

令和元年 7 月 12 日

仏国「PLAN DE PRÉVENTION DES RISQUES NATURELS D'INONDATION
COMMUNE DE BOUJAN-SUR-LIBRON
RÈGLEMENT」
(PLAN FOR PREVENTING NATURAL RISKS OF FLOODING
COMMUNE OF BOUJAN SUR LIBRON
REGULATION) 仮英訳

http://www.boujansurlibron.com/wp-content/uploads/2018/05/PPR_reglement.pdf (参
照：2019/06/28)

国土技術政策総合研究所 河川研究部 水害研究室
板垣 修
生江 恵美子

* この資料は Google 翻訳によって、仏語から英語に機械英訳がなされています。一部の
単語については辞書で調べて補足をいたしました。

表紙

Freedom, Equality, Fraternity

France Republic

Prefect of Hérault

Departmental Direction of
Territories and Sea Service Water,
Risks and Nature

PLAN FOR PREVENTING NATURAL RISKS OF FLOODING

COMMUNE OF BOUJAN-SUR-LIBRON

REGULATION

Procedure	Prescription	Public survey	Approval
Elaboration	06/12/2011	from 07/03/2016 to 07/04/2016	05/31/2016

2 頁

T ABLE OF MATERIAL

Lexicon	3
List of acronyms and abbreviations	8
Part One: Scope of the Regulation – General Provisions	9
1. Scope and effects of the PPRI	10
2. The zoning of the PPRI	11
2.1. Danger zones	11
2.2. Precautionary zones	11
2.3. Alea, issues and risks	11
3. General measures of prevention, protection and safeguard	15
3.1. Prevention measures	15
3.2. Protection measures	15
3.3. Safeguarding and mitigation measures	16
4. General provisions for land use	16
4.1. Careers	16
4.2. Work on the beds of water courses and water surfaces	17
4.3. Control of rainwater and runoff.	17
4.4. Special provisions for agricultural or forestry land occupation	18
4.5. Constructive provisions required for new projects located in a flood zone	18
4.6. Campsites	19
4.7. Deposits and embankments	20
4.8. Activities requiring proximity to the sea, pond or waterway	20
5. Conventions	20
Part Two: Regulatory Provisions Applicable in Each Zone	22
1. Red Zones of Danger: Rn, Ru	23
2. Red Zone of Precaution: Rp	29
3. Blue Precautionary Zone: Bu	32
4. Precautionary Zones: Z1 and Z2	37
5. Red and Blue Zones Ru, Rn, Rp, Bu: Prevention, Protection and Safeguard Measures...	39
6. Red and Blue Zones Ru, Rn, Rp, Bu: Mitigation Measures	43

3 頁

Lexicon

The introductory report contains a lexicon intended to clarify certain terms and their use in this document. It is taken again exhaustively below:

Aléa: probability of occurrence of a given natural phenomenon, intensity and occurrence in a given territory. The hazard is weak, moderate, strong or very strong, depending on the water level, the flow velocity and the submersion time compared to the reference phenomenon.

Landing: alluvium (sediments such as sand, mud, clay, silt, gravel) transported by running water, and settling in the bed of the course of water or accumulating at break points.

Watershed: territory drained by a watercourse and its tributaries.

Cofferdam: removable flood barrier.

Flood expansion field: non-urbanized or poorly urbanized sector allowing the temporary storage of flood waters.

Change of destination: transformation of a surface to change its use.

- ✓ **change of destination and reduction of vulnerability**: in the regulation, it is sometimes indicated that works are allowed under reserve not to increase the vulnerability. Will be considered a change of destination increasing vulnerability, a transformation that increases the risk, such as the transformation of a housing rebate.

Article R 123-9 of the Town Planning Code distinguishes nine building classes grouped in this document into three classes according to their vulnerability:

a / dwelling, hotel accommodation, buildings and installations necessary for public services or of collective interest including premises night sleep,

b/office, commerce, crafts, industry, constructions and installations necessary for public services or of collective interest not including no overnight accommodation,

4 頁

c/agricultural or forestry buildings, buildings with warehouse function (by extension garage, warehouse, shed, annex), constructions and installations necessary for public services or of collective interest strictly devoted to agricultural uses, forest or warehouse.

The following hierarchy, in descending order of vulnerability, can be proposed: a > b > c

For example, the transformation of a return to commerce, from an office to a home, goes in the direction of increasing vulnerability, while that the transformation of housing into

commerce reduces this vulnerability. The distinction of types of buildings is based on the vulnerability to flood risk of the people who occupy them, and between as part of managing the crisis for potential evacuation.

To note :

- ✓ in terms of vulnerability, hotel-type accommodation is comparable to housing, while a restaurant is the business activity.
- ✓ Transformation of housing into multiple dwellings increases vulnerability.

NGF rating: altimetric level of a land or submersion level, attached to the General Leveling of France (IGN 69).

PHE rating (highest water level): NGF rating reached by the reference flood.

Flood: a rapid and temporary increase in the flow of a watercourse, resulting in an increase in the water level and its speed flow.

Reference flood: it serves as a basis for the development of the PPRI and corresponds to the calculated centennial flood or the strongest historical event known, if it is superior.

Centennial flood : statistical flood that has a 1 in 100 chance of occurring each year.

Exceptional flood : flood determined by hydrogeomorphological method, likely to occupy the entire major bed of the watercourse.

5 頁

Historical flood : highest known flood.

Flow rate: volume of water passing at a given point in one second (expressed in m^3 / s).

Footprint: trace on the ground or vertical projection of the volume of the construction, including overhangs and overhangs.

Issues: people, goods, activities, means, heritage likely to be affected by a natural phenomenon.

Equipment of general interest: infrastructure or superstructure intended for a public utility

(drinking water supply including drilling, sanitation, sewage treatment, networks, public passenger transport equipment, protective dams close to the premises densely urbanized,...). Are not considered as equipment of general interest the equipment receiving from the public, even worn by a community and / or intended for public use (pool, gymnasium, school building, ...) or urbanization operations even though they have been the subject of a declaration of public utility.

Strategic establishment: Construction, building, development necessary for crisis management (fire stations, gendarmerie, etc.).

Vulnerable establishment: Construction, building, development, thus defined either because they host vulnerable populations, young, elderly or dependent (nursery, day-care center, school, ventilated center, retirement home and service seniors, specialized facility for disabled people, hospital, clinic ...), or by the nature of their activity (classified facilities for the protection of the environment likely to aggravate the crisis, or hinder the means implemented in the management of the crisis: concept of on-hazard).

Extension: increase of the footprint and / or floor area.

Water Height: The difference between the PHE rating and the TN rating.

6 頁

Hydrogeomorphology: study of the hydraulic functioning of a river by analysis and interpretation of the valley structure (photo-interpretation and field observations).

Flood: Temporary flooding by water of land that is not submerged in normal times. This notion covers floods due river floods, mountain streams and intermittent Mediterranean rivers and floods due to the sea in coastal areas

Mitigation: action to mitigate the vulnerability of existing assets.

Construction modification: transformation of all or part of the existing surface, without any increase in footprint or floor area. This assumes not to touch either the building volume or the floor area, otherwise the project will be expanded.

