

# Removing a weir and renaturalising the Iton River on the Plis industrial site in Hondouville

## The operation

Category	Restoration
Type of operation	Partial or total weir/dam removal
Type of environment	Lowland rivers
Issues at stake (water, biodiversity, climate)	Good habitat status, reduction of flood risks

Start of operation	2014
End of operation	2014
Length of river affected by the works	200 m

## River in the restored sector

Name	Iton River
Distance to source	126 km
Mean width (bankfull width)	17 m before works 17 m after works
Mean gradient	0.2 ‰
Mean discharge	Appr. 3.7 m <sup>3</sup> /s

## Environment and pressures

- Restore river continuity in the Iton.
- Renaturalise the Courtieux stream.
- Reduce the risks of accidental water pollution and of flooding.

## Environment and pressures

The Iton River springs from the Perche hills and is a 132-kilometre left-bank tributary to the Eure River. The river basin, approximately 1 200 km<sup>2</sup> in size, is predominantly rural with cereal farming on the plateaus and the head of the basin devoted to livestock farming. The river is heavily impacted by human activities with numerous modified reaches and over 220 hydraulic installations, including numerous mills. Most of the installations block sediment transport and the passage of fish. The Iton is a salmonid river, home to brown trout, grayling, bullheads, stone loach, eels and brook lamprey.

The industrial site in Hondouville was constructed in the beginning of the 1900s as a textile factory. A weir was built across the Iton with a bypass leat leading to a mill, called the Plis mill. In 1977, the paddle-wheel disappeared, but the hydraulic installations remained, even

## The localisation

Country	France
River basin	Seine-Normandie
Region(s)	Normandie
Departement(s)	Eure
Commune(s)	Hondouville, Amfreville-sur-Iton



Regulatory context Not applicable

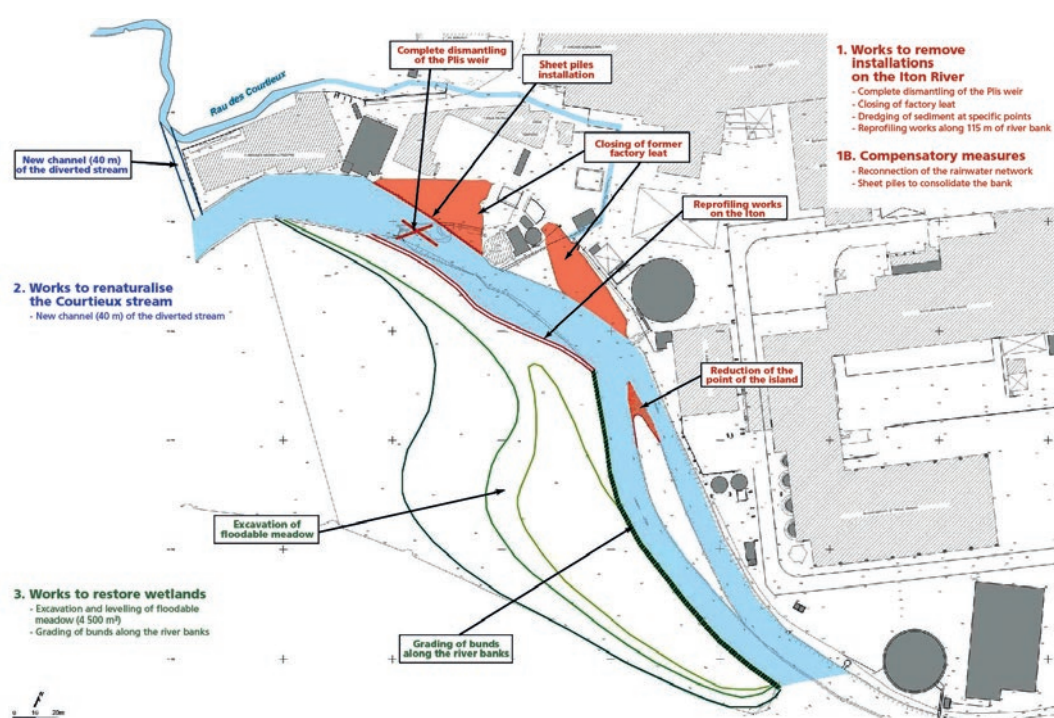
## European directive references

Water-body ref.:	FRHR259
Natura 2000 site ref.:	Not applicable
ROE code of the obstacle	70747 and 3872

The Plis factory around 1910.



