

# *Fermoy Weir and Fish Bypass Channel*

*September 2020*

# Fermoy Weir



**Over 200 years old - A Protected Structure**

# Fermoy weir

## Mill Race Weir Wall

- ❑ loss of grout
- ❑ Open Joints
- ❑ Loose masonry



# The Issues

## Protected Structure

- ▶ CCC obliged to prevent deterioration of weir
- ▶ Weir breached and in poor Condition
- ▶ Leading to bank and bed erosion



## Environmental issues

- ▶ Any works to reinstate weir be compatible with the requirements of the Habitats Directive
- ▶ Weir is a barrier to Fish Passage



# Weir before the Breach (2015)



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# Effects of Breach in Weir



Erosion of Bed and Bank **leading to real risk of undermining** of flood defence structures



Velocities in low flow conditions are a hindrance to fish passage

# Increased flows lead to increased gravel

2005



2020



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# Lawrence Collection Photos c. 1890



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# Existing Fish Pass

Not ideally situated in weir  
Does not provide for passage of all fish

Fish Pass in late 19<sup>th</sup> Century



Fish Pass Today



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# Options Considered

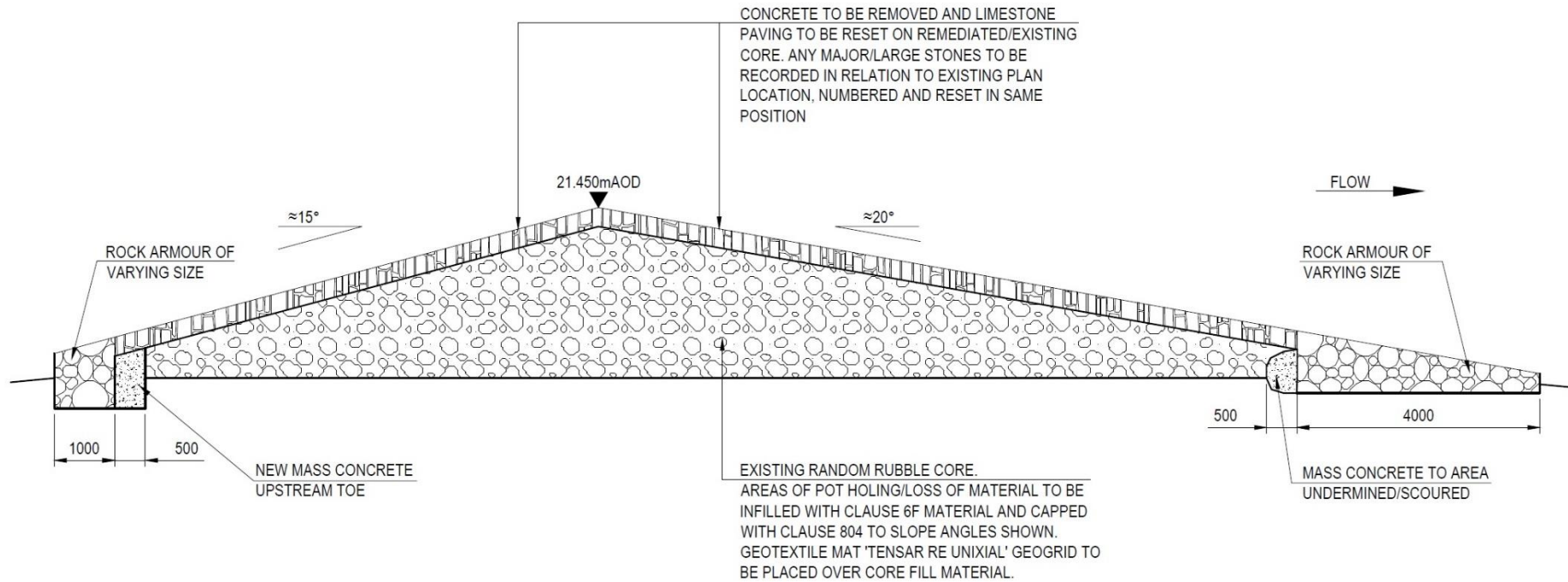
## Must satisfy different demands

### Weir Repair

- ▶ Reconstruct using original materials
- ▶ Record and replace as new

### Fish Passage

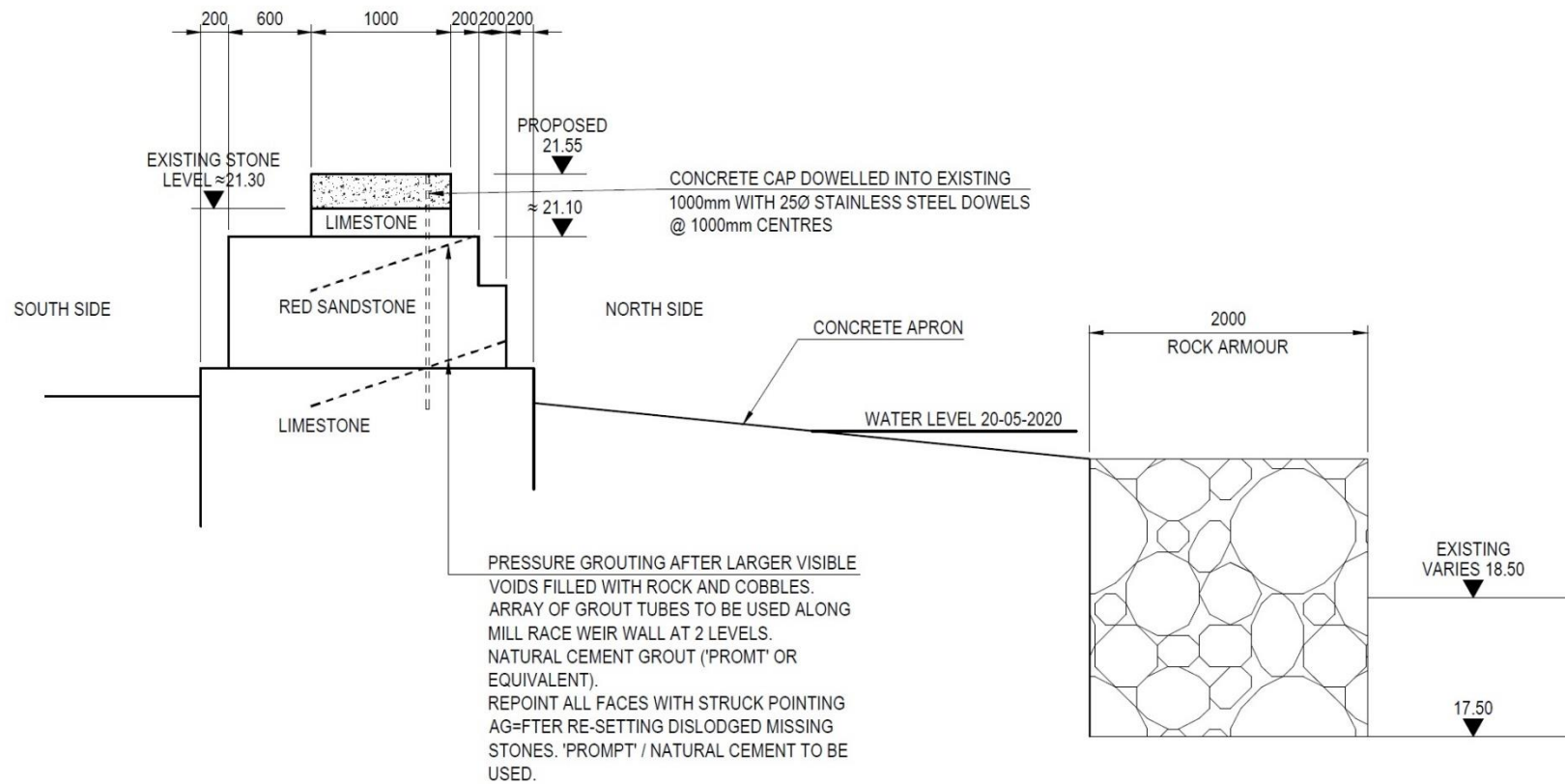
1. Do Nothing
2. Stabilise remaining section of weir
3. Remediate the existing fish pass.
4. Complete removal of the weir
5. Construct an in-river rock ramp.
6. Construct a fish ramp (rock ramp) in the existing breach
7. Construct a near natural bypass channel.
8. Bypass river around weir
9. Construct a rough channel pool bypass.