Opening: any surface through which water can enter a building (door, window, bay windows, etc.).

Living floor: all living space or arranged to accommodate commercial, craft or industrial activities. In Warehouses, garages, forestry or agricultural operations are excluded.

Risk Prevention Plan: a document worthy of public utility, it is annexed to the Local Town Planning Plan in order to guide the urban development of the municipality outside the flood zones. It aims to reduce damage during disasters (natural or technology) by limiting urbanization in risk areas and reducing the vulnerability of already urbanized areas. It is the essential tool of the state in terms of risk prevention.

For example, there are:

-the **Flood Risk Prevention Plan** (PPRI)

-The **Forest Fire Risk Prevention Plan** (PPRIF)

-the **Ground Movement Risk Prevention Plan** (PPRMT): landslides, falls of blocks and landslides, shrinkage-swellings of clay, subsidence or collapse of cavities, muddy flows.

7 頁

Prescriptions: local rules to apply to a construction in order to limit the risk and / or the vulnerability.

Prevention: all the measures to be implemented to prevent, if not reduce, the impact of a foreseeable natural phenomenon on people and property.

Project: any type of structure, development or agricultural, forestry, craft, commercial or industrial operation, and in particular any new construction, including extensions, but also existing intervention projects such as modifications or changes destination,

Property: all contiguous parcels belonging to the same owner.

Floor area: floor area closed and covered under a ceiling height exceeding 1.80 m.

TN (natural land): natural land before works.

Vulnerability: potential consequences of the impact of a hazard on issues (populations,

buildings, infrastructure, etc.). Essential concept in crisis management determining the likely reactions of populations, their ability to cope with the crisis, the need for evacuation, etc.

Refuge area: habitable covered floor level accessible directly from inside the building located above the reference elevation and provided with access to the roof allowing evacuation.

8 頁

LIST OF ACRONYMS AND ABBREVIATIONS

DDRM: Departmental Dossier on Major Risks

DDTM: Departmental Direction of the Territories and the Sea

DICRIM: Communal Information Document on Major Risks

DREAL: Regional Directorate for the Environment, Planning and Housing

DUP: Declaration of Public Utility

EPCI: Public Institution of Intercommunal Cooperation

ERP: Institution Receiving Public

FPRNM: Major Natural Risk Prevention Fund

HLL: Light Houses of Leisure

IAL: Information Buyers Tenants

PCS: Municipal Protection Plan

PHE: Higher Waters

PLU: Local Urbanism Plan

PLUI: Local Intercommunal Urban Plan

POS: Land Use Plan

PPRI: Flood Risk Prevention Plan

RSD: Departmental Health Regulations

SAGE: Diagram of Development and Management of Waters

SDAGE: Master Plan of Development and Management of Waters

SPC: Flood Forecasting Service

TN: Natural Land

9 頁

PART ONE: SCOPE OF REGULATION - PROVISIONS

GENERAL

1 0 頁

This Natural Flood Risk Prevention Plan (PPRI) applies to the municipality of BOUJAN-SUR-LIBRON. This procedure was prescribed by prefectural decree no. 2011-OI-2592. It may possibly be reviewed if there is a change in the knowledge of the risk or the local context, or be subject to a modification according to the provisions of the Environmental Code.

1. CHAMPS OF APPLICATION AND EFFECTS OF PPRI

The PPRI aims, pursuant to Article L.562-1 of the Environment Code, to prohibit human settlements (housing, institutions public, economic activities) in the most dangerous areas where the safety of persons cannot be guaranteed and to other flood zones. The PPRI also aims to prevent an increase in risk by ensuring the preservation of flow capacities streams and their flood-expansion fields. On the one hand, it provides for new projects and on the other hand measures reduction of vulnerability, called mitigation, on existing buildings.

The purpose of the PPRI is to ensure the safety of people by integrating flood risk as a development constraint, while taking into account the urban development of the municipality.

Its development therefore aims to meet three fundamental objectives in risk management and the reduction of vulnerability:

- the preservation of human lives,
- the reduction of the cost of damages on goods and activities located in the flood zone,
- the preservation of the balance of natural environments, maintaining their capacity for expansion and the free flow of water, through a control of urbanization in the flood zone and new embankments.

Once elaborated and submitted to the public inquiry, the document is approved by prefectural decree. The PPRI is worth public utility since its publication (article L562-4 of the Environment Code) and must be annexed to the Local Urbanism Plan (PLU) of the municipality, when the latter has, or the Local Intercommunal Urban Plan (PLUI) of the competent Public Inter-municipal Cooperation Institution (EPCI), when the latter has it, within three months in accordance with Article L126-1 of the Town Planning Code.

Failure to comply with the rules imposed by the by-law is sanctioned by the Town Planning Code, the Penal Code and the Insurance Code. Last determining the conditions of compensation for victims of natural disasters.

Finally, the approval of the PPRI implies the implementation by the municipality of regular preventive information to residents, elected representatives and actors, as well as the constitution of a Communal Plan of Safeguarding (PCS).

11 頁

2. THE ZONING OF PPRI

Two major types of risk areas are defined for the reference hazard (defined in 2.3 below).

- The **zones exposed to the risks**, qualified in this document of **zones of danger**, are constituted zones of **strong hazard** for the hazard of reference.
- The **areas that are not directly exposed to the risks**, described in this document **precautionary zones** consist on the one hand, areas of **moderate hazard** for the reference hazard and, on the other hand, areas affected by **a flood greater than the flood of reference**, where the probability of flooding is low, or even zero, but where developments are likely to increase the risk, in particular on the flood zones located downstream.

2.1. Danger zones

These are the areas exposed to a strong hazard for the reference hazard. They group:

- the **Red Ru zone**, a floodable area subject to a strong hazard for river overflow, where the stakes are high (urban area).
- the **Red Rn zone**, a floodable area subject to a high hazard for river overflow, where the stakes are moderate (natural area).

2.2. Precautionary zones

On the one hand, these are areas with a low exposure to the reference hazard, which it is desirable to preserve in order to leave the flow of water free and not to reduce their expansion field and, on the other hand, areas not directly exposed to the reference hazard, where aggravate the existing risk and, if necessary, provoke new ones in the danger zones. They group:

- the **Blue Bu zone**, a floodable area subject to a moderate hazard where the stakes are high (urban area).
- the **Red Zone Rp**, a floodable area subject to a moderate hazard where the stakes are moderate (natural area).
- Precautionary zones Z1 and Z2, areas not flooded by the reference hazard, composed of the potentially residual zone Z1 flooded by an exceptional flood and zone Z2 which

concerns the rest of the municipal territory, not subject to the reference flood or the exceptional flood.

12 頁

2.3. Alea, issues and risks

➤ **The reference hazard for the fluvial flood risk** corresponds to the highest value reached by the historical flood or the centennial flood determined by statistical method. It is determined from the criteria of flow velocity and water height, and qualified according to thresholds, high or moderate.

➤ **Moderate issues** cover non-urbanized areas at the time of writing and therefore include agricultural areas, natural areas and forest areas in accordance with the terms of Article R.123-4 of the Town Planning Code and the areas to be urbanize undeveloped.

The strong issues cover urbanized areas at the date of preparation of this document as well as areas or parts of areas urbanization already developed.

