Preliminary flood risk assessment review

Self-assessment form

January 2017

This self-assessment form is provided to enable each lead local flood authority (LLFA) in England to complete the first review of its preliminary assessment report and identification of flood risk areas (FRAs), as required by the Flood Risk Regulations (2009).

Who should complete this self-assessment?

Every LLFA in England should complete parts A, C and D of the self-assessment form and submit it, with the additional information requested in sections C3 and C4, to the appropriate Environment Agency Partnership and Strategic Overview team **no later than 22 June 2017**.

All LLFAs should **read the guidance document 'Preliminary flood risk assessment review: guidance for lead local flood authorities in England'** before completing the self-assessment form.

Part A - LLFA contact information	
Name of LLFA	Solihull Metropolitan Borough Council
Name of LLFA officer submitting the assessment	Oliver Monk
Job title	Highway Drainage Engineer
Telephone number	0121 704 6504
Email address	Oliver.monk@solihull.gov.uk
Name of LLFA officer approving the assessment	Edward Bradford
Job title	Flood Risk Manager
Date submitted to Environment Agency	
Link to PFRA report 2011	http://www.solihull.gov.uk/Portals/0/CrimeAndEmergencies/PFRA.pdf

Part B - to be completed by the Environment Agency	
Name of Environment Agency officer receiving the completed assessment	
Job title	
Date assessment received from LLFA	
Date assessment agreed with LLFA	

Part C - LLFA self-assessment

PFRA report section	Activity for PFRA/FRA review	Yes/No	Summary description	Actions planned in response
1. Governance and partnership	1.1 Since publication of the PFRA in 2011, have there been any changes to, or creation of new, risk management authorities (RMAs) with responsibilities in the LLFA area?	Yes	Creation of Coventry Solihull Warwickshire Resilience (CSWR) - A joint service providing the emergency planning function for the three council areas	CSWR routinely attend the regular Solihull Flood Risk Management Partnership (SFRMP) meetings
	1.2 Are all roles and responsibilities for collecting and recording flood risk data and information clearly defined, including the respective roles and responsibilities of upper and lower tier authorities and other RMAs where relevant?	Yes		
2. Data systems and management	2.1 Do you have an up to date record of relevant sources of flood risk data and information for the LLFA area, including those held by other organisations?	Yes	GIS records and asset records.	Keep external records up to date through regular updates.
	2.2 Have sources of 'locally agreed surface water information' been established and maintained for the LLFA area and agreed with relevant partners?	Yes	The Updated Flood Map for Surface Water has been agreed upon by partners at the SFRMP meetings.	

PFRA report section	Activity for PFRA/FRA review	Yes/No	Summary description	Actions planned in response
	2.3 Are systems in place to collect, record and share data and information for the purpose of assessing flood risk in the LLFA area?	Yes	Community Cameras monitor key watercourses and provide high water level alerts. Additionally there is an ongoing public survey to allow residents to report flood data.	On call operatives respond to high water level reports. Public reports are investigated by the LLFA team.
	2.4 Are systems in place to assure the quality and security of data and information recorded for the purpose of assessing flood risk in the LLFA area?	Yes	All collected data from cameras, surveys etc. are collected and stored off site. Detailed investigations are on the council network which is backed up.	Continue to expand the camera network where funding is available.
	2.5 Do you understand the condition and performance of the public, third party and private assets in your register in terms of flood risk?	Yes	Assets recorded on the asset register are inspected and maintained as required.	Continue the ongoing inspection and maintenance regime.
3. Past floods since Dec 2011 only) **Information on past floods since 2011 is required for reporting to the European Commission**	3.1 Have any flood events occurred since publication of the original PFRA report in December 2011 that have added to or changed your understanding of significant flood risk in the LLFA area? See the guidance document on which floods to report.	Yes	Do not populate this box. Provide details of relevant floods by updating annex 1 Past floods of your original PFRA report to include relevant floods since 2011. Information from your updated annex 1 will be used for reporting to the European Commission.	
	3.2 Has your current understanding of significant flood risk in the LLFA area changed as a result of the consequences of floods that have occurred since 2011? How?	Yes	More occurrences of ground water flooding than predicted in 2011. Better communication and reporting mechanisms mean that the LLFA is responding to a greater number and variety	A groundwater monitoring scheme is being considered but this is at a preliminary stage. Current communication processes will be continued and use of social media is being considered to improve reporting further.

PFRA report section	Activity for PFRA/FRA review	Yes/No	Summary description	Actions planned in response
			of flooding events than previously. Modelling undertaken as part of investigations has enhanced understanding of local flooding issues by clarifying sources of water and flow routing.	We have started to model flooding in-house rather than depending on consultants.
4. Future flood information **Information on future floods is required for reporting to the European Commission**	4.1 Have you created or received new information on potential future floods that has added to or changed your understanding of significant flood risk in the LLFA area since publication of your original PFRA report in 2011?	Yes	Do not populate this box. Provide details by updating annex 2 Future floods of your original preliminary assessment report to include relevant new information since 2011. Information from your updated annex 2 will be used for reporting to the European Commission.	
	4.2 Have you created or received new information to improve the understanding of the future impact of climate change on flood risk in the LLFA area?	Yes	New guidance on climate change published in February 2016 has been adopted by the LLFA.	New developments are directed to use the new guidance.
	4.3 Have you created or received new information on long term developments to improve your understanding of flood risk in the LLFA area?	Yes	We are working closely with the local planning authority on future developments including the Local Plan.	We will continue this partnership.
	4.4 Has your understanding of flood risk in the LLFA area changed since 2011 as a result of new information on the potential consequences of future floods, the impact of climate change or long term developments? How?	Yes	Modelling of the River Blythe gives an improved understanding of the flood risk to Cheswick Green and the surrounding area. The model takes into account the effects of climate change.	The model is being updated and expanded to include take the model to the upper reaches of the river and include two tributaries. These models will inform our strategy of future development in the area.