## Crump Weir Typical Section of Proposed Remediation

- ❑ Strip off Concrete apron
- ❑ Rock armour and concrete to stabilise toe of embankment
- ❑ reinstate limestone cobbles on face of weir

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## Mill Race Weir Wall Typical Section of Proposed Remediation

- ❑ Fill larger voids in wall with rock and cobbles
- ❑ Pressure grout using natural cement
- ❑ Re set dislodged stones and Point all faces
- ❑ Re Build breached section of wall using similar type materials

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## 1. Do Nothing

Leave existing situation as is  
Weir will continue to deteriorate

Complete collapse will eventually allow fish migration  
Bank and bed erosion could undermine flood defences

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## 2. Stabilise remaining section of weir

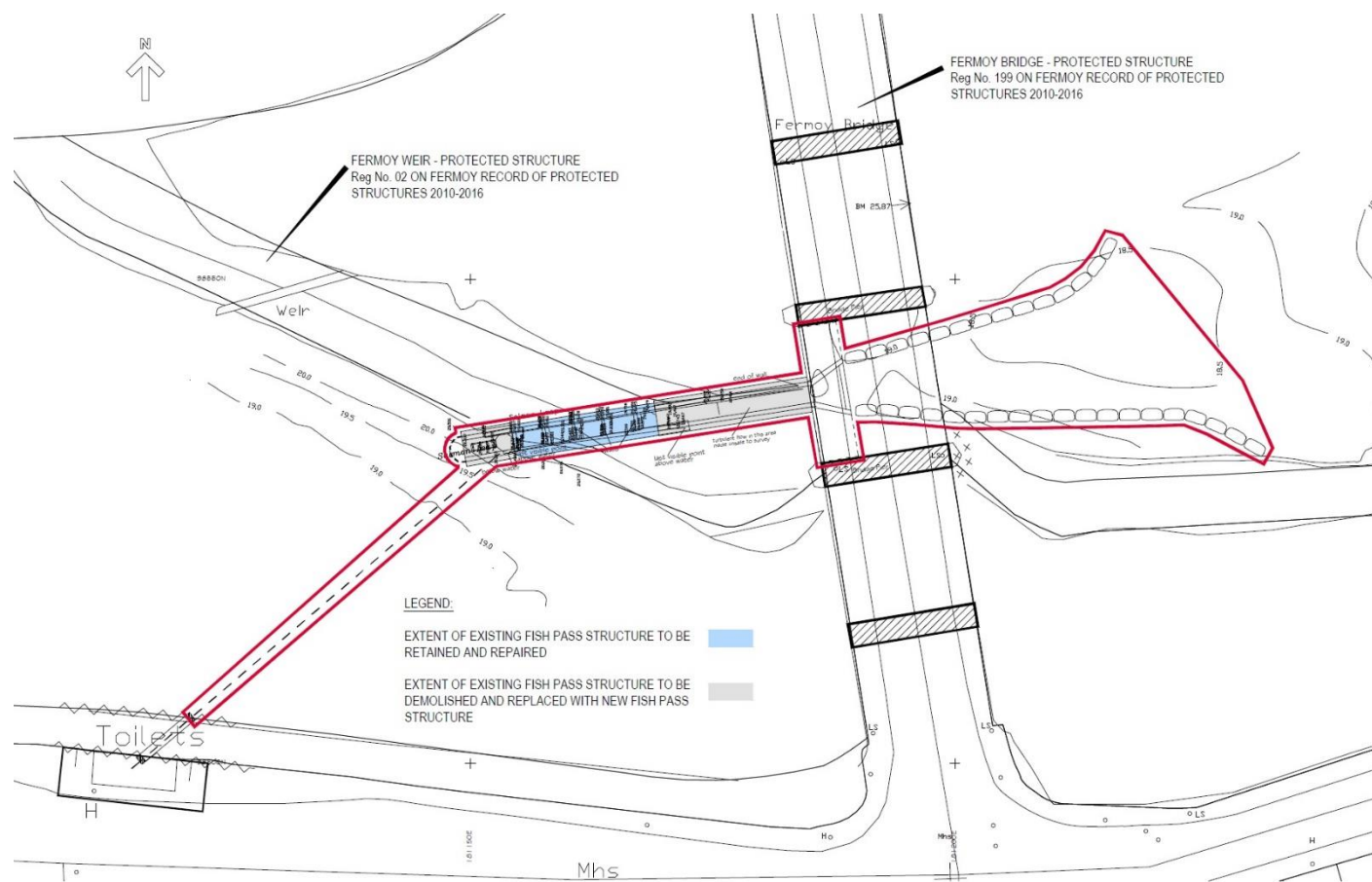
Leave existing breach in place

Upstream river level would not return to pre-breach levels

Excessive velocities in mill race channel causing bed and bank erosion

Passage of all fish species not ensured

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### 3. Remediate Existing Fish Pass

