



**METHODOLOGY FOR THE DEVELOPMENT OF  
FLOOD HAZARD MAPS AND FLOOD RISK MAPS  
FOR AREAS EXPOSED TO FLOODING  
IN THE EVENT OF DAM FAILURE – PART II**

**ANNEX no. 1**

**ATTRIBUTE STRUCTURE OF THE DIGITAL VERSION  
OF FLOOD HAZARD MAPS AND FLOOD RISK MAPS  
FOR AREAS EXPOSED TO FLOODING  
IN THE EVENT OF DAM FAILURE**

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## **1. ATTRIBUTE STRUCTURE OF DIGITAL FHM<sub>s</sub> AND FRM<sub>s</sub>**

The attribute structure of digital flood hazard maps and flood risk maps for areas exposed to flooding in the event of dam failure covers:

- reference layers;
- layers of flood hazard maps;
- layers of flood risk maps.

### **1.1 REFERENCE LAYERS**

The reference layers for the entire area under development cover:

- watercourses and canals;
- other watercourses;
- surface waters;
- roads;
- railway lines;
- voivodeship;
- district;
- commune;
- sheets of maps at a scale of 1:10 000 for PL-1992.

### Watercourses and canals (hydrographic network)

- Layer: ciek\_i\_kanal;
- Type of layer: lines;
- Description: sections of main watercourses and canals with nomenclature compliant with MPHP10k;
- Data source: MPHP10k rzeki\_o (modelled rivers are verified on the basis of DTM, orthophotomap and channel cross-sections);
- Type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
ID_HYD_R	T(22)	Identifier in MPHP10k	PGW WP/MPHP10k
NAZWA_MPHP	T(254)	Name of watercourse compliant with MPHP10k	PGW WP/MPHP10k
RODZAJ	SINT(5)	Type, where: 1 - natural watercourse; 2 - artificial watercourse - canal; 3 - artificial watercourse - ditch; 4 - artificial watercourse - pipeline; 11 - natural watercourse - river; 12 - natural watercourse - torrent; 13 - natural watercourse - creek; 14 - natural watercourse - stream; 15 - natural watercourse - old channel; 16 - natural watercourse - oxbow lake.	PGW WP/MPHP10k
SZEROKOSC	SINT(5)	Width of watercourse: 1 - not defined (for artificial connection); 2 - less than 1.5m; 3 - from 1.5m to 5m; 4 - more than 5m.	PGW WP/MPHP10k
OKRESOWOSC	SINT(5)	Determination whether the watercourse is permanently filled with water or periodically: 1 - permanent; 2 - periodical; 3 - hidden (underground); 4 - flow through the siphon; 5 - flow through the aqueduct.	PGW WP/MPHP10k
OPIS	T(254)	Additional information: "modified object" - when making changes to an object from MPHP10k (this applies to geometry and attributes); "no object in MPHP10k, vectorisation was performed" - when introducing a new object; "main name" - when selecting the name of the watercourse or its section.	PGW WP/aMZPiMRP

Attribute	Field type	Description	Attribute source
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 1. Attribute structure of the *cieki\_kanaly* layer

#### Other watercourses (hydrographic network)

- layer: *cieki\_pozostale*;
- type of layer: lines;
- description: layer including other natural or artificial watercourses, mainly agricultural drainage ditches;
- data source: MPHP10k:rzeki\_n;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
OPIS	T(254)	Additional information: "modified object" - when making changes to an object from MPHP10k (this applies to geometry and attributes); "no object in MPHP10k, vectorisation was performed" - when introducing a new object; "main name" - when selecting the name of the watercourse or its section.	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 2. Attribute structure of the *cieki\_pozostale* layer

### Surface waters (hydrographic network)

- layer: wody\_powierzchniowe;
- type of layer: polygons;
- description: areas with standing waters (lakes, ponds, water reservoirs) and with flowing waters and sea waters, the surface of which can be represented on a map at a scale of 1:10 000;
- data source: GUGiK/BDOT10k and PGW WP/MPHP10k;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
ID_HYD_R	T(22)	Identifier in MPHP10k	PGW WP/MPHP10k
NAZWA_MPHP	T(254)	Name of watercourse compliant with MPHP10k	PGW WP/MPHP10k
IdIIP_BT_I	T(50)	Local identifier in BDOT10k. For sheets from the 1 <sup>st</sup> cycle not subject to update: "ND".	GUGiK/BDOT10k
IdIIP_BT_1	T(50)	Identifier of namespaces in BDOT10k. For sheets from the 1 <sup>st</sup> cycle not subject to update: "ND".	GUGiK/BDOT10k
IdIIP_BT_2	T(50)	Identifier of version of BDOT10k For sheets from the 1 <sup>st</sup> cycle not subject to update: "ND".	GUGiK/BDOT10k
RODZAJ	T(3)	Type of surface: Pp - flowing waters; Ps - standing waters; Pm - sea waters.	GUGiK/BDOT10k
OPIS	T(254)	Additional information: "modified object" - when making changes to an object from BDOT10k (this applies to geometry and attributes); "no object in BDOT10k, vectorisation was performed" - when introducing a new object; "main name" - when selecting the name of the watercourse or its section.	KZGW/aMZPiMRP

