

Implementing fish friendly principles: Bringing Back the Fish project

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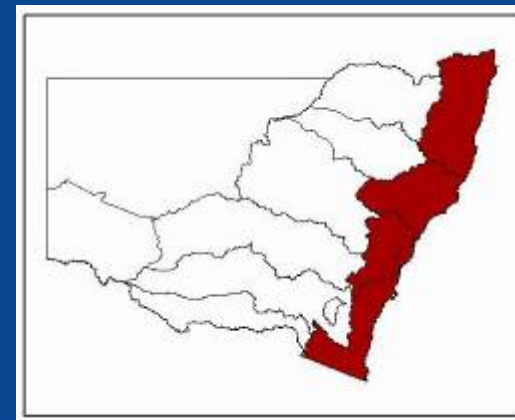


NSW DEPARTMENT OF PRIMARY INDUSTRIES

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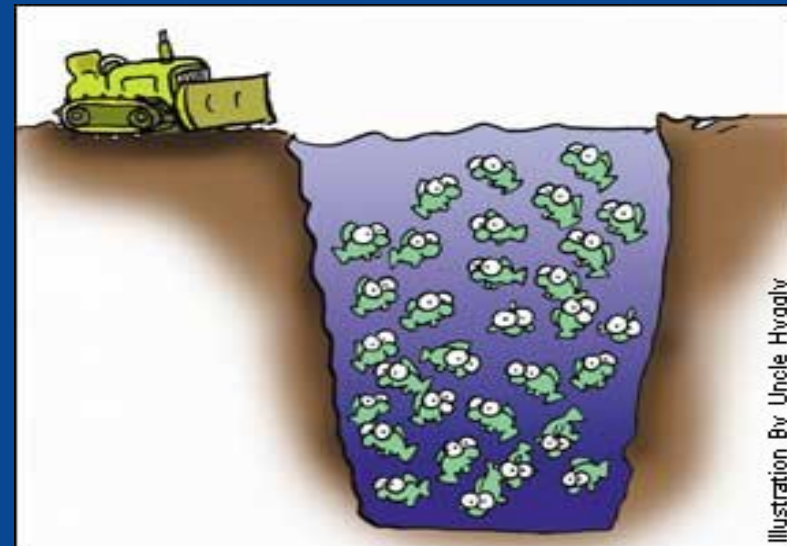
Bringing Back the Fish Project

- **3 year project funded by Federal Government**
- **Working for SRCMA on behalf of 5 coastal CMAs**
- **Improve fish passage at Roads, Weirs & Floodgates**
- **Improve Aquatic Habitat**