Not ideally located at upstream end of weir

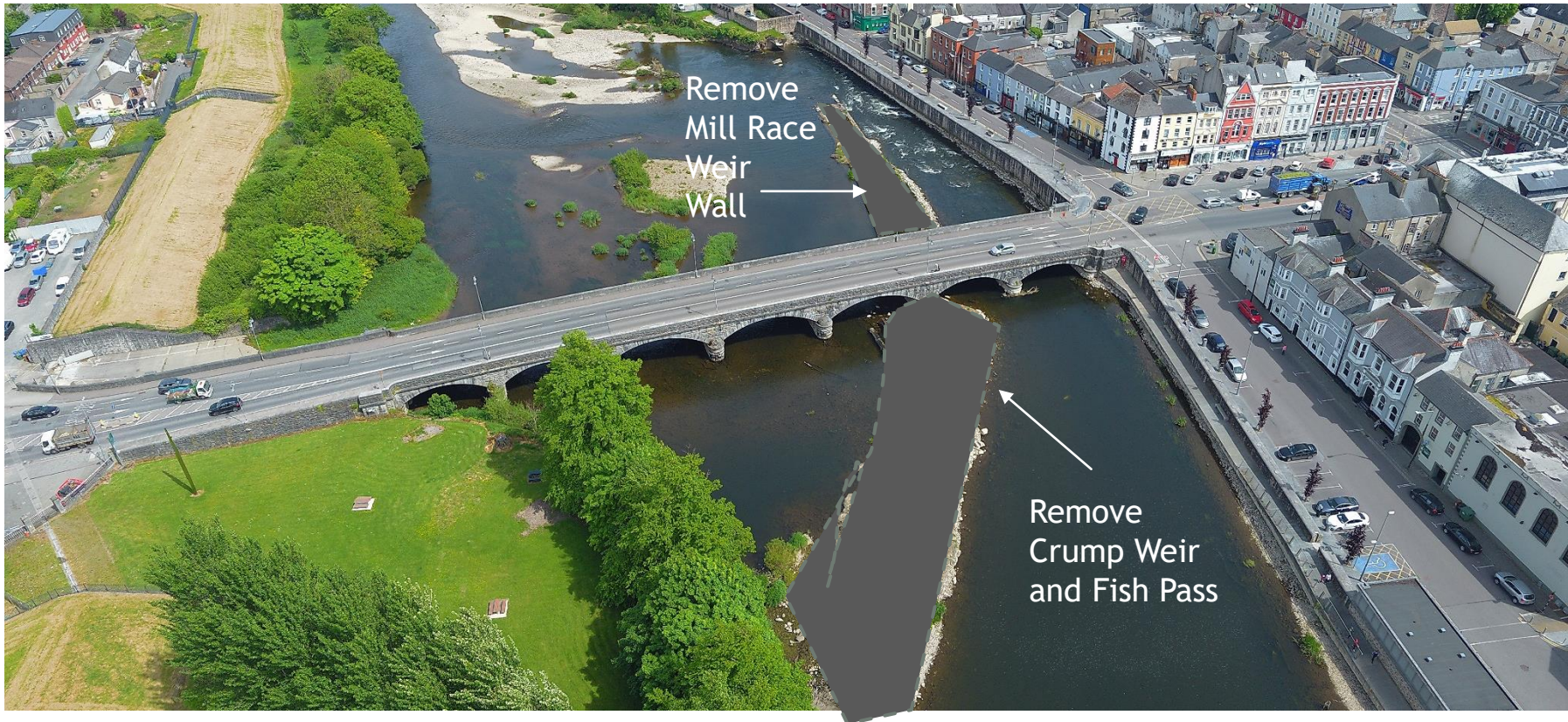
Does not provide satisfactory fish passage

Therefore does not satisfy Conservation objectives

Acceptable for Protected Structure Status

Maintains upstream river levels

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## 4. Complete removal of the weir

