

Let's improve fish Passage together

New Zealand **Fish Passage** Advisory Group

advisorygroup@fishpassagenz.org • doc.govt.nz/fishpassage

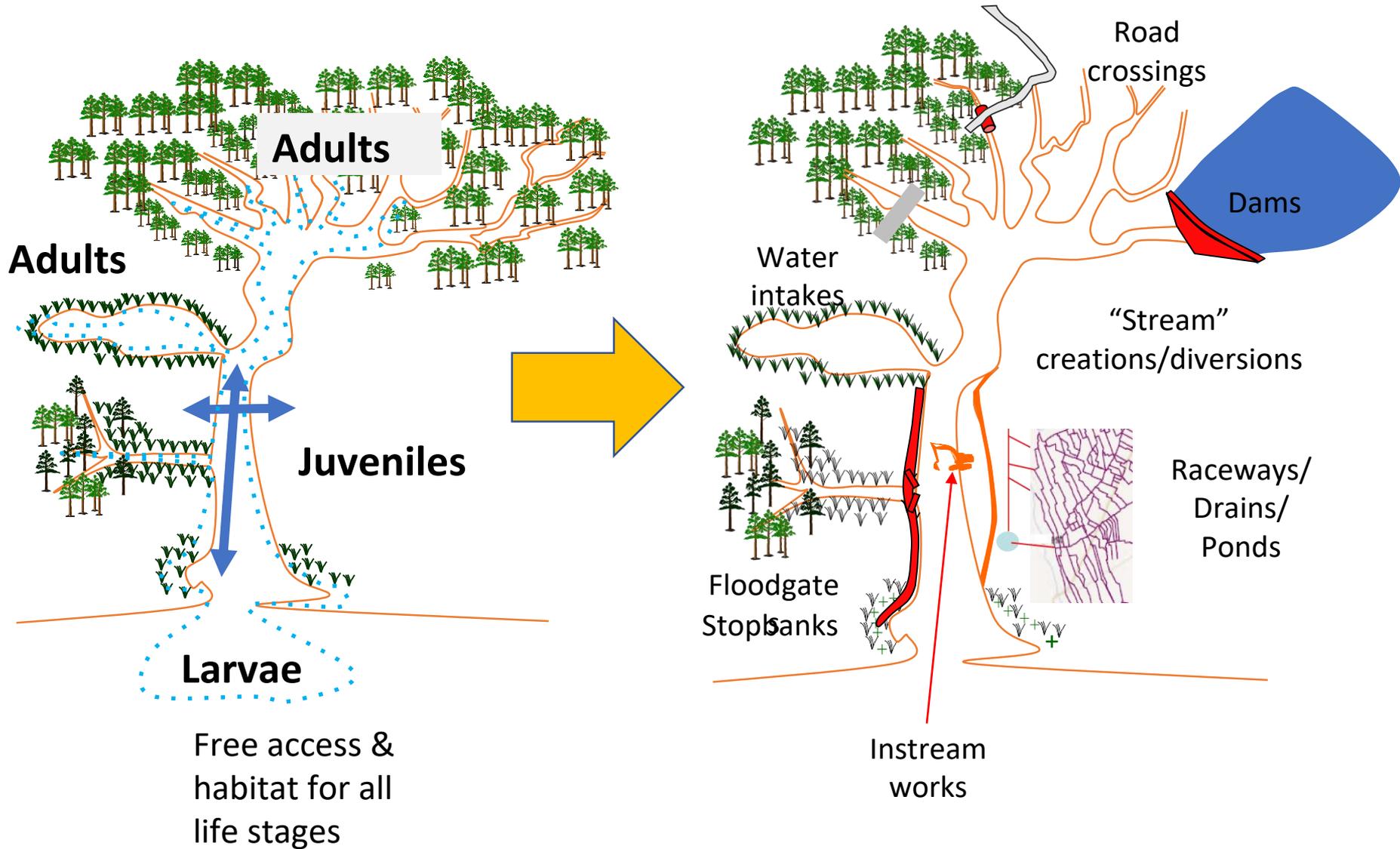



greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Introducing our Indigenous FW Fish



Why is connectivity important?



What makes a fish migration barrier?

