A procedure for field-survey of flood damage data

D. Molinari, S. Menoni, G.T. Aronica, F. Ballio, N. Berni, C. Pandolfo

Online resource 1: Form for data collection to be implemented in the procedure

Notes:

Three different colours are used in the form:

- Black: for pre-compiled fields
- Blue: for fields to be filled in during survey
- Red: for fields to be filled in after the survey, also on the basis of other sources. In the final version of the form (that will be filled in by collectors during survey) such fields will be deleted but still be present in the database.

Province I.D. |_|_|_|
Municipality I.D. |_|_|_|
Municipality |_|_|_|_|_|_|_|_|_|_|
Form I.D. |_|_|_|_|_|
Date |_|_| |_|_| |_|_|

SECTION 1 – SURVEY DATA		**Data**	**Notes**	**Guidelines**
Conditions for survey		Team I.D. |_|_| Collector I.D. |_|_|_|_| ☐ Support by private citizen Name:_____ Surname:_____ Tel./e-mail:_____ Function: ☐ Owner ☐ Tenant ☐ Other _____		Supply information on collector and their team. Indicate whether support by private citizen was supplied during the survey. If so, indicate personal details of the citizen, a telephone number/e-mail address and their function, being the owner, the tenant or other (e.g. neighbour, volunteer, etc.)
SECTION 2– BUILDING LOCATION		**Data**	**Notes**	**Guidelines**
Geographic coordinates (Datum WGS84, Format DMS)	|_|_|° |_|_|’ |_|_|_|” N |_|_|° |_|_|’ |_|_|_|” E	|_|_|° |_|_|’ |_|_|_|” N |_|_|° |_|_|’ |_|_|_|” E		Validate geographic coordinates. Use the WGS84 datum, DMS (Degree Minutes Seconds) format. If other datum/format is used, please specify in “Notes”.
Cadastral coordinate	Sheet I.D. |_|_|_| Particle I.D. |_|_|_|_|			

Address	☐ street ☐ avenue ☐ square Other _____ Number |_|_|_|	☐ Confirmed ☐ Not Confirmed ☐ street ☐ avenue ☐ square Other _____ Number |_|_|_|		When data are not confirmed, update the information.
SECTION 3 – BUILDING FEATURES		**Data**	**Notes**	**Guidelines**
Building typology	☐ Detached house ☐ Apartment house/semi-detached house Number of housing units |_|_|_| ☐ presence of attached buildings ☐ public building Specify_____	☐ Confirmed ☐ Not Confirmed ☐ Detached house ☐ Apartment house/semi-detached house Number of housing units |_|_|_| ☐ presence of attached buildings ☐ public building Specify_____		When data are not confirmed, update the information. Specify building typology and whether attached buildings are present. In the case of apartment house/semi-detached house, indicate the number of housing units.
Surface		Width |_|_|_|_| m Length |_|_|_|_| m		
Number of storeys (excluding basement)	|_|_| N°	☐ Confirmed ☐ Not Confirmed |_|_| N°		When data are not confirmed, update the information. Indicate the number of storeys, excluding basement.

Presence of basement	☐ No ☐ Yes |_|_| N°	☐ Confirmed ☐ Not Confirmed ☐ No ☐ Yes |_|_| N° ☐ Basement windows		When data are not confirmed, update the information. Indicate the number of storeys below the ground level and whether basement windows are present.
Open space		☐ Yes ☐ No ☐ Court ☐ Garden ☐ Other_____		
Period of construction	☐ before 1945 ☐ 1945-1991 ☐ 1991-2007 ☐ after 2007	☐ Confirmed ☐ Not Confirmed ☐ before 1945 ☐ 1945-1991 ☐ 1991-2007 ☐ after 2007 ☐ restoration within last 20 years		When data are not confirmed, update the information. Besides age, indicate whether evidence of restoration (within the last 20 years) is present.
Building structure		☐ Masonry ☐ Concrete ☐ Steel ☐ Wood ☐ Other _____		When the building is made up of parts with different structure, please specify in “Notes”.