Table 3. Attribute structure of the wody\_powierzchniowe layer

## Roads

- layer: drogi;
- type of layer: lines;
- description: public roads intended for road traffic, without internal roads and short sections of access roads to homesteads;
- data source: GUGiK/BDOT10k;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
IdIIP_BT_I	T(50)	Local identifier in BDOT10k.	GUGiK/BDOT10k
IdIIP_BT_1	T(50)	Identifier of namespaces in BDOT10k	GUGiK/BDOT10k
IdIIP_BT_2	T(50)	Identifier of version of BDOT10k	GUGiK/BDOT10k
TYP	T(3)	Type of road: K - national road; W - voivodeship road; P - district road; G - commune road; I - other roads.	GUGiK/BDOT10k
SZER_DROGI	D	Width of road crest with carriageway	GUGiK/BDOT10k
SZER_NAW	D	Width of pavement	GUGiK/BDOT10k
RODZ_NAW	T(3)	Type of pavement: Mb - bitumen compound; Bt - concrete; Br - cobblestones; Kk - stone pavers; Kp - prefabricated pavers; Pb - concrete slabs; Tl - crushed stone; Zw - gravel; Gz - stabilised with gravel or slag Gr - natural ground; In - other; Kl - clinker bricks.	GUGiK/BDOT10k
OPIS	T(254)	Additional information, in case of introducing changes to the object from BDOT10k or entering a new object: "modified object" or "no object in BDOT10k, vectorisation was performed".	PGW WP/aMZPiMRP

Table 4. Attribute structure of the drogi layer

## Railway lines

- layer: koleje;
- type of layer: lines;
- description: layer includes railway routes;
- data source: GUGiK/BDOT10k;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
IdIIP_BT_I	T(50)	Local identifier in BDOT10k	GUGiK/BDOT10k
IdIIP_BT_1	T(50)	Identifier of namespaces in BDOT10k	GUGiK/BDOT10k
IdIIP_BT_2	T(50)	Identifier of version of BDOT10k	GUGiK/BDOT10k
LICZBA_TOR	SINT(2)	Number of tracks	GUGiK/BDOT10k
RODZAJ_TOR	T(3)	Type of tracks: Ts - wide; Tn - normal; Tw - narrow.	GUGiK/BDOT10k
OPIS	T(254)	Additional information, in case of introducing changes to the object from BDOT10k or entering a new object: "modified object" or "no object in BDOT10k, vectorisation was performed".	PGW WP/aMZPiMRP

Table 5. Attribute structure of the koleje layer



## Voivodeship

- layer: województwo;
- type of layer: polygons;
- description: voivodeship boundary compliant with the National Register of Boundaries (PRG);
- data source: GUGiK/PRG, GUS/TERYT;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
IdIIP_1	T(50)	Local identifier in PRG	GUGiK/PRG
IdIIP_1	T(50)	Identifier of namespaces in PRG	GUGiK/PRG
IdIIP_2	T(50)	Identifier of version	GUGiK/PRG
NAZWA	T(30)	Name of voivodeship	GUGiK/PRG
TERYT	T(2)	TERYT id of voivodeship	GUS/TERYT
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP

Table 6. Attribute structure of the wojewodztwo layer



## District

- layer: powiat;
- type of layer: polygons;
- description: district boundary compliant with the National Register of Boundaries;
- data source: GUGiK/PRG, GUS/TERYT;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
IdIIP_1	T(50)	Local identifier in PRG	GUGiK/PRG
IdIIP_1	T(50)	Identifier of namespaces in PRG	GUGiK/PRG
IdIIP_2	T(50)	Identifier of version	GUGiK/PRG
NAZWA	T(30)	Name of district	GUGiK/PRG
TERYT	T(4)	TERYT id of district	GUS/TERYT
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP

Table 7. Attribute structure of the powiat layer



## Commune

- layer: gmina;
- type of layer: polygons;
- description: commune boundary compliant with the National Register of Boundaries;
- data source: GUGiK/PRG, GUS/TERYT;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
IdIIP_1	T(50)	Local identifier in PRG	GUGiK/PRG
IdIIP_1	T(50)	Identifier of namespaces in PRG	GUGiK/PRG
IdIIP_2	T(50)	Identifier of version	GUGiK/PRG
NAZWA	T(30)	Name of commune	GUGiK/PRG
TERYT	T(7)	TERYT id of commune	GUS/TERYT
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP

Table 8. Attribute structure of the gmina layer

### Sheets of maps at a scale of 1:10 000 for PL-1992

- layer: ramka\_arkusza;
- type of layer: polygons;
- description: areas of map sheets at a scale of 1:10 000 in PL-1992;
- data source: GUGiK;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
NUMER	T(38)	Map sheet identification number e.g.: M-33-6-B-c-2	GUGiK
NAZWA	T(254)	Sheet name e.g.: Łazy	GUGiK
AKT_MZP_BP	T(10)	Determination of FHM version for the scenario of dam failure (e.g. 2019v1, 2022v1)	PGW WP/aMZPiMRP
AKT_MRP_BP	T(10)	Determination of FRM version for the scenario of dam failure (e.g. 2019v1, 2022v1)	PGW WP/aMZPiMRP
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 9. Attribute structure of the ramka\_arkusza layer



## **1.2 LAYERS OF FLOOD HAZARD MAPS**

The flood hazard maps within the area exposed to flooding in the scenario of dam failure include:

- flood hazard area for the scenario of dam failure;
- water depth;
- maximum of water level;
- top of flood embankments elevation in cross-sections;
- dams;
- location of dam failure;
- flood embankments;
- chainage.

### Flood hazard area for the scenario of dam failure

- layer: obszar\_zagrozenia\_pow\_BP
- type of layer: polygons;
- description: flood risk area resulting from 1D or 2D hydraulic modelling for a specific river;
- data source: PGW WP/aMZPiMRP;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
ZBIORNIK	T(254)	Name of reservoir compliant with the name of the area of potential significant flood risk as a result of dam failure identified in the preliminary flood risk assessment (without prefix)	PGW WP/aWORP
ID_HYD_R	T(22)	Hydrographic identifier of watercourse or reservoir in MPHP10k	PGW WP/MPHP10k
NAZWA_MPHP	T(254)	Name of watercourse or reservoir in MPHP10k	PGW WP/MPHP10k
ID_PRNG	T(38)	Identifier of watercourse or reservoir compliant with PRNG	PRNG
NAZWA_PRNG	T(254)	Name of watercourse or reservoir compliant with PRNG	PGW WP/MPHP10k
NAZ_DORZ	T(100)	Name of river basin district (RBD) e.g.: "obszar dorzecza Dunaju" ("Dunaj RDB")	PGW WP/aWORP
KOD_DORZ	T(42)	Code of river basin district: "PL1000" - obszar dorzecza Dunaju (Dunaj RBD); "PL2000" - obszar dorzecza Wisły (Wisła RBD); "PL3000" - obszar dorzecza Świeżej (Świeża RBD); "PL4000" - obszar dorzecza Banówki (Banówka RBD); "PL5000" - obszar dorzecza Łaby (Łaba RBD); "PL6000" - obszar dorzecza Odry (Odra RBD); "PL7000" - obszar dorzecza Pregoty (Pregoła RBD); "PL8000" - obszar dorzecza Niemna (Niemen RBD); "PL9000" - obszar dorzecza Dniestru (Dniestr RBD).	PGW WP/aWORP

Attribute	Field type	Description	Attribute source
NAZ_RW	T(100)	Name of water region: region wodny Małej Wisły (Mała Wisła water region); region wodny Górnej-Zachodniej Wisły (Górna-Zachodnia Wisła water region); region wodny Górnej-Wschodniej Wisły (Górna-Wschodnia Wisła water region); region wodny Narwi (Narew water region); region wodny Bugu (Bug water region); region wodny Środkowej Wisły (Środkowa Wisła water region); region wodny Dolnej Wisły (Dolna Wisła water region); region wodny Górnej Odry (Górna Odra water region); region wodny Środkowej Odry (Środkowa Odra water region); region wodny Dolnej Odry i Przymorza Zachodniego (Dolna Odra i Przymorze Zachodnie water region); region wodny Warty (Warta water region); region wodny Noteci (Noteć water region); region wodny Dniestru (Dniestr water region); region wodny Czarnej Orawy (Czarna Orawa water region); region wodny Czadeczki (Czadeczka water region); region wodny Morawy (Morawa water region); region wodny Banówki (Banówka water region); region wodny Izery (Izera water region); region wodny Łaby i Ostrożnicy (Łaba i Ostrożnica water region (Upa)); region wodny Metuje (Metuje water region); region wodny Orlicy (Orlica water region); region wodny Niemna (Niemen water region); region wodny Łyny i Węgorapy (Łyna i Węgorapa water region); region wodny Świeżej (Świeża water region).	PGW WP
NAZ_ZLEWNI	T(250)	Name of catchment (name compliant with MPHP10k)	PGW WP/MPHP10k
KOD_OB_N	T(42)	Code of area of potential significant flood risk	PGW WP/aWORP
ID_SCEN	T(5)	Identifier of scenario: BP - scenario of dam failure	PGW WP/aMZPiMRP
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP



Attribute	Field type	Description	Attribute source
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 10. Attribute structure of the *obszar\_zagrozenia\_pow\_BP* layers



## Water depth

- layer: glebokosc\_BP
- type of layer: polygons;
- description: water depth determined as a result of 1D or 2D hydraulic modelling;
- data source: PGW WP/aMZPiMRP;
- type of map: flood hazard map.

