

**LIMERICK CITY AND COUNTY COUNCIL**

**MUNICIPAL DISTRICT OF NEWCASTLE WEST**

**MEETING TO BE HELD ON WEDNESDAY 9<sup>th</sup> SEPTEMBER, 2020**

**Notice of Motion submitted by Councillor L. Galvin**

I will move at the next Meeting that this Council call on Irish Water to rectify the serious problem it caused when the River Feale was interfered with at the Town Park, Abbeyfeale to divert water to the treatment plant.

**REPLY:**

- In early 2016, following extreme floods, a breach formed on the River Feale. The breach occurred when flood waters bypassed the existing meander, the natural course of the river and instead flowed through an existing drainage channel. If left unchecked this would have caused the meander to become cut off from the river. This could have resulted in a significant threat to the water supply for approximately 3,000 people supplied by the Abbeyfeale Public Water Supply.
- The River Feale is the raw water source for the Abbeyfeale Public Water Supply and the raw water intake (abstraction point) was in place long before the 2016 event.
- Due to concerns by Irish Water and Limerick County Council that the breach may impact adversely on the abstraction, emergency works were planned and undertaken. The works involved closing of the breach channel during low flows and undertaking some instream works on the main river channel at the request of Inland Fisheries Ireland.
- Prior to and during the works, Irish Water and Limerick County Council consulted with the OPW, Inland Fisheries Ireland (IFI) and the National Parks and Wildlife Service (NPWS) and complied fully with all associated requirements. It was confirmed that there was no requirement to complete a Natura Impact Statement (NIS). An Appropriate Assessment Screening Report was prepared and submitted to NPWS. This report is attached.
- The works were completed later in 2016.

- Irish Water contends that the works undertaken did not change the course of the River Feale but rather restored and protected its natural channel flow to that of the river, pre 2016. While it is accepted that there has been erosion at the Public Park, Irish Water's position is that this did not occur as a result of the emergency works undertaken.
- Irish Water does not have jurisdiction to undertake any further works on the River Feale and so it is respectfully suggested that contact be made with the OPW to further discuss the matter.

Please accept our apologies for the delay in responding to your query as we worked to compile the information above.

I note also your request to attend an upcoming meeting of the Newcastle West Municipal District. Unfortunately, we are not available to attend Council or Municipal District meetings at this time. However, I trust the information provided above will address your query. Should you or your colleagues have any additional queries, you may direct them to the Local Representative Support Desk and we will make every effort to respond as quickly as possible. The LRSD can be contacted by email at [localrepsupport@water.ie](mailto:localrepsupport@water.ie) or by phone at 1890 178 178.

Yours sincerely,

**Donough Leahy**

*Local Representative Support Desk*

# Abbeyfeale Emergency Works on the River Feale.

## Appropriate Assessment Screening Report

AUGUST 2016



**CONSULTING ENGINEERS**

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<b>Client</b>	Irish Water / Limerick City and County Council
<b>Project No.</b>	3085
<b>Project Title</b>	Abbeyfeale Emergency Works on the River Feale
<b>Report Title</b>	Appropriate Assessment Screening Report

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## 1.0 INTRODUCTION

Ryan Hanley was appointed by Irish Water and Limerick City and County Council to prepare a Stage 1 Appropriate Assessment (AA) Screening Report for the proposed in-stream emergency works in the River Feale at Abbeyfeale.

The River Feale is the raw water source for the town of Abbeyfeale in County Limerick. The intake is located on the right bank of the outside bend of a long and distinctive meander through an alluvium floodplain upstream of Abbeyfeale Bridge. During the extreme floods of early 2016 a breach formed across the flood plain from the upstream end of the meander to an existing drainage channel to the north west of the main channel. Irish Water and Limerick County Council are concerned that the breach may convey, during low flows, a significant portion of available flows away from the main channel and impact on the security of supply of raw water to the existing intake.

Further to consultations and site visits, mitigations works have been identified for the River Feale, namely short-term emergency works, to secure the raw-water supply in Abbeyfeale during the low flow periods of late summer-autumn 2016.

Long term solutions for the Water Supply at Abbeyfeale are under consideration by Irish Water which include options such as main channel diversions, relocation of water intake and alternative raw water sources e.g. (groundwater).

The short term emergency works solution consists of the construction of a weir structure across the breach channel at the upstream meander on the River Feale at Abbeyfeale as an emergency mitigation to sustain low flows in the main channel and to supply the existing water supply scheme intake. It is proposed that works will be carried out before the end of the summer 2016. The proposed emergency solution is expected to be put in place as a short term solution only, with a long term solution identified and put in place within two years.

### 1.1 The Requirement for Appropriate Assessment

The requirement for Appropriate Assessment is set out in the EU Habitats Directive (92/43/EEC) in Article 6 (3) which states:

*“Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to appropriate assessment of its implications for the site in view of the site’s conservation objectives.”*

The Habitats Directive is transposed in Ireland by the European Communities (Birds and Natural Habitats) Regulations, 2011 (consolidating the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in recent CJEU Judgements (hereafter referred to as the Habitats Regulations) and the Planning and Development (Amendment) Act, 2010.

### 1.2 The Aim of this Report

This Screening for Appropriate Assessment (Stage 1) has been prepared in accordance with current guidance and provides the information required in order to establish whether or not the proposed development is likely to have a significant impact on Natura sites in the context of their conservation objectives and specifically on the habitats and species for which the Natura 2000 sites have been designated.

By undertaking the ecological impact assessment in a step by step manner in relation to the habitats and species of the Natura 2000 sites, this report seeks to inform the screening process required as the first stage of the process pursuant to Article 6.3 of the EU Habitats Directive.

## 2.0 THE APPROPRIATE ASSESSMENT PROCESS

### 2.1 Guidance

Article 6(3) of the EU Habitats Directive (92/43/EEC) defines the requirement for Appropriate Assessment of certain plans and projects. In order to inform the requirements of this Screening Report the following guidance documents have been referred to:

- DoEHLG Circular NPWS 1/10 & PSSP 2/10 Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.
- DoEHLG Circular L8/08 Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments. Department of Environment, Heritage and Local Government.
- DoEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Department of the Environmental Heritage and Local Government.
- European Commission (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.
- European Commission (2000) Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg. European Commission.
- European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC
- European Commission (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/49/EEC; clarification of the concepts of: Alternative solutions, Imperative reasons of overriding public interest, Compensatory Measures, Overall Coherence, Opinion of the Commission.
- European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/49/EEC; clarification of the concepts of: Alternative solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2013). Interpretation Manual of European Union Habitats. Version EUR 28. European Commission
- European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No.477 of 2011).
- Ryan Hanley (2014a) Stage 1: Appropriate Assessment Screening Methodology for the Maintenance of Arterial Drainage Schemes. Prepared by Ryan Hanley on behalf of the Office of Public Works.
- Ryan Hanley (2014b) OPW Drainage Maintenance Categories Source » Pathway » Receptor Chains for Appropriate Assessment. Prepared by Ryan Hanley on behalf of the Office of Public Works.

## 2.2 Stages of Article 6 Assessment

The European Commission's guidance promotes a staged process, as set out below, the need for each being dependent upon the outcomes of the preceding stage.

- (1) Screening
- (2) Appropriate Assessment
- (3) Assessment of Alternative Solutions
- (4) Assessment where no alternative solutions remain and where adverse impacts remain.
  - The "IROPI test" (Imperative Reasons of Over-riding Public Interest) and compensatory measures.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures.

Stage 1 of the process is intended to identify whether the project is 'likely to have a significant effect' upon a European site, referred to as 'Screening for Appropriate Assessment'.

If the screening process identifies effects to be significant, potentially significant or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening is undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan or project. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact.

Section 177U of the Planning and Development Act 2010 states that; *"the competent authority shall determine that an appropriate assessment of the proposed development is not required if it can be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will not have a significant effect on a European site."*

Stage 2 of the process considers any potential impacts in greater detail including whether further mitigation measures are required. If an adverse impact upon the site's integrity cannot be ruled out then Stage 3 will need to be undertaken to assess whether alternative solutions exist. If no alternatives exist that have a lesser effect upon the Natura 2000 site/s in question, the project can only be implemented if there are 'imperative reasons of overriding public interest', as detailed in Article 6(4). In essence, the work at Stage 1 will determine whether further stages of the process are required.

This report includes the testing required under Stage 1: Screening for Appropriate Assessment.

## 2.3 Report Format

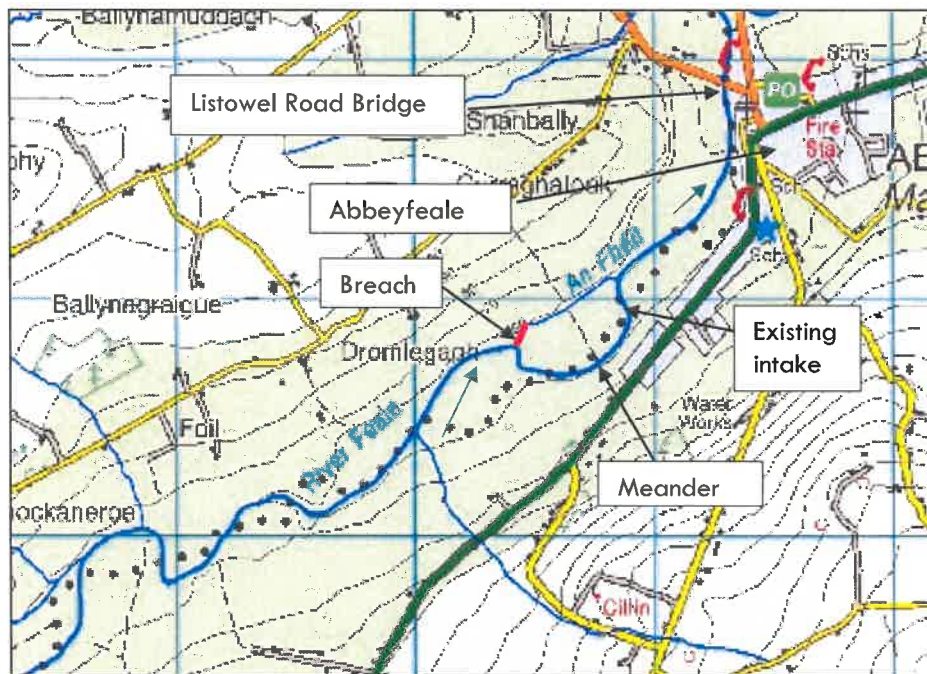
In complying with the obligations under Article 6(3) and to be consistent with the Guidance for Planning Authorities, this report has been structured as follows:

- Description of the Plan/Project;
- Identification of Natura 2000 sites, and the associated Conservation Objectives, which may be potentially affected;
- Identification and description of individual and cumulative impacts likely to result from the Plan/Project;
- Assessment of the significance of the impacts identified above on site integrity;
- Exclusion of site where it can be objectively concluded that there will be no significant effects.

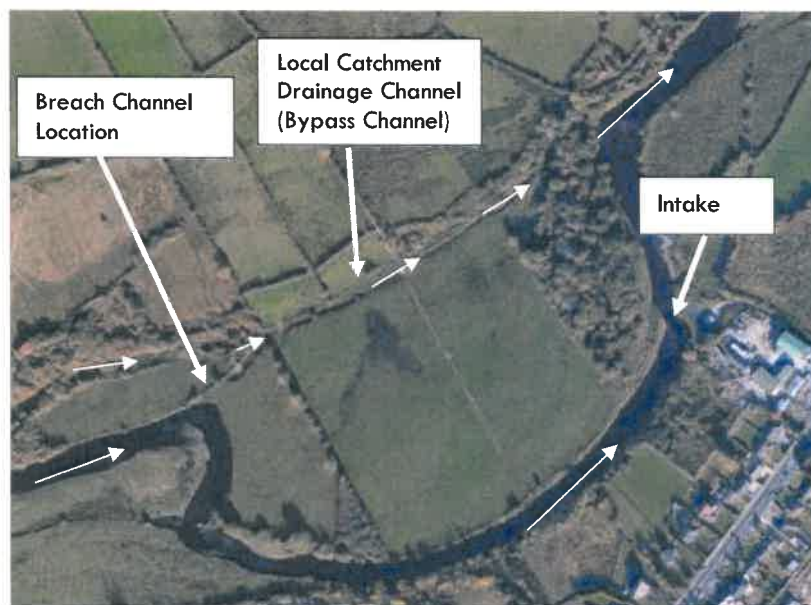


### 3.0 DESCRIPTION OF THE PROJECT

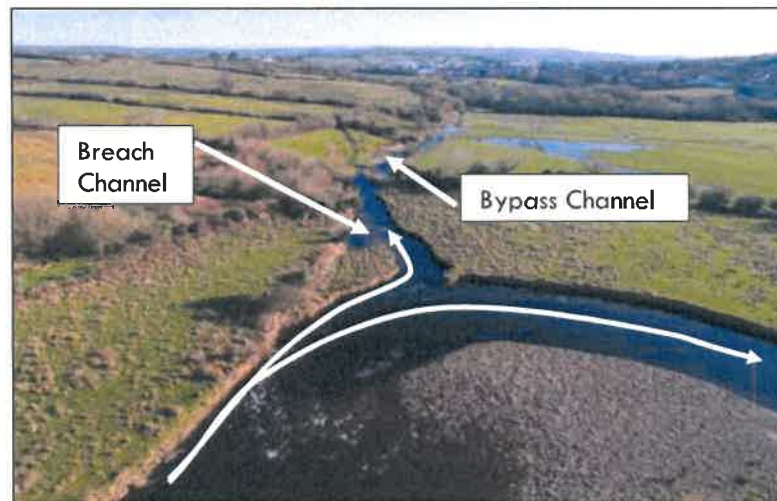
The River Feale is the raw water source for the Abbeyfeale Water Supply Scheme in County Limerick. The intake is located on the right bank of the outside bend of long and distinctive meander through an alluvium floodplain upstream of Abbeyfeale Bridge (See Figure 3.1). During the extreme floods of early 2016 a breach formed across the flood plain from the upstream end of the meander to an existing drainage channel to the north west of the main channel (See Figure 3.1). It is considered that the breach may convey, during low flows, a significant portion of available flows away from the main channel and impact on the security of supply of raw water to the existing intake.



