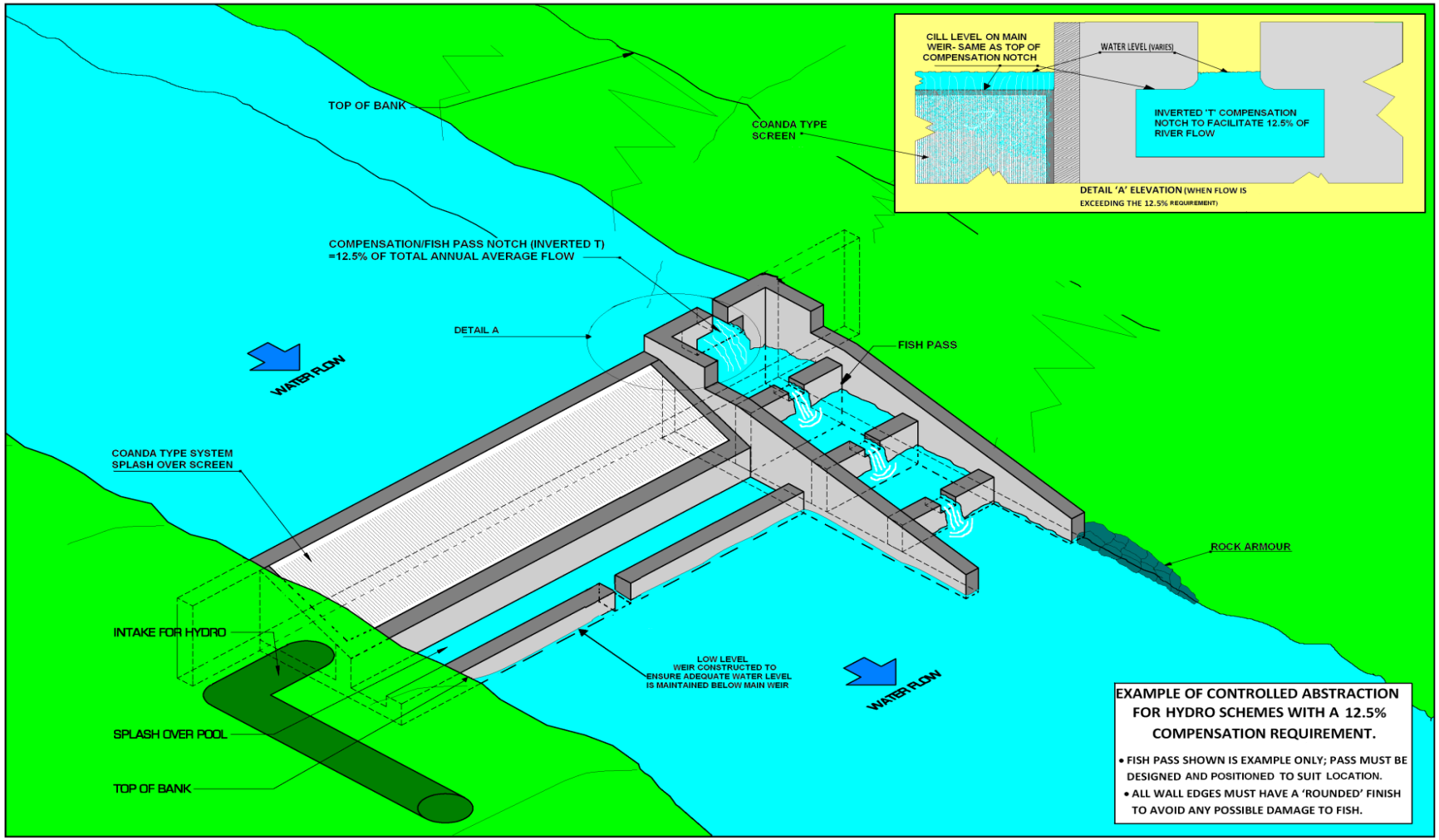
87.5% of the total annual average flow runs over cill when notch is full