Length of culvert

Fast water inside



Perched above river

Overhanging outlet

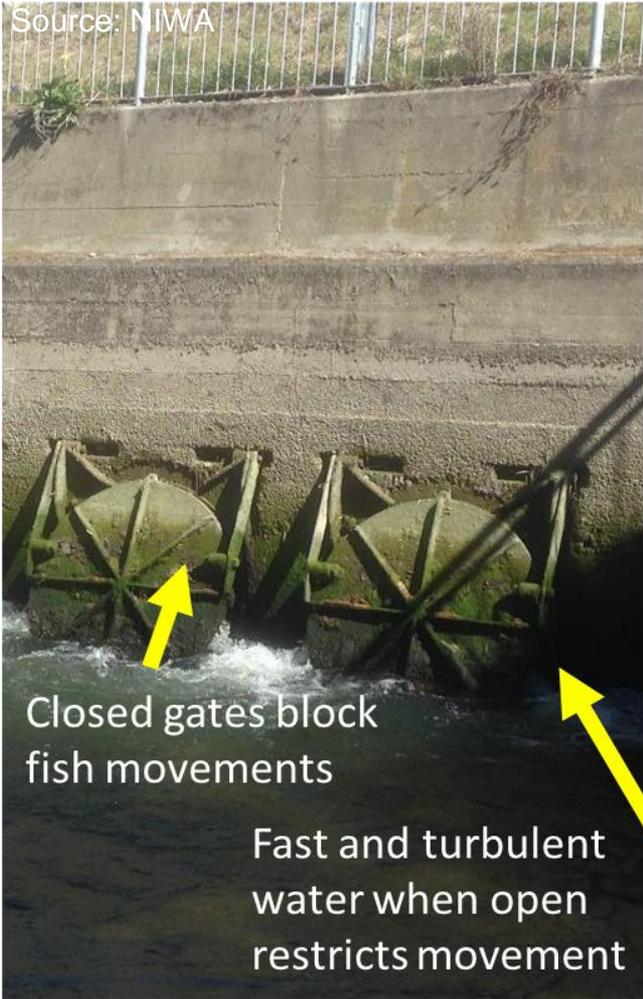
Vertical drop



No shallow margin

Turbulent water

What makes a fish migration barrier? – Cont'd



Different species & places

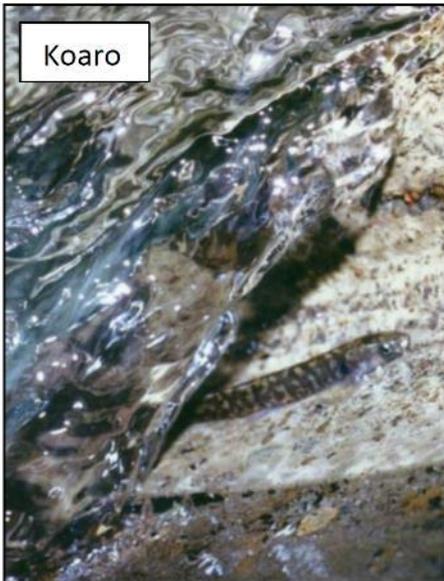
Swimmers

Inanga, smelt, grey mullet and common bullies.



Climbers

Lamprey, elvers (juvenile eels), juvenile kōkopu and kōaro. Juvenile and adult redfin bullies and, to a limited extent, torrentfish.