**Figure 3.1: Location Map of River Feale Intake at Abbeyfeale**

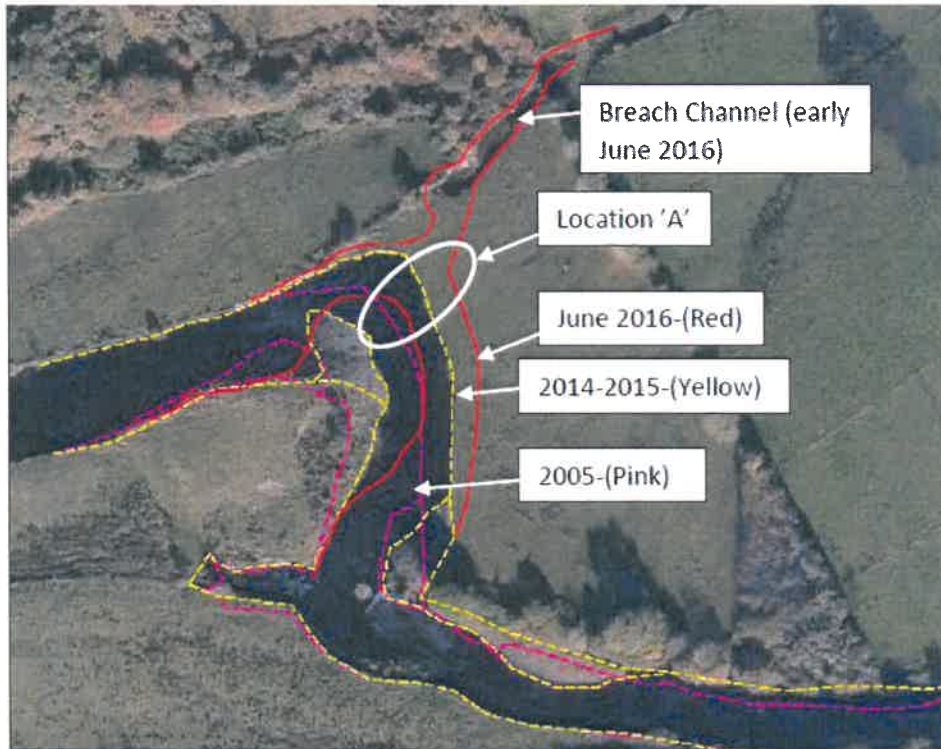


**Figure 3.2: Aerial Photograph of the meander within the study area (pre March 2016)**



**Figure 3.3: Aerial Photograph of the upstream end of the meander (March 2016) with indicative flow direction shown**

The breach channel bank material comprises highly erodible material (silts and sands on gravels) and has been observed during the period of February 2016 – July 2016 to be being scoured/ eroded away at significant rate and is likely to continue (if unmitigated) and probably intensify as the breach channel capacity increases and conveys increasing flow from the upstream main River Feale channel until the main channel flow entirely diverts to the new pathway along the line of the existing bypass channel. Thereafter, the existing meander in the main channel will likely be cut off and an ox-bow lake formed. The proposed sheet pile weir will not prevent this natural process from progressing in the long term.



**Figure 3.4 River Feale Erosion at the upstream end of the meander at Abbeyfeale between 2005 and early June 2016**

In order to protect the Abbeyfeale Raw Water Supply the following emergency works are proposed until such time as a long terms solution for securing the supply of raw water for the area is provided.

- The construction of a sheet-piled weir across the breach channel and associated works.
- The relocation of cobble / gravels from the main channel in front of the sheet-piled weir.

For the recommended emergency (interim) solution it is proposed to locate the weir approximately 50m downstream of the main channel in order to facilitate further erosion of main channel left bank at the inlet to the breach channel and to promote natural deposition and blocking up of the breach channel by gravels and silts. The proposed weir structure comprises sheet piles extending across the channel width and 5m into each bank. This form of structure will effectively cut off low flows in the channel and flows through the gravel and sand bed and bank material, will protect against encroachment and erosion around the weir and should be sufficiently robust to withstand winter flooding in the short term.

It is proposed to set the weir level for the structure at 55.97mOD which is the equivalent 70%ile water level in the main channel (pre-breach scenario) at the inlet to the breach. The bed and bank levels at the proposed weir site range between 56.4mOD to 56.8mOD and 54.6mOD to 55.6mOD respectively. An approximately 75m long and 3.5m wide channel will be developed, (as requested by IFI), through a strand of cobbles (deposition area) on the inside bend of the upstream end of the Abbeyfeale meander located opposite the breach channel. The removed cobbles will be placed in the breach channel upstream of the proposed sheet pile weir.

### 3.1 Construction Methodology

The proposed site will be accessed via privately owned field access track to the west of Abbeyfeale not only for installation works but also for maintenance and decommissioning works. The access track is narrow and partially overgrown in places and becomes steep upon approach to the river bank. The contractor will be required to undertake some access track improvement works to facilitate construction vehicles and delivery of construction materials to site. The access track leads to the northern bank of the catchment channel where a culvert crossing has been washed away and will require replacement.

The contractor will be required to construct a temporary access trackway and set down areas along the north and south bank to access both the mouth of the breach channel and the site of the proposed sheet pile weir. Areas stripped of vegetation will be kept to a minimum by installation of site fencing in order to reduce areas of soil exposed to erosion and minimise impact on the existing ash and hazel trees adjacent to the works site. The contractor shall remove the access track road following the works and shall reinstate the field to match the pre-construction condition.

Figure 3.4 and Table 3.1 below present the proposed construction methodology for the construction and decommissioning of the proposed sheet pile weir, formation of a channel within the gravel bed and associated construction stage mitigations. Refer also to the Method Statement for a detailed description of the proposed construction methodology.



**Figure 3.5: (1) Proposed Sheet Pile Weir site, (2) Former river crossing (A), (3) Former river crossing (B), (4) Breach channel, (5) Catchment Channel, (6) Existing intake, (7) River Feale Meander**

**Table 3.1 Construction Methodology (See also Figures 3.5 to 3. 13)**

Step	Description
1	Establish access to site left bank via existing field access track, prepare materials for installation of ford across the river. Install stock proof site fencing to mark out and restrict extent of site. The design will be carried out in consultation with Inland Fisheries Ireland and in accordance with IFI (2016) <i>Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters</i> .
2	Restrict flows upstream of proposed ford using a temporary dam comprising sand bags (*a) (circa 9m wide) and install silt and pollution control system downstream of the ford (straw bales installed along with secondary sedi-mats). Install temporary ford comprising 600mm diameter pipes (minimum size acceptable), terram and clean stone to facilitate preliminary access (*b)
3	Install stock proof site fencing to restrict access by livestock and the public, define the works area, and install required construction and health and safety mitigations. Install the primary upstream blockage on the breach channel close to mouth of the breach. Establish a crossing of the main channel.
4	Access the strand of cobbles via a crossing of the main channel, Form the fisheries channel commencing from the downstream and working upstream, involving the removal of the approximately 275m <sup>3</sup> of material, and stock pile removed cobble material on left bank of the floodplain. Vehicular traffic within the river flow to be minimised. AA cobble material is to be retained within the SAC.
5	Ecological translocations / electro-fishing works of the breach channel and the catchment channel (under license of IFI), dewater the channel between the primary breach channel blockage and the sand bags upstream of the ford (*c). Dewatering involving pumping out of water from a low point between the two dams onto grasslands adjacent to the breach channel but which discharge to the main channel (River Feale). Turbidity monitoring shall be undertaken in both the River Feale and the catchment channel over the duration of the works at upstream and downstream control stations. This will monitor silt levels and will help reduce impacts to downstream species and habitats (including Freshwater Pearl Mussel). Should levels increase above 20% of the ambient baseline turbidity levels (at downstream control stations), works will cease until appropriate measures to reduce siltation have been adopted and implemented.
6	Install the temporary crossing of the dewatered breach channel upstream of the proposed weir site using rip-rap (*d) to facilitate passage from south to north bank (left bank). Install stock proof site fencing to restrict access by livestock and the public and define the works area. Carry out clearance works on north bank to facilitate works, Install sheet piles (*e) from the north bank southwards, crossing the channel and continuing into the south bank of the breach channel as per the design details. Cut the sheet piles to required levels. Install capping to the exposed sheet piles.
7	Reinstate the north bank including installing an earthen mound above the sheet piles. Cross back to the south bank and use the temporary breach channel rip-rap as scour protection to the channel and banks upstream and downstream of the sheet pile weir as per the design detail. Place the stock piled cobbles into the breach channel upstream of the sheet pile weir to match the channel width and top of bank level. The downstream extents of the cobble fill is to be 10m upstream of the sheet pile weir rip-rap.
8	Remove construction debris from the breach and catchment channels. Turn off dewatering pumps and allow the upper reach of the breach channel to refill slowly to match the main channel level. Remove the primary breach channel blockage. Reinstate the south bank including earthen mound above the sheet piles. Top soil and reseed damaged grassland areas as necessary.
9	Remove all construction equipment and materials from the south bank and cross the catchment channel. Remove the temporary ford. Remove the sand bags upstream of the ford. Remove silt build up at the straw bales and sedi-mats prior to their removal from the channel. Remove all

construction materials from site and reinstate the access road, Remove all construction equipment from site.
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Note for Table 3.1.

(\*a) The contractor shall be responsible for the design, provision, installation, maintenance, repair and complete removal of the sand bag dams. The dams shall comprise one tonne sand bags installed two layers high, two layers deep and for the complete channel width (circa 9m wide). Smaller sand bags shall be used as necessary to block the remaining opes at the dam sites.

(\*b) The contractor shall be responsible for the design, provision, installation, maintenance, repair and removal of the temporary fording point and silt and pollution control system (straw bales and sedi-mats) at location 2 on Figure 3.5. The temporary fording point will be constructed to ensure conveyance of the catchment channel flows with minimum afflux and that vehicles will not enter the watercourse. Minimum culvert pipe sizes shall be 600mm diameter

(\*c) The contractor shall be responsible for the design, provision, installation, maintenance, repair and removal of the dewatered silt treatment system.

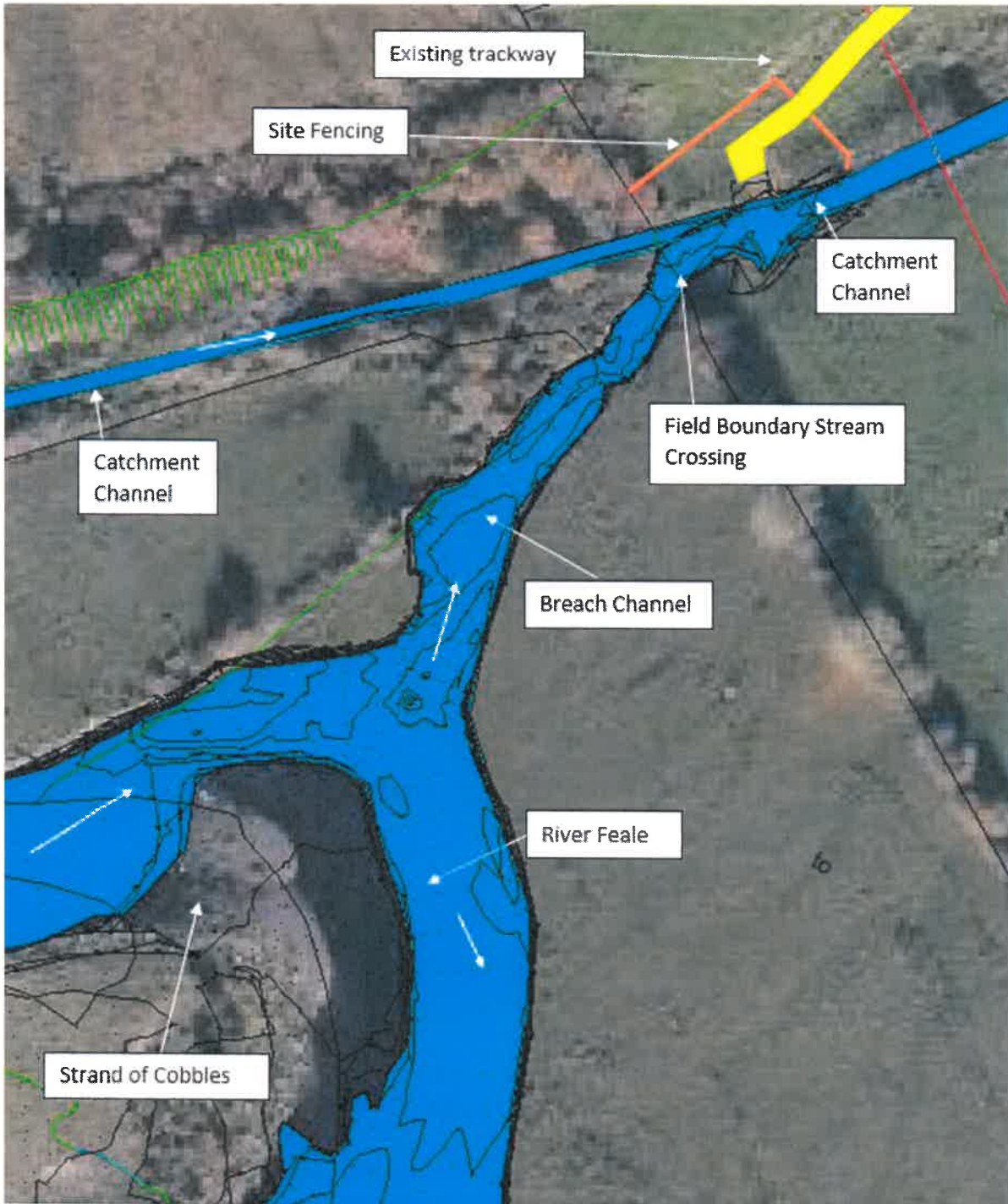
(\*d) The rip-rap/ stone armour shall be provided and installed by the contractor.

#### Rip-Rap Material

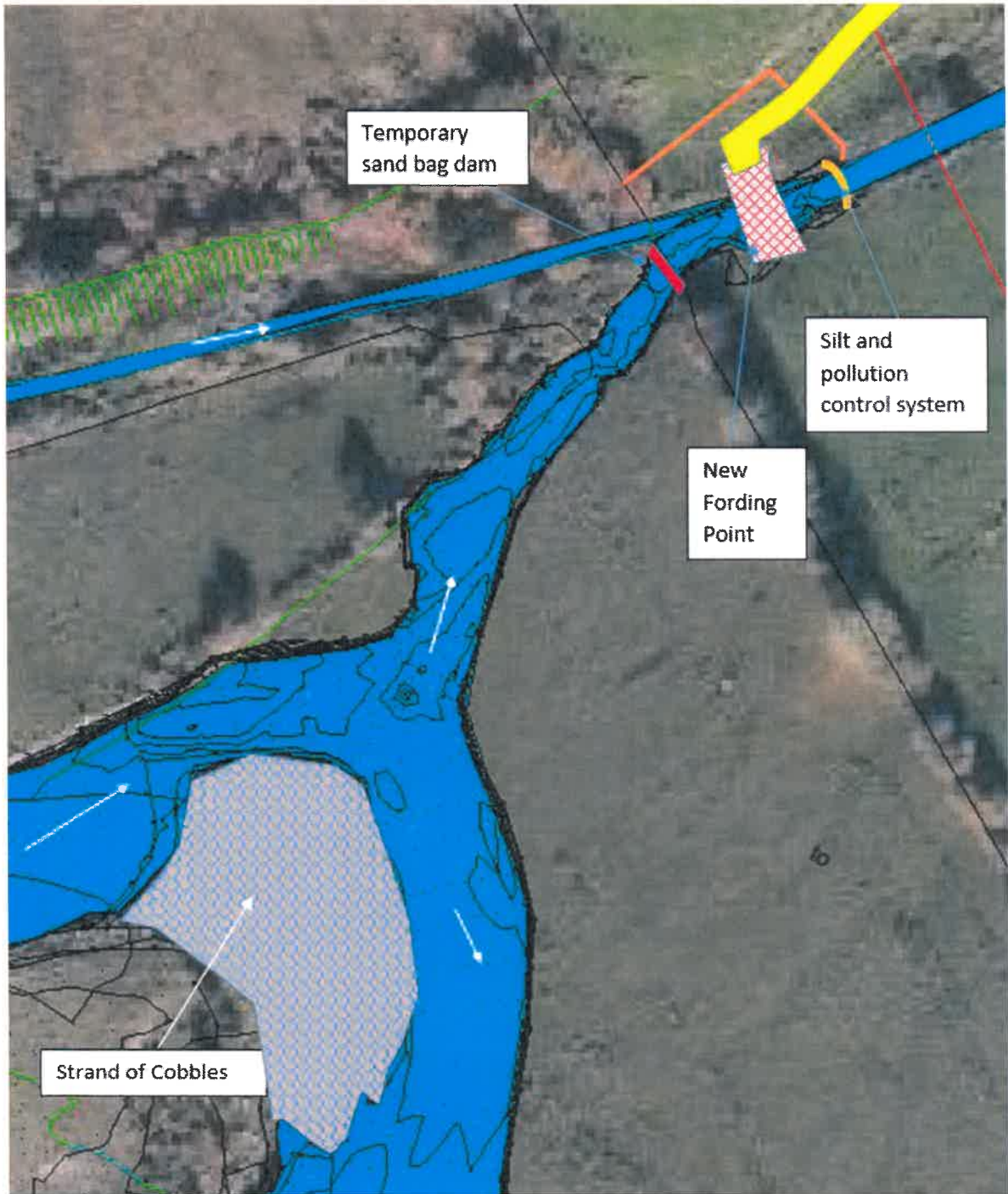
The following criteria shall be used for selection of the proposed rip-rap and filter material:

1. The quarried stone that shall be used for rock rip rap / rock armour should be blocky and angular, with sharp clean edges and relatively flat faces. Locally sourced quarried stone, matching the stone type found in-stream, is to be used.
2. It is recommended that individual pieces are close to equi-dimensional, rather than elongate, as far as practical. Typically, the average ratio of the long axis, a, to the thickness, c, for an individual rock should be less than 2.
3. The stone to be used for rock riprap / rock armour shall be hard, durable, angular in shape, with sharp clean edges and relatively flat faces, resistant to weathering and water action.
4. The rock is to be free from overburden, spoil, silt and clay or organic material and should meet the specified gradation. Dirty rock, which contains clay, silt, soil, or organic material, but is otherwise acceptable, is to be washed prior to delivery to the site.
5. The stone relative density is taken as 2,600kg/m<sup>3</sup>

(\*e) The contractor shall be responsible for the design, provision and installation of the sheet pile weir. The sheet pile weir shall be constructed 21m upstream of the field boundary stream crossing (approximately 55m downstream of the inlet to the breach). The interlocking sheet piles shall be Arcelor Mittal (AZ12-770) or equivalent, and shall be 10m long. The sheet pile wall shall extend 5m wide into the north bank (to ground level), extend the full width (approximately 9m wide) of the breach channel (cut off to 55.97mOD) and a further 10m wide into the south bank (to ground level) (total approximate length of 24m). A capping shall be placed on top of the sheet pile.

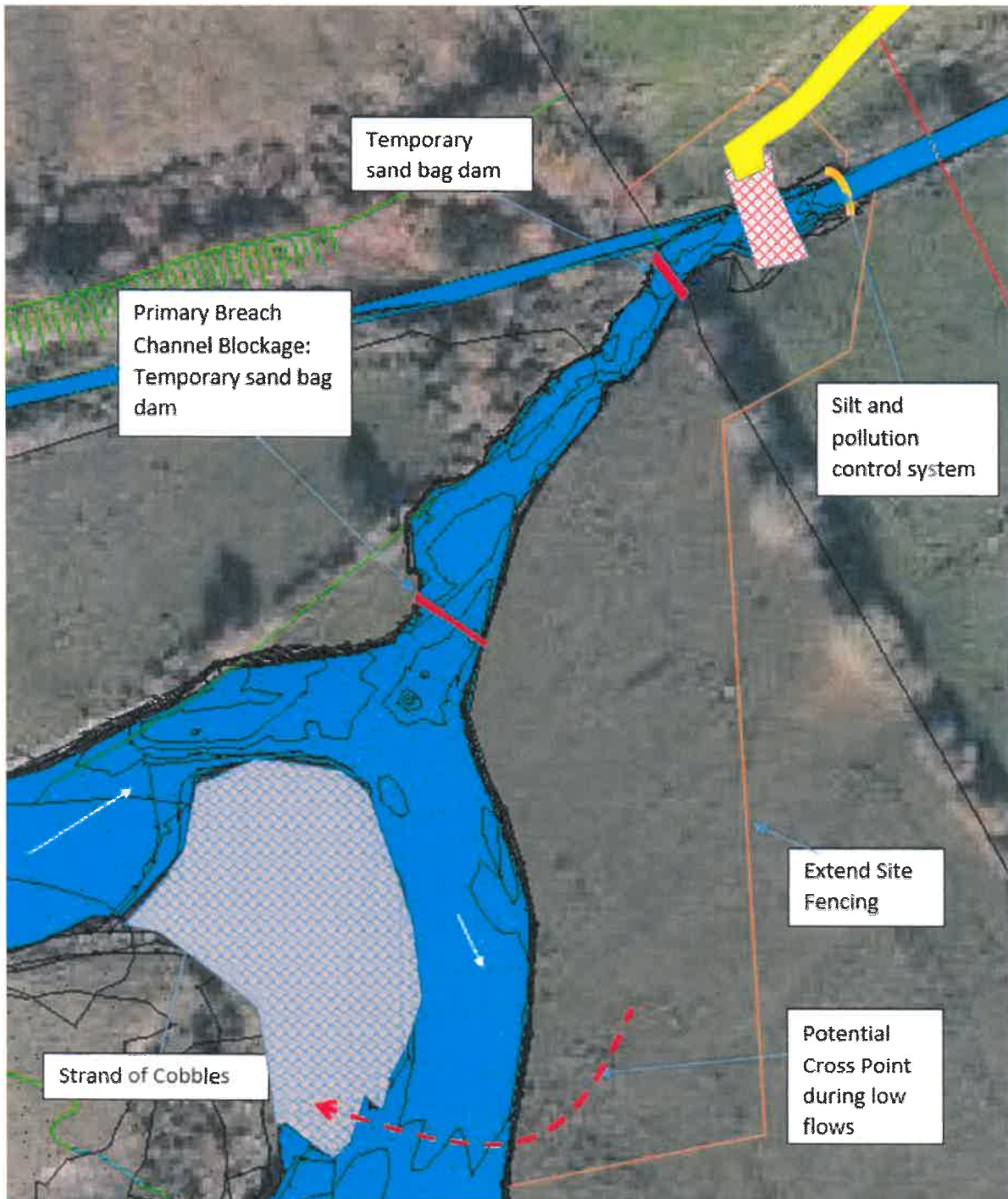


**Figure 3.6: STEP 1: Establish Access to site left bank via existing field access tracks, Prepare materials for installation of ford across the river**

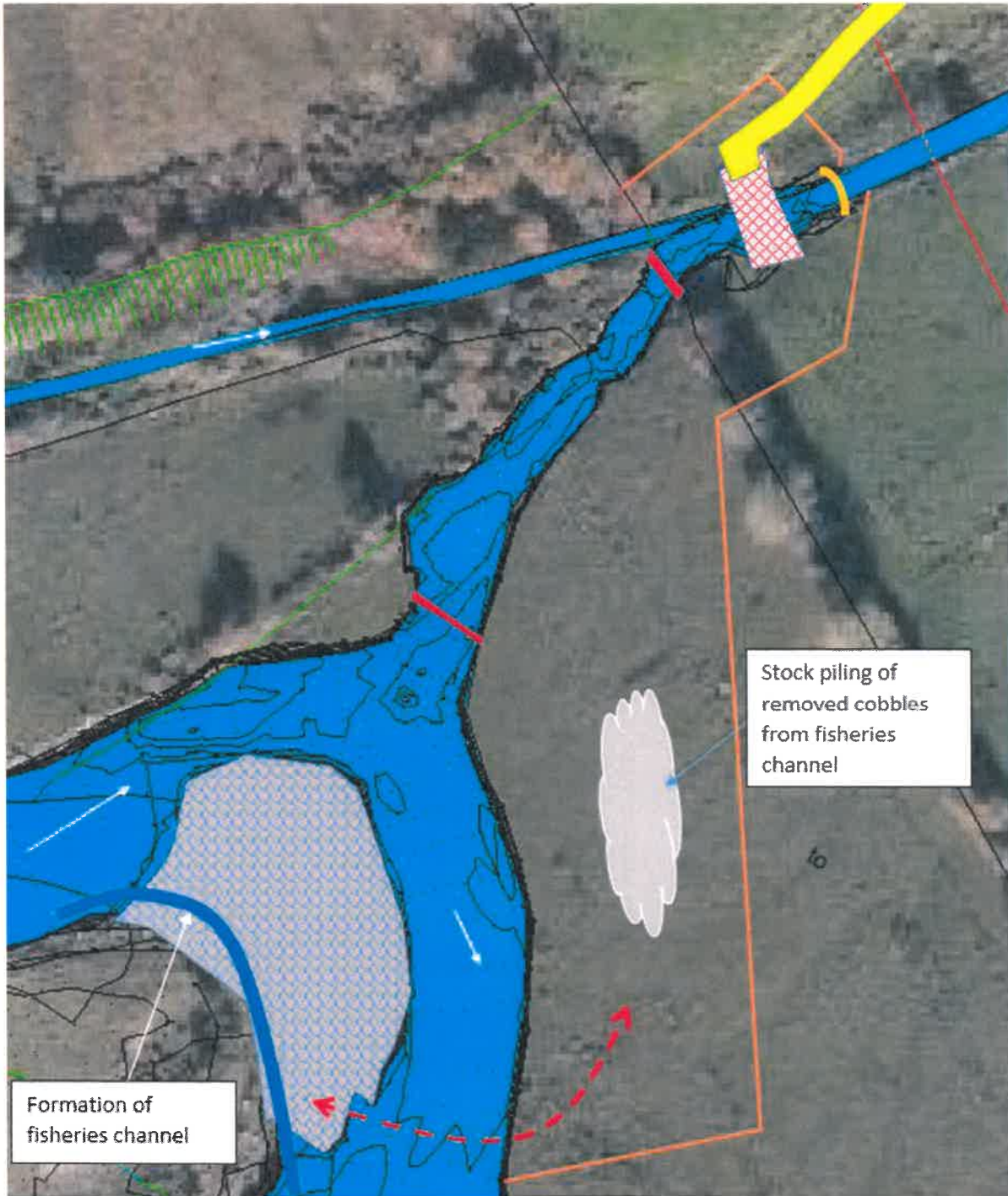


**Figure 3.7: STEP 2: Restrict flows upstream of proposed ford using sand bags and install silt and pollution control system. Install temporary ford with 600mm diameter pipes and clean stone.**