➤ **Risk** is the crossroads of hazards and issues

13 頁

Table 1: Determination of the intensity of the fluvial flood hazard

Intensity of the hazard river flood	Characteristics
Strong	$H \geq 0.5 \text{ m}$ or $V \geq 0.5 \text{ m / s}$
Moderate	$H < 0.5 \text{ m}$ and $V < 0.5 \text{ m / s}$
Residual	$H > 0$ and $V > 0$
No	$H = 0$ or $V = 0$

With H: Water Height and V: Flow Speed

Table 2: Determining the intensity of the stakes

Issues	Characteristics
Strong	Urbanized or urbanized areas already developed
Moderate	Areas not urbanized at the time of development of the PPRI including natural areas, forest, even with scattered dwellings and undeveloped urbanization areas

Table 3: Classification of Risk Areas (Flooding)

Alea	issues	Strong (urban areas)	Moderate (natural areas)
Strong	Overflow flood of	Danger zone Red Ru	Danger zone Red

	stream		Rn
Moderate	Overflow flood of stream	Precautionary zone Blue Bu	Precautionary zone Red Rp
Residual	Hydrogeomorphological limit of the flood zone by overflow of watercourses	Precautionary zone Z1	
No	Beyond the limit hydrogeomorphological of the flood zone overflow stream	Precautionary zone Z2	

15 頁

3. GENERAL MEASURES OF PREVENTION, PROTECTION AND SAFEGUARD

These measures aim at the preservation of human lives by actions on the phenomena or the vulnerability of people and goods. Some are public authorities within the scope of their powers, others are the responsibility of individuals. They concern both future construction, development and activity projects, as well as existing assets and activities.

3.1. Prevention measures

They aim to reduce the impact of a phenomenon on people and goods, to improve the knowledge and perception of risk by populations and elected officials and to anticipate the crisis. To this end, several provisions can be made, such as:

- the realization of specific studies on hazards (hydrology, hydraulic modeling, hydrogeomorphology, atlas of flood zones, etc.),
- the establishment of a monitoring and flood warning system,
- the development of a crisis management plan at the departmental and communal levels, as foreseen in the SCP,
- the implementation of public information meetings on risks, the development of information documents such as DICRIM, etc.

3.2. Protection measures

They aim to reduce hazards by building structures in the most exposed and vulnerable sectors. To this end several provisions can be made, such as:

- the realization of works intended for the reduction of the hazard,
- retention basins in the runoff areas,
- protective dikes or containment systems to protect densely urbanized areas,

- flood-arresting dams to "temporarily retain part of the flow of the flood and then gradually release the corresponding volume, which reduces the effects of the flood on the downstream zone,
- hydraulic installations.

16 頁

Note: Owners or managers, public or private, of protection dikes in highly urbanized areas must comply with the current regulations on the safety of hydraulic structures (decree No. 2007-1735 of December 11, 2007 relating to the safety of the structures and Decree No 2015-526 of 12 May 2015 on the rules applicable to works constructed or laid out with a view to preventing floods and hydraulic safety rules applicable at the date of approval of the PPRI).

3.3. Safeguarding and mitigation measures

Article L.562-1 of the Environmental Code defines in II (3) and (4) the safeguarding and mitigation measures prescribed in the PPRI as follows:

"II. The purpose of these plans is, where necessary:

[...]

No. 3 To define the prevention, protection and safeguard measures that must be taken, in the zones mentioned in No.1 and No.2, by the public authorities within the scope of their powers, as well as those that may be incumbent on individuals;

No.4 To define, in the zones mentioned in No.1 and No.2, measures relating to the development, use or exploitation of buildings, existing planted or cultivated areas on the date of plan approval to be taken by the owners, operators or users. "

Thus, **the safeguarding measures** group together all the planning and programming **measures** while the **mitigation measures** generally refer to all interventions on the existing (buildings, works, goods). The details of these measures, their mandatory or recommended nature and, for the mandatory measures, the completion time are developed in the end second part of this Regulation.

4. GENERAL TERRITORIAL USE INSTRUCTIONS

In addition to the specific provisions listed on the following pages for existing projects and racks in the danger and precaution, several general rules of land use apply throughout the territory of the municipality.

17 頁

4.1. Careers

Applications for the opening and exploitation of quarries, sand pits or gravel pits must be made to the Regional Directorate of Environment, Planning and Housing (DREAL).

These quarries, sand pits or gravel pits must comply with the guidelines of the Master Plan for Water Development and Management. (SDAGE) and the Plan of Development and Management of Waters (SAGE) if they exist and with the Diagram Departmental Careers, tool of aid to the decision of the Prefect for the issue of quarry permits.

4.2. Work in stream beds and water surfaces

The right-of-way of the minor beds of watercourses and, in general, all water surfaces are subject to a non-servitude non constructible.

Embankments are also not permitted. All works, roadworks, installations and activities in the bed of watercourses may be subject to declaration or authorization under the water law in accordance with article R 214-1 of the Environment Code.

For all works related to riverine, it is advisable to refer to the orientations and the recommendations of SDAGE and SAGE.

4.3. Control of rainwater and runoff

In application of article L.2224-10 of the General Code of Territorial Collectivities, the municipality must, after public inquiry, delimit zones strategies to limit urban runoff:

- on the one hand, areas where it is necessary to limit the waterproofing of soils and ensure control of the flow and flow of water,
- on the other hand, the collection and storage areas, or even rainwater treatment areas when they bring to the aquatic environment pollution that may seriously affect the effectiveness of the sanitation systems.

In order to limit rain runoff, a communal rainwater drainage scheme is made mandatory and any urbanization operation shall provide for sufficient compensatory measures to allow retention of rainwater in the minimum proportion of 120 liters / m² water proofed.

Concerning the flow axes identified in continuous or discontinuous blue lines on the IGN (National Geographic Institute) SCAN 25® and not mapped in this PPRI, a strip of 20 meters on either side of these axes, which is not buildable and cannot be filled, is to preserve the flow of water and the stability of the banks. This influence can be specified according to the results of a hydraulic study conducted at the scale of the catchment area of the creek considered on the assumption of a 100-year flood. In this band, any work is nevertheless

authorized provided that it has no effect on floods.

18 頁

4.4. Special provisions for agricultural or forestry land occupation

- It is recommended to increase the wooded area by limiting clearing to reduce runoff volumes and spreading the effects.
- Special attention will be paid to cropping patterns and hedging that can lead to slowing down or increase the water storage capacity without creating obstacles to their flow.
- In accordance with the Environment Code, maintenance of the minor stream bed may be authorized either by selective deforestation or by removing landings.
- The maintenance of the banks by reforestation of eroded slopes and selective maintenance of riparian forest will be done in accordance with the guidelines of the SDAGE and SAGE.

4.5. Constructive provisions required for new projects located in a flood zone

The following non-exhaustive techniques are to be implemented under the responsibility of the contracting authority and its project manager in the framework of new constructions or work on the existing building, in a flood zone:

- The foundations, walls and parts of the structure below the PHE rating should have a watertight macaw on their upper part. The materials of these corrosion-sensitive structures should be treated with water-repellent or anti-corrosive products.
- Building foundations will be anchored in the ground to resist scour, settling or erosion.