of this

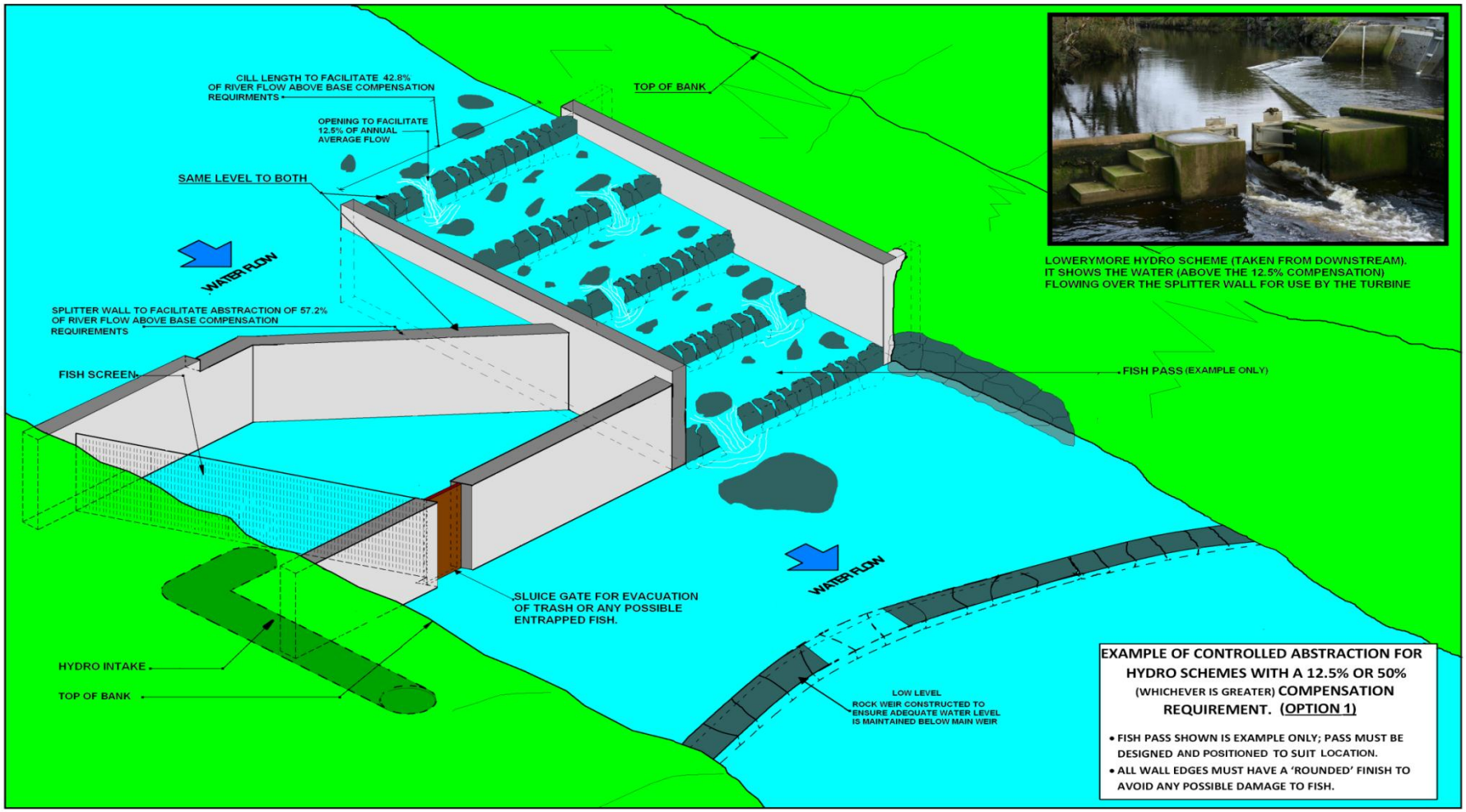
57. 2% of the flow over cill gives 50% of total annual average flow to hydro
42.8 % of the flow over cill gives 37.5% of total annual average flow to compensation