Attribute	Field type	Description	Attribute source
ZBIORNIK	T(254)	Name of reservoir compliant with the name of the area of potential significant flood risk as a result of dam failure identified in the preliminary flood risk assessment (without prefix)	PGW WP/aWORP
GLEBOKOSC	T(1)	Description of depth classes: 1 - <= 0.5m; 2 - 0.5-2m; 3 - 2-4m; 4 - >4m.	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 11. Attribute structure of the *glebokosc\_BP* layer

### Maximum of water level

- layer: max\_rzedna\_zw\_wody;
- type of layer: points;
- description: determined maximum water level for a given scenario - the result of 1D or 2D hydraulic modelling;
- data source: PGW WP/aMZPiMRP;
- type of map: flood hazard map.

Attribute	Field type	Description	Attribute source
ZBIORNIK	T(254)	Name of reservoir compliant with the name of the area of potential significant flood risk as a result of dam failure identified in the preliminary flood risk assessment (without prefix)	PGW WP/aWORP
ID_HYD_R	T(22)	Identifier in MPHP10k	PGW WP/MPHP10k
NAZWA_MPHP	T(254)	Name of watercourse or reservoir compliant with MPHP10k	PGW WP/MPHP10k
RZEDNA_BP	F(7,2)	Maximum of water level, resulting from modelling in m above sea level for the scenario of dam failure	PGW WP/aMZPiMRP
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 12. Attribute structure of the max\_rzedna\_zw\_wody layer

### Top of flood embankments elevation

- layer: waly\_przeciwpowodziowe\_rzedne;
- type of layer: points;
- description: top of flood embankments elevations in cross-sections;
- data source: PGW WP/aMZPiMRP;
- type of map: flood hazard map.

Attribute	Field type	Description	Attribute source
ID_HYD_R	T(22)	Identifier in MPHP10k	PGW WP/MPHP10k
NAZWA_MPHP	T(254)	Name of watercourse or reservoir compliant with MPHP10k	PGW WP/MPHP10k
RZEDNA	F(7,2)	Top of flood embankment elevation in m above sea level	PGW WP/aMZPiMRP
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 13. Attribute structure of the waly\_przeciwpowodziowe\_rzedne layer

## Dams

- layer: budowle\_pietrzace;
- type of layer: lines;
- description: a line representing a dam whose failure is the main subject of the scenario;
- data source: PGW WP, Orthophotomap;
- type of map: flood hazard map.

Attribute	Field type	Description	Attribute source
ZBIORNIK	T(254)	Name of reservoir compliant with the name of the area of potential significant flood risk as a result of dam failure identified in the preliminary flood risk assessment (without prefix)	PGW WP/aWORP
ID_HYD_R	T(22)	Identifier of watercourse or reservoir in MPHP10k	PGW WP/MPHP10k
NAZWA_MPHP	T(254)	Name of watercourse or reservoir compliant with MPHP10k	PGW WP/MPHP10k
RDZ_BUD	T(2)	Type of dam: B - concrete dam; Z - earth dam.	PGW WP
WYSOKOSC	D	Height of structure	PGW WP
RZEDNA_KOR	D	Elevation of the dam crest [m above sea level]	PGW WP
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the following version of FHM and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 14. Attribute structure of the budowle\_pietrzace layer

### Location of dam failure

- layer: miejsce\_uszkodzenia\_budowli;
- type of layer: lines;
- description: place of failure of dam taken into account in hydraulic modelling;
- data source: PGW WP/aMZPiMRP;
- type of map: flood hazard map.

Attribute	Field type	Description	Attribute source
ZBIORNIK	T(254)	Name of reservoir compliant with the name of the area of potential significant flood risk as a result of dam failure identified in the preliminary flood risk assessment (without prefix)	PGW WP/aWORP
ID_HYD_R	T(22)	Identifier of watercourse or reservoir in MPHP10k	PGW WP/MPHP10k
NAZWA_MPHP	T(254)	Name of watercourse or reservoir compliant with MPHP10k	PGW WP/MPHP10k
RDZ_BUD	T(2)	Type of dam: B - concrete dam; Z - earth dam.	PGW WP
RDZ_AWARII	T(5)	Type of failure: P - water overflowing the dam crest; U - damage do dam body; PU - water overflowing the dam crest and damage do dam body	PGW WP
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 15. Attribute structure of the *miejsce\_uszkodzenia\_budowli* layer