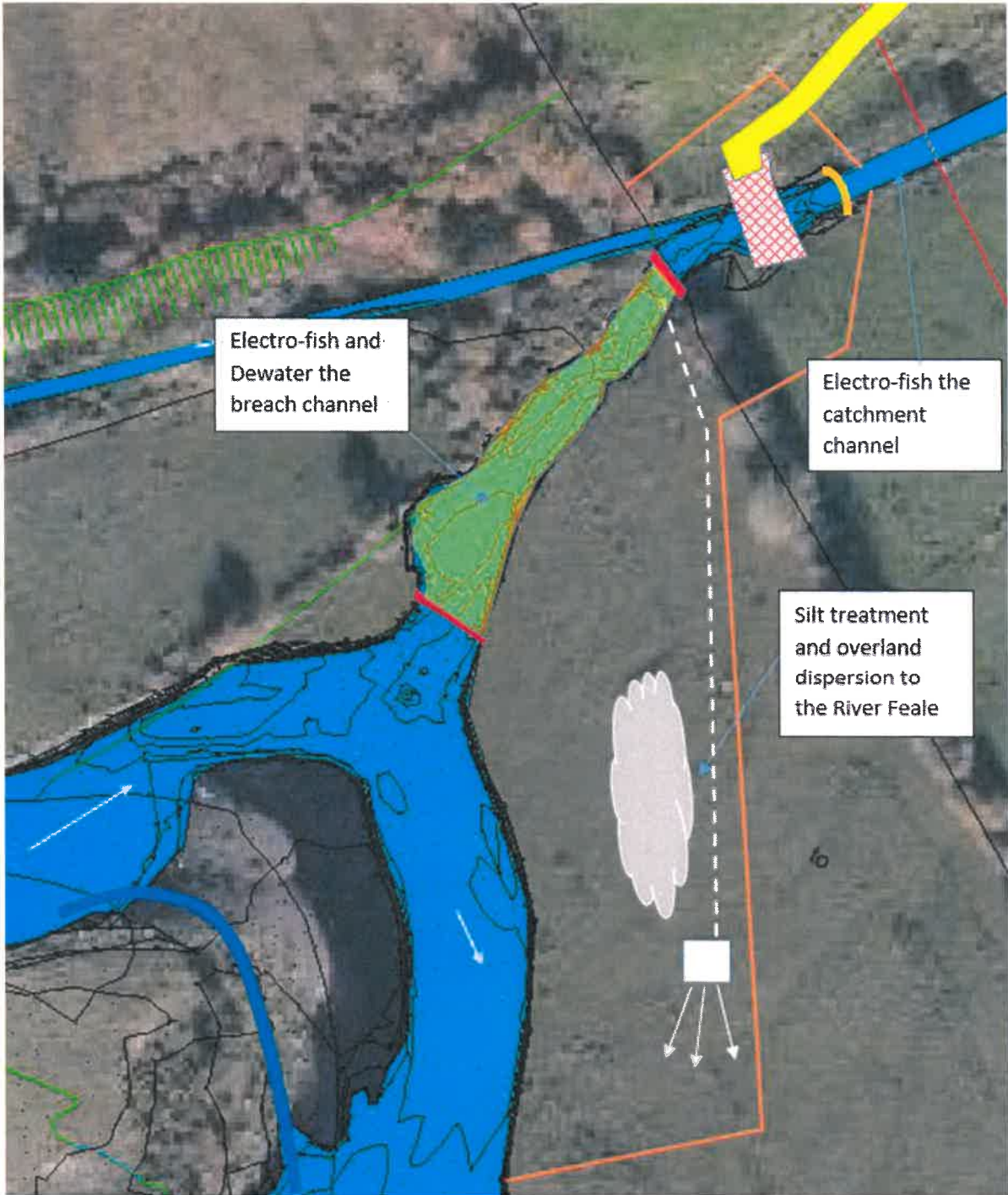




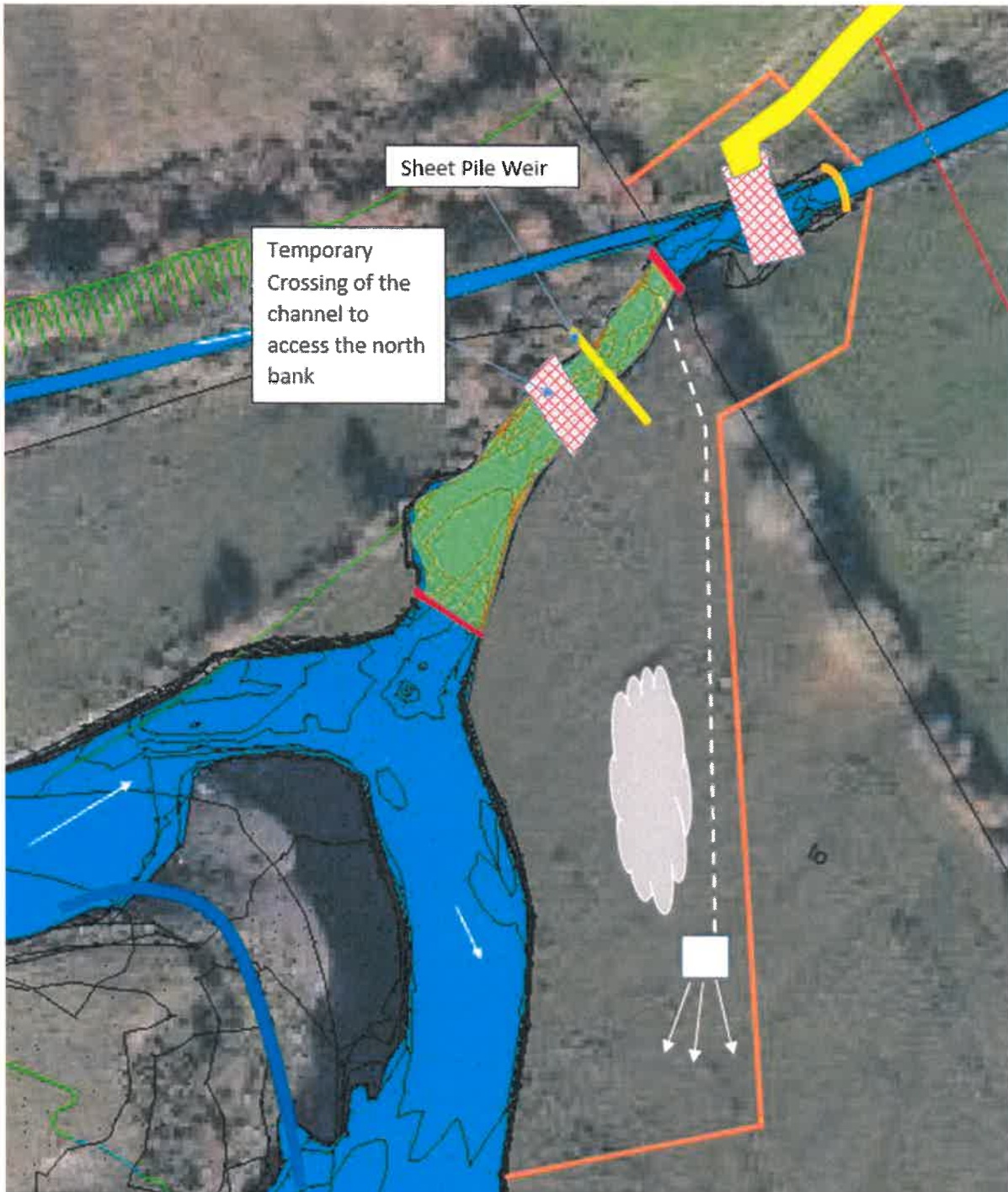
**Figure 3.8: STEP 3 Install site fencing to restrict access by livestock and the public and install required construction and health and safety mitigations, Install primary channel blockage close to mouth of the breach. Establish crossing of the main river channel.**



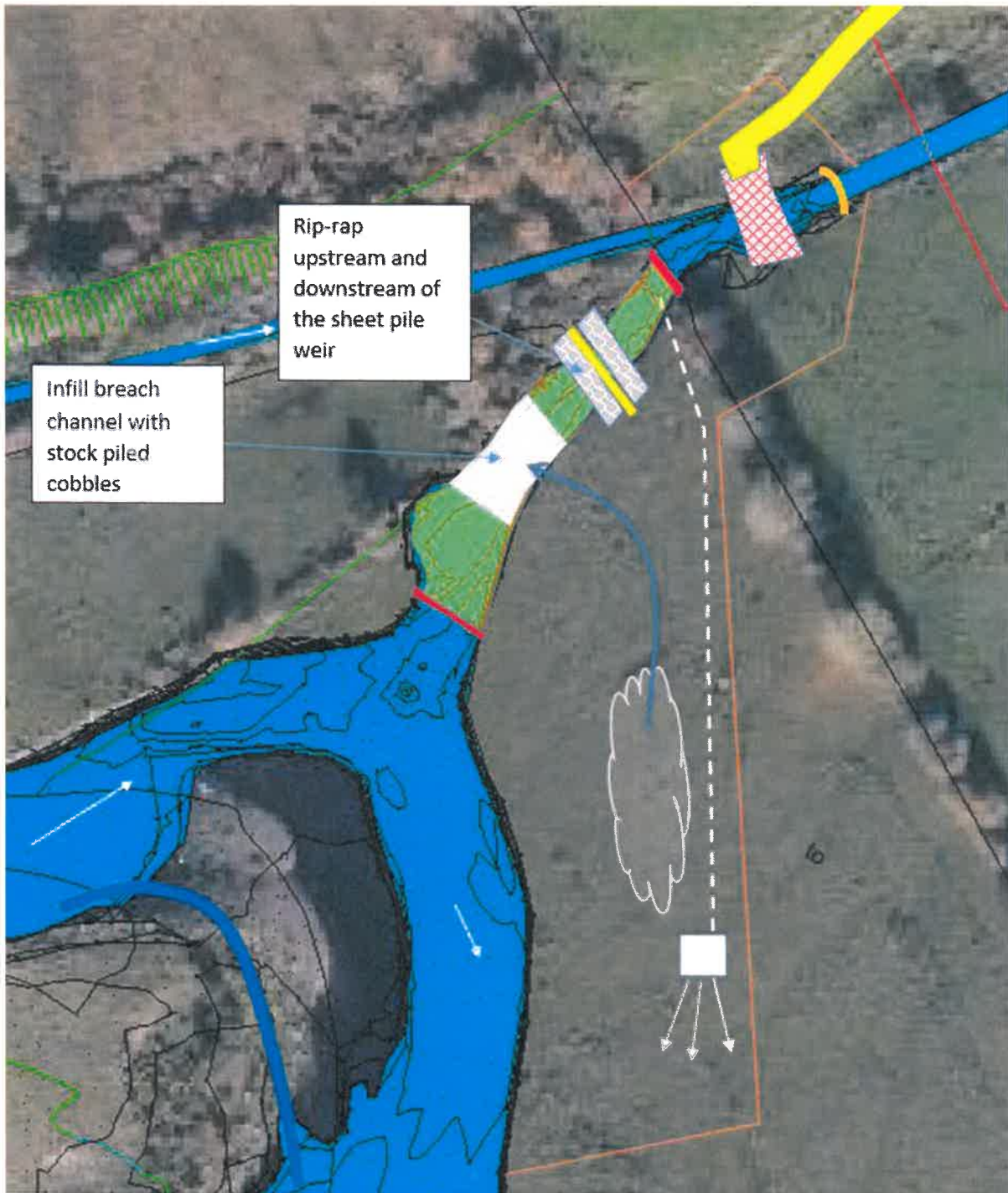
**Figure 3.9: STEP 4** Access the strand of cobbles via a crossing of the main channel, form the fisheries channel and stock pile removed cobble material on let bank of the floodplain.



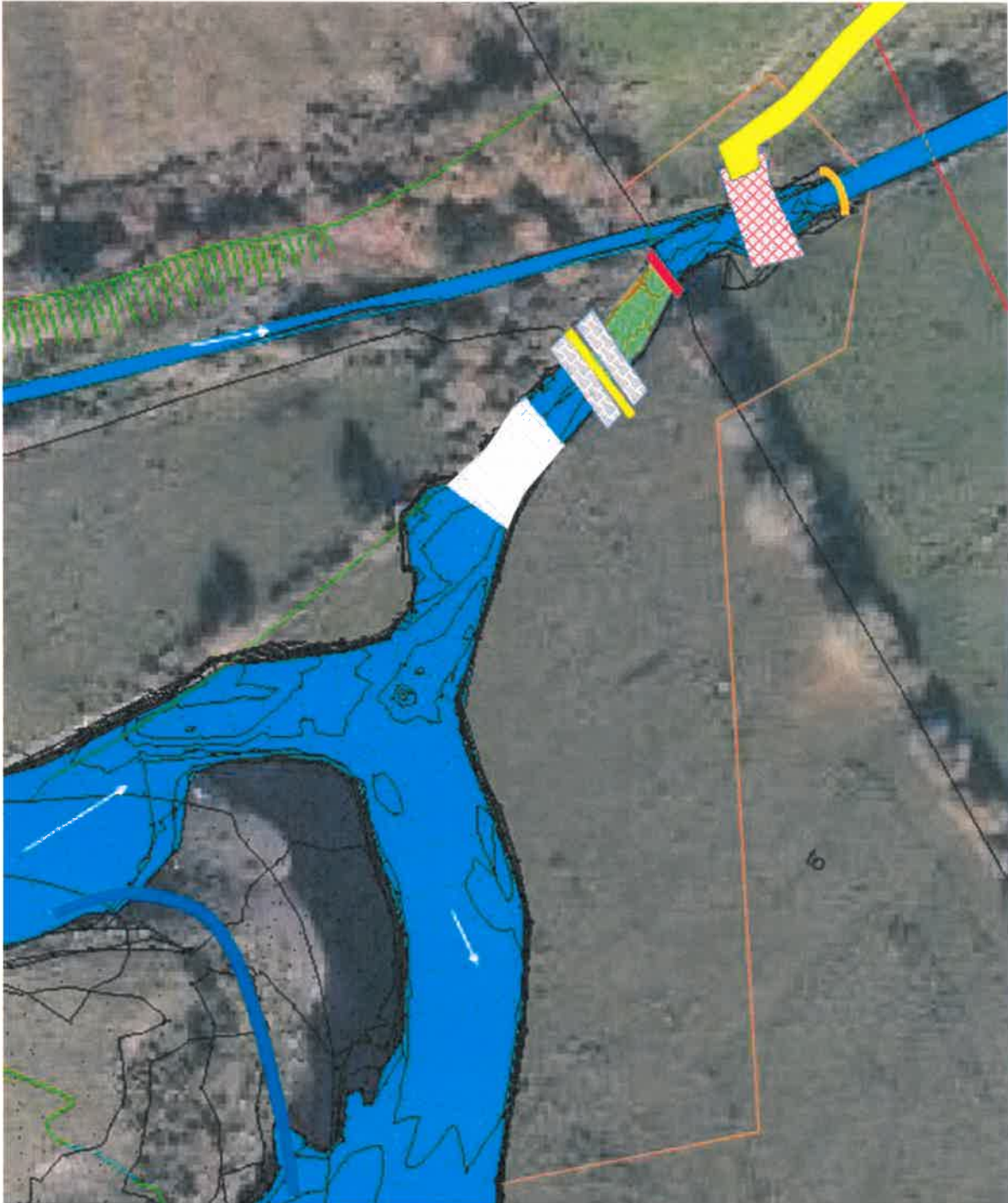
**Figure 3.10: STEP 5 Ecological mitigations / electro-fishing works of the breach channel and catchment channel, dewater the channel between the primary channel blockage and the sand bags upstream of the temporary ford. Dewatering involving pumping out of water into a silt treatment system before discharge, via a dispersion system, onto grasslands to the south of the breach channel which discharge to main channel downstream of the breach inlet.**



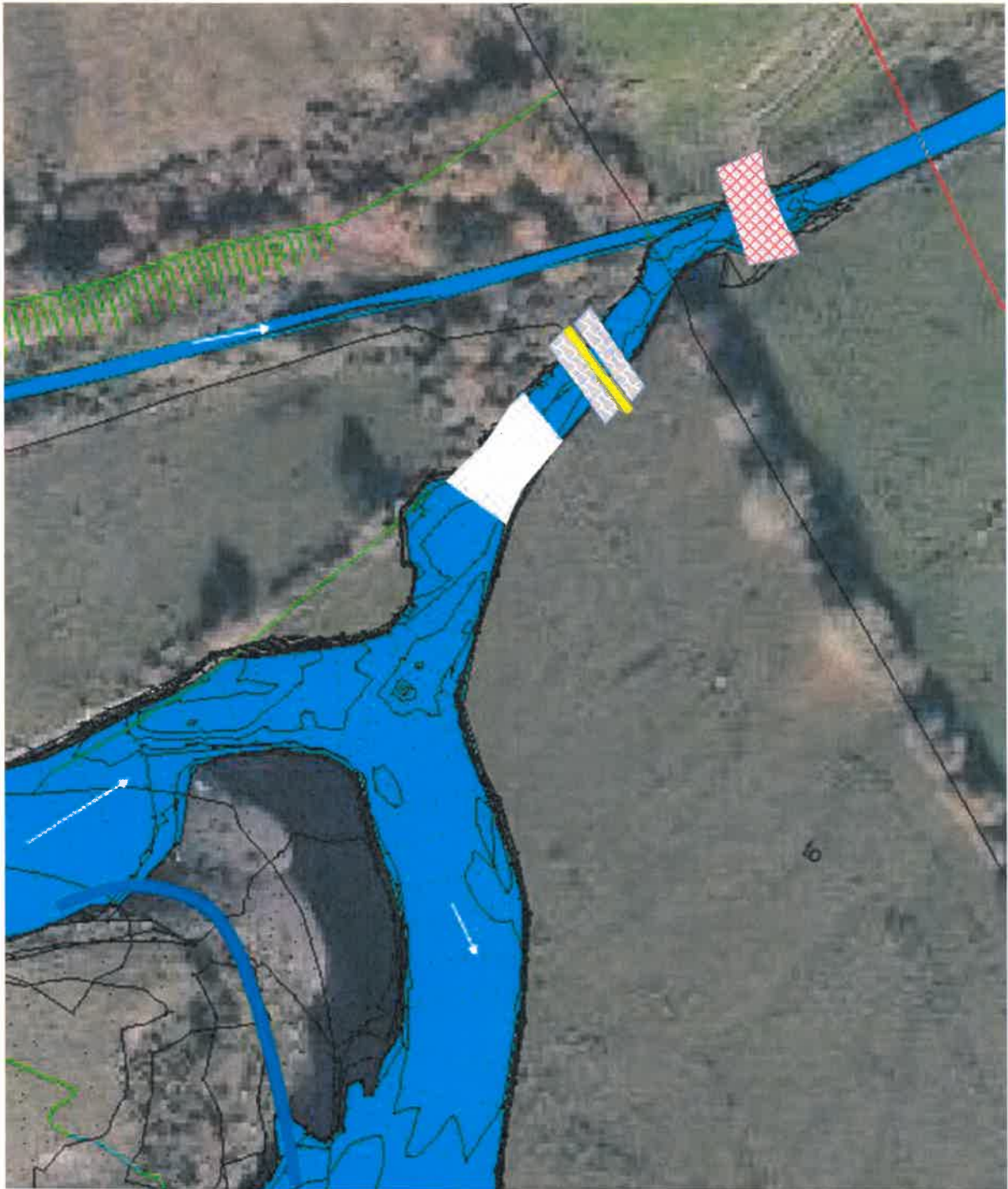
**Figure 3.11: STEP 6 Install temporary crossing of the channel upstream of the proposed weir site using rip-rap to facilitate passage from south to north bank (left bank) of the breach, Carry out clearance works on north bank, Install sheet piles from the north bank southwards, crossing the channel and continuing into the south bank of the breach channel as per the design details, Cut off the sheet piles to required levels, Install capping to the exposed sheet piles.**



**Figure 3.12 STEP 7 Reinststate the north bank including earthen mound above the sheet piles, Cross back to the south bank and use the temporary breach channel rip-rap as scour protection to the channel and banks upstream and downstream of the sheet pile weir as per the design detail. Place the stock piled cobbles into the breach channel upstream of the sheet pile weir to match the channel width and top of bank level. The downstream extents of the cobble fill will be 10m upstream of the sheet pile weir rip-rap.**



**Figure 3.13 STEP 8 Remove construction debris from the channel. Turn off dewatering pumps and allow the upper reach of the breach channel to refill slowly to match the main channel level, Remove the primary channel blockage. Reinststate the south bank including earthen mound above the sheet piles.**



**Figure 3.14 STEP 9 Remove all construction equipment and materials from the south and cross the catchment drain. Remove temporary ford construction; Remove the sand bags upstream of the ford; Remove all construction materials from site and reinstate the access road; Remove all construction equipment from site.**

### 3.3 Maintenance and Decommissioning:

#### **Proposed Project Maintenance**

During the operation phase the local authority and Irish Water will carry out regular inspections of the weir, in particular following significant flood events in the River Feale catchment, and will organise maintenance/ repair

works to be carried out when necessary to the structure and adjacent river banks and channel to ensure the weir is effective. These works would likely comprise repairs to the sheet piles, removal of flood debris and installation of additional rip-rap.