Provides for free passage of fish

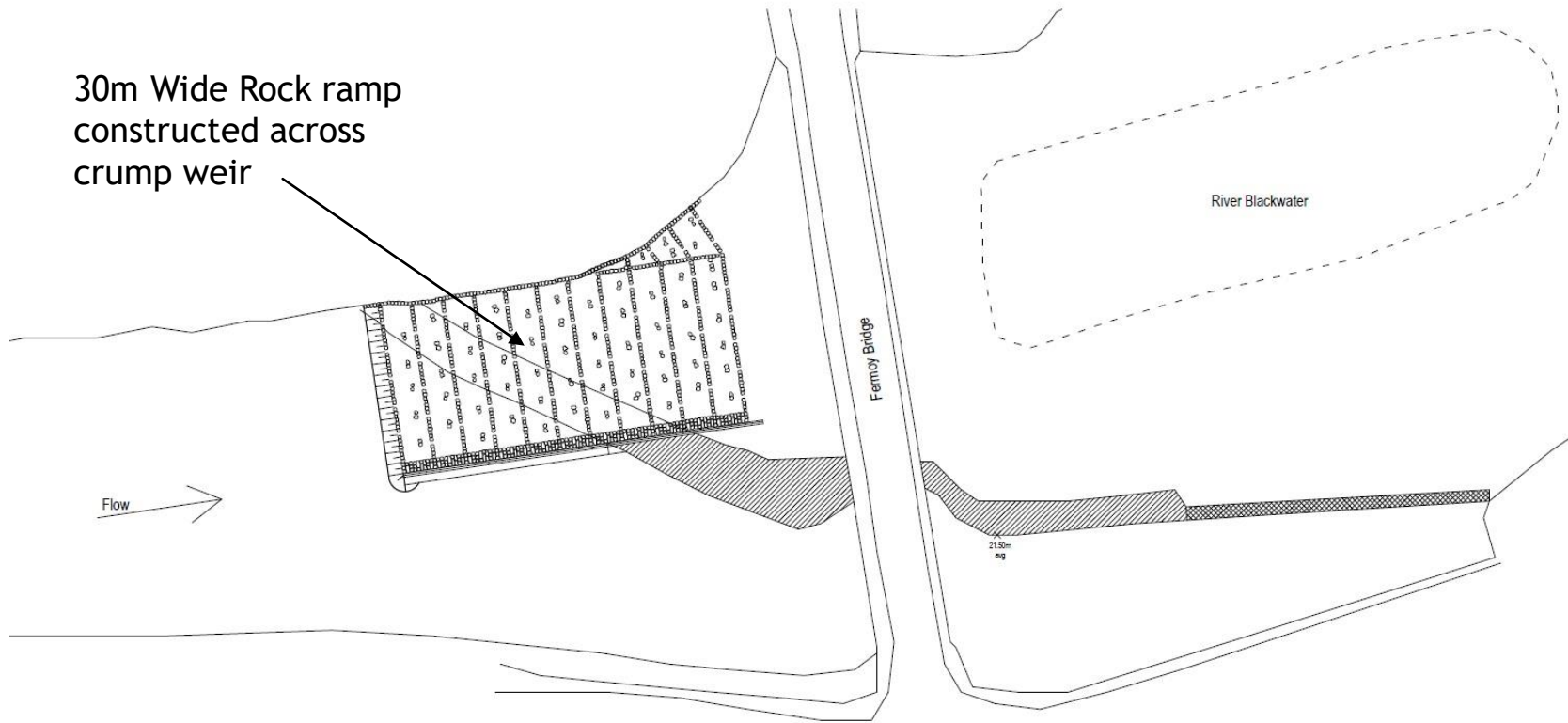
Lower river levels U/S of Bridge

Protected structure status breached

River amenities affected, e.g. rowing

Potential issues for Flood defence structures if bed levels are lower

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## 5. Construct an in-river rock ramp.