## Flood embankments

- layer: waly\_przeciwpowodziowe;
- type of layer: lines;
- description: a layer representing sections of flood embankments;
- data source: BDOT10k/DTM Lidar/administrators of facilities;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
MATERIAL	T(2)	Type of material for building a dyke or flood embankment: 1 - with concrete facing; 2 - earthen.	GUGiK/BDOT10k
RODZAJ	T(2)	Type of facility: W - flood embankment; Z - side dam.	PGW WP/aMZPiMRP
SZER_KOR	D	Width in the top of flood embankment	GUGiK/BDOT10k
WYSOKOSC	D	Height of flood embankment	GUGiK/BDOT10k
ID_HYD_R	T(22)	Identifier from MPHP10k	PGW WP/MPHP10k
NAZWA_MPHP	T(254)	Name of watercourse or water reservoir compliant with MPHP10k	PGW WP/MPHP10k
ID_JEZ	T(38)	Identifier of secured reservoir	PGW WP/MPHP10k
ID_PRNG	T(38)	Identifier of watercourse or reservoir	GUGiK/BDOT10k
NAZWA_PRNG	T(254)	Name according to BDOT10k	GUGiK/BDOT10k
KL_OBIKTU	T(3)	Importance class of facility: I - importance class; II - importance class; III - importance class; IV - importance class; BD - no data available.	RZGW/WZMIUW
BRZEG	T(1)	Type of bank: L - left; P - right; O - perimeter; I - other.	RZGW/WZMIUW/PGW WP /aMZPiMRP
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHM and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 16. Attribute structure of the waly\_przeciwpowodziowe layer

## Chainage

- layer: kilometraz;
- type of layer: points;
- description: chainage of the river in the section for which FHA was developed, presented every 500 m;
- data source: PGW WP/aMZPiMRP;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
ID_HYD_R	T(22)	Hydrographic identifier of watercourse or reservoir in MPHP10k	PGW WP/MPHP10k
NAZWA_MPHP	T(254)	Name of watercourse compliant with MPHP10k	PGW WP/MPHP10k
ID_PRNG	T(38)	Identifier of watercourse	GUGiK/PRNG
NAZWA_PRNG	T(254)	Name of watercourse compliant with PRNG	GUGiK/PRNG
KM_PKT	F(5,1)	Kilometre of watercourse	PGW WP/aMZPiMRP
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 17. Attribute structure of the kilometraz layer



### **1.3 LAYERS OF FLOOD RISK MAPS**

The flood risk maps within the area exposed to flooding include:

- land use;
- land use with calculated potential flood losses;
- buildings;
- industrial plants;
- water abstractions;
- protection zones of water abstractions;
- bathing waters;
- forms of nature conservation;
- areas of cultural heritage;
- objects of cultural heritage;
- zoos;
- cemeteries (potential sources of pollution);
- landfills (potential sources of pollution);
- wastewater treatment plants and wastewater pumping stations (potential sources of pollution);
- cities.



## Land use

- layer: uzytkowanie\_BP
- type of layer: polygons;
- description: surface of area differentiated by physiognomic features.

### Land use classes:

- areas of residential properties - include blocks of flats, buildings in the city centre, single-family houses and other i.e. with infrastructure between the buildings e.g. playgrounds, car parks, green areas, courtyards, sheds, livestock buildings, areas with commercial buildings, sacral buildings, public administration buildings, etc.;
- industrial areas - include industrial and warehouse buildings, areas under technical or construction equipment, waste disposal sites, landfills, excavations, excavation pits, other industrial and storage areas;
- transportation areas - include areas occupied by roadways, railway tracks, hardened airport roads with traffic facilities such as sidings, ramps, aircraft parking areas, squares with and without hard surface;
- forests - include forests, coppices, young stands and plant nurseries;
- recreational areas - include mainly allotments, sports and recreation centres, holiday home complexes, parks, green areas in urban areas including lawns, botanical and zoological gardens, camping sites;
- arable land and permanent crops - include areas occupied by field crops, plantations and orchards;
- grasslands - include meadows and pastures;
- other areas - include bushy or wooded areas, exposed lands;
- data source: GUGiK/BDOT10k;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
ZBIORNIK	T(254)	Name of reservoir compliant with the name of the area of potential significant flood risk as a result of dam failure identified in the preliminary flood risk assessment (without prefix)	PGW WP/aWORP
ID_KLAS	T(2)	Land use classes: 1 - areas of residential properties; 2 - industrial areas; 3 - transportation areas; 4 - forests; 5 - recreational areas; 6 - arable land and permanent crops; 7 - grasslands; 8 - other areas.	GUGiK/BDOT10k;PGW WP/aMZPiMRP.
CHAR_ZAB	T(3)	Nature of residential properties: Gst - densely built-up area; Zwr - compactly built-up area; Luz - loosely built-up area; ND - not applicable.	GUGiK/BDOT10k
WERSJA	T(25)	Information referring to the following version of FHM and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 18. Attribute structure of the *uzytkowanie\_BP* layer