The contractor, on behalf of Irish Water and the local authority, will undertake these repair/ maintenance works in consultation and agreement with the project ecological clerk of works (EcOW) and the client to co-ordinate the necessary mitigation works (as described for the installation phase) and licences, permissions etc. required.

**Proposed Project Decommissioning**

Figure 3.6 to 3.9 above and Figure 13.14 to 13.17 and Table 3.2 below present the proposed methodology for the decommissioning of the sheet pile weir. Details of the works mitigations are also included in Appropriate Assessment Screening Report.

Prior to decommissioning, the site will be assessed and physical changes to the noted. This Method Statement will be amended as necessary should the site ecologist (in consultation with IFI and NPWS) deem it necessary. Such changes to the method statement may include the removal of silts and gravels that have built up over time prior to decommissioning of the sheetpiles.

**Table 3.2 Proposed Sheet Pile Weir Decommissioning Methodology**

Step	Description	Fig
1a	As for Step 1 in Table 3.1**	3.6
2a	As for Step 2 in Table 3.1**	3.7
3a	As for Step 3 in Table 3.1**	3.8
4a	As for Step 4 in Table 3.1**	3.9
5a	Install the temporary crossing of the dewatered breach channel upstream of the sheet pile weir site using the existing rip-rap (*d2) to facilitate passage from south to north bank (left bank). Carry out clearance works on north bank to facilitate works, Remove the sheet piles (*e2) from the north bank southwards, crossing the channel and continuing into the south bank of the breach channel.	3.15
6a	Reinstate the north bank including backfilling with clay any voids formed by the sheet piles and top soiling and reseeding. Cross back to the south bank and remove rip-rap from the channel and banks upstream and downstream of the sheet pile weir. Regrade the channel bed locally at the site of the weir and rip rap using natural occurring channel bed material.	3.16
7a	Remove construction debris from the breach and catchment channels. Turn off dewatering pumps and allow the upper reach of the breach channel to refill slowly to match the main channel level. Remove the primary breach channel blockage. Reinstate the south bank including backfilling with clay any voids formed by the sheet piles and top soiling and reseeding.	3.17
8a	Remove all construction equipment and materials from the south bank and cross the catchment channel. Remove the temporary ford. Remove the sand bags upstream of the ford. Remove silt build up at the straw bales and sedi-mats prior to their removal from the channel. Remove all construction materials from site and reinstate the access road. Remove all construction equipment from site.	3.18

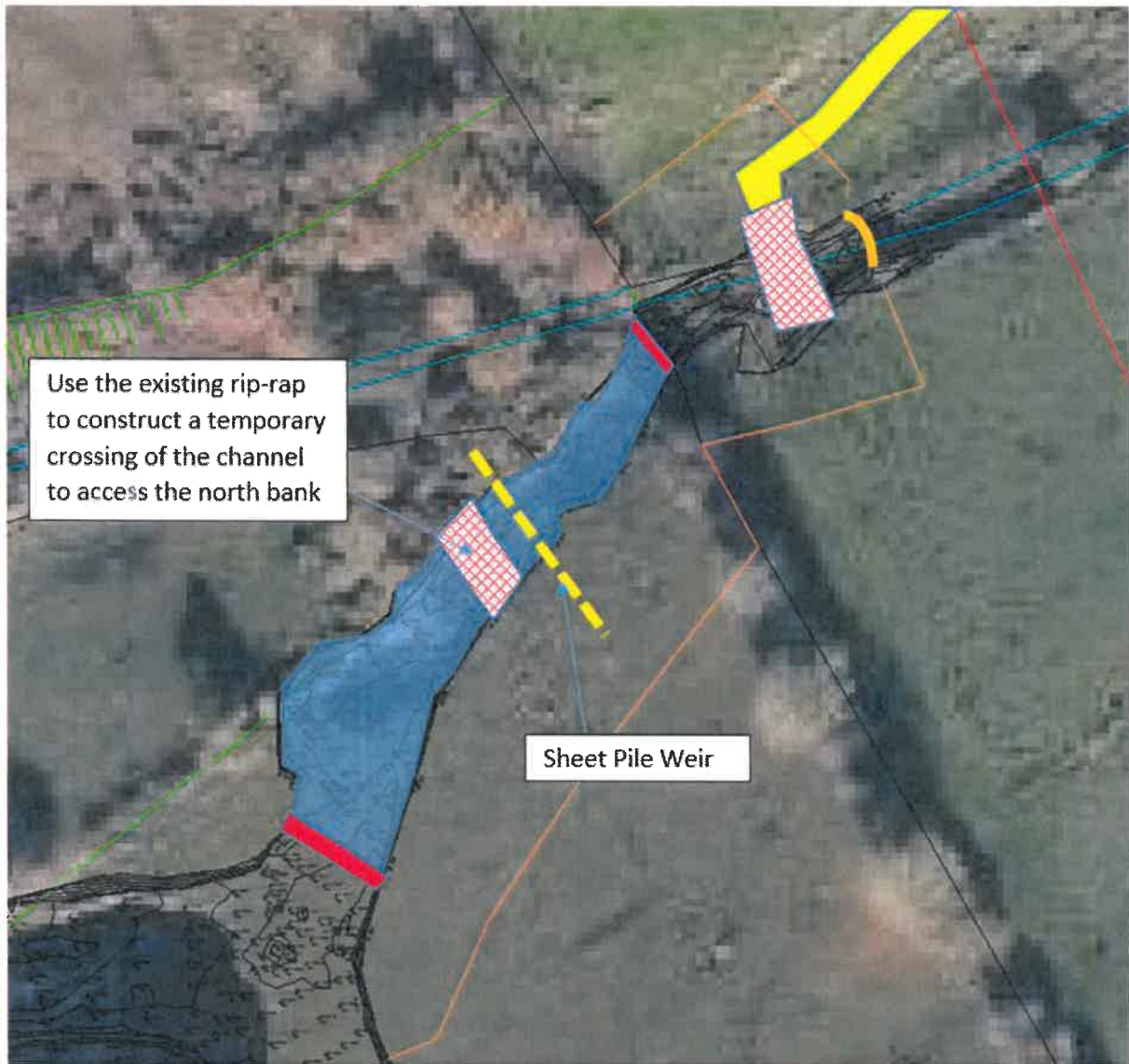
Notes for Table 3.2 (Notes for Table are applicable for Table 3.1 except for the following).

(\*d2) Remove the rip-rap from the channel and dispose of off-site.

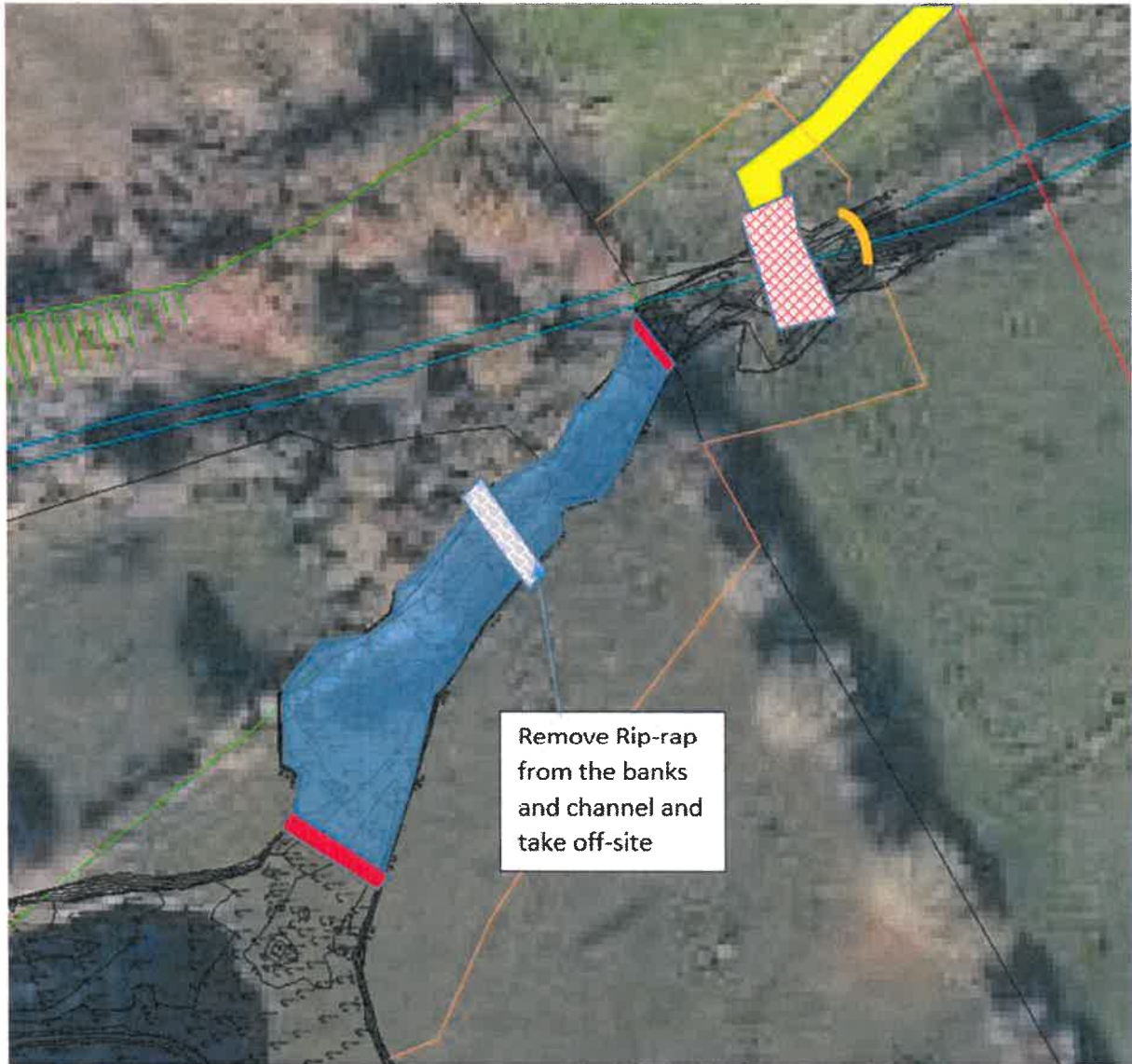
(\*e2) Remove 24m wide circa 10m long sheet piles and dispose of off-site

\*\* Excluding any works associated with the formation of the fisheries channel.

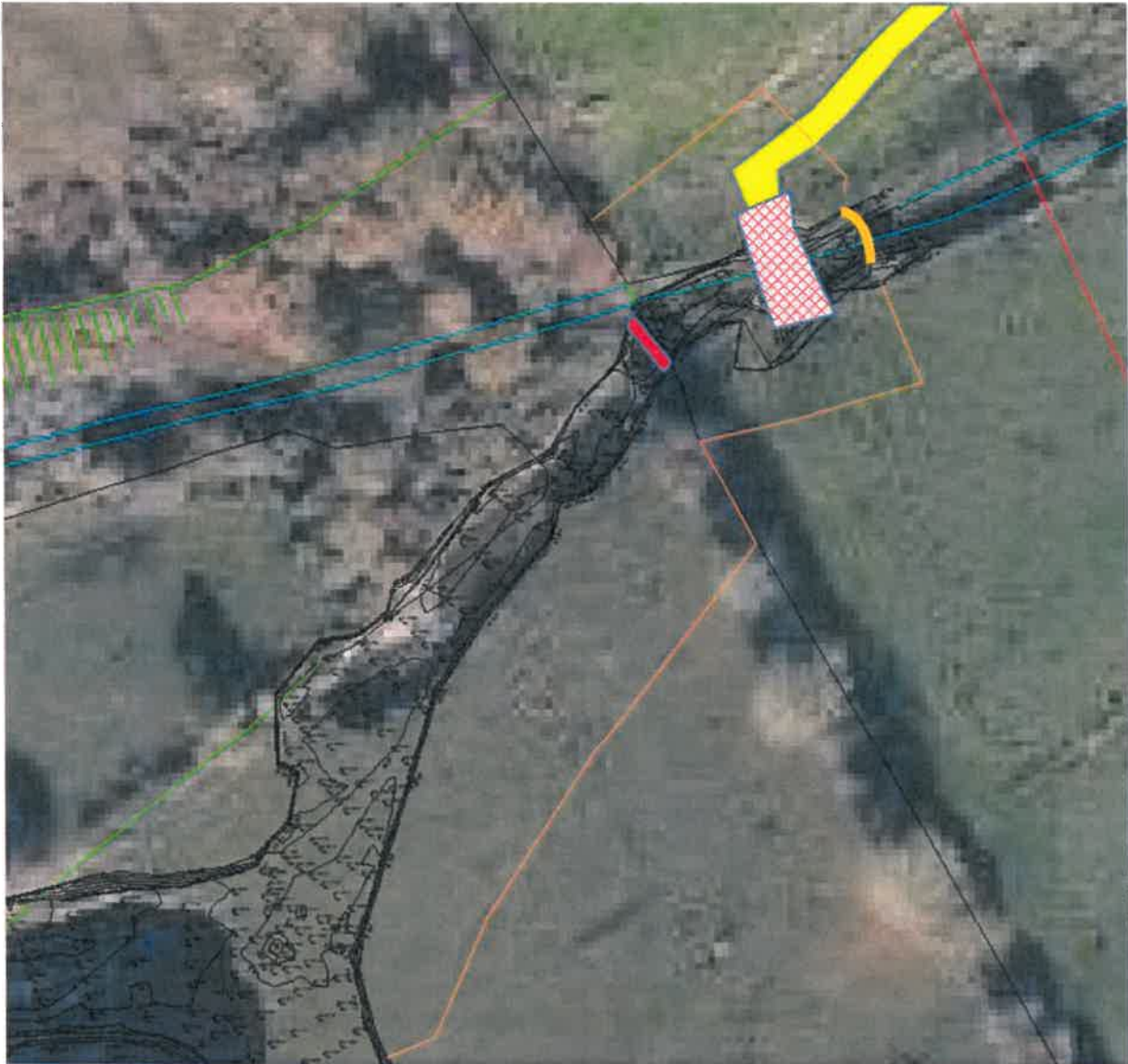




**Figure 3.15: STEP 5a Install temporary crossing of the channel upstream of the proposed weir site using the existing rip-rap to facilitate passage from south to north bank (left bank) of the breach, Carry out clearance works on north bank to facilitate works. Remove the sheet pile weir from the north bank southwards..**



**Figure 3.16 STEP 6a Reinststate the north bank, cross back to the south bank. Remove the rip rap from the channel and take off-site.**



**Figure 13.17 STEP 7a Remove construction debris from the channel. Turn off dewatering pumps and allow the upper reach of the breach channel to refill slowly to match the main channel level, Remove the primary breach channel blockage. Reinststate the south bank.**



**Figure 3.18 STEP 8a Remove all construction equipment and materials from the south and cross the catchment drain. Remove temporary ford construction, Remove the sand bags upstream of the ford. Remove all construction materials from site (including site fencing) and reinstate the access road, Remove all construction equipment from site.**

#### 3.4 Best Practice Pollution Control Measures:

Construction and decommissioning works including all personnel vehicles and machinery will only be conducted within the bounds of the proposed development site. Under no circumstances should construction personnel or construction works be permitted outside of the site boundaries. Temporary fencing will be erected along the proposed development sites boundaries to prevent entry of any construction related materials, personnel, amenity etc. onto nearby areas of the SAC.