PFRA report section	Activity for PFRA/FRA review	Yes/No	Summary description	Actions planned in response
5. Identification of Flood Risk Areas for 2nd planning cycle **Identified FRAs are required for reporting to the European Commission**	5.1 Are the indicative FRAs an appropriate representation of significant **surface water** flood risk in your LLFA area?	Yes	Currently this is accurate but the future development of the High Speed 2 interchange which is just outside the area may require the expansion of the FRA due to the critical nature of this infrastructure.	
	5.2 Do the consequences of flooding from **other local sources,** ie groundwater or ordinary watercourses, or from **combined multiple sources**, indicate any other areas of significant risk?	No		
	5.3 Has your PFRA review identified **any other information** which indicates other areas of significant risk?	No		
	5.4 On the basis of the national evidence provided and your review, do you agree with the indicative FRAs for your area?	Yes	Do not populate this box. List your FRAs in annex 3 of your original preliminary assessment report. If you do not agree with an indicative FRA, we advise that you engage early with the relevant Environment Agency PSO team to raise questions or concerns ahead of submitting this form (see guidance document).	
	5.5 On the basis of local evidence and your review, are you amending or identifying any additional FRAs for your area?	No	Do not populate this box. List additional FRAs in annex 3 of your original preliminary assessment report. If you are amending, or proposing additional, FRAs, this should first be discussed with the	

PFRA report section	Activity for PFRA/FRA review	Yes/No	Summary description	Actions planned in response
			relevant Environment Agency PSO team ahead of submitting this form.	
6. Updating the original preliminary assessment report using the template addendum (see also Part D) **Updates are required for reporting to the European Commission**	6.1 Have you completed an addendum to update your preliminary assessment report?	Yes	Do not populate this box. Complete the addendum template provided below	

Part D Template for addendum to update the original Preliminary Flood Risk Assessment report

ADDENDUM

Update to the preliminary flood risk assessment report for Solihull Metropolitan Borough Council

The preliminary flood risk assessment (PFRA) and flood risk areas (FRAs) for Solihull Metropolitan Borough Council were reviewed during 2017, using all relevant current flood risk data and information, and agreed with the Environment Agency in December 2017.

Changes to the assessment of risk since the preliminary assessment report was published in 2011 are described in the statements in this addendum.

The annexes to the preliminary assessment report have been reviewed and updated to show relevant new information since 2011.

Past flood risk

More occurrences of ground water flooding than predicted in 2011.

Surface water flooding on 1st September 2015 as a result of natural exceedence.

Better communication and reporting mechanisms mean that the LLFA is responding to a greater number and variety of flooding events than previously.

Modelling undertaken as part of investigations has enhanced understanding of local flooding issues by clarifying sources of water and flow routing.

Future flood risk

The updated flood map for surface water has been used in the Solihull Local Flood Risk Management Strategy.

Flood risk areas (FRAs)

The following FRAs have been identified for the purposes of the Flood Risk Regulations (2009) 2nd planning cycle (if no FRAs are identified, please state this here).

Birmingham BUASD

Coventry BUASD

Other changes

Include any other updates which you consider important in relation to the assessment of flood risk in your area eg a change in the governance or structure of flood risk management in the LLFA area from those described in the original report.

ANNEX 1: Records of past floods and their significant consequences (preliminary assessment report spreadsheet)

Field:	Flood ID	Summary description	Name of Location	National Grid Reference	Location Description	Start date	Days duration	Probability	Main source of flooding	Additional source(s) of flooding	Confidence in main source of flooding	Main mechanism of flooding	Main characteristic of flooding
Mandatory / optional:	Mandatory	Mandatory	Mandatory	Mandatory	Optional	Optional for first cycle	Optional for first cycle	Optional for first cycle	Optional for first cycle	Optional	Optional	Optional for first cycle	Optional for first cycle
Format:	Unique number between 1-9999	Max 5,000 characters	Max 250 characters	12 characters: 2 letters, 10 numbers	Max 250 characters	'yyyy' or 'yyyy-mm' or 'yyyy-mm-dd'	Number with two decimal places	Max 25 characters	Pick from drop-down	Max 250 characters, same source terms	Pick from drop-down	Pick from drop-down	Pick from drop-down
Notes:	A sequential number starting at 1 and incrementing by 1 for each record.	Description of the flood and its adverse or potentially adverse consequences. Where available, information from other fields (Start date, Days duration, Probability, Main source, Main mechanism, Main characteristics, Significant consequences) should be repeated here.	Name of the locality associated with the flood, using recognised postal address names such as streets, towns, counties. If the flood affected the whole LLFA, then record the name of the LLFA.	National Grid Reference of the centroid (centre point, falls within polygon) of the flood extent, or of the area affected if there is no extent information.	A description of the general location that was flooded.	The date when the flood commenced - when land not normally covered by water became covered by water.	The number of days (duration) of the flood - that land not normally covered by water was covered by water. Values should be within the range 0.01 - 999.99 (permitting records to the nearest quarter of an hour, where appropriate).	The chance of the flood occuring in any given year - record X from "a 1 in X chance of occurring in any given year". Where this is difficult to estimate, a range can be recorded.	Pick the source from which the majority of flooding occurred. Refer to the PFRA guidance for definitions of sources.	If flooding occurred from, or interacted with, any other sources (other than the Main source of flooding), report the source(s) here, using the same source terms.	Pick a broad level of confidence in the Main source of flooding from; 'High' (compelling evidence of source - about 80% confident that source is correct), 'Medium' (some evidence of source but not compelling - about 50% confident that source is correct) 'Low' (source assumed - about 20% confident that source is correct) or 'Unknown'.	Pick a mechanism from; 'Natural exceedance' (of capacity), 'Defence exceedance' (floodwater overtopping defences), 'Failure' (of natural or artificial defences or infrastructure, or of pumping), 'Blockage or restriction' (natural or artificial blockage or restriction of a conveyance channel or system), or 'No data'.	Pick a characteristic from; 'Flash flood' (rises and falls quite rapidly with little or no advance warning), 'Natural flood' (due to significant precipitation, at a slower rate than a flash flood), 'Snow melt flood' (due to rapid snow melt), 'Debris flow' (conveying a high degree of debris), or 'No data'. Most UK floods are 'Natural floods'.
Example:	1	On the 14 April 1998 an intense storm system produced surface water flooding across Essex, concentrated in the west of the county. The flooding lasted about 6 hours, and 23 residential properties were recorded as suffering internal flooding, in Epping and North Weald. The surface runoff exceeded the drainage capacity in several places, and so probably had a 1 in 30 to 1 in 50 chance of occuring in any given year.	Essex	SX1234512345	Several towns and villages across west Essex	1998-04-15	0.25	20-50	Surface runoff		High	Natural exceedance	Natural flood
Records begin here:	1	On 20th July a period of wet weather was followed by an intense rainfall event causing the River Cole and River Blythe to flood. In the region of 20 properties suffered internal flooding in the Solihull area although many more were threatened with flooding. Many smaller watercourses also caused localised flooding. The period of intense rainfall experienced represented a 1 in 75 year storm event. Propery flooding lasted in escess of 4 hours and river levels did not return to non-flood flow conditions for 48 hours.	Nethercote Gardens, Shirley suffered significant flooding fom the River Cole (Ordinary Watercourse)	SP4103827904	Residential estate adjacent to River Cole.	20/07/2007	0.5	0.33	Ordinary watercourses	Secondary sources apply. Floodwater overtopped adjacent Mill Pond flowing down to Netercote Gardens. Drainage system was unable to cope or discharge into the river. Road	High	Natural exceedance	Natural flood
	2	On 20th July a period of wet weather was followed by an intense rainfall event causing the River Cole and River Blythe to flood. In the region of 20 properties suffered internal flooding in the Solihull area although many more were threatened with flooding. Many smaller watercourses also caused localised flooding. The period of intense rainfall experienced represented a 1 in 75 year storm event. Propery flooding lasted in escess of 4 hours and river levels did not return to non-flood flow conditions for 48 hours.	Cheswick Green suffered significant flooding from the River Blythe (Main River) at the confluence of Mount Brook	SP4125227556	Residential estate adjacent to River Blythe.	20/07/2007	0.5	0.33	Main rivers	River Blythe backs up Mount Brook causing the brook to overtop banks	High	Natural exceedance	Natural flood
	3	On several occassions including the summer of 2007 flooding from the Low Brook occurred at the boundary fence of Birmingham Airport. Although the flood water did not extend to the adjacent runway the A45 Coventry Road was been adversley affected. Debris collecting on the airport security fence across the watercourse contributes to the risk of flooding.	Low Brook is Main River at this location. The A45 is a main access route into Birmingham and provides access to Birmingham Airport.	SP4178728298	Potential disruption to air and road transport infrastructure	20/07/2007	0.3	0.5	Main rivers	Blockage due to debris on security fence can cause flooding of A45 Coventry Road without generalised flooding.	High	Natural exceedance	Natural flood