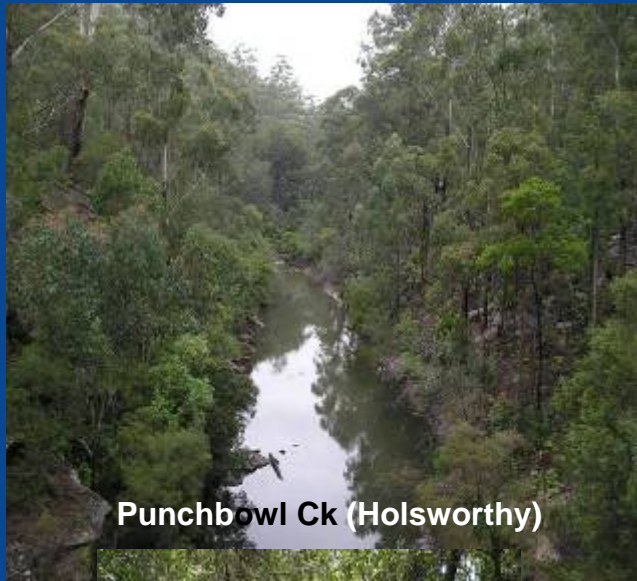


Urban impacts

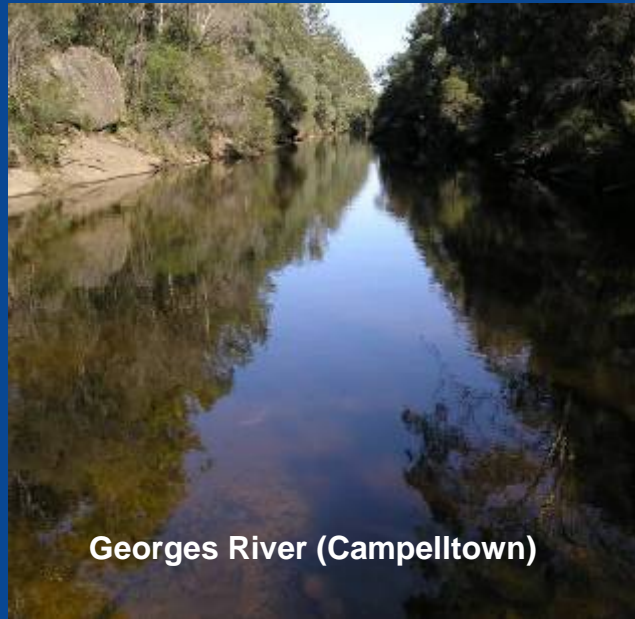
Urban Development
= high pressure on aquatic environment =
LOSS OF HABITAT



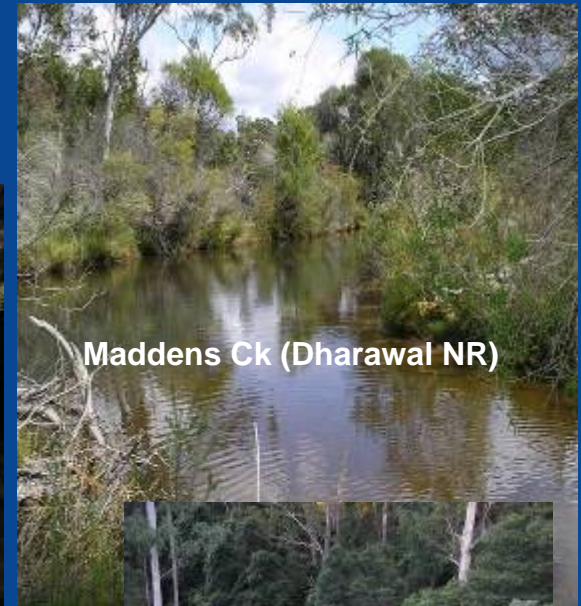
Waterways of Sydney



Punchbowl Ck (Holsworthy)



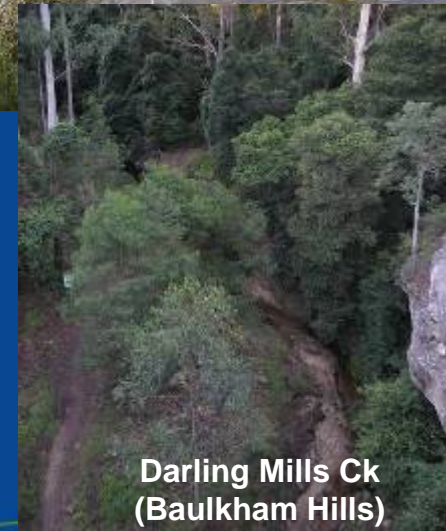
Georges River (Campelltown)



Maddens Ck (Dharawal NR)



**Heathcote Ck
(Sutherland)**



**Darling Mills Ck
(Baulkham Hills)**

Waterways of Sydney



Bardwell Ck (Rockdale)

Orphan School Ck (Fairfield)



Badoberong Ck (Rockdale)