Anguilliforms

Shortfin and longfin eels

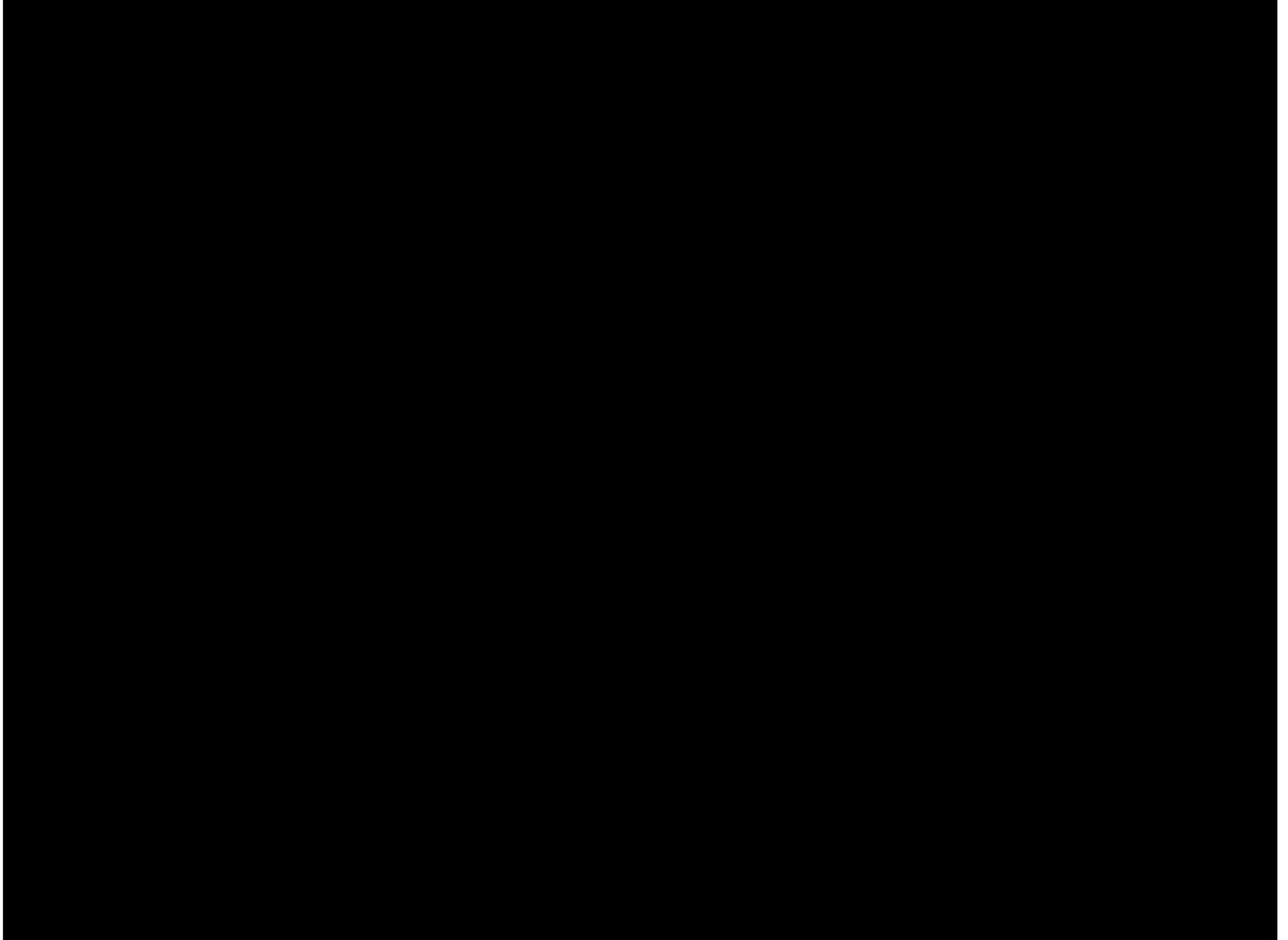


Jumpers

Trout and salmon.



Why is connectivity important?



Specific fish passage responsibilities

DOC Freshwater Fisheries Regulations (1983)	Councils Resource Management Act (1991)
<i>“No culvert or ford should impede fish passage without approval”</i>	S 13 – Restrictions on works in a bed of lakes and rivers , unless allowed for in NES or regional plan
<i>“... that any proposed or dam or diversion structure built post 1983 may require a fish facility”</i>	S 14 – Restrictions relating to water (take, use, dam, or divert water) , unless allowed for in NES or regional plan
<i>“...Fish facility maintenance... approval required for structural change”</i>	S 17 – Duty to avoid, remedy, or mitigate adverse effects