Field:	Significant consequences to human health	Human health consequences - residential properties	Property count method	Other human health consequences	Significant economic consequences	Number of non-residential properties flooded	Property count method	Other economic consequences	Significant consequences to the environment	Environment consequences	Significant consequences to cultural heritage	Cultural heritage consequences
Mandatory / optional:	Mandatory	Optional	Optional	Optional	Mandatory	Optional	Optional	Optional	Mandatory	Optional	Mandatory	Optional
Format:	Pick from drop-down	Number between 1-10,000,000	Pick from drop-down	Max 250 characters	Pick from drop-down	Number between 1-10,000,000	Pick from drop-down	Max 250 characters	Pick from drop-down	Max 250 characters	Pick from drop-down	Max 250 characters
Notes:	Were there any significant consequences to human health when the flood occurred, or would there be if it were to re-occur?	Record the number of residential properties where the building structure was affected either internally or externally by the flood, or that would be so affected if the flood were to re-occur.	Where residential or non-residential properties have been counted, it is important to record the method of counting, to aid comparisons between counts. Choose from; 'Detailed GIS' (using property outlines, as per Environment Agency guidance), 'Simple GIS' (using property points), 'Estimate from map', or 'Observed number'.	If there were other Significant consequences to human health, describe them including information such as the number of critical services flooded.	Were there any significant economic consequences when the flood occurred, or would there be if it were to re-occur?	Record the number of non-residential properties where the building structure was affected either internally or externally by the flood, or that would be so affected if the flood were to re-occur.	Where residential or non-residential properties have been counted, it is important to record the method of counting, to aid comparisons between counts. Choose from; 'Detailed GIS' (using property outlines, as per Environment Agency guidance), 'Simple GIS' (using property points), 'Estimate from map', or 'Observed number'.	If there were other Significant economic consequences, describe them including information such as the area of agricultural land flooded, length of roads and rail flooded.	Were there any significant consequences to the environment when the flood occurred, or would there be if it were to re-occur?	If there were Significant consequences to the environment, describe them including information such as national and international designated sites flooded, and pollution sources flooded.	Were there any significant consequences to cultural heritage when the flood occurred, or would there be if it were to re-occur?	If there were Significant consequences to cultural heritage, describe them including information such as the number and type of heritage assets flooded.
Example:	Yes	23	Observed number		No				No		No	
Records begin here:	Yes	37	Observed number	Risk to health from contaminated flood water	Yes	0	Estimate from map		No		No	
	Yes	10	Observed number	Risk to health from contaminated flood water	Yes	3 - Village Hall, Shop and Post Office	Estimate from map		No		No	
	Yes	0	Estimate from map	Risk of injury to travelling public	Yes	Disruption to main 'A' road between Birmingham and Coventry. Disruption to main access route to Birmingham Airport and possible flooding to end of runway..	Observed number	During worst recent incident in 2007 the A45 closed to traffic for 6hrs.	No		No	

Field:	Comments	Data owner	Area flooded	Flood event outline confidence	Flood event outline source	Survey date	Photo ID	Lineage	Sensitive data	Protective marking descriptor	European Flood Event Code
Mandatory / optional:	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Auto-populated
Format:	Max 1,000 characters	Max 250 characters	Number with two decimal places	Pick from drop-down	Pick from drop-down	'yyyy' or 'yyyy-mm' or 'yyyy-mm-dd'	Max 50 characters	Max 250 characters	Pick from drop-down	Max 50 characters	Max 42 characters
Notes:	Any additional comments about the past flood record.		The total area of the land flooded, in km^2	Choose from; 'High' (data includes one of: Aerial video, Aerial photos, Professional survey, Flood level information, EA flood data recording staff notes), 'Medium' (data includes one of: EA/LA ground video, EA/LA ground photos, EA/LA flood event outline map, LA/professional partner officer site records, Public ground video), 'Low' (not confident) or			Provide references to relevant specific photographs, or to a set of relevant photographs. It may not be practical to reference all relevant photographs for each flood event.	Lineage is how and what the data is made from. Has this data been created by using data owned or derived from data owned by 3rd party (external) organisations? If yes please give details.	Has the information been classified under the Government's Protective Marking Scheme? Include protective marking time limit where known. Note: If "Approved for Access" then report "Unmarked".	For use where organisations apply the Government's Protective Marking Scheme.	This field will autopopulate using the LLFA name provided on the "Instructions" tab, and the Flood ID. It is an EU-wide unique identifier and will be used to report the flood information. Format: UK<ONS Code><P or F><LLFA Flood ID>. "ONS Code" is a unique reference for each LLFA. "P or F" indicates if the event is past or future. "LLFA Flood ID" is a sequential number beginning with 0001.
Example:		Epping Forest District Council		Medium	Site survey	1998-04-20		Ordnance Survey AddressPoint; CEH 1:50k River Centreline; NextMap DTM.	Unmarked	Private	UKE10000012P0001
Records begin here:	Flood insurance is becoming difficult for property owners	Solihull Metropolitan Borough Council	0.03	Medium	Professional staff notes	2010		River Cole Local Flood Risk Management Plan - Assessment of Flood Risk November 2010. Prepared by Atkins Ltd for Birmingham City Council and Solihull Metropolitan	Unmarked		UKE08000029P0001
	Flood insurance is becoming difficult for property owners	Solihull Metropolitan Borough Council		Medium		2010		Cheswick Green Parish Council Fooding Report	Unmarked		UKE08000029P0002
	The proposed runway extension will take the runway across the existing A45 which is scheduled for realignment.	Solihull Metropolitan Borough Council		Medium							UKE08000029P0003