Best practice will be employed to ensure that no pollution impacts arise during construction phase of the proposed development. The biggest threats of the proposed development potentially reside during construction where sediments and hydrocarbons may be released, particularly in association with movement of soil, storage of sand and gravel etc. In order to ensure that no sediment or hydrocarbons associated with construction phase

are transported directly to the SAC; the following mitigation measures will be implemented throughout the construction phase:

- An ecological clerk of works (EcOW) will be commissioned full time for the duration of the works.
- Vehicles will be refuelled away from watercourses in a designated refuelling area. Any storage of oils and diesel on site will be in steel or plastic tanks of good integrity and bunded to 110% of tank capacity. Fuels will only be stored on site during the construction phase, which will be of relatively short duration. Alternatively, refuelling can be carried out directly from delivery vehicles.
- Areas stripped of vegetation will be kept to a minimum. This will reduce areas of soil exposed to erosion. This can be facilitated/minimised by using a dedicated crossing point and lines of access for track machines, trucks and dumpers.
- During the construction phase, best practices will be employed to minimise the release of sediment laden storm water run-off. This will be achieved by pumping clean surface water runoff away from the in channel works site to minimise the volume of silted water generated (i.e. from between two sand bagged dammed areas to facilitate working in the dry).
- Water will be pumped from a low point between the two dams to the adjoining dry grassy meadows and allow the natural grasses to filter out any silt contained in the water before re-entering the River Feale.
- The ecological clerk of works (EcOW) will monitor silt levels downstream during construction phase of the works at the confluence of the channel breach with the Feale (downstream end) and also downstream of the meander at the upstream end. This will be undertaken with a turbidity meter with levels logged over the duration of the works at upstream and downstream control stations. Should levels increase above 20% of the ambient baseline turbidity levels (at downstream control stations), works will cease until appropriate measures to reduce siltation have been adopted and implemented.
- The area downstream of the construction area on the channel breach and the proposed temporary ford point (location 2 on Figure 3.4) during construction phase will have straw bales installed along with secondary sedi-mats at the end of the channel covering the full width of the channel in order to attenuate any residual silt/ sediment carried in suspension.
- The integrity of the temporary sand bagging dams will be monitored regularly to ensure working in the dry is maintained.
- The works will be completed when a settled relatively dry spell of weather of 5-days or more is forecasted by Met Eireann, preferable during a period of base flow to minimise siltation and potential for works inundation.
- The proposed works area will only be accessed from the access track from the north and thus will avoid damage of any of the sensitive woodland habitat and riparian areas including impacts to the species they support. Site fencing will be installed to restrict the works area.
- The extent of Ash-hazel woodland as identified in this report will be clearly identified and fenced off.
- Appropriate biosecurity shall be implemented by the contractor to avoid the introduction or spread of invasive species in the works area. a biosecurity protocol will ensure that no soil, gravel or stone will be brought on site within out prior notification and inspection and tyres and tracks. All plant machinery and equipment will be thoroughly cleaned and inspected for invasive species prior to leaving site. Construction staff will receive training on the identification and management of invasive species and will ensure adherence to the biosecurity protocol.
- The site shall be surveyed for invasive species one year after works and decommissioning are completed. Should any invasive species be found as a result of the works, eradication will be carried out.

- The working hours for construction will avoid dawn and dusk.
- It is important to prevent any escapement of chemicals such as hydrocarbons, hydraulic fluids and concrete. This will be dealt with specifically in a construction method statement that will be signed off on by the contractor.

The contractor will be bound to carry out works as per the Method Statement which has been completed for the project (See Appendix A).

## 4.0 DESCRIPTION OF THE RECEIVING ENVIRONMENT

### 4.1 Designated Sites in the Vicinity of the Project

Section 3.2.3 of the Guidance for Planning Authorities states that the approach to screening can be different for different plans and projects and will depend on the scale and the likely effects of the project. A key variable that will determine whether or not a particular Natura 2000 site is likely to be negatively affected is its physical distance from the project site.

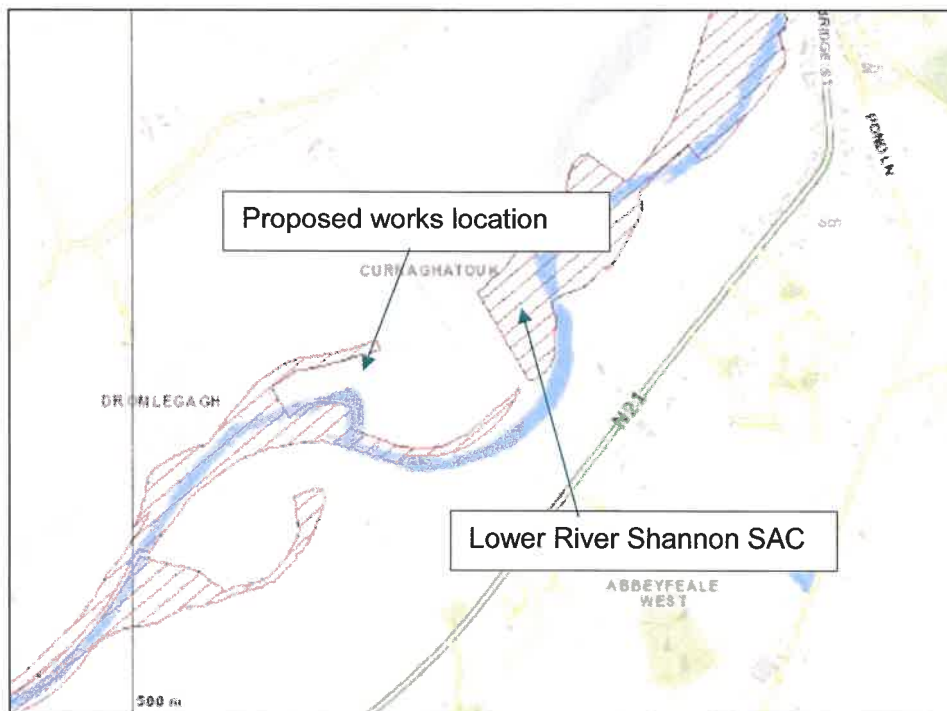
Furthermore UK guidance (Scott Wilson et al., 2006) state that a distance of 15km is currently recommended in the case of plans. For projects, the distance could be much less than 15km and in some cases less than 100m, but this must be evaluated on a case-by-case basis.

Given the nature of this project and the proposed construction methodology it is considered for the purpose of this screening exercise that the likely zone of impact is the zone immediately around the construction site and both upstream and downstream of the site.

A review of the National Parks and Wildlife Service database has identified the following Natura 2000 sites as potentially impacted by the proposed project, being in proximity, upstream or downstream of the works (See Figure 4.1):

- 002165 Lower River Shannon Special Area of Conservation

The proposed development site is within the Lower River Shannon SAC and the AA Screening will proceed with regard to this. It is noted that the river course has changed over time, potentially resulting in changes to the mapping of the site (along with discrepancies between administrative boundaries). While the NPWS mapping for the designated site does not include all sections of the river at the location of the study area, this study will assume all the riverine habitat and adjoining habitat of ecological interest are part of the Lower River Shannon SAC.



**Figure 4.1: Location Plan and Natura 2000 Designations ([www.npws.ie](http://www.npws.ie))**

**4.2 Description of Natura 2000 sites**

The Lower River Shannon SAC is a very large site along the Shannon valley from Killaloe in Co. Clare to Loop Head/ Kerry Head, a distance of some 120 km. The site thus encompasses the Shannon, Feale, Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head.

The eastern sections of the Feale catchment flow through Namurian rocks and the western stretches through Carboniferous limestone. The Feale catchment exhibits all the aspects of a river from source to mouth. Semi-natural habitats, such as wet grassland, wet woodland and marsh occur, but improved grassland is the most common habitat type.

The Lower River Shannon SAC is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the E.U. Habitats Directive, including the priority habitats lagoon and alluvial woodland and all three Irish lamprey species. A good number of Red Data Book species are also present, perhaps most notably the thriving populations of Triangular Club-rush.

Table 4.1 identifies the Conservation Objectives and Qualifying Interests of Lower River Shannon SAC.

**Table 4.1 Conservation Objectives for Qualifying Interests of Lough Corrib SAC**

Code	Conservation Objectives
To maintain or restore the favourable conservation condition of the Annex I habitats and Annex II species for which the SAC has been selected:	
1029	Freshwater Pearl Mussel <i>Margaritifera margaritifera</i>
1095	Sea lamprey <i>Petromyzon marinus</i>

1096	Brook lamprey <i>Lampetra planeri</i>
1099	River Lamprey <i>Lampetra fluviatilis</i>
1106	Atlantic salmon <i>Salmon salar</i>
1110	Sandbanks which are slightly covered by sea water all the time
1130	Estuaries
1140	Mudflats and sandflats not covered by seawater at low tide
1150	*Coastal lagoons
1160	Large shallow intlets and bays
1170	Reefs
1220	Perennial vegetation of stony banks
1230	Vegetated sea cliffs of the Atlantic and Baltic coasts
1310	<i>Salicornia</i> and other annuals colonizing mud and sand
1330	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> )
1349	Bottlenose Dolphin <i>Tursiops truncatus</i>
1355	Otter <i>Lutra Lutra</i>
1410	Mediterranean salt meadows ( <i>Juncetalia maritima</i> )
3260	Watercourses of plain to montaine levels with Ranunculion fluitantis and Callitricho-Batrachion vegetation
6410	Molina meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> )
91E0	*Alluvia forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> )

\*denotes a priority habitat

### 4.3 Site Description

River habitat surveys and fisheries assessments were carried out by Ross Macklin in June 2016 (See Fisheries Appraisal and Aquatic Report, 2016 for further details). The following description of the study area is derived from the report.

The following habitat descriptions are illustrated in Figure 4.2 of this report.

#### Terrestrial Habitat

##### Hazel Woodland

A tract of hazel woodland (WN2) following the valley ridgeline was located north of the channel breach (i.e. meander area). The hazel woodland (WN2) at Abbeyfeale may be considered of **high local importance** given that it is a rarer habitat in the wider locality and is a natural native woodland type. The habitat does not constitute a conservation objective for the Lower River Shannon SAC

##### Wet willow-alder-ash woodland (WN6)



This woodland either corresponded to a wetter valley flush form (i.e. south bank) or lower lying plateau floodplain woodland (e.g. north bank). The latter did not correspond to riparian woodland (WN5) given the absence of very frequent flooding (rather occasional winter spate) and also because of low levels of alder (*Alnus glutinosa*) and the dominance of ash (*Fraxinus excelsior*).

Wet willow-alder-ash woodland (WN6) was located bordering the River Feale on its north bank (opposite the drinking water intake). This area of woodland on the north banks was flooded during winter spate and contained abundant wooded flood debris. The canopy was ash dominated with blocks of willow and scattered sycamore.

Wet willow-alder-ash woodland was also present bordering the south bank of the River Feale. Specifically, within the Lower River Shannon SAC of which the River Feale forms part of the designation, wet willow-alder-ash woodland (WN6) has been associated valley bottoms and locally in flushed areas on the side of steep valleys.

The woodland on the south bank of the River Feale was fed by wet flushes emanating from bedrock at the head of the valley slope that created wetter flushed soil bases. The canopy comprised of alder and ash with the latter dominating. Some drier patches had frequent Lady fern (*Athyrium filix-femina*), hart's tongue fern (*Phyllitis scolopendrium*) and more localised hard-shield fern (*Polystichum aculeatum*) with ivy and bramble also present.

In the middle to eastern areas the woodland was ash dominated with infrequent oak and locally frequent willow near the River Feale border with the woodland. The ground layer was dominated by umbellifers with hemlock water dropwort being most frequent with occasional pignut (*Conopodium majus*) and wild angelica. Bluebells were locally frequent with herb Robert and great wood rush (*Luzula sylvatica*) also being recorded. The habitat corresponds broadly to the Annex I Habitat, Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alnopadion, Alnion incanae, Salicion albae) (91E0).

The wet willow-alder-ash woodland at Abbeyfeale may be considered of **international importance** given its inclusion as part of the Lower River Shannon SAC and by virtue of its status as a good representation of this habitat type.

#### Mixed Broadleaved Woodland (WD1)

Small narrow strips of mature mixed-broadleaved woodland adjoined the River Feale on its south bank. The mixed broadleaved woodland (WD1) at Abbeyfeale may be considered of **moderate local importance** given it contains semi-natural features of conservation value and does not correspond to a qualifying interest of the SAC.

#### Tall Herb Vegetation (FS2)

Tall herb vegetation formed long narrow stands on both the north bank of the River Feale and for small sections of the breach channel. The tall herb vegetation (FS2) at Abbeyfeale may be considered of **high local importance** given it that the habitat supports a moderate diversity of species and is an important habitat for a variety of terrestrial insects and acts as a corridor for wildlife along the riparian zone of the river. The tall herb vegetation does not correspond with habitats of a qualifying interests of the SAC

#### Treelines (WL1)

Treelines were common adjoining the River Feale making up field boundaries. They included frequent mature hawthorn, blackthorn (*Prunus spinosa*), grey willow (*Salix cinerea* subsp. *oleifolia*), ash and occasional sycamore.

#### Dry meadows (GS2)

Tracts of land that were infrequently grazed and/ or left fallow corresponded to dry meadows (GS2). These low lying fields adjoined the River Feale at a number of locations. The stands of GS2 vegetation were broadly similar and comprised a combination of grass species and herbaceous weeds. The dry meadow habitats adjoining the River Feale are considered of **moderate local importance** given they are semi-natural habitats of conservation interest.