Fish of Sydney Basin



Australian Bass



Sea (Bully) Mullet



Freshwater Mullet



Australian Smelt



Bullrout



Freshwater Catfish



Common Jollytail



Blue-eye



Long & shortfin Eel

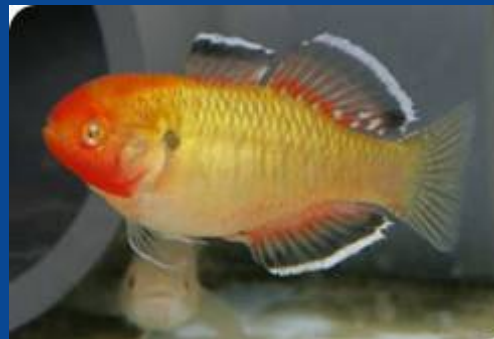
Fish of Sydney Basin: Gudgeons



Firetail Gudgeon

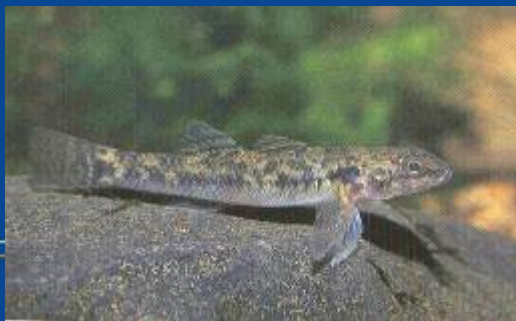


Flathead Gudgeons (Dwarf)



Empire Gudgeon

Cox's Gudgeon



Striped Gudgeon



NSW Migratory Fish

Breeding: fresh - salt - return



Australian Bass

Australian Grayling



Non-breeding: salt - fresh - return

Breeding: fresh - salt - return



Common Jollytail

Firetail Gudgeon



Wholly freshwater

Freshwater Herring



Breeding: fresh - salt - return

Australian Smelt



Non-breeding: fresh - salt - return

Sea Mullet



Non-breeding: salt - fresh - return

Macquarie Perch



Wholly freshwater

Breeding: fresh - salt - return



Congolli

Instream structures = Fish passage barriers



Natural barriers affect movement in upstream direction

Instream structures = Fish passage barriers

Man Made barriers affect movement upstream



Road culverts



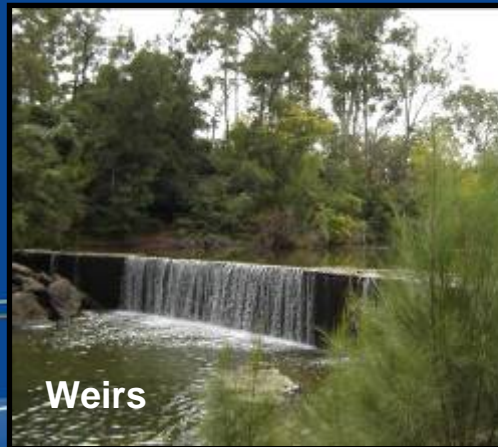
Online GPTs



Floodgates

Think of fish

moving upstream



Weirs



Sedimentation



River gauges

Barrier Types

- **Physical:**

- Headloss (permanent)
- Debris (temporary)



- **Hydrological:**

- Water velocity
- Low Flow

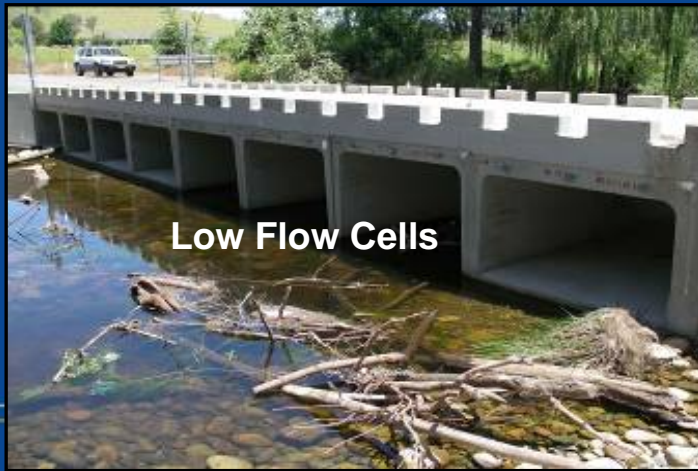


- **Behavioural:**

- Light (some species)