ANNEX 2: Records of future floods and their consequences (preliminary assessment report spreadsheet)

Field:	Flood ID	Description of assessment method	Name of Location	National Grid Reference	Location Description	Name	Flood modelled	Probability	Main source of flooding
Mandatory / optional:	Mandatory	Mandatory	Mandatory	Mandatory	Optional	Optional	Optional	Mandatory	Mandatory
Format:	Unique number between 1-9999	Max 1,000 characters	Max 250 characters	12 characters: 2 letters, 10 numbers	Max 250 characters	Max 250 characters	Max 250 characters	Max 25 characters	Pick from drop-down
Notes:	A sequential number starting at 1 and incrementing by 1 for each record.	Description of the future flood information and how it has been produced. Cover Regulation 12(6) requirements of (a) topography, (b) the location of watercourses, (c) the location of flood plains that retain flood water, (d) the characteristics of watercourses, and (e) the effectiveness of any works constructed for the purpose of flood risk management. Information from other relevant fields (Probability, Main source, Name) should be repeated here.	Name of the locality associated with the flood, using recognised postal address names such as streets, towns, counties. If the flood affects the whole LLFA, then record the name of the LLFA.	National Grid Reference of the centroid (centre point, falls within polygon) of the flood extent, or of the area affected if there is no extent information. If the flood affects the whole LLFA, then record the centroid of the LLFA.	A description of the general location that could be flooded.	Name of the model or map product or project which produced the future flood information	Background, or additional information on the probability of the flood modelled - such as whether Probability refers to probability of rainfall or water on the ground.	The chance of the flood occuring in any given year - record X from "a 1 in X chance of occurring in any given year".	Pick the source which generates the majority of flooding. Refer to the PFRA guidance for definitions of sources.
Example:	1	See records below for examples of description of assessment method.	Essex	SX1234512345		Flood Map for Surface Water - 1 in 200 deep	Probability refers to the probability of the rainfall event, in this case producing flooding of greater than 0.3m depth.	200	Surface runoff
Records begin here:	1	• Topography is derived from LIDAR (in larger urban areas, on 1, 2 and 3m grids; original accuracy ± 0.15m) and Geoperspective data (original accuracy ± 1.5m), processed to remove buildings and vegetation, then degraded to a composite 5m DTM. Manual edits applied where flow paths clearly omitted e.g. below bridges. • Flow routes dictated by topography; no allowance made for manmade drainage. The DTM may miss flow paths below bridges. • Areas that may flood are defined by dynamically routing a 6.5 hour duration storm with 1 in 200 chance of occurring in any year, over the DTM using JBA's JFLOW–GPU model. • Manning's n of 0.1 is used throughout, to allow broad scale effects of buildings and other obstructions to be approximated. • No allowance made for drainage, pumping or other works constructed for the purpose of flood risk management. • The 'less susceptible' layer shows where modelled flooding is 0.1-0.3m deep; you must not interpret this as depth of flooding, rather as indicative of susceptibility to flooding because of modelling uncertainties.	Solihull	418932, 279649	Throughout the borough, concentrated in urban areas	Areas Susceptible to Surface Water Flooding (AStSWF) - Less	Probability refers to the probability of the rainfall event. This identifies areas which are 'less susceptible' to surface water flooding. For more information refer to "What are Areas Susceptible to Surface Water Flooding" Environment Agency December 2010.	200	Surface runoff
	2	• Topography is derived from LIDAR (in larger urban areas, on 1, 2 and 3m grids; original accuracy ± 0.15m) and Geoperspective data (original accuracy ± 1.5m), processed to remove buildings and vegetation, then degraded to a composite 5m DTM. Manual edits applied where flow paths clearly omitted e.g. below bridges. • Flow routes dictated by topography; no allowance made for manmade drainage. The DTM may miss flow paths below bridges. • Areas that may flood are defined by dynamically routing a 6.5 hour duration storm with 1 in 200 chance of occurring in any year, over the DTM using JBA's JFLOW–GPU model. • Manning's n of 0.1 is used throughout, to allow broad scale effects of buildings and other obstructions to be approximated. • No allowance made for drainage, pumping or other works constructed for the purpose of flood risk management. • The 'intermediate susceptibility' layer shows where modelled flooding is 0.3-1.0m deep; you must not interpret this as depth of flooding, rather as indicative of susceptibility to flooding because of modelling uncertainties.	Solihull	418932, 279650	Throughout the borough, concentrated in urban areas	Areas Susceptible to Surface Water Flooding (AStSWF) - Intermediate	Probability refers to the probability of the rainfall event. This identifies areas with 'intermediate susceptibility' to surface water flooding.	200	Surface runoff
	3	• Topography is derived from LIDAR (in larger urban areas, on 1, 2 and 3m grids; original accuracy ± 0.15m) and Geoperspective data (original accuracy ± 1.5m), processed to remove buildings and vegetation, then degraded to a composite 5m DTM. Manual edits applied where flow paths clearly omitted e.g. below bridges. • Flow routes dictated by topography; no allowance made for manmade drainage. The DTM may miss flow paths below bridges. • Areas that may flood are defined by dynamically routing a 6.5 hour duration storm with 1 in 200 chance of occurring in any year, over the DTM using JBA's JFLOW–GPU model. • Manning's n of 0.1 is used throughout, to allow broad scale effects of buildings and other obstructions to be approximated. • No allowance made for drainage, pumping or other works constructed for the purpose of flood risk management. • The 'more susceptible' layer shows where modelled flooding is >1.0m deep; you must not interpret this as depth of flooding, rather as indicative of susceptibility to flooding because of modelling uncertainties.	Solihull	418932, 279651	Throughout the borough, concentrated in urban areas	Areas Susceptible to Surface Water Flooding (AStSWF) - More	Probability refers to the probability of the rainfall event. This identifies areas which are 'more susceptible' to surface water flooding.	200	Surface runoff
	4	• Topography is derived from 64.5% LIDAR (on 0.25m-2m grids; original accuracy ± 0.15m) and 35.5% NEXTMap SAR (on 5m grid; original accuracy ± 1.0m), processed to remove buildings & vegetation, then combined on a 2m grid; buildings added with an arbitrary height of 5m based on OS MasterMap 2009 building footprints, then resampled to a 5m grid DTM. Manual edits applied where flow paths clearly omitted e.g. below bridges. • Flow routes dictated by topography; a uniform allowance of 12mm/hr has been made for manmade drainage in urban areas. Infiltration allowance reduces runoff to 39% in rural areas and 70% in urban areas. • Areas that may flood are defined by dynamically routing a 1.1 hour duration storm with 1 in 30 chance of occurring in any year over the DTM using JBA's JFLOW–GPU model. • Manning's n of 0.1 in rural areas; 0.03 in urban areas, to reflect explicit modelling of buildings in urban areas. • No allowance made for local variations in drainage, pumping or other works constructed for the purpose of flood risk management. • The '>0.1m' layer shows where modelled flooding is greater than 0.1m deep.	Solihull	418932, 279652	Throughout the borough, concentrated in urban areas	Flood Map for Surface Water (FMfSW) - 1 in 30	Probability refers to the probability of the rainfall event, in this case producing flooding of greater than 0.1m depth.	30	Surface runoff
	5	• Topography is derived from 64.5% LIDAR (on 0.25m-2m grids; original accuracy ± 0.15m) and 35.5% NEXTMap SAR (on 5m grid; original accuracy ± 1.0m), processed to remove buildings & vegetation, then combined on a 2m grid; buildings added with an arbitrary height of 5m based on OS MasterMap 2009 building footprints, then resampled to a 5m grid DTM. Manual edits applied where flow paths clearly omitted e.g. below bridges. • Flow routes dictated by topography; a uniform allowance of 12mm/hr has been made for manmade drainage in urban areas. Infiltration allowance reduces runoff to 39% in rural areas and 70% in urban areas. • Areas that may flood are defined by dynamically routing a 1.1 hour duration storm with 1 in 30 chance of occurring in any year over the DTM using JBA's JFLOW–GPU model. • Manning's n of 0.1 in rural areas; 0.03 in urban areas, to reflect explicit modelling of buildings in urban areas. • No allowance made for local variations in drainage, pumping or other works constructed for the purpose of flood risk management. • The '>0.3m' layer shows where modelled flooding is greater than 0.3m deep.	Solihull	418932, 279653	Throughout the borough, concentrated in urban areas	Flood Map for Surface Water (FMfSW) - 1 in 30 deep	Probability refers to the probability of the rainfall event, in this case producing flooding of greater than 0.3m depth.	30	Surface runoff