Level of maintenance		□ Good □ Regular □ Bad		The level of maintenance is to be considered“bad” if, before the flood: • pavements were lacking or severely damaged (more than 20% of the total surface); • cover/plaster was lacking or severely damaged (more than 10% of the total surface); • walls were severely damaged; • more than one external openings was lacking or in bad condition; • the electric and plumbing systems were not designed/built according to the law. When openings, pavements, cover/plaster and roof were new/preciousness and systems were functioning, the level of maintenance is to be considered “good”. Otherwise, the level of maintenance is to be considered “regular”.
SECTION 4 – DESCRIPTION OF FLOOD EVENT		**Data**	**Notes**	**Guidelines**
Duration		Beginning: Hour |_|_| |_|_| Date |_|_| |_|_| |_|_| End: Hour |_|_| |_|_| Date |_|_| |_|_| |_|_| Peak of water depth: Hour |_|_| |_|_| Date |_|_| |_|_| |_|_|		Event begging and end refer to the period of time in which water was inside the building. Please use the following format: • “hh mm” for hour • “dd mm yy” for date

Water depth outside the building		SURVEY POINT: Description: _____ _____ Water depth |_|_|_| cm Altitude |_|_|_|_| m REFERENCE PLANE: Description: _____ _____ Altitude |_|_|_|_| m		Attach photos in order to univocally identify the survey point and the reference plan
Water depth outside attached buildings		SURVEY POINT: Description: _____ _____ Water depth |_|_|_| cm Altitude |_|_|_|_| m REFERENCE PLANE: Description: _____ _____ Altitude |_|_|_|_| m		Attach photos in order to univocally identify the survey point and the reference plane

Presence of sediments		☐ Yes ☐ No Type of sediment: ☐ fine sediments ☐ garbage ☐ coarse sediments ☐ vegetation/wood ☐ Other _____		
Presence of contaminants		☐ Yes ☐ No Type(s) of contaminant(s): _____		
SECTION 5 – DAMAGE TO HOUSING UNIT (TO REPEAT FOR EVERY HOUSING UNIT)				
Section 5A- unit features		**Data**	**Notes**	**Guidelines**
Owner	Name:_____ Surname:_____ Place of birth:_____ Date of birth: |_|_| |_|_| |_|_| Address:_____ _____	☐ Confirmed ☐ Not Confirmed Name:_____ Surname:_____ Place of birth:_____ Date of birth: |_|_| |_|_| |_|_| Address:_____ _____		When data are not confirmed, update the information. In the case of more than one owner, please specify it in “notes” along with data of further owners.
Cadastral coordinates	Sub-Particle |_|_|_|			
Surface		|_|_|_|_| m^2		

Number of storeys (excluding basement)		|_|_| N°		Indicate the number of storeys, excluding basement.
Presence of basement		☐ No ☐ Yes |_|_| N° ☐ Basement windows Surface |_|_|_|_| m^2		Indicate the number of storeys below the ground level and whether basement windows are present. Indicate the surface of every storey, pertaining to the housing unit. In the case of more than one storey, supply single floor information in “Notes”.
Elevation of ground floor		|_|_|_| cm		Elevation of the ground floor with respect to the ground level, in front of the building. If the ground level is irregular, please specify it in “Notes”.
Section 5B- Direct damage		**Data**	**Notes**	**Guidelines**
Flooded storeys		☐ Basement Use: ☐ box ☐ cellar ☐ housing ☐ storage ☐ not in use ☐ under construction/restoration ☐ Other_____ Technological systems pertaining to unit: ☐ plumbing system ☐ electrical system ☐ heating system ☐ Ground floor		Indicate which storeys were flooded and their use. Indicate whether technological systems are present, for every storey.

		Use: □ commercial □ housing □ not in use □ under construction/restoration □ Other_____ Technological systems pertaining to unit: □ plumbing system □ electrical system □ heating system □ upper floors Use: □ commercial □housing □ mansard □ not in use □ under construction/restoration □ Other_____ Technological systems pertaining to unit: □ plumbing system □ electrical system □ heating system		
Maximum water depth inside buildings		Basement |_|_|_| cm Ground floor |_|_|_| cm Upper floors |_|_|_| cm		Data refer to maximum water depth inside the building, during the whole flood event.

DAMAGE TO STRUCTURE – Concrete/Steel buildings

Structural damage

☐ Yes ☐ No

	Light Damage			Medium Damage			Severe Damage		
	<1/3	1/3-2/3	>2/3	<1/3	1/3-2/3	>2/3	<1/3	1/3-2/3	>2/3
Pillars									
Cladding									
Floor									
Stairs									
Roof									
Partitions									
Foundations									

Specify, for each degree of damage severity, the portion of the affected elements with respect to the total elements in the unit.

Damage is to be considered “light” when the strength of the element is not compromised, there is no danger for occupants because of collapse /fallen objects

Damage is to be considered“medium” when the strength of the element could be compromised, leading to its collapse. Falling objects are possible.