The Plis weir in 2014.



though they no longer served any purpose. The factory, owned by SCA Tissue France, now produces paper and sanitary cotton products.

The outdated Plis weir measured 1.1 metres high with the gates closed and 0.8 metre with the gates open. It caused numerous malfunctions in the river, including a break in sediment transport, an obstacle to the passage of trout and eels, degraded water quality, a more uniform flow pattern and siltation of habitats (an impounded reach extending 600 metres).

In addition, the Courteux stream flowed through the industrial site, itself located in a floodable zone, before reaching the Iton. In the lower section, the stream runs through a culvert, but due to its poor positioning, the stream is clogged with sediment over more than 350 metres, with as a result a break in continuity between the stream and the river.

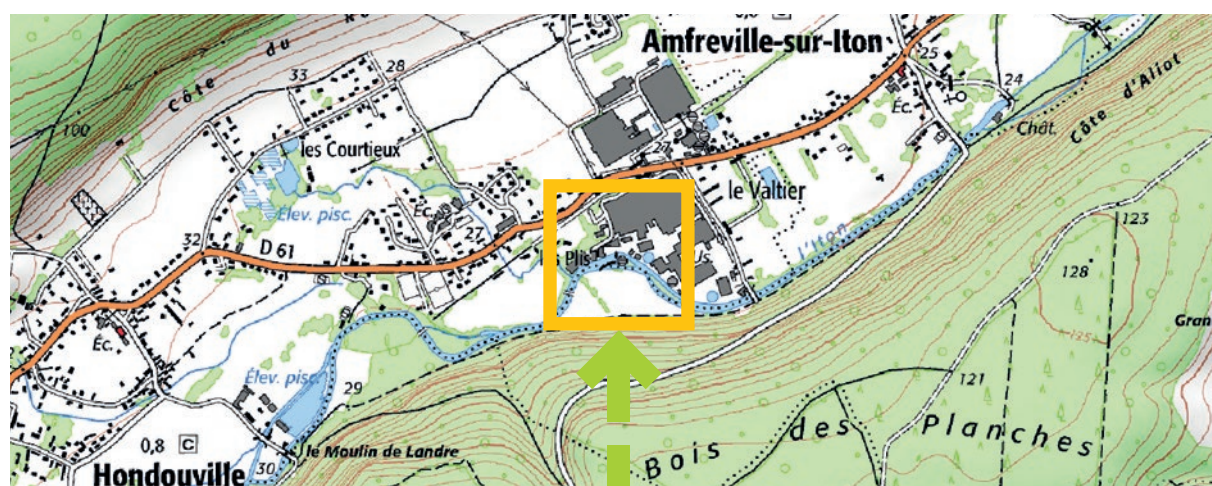
Finally, there was a risk of accidental pollution due to the position of the Courteux stream and the factory leat in the middle of the industrial installations and no means to control the water entering or exiting them. The position of the factory wastewater-treatment plant, on an island in a floodable zone, was also a problem.

## Opportunities to act

The river board for the lower Iton (Saviton) is in charge of protecting and managing the lower stretch of the Iton River and its tributaries. The board wishes to undertake restoration work to improve river continuity. In the framework of preparing the multi-year restoration and maintenance plan, an assessment of the river basin was carried out in 2003-2004. Among other surveyed hydraulic installations, the assessment concluded that the Plis weir was outdated and an obstacle to sediment and biological continuity.

Saviton informed SCA Tissue France on the problems caused by the Plis weir, on the possibility of a public subsidy to remove the structure and proposed providing assistance to the industrial company during the operation. SCA Tissue France had no further use for the weir and wanted to avoid incurring costs for its maintenance, consequently, it accepted the idea of removing it.

The fact that the company owned the meadow opposite the site was a chance to restore the flood storage zone and to reduce the flood risk for the factory. In addition to removing the Plis weir, the final project included filling in the factory leat to improve access to the wastewater-treatment plant, bypassing







The meadow after restoration of the wetland (2014).

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the Courtieux stream to avoid the industrial site and the creation of a wetland in the meadow opposite the site. SCA Tissue France decided in favour of the project given that it was economically beneficial for site operation and corresponded to its environmental values.

### ■ Works and developments

The works took place in three phases.