	6	• Topography is derived from 64.5% LIDAR (on 0.25m-2m grids; original accuracy ± 0.15m) and 35.5% NEXTMap SAR (on 5m grid; original accuracy ± 1.0m), processed to remove buildings & vegetation, then combined on a 2m grid; buildings added with an arbitrary height of 5m based on OS MasterMap 2009 building footprints, then resampled to a 5m grid DTM. Manual edits applied where flow paths clearly omitted e.g. below bridges. • Flow routes dictated by topography; a uniform allowance of 12mm/hr has been made for manmade drainage in urban areas. Infiltration allowance reduces runoff to 39% in rural areas and 70% in urban areas. • Areas that may flood are defined by dynamically routing a 1.1 hour duration storm with 1 in 200 chance of occurring in any year over the DTM using JBA's JFLOW–GPU model. • Manning's n of 0.1 in rural areas; 0.03 in urban areas, to reflect explicit modelling of buildings in urban areas. • No allowance made for local variations in drainage, pumping or other works constructed for the purpose of flood risk management. • The '>0.1m' layer shows where modelled flooding is greater than 0.1m deep.	Solihull	418932, 279654	Throughout the borough, concentrated in urban areas	Flood Map for Surface Water (FMfSW) - 1 in 200	Probability refers to the probability of the rainfall event, in this case producing flooding of greater than 0.1m depth.	200	Surface runoff
	7	• Topography is derived from 64.5% LIDAR (on 0.25m-2m grids; original accuracy ± 0.15m) and 35.5% NEXTMap SAR (on 5m grid; original accuracy ± 1.0m), processed to remove buildings & vegetation, then combined on a 2m grid; buildings added with an arbitrary height of 5m based on OS MasterMap 2009 building footprints, then resampled to a 5m grid DTM. Manual edits applied where flow paths clearly omitted e.g. below bridges. • Flow routes dictated by topography; a uniform allowance of 12mm/hr has been made for manmade drainage in urban areas. Infiltration allowance reduces runoff to 39% in rural areas and 70% in urban areas. • Areas that may flood are defined by dynamically routing a 1.1 hour duration storm with 1 in 200 chance of occurring in any year over the DTM using JBA's JFLOW–GPU model. • Manning's n of 0.1 in rural areas; 0.03 in urban areas, to reflect explicit modelling of buildings in urban areas. • No allowance made for local variations in drainage, pumping or other works constructed for the purpose of flood risk management. • The '>0.3m' layer shows where modelled flooding is greater than 0.3m deep.	Solihull	418932, 279655	Throughout the borough, concentrated in urban areas	Flood Map for Surface Water (FMfSW) - 1 in 200 deep	Probability refers to the probability of the rainfall event, in this case producing flooding of greater than 0.3m depth.	200	Surface runoff
	8	• Areas Susceptible to Groundwater Flooding (AStGWF) is a strategic scale map showing groundwater flood areas on a 1km square grid • This data has used the top two susceptibility bands of the British Geological Society (BGS) 1:50,000 Groundwater Flood Susceptibility Map, which was developed on a 50m grid from: • NEXTMap 5m grid DTM. • National Groundwater Level data on a 50m grid • BGS 1:50 000 geological mapping, with classifications of permeability • It covers consolidated aquifers (chalk, limestone, sandstone etc.) and superficial deposits. • Flood plains are not explicitly identified; the mapping identifies where groundwater is likely to emerge, and not where the water is subsequently likely to flow or pond. • No allowance is made for engineering works, or for groundwater rebound or abstraction to prevent groundwater rebound. • Shows the proportion of each 1km grid square which is susceptible to groundwater emergence, using four area categories.	Solihull	418932, 279656	Throughout the borough	Areas Susceptible to Groundwater Flooding (AStGWF)	Does not describe a probability, but shows places where groundwater emergence more likely to occur.	Unknown	Groundwater
	9	• Modelling developed from combination of national (2004) and local (generally 1998-2010) modelling. • Topography derived from LIDAR (on 0.25m-2m grids; original accuracy ± 0.15m), NEXTMap SAR (on 5m grid; original accuracy ± 1.0m), processed to remove buildings & vegetation. For local modelling, topography may include ground survey. • Location of watercourses and tidal flow routes dictated by topographic survey. • Areas that may flood are defined for catchments $>3km^2$ by routing appropriate flows for that catchment through the model to ascertain water level and thus depth and extent. • Manning's n of 0.1 used for national fluvial modelling; variable (calibrated) values for national tidal modelling; appropriate values selected for local modelling. Channel capacity assumed as QMED for national fluvial modelling; local survey methods used for local modelling. • For the purpose of flood risk management, models assume that there are no raised defences.	Solihull	418932, 279657	Following the main rivers, Blythe and Cole in the northern and eastern parts of the borough	Flood Map (for rivers and sea) - flood zone 3	Fluvial 1 in 100, tidal 1 in 200	100	Main rivers
	10	• Modelling developed from combination of national (2004) and local (generally 2004-2010) modelling. • Topography derived from LIDAR (on 0.25m-2m grids; original accuracy ± 0.15m), NEXTMap SAR (on 5m grid; original accuracy ± 1.0m), processed to remove buildings & vegetation. For local modelling, topography may include ground survey. • Location of watercourses and tidal flow routes dictated by topographic survey. • Areas that may flood are defined for catchments $>3km^2$ by routing appropriate flows for that catchment through the model to ascertain water level and thus depth and extent. • Manning's n of 0.1 used for national fluvial modelling; variable (calibrated) values for national tidal modelling; appropriate values selected for local modelling. Channel capacity assumed as QMED for national fluvial modelling; local survey methods used for local modelling. • For the purpose of flood risk management, models assume that there are no raised defences.	Solihull	418932, 279658	Following the main rivers, Blythe and Cole in the northern and eastern parts of the borough	Flood Map (for rivers and sea) - flood zone 2	Extreme flood outline is 1 in 1000, and includes some historic where judged that this gives an indication of areas at risk of future flooding.	1000	Main rivers
	11	1. A bare earth ground model is produced for all of England based on LiDAR or NextMap data typically captured to +-15cm and 1m respectively and merged to form a composite DTM. This shows the height of the ground divided into 2m square cells allowing small scale features that affect flood patterns, such as paths between buildings to be represented. a. The ground height is typically raised by around 0.3m to represent building footprints b. The ground model is edited to include flow paths through structures such as bridges and rail embankments. c. Road surfaces are lowered by the kerb height so they are better represented as flood flow paths. d. Ground roughness is varied to take into account different land use and its effect on flow. 2. Total rainfall depths are calculated for all of England divided into 5km squares using: a. Rainfall probabilities of 3.3% (1 in30), 1% (1 in 100) and 0.1% (1 in 1000) chance of occurring in any year b. Storm durations of 1, 3 and 6 hours (worst case used for each cell for each flood probability to represent spatial variation in critical storm duration) c. The 50% summer rainfall profile These are then adjusted to take into account infiltration (urban / rural area split) and drainage (single amount removed in all urban areas). 3. The effect of the remaining rainfall is modelled across the edited ground surface using JFlow+ software to see where it flows and ponds and therefore the extent of flooding. Buildings are represented in such a way that water can flow through them once the depth exceeds the 0.3m the footprints have been raised by. 4. Resulting flood extents derived by cleaning to remove very small isolated wet areas ('noise') and very shallow areas of water which would not be considered to constitute 'flooding'. 5. Model results are also produced for depth, velocity, hazard rating and flow direction for maximum velocity. 6. Results from the computer model were validated using historical observations and local modelling data in 3 pilot areas. 7. No flood defence works are taken into account beyond their natural inclusion in the DTM or drainage assumptions [where appropriate add 8. Local model of xx area incorporated in RoFSW map (give details	Solihull	418932, 279652	Throughout the borough, concentrated in urban areas	Risk of Flooding from Surface Water (RoFSW)	Rainfall probabilities of 3.3% (1 in30), 1% (1 in 100) and 0.1% (1 in 1000) chance of occurring in any year plus 3 storm durations (1,3,6 hours) for each probability.	3.3% (1 in30), 1% (1 in 100) and 0.1% (1 in 1000) chance of occurring in any year	Surface runoff