Provides satisfactory passage for all fish

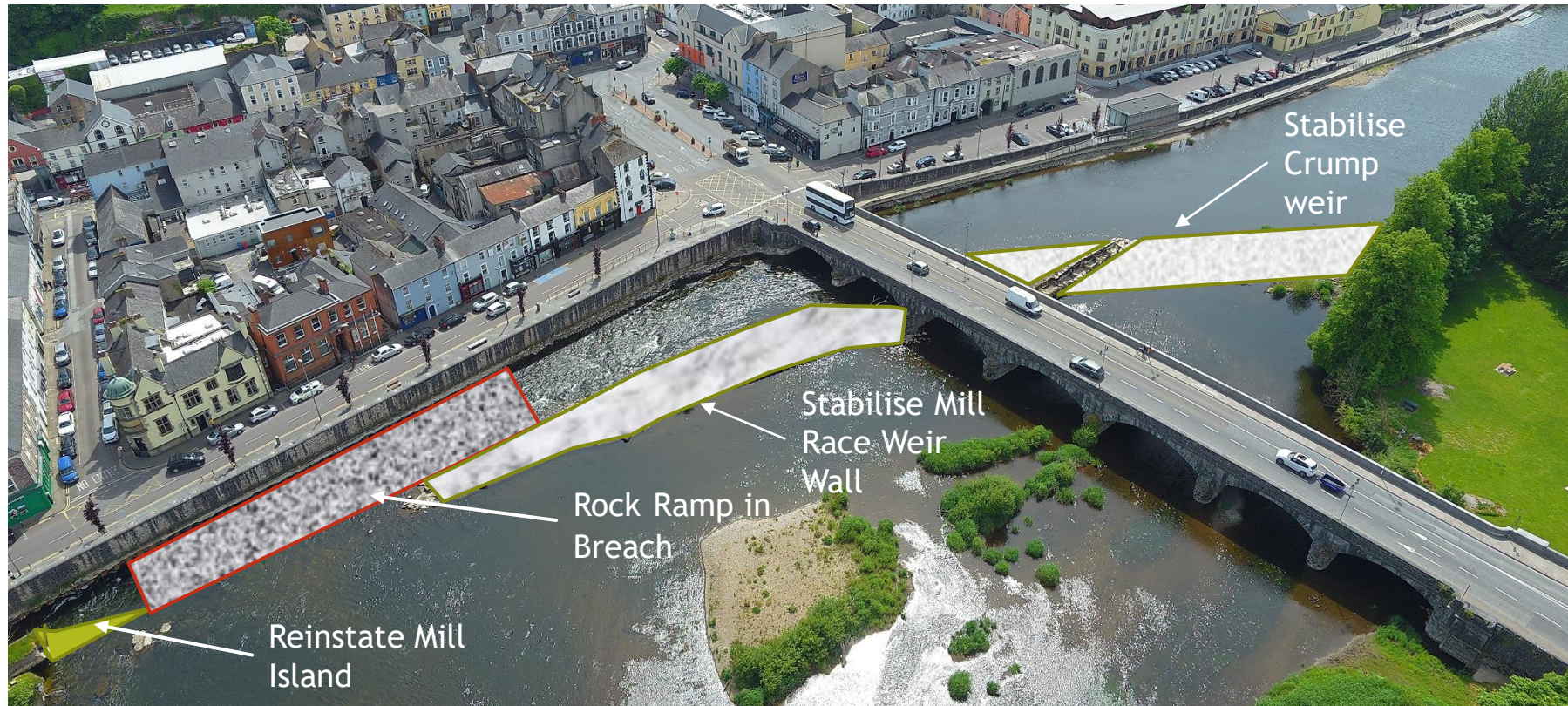
Requires removal of part of protected structure

Extends upstream in main channel of river affecting amenity uses

Visual impact alongside bridge

Potential scour impact on bridge piers

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## 6. Fish Ramp (rock ramp) in the Existing Breach

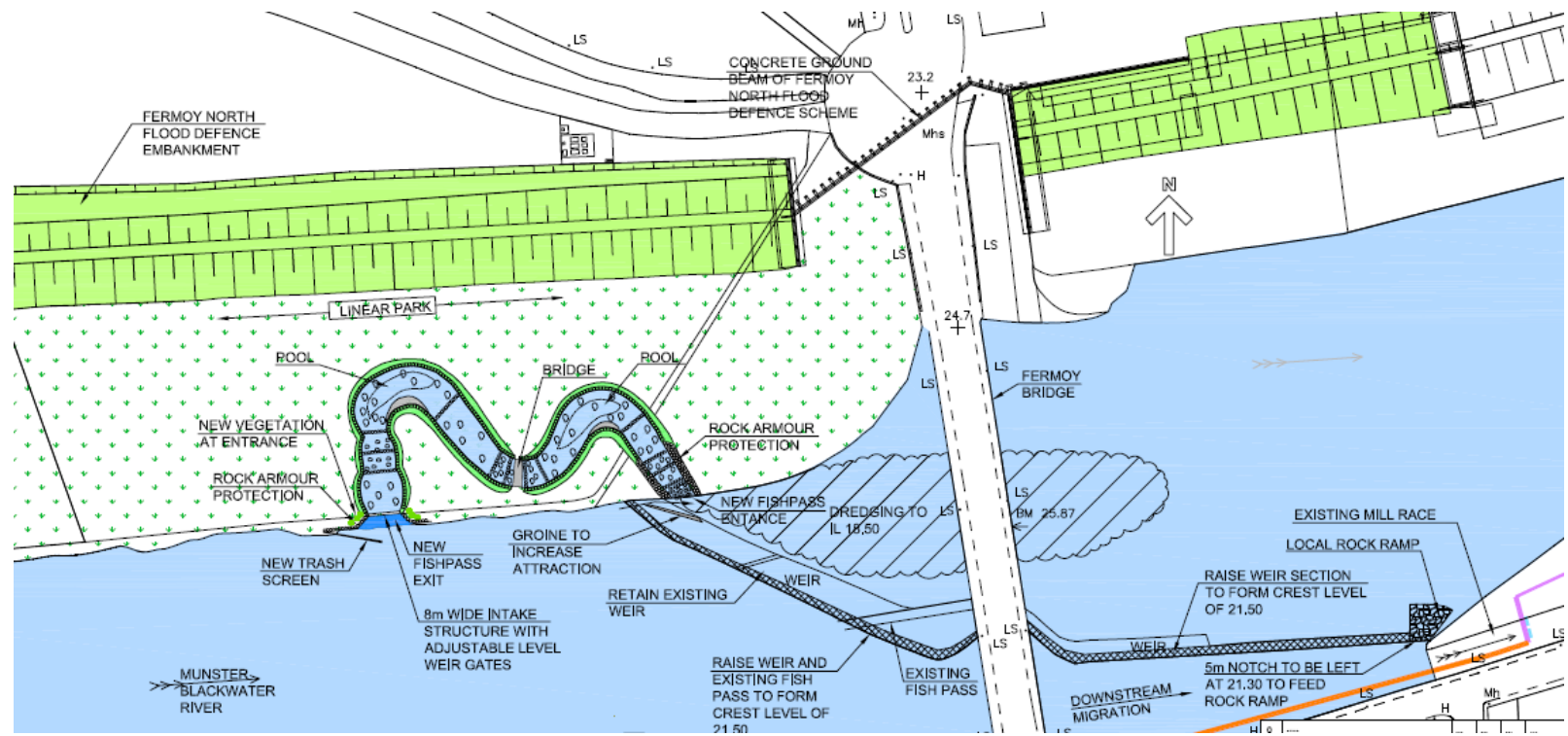
Ramp not ideally located to attract fish