} 100% Total flow over cill

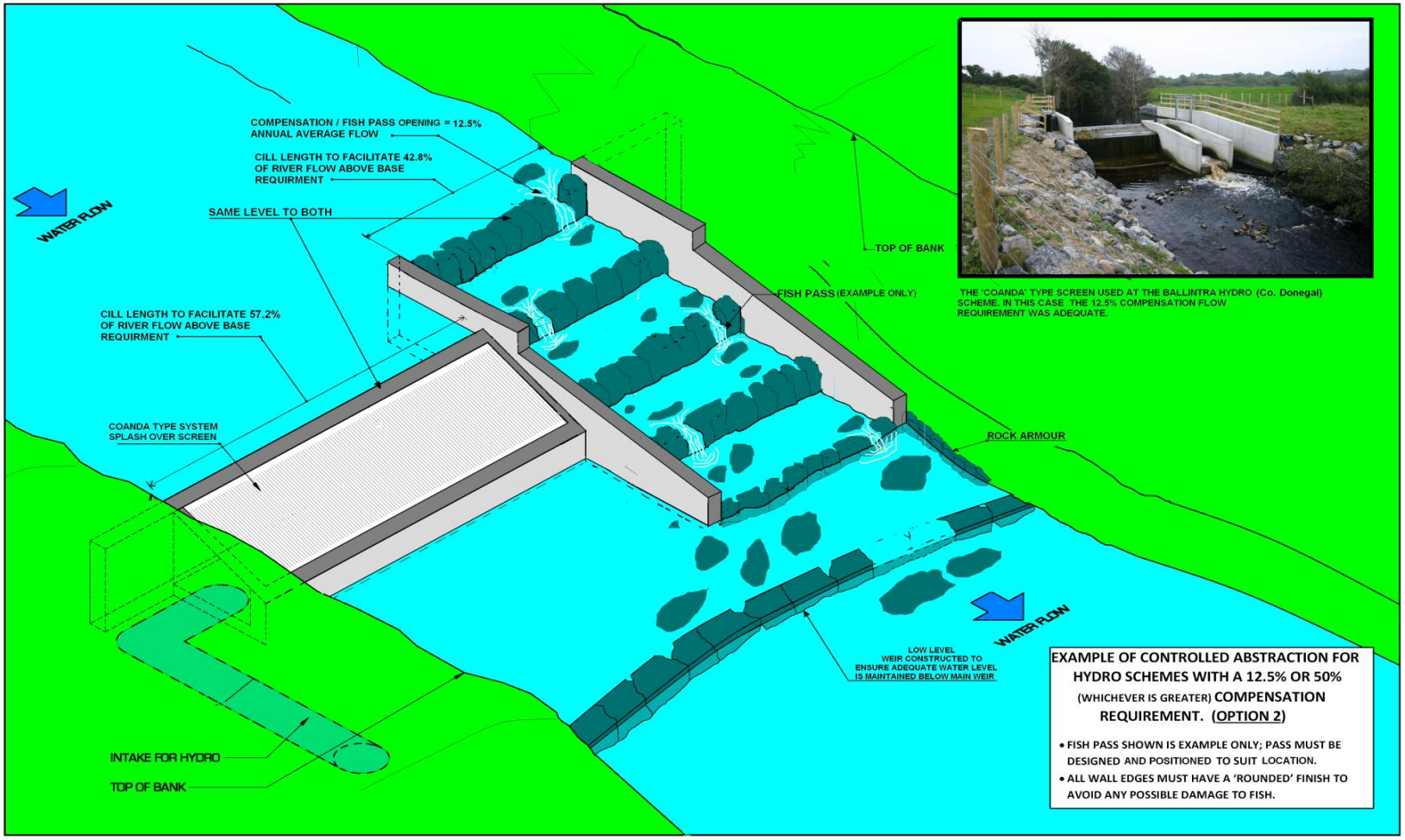
Category (1-2) Rivers
Minimum Compensation Requirement (12.5%)