Damage is to be considered “severe” when the strength of the element is compromised and collapse occurred/is likely.

Causes of collapse

Evidence of:

☐ collapse of external cladding Cladding without damage to structural elements

☐ severe damage to structural elements (pillars and girders) without building collapse

☐ severe damage/collapse to/of building structure

☐ severe damage to foundations

<table>
<tr><td></td><td></td><td>without building collapse

☐ severe damage to foundations and building collapse

☐ building displacement

☐ building rotation</td><td></td><td></td></tr>
<tr><td colspan="5">DAMAGE TO STRUCTURE – Masonry/Wood buildings</td></tr>
<tr><td>Structural damage</td><td colspan="2">☐ Yes ☐ No
<table><tr><td></td><td colspan="3">Light Damage</td><td colspan="3">Medium Damage</td><td colspan="3">Severe Damage</td></tr><tr><td></td><td><1/3</td><td>1/3-2/3</td><td>>2/3</td><td><1/3</td><td>1/3-2/3</td><td>>2/3</td><td><1/3</td><td>1/3-2/3</td><td>>2/3</td></tr><tr><td>Vertical structures</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Floors</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Stairs</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Roof</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Partitions</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Foundations</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td><td></td><td>Specify, for each degree of damage severity, the portion of affected elements with respect to total elements in the unit.

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<tr><td>Causes of collapse</td><td></td><td>Evidence of:

☐ severe damage/collapse of ground wall because of flood wave without building collapse</td><td></td><td></td></tr>
</table>

		□ severe damage/collapse to/of building structure □ severe damage to foundations without building collapse □ severe damage to foundations and building collapse □ building displacement □ building rotation		
		|_|_|_|_|_|_| _|_|_|_|_| €		Specify the economic value of damage.
Damage to coating/plaster		□ Yes □ No |_|_|_|_| damaged surface [m^2]		
		|_|_|_|_|_|_| _|_|_|_|_| €		Specify the economic value of damage.
Damage to doors and windows		□ Yes □ No N° of damaged doors |_|_| |_|_|_|_| damaged surface [m^2] N° of damaged windows |_|_| |_|_|_|_| damaged surface [m^2]		Windows/doors are to be considered "damaged" if they need to be fixed/replaced. On the contrary, incurred costs must be considered as "clean-up cost".
		|_|_|_|_|_|_| _|_|_|_|_| €		Specify the economic value of damage.
Damage to pavements		□ Yes □ No |_|_|_|_| damaged surface [m^2]		Pavements are to be considered "damaged" if they need to be fixed/replaced. On the contrary,

				incurred costs must be considered as “clean-up cost”.
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Damage to technological systems		☐ plumbing system ☐ electrical system ☐ heating system ☐ lift ☐ Other_____		
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Damage to structure - Total		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage, as the sum of previous headings.
DAMAGE TO CONTENTS				
Damage to furniture		☐ Yes ☐ No		
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Damage to household appliances		☐ Yes ☐ No Specify:_____ _____		
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Other		Specify:_____ _____		

		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Damage to contents - Total		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage, as the sum of previous headings.
Direct damage - Total		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage, as the sum of previous headings.
Section 5C- Indirect damage		**Data**	**Notes**	**Guidelines**
Lack of Usability		☐ Yes ☐ No Duration |_|_|_|_| days Causes_____ _____		
Clean-up costs		☐ Yes ☐ No		Clean-up costs relate, for example, to the following activities: cleaning, debris removal, clearing, etc.
		☐ private work |_|_|_|_|_|_|_|_|_|_|_| € |_|_|_|_|_|_|_|_| days/person ☐ public work		Indicate if clean-up was done by private citizens or local authorities. In the first case, please specify incurred costs or required job (in terms of days/person).
Section 5D- Mitigation factors		**Data**	**Notes**	**Guidelines**
Mitigation actions		☐ None ☐ Suction pumps ☐ Shields ☐ Moving objects at upper floors		

		☐ Power interruption / switching off ☐ Evacuation ☐ Other_____ Time: Hour |_|_| |_|_| Date |_|_| |_|_| |_|_| Motivation: _____ _____ _____		
SECTION 6 – DAMAGE TO COMMON AREAS (To fill in only in the case of apartments house/semi-detached house)				
Section 6A- Common areas features		**Data**	**Notes**	**Guidelines**
Presence of basement		☐ No ☐ Yes |_|_| N° ☐ Basement windows Surface |_|_|_|_| m^2		Indicate the number of storeys below the ground level and whether basement windows are present. Indicate the surface of every storey, common to all housing units. In the case of more than one storey, supply single floor information in "Notes".
Elevation of ground floor		|_|_|_| cm		Elevation of the ground floor with respect to the ground level, in front of the building. If ground level is irregular, please specify in "Notes".
Section 6B- Direct damage		**Data**	**Notes**	**Guidelines**
Flooded storeys		☐ Basement Use: ☐ box ☐ cellar ☐ not in use		Indicate which storeys were flooded and their use. Indicate whether technological systems are present, for every storey.