Field:	Flood ID	Additional source(s) of flooding	Confidence in main source of flooding	Main mechanism of flooding	Main characteristic of flooding	Significant consequences to human health	Human health consequences - residential properties	Property count method	Other human health consequences	Significant economic consequences	Number of non-residential properties flooded	Property count method	Other economic consequences	Significant consequences to the environment	Environment consequences	Significant consequences to cultural heritage	Cultural heritage consequences
Mandatory / optional:	Mandatory	Optional	Optional	Mandatory	Mandatory	Mandatory	Optional	Optional	Optional	Mandatory	Optional	Optional	Optional	Mandatory	Optional	Mandatory	Optional
Format:	Unique number between 1-9999	Max 250 characters, same source terms	Pick from drop-down	Pick from drop-down	Pick from drop-down	Pick from drop-down	Number between 1-10,000,000	Pick from drop-down	Max 250 characters	Pick from drop-down	Number between 1-10,000,000	Pick from drop-down	Max 250 characters	Pick from drop-down	Max 250 characters	Pick from drop-down	Max 250 characters
Notes:	A sequential number starting at 1 and incrementing by 1 for each record.	If the flood is generated by, or interacts with, any other sources (other than the Main source of flooding), report the source(s) here, using the same source terms.	Pick a broad level of confidence in the Main source of flooding from; 'High' (compelling evidence of source - about 80% confident that source is correct), 'Medium' (some evidence of source but not compelling - about 50% confident that source is correct) 'Low' (source assumed - about 20% confident that source is correct) or 'Unknown'.	Pick a mechanism from; 'Natural exceedance' (of capacity), 'Defence exceedance' (floodwater overtopping defences), 'Failure' (of natural or artificial defences or infrastructure, or of pumping), 'Blockage or restriction' (natural or artificial blockage or restriction of a conveyance channel or system), or 'No data'.	Pick a characteristic from; 'Flash flood' (rises and falls quite rapidly with little or no advance warning), 'Natural flood' (due to significant precipitation, at a slower rate than a flash flood), 'Snow melt flood' (due to rapid snow melt), 'Debris flow' (conveying a high degree of debris), or 'No data'. Most UK floods are 'Natural floods'.	Would there be any significant consequences to human health if the future flood were to occur?	Record the number of residential properties where the building structure would be affected either internally or externally if the flood were to occur.	Where residential or non-residential properties have been counted, it is important to record the method of counting, to aid comparisons between counts. Choose from; 'Detailed GIS' (using property outlines, as per Environment Agency guidance), 'Simple GIS' (using property points), 'Estimate from map', or 'Observed number'.	If there would be other Significant consequences to human health, describe them including information such as the number of critical services flooded.	Would there be any significant economic consequences if the future flood were to occur?	Record the number of non-residential properties where the building structure would be affected either internally or externally if the flood were to occur.	Where residential or non-residential properties have been counted, it is important to record the method of counting, to aid comparisons between counts. Choose from; 'Detailed GIS' (using property outlines, as per Environment Agency guidance), 'Simple GIS' (using property points), 'Estimate from map', or 'Observed number'.	If there would be other Significant economic consequences, describe them including information such as the area of agricultural land flooded, length of roads and rail flooded.	Would there be any significant consequences to the environment if the future flood were to occur?	If there would be Significant consequences to the environment, describe them including information such as national and international designated sites flooded, and pollution sources flooded.	Would there be any significant consequences to cultural heritage if the future flood were to occur?	If there would be Significant consequences to cultural heritage, describe them including information such as the number and type of heritage assets flooded.
Example:	1		High	Natural exceedance	Natural flood	Yes	12000	Detailed GIS		No				No		No	
Records begin here:	1		High	Natural exceedance	Natural flood		Available from EA				Available from EA						
	2		High	Natural exceedance	Natural flood		Available from EA				Available from EA						
	3		High	Natural exceedance	Natural flood		Available from EA				Available from EA						
	4		High	Natural exceedance	Natural flood												
	5		High	Natural exceedance	Natural flood												
	6		High	Natural exceedance	Natural flood		Available from EA				Available from EA						
	7		High	Natural exceedance	Natural flood		Available from EA				Available from EA						
	8		High	Natural exceedance	Natural flood												
	9	Sea, ordinary watercourses	Medium	Natural exceedance	Natural flood												
	10	Sea, ordinary watercourses	Medium	Natural exceedance	Natural flood												
	11		High	Natural exceedance	Natural flood	Yes				Yes				No		No	