The gates, concrete glacis and spillway were removed. The factory leat and part of the low-water channel upstream of the weir were dredged. The island downstream of the factory channel was eliminated to enable a distribution of flows similar to that prior to the works.

The future riverbed was dug out, the banks were graded to a slight slope and replanted. The former bed was filled in with landfill from the new bed. The bunds along the banks were removed to create a wetland and the section of the lot along the Iton was cleared.

The factory channel was filled in with the landfill from the meadow. The banks along the industrial site were reinforced with sheet piles to protect the buildings. The outlet of the wastewater-treatment plant, originally in the factory channel, was extended to the Iton.

### ■ Regulatory approach

- The works were authorised in accordance with the Water law.

### ■ Post-restoration management

The meadow is used for extensive grazing. Mobile, electric fences are used to protect the newly created banks of the Iton.

### ■ Monitoring

The pre works monitoring done in 2012 dealt with the biological (benthic macroinvertebrates) and morphological (topographic surveys of the long and cross profiles, sedimentation levels) compartments.

The first survey after the works in 2015 (n+1) dealt with the morphological compartment (topographic surveys of the long and cross profiles, water depths, substrates and current velocities) at four points along the riverbed and the flood plain, in a zone stretching 400 metres upstream and downstream of the former weir. The monitoring programme is scheduled to continue for two more years (n+2 and n+3).

### ■ Outcome of the project and outlook

This project opened and restored 800 metres of the Iton (though there remain five structures downstream and 200 upstream) and restored 600 metres of favourable habitats for category-1 species thanks to the elimination of the impounded reach. Sediment transport was previously blocked by the weir, but has now been restored. The restoration of the meadow provides the river with a flood expansion zone and would appear to be a potential habitat for the yellow-bellied toad, whose presence has been observed near the site.

One year after the works, the hydromorphological studies on the Iton at the site of the former weir revealed a modification in the long profile with a drop of 25 centimetres in the water level upstream and an increase of 25 to 30 cm downstream. In economic and flood-security terms, the project is beneficial for SCA Tissue France in that the firm succeeded in protecting its installations from the river and avoided maintenance costs. The risk of accidental pollution was reduced by returning the Courtieux stream to the talweg and by filling in the factory channel.

However, due to the small amount of available land, the new bed of the Courtieux stream is straight and the banks could not be planted as planned.

The drop in the water level indirectly damaged the foundations of the industrial installations along the river by exposing them to freezing temperatures.

That being said, SCA Tissue France and its partners consider the project a success because it met both the economic and ecological objectives, thanks to the technical support from Saviton and the implication of the industrial company.



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Filling in the factory leat following the removal of the Plis weir (2014).

## Costs

In euros ex. VAT

Preliminary study	35,000 €
Purchase of land	Not applicable
Works and developments	314,000 €
Monitoring studies	10,000 €
Promotion	Not applicable
<b>Total cost of project</b> (not including monitoring)	<b>359,000 €</b>

### Financial partners and funding:

Seine-Normandie water agency (80%), SCA Tissue France (20%)

### Technical partners:

Saviton, Seine-Normandie water agency, Eure departmental territorial and maritime agency, Onema, Haute-Normandie regional environmental directorate, Egis Eau consulting firm, SETHY company



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## Promotion of the project



Following the works, in 2014 SCA and the Seine-Normandie water agency produced a film on the project. A visit to the site was also organised for local residents, elected officials as well as the technical and financial partners.



The Hondouville site was awarded the SCA Europe Excellence prize 2014, the "Caring for people and nature award".



In the beginning of 2015, SCA published a press release that generated articles in the local, national and professional press, as well as an interview for an economic show on television.



- Film on the project at SCA France:  
<http://www.sca.com/fr/france/Medias/Actualites/2014/Renaturation-Iton/>
- SAGE de l'Iton - PAGD et règlement. 2012, 112 p.
- Saviton. Article on the project to renaturalise the Iton River. 4 February 2015.  
<http://saviton.net/2015/02/04/etude-de-renaturation-site-industriel-hondouville/>
- Étude d'effacement d'ouvrage et de renaturation de cours d'eau sur le site industriel de Georgia Pacific, Phase 3, Programme de travaux. Egis Eau, R. Fourier, août 2013, 38 p.

Project owner



SCA Tissue France

Assisting the project owner:  
Saviton

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