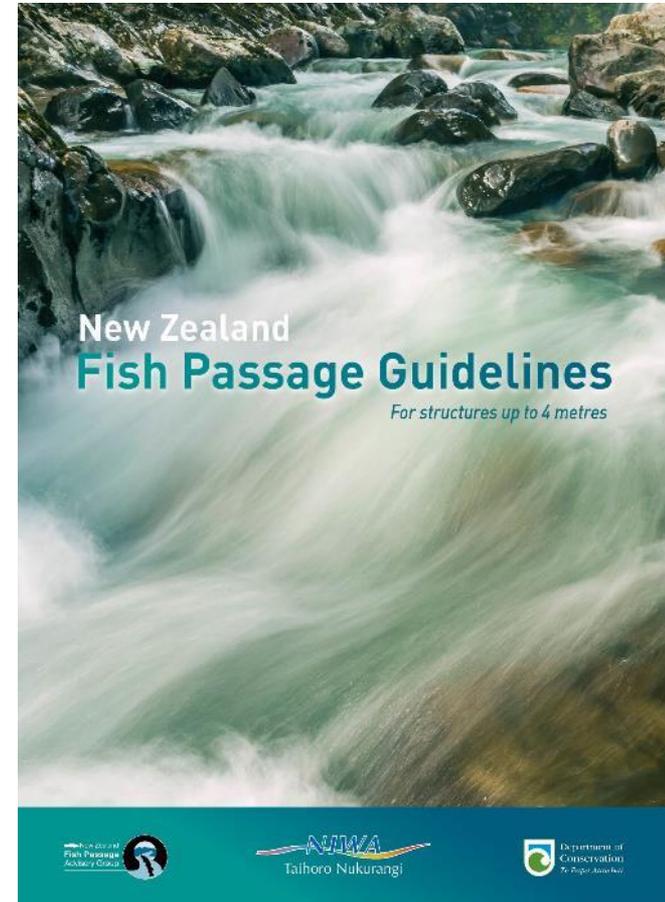
+ Other statutory requirements:

- **Design integrity**
- **Land Status**
- **Protection of species & habitat**
- **Fish salvage/translocations**

Regional Plan requirements (rules, polices)
 NPS, NES

NZ Fish Passage Guidelines

- Structures ≤ 4 m high
- Rationale & legal basis
- Summary of current knowledge
- Minimum design standards & best practice
- Monitoring
- Limitations of current knowledge & research gaps

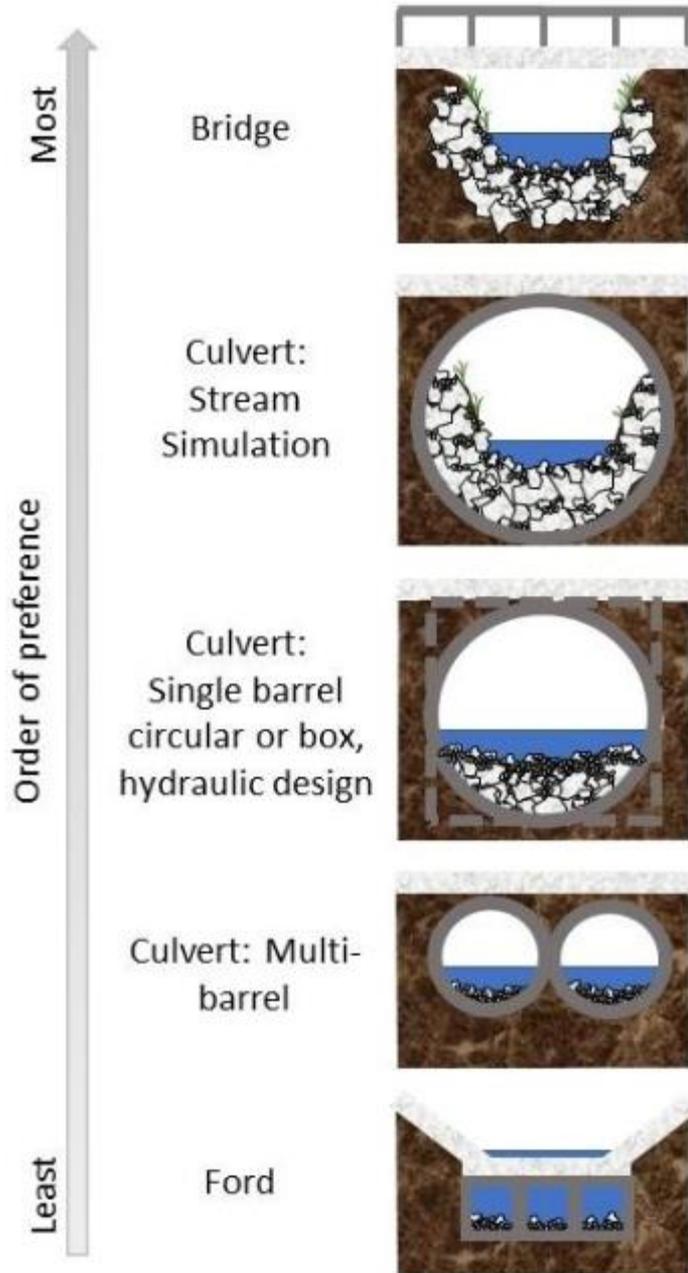


Go to <https://www.doc.govt.nz/nature/habitats/freshwater/fish-passage-management/how-you-can-help/> to download