They must be able to withstand the hydrostatic pressure.

- Finishing work (partitions, joinery, doors, etc.) and coatings (floors, walls, etc.) below the PHE rating will be made with materials insensitive to water, or properly treated.
- Authorized developments should not lead to the creation of stocks of products or valuables, vulnerable to water, underneath of the reference rating.
- The storage of polluting products, whatever their quantity or concentration, must be carried out in sealed and protected containers against the effects of a centennial flood. The nomenclature of these products is fixed by the law on classified installations and by the Departmental Health Regulations.
- Electrical equipment should be placed above the reference dimension, with the exception of depletion or pumping.

- Buried and unburied tanks and pressure tanks and all containers containing hydrocarbons, gas, fertilizers liquids, pesticides and, in general, all moisture-sensitive products, should be protected against the effects of centennial (put out of water or fixed and sealed).

19 頁

- Fencing and alignment planting should be designed to maintain maximum flow transparency.
- The external water, gas and electricity networks must have a decommissioning device or be entirely above the reference rating.
- The newly constructed sanitation networks should be watertight and equipped with check valves. The manholes will have to be locked.
- It will be necessary to avoid any development contributing to waterproof large areas, except to provide compensation ponds sufficiently sized and processes limiting runoff.
- In terms of rainwater, it is necessary to seek, subject to the constraints of the environment, the implementation of compensatory techniques to urbanization favoring the infiltration of rainwater on the spot and the slowing down of the flows (filter trenches, infiltration wells, tank floor, etc.)

4.6. Campsites

The creation of campsites and residential leisure parks (PRL) or the increase of the capacity of reception of existing ones are prohibited in zones red and blue.

The merging of perimeters of existing campsites is allowed, without increasing the number of sites or their capacity. The locations may be redeveloped within the perimeter provided that they do not aggravate their vulnerability, ie are not concerned by a stronger hazard.

Extension of the perimeters of existing campsites is allowed only in natural areas, without increasing the number of locations or their capacity of reception. As part of an extension and for existing campsites, the sites may be redeveloped within perimeter provided that they do not aggravate their vulnerability, that is to say in particular that they are not concerned by a stronger hazard.

In existing campsites or PRLs, work projects (swimming pools, fences, constructions, etc.) are subject to the requirements regulating these works.

4.7. Deposits and embankments

Deposits of materials and packaging likely to be washed away or to impede the flow of water

in case of flood are prohibited in zones red and blue. These include landfills, garbage and garbage dumps, and dangerous goods depots and storages or pollutants.

Flooding areas are also prohibited in all soil reclamation works, including embankments and dams, including rehabilitation, except if they are likely to protect densely urbanized or planned places in the context of equipment of general interest.

20 頁

4.8. Activities requiring proximity to water

Excluding dwellings, activities requiring proximity to water (port activities) are authorized in the flood zone. Conditions these activities are defined in the regulations of each zone.

5. CONVENTIONS

In order to be able to enact simple rules and the implementation of which presents the least possible difficulty, it is necessary to clearly define the altitude markers which will serve as wedges to the different prescriptions of the regulation:

- The TN rating of the land is the NGF level of the existing natural land before construction,
- The PHE rating is the NGF rating of the Highest Waters of the reference event, historic or centennial.
- The PHE + 30 cm rating is often used to define the layout of the surface of the 1st floor. This elevation of 30 cm is related to the uncertainty of mathematical models.

In the case where the PHE is not defined, the floor area will be wedged on a crawl space at 50 cm above the natural ground or the track. Access to the land when it is higher.

These altimeter ratings are established with reference to the General Leveling of France (NGF) which defines the official leveling of France Metropolitan.

Any application for authorization to work in a flood zone must be accompanied by a topographic survey attached to the General Leveling of the France (NGF) and trained by an expert surveyor with an altimeter accuracy of 0.01 m.

The sale or lease of real estate located in one of the red and blue zones, of high or moderate risk, must be the subject of an Information of Purchasers and Tenants (IAL).

In each zone, the PPRI regulation defines a set of applicable measures:

- new projects in different areas (prevention measures)
- existing developments in red zones and blue zones (mitigation measures)

21 頁

SECOND PART: REGULATORY CLAUSES APPLICABLE IN EACH AREA

22 頁

1. RED AREAS OF DANGER: R_n, R_u

- ✓ Danger zone R_n = flood zone of strong hazard moderate sector (non-urbanized sector)
- ✓ Danger zone R_u = flood zone of high hazard sector with high stakes (urbanized sector)

Objective: Not to increase the population, the building and the risks in these zones of danger, allowing only a minimal evolution of the building in urban areas to promote continuity of life and renewal urban.

23 頁

1. RED AREAS OF DANGER: R_n, R_u

Reminder: The red zones in the natural sector R_n and urban R_u have as their principle the prohibition of any new construction, including the prohibition establish new campsites and recreational parks, or increase the capacity of campsites or existing PRL and the prohibition any embankments, deposits or exhalations.

ARE FORBIDDEN: All new works and projects of any kind, except those referred to in the paragraph below (entitled "ARE ADMITTED").

ARE ALLOWED subject to the application of constructive measures defined in Section 4.5 of the 1st part:

- Routine maintenance and management work (facade treatments, roof repairs, painting, etc.),
- Creation of openings above the PHE coast,
- Creation of openings below the PHE rating provided that all openings are equipped with cofferdams,
- Pools at the natural ground level , provided that permanent marking of the pool is put in place to ensure the safety of people and rescue services,
- Modifications of existing constructions and / or their change of destination, subject to:
 - not to create additional housing,

24 頁

1. RED AREAS OF DANGER: Rn, Ru

- in zone Rn only, in case of change of destination, this change does not increase the vulnerability and improves security people,
- that the surface of the first finished floor is wedged on a crawl space at the minimum height PHE + 30 cm and that of the garage is set at minimum at the PHE rating. In the case where the PHE is not defined, the floor area will be wedged on a crawl space at 50 cm above the natural terrain or the land access road when it is higher.
- ◆ These rules remain valid in the case of a reconstruction , on the same property subject to:
 - that the demolition is concomitant with the application for a building permit,
 - that the construction is carried out on crawl space and is not located in the safety band of a dike or a structure of protection (100 times the distance between the maximum water level reached upstream of the structure and the natural terrain immediately behind him, without being less than 50 meters),
 - that the reconstruction is not consecutive to a flood disaster.
- ◆ Special cases of ground floors in Ru area: Their modification and / or change of destination will be authorized without raising the floor provided that:
 - that it is not intended for housing,
 - that the height remaining under ceiling, if the floor was raised according to the general rules, is less than 2 m,
 - that measures to reduce the vulnerability of the building itself are taken (installation of cofferdams, etc.),
 - that goods can be secured (putting out of water goods or goods inside, etc.),
 - that people are not endangered (closure in case of flood warning, etc.).