#### Improved Grassland (GA1)

Improved grassland habitats contained typical species including perennial rye grass, clovers and weeds comprising broad leaved dock, annual meadow grass (*Poa annua*), silver weed and creeping thistle (*Cirsium arvense*). The improved grassland habitats (GA1) adjoining the River Feale are considered of **low local importance** given they had limited naturalness were semi-intensively managed.

#### Drainage Channel (FW4)

Small drainage channels adjoined the River Feale on the north and south banks. They were typically seasonal channels with a muddy base or with localised gravels and not of fisheries value. They were typically encroached by trees (e.g. willow) or umbellifers (e.g. hemlock water dropwort). The drainage channels at Abbeyfeale are considered of low local importance as they did not contain populations of species of ecological value and were typically degraded channels.

#### Lowland Depositing Watercourse (FW2)

The most significant surface water feature at Abbeyfeale in the footprint of the proposed works areas is the River Feale. The river has a good quality semi-natural channel profile and supports a good diversity of protected riparian habitats and aquatic species. The river is discussed in greater detail below. The River Feale at Abbeyfeale is a lowland depositing watercourse of **international importance**. This is considered by virtue of its designation as part of the Lower River Shannon SAC (2165) and in supporting Annex II populations of Freshwater Pearl mussel, salmonids and lamprey. It also is considered of international importance as it is a designated salmonid watercourse, pursuant to the European Communities (Quality of Salmonid Waters) Regulations, S.I. No. 293 of 1988.

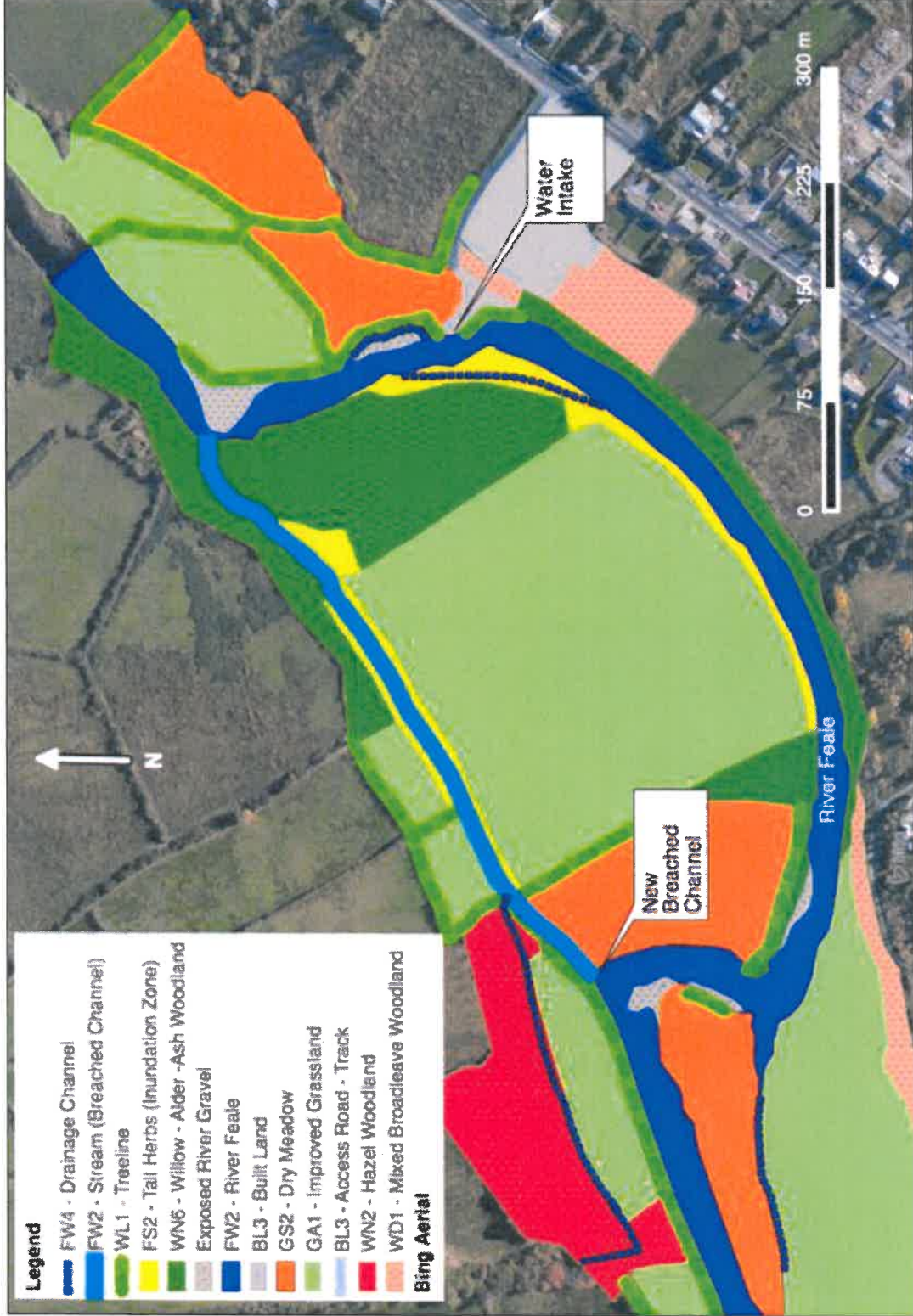


Figure 4.2 - Habitat mapping according to Fossit (2000) of habitats adjoining the River Feale at Abbeyfeale , Co. Limerick

## Fisheries Ecology

The River Feale is considered a lowland depositing watercourse (FW2) throughout much of its length. The river rises in the mountains of north Cork, near Rockchapel, and flows west for approximately 75 km through the towns of Abbeyfeale and Listowel before entering the sea at Ballybunion. The catchment area is approx. 1,165 km<sup>2</sup> and derives its flow principally from runoff. It is therefore typically a fast flowing spate river subject to flash flooding. The Feale is one of Ireland's most important Sea trout (*Salmo trutta*) and Atlantic salmon (*Salmo salar*) fisheries and is listed as a designated salmonid watercourse under the E.U. Freshwater Fish Directive. The Feale (entire length) is also part of the Lower River Shannon SAC.

According to the EPA in 2014, the biological water quality on the River Feale achieved Q4, 'good status' downstream of Abbeyfeale Bridge, further downstream, the river achieved Q4-5, 'high status' at Duagh Bridge, and approximately 5km upstream of the proposed works area a Q4, at Wellesley Bridge. Biological water quality data as part of this study provided an overall Q-Rating of Q4 unpolluted (good status) water quality both upstream and downstream of the breach channel.

The River Feale featured peat stained water at the time of surveying and was characteristic of a spate river (i.e. subject to flash floods) and typical of many of the important migratory salmonid rivers in Western Ireland. The River Feale was characteristic of an E type channel. Such channels are meandering, with higher incised banks and as floods are typically contained within the channel rather than spreading onto the floodplain, they are important channels for spawning salmonids. The main channel of the River Feale has a semi-natural profile with 60% glide, 30% pool and 10% riffle. The substrate is predominantly of cobble indicating the instability of the bed due to high spate velocities. The lowered energy in the main channel via the new cut (breach channel) and meander results in good quantities of gravels being deposited downstream of this point. However, the river gains energy downstream of the 2nd meander as exhibited by exposed bedrock and larger cobble dominated substrata, which largely dominates the river for the remainder of the surveyed stretch. The channel breach predominantly comprised glide-pool sequences with a very small proportion of riffle at the inflow and exit points of the channel. The instream gravels were typically coarse with light siltation. It is likely over time that all of the gravels in this channel will be replaced by cobble given its instability and ever-widening conveyance capacity as the water from the main channel of the River Feale is diverted through this new breach.

Three distinct sub-habitat types were identified within the survey area:

### Type 1: glide and pool habitat dominated by gravel and cobble:

Comprised natural deeper glide and pool habitat characterised primarily by coarse and medium gravel substrata. Upstream of the breach channel, the glides can be considered as moderate quality nursery habitat, whereas the glide-pool sequence of the breach channel itself represented excellent salmonid nursery and moderate spawning habitat. The middle reaches of the main channel featured more bedrock and cobble substrates, representing good adult salmon holding habitat but poorer nursery and spawning habitat. Submerged macrophytes were absent with only localised river moss (*Fontinalis antipyretica*) attached to boulder. The glide and pool habitat is considered most important as Atlantic salmon and sea trout (*Salmo trutta*) holding areas given the importance of the River Feale as a migratory salmonid system, and to a lesser degree for spawning. Overall, the coarse and medium gravels along with cobble substrata of the glide and pool habitats within the study site are considered more optimal for Atlantic salmon spawning as opposed to trout. Trout spawning habitat was more localised given their requirement for smaller gravels and lower cobble composition than salmon. This habitat was largely restricted to gravels on the western proportion of the study site downstream of the channel breach to the next meander.

Type 2: shallow riffle habitat considered optimal for salmonid spawning and nursery:

Shallow riffle zones were present throughout the surveyed section, adjoining glide and pool habitat types. They were also associated with exposed gravel bars on the river littoral, where localised shallowing up of the river created riffle zones that fed pool areas. This sub-habitat was located downstream of the breach channel inflow and associated meander; immediately upstream of the water supply intake and also at the downstream confluence of the breach and main river channels. Wherever found in the study site, these shallow riffles can be considered to provide excellent salmonid nursery habitat in conjunction with optimal spawning habitat (for Atlantic salmon rather than trout, as described above). While the shallow riffle areas consisted predominantly of cobble substrata, there were localised riffle areas that supported finer gravels to the west of the study area (i.e. downstream of the channel breach).

Type 3: pool habitat considered as valuable adult salmon holding habitat with localised and interspersed juvenile lamprey habitat.

There were some slack pool areas supporting sandier substrata and pondweed (*Potamogeton natans*) vegetation. These areas, where they intersected with the main channel flow, could support river/ brook lamprey given the deposition of suitably deep fines (measured as being >15cm depth) and organic material that would support burrowing and feeding lamprey ammocoetes. Such areas were localised throughout the survey site, however, being only present downstream of the meander and upstream of the confluence of the downstream end of the channel breach with the main River Feale channel. The localised nature of suitable lamprey burrowing sites in the survey area is in keeping with other studies on the River Feale which found that the watercourse, as a spate river, is sub-optimal for lamprey species overall. It is therefore imperative that such infrequent areas are not impacted due to any proposed emergency channel blockage works.

The primary importance of pooling areas in this section of the Feale is as adult salmon holding areas. In particular, the deep pool habitat located on the meander where the breach channel offshoot is situated provides optimal adult holding water. The slacker interior of these pool zones supported cyprinids (i.e. minnow, *Phoxinus phoxinus*) that provide feeding for kingfisher.