May be issues with excessive velocities

May conflict with flood defence structural design

Protected Structure obligations not fully complied with

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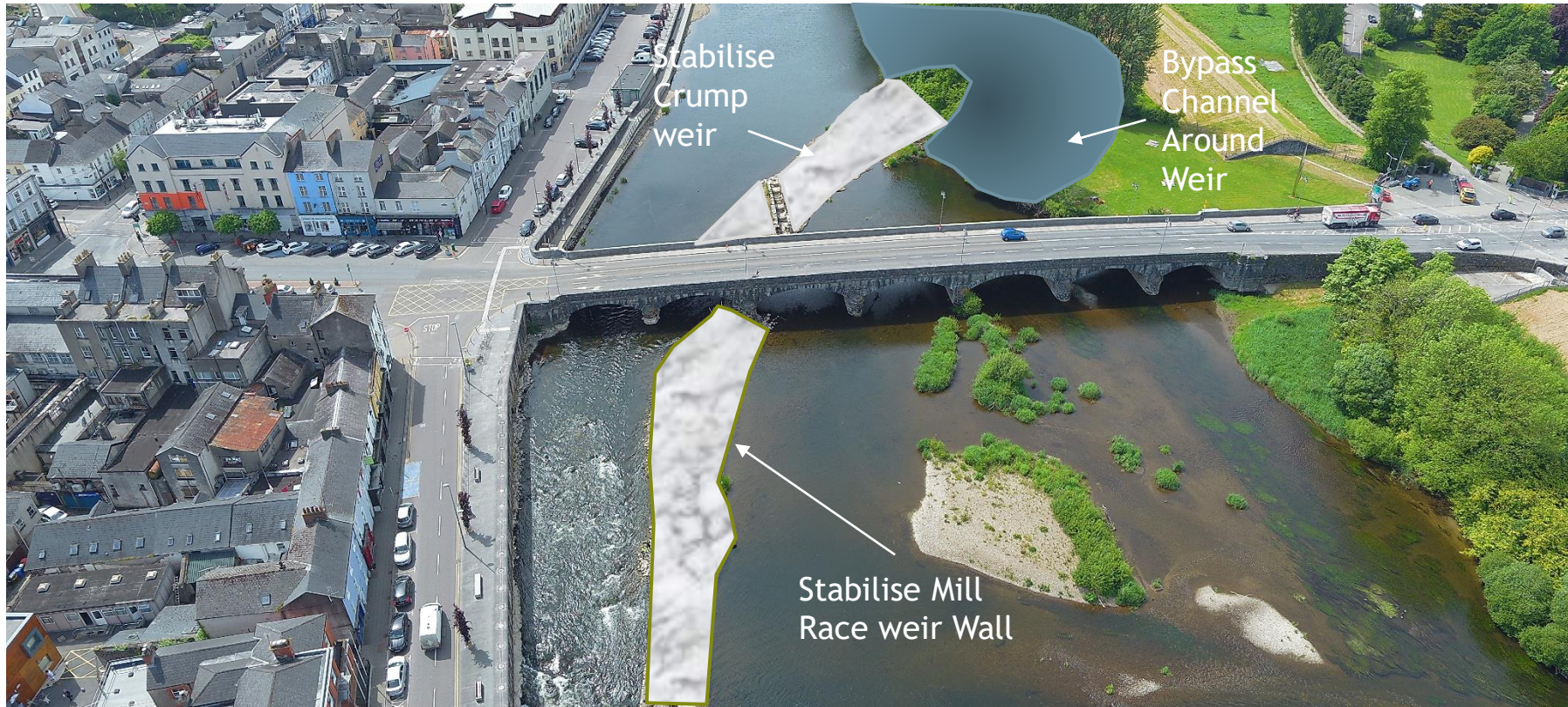