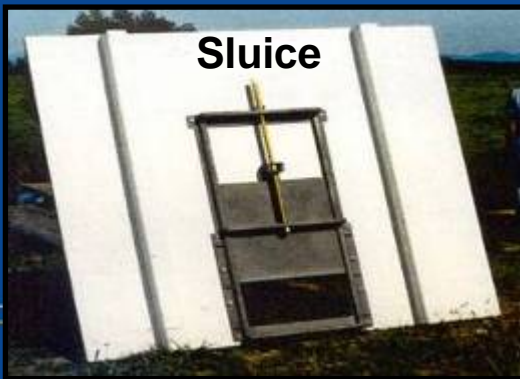


Roads - Solutions

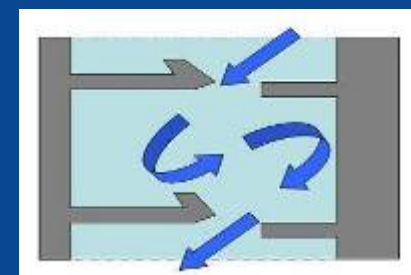
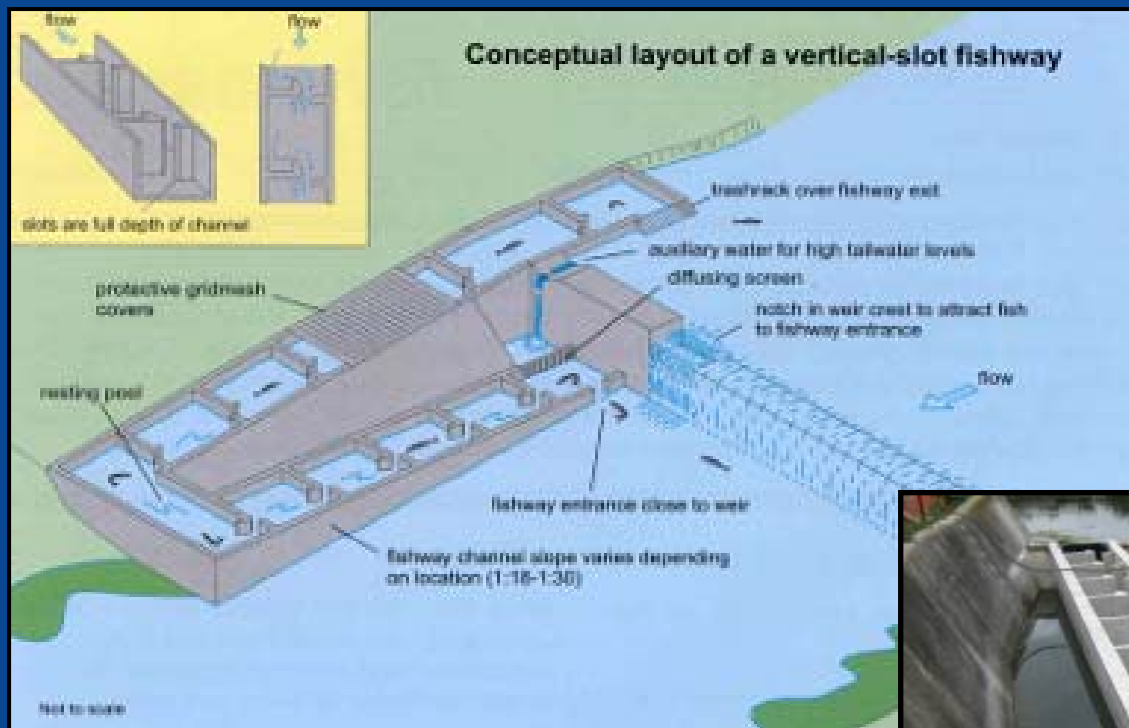