Field:	Flood ID	Comments	Data owner	Area flooded	Confidence in modelled outline	Model date	Model Type	Hydrology Type	Lineage	Sensitive data	Protective marking descriptor	European Flood Event Code
Mandatory / optional:	Mandatory	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Auto-populated
Format:	Unique number between 1-9999	Max 1,000 characters	Max 250 characters	Number with two decimal places	Pick from drop-down	'yyyy' or 'yyyy-mm' or 'yyyy-mm-dd'	Max 250 characters	Max 250 characters	Max 250 characters	Pick from drop-down	Max 50 characters	Max 42 characters
Notes:	A sequential number starting at 1 and incrementing by 1 for each record.	Any additional comments about the future flood record.		The total area of the land flooded, in km^2	Pick a broad level of confidence in the modelled flood outline from; 'High' (good match to past flood extents - about 80% confident that outline is correct), 'Medium' (reasonable match - about 50% confident that outline is correct), 'Low' (poor match, sparse data - about 20% confident that outline is correct) or 'Unknown'.		Type of software used to create future flood information.	Type of hydrology method used to create future flood information.	Lineage is how and what the data is made from. Has this data been created by using data owned or derived from data owned by 3rd party (external) organisations? If yes please give details.	Has the information been classified under the Government's Protective Marking Scheme? Include protective marking time limit where known. Note: If "Approved for Access" then report "Unmarked".	For use where organisations apply the Government's Protective Marking Scheme.	This field will autopopulate using the LLFA name provided on the "Instructions" tab, and the Flood ID. It is an EU-wide unique identifier and will be used to report the flood information. Format: UK<ONS Code><P or F><LLFA Flood ID>. "ONS Code" is a unique reference for each LLFA. "P or F" indicates if the event is past or future. "LLFA Flood ID" is a sequential number beginning with 0001.
Example:	1		Epping Forest District Council		Medium-Low	2008-08	2D-TuFlow	FEH (Revised Rainfall Runoff)	Ordnance Survey AddressPoint; CEH 1:50k River Centreline; NextMap DTM.	Unmarked	Private	UKE10000012F0001
Records begin here:	1		JBA Consulting (distributed by Environment Agency under licence)		Low	2009-07	JFLOW-GPU	Depth-duration-frequency curves derived from FEH CD-ROM, from centre of each 5km model, with areal reduction factor applied to convert point rainfall estimate to more representative figure. Curve then used to derive 6.5 hr, 1:200 chance rainfall depth; this is converted to hyetograph, using summer rainfall profile.		Protect	Commercial	UKE08000029F0001
	2		JBA Consulting (distributed by Environment Agency under licence)		Low	2009-07	JFLOW-GPU	Depth-duration-frequency curves derived from FEH CD-ROM, from centre of each 5km model, with areal reduction factor applied to convert point rainfall estimate to more representative figure. Curve then used to derive 6.5 hr, 1:200 chance rainfall depth; this is converted to hyetograph, using summer rainfall profile.		Protect	Commercial	UKE08000029F0002
	3		JBA Consulting (distributed by Environment Agency under licence)		Low	2009-07	JFLOW-GPU	Depth-duration-frequency curves derived from FEH CD-ROM, from centre of each 5km model, with areal reduction factor applied to convert point rainfall estimate to more representative figure. Curve then used to derive 6.5 hr, 1:200 chance rainfall depth; this is converted to hyetograph, using summer rainfall profile.		Protect	Commercial	UKE08000029F0003
	4		Environment Agency		Medium-Low	2010-11	JFLOW-GPU	Depth-duration-frequency curves derived from FEH CD-ROM, from centre of each 5km model, with areal reduction factor applied to convert point rainfall estimate to more representative figure. Curve then used to derive 1.1 hr, 1:30 chance rainfall depth; this is converted to hyetograph, using summer rainfall profile. See "Description of assessment method" for allowances for infiltration and drainage.	Rainfall Hyetograph, EA 2m Composite DTM, OSMM Topography	Unmarked		UKE08000029F0004
	5		Environment Agency		Medium-Low	2010-11	JFLOW-GPU	Depth-duration-frequency curves derived from FEH CD-ROM, from centre of each 5km model, with areal reduction factor applied to convert point rainfall estimate to more representative figure. Curve then used to derive 1.1 hr, 1:30 chance rainfall depth; this is converted to hyetograph, using summer rainfall profile. See "Description of assessment method" for allowances for infiltration and drainage.	Rainfall Hyetograph, EA 2m Composite DTM, OSMM Topography	Unmarked		UKE08000029F0005
	6		Environment Agency		Medium-Low	2010-11	JFLOW-GPU	Depth-duration-frequency curves derived from FEH CD-ROM, from centre of each 5km model, with areal reduction factor applied to convert point rainfall estimate to more representative figure. Curve then used to derive 1.1 hr, 1:200 chance rainfall depth; this is converted to hyetograph, using summer rainfall profile. See "Description of assessment method" for allowances for infiltration and drainage.	Rainfall Hyetograph, EA 2m Composite DTM, OSMM Topography	Unmarked		UKE08000029F0006
	7		Environment Agency		Medium-Low	2010-11	JFLOW-GPU	Depth-duration-frequency curves derived from FEH CD-ROM, from centre of each 5km model, with areal reduction factor applied to convert point rainfall estimate to more representative figure. Curve then used to derive 1.1 hr, 1:200 chance rainfall depth; this is converted to hyetograph, using summer rainfall profile. See "Description of assessment method" for allowances for infiltration and drainage.	Rainfall Hyetograph, EA 2m Composite DTM, OSMM Topography	Unmarked		UKE08000029F0007
	8	Data developed specifically for PFRA, and is unlikely to be suitable for any other purposes.	Environment Agency		Low	2010-11	ArcGIS	Uses data which is developed from published BGS groundwater level contours, groundwater levels in BGS WellMaster database and some river levels. No probability is associated with this data.	British Geological Society (BGS) DiGMapGB-50 [Susceptibility to Groundwater Flooding].	Unmarked		UKE08000029F0008
	9	Data updated quarterly. To understand the likelihood of future flooding, taking account of defences, refer to Areas Benefitting from Defences and National Flood Risk Assessment (NaFRA) data. Marked 'Protect' for complete national dataset only.	Environment Agency		Medium	2010-11	Varies but mainly JFLOW, ISIS, HEC-RAS, TUFLOW for fluvial, and HYDROF for tidal.	National methodology described in "National Generalised Modelling for Flood Zones - Fluvial & Tidal Modelling Methods - Methodology, Strengths and Limitations". A national dataset (for England and Wales) of fluvial flood peak estimates was derived from the Flood Estimation Handbook (FEH) to generate a 1 in 100 chance fluvial flood. Local fluvial modelling uses FEH methods. Peak tidal water levels from either Dixon & Tawn (DT3) or local data sets to derive 1 in 200 chance tide levels including surge from POL CSX model.	NextMap SAR DTMe, UKHO Admiralty Charts, 1:50K CEH River Centre Line, CEH FEH Q(T) Grids, POL CSX Peak Extreme Water Levels, POL CS3 Astronomical Tides, UKHO Admiralty Tide Time-Series Calibration Locations, OS 1:10 Boundary Line MHW	Protect	Commercial	UKE08000029F0009
	10	Data updated quarterly. To understand the likelihood of future flooding, taking account of defences, refer to National Flood Risk Assessment (NaFRA) data. Marked 'Protect' for complete national dataset only.	Environment Agency		Medium	2010-11	Varies but mainly JFLOW, ISIS, HEC-RAS, TUFLOW for fluvial, and HYDROF for tidal.	National methodology described in "National Generalised Modelling for Flood Zones - Fluvial & Tidal Modelling Methods - Methodology, Strengths and Limitations". A national dataset (for England and Wales) of fluvial flood peak estimates was derived from the Flood Estimation Handbook (FEH) to generate a 1 in 1000 chance fluvial flood. Local fluvial modelling uses FEH methods. Peak tidal water levels from either Dixon & Tawn (DT3) or local data sets to derive 1 in 1000 chance tide levels including surge from POL CSX model.	NextMap SAR DTMe, UKHO Admiralty Charts, 1:50K CEH River Centre Line, CEH FEH Q(T) Grids, POL CSX Peak Extreme Water Levels, POL CS3 Astronomical Tides, UKHO Admiralty Tide Time-Series Calibration Locations, OS 1:10 Boundary Line MHW, Historic Flood Map	Protect	Commercial	UKE08000029F0010
	11		Environment Agency		High-Medium	2013-03	Jflow+	Direct Rainfall - ReFH	CEH FEH Handbook, OS Mastermap, National Soil Research Institute, NextMapSAR, EA LiDAR, Infoterra LiDAR,	Official	Available under conditional licence	UKE08000029F0011