		☐ under construction/restoration ☐ Other_____ Technological systems common to all units: ☐ plumbing system ☐ electrical system ☐ heating system ☐ Ground floor Use: ☐ porter's lodge/lobby ☐ not in use ☐ under construction/restoration ☐ Other_____ Technological systems common to all units: ☐ plumbing system ☐ electrical system ☐ heating system ☐ upper floors Use: ☐ lobby ☐ mansard ☐ not in use ☐ under construction/restoration ☐ Other_____ Technological systems common to all units:		

<table>
<tr><td></td><td></td><td>☐ plumbing system
☐ electrical system
☐ heating system</td><td></td><td></td></tr>
<tr><td>Maximum water depth inside buildings</td><td></td><td>Basement |_ |_ |_ | cm
Ground floor |_ |_ |_ | cm
Upper floors |_ |_ |_ | cm</td><td></td><td>Data refer to maximum water depth inside the building, during the whole flood event.</td></tr>
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<tr><td>Structural damage</td><td colspan="2">☐ Yes ☐ No
<table>
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<tr><td>Pillars</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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</table></td><td></td><td>Specify, for each degree of damage severity, the portion of affected elements with respect to total elements in the common area.
Damage is to be considered“light” when the strength of the element is not compromised, there is no danger for occupants because of collapse /fallen objects
Damage is to be considered“medium” when the strength of the element could be compromised, leading to its collapse. Falling objects are possible.
Damage is to be considered “severe” when the strength of the element is compromised and collapse occurred/is likely.</td></tr>
<tr><td>Causes of collapse</td><td></td><td>Evidence of:
☐ collapse of external cladding without damage to structural elements</td><td></td><td></td></tr>
</table>

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<td></td>
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☐ severe damage/collapse to/of building structure

☐ severe damage to foundations without building collapse

☐ severe damage to foundations and building collapse

☐ building displacement

☐ building rotation</td>
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Damage is to be considered“light” when the strength of the element is not compromised, there is no danger for occupants because of collapse /fallen objects

Damage is to be considered “medium” when the strength of the element could be compromised, leading to its collapse. Falling objects are possible.

Damage is to be considered “severe” when the strength of the element is compromised and collapse occurred/is likely.</td>
</tr>
</table>

Causes of collapse		Evidence of: □ severe damage/collapse of ground wall because of flood wave without building collapse □ severe damage/collapse to/of building structure □ severe damage to foundations without building collapse □ severe damage to foundations and building collapse □ building displacement □ building rotation		
		|_|_|_|_|_|_| _|_|_|_|_| €		Specify the economic value of damage.
Damage to coating/plaster		□ Yes □ No |_|_|_|_| damaged surface [m^2]		
		|_|_|_|_|_|_| _|_|_|_|_| €		Specify the economic value of damage.
Damage to doors and windows		□ Yes □ No N° of damaged doors |_|_| |_|_|_|_| damaged surface [m^2] N° of damaged windows |_ |_ | |_|_|_|_| damaged surface [m^2]		Windows/doors are “damaged” if they need to be fixed/replaced. On the contrary, incurred costs must be considered as “clean-up cost”.

		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Damage to floors		☐ Yes ☐ No |_|_|_|_| damaged surface [m^2]		Pavements are “damaged” if they need to be fixed/replaced. On the contrary, incurred costs must be considered as “clean-up cost”.
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Damage to technological systems		☐ plumbing system ☐ electrical system ☐ heating system ☐ lift ☐ Other_____		
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Damage to structure - Total		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage, as the sum of previous headings.
DAMAGE TO CONTENTS				
Damage to furniture		☐ Yes ☐ No		
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Other		Specify:_____ _____		
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.