Floodgates - Solutions

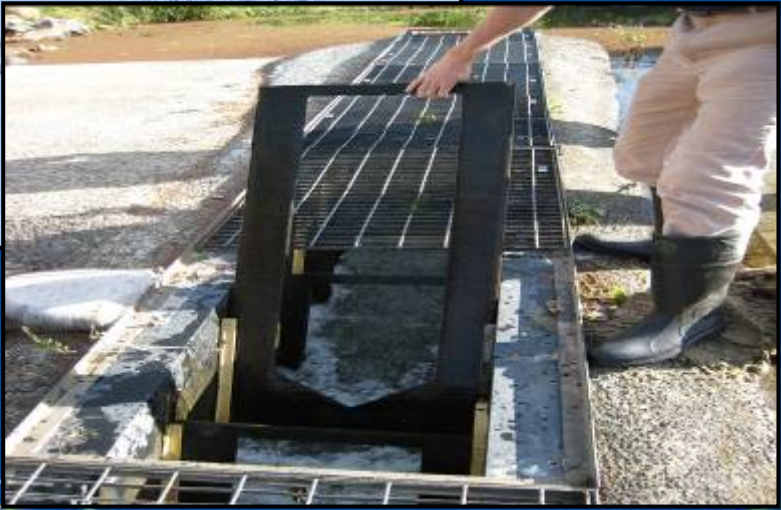
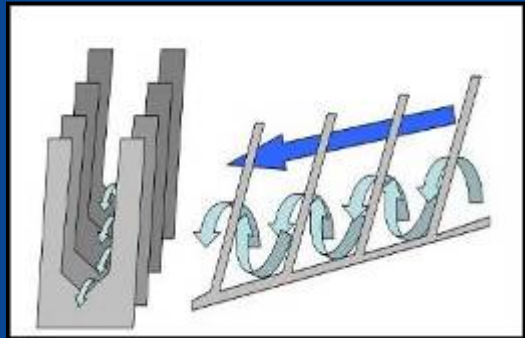
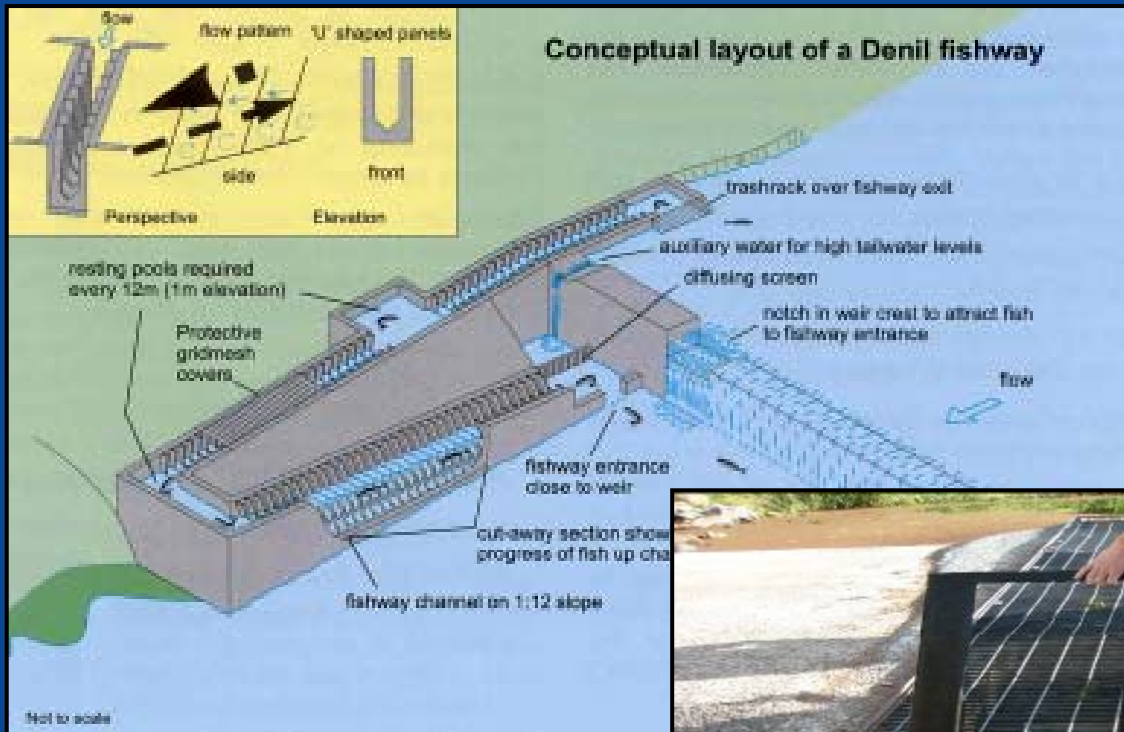
■ Removal / Improved Management