#### Land use with calculated potential flood losses

- layer: uzytkowanie\_straty\_BP
- type of layer: polygons;
- data source: BDOT10k;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
ZBIORNIK	T(254)	Name of reservoir compliant with the name of the area of potential significant flood risk as a result of dam failure identified in the preliminary flood risk assessment (without prefix)	PGW WP/aWORP
ID_KLAS	T(2)	Land use classes: 1 - areas of residential properties; 2 - industrial areas; 3 - transportation areas; 4 - forests; 5 - recreational areas; 6 - arable land and permanent crops; 7 - grasslands; 8 - other areas.	GUGiK/BDOT10k;PGW WP/aMZPiMRP
GLEBOKOSC	T(2)	Description of depth classes 1 - $\leq 0,5m$ ; 2 - 0,5-2m; 3 - 2-4m; 4 - $>4m$ ; ND – not applicable (only for land use classes: 4, 5 and 8, in which the value of flood losses does not depend on the water depth).	PGW WP/aMZPiMRP
STR_NA_M2	D	Value of potential unit losses in PLN/m <sup>2</sup>	PGW WP/aMZPiMRP
STRATA	D	Value of potential flood losses in PLN (rounded to full PLN e.g. 175.51 = 176; 175.30 = 175) i.e. from 0.01 PLN to 0.49 PLN - rounded down; from 0.50 PLN to 0.99 PLN - rounded up.	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 19. Attribute structure of the *uzytkowanie\_straty\_BP* layer

## Buildings

- layer: budynki;
- type of layer: polygons;
- description: layer includes residential buildings and selected buildings of social importance;
- data source: GUGiK/BDOT10k, GUS;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
ZBIORNIK	T(254)	Name of reservoir compliant with the name of the area of potential significant flood risk as a result of dam failure identified in the preliminary flood risk assessment (without prefix)	PGW WP/aWORP
IdIIP_BT_1	T(50)	Local identifier in BDOT10k	GUGiK/BDOT10k
IdIIP_BT_1	T(50)	Identifier of namespaces in BDOT10k	GUGiK/BDOT10k
IdIIP_BT_2	T(50)	Identifier of version of BDOT10k. For sheets from the 1 <sup>st</sup> cycle not subject to update: "ND".	GUGiK/BDOT10k
ID_MIEJSC	T(38)	ID_PRNG of city	GUGiK/BDOT10k
MIEJSC	T(254)	Name of city	GUGiK/BDOT10k
ID_ULICY	T(7)	TERYT of street. "BD" if it is not possible to match the PRG address point	GUGiK/PRG_AD
N1_UL	T(15)	Prefix of name e.g. al., ul.	GUGiK/PRG_AD
N2_UL	T(30)	Prefix of name e.g. Św., Marszałka	GUGiK/PRG_AD
N3_UL	T(100)	First part of name e.g. Jana	GUGiK/PRG_AD
N4_UL	T(100)	Main part of street name	GUGiK/PRG_AD
NUMER	T(20)	Number of building	GUGiK/PRG_AD
KONDYG	SINT(2)	Number of floors (ground floor is understood as first floor).	GUGiK/BDOT10k
KLASYFIK	T(1)	Classification of building: m - residential; s - of special social importance.	GUGiK/BDOT10k

Attribute	Field type	Description	Attribute source
FUNKCJA	T(7)	<p>Detailed function of building:</p> <p>Residential buildings:</p> <p>1110.Dj - single-family building;            1121.Db - building with two apartments;            1122.Dw - multi-family building;            1130.Dd- orphanage;            1130.Ds- students house;            1130.In - dormitory;            1130.Hr - workers hotel;            1130.Kl - monastery;            1130.Bs - boarding house;            1130.Db - home for the homeless;            1130.Dp- parish house;            1130.Po - care and educational institution.</p> <p>Buildings of social importance:</p> <p>1264.Hs - hospice;            1130.Os - nursing home;            1220.Pc - police;            1220.Sp - fire service;            1220.Sg - units of border guard;            1230.Ch -shopping centre;            1230.Ht and 1230.Hm - market hall,            hypermarket;            1211.Ht and 1211.Mt and 1211.Zj and            1211.Pj - hotel, inn, motel, guesthouse;            1212.Dw - holiday home;            1274.Zp - penitentiary or correctional            institution;            1274.As - custody;            1263.Ps - kindergarten;            1263.Sp and 1263.Sd and 1263.Sw - school;            1130.Zp - correctional institution;            1130.Zk - penitentiary institution;            1264.Zb - nursery;            1264.St - sanatorium;            1264.Sz - hospital.</p>	GUGiK/BDOT10k
L_MIESZ	LINT(6)	<p>Estimated number of residents in the building</p> <p>In the case of buildings of social importance - 7777.</p>	GUS
GLEBO_BP	T(1)	<p>Depth of flooding:</p> <p>2 - more than 2m;            1 - less than 2m;            0 - building is not in the flood area in this scenario.</p>	PGW WP/aMZPiMRP

Attribute	Field type	Description	Attribute source
OPIS	T(254)	Additional information to be filled in, in particular: when the building is located on two different streets and has more than two street names in the address and in the case of Border Guard units, where it should be indicated whether it is a command or a centre, additionally when making changes to an object from BDOT10k or when entering a new object: "modified object" or "no object in BDOT10k, vectorisation was performed".	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 20. Attribute structure of the budynki layer