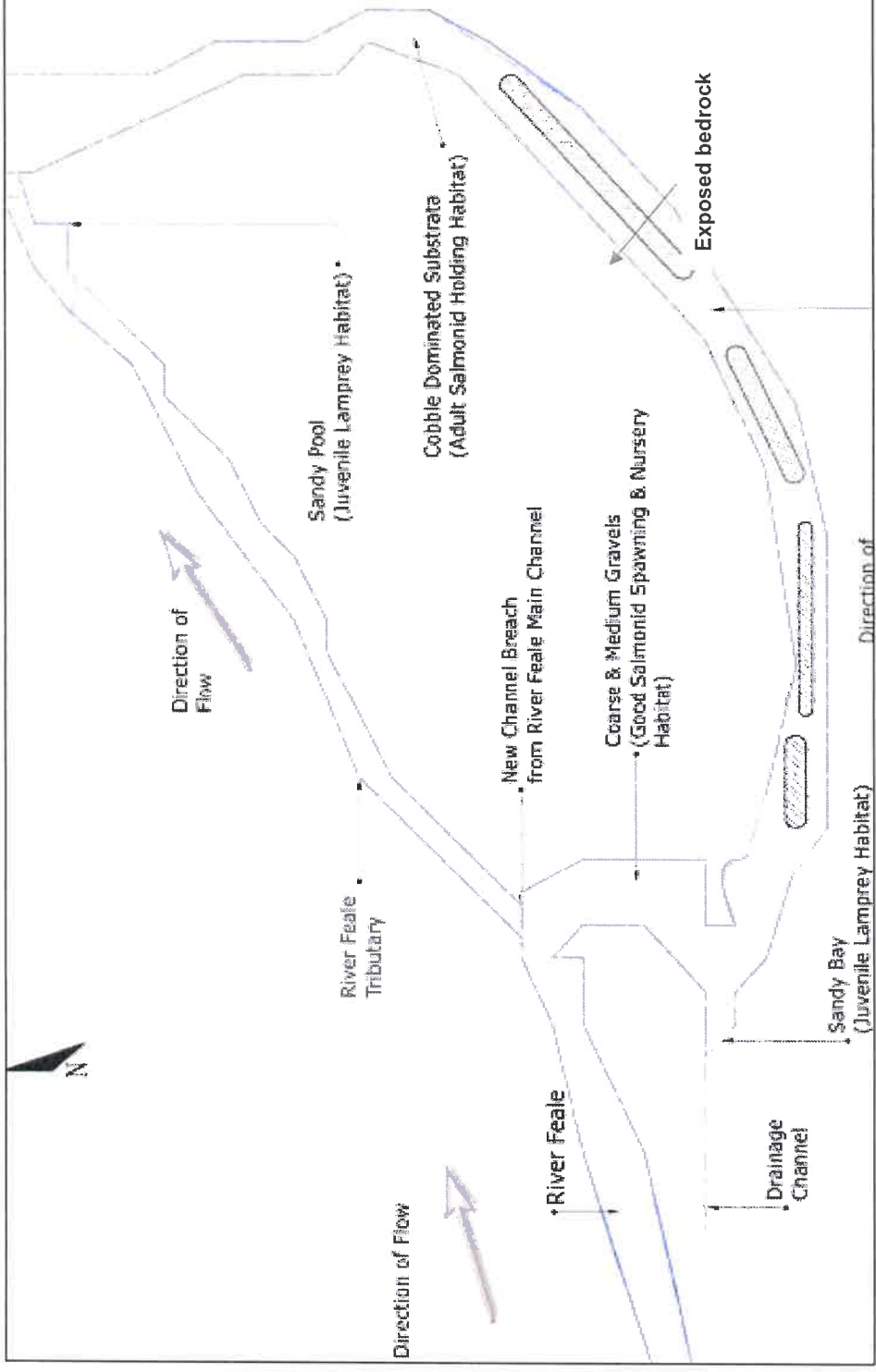


Figure 4.3 – River substrate map, River Feale, Abbeyfeale, Co. Limerick

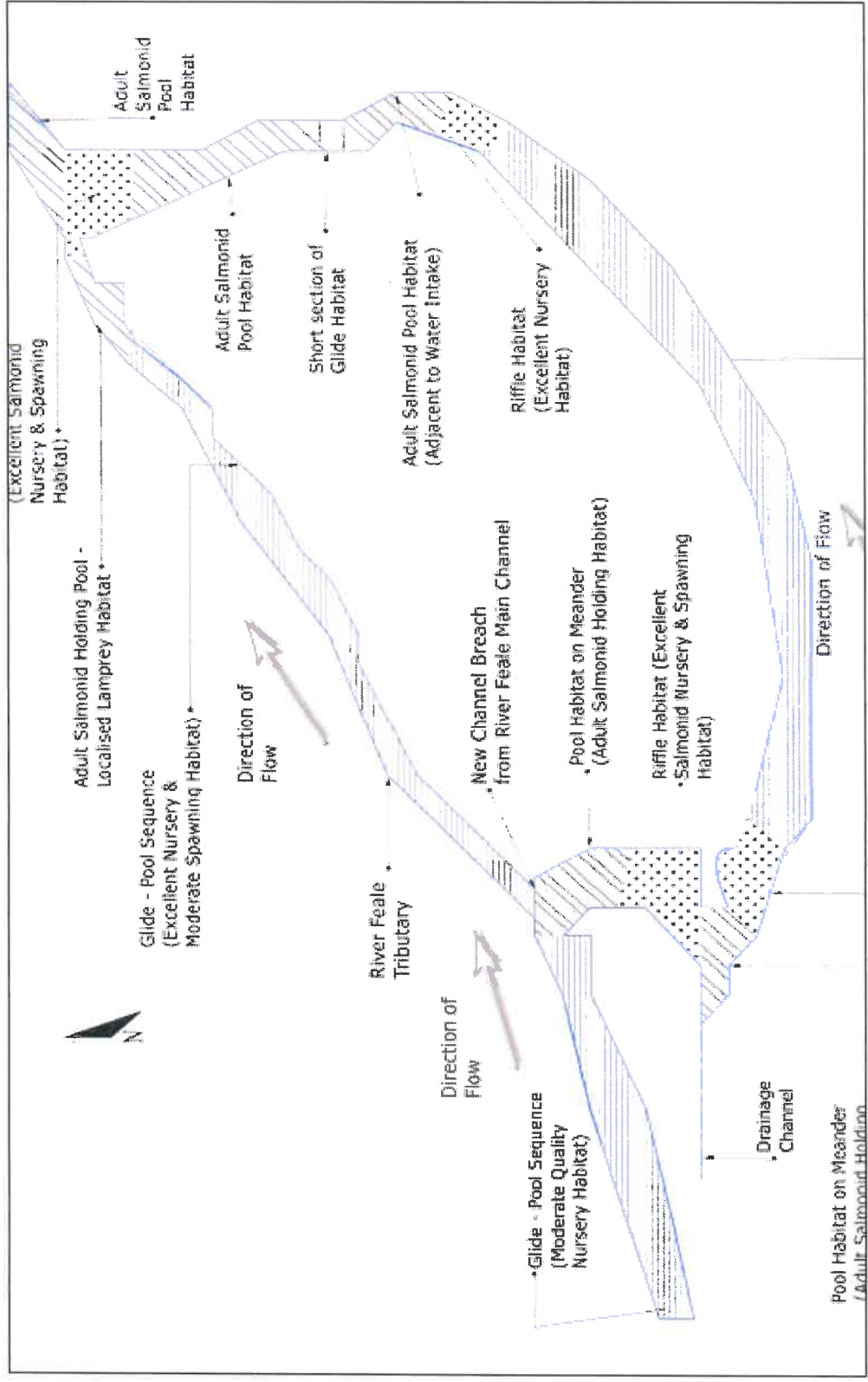


Figure 4.4 – River profile map, River Feale, Abbeyfeale, Co. Limerick

Watercourses containing good salmonid habitat can be considered of at least high value local ecological importance (NRA, 2009). Overall the River Feale in the upstream vicinity of Abbeyfeale can be considered of international importance for Atlantic salmon given the presence of good quality spawning and nursery habitat and by virtue of its inclusion in the Lower River Shannon SAC for which the species is a conservation objective. Furthermore, the River Feale at this location can be considered of High Value Local Importance for lamprey species given the presence of localised but good burrowing habitat for ammocoetes, alongside more local gravel spawning areas, despite the overall lack of optimal habitat throughout the catchment.

#### Other Species of Aquatic Importance

##### Freshwater Pearl mussel

The River Feale is known to contain populations of Freshwater Pearl mussel (*Margaritifera margaritifera*), a qualifying interest as part of the Lower River Shannon SAC. However, only the River Cloon is designated under SI NO. 296/2009 – the European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations. Fresh Water Pearl mussel are considered an extremely endangered species and are on the IUCN Red List of Threatened animals. The main channel of the River Feale between the meander and the town water intake is sub-optimal for *Margaritifera*, given large tracts of the substrate consist of mobile and unstable mixtures of gravel/cobble/boulders and some stretches of exposed bedrock (i.e. middle reaches). There were some limited patches of potentially suitable habitat along the southern bank under overhanging willow, but the stretch suffered from sedimentation and heavy silt plumes were present throughout, particularly in areas with slow flow. A small population of *Margaritifera* was recorded in the main channel of the River Feale in the stretch investigated (c. 730m) with only 3 individual mussels recorded. Further studies downstream of the confluence of the breach with the main channel (approximately 150m) on the north bank recorded one single live *Margaritifera*. The area was heavily silted. The heavily silted nature of the substrate observed downstream of the confluence was inimical to the maintenance of a sustainable population of *Margaritifera*.

Further upstream, during historical surveys *Margaritifera* were recorded in a 750m stretch commencing at Wellesley Bridge and moving downstream. According to the NPWS sensitive data request, the nearest downstream records in addition to the four mussels found in these surveys is 1.56km downstream of the drinking water intake adjacent to Abbeyfeale Bridge.

##### Otter

Otters are known to utilise the River Feale in the vicinity of Abbeyfeale town. Tracks and spraints were recorded during the survey on the north bank of the River Feale opposite a wet willow-alder-ash woodland (WN6) woodland. A single holt was located in scrub/brush vegetation in the middle of wet willow-alder-ash woodland (WN6) on the north bank of the River Feale. The holt was located a substantial distance away from the proposed works area (>200m) and will not be impacted as it is not in the vicinity of any proposed construction works area.

## 5.0 POTENTIAL IMPACTS ON NATURA 2000 SITES

In order to determine whether the project is likely to have a significant impact, the project and its potential impacts are assessed and followed by a determination of whether there is a risk that the effects identified could be significant. If the effects of a proposal are deemed to be significant, potentially significant or uncertain, or if the screening process becomes overly complicated then the process must proceed to a full Appropriate Assessment and the provision of a Natura Impact Statement.

Table 5.1 assess the impacts on each of the qualifying interests of the Lower River Shannon SAC as a result of the proposed emergency works.



## 5.1 Cumulative Impacts with Other Plans/Projects

The Feale has been heavily influenced by arterial drainage schemes in the past. Evidence of nutrient enrichment and sedimentation is evident within the river. Agricultural activities are impacting on the river including poaching from cattle and land spreading.

The Abbeyfeale Local Area Plan 2014 – 2020 identifies zoned land for residential development, agriculture, enterprise and employment and walkways. A screening for AA was carried out and determined that the proposed plan in consideration of the receiving environment did not require an Appropriate Assessment. The current Plan reduces the area of previously zoned land and includes for open space and semi natural land zoned adjoining the River Feale. This will act as a buffer zone and prevent encroachment of development on the SAC. The Plan includes the requirement for no adverse direct, indirect or secondary impacts on the integrity of the Natura 2000 site which adds additional safeguards to the area. The policy along with phasing of development to ensure infrastructural capacity determines that there is no potential for significant impact on the Lower River Shannon SAC in the context of its conservation objectives.

A search of the EPA website licenced facilities showed that one facility is within 5km of the proposed works. The closest licenced facility is Knocknagoshel Broiler Farm (>4km upstream of the works). The farm is in compliance with its license and annual report for 2015 shows no exceedances to its emissions.

The Waste Water Treatment Plant in Abbeyfeale is licensed under the EPA and is located approximately 1.8km from the Abbeyfeale intake. The 2015 AER for Abbeyfeale WWTP shows the following parameters exceeded the emission limit values:

- Orthophosphate
- Ammonia
- Total phosphorus.

EPA Quality ratings both up and downstream of the discharge point do not show any difference in water quality indicating that the dilution capacity of the river is sufficient to prevent any decline in water quality. The Feale into which the WWTP discharges has a water quality (Q) rating of 4 indicating unpolluted status, both up and downstream of the WWTP.

There is no organic emissions arising as a result of the proposed construction phase of the works therefore it is considered that no cumulative impact with regards to the above activities and the proposed construction of emergency sheet piles/weir is considered likely.

**Table 5.1: Conservation Objectives and Potential Impact of the proposed development on Lower River Shannon SAC**

Qualifying (Conservation Objective)	Interest Presence within the SAC/Zone of influence	Potential Impact	In combination Impact	Screened for Appropriate Assessment (NIS)
Freshwater Pearl Mussel <i>Margaritifera margaritifera</i>	Present in River Feale both upstream and downstream of works. River Feale not designated as a conservation objective, only River Cloon designated within the Lower River Shannon SAC.	No potential impact on integrity of SAC, however measures to ensure water quality and minimise siltation are provided in method statement and in this report for the protection of Freshwater Pearl Mussel.	No impact	Screened out
Sea lamprey <i>Petromyzon marinus</i> , Brook lamprey <i>Lampetra planeri</i> River lamprey <i>Lampetra fluviatilis</i>	Overall sub-optimal habitat for lamprey. Some suitable juvenile lamprey habitat present downstream end of breach channel.	No direct impact on potential lamprey habitat. Electrofishing licence has been granted by IFI for the salvage and translocation of salmonids and lamprey prior to construction work thus minimising direct loss of fish during construction phase. Method Statement and design protects potential lamprey habitat downstream of the works at the end of the breach channel by ensuring water flow is maintained in this channel in low flow conditions. This is ensured by the supply of water to this channel via an existing slow flowing drainage catchment channel to the north which will remain intact. (Sheetpiles will be located upstream of the channel.)	Evidence of sedimentation and enrichment already visible in the river. The works will not contribute to enrichment. Measures are in place to prevent sedimentation of channel during construction phase. Decommission will result in some silt release which are a short term impact will be resolved quickly. No cumulative impact.	Screened out

Works as outlined in the method statement ensure a minimisation of siltation during construction to minimise impact on lamprey. Regrading of stream will be required as part of decommissioning. There will be some silt release during decommissioning. Siltation effect will be short term and the stream morphology will resolve itself quickly in flood conditions. The release of

silt is not considered to be more than that experienced as a result of the prevailing breach channel erosion.

Relocation of cobbles to form new channel will be carried out in the dry during low flow conditions only so as to minimise the impact on the riverine system. Instream riverine works (for access and transportation of cobbles) will be carried out within the permitted period for instream works as identified by IFI (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (July – September).

*Atlantic salmon Salmon*  
*salar*

Salmon habitat in both the main channel and breach channel. Glides, pools and riffles in both channels providing spawning, nursery and adult pool habitat.

Electrofishing licence has been granted by IFI for the salvage and translocation of salmonids and lamprey prior to construction work thus minimising direct loss of fish during construction phase.

The Method statement minimises the risk of siltation impacts of spawning and nursery habitat downstream in the breach channel. Measures include working in low flow conditions only, pollution control measures and the provision of silt traps.

Regrading of stream will be required as part of decommissioning. There will be some silt release during decommissioning. Siltation effect will be short term and the stream morphology will resolve itself quickly in flood conditions. The release of silt is not considered to be more than that experienced as a result of the prevailing breach channel erosion. Decommission will be carried out during August – September in order to avoid salmon and lamprey spawning seasons.

Relocation of cobbles to form new channel will be carried out in the dry during low flow conditions only so as to minimise the impact on the riverine system. Instream riverine works (for access and transportation of cobbles)

Evidence of sedimentation and enrichment already visible in the river. The works will not contribute to enrichment. Measures are in place to prevent sedimentation of channel during construction phase.

Decommission will result in some silt release which are a short term impact will be resolved quickly. No cumulative impact.

Screened out

will be carried out within the permitted period for instream works as identified by IFI (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (July – September).

Sandbanks which are slightly covered by sea water all the time	Not found within the zone of influence	No potential impact	No impact	Screened out
Estuaries	Not found within the zone of influence	No potential impact	No impact	Screened out
Mudflats and sandflats not covered by seawater at low tide	Not found within the zone of influence	No potential impact	No impact	Screened out
*Coastal lagoons	Not found within the zone of influence	No potential impact	No impact	Screened out
Large shallow inlets and bays	Not found within the zone of influence	No potential impact	No impact	Screened out
Reefs	Not found within the zone of influence	No potential impact	No impact	Screened out
Perennial vegetation of stony banks	No calcareous fens located within the zone of influence	No potential impact	No impact	Screened out
Vegetated sea cliffs of the Atlantic and Baltic coasts	Not found within the zone of influence	No potential impact	No impact	Screened out
Salicornia and other annuals colonizing mud and sand	Not found within the zone of influence	No potential impact	No impact	Screened out
Atlantic salt meadows (Glaucopuccinellietalia maritima)	No present within the zone of influence	No potential impact	No impact	Screened out
Bottlenose Dolphin Turstrops truncatus	Not present within zone of influence	No potential impact	No impact	Screened Out

Otter <i>Lutra Lutra</i>	Otters using the River Feale. Tracks, spraint and holt present in scrub/brush vegetation in middle of wet-will-aldersh woodland on north bank of river. The holt is over 200m from proposed works.	No direct impact on otter holt. Disturbance to otter during construction is temporary in nature and not considered significant. Works are permitted in day time hours only which will minimise the impact on otter foraging and movement. Method statement will minimise the risk of impact on prey items in the River Feale for otters.	No impact	Screened out
Mediterranean salt meadows ( <i>Juncetalia maritima</i> )	Not present within zone of influence	No potential impact	No impact	Screened out
Watercourses of plain to montaine levels with <i>Ranunculon fluitantis</i> and <i>Callitriche-Butrachion</i> vegetation	No habitat identified within the study area of the main channel or breach channel	No potential impact	No impact	Screened out
Molina meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> )	Not present within zone of influence	No potential impact	No impact	Screened Out
*Alluvia forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> )	Wet willow alder ash woodland broadly corresponding to the Annex I habitat located bordering the River Feale on the north and south bank of main channel.	No direct loss of habitat as a result of the proposed works. Potential positive impact as flows are redirected to the main channel thus preventing loss of water to this habitat should water flows continue to be directed to the breach channel (current scenario).	No current impacts on alluvial woodlands. No in combination impact.	Screened Out

## 6. DISCUSSION AND CONCLUSION

The first stage of the Appropriate Assessment process, screening, has been completed in compliance with the relevant European Commission and national guidelines. The potential impacts during the construction and operation of the proposed Abbeyfeale Emergency Works on the River Feale has been considered in the context of Natura 2000 sites, their Qualifying Interests and conservation objectives within the zone of influence.

In consideration of the above, Screening for Appropriate Assessment has determined that there will be no potential impact on the qualifying interests for the Lower River Shannon SAC due to the location and scale of the development in relation to qualifying interests and with appropriate environmental actions and best practice construction mitigation measures in place to prevent any significant contamination of surface waters.

This report returns a conclusion that there is no potential for significant effects on the Natura 2000 site. As such the project can be screened out under the Habitats Directive as not requiring a Stage 2 Appropriate Assessment.