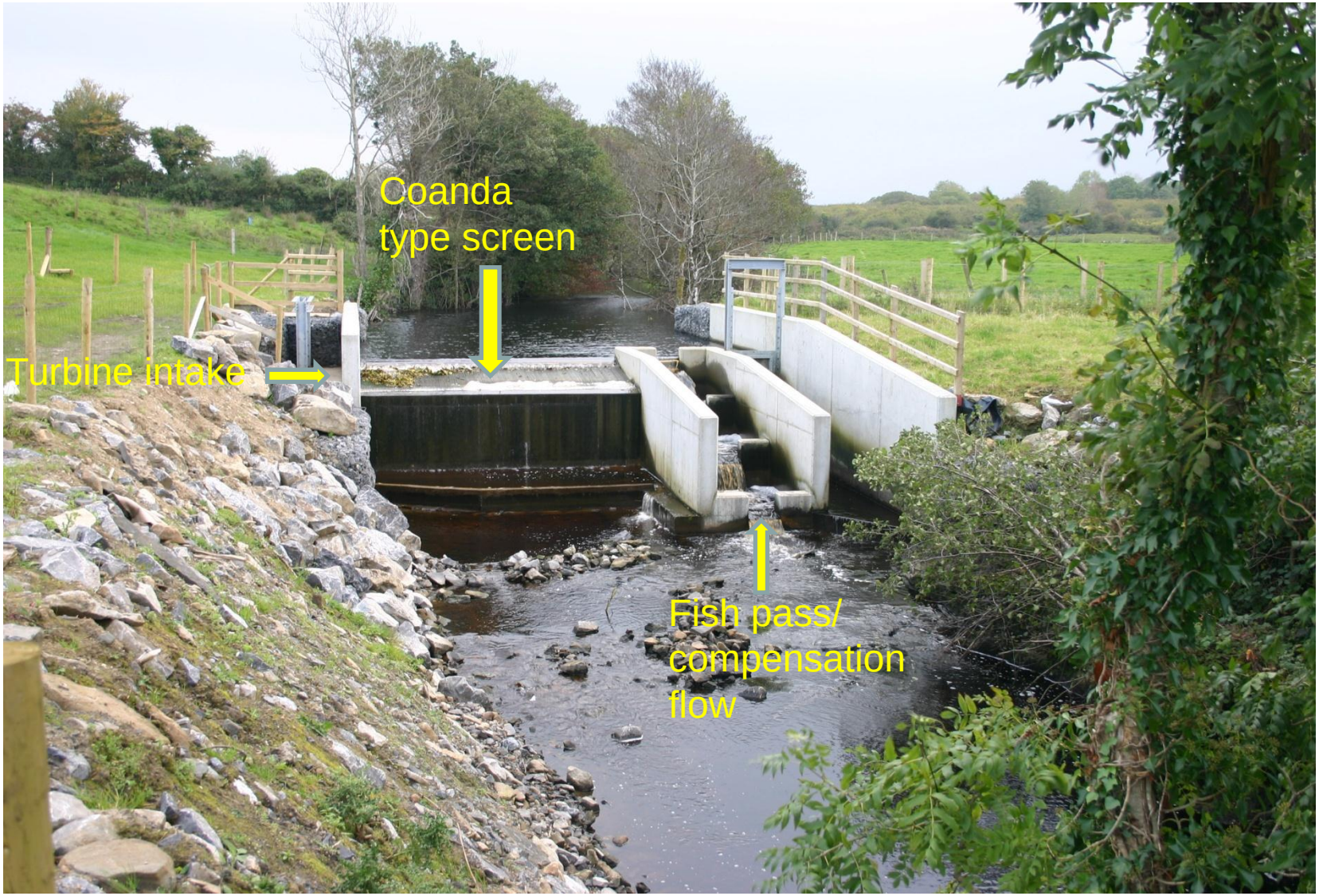
Category (2-3) Rivers (option 1)
Minimum Compensation Requirement (12.5% or 50% whichever is greater)



Category (2-3) Rivers (option 2)
Minimum Compensation Requirement (12.5% or 50% whichever is greater)

