SUBJECT 4
WATER INTAKE

Sea water requirements

The Flamanville 3 unit, like the existing units in use, pumps water from the Channel at a pumphouse located alongside the intake channel. Among other things, the pumped seawater is used to cool the condenser and auxiliary systems. Furthermore, it is used for the production of demineralized water by desalinising the sea water thanks to the construction of a desalinising station in the framework of the building of the new production unit. To avoid corrosion and deposits in the primary and secondary systems, a nuclear power plant needs chemically pure water.

The flow of sea water required is around 67 m^3/s for an EPR unit, because of its power and its greater efficiency, and 157 m^3/s for the entire Flamanville site with three production units.

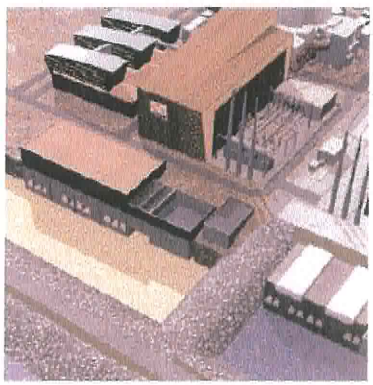
Fresh water requirements

River water is also drawn from the Diélette, the Petit Douet and the Grand Douet. This water is used as industrial water while the plant is operating (floor washing, spraying of valve cable glands) as well as the building site's water supply (concrete production, crushing unit). It is also used in the production of demineralized water for units 1 and 2 prior to the commissioning of a seawater desalination unit planned in 2008. The intake of fresh water for the production of demineralized water will then be limited to the periods in which the nuclear units are restarted, when there is a need for more water, and times during which the desalination unit is unavailable. The flow of fresh water drawn from each river is below 0.05 m^3/s.

The Flamanville site is supplied in drinking water through two pipes connected to the public network managed by les Pieux community of municipalities.

Impact of the intake of water from the Channel

Adding an additional production unit on the site does not impact on the intake channel, which was originally designed for four nuclear production units and was therefore meant to cater for the new EPR reactor to be built.



EPR unit pumphouse project

- **Effect on hydrology**

As water is drawn from a strong hydrodynamic area, the velocities linked to suction (even heightened following the introduction of the EPR unit) will be negligible in relation to the velocity of the tidal currents and will not impact on hydrology.

- **Effect on sediments**

Due to strong hydrodynamics off the Flamanville Headland, the sea bottom is mainly composed of coarse rocks and sediments. There is only a fine layer of sand on the coastline. In this area, sediments are shifted from the south to the north.

Changes to the sea bottom in front of the seawalls, which could occur when water is drawn from the intake channel, can only be highly localised. In actual fact, no changes to the sea bottom in the area have been observed since the platform and the seawalls were constructed 20 years ago.

Impact of the intake of fresh water

When the intake of fresh water is necessary (for example, before the desalination unit is installed), the maximum intake rate that is currently authorized will be enough to meet the needs of the building site or the future EPR unit cumulated with units 1 and 2. Furthermore, the existence of a minimum regulated flow in the rivers means the impact on the ecosystem is limited by guaranteeing a minimum flow that ensures the development of aquatic life. The fresh water requirements of an EPR reactor do not significantly modify the aquatic ecosystem.

Measures foreseen to eliminate, reduce and if possible compensate the effects of Flamanville 3

Regarding seawater, all of the cooling water drawn from the sea is returned to it.

Regarding fresh water, water recycling is resorted to as often as possible, both during the EPR construction and operating phases, to optimise consumption. Furthermore, the choice of a seawater desalination unit contributes to reducing the intake of fresh water and preserving the water supply. The residual rates of fresh water drawn from rivers undergo real-time checks by EDF which respect the minimum regulated flows of the rivers.

☞ **TO FIND OUT MORE**, please see:

- ***Documents 6 Piece B - Chapters IV.1.2, IV.2.2, IV.2.3, IV.4.1.1, IV.4.2.1, IV.4.2.2**: Water requirements in operation*
- ***Documents 6 Piece B - Chapters V.3.3, V.3.4**: Building site water requirements*
- ***Documents 6 Piece C - Chapters I.2, II.4**: Marine and terrestrial hydrological reference state*
- ***Documents 6 Pièce E - Chapters III.1.1, III.1.2.4**: Impact on marine hydrology and sedimentology*
- ***Documents 6 Pièce E - Chapters VI.1.2.1, VI.2.1.6, VI.2.2.1**: Measures foreseen regarding the marine ecosystem and the terrestrial ecosystem*