## 7. Near Natural Bypass Channel

- Reduces in-stream works
- Land acquisition required

- May not facilitate passage of all fish
- Avoids negative visual impacts

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## 8. Bypass Channel Around Weir

Large flow to be accommodated in Bypass channel

Fish Passage accommodated

Upstream Water Levels lowered

Adverse impacts on Conservation objectives

Large land Acquisition required

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## 9. Rough Channel Pool Bypass

Maintains Upstream Water level

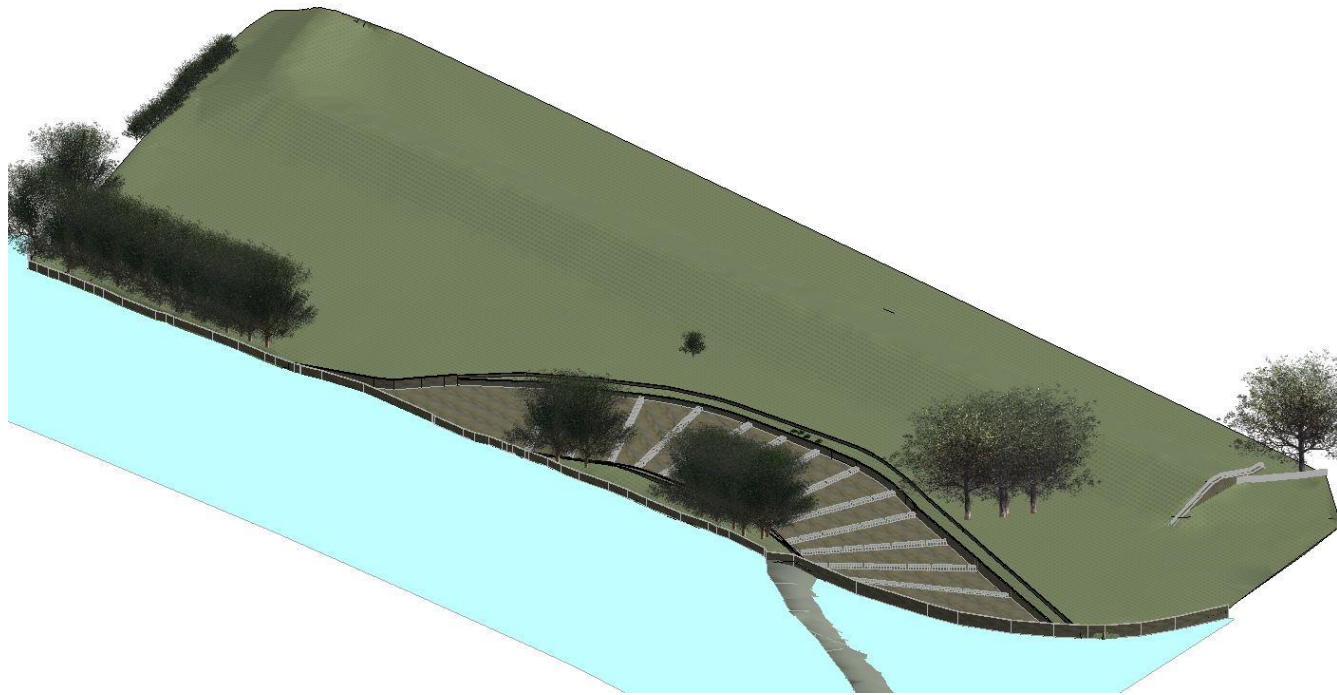
Facilitates fish passage

Minimises instream works

Land acquisition required

Significant visual impact

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## 9 Rough Channel Pool Bypass

3d View

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Thank You