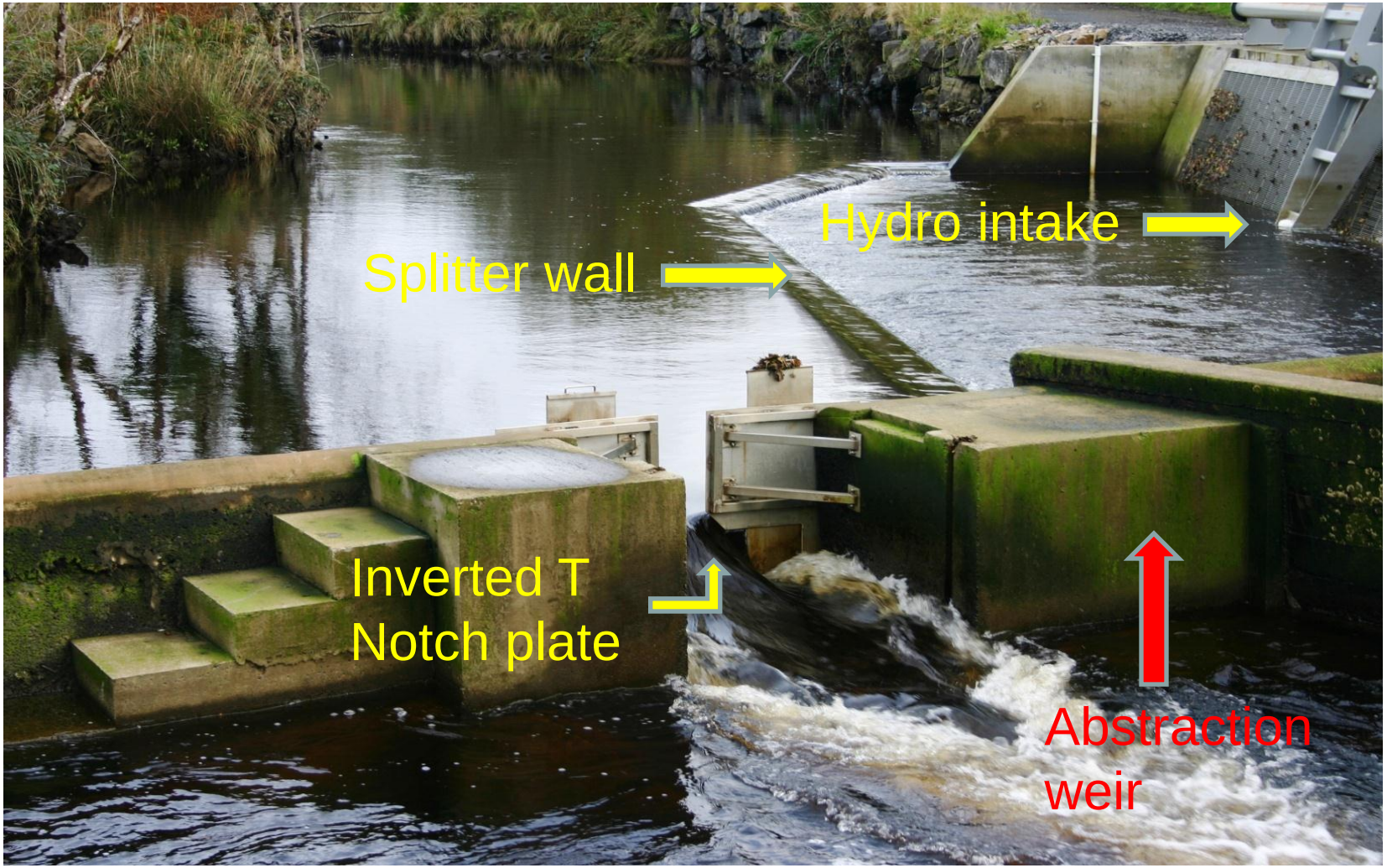


Ballintra river hydro scheme

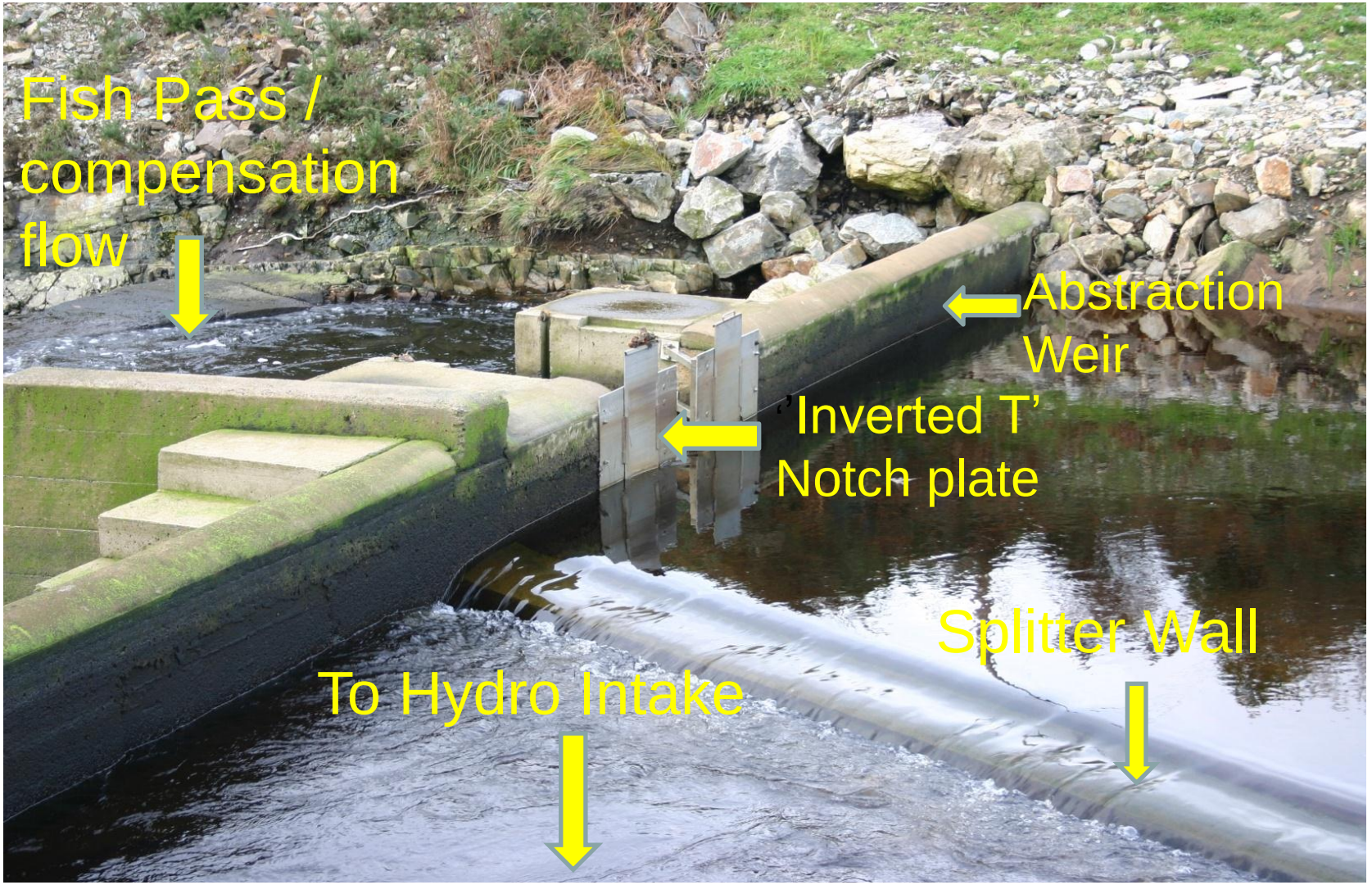


Ballintra (2 Days Later)

Lowerymore ‘Inverted T’ with ‘splitter wall’ (looking upstream)



Lowerymore ‘inverted T’ with splitter wall (looking downstream)



Lowerymore fish pass

- Salmon on way up
- Thank you
- All questions to Alan