ANNEX 3: Records of Flood Risk Areas and their rationale (preliminary assessment report spreadsheet)

Field:	Flood Risk Area ID	Name of Flood Risk Area	National Grid Reference	Main source of flooding	Additional source(s) of flooding	Confidence in main source of flooding	Main mechanism of flooding	Main characteristic of flooding	Significant consequences to human health	Human health consequences - residential properties	Property count method	Other human health consequences	Significant economic consequences	Number of non-residential properties flooded	Property count method	Other economic consequences	Significant consequences to the environment	Environment consequences	Significant consequences to cultural heritage	Cultural heritage consequences	Origin of Flood Risk Area	Amended Flood Risk Area rationale	New Flood Risk Area rationale	Rationale detail	European Flood Risk Area Code
Mandatory / optional:	Mandatory	Mandatory	Mandatory	Mandatory	Optional	Optional	Mandatory	Mandatory	Mandatory	Optional	Optional	Optional	Mandatory	Optional	Optional	Optional	Mandatory	Optional	Mandatory	Optional	Mandatory	Mandatory	Mandatory	Mandatory	
Format:	Unique number between 1-9999	Max 250 characters	12 characters: 2 letters, 10 numbers	Pick from drop-down	Max 250 characters, same source terms	Pick from drop-down	Pick from drop-down	Pick from drop-down	Pick from drop-down	Number between 1-10,000,000	Pick from drop-down	Max 250 characters	Pick from drop-down	Number between 1-10,000,000	Pick from drop-down	Max 250 characters	Pick from drop-down	Max 250 characters	Pick from drop-down	Max 250 characters	Pick from drop-down	Pick from drop-down	Pick from drop-down	Max 1,000 characters	Auto-populated Max 42 characters
Notes:	A sequential number starting at 1 and incrementing by 1 for each record.	Name of the locality associated with the Flood Risk Area; a town, city, or county.	National Grid Reference of the centroid (centre point, falls within