Damage to contents - Total		|_|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage, as the sum of previous headings.
Direct damage - Total		|_|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage, as the sum of previous headings.
Section 6C- Indirect damage		**Data**	**Notes**	**Guidelines**
Lack of Usability		☐ Yes ☐ No Duration |_|_|_|_| days Causes_____ _____		
Clean-up costs		☐ Yes ☐ No		Clean-up costs relate, for example, to the following activities: cleaning, debris removal, clearing, etc.
		☐ private work |_|_|_|_|_|_|_|_|_|_|_|_| € |_|_|_|_|_|_|_|_|_| days/person ☐ public work		Indicate if clean-up was done by private citizens or local authorities. In the first case, please specify incurred costs or required job (in terms of days/person).
Section 6D- Mitigation factors		**Data**	**Notes**	**Guidelines**
Mitigation actions		☐ None ☐ Suction pumps ☐ Retaining walls ☐ Moving objects at upper floors ☐ Power interruption / switching off ☐ Evacuation		

		☐ Other_____ Time: Hour |_|_| |_|_| Date |_|_| |_|_| |_|_| Motivation: _____ _____ _____		
SECTION 7 – DAMAGE TO ATTACHED BUILDINGS (TO REPEAT FOR ANY ATTACHED BUILDNG)				
Section 7A- features of attached building		**Data**	**Notes**	**Guidelines**
Owner	Name:_____ Surname:_____ Place of birth:_____ Date of birth: |_|_| |_|_| |_|_| Address:_____ _____ ☐ Common property	☐ Confirmed ☐ Not Confirmed Name:_____ Surname:_____ Place of birth:_____ Date of birth: |_|_| |_|_| |_|_| Address:_____ _____ ☐ Common property		When data are not confirmed, update the information. In the case of more than one owner, please specify it in “notes” along with data of further owners.
Cadastral coordinates	Sub-Particle |_|_|_|			
Surface		|_|_|_|_| m^2		
Number of storeys (excepting basement)		|_|_| N°		Indicate the number of storeys, excluding basement.

Presence of basement		☐ No ☐ Yes |_|_| N° ☐ Basement windows Surface |_|_|_|_| m^2		Indicate the number of storeys below the ground level and whether basement windows are present. Indicate the surface of every storey, pertaining to the building. In the case of more than one storey, supply single floor information in “Notes”.
Elevation of ground floor		|_|_|_| cm		Elevation of the ground floor with respect tothe ground level, in front of the building. If ground level is irregular, please specify it in “Notes”.
Section 7B- Direct damage		**Data**	**Notes**	**Guidelines**
Flooded storeys		☐ Basement Use: ☐ box ☐ storage ☐ poultry house/stable ☐ not in use ☐ under construction/restoration ☐ Other_____ Technological systems pertaining to attached building: ☐ plumbing system ☐ electrical system ☐ heating system ☐ Ground floor Use: ☐ box ☐ storage ☐ poultry house/stable		Indicate which storeys were flooded and their use. Indicate whether technological systems are present, for every storey.

		□ not in use □ under construction/restoration □ Other_____ Technological systems pertaining to attached building: □ plumbing system □ electrical system □ heating system □ upper floors Use: □ storage □ poultry house/stable □ not in use □ under construction/restoration □ Other_____ Technological systems pertaining to attached building: □ plumbing system □ electrical system □ heating system		
Maximum water depth inside buildings		Basement |_|_|_| cm Ground floor |_|_|_| cm Upper floors |_|_|_| cm		Data refer to maximum water depth inside the building, during the whole flood event.
DAMAGE TO STRUCTURE – Concrete/Steel buildings				

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<tr><th></th><th colspan="3">Light Damage</th><th colspan="3">Medium Damage</th><th colspan="3">Severe Damage</th></tr>
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<tr><td>Pillars</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Cladding</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Floor</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Stairs</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Roof</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Partitions</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Foundatiosn</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td>
<td></td>
<td>Specify, for each degree of damage severity, the portion of affected elements with respect to total elements in the building.

Damage is to be considered “light” when the strength of the element is not compromised, there is no danger for occupants because of collapse /fallen objects

Damage is to be considered“medium” when the strength of the element could be compromised, leading to its collapse. Falling objects are possible.