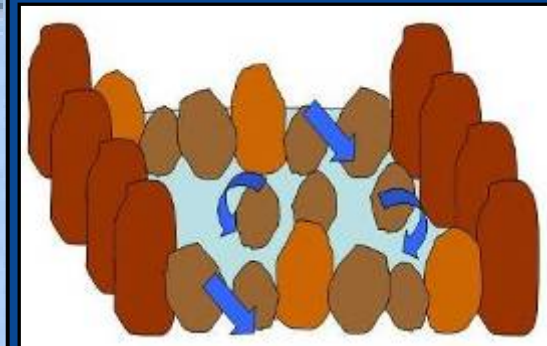
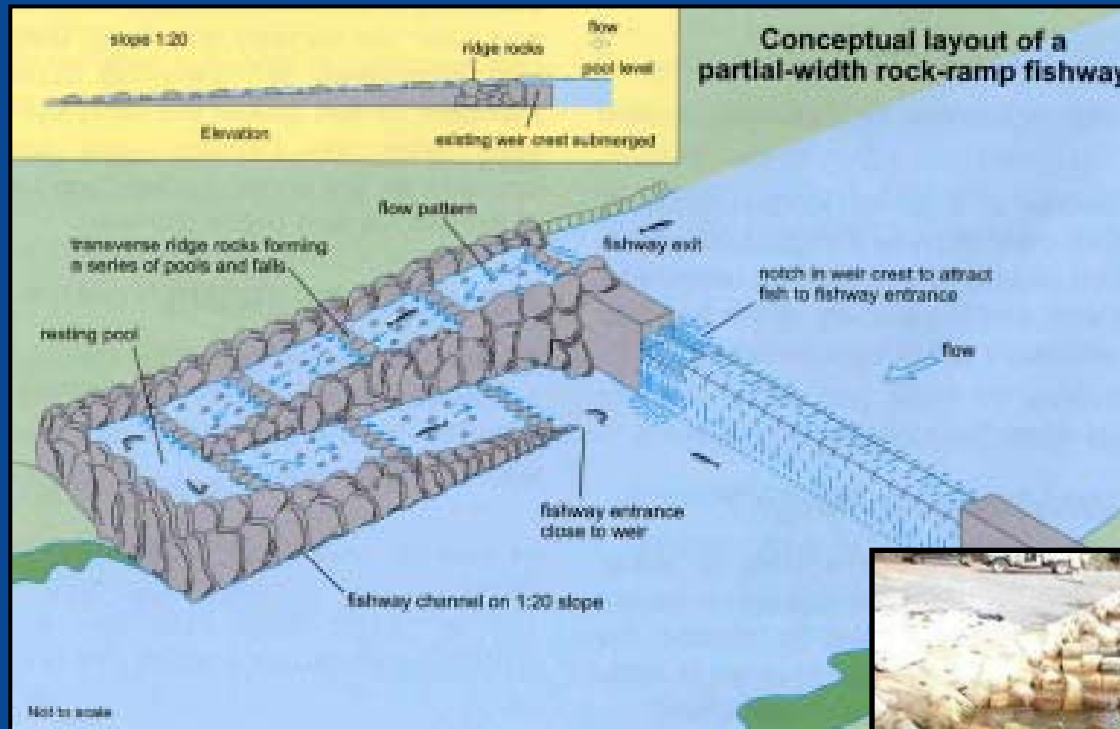
Fishways – Vertical Slot