New Zealand
Fish Passage
Advisory Group



New structures



Appendix G Minimum design standards for fish passage at instream structures

1. Minimum design standards for fish passage will achieve:
 - a. Efficient and safe passage of all aquatic organisms and life stages with minimal delay, except where specific provisions are required to limit the movement of undesirable exotic species.
 - b. A diversity of physical and hydraulic conditions leading to a high diversity of passage opportunities for aquatic organisms.
 - c. A structure that will provide no greater impediment to fish movements than adjacent stream reaches.
 - d. Structures that have minimal maintenance requirements and are durable.
2. Culverts installed in freshwater bodies will meet the following minimum design standards for fish passage¹⁴:
 - a. Alteration of natural stream channel alignment will be avoided or minimized.
 - b. Alteration of natural stream gradient will be avoided or minimized.

Existing barriers

Source: NIWA

OPTIONS:

- **Removal** should be first option & will ALWAYS have best result
 - **Replacement** with fish friendlier design
 - **Retrofit** existing structure to improve connectivity
- *Ensure fit for purpose!
- **Retain or build barriers** to protect biodiversity



Possible fixes



Mussel spat rope



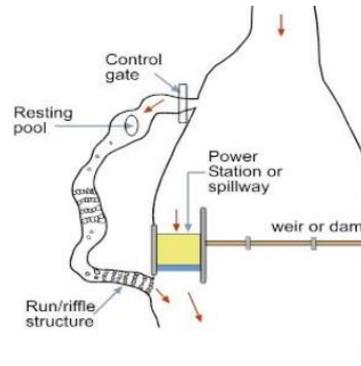
Baffles



Ramp fishway



Artificial ramps



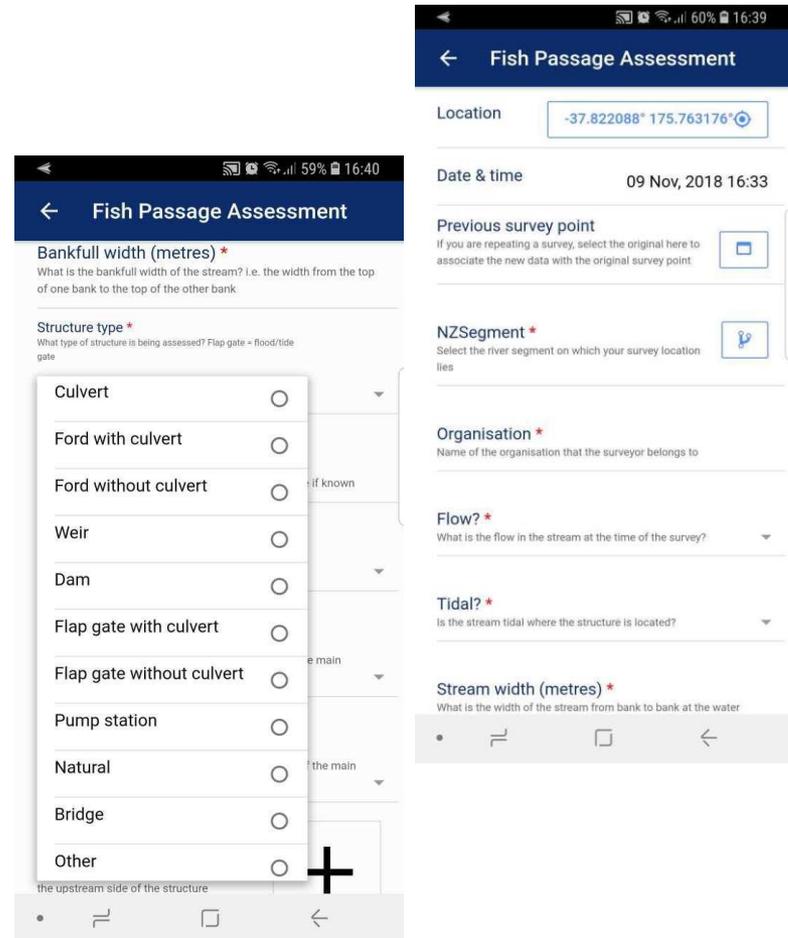
Fish Bypass channel



Fish friendly flap gates

NZ fish passage assessment tool

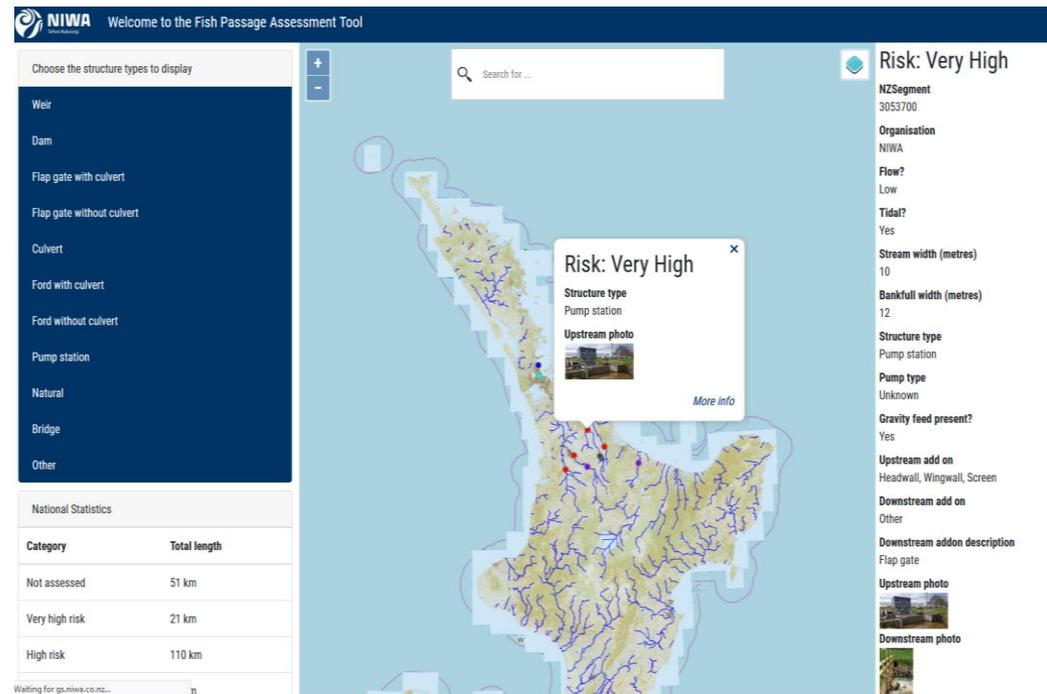
- Standardised method for recording & assessing structures for fish passage
- Android & iOS versions
- Works for multiple structure types
- Links automatically to national database
- Doesn't just rely on observation, but also uses knowledge/experience to assess fish passage