25 頁

1. RED AREAS OF DANGER: Rn, Ru

- The floor extensions of existing residential buildings (once from the date of application of this document), without creation of new housing, within the limit of 20 m² of footprint and the floor extensions of the buildings of activities, industries, existing businesses or agricultural properties (only once from the date of application of this Regulation) up to 20% of the right of way on the ground of the existing building, provided that:
 - the surface of the first finished floor is wedged on a crawl space at minimum height PHE + 30 cm and that of the garage is set at minimum at the PHE rating. In the case where

the PHE is not defined, the floor area will be wedged on a crawl space at 50 cm above the natural terrain or the land access road when it is superior to it,

- extension is accompanied by countervailing measures to reduce the vulnerability of the building itself (cofferdams at each opening under the PHE, etc.).
- ◆ Special case of buildings habitation No existing with an accessible floor: Their extension may be authorized on the same level as the existing ground floor, within a limit of 20 m² of provided that the extension is accompanied by compensatory measures to reduce the vulnerability of the building itself (cofferdam installation at each opening under the PHE, etc.).
- Upstairs extensions of existing buildings, without creation of housing or additional activity and provided that:
 - the extension is accompanied by compensatory measures likely to reduce the vulnerability of the building itself (cofferdam installation at each opening located below the PHE, etc.)
 - the footprint that may be generated is less than 20 m² for residential buildings or 20% of the footprint for residential buildings. Buildings of activities, industries, trade or agricultural.
- The collective farms ground parking vehicles (public or under the management of a corporation), provided they are reported as floodable and their evacuation is organized from a flood forecasting or warning device to the PCS, without the creation of embankments and provided that they do not create an obstacle to the flow of floods.
- The equipment of general interest, except strategic establishments (fire stations, gendarmerie, etc.), under

26 頁

1. RED AREAS OF DANGER: Rn, Ru

- constructed outside the safety strip of a dike or protective structure, except for crossing. This safety strip immediately behind the dike or protective structure and counted from the foot of the dike or the protective structure, will be equal to 100 times the distance between the maximum height of water reached upstream of the structure and the ground natural immediately behind him and can in no case be less than 50 meters.
- Buildings being made on crawl space and the surface of the 1st floor is arranged wedged at least the dimension PHE +30 cm,
- A hydraulic study will have to define the upstream and downstream consequences and determine their impact on the flow of floods. Compensatory measures to cancel their

effects on the floods and the conditions for their safety. It will also have to make appear the consequences of an exceptional flood (1.8 times the centennial flow), the consequences of a dike break or protective works and the arrangements made to protect them.

- This category includes works or improvements on existing structures and dikes of public safety, including embankment for close protection of densely urbanized areas, as demonstrated by an after obtaining regulatory approvals (Water Act and Declaration of Public Utility).
- All works of sports facilities and light equipment of animation and outdoor recreation without creation of embankments, underprovided that they do not create an obstacle to the flow of floods and that they are located outside the safety strip of a dike or a protective structure (100 times the distance between the maximum height of water reached upstream of the structure and the natural terrain immediately behind him, without being less than 50 meters). Is authorized the creation of floor area in the limit of 20 m² for a local related to these sports facilities, light equipment for animation and outdoor recreation, unmanned use of sanitary facilities, cloakrooms, local equipment, and provided that the surface of the floors is anchored to a crawl space at PHE + 30 cm when defined (in otherwise, it will be set at least 50 cm above the natural terrain or the access road when it is higher).
- The extension of the perimeters of existing campsites only in natural areas , without increasing the number of locations or their capacity of reception. In the case of an extension and for existing campsites, the sites may be redeveloped indoors of the perimeter provided that they do not aggravate their vulnerability, that is to say in particular that they are not concerned by a stronger hazard. The merging of perimeters of existing campsites is allowed, without increasing the number of sites or their capacity.
- Excluding dwellings, activities requiring the proximity of water (port activities) are authorized in the flood zone, under reserve that the surface of the first finished floor is wedged to the minimum of PHE + 30 cm.

27 頁

1. RED AREAS OF DANGER: Rn, Ru

- In zone Rn only, the creation or modification of fences and walls insofar as they allow a transparency to the flow (broad mesh, that is to say the smallest side is greater than 5 cm, on a wall of 20 cm high maximum).
- In Ru area only, the creation or modification of fences and walls exceeding 20 cm high

provided that it does not constitute a major obstacle to the flow of water. For this, at least 30% of their surface between the ground and the PHE's coast will have to be left transparent to the flows, in the form of barbican, openwork gates, wide mesh, etc.

- The realization of new underground dry networks provided they are not vulnerable to floods and subject to plugging sheaths.
- Creation of new wet networks (drinking water) provided that they are watertight and equipped with non-return valves.
- The realization of new wet networks (sanitation) provided that they guard against parasitic water inflow and that they have non-return valves. The manholes must be locked.

- The installation of photovoltaic power generation units in the form of sensor fields (called farms or photo-voltaic fields) , subject to:
 - that a hydraulic study based on the reference flood of this PPRI specifies, on the site of implantation, the heights of water and the flow velocities,
 - that the project is outside the safety strip of a dike or protective structure (100 times the distance between the height of maximum water reached upstream of the structure and the natural terrain immediately behind it, without being less than 50 meters) and in an area where the flow rate calculated in the hydraulic study is less than 0.50 m / s,
 - the underside of the panels is located above the PHE rating indicated in the hydraulic study and this PPRI,
 - that a specific safety note, guarantee the solidity of the anchoring of the posts (expert opinion) to resist the flow and the speed of a centennial flood studied in the hydraulic study and take into account the possible arrival of jams (traps by piles, ...).
- ◆ The technical buildings required for the operation of these units are allowed in this context, provided that their installations electrical systems are out of water and that the openings located under the PHE code are protected (cofferdams or watertight doors).

28 頁

2. RED AREA OF PRECAUTION: Rp

- ✓ Precautionary area Rp = flood zone moderate risk and moderate stakes (sectors not urbanized)

Objectives:

- Preserve non-urbanized flood zones,
- Prohibit any project likely to aggravate the existing risk or to provoke new ones,

→ Prohibit any construction promoting isolation of persons and / or inaccessible to help.

29 頁

2. RED AREA OF PRECAUTION: Rp

Reminder: The precautionary red zone in the Rp natural sector is based on the prohibition of any new construction so as not to expose it to a risk and to preserve the spate of flood expansions, including the prohibition of establishing new campsites and recreational parks, and the prohibition to increase the capacity of existing campsites or PRLs. All embankments, deposits or exhalations are also prohibited.

ARE FORBIDDEN:

All new works and projects of any kind, except those referred to in the paragraph below (entitled "ARE ADMITTED").

ARE ALLOWED subject to the application of constructive measures defined in Section 4.5 of the 1st part:

- Works and projects admitted in zone Rn
- Greenhouses needed for agricultural activity , subject to:
 - the applicant is the principal operator. He will have to provide his AMEXA affiliation and the parcel survey.
 - that the flow of water be taken into account:
 - either by ensuring total transparency by a device allowing the free flow of water inside the greenhouses,
 - either by respecting the following implantation rules: the width should not exceed 20 m, the largest dimension will be implanted in the main flow direction, a minimum space of not less than half of the width of the right-of-way shall be maintained so as to separate the modules in the direction of the width and 10 m in the longitudinal direction (direction of the current).

Example: to plant four greenhouses each 9.60 m wide, it will be possible to join them two by two, (each module will therefore be 19.2 m right of way), leaving 9.60 m free between the two modules.

30 頁

2. RED AREA OF PRECAUTION: Rp

- The construction or extension of agricultural storage buildings necessary for the

agricultural operation, excluding any residential construction, any building project likely to accommodate the public (sales vault, reception office, etc.) or to shelter animals, all projects concerning an agro-food processing activity (private cellar, cheese factory, etc.), in the maximum limit of 400 m² of footprint, subject to:

- the applicant is the principal operator. He will have to provide his AMEXA affiliation and the parcel survey,
 - to base the surface of the floor at the height of the PHE, or, in the absence of his knowledge, 50 cm above the natural terrain. This authorization shall be granted within the limit of one application per holding as from the date of application of this document.
- Refuges platforms to put out of water the animals, without roofs or walls, within the limit of 4 m² per animal of the exploitation and subject to:
- the applicant is the principal operator. He will have to provide his AMEXA affiliation and the parcel survey,
 - to wedge the surface of the platform to the coast of the PHE, or, in the absence of his knowledge, 50 cm above the natural terrain.

31 頁

3. BLUE PRECAUTION AREA: Bu

✓ Precautionary zone Bu = moderate hazard flood zone in high stakes sector (urban sectors)

Objective: To allow an urban development taking into account the exposure to the risk so as not to increase the vulnerability.

32 頁

4. BLUE PRECAUTION AREA: Bu

Reminder: The Bu blue precaution zone allows the realization of new works and projects in the urban sector, subject to certain prohibitions or conditions.

ARE FORBIDDEN:

- All projects of construction of strategic or vulnerable establishments ,
- All embankments, deposits or exhalations, with the exception of dikes or flood protection

works in densely populated areas urbanized,

- The creation of new campgrounds, residential recreation parks and Travelers' reception area , as well as the increase of capacity and extension of existing campsites,
- All new works and projects located in the safety strip of a dike or protective structure (100 times the distance between the maximum height of water reached upstream of the structure and the natural terrain immediately behind it without being less than 50 meters counted from the foot of the dike or protective structure) and may increase the risk.

ARE ALLOWED subject to the application of constructive measures defined in Section 4.5 of the 1st part:

- Routine maintenance and management work (facade treatments, roof repairs, painting, etc.),
- Creation of openings above the PHE coast ,
- Creation of openings below the PHE rating provided that all openings are equipped with cofferdams,
- Pools at the natural ground level , provided that permanent marking of the pool is put in place to ensure the safety of people and rescue services.

33 頁

4. BLUE PRECAUTION AREA: Bu

- New constructions (excluding vulnerable or strategic establishments), extensions or modifications of existing buildings subject to:
 - that the surface of the first finished floor is set at a minimum of PHE + 30 cm and that the surface of garages and associated rooms at least at the PHE rating,
 - that residential buildings are built on crawl space. Other types of premises may be made according to other in particular to guarantee protection against capillary rise.
- ◆ Special cases of existing residential buildings with an accessible floor:

Their extension, without creation of new housing, may be authorized at the same level as the existing ground floor, within the limit of 20 m² of footprint, provided that the extension is accompanied by countervailing measures to reduce the vulnerability of the building itself (cofferdam installation at each opening under the PHE, etc.).
- ◆ Special cases of existing ground floors: Their modification and / or change of destination will be authorized without raising the floor provided that:
 - that this ground floor is not intended for housing,
 - that the height remaining under ceiling, if the floor was raised according to the

- general rules, is less than 2 m,
 - that measures to reduce the vulnerability of the building itself are taken (installation of cofferdams, etc.),
 - that goods can be secured (putting out of water goods or goods inside, etc.),
 - that people are not endangered (closure in case of flood warning, etc.)
- The creation or modification of fences and walls does not constitute a major obstacle to the flow of water. For that, at least 30% of their surface located between the ground and the PHE coast, must be left transparent to the flows, in the form of barbicans, openwork gates, wide mesh, etc.
- The equipment of general interest , except strategic establishments (fire stations, gendarmerie, etc.), under Reserve :

34 頁

4. BLUE PRECAUTION AREA: Bu

- they are built outside the safety strip of a dike or protective structure, except for crossing structures. This safety strip immediately behind the dike or protective structure and counted from the foot of the dike or the protective structure, will be equal to 100 times the distance between the maximum water level reached upstream of the structure and the natural terrain immediately behind it and may in no case be less than 50 meters.
- that the buildings are built on crawl space and that the surface of the first floor is set at least at the PHE + 30 cm level,
- A hydraulic study should define the upstream and downstream consequences and determine their impact on the flow of floods, the compensatory measures to be adopted to cancel their effects on floods and the conditions for their safety. It will also have to show the consequences of an exceptional flood (1.8 times the centennial flow), the consequences of a breach of the dike or protective structure and the measures implemented to guard against it.
- Money under this heading works or improvements on existing structures and dykes for public safety, including the creation of embankments intended for close protection of densely urbanized sites, as demonstrated by a hydraulic study and after obtaining regulatory approvals (Act on the water and Declaration of Public Utility).
- All sports and light animation and outdoor recreation work without the creation of embankments, provided that they do not create an obstacle to the flow of floods and that

they are located in out of the safety strip of a dike or protective structure (100 times the distance between the maximum height of water reached upstream of the structure and the natural terrain immediately behind it, without being less than 50 meters). It is also authorized the creation of floor areas for unmanned premises used as sanitary facilities, cloakrooms, equipment rooms, and provided that the floor area is calibrated at PHE + 30 cm when it has been defined (in the opposite case, it shall be set at least 50 cm above the natural terrain or the access road when it is higher) and provided that the consequences of these developments on the flow of floods are negligible.

- Collective park ground parking lots (public or under the management of a legal person), provided that they are marked as being floodable and that their evacuation is organized from a flood forecasting device, without creating embankments and provided that they do not create an obstacle to the flow of floods.
- The realization of new underground dry networks provided that they are not vulnerable to flooding and clogging ducts.
- Creation of new wet networks (drinking water) provided that they are watertight and equipped with non-return valves.
- The realization of new wet networks (sanitation) provided that they guard against parasitic water inflows and that they are equipped with non-return valves. The manholes must be locked.

35 頁

4. BLUE PRECAUTION AREA: Bu

- The establishment of photovoltaic power generation units in the form of sensor fields (called farms or photo-voltaic fields), subject to:
 - that a hydraulic survey based on the reference flood of this PPRI specifies, at the site of implantation, the water heights and the flow velocities,
 - that the project is located outside the safety strip of a dike or protective structure (100 times the distance between the maximum height of water reached upstream of the structure and the natural terrain immediately behind it, without being less than 50 meters) and in an area where the flow rate calculated in the hydraulic study is less than 0.50 m / s,
 - that the underside of the panels is located above the PHE elevation indicated in the hydraulic study and this PPRI,
 - that a specific safety notice, guarantee the solidity of the anchoring of the posts (expert opinion) to resist the flow and the speed of a centennial flood studied in the hydraulic

study and take into account the arrival possible jams (traps by piles, ...).

- The technical buildings required for the operation of these units are allowed in this context, provided that their electrical installations are out of water and that the openings located under the PHE symbol are protected (cofferdams or watertight doors).

36 頁

4. ZONES OF PRECAUTION: Z1 AND Z2

- ✓ Residual precautionary zone Z1 = zone not subject to the reference flood but potentially flooded by an exceptional flood
- ✓ Expanded precautionary zone Z2 = the rest of the municipal area

Objectives:

- Allow urban development taking into account the potential risk in the event of a flood higher than the reference flood (Z1),
- Allow urban development of non-floodable areas without aggravating the floodability of flood zones (Z2).

37 頁

6. ZONES OF PRECAUTION: Z1 AND Z2

Reminder: The precautionary zone Z1 is intended to authorize all new works and projects except for strategic or vulnerable buildings, insofar as these works and projects do not increase the risk and vulnerability of people. Zone Z2 allows the implementation of any type of project, subject to compliance with the provisions below.

These areas are not considered to be floodable for acquirer and tenant information.

ARE FORBIDDEN:

- In Z1 only: All projects of construction of strategic or vulnerable establishments, ARE

ALLOWED subject to the application of the constructive measures defined in chapter 4.5 of the 1st part:

- All works of any kind, provided that they comply with the following provisions:
 - Compensatory measures related to the waterproofing, with a minimum of 120

liters of retention per waterproofed m², must be carried out either as part of an overall reflection, through a water law file or no, either to the plot.

- The storm water network must be maximally dimensioned on the basis of a decadal flow so as not to bring a surplus of runoff water to the danger zone.
- In Z1 only: the surface of the finished floors of the new constructions will be set at least 50 cm above the natural terrain.

38 頁

5. RED AND BLUE ZONES Ru, Rn, Rp, Bu: MEASUREMENTS PREVENTION, PROTECTION AND SAFEGUARD

- ✓ Regulatory clauses imposed on communities or individuals in red and blue zones

39 頁

5. RED AND BLUE ZONES Ru, Rn, Rp, Bu: PREVENTION, PROTECTION AND SAFEGUARD MEASURES

The prevention, protection and safeguard measures, stemming from Article L.562-1 paragraph 3 of the Environment Code, correspond to the collective or specific measures to be implemented to reduce overall the vulnerability of goods and people. Some are from the environmental regulations or other texts, but recalled here, since they share the same objective of precaution, protection and safeguarding.

The measures set out below are made mandatory by this IRPP within the time period indicated. The community or individuals are also specified for each measure.

1. Obligation to inform the public

Target: Mayor / Deadline: every 2 years

The mayor must issue at least once every two years to the population periodic information on natural hazards. This procedure must be supplemented by an obligation to inform all citizens on a yearly basis through a relay left to the free choice of the municipality (municipal bulletin, public meeting, distribution of a brochure) on mandatory and recommended measures for future projects and for the existing building.

2. Development of a Communal Safeguard Plan (PCS)

Target: Mayor / Deadline: 2 years from PPRI approval

The mayor has to draw up a communal plan of safeguard (PCS), in accordance with article 13 of the law No. 2004-811 of August 13th, 2004 relative to the modernization of the civil

security, within two years as from the date of approval of the PPRI by the Prefect of the department. This article specifies that "the municipal plan of safeguard brings together all the documents of communal competence contributing to the preventive information and the protection of the population. It determines, based on the known risks, the immediate measures of safeguard and protection of the people, fixes the organization necessary for the diffusion of the alert and the safety instructions, identifies the available means and defines the implementation of the measures accompaniment and support of the population. He may designate the deputy mayor or the municipal councilor responsible for civil security issues. It must be compatible with the plans for the organization of the emergency measures adopted pursuant to the provisions of Article 14 ". Adapted to the means available to the municipality, it is established in particular with regard to the knowledge of the natural and technological risks incurred on the Commune and detailed in documents made or brought to the attention of the State (DDRM, PPR, studies, mapping of areas Flood Directive - areas within the approximate envelope of potential floods and areas flooded by an extreme event).

40 頁

5. RED AND BLUE ZONES Ru, Rn, Rp, Bu: PREVENTION, PROTECTION AND SAFEGUARD MEASURES

3. Stormwater sanitation zoning

Target: the commune / Deadline: 1 year from the approval of the PPRI If it is not already realized, the municipality will have to establish a zoning of sanitation rain, in accordance with Article L2224-10 3 ° of the Code General of Territorial Communities, within one year from the approval of the PPRI.

4. Opening to urbanization / development or revision of PLU or PLUI

Target: the municipality / EPCI competent / Deadline: during the development or revision of the PLU or PLUI. When a municipality or a competent EPCI considers an extension of urbanization, the access of the relief will have to be studied beforehand. The mayor or the president of the competent EPCI will have to consult the SDIS for opinion, on the basis of an access and danger study. Any recommendations will be integrated into the PCS.

5. Diagnosis, monitoring and regular maintenance of dikes, protective works, containment systems and hydraulic installations

Target: owners and managers of dikes and protective structures, individuals or competent authorities / Time limit: 1 to 5 years Owners or managers, public or private, dikes, protective works, containment systems and hydraulic schemes on densely populated areas must comply with the requirements of the current regulations on the safety of hydraulic

structures (Decree No. 2007-1735 of 11 December 2007 on the safety of hydraulic structures and Decree No. 2015-526 of 12 May 2015 on the applicable rules the structures constructed or constructed to prevent flooding and the hydraulic safety rules applicable on the date of approval of the PPRI). According to their characteristics and the protected population, dikes and protection works for the protection of urbanized places must be the object of their owner of a complete diagnosis, a thorough technical visit, a report of inspection and report of monitoring at a frequency of 1 to 5 years.

6. Installation of flood markers

Target: Competent communities / Lead time: 5 years

The installation of flood markers is a major element of risk awareness and preventive information. Communities are therefore encouraged to put these brands, in the most relevant sectors and public transit, according to the information in their possession (historical knowledge, PHE statement of the DDTM, etc.).

41 頁

5. RED AND BLUE ZONES Ru, Rn, Rp, Bu: PREVENTION, PROTECTION AND SAFEGUARD MEASURES

7. Maintenance of watercourses and outflow axes

Target: bank owners, private individuals or competent authorities / Deadline: annually

Maintenance work on the minor bed of watercourses and outflow points will be carried out in accordance with the Environment Code; this maintenance includes selective deforestation and the removal of landings after authorization procedure in accordance with the Environment Code. It also includes reforestation of eroded embankments and selective maintenance of the riparian forest, according to the application of the guidelines and recommendations of the SDAGE and the SAGE.

42 頁

6. RED AND BLUE ZONES Ru, Rn, Rp, Bu: MEASUREMENTS OF MITIGATION

✓ Regulatory Clauses for Existing Goods in Red and Blue Zones

43 頁

6. RED AND BLUE ZONES Ru, Rn, Rp, Bu: MITIGATION MEASURES

The current vulnerability of existing properties in flood-prone areas has led to new measures being taken into account in the development of the PPRI. The latter, called "mitigation

measures", aim to:

- To ensure the safety of people (adaptation of goods or activities in order to reduce the vulnerability of people: safe haven, consolidation works or protection works),
- Reduce the vulnerability of goods (limit material damage and economic damage),
- Facilitate the return to normal (adapting the goods to facilitate the return to normal when the event occurred: choice of water resistant materials, etc. Mitigate the psychological trauma associated with a flood by facilitating the waiting for relief or recession, and possible evacuation in conditions of comfort and satisfactory safety).

For property built or developed in accordance with the provisions of the Urban Planning Code and before approval of this PPRI, the work relating to certain individual building measures is now compulsory and is only required within the limit of 10% of the building code. the market value or estimated value of the property considered at the date of approval of the plan (Article R. 562-5 of the Environment Code).

Unless otherwise specified in this Regulation, the implementation of these provisions must be carried out as soon as possible and within a maximum period of 5 years from the approval of this plan (pursuant to Article L. 562-1 III of the Code of the Environment, according to the terms of its implementing decree). If these measures are not implemented within the prescribed time limits, the prefect may impose the implementation of these measures at the expense of the owner, the operator or the user.

Article L. 561-3 of the Environmental Code stipulates that all work to protect people and reduce the vulnerability of property may be subsidized by the State. This grant from the Fund for Prevention of Major Natural Risks, known as the Barnier Fund, aims to encourage the implementation of these measures and concerns:

- individuals (residential property) up to 40%,
- companies with less than 20 employees (professional use) up to 20%.

44 頁

6. RED AND BLUE ZONES Ru, Rn, Rp, Bu: MITIGATION MEASURES

1. COMPULSORY MEASURES

1.1. Diagnosis and self-diagnosis of buildings

Target: owner or manager of the building / Completion time: 2 years from the date of

approval of this PPRI

The diagnosis concerns establishments receiving public and collective buildings located in a flood zone, as well as all networks considered strategic. It must be carried out by persons or organizations qualified in the assessment of natural risks and their socio-economic effects. It must include at least the following elements:

- (1) A plan of the building (s) (including annexes and access routes) or infrastructure
- (2) An understanding of the hazard as well as flood conditions of the site
- (3) The organization of the alert and rescue
- (4) A description of the diagnostic method used
- (5) Evidence of the experience and competence of the person or organization that made the diagnosis
- (6) A description and analysis of operations and manufacturing processes (in the case of economic activities)
- (7) The identification of all structural and non-structural elements that are vulnerable in the event of flooding (estimation of potential damage and malfunctions on the networks and on the right of buildings)
- (8) A definition of possible reinforcement actions and vulnerability reduction measures, accompanied by a technical and economic description of the proposed measures and a justification for the selection of the selected measures. The diagnosis will notably ensure to propose the measures to be envisaged, intended to answer the objectives fixed by the law, which will be hierarchized accordingly
- (9) The definition of a timetable for the implementation of the selected actions, without exceeding a period of 5 years at the end of the production of the diagnosis.

45 頁

6. RED AND BLUE ZONES Ru, Rn, Rp, Bu: MITIGATION MEASURES

For all other properties situated in a flood zone, the owner of the property is obliged to carry out a self-diagnosis: this self-diagnosis contains the same elements as the diagnosis, in particular points (1), (2), (4), (7), (8) and (9), but the analysis of item (6) is left to the initiative of the owner, without recourse to a qualified body. This approach must make it possible to identify the degree of flooding of the building, namely the height of water likely to cover the first landscaped floor and, if necessary, the measures to be implemented on the dwelling. For this purpose, each owner may directly attach the commune or, failing this, the services of the Departmental Direction of the Territories and the Sea (DDTM) which will

communicate to him the NGF rating of the highest waters (PHE rating). The NGF dimension of the reference floor area, if not known or easily determinable, may be fixed by a surveyor.

1.2. Installation of cofferdams, identification or creation of a refuge area

Target: owner and manager of the building / Completion time: 5 years from the date of approval of this PPRI

The installation of cofferdams is mandatory for each opening located below the PHE, to prevent water from entering, at least during the most common floods. In addition, if the diagnosis or self-diagnosis indicates that the water level at the reference flood in the building is greater than 1 m, the safety of persons must be examined:

- for non-collective activity or residential buildings, and for single-family homes, an interior accessible refuge zone must be completed within 5 years of PPRI approval if the building has no not a level out of water (accessible floor, attic, etc.). This refuge area will be sized according to the number of inhabitants in the housing at the date of the creation project, on the basis of a minimum surface area of 6 m² and 1 m² per person,
- for other buildings, the owner or the co-owners will have to study the feasibility of putting the persons present in the building in security by any solution allowing the refuge out of water, and, in case of impossibility, to make sure of it is taken into account in the PCS.

In addition to the opening, these measures also apply to network ducts that must be able to temporarily plug, vents and ventilation openings and access doors crawl space must also be able to hide.

46 頁

6. RED AND BLUE ZONES Ru, Rn, Rp, Bu: MITIGATION MEASURES

1.3. Materialize the footprints of swimming pools and underground ponds

Target: owner and manager / Completion time: 5 years from the date of approval of this PPRI

In case of flood, the buried pools and swimming pools are no longer visible due to the

turbidity of the water. They represent a risk for rescuers who can fall in and drown. It is therefore, in all areas flooded by the reference flood (BU blue zones and red RU, RN, RP), to materialize by permanent markup, the height of which will be at least 20 cm above the coast of PHE, used to delimit at least the perimeter of pools and watershed.

1.4. Prevent floating objects

Target: owner and manager / Completion time: 5 years from the date of approval of this PPRI

In all areas flooded by the reference flood (blue BU and red RU, RN, RP zones), fuel tanks, caravans and trailers, hydrocarbon cylinders, etc. must be securely stowed so as not to be swept away by the current. Likewise, floatation of firewood-type objects, light constructions, etc., will be avoided. Indeed, these objects once carried away, become dangerous, can strike the rescuers and damage walls, cofferdams, windows, etc.

47 頁

6. RED AND BLUE ZONES Ru, Rn, Rp, Bu: MITIGATION MEASURES

2. RECOMMENDED MEASURES

In addition to the previous measures, made mandatory by the approval of this PPRI, other measures are recommended to reduce the vulnerability of the assets. The non-mandatory nature of these measures does not exempt their implementation if this is recommended in the diagnosis. Their use may also be relevant in case of internal changes to the premises or during renovation work. The measures mentioned in this chapter are voluntarily expressed in terms of performance. It is the owners, operators or users who have the choice to decide on such or such measures according to the nature of the property, the configuration of the premises, the material and financial constraints, etc. For owners and managers of buildings, the implementation of the measures indicated in the diagnosis made mandatory are strongly recommended, based on a prior ranking according to their interest and the cost-to-purpose ratio.

To promote the arrival of relief and facilitate the evacuation of people, it is also recommended:

- the creation of a roof opening, balcony or terrace,
- development of immediate surroundings, installation of a mooring ring.

To improve the security of goods and their durability while facilitating the return to normal:

- avoid scouring the foundations,
- install check valves,
- use thermal insulators with low water retention (avoid glass wool) and use water-repellent materials (some drywall, partitions, etc.),
- install PVC joinery,
- put the electrical panel out of water, create a downward electrical network,
- put out of water the heating installations, the ventilation and air-conditioning plants,
- install a peripheral drain.