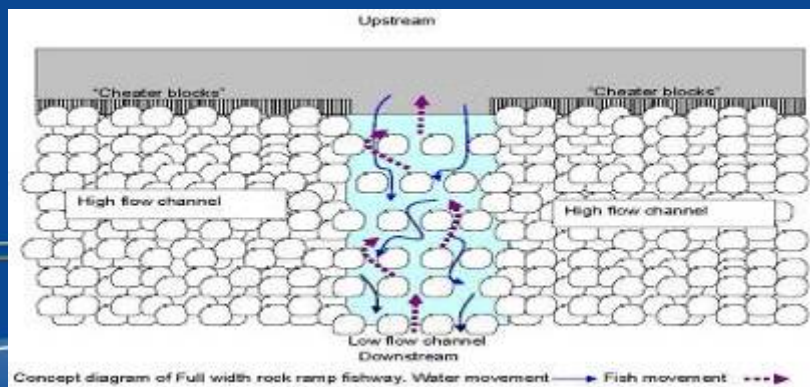
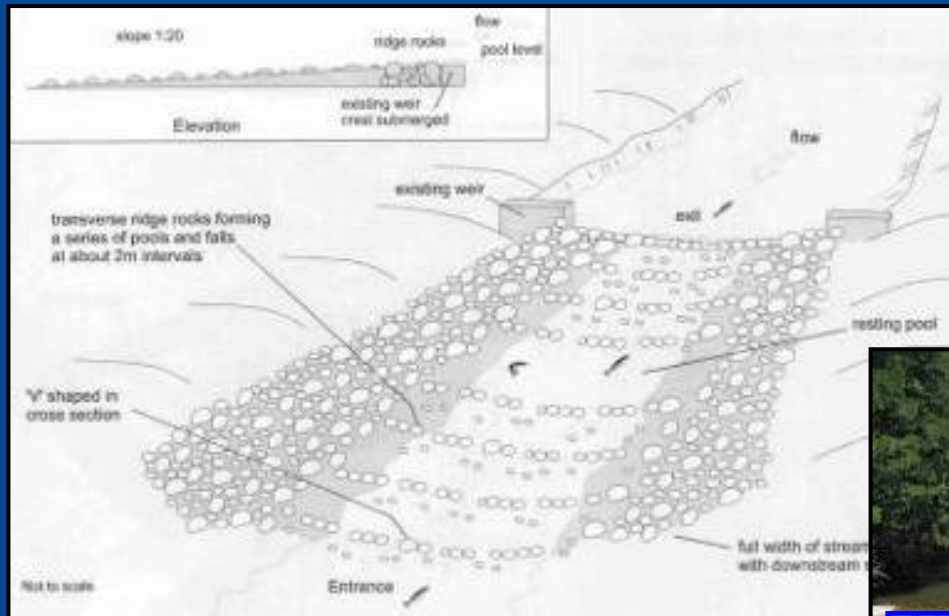
Fishways – Denil insert (steeper slope)



Fishways – Partial Width Rock Ramp



Fishways – Full Width Rock Ramp

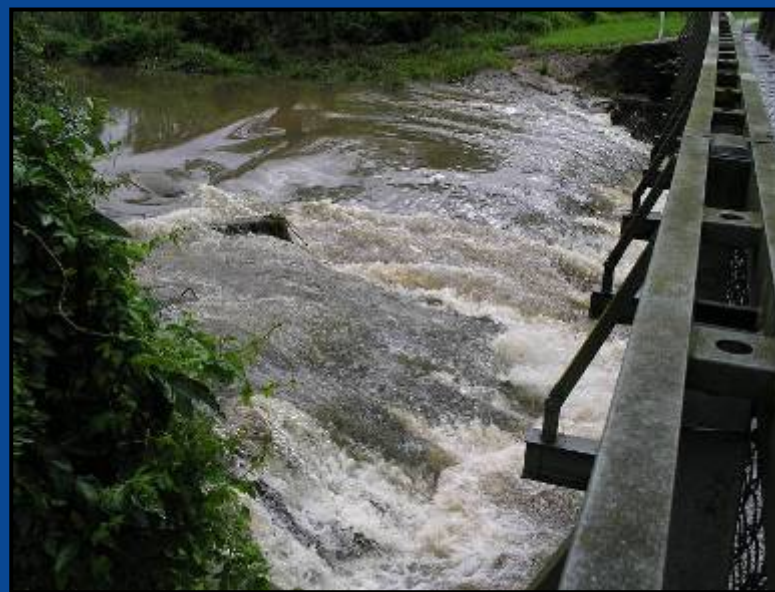


'Bringing Back the Fish' An NHT Funded Border-to-Border Rehabilitation of NSW Coastal Habitats