The image displays two screenshots of the 'Fish Passage Assessment' mobile application. The left screenshot shows the 'Structure type' selection screen, which includes a list of options: Culvert, Ford with culvert, Ford without culvert, Weir, Dam, Flap gate with culvert, Flap gate without culvert, Pump station, Natural, Bridge, and Other. The right screenshot shows the main assessment form, which includes fields for Location, Date & time, Previous survey point, NZSegment, Organisation, Flow?, Tidal?, and Stream width (metres).

NZ fish passage assessment tool webpage

- Data generated using app is stored in national database
- Publicly accessible through the webpage
- View & download data
- Determines risk to fish passage
- Calculates national statistics



Welcome to the Fish Passage Assessment Tool

Choose the structure types to display

- Weir
- Dam
- Flap gate with culvert
- Flap gate without culvert
- Culvert
- Ford with culvert
- Ford without culvert
- Pump station
- Natural
- Bridge
- Other

National Statistics

Category	Total length
Not assessed	51 km
Very high risk	21 km
High risk	110 km

Risk: Very High

Structure type
Pump station

Upstream photo

More info

Risk: Very High

NZSegment
3053700

Organisation
NIWA

Flow?
Low

Tidal?
Yes

Stream width (metres)
10

Bankfull width (metres)
12

Structure type
Pump station

Pump type
Unknown

Gravity feed present?
Yes

Upstream add on
Headwall, Wingwall, Screen

Downstream add on
Other

Downstream add on description
Flap gate

Upstream photo

Downstream photo

Go to <https://fishpassage.niwa.co.nz/>

Fish Passage Assessments in Porirua

- Summer 2018/19 PCC and GWRC funded two students to do fish passage and stream habitat assessments in Porirua
- 100 structures assessed in 4 weeks
- Each assessment 5-15 mins