## Industrial plants

- layer: zaklady\_przemyslowe;
- type of layer: points;
- description: layer includes industrial plants referred to in the Regulation on the development of flood hazard maps and flood risk maps;
- data source: GUGiK/BDOT10k, PGW WP, GIOŚ, WIOŚ, KG PSP, digitalisation from orthophotomap;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
ID_MIEJSC	T(38)	ID_PRNG of city	GUGiK/BDOT10k
MIEJSC	T(254)	Name of city	GUGiK/BDOT10k
KATEG	T(2)	Category of industry: E - energy; P - production and processing of metals; M - mineral; C - chemical; O - waste management; I - other activities (paper and wood production and processing, intensive rearing or breeding of poultry and pigs, production and processing of plant and animal raw materials).	PGW WP; MŚ
IPPC	T(2)	Information whether the facility has integrated IPPC permit: T - with permit; N - with no permit.	MŚ
AWARIA	T(2)	Information whether the facility is in the register of establishments with a major or increased risk of a major failure: T - in the register; N - not in the register.	GIOŚ/WIOŚ; KG PSP
OPIS	T(254)	Additional information, in case of introducing changes to the object from BDOT10k or entering a new object: "modified object" or "no object in BDOT10k, vectorisation was performed".	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 21. Attribute structure of the zaklady\_przemyslowe layer

## Water abstractions

- layer: ujecia\_wody;
- type of layer: points;
- description: layer includes water abstraction;
- data source: BDOT10k, PIG-PIB, PGW WP;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
TYP	T(3)	Type of intake: W - surface water abstraction; P - groundwater abstraction.	GUGiK/BDOT10k; PIG-PIB; PGW WP
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 22. Attribute structure of the *ujecia\_wody* layer



### Protection zone of water abstraction

- layer: strefa\_ujecia;
- type of layer: polygons;
- description: layer includes indirect protection zones of water abstractions;
- data source: PGW WP;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
TYP	T(3)	Type of intake: W - surface water abstraction; P - groundwater abstraction; BD - no data available.	PGW WP
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 23. Attribute structure of the strefa\_ujecia layer

## Bathing waters

- layer: kąpieliska;
- type of layer: points;
- description: water areas for recreational purposes, reported to the European Union and listed by the Chief Sanitary Inspectorate;
- data source: PIS-GIS;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
ID_HYD_R	T(22)	Identifier in MPHP10k	PGW WP/MPHP10k
NAZWA_MPHP	T(254)	Name of watercourse compliant with MPHP10k	PGW WP/MPHP10k
ID_MIEJSC	T(38)	ID_PRNG of city	GUGiK/BDOT10k
MIEJSC	T(254)	Name of city	GUGiK/BDOT10k
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 24. Attribute structure of the kąpieliska layer

### Forms of nature conservation

- layer: formy\_ochrony\_przyrody;
- type of layer: polygons;
- description: legally established forms of nature conservation;
- data source: GDOŚ;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
TYP_OCHR	T(3)	Type of conservation forms: PN - national park; RP - nature reserve; SOO - Special Area of Conservation (habitat) Natura 2000; OSO - Special Protection Area for Birds Natura 2000.	GDOŚ
NAZWA	T(254)	Name of area	GDOŚ
OPIS	T(254)	Additional information on the object e.g. type of reserve, specially protected species	GDOŚ
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 25. Attribute structure of the formy\_ochrony\_przyrody layer

### Areas of cultural heritage

- layer: obszary\_cenne\_kulturowo;
- type of layer: polygons;
- description: layer includes non-movable heritage monuments, sites listed on the World Heritage List, extermination monuments, museums, open-air museums;
- data source: MKiDN, NID;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
ID_MIEJSC	T(38)	ID_PRNG of city	GUGiK/BDOT10k
MIEJSC	T(254)	Name of city	GUGiK/BDOT10k
NR_REJ	T(254)	Number in the register of monuments (in extended form, including information on numbers of decision amendments, decisions on removal, etc.)	NID
OBIEKT	T(2)	Object identified on flood risk map: Z - non-movable monument; P - extermination monument; M - museum, open-air museum; ND - not applicable.	NID; MKiDN
UNESCO	T(1)	Listed by UNESCO: T - listed; N - not listed.	NID
OPIS	T(254)	Name or additional description of monument	NID; MKiDN
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 26. Attribute structure of the obszary\_cenne\_kulturowo layer

## Objects of cultural heritage

- layer: obiekty\_cenne\_kulturowo;
- type of layer: points;
- description: layer includes non-movable heritage monuments, sites listed on the World Heritage List, extermination monuments, museums, open-air museums, libraries, archives;
- data source: MKiDN, NID;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
ID_MIEJSC	T(38)	ID_PRNG of city	GUGiK/BDOT10k
MIEJSC	T(254)	Name of city	GUGiK/BDOT10k
NR_REJ	T(254)	Number in the register of monuments	NID
OBIEKT	T(2)	Object identified on flood risk map: Z - non-movable monument; P - extermination monument; M - museum, open-air museum; B - library (the national library resources); A - archives (the national archive resources); ND - not applicable.	NID; MKiDN
UNESCO	T(1)	Listed by UNESCO: T - listed; N - not listed.	NID
OPIS	T(254)	Name or additional description of monument	NID; MKiDN
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 27. Attribute structure of the obiekty\_cenne\_kulturowo layer