Turella Weir – Wollie Creek



Fish passage generally only possible at high flows

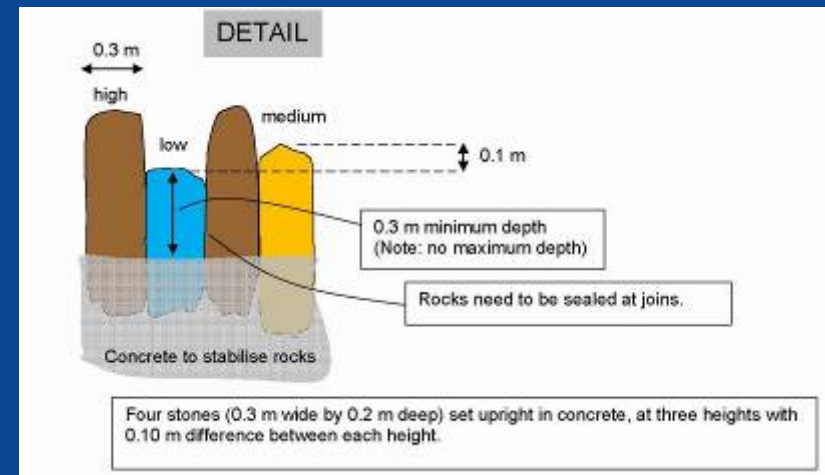
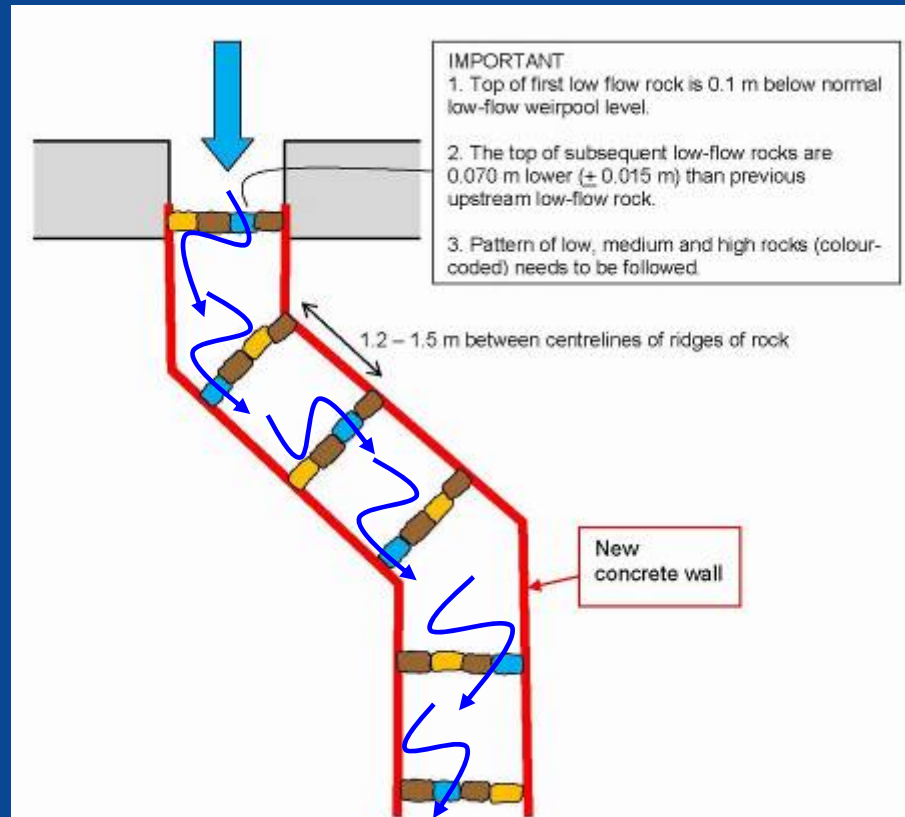


Turella Weir – Wollie Creek



Spillway flow

Turella Weir – Wollli Creek



Turella Weir – Wollie Creek



Change to original design due to Energy Australia cable = “dog-leg”

Turella Weir – Wollli Creek



Near top of effective
operation

Turella Weir – Wollli Creek



Near top of effective operation



Turella Weir – Wollie Creek



Perfect conditions –
high tide and some flow

Sampling Wolli Creek



Fyke nets set either side of weir

Fish of Wollie Creek



Firetail Gudgeon



Flathead Gudgeon



Sea (Bully) Mullet



Yellowfin Bream



Empire Gudgeon



Striped Gudgeon



Longfin eel



Pt Jackson Perchlet
(Glassfish)



Common Jollytail



Baby Turtle



Gambusia

INTRODUCED

Turella Weir – Wollie Creek



Juvenile Common Galaxias (Jollytail) moving upstream in 2cm water through old spillway

Gambusia...what to do?

- **Very tolerant**

- Water temp 0-45C
- Wide salinity tolerance
- Low dissolved oxygen
- Wide pH range



- **Very difficult to control!**

- Best method is improving conditions for native fish