riap gate without culvert

Culvert

Ford with culvert

Ford without culvert

Pump station

Natural

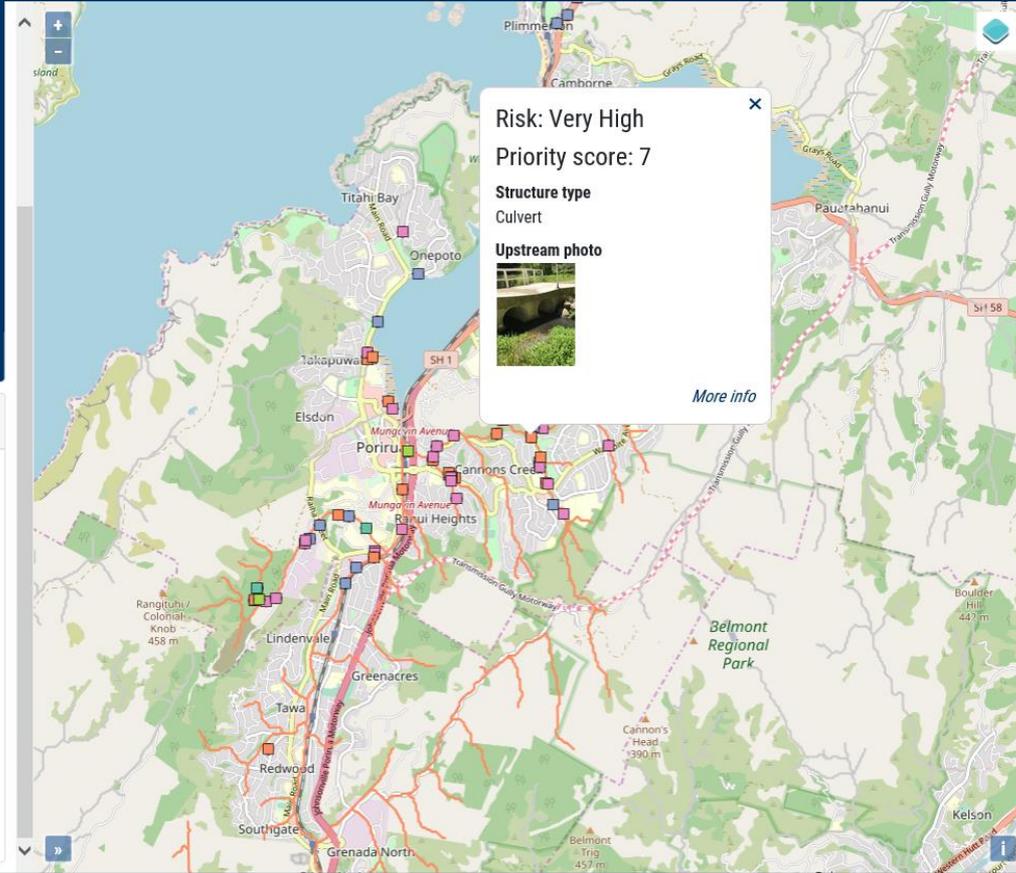
Bridge

Other

National Statistics

Proportion of Structures

Category	Percentage
Not assessed	0
Very high risk	25
High risk	46
Medium risk	21
Low risk	4
Very low risk	4



Risk: Very High
 Priority score: 7
 Structure type
 Culvert
 Upstream photo

[More info](#)

Risk: Very High

Priority score: 7

NZSegment

9260659

Organisation

Porirua City Council

Flow?

Normal

Tidal?

No

Stream width (metres)

3.6

Bankfull width (metres)

4.8

Structure type

Culvert

Asset Owner

Territorial Authority

Number of culvert barrels

2

Culvert barrels the same?

Yes

Culvert shape

Pipe

Culvert material

Concrete

Culvert length (metres)

4

Culvert width (metres)

0.94

Fish Passage Guidelines Implementation Project

- Aim to investigate how GW can implement the new FP guidelines and Assessment tool
- Project team formed June 2019
- Monthly workshops from July to Dec 2019
- Using a logic model based approach to develop ideas for how we can implement the guidelines
- Intended output is an Implementation plan by March 2019

Thank you

Go to www.doc.govt.nz/fishpassage or NIWA website www.niwa.co.nz to download



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