Damage is to be considered“severe” when the strength of the element is compromised and collapse occurred/is likely.</td>
</tr>
<tr>
<td>Causes of collapse</td>
<td></td>
<td>Significant presence of:

☐ collapse of external cladding without damage to structural elements

☐ severe damage to structural elements (pillars and beams) without building collapse

☐ severe damage/collapse to/of building structure

☐ severe damage to foundations without building collapse

☐ severe damage to foundations</td>
<td></td>
<td></td>
</tr>
</table>

<table>
<tr><td></td><td></td><td>and building collapse

☐ building displacement

☐ building rotation</td><td></td><td></td></tr>
<tr><td colspan="5">DAMAGE TO STRUCTURE – Masonry/Wood buildings</td></tr>
<tr><td>Structural damage</td><td>☐ Yes ☐ No
<table><tr><td></td><td colspan="3">Light Damage</td><td colspan="3">Medium Damage</td><td colspan="3">Severe Damage</td></tr><tr><td></td><td><1/3</td><td>1/3-2/3</td><td>>2/3</td><td><1/3</td><td>1/3-2/3</td><td>>2/3</td><td><1/3</td><td>1/3-2/3</td><td>>2/3</td></tr><tr><td>Vertical structures</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Floors</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Stairs</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Roof</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Partitions</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Foundations</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td><td></td><td>Specify, for each degree of damage severity, the portion of affected elements with respect to total elements in the building.

Damage is to be considered “light” when the strength of the element is not compromised, there is no danger for occupants because of collapse /fallen objects

Damage is to be considered “medium” when the strength of the element could be compromised, leading to its collapse. Falling objects are possible.

Damage is to be considered “severe” when the strength of the element is compromised and collapse occurred/is likely.</td></tr>
<tr><td>Causes of collapse</td><td></td><td>Significant presence of:

☐ severe damage/collapse of ground wall because of flood wave without building collapse

☐ severe damage/collapse to/of building structure</td><td></td><td></td></tr>
</table>

		□ severe damage to foundations without building collapse □ severe damage to foundation and building collapse □ building displacement □ building rotation		
		|_|_|_|_|_|_| _|_|_|_|_| €		Specify the economic value of damage.
Damage to coating/plaster		□ Yes □ No |_|_|_|_| damaged surface [m^2]		
		|_|_|_|_|_|_| _|_|_|_|_| €		Specify the economic value of damage.
Damage to doors and windows		□ Yes □ No N° of damaged doors |_|_| |_|_|_|_| damaged surface [m^2] N° of damaged windows |_|_| |_|_|_|_| damaged surface [m^2]		Windows/doors are “damaged” if they need to be fixed/replaced. On the contrary, incurred costs must be considered as “clean-up cost”.
		|_|_|_|_|_|_| _|_|_|_|_| €		Specify the economic value of damage.
Damage to floors		□ Yes □ No |_|_|_|_| damaged surface [m^2]		Pavements are “damaged” if they need to be fixed/replaced. On the contrary, incurred costs must be considered as “clean-up cost”.

		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Damage to technological systems		☐ plumbing system ☐ electrical system ☐ heating system ☐ Other_____		
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Damage to structure - Total		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage, as the sum of previous headings.
DAMAGE TO CONTENTS				
Damage to furniture		☐ Yes ☐ No		
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Damage to household appliances		☐ Yes ☐ No Specify:_____ _____		
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.
Other		Specify:_____ _____		
		|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage.

Damage to contents - Total		|_|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage, as the sum of previous headings.
Direct damage - Total		|_|_|_|_|_|_|_|_|_|_|_|_| €		Specify the economic value of damage, as the sum of previous headings.
Section 7C- Indirect damage		**Data**	**Notes**	**Guidelines**
Lack of usability		☐ Yes ☐ No Duration |_|_|_|_| days Causes_____ _____		
Clean-up costs		☐ Yes ☐ No		Clean-up costs relate, for example, to the following activities: cleaning, debris removal, clearing, etc.
		☐ private work |_|_|_|_|_|_|_|_|_|_|_|_| € |_|_|_|_|_|_|_|_| days/person ☐ public work		Indicate if clean-up was done by private citizens or local authorities. In the first case, please specify incurred costs or required job (in terms of days/person).
Section 7D- Mitigation factors		**Data**	**Notes**	**Guidelines**
Mitigation actions		☐ None ☐ Suction pumps ☐ Retaining walls ☐ Moving objects at upper floors ☐ Power interruption / switching off ☐ Evacuation		

		☐ Other_____ Time: Hour |_|_| |_|_| Date |_|_| |_|_| |_|_| Motivation: _____ _____ _____		

SECTION 8 – ATTACHMENTS

☐ Building Plan (1:100)

☐ Photos to identify buildings

☐ Photos to identify reference point for water depth record

☐ Photos of damaged items