## Zoos

- layer: ogrody\_zoo;
- type of layer: polygons;
- description: layer includes zoos;
- data source: GUGiK/BDOT10k;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
ID_MIEJSC	T(38)	ID_PRNG of city	GUGiK/BDOT10k
MIEJSC	T(254)	Name of city	GUGiK/BDOT10k
NAZWA	T(254)	Name of zoo	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 28. Attribute structure of the ogrody\_zoo layer



### Cemeteries (potential sources of pollution)

- layer: cmentarze;
- type of layer: polygons;
- description: layer includes cemeteries;
- data source: GUGiK/BDOT10k;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
ID_MIEJSC	T(38)	ID_PRNG of city	GUGiK/BDOT10k
MIEJSC	T (254)	Name of city	GUGiK/BDOT10k
POWIERZ	D	Area of cemetery in ha	Calculations
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 29. Attribute structure of the cmentarze layer

### Landfills (potential sources of pollution)

- layer: składowiska\_odpadow;
- type of layer: polygons;
- description: layer includes structured active or inactive landfills that can be presented as an area at a scale of 1:10 000;
- data source: GUGiK/BDOT10k, PGW WP, WIOŚ;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
TYP	T(2)	Type of landfill: K - municipal; P - industrial; M - mixed; BD - no data available.	GUGiK/BDOT10k; PGW WP; WIOŚ
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 30. Attribute structure of the składowiska\_odpadow layer



### Wastewater treatment plants and wastewater pumping stations (potential sources of pollution)

- layer: oczyszczalnie\_przepompownie;
- type of layer: points;
- description: layer includes wastewater treatment plants together with their entire infrastructure, e.g. liquid waste dump sites, waste storage sites, etc;
- data source: GUGiK/BDOT10k, WIOŚ, PGW WP, digitalisation;
- type of map: flood risk map.

Attribute	Field type	Description	Attribute source
RODZAJ	T(1)	Potential source of pollution: O - wastewater treatment plant; P - wastewater pumping station.	GUGiK/BDOT10k; WIOŚ; PGW WP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 31. Attribute structure of the oczyszczalnie\_przepompownie layer

## Cities

- layer: miejscowosci;
- type of layer: polygons;
- description: settlement units of urban or rural nature;
- data source: GUGiK/BDOT10k;
- type of map: flood hazard map, flood risk map.

Attribute	Field type	Description	Attribute source
ZBIORNIK	T(254)	Name of reservoir compliant with the name of the area of potential significant flood risk as a result of dam failure identified in the preliminary flood risk assessment (without prefix)	PGW WP/aWORP
IdIIP_BT_I	T(50)	Local identifier in BDOT10k	GUGiK/BDOT10k
IdIIP_BT_1	T(50)	Identifier of namespaces in BDOT10k	GUGiK/BDOT10k
IdIIP_BT_2	T(50)	Identifier of version of BDOT10k. For sheets from the 1 <sup>st</sup> cycle not subject to update: "ND".	GUGiK/BDOT10k
ID_PRNG	T(38)	Identifier in PRNG	GUGiK/BDOT10k
NAZWA	T(254)	Name of city compliant with PRNG	GUGiK/BDOT10k
RODZAJ	T(3)	Type of unit: Ms - city; Ws - village; In - part of a city, part of a village or other separated part of a city.	GUGiK/BDOT10k
TERYT	T(7)	TERYT id of city	GUS; GUGiK/BDOT10k
L_Z_BP	LINT(6)	Population of the city within the flood hazard area for the scenario of dam failure	GUS
OPIS	T(254)	Additional information	PGW WP/aMZPiMRP
WERSJA	T(25)	Information referring to the version of FHMs and FRMs: 2019v1, 2022v1 etc.	PGW WP/aMZPiMRP

Table 32. Attribute structure of the miejscowosci layer



## 1.4 FINAL NOTES

The FHM and FRM spatial databases are in \*.shp format in the flat rectangular coordinate system PL-1992.

Description of the additional designation adopted for textual and numerical attributes:

- Textual attribute:
  - “ND” - means not applicable, to be used if the given attribute does not exist;
  - “BD” - means no data available, to be used if the given attribute exists but there are no specific descriptive data.
- Numerical attribute:
  - -9999 - means that the value is unknown (no data available);
  - -8888 - means that the value is still to be measured;
  - -7777 - means that the value does not apply to the given field.

Types of fields used in the description of attribute structure:

T(a) – text, a – field length;

SINT(a) – short integer, a – field length;

LINT(a) – long integer, a – field length;

F(a,b) – float, a – field length, b – number of decimal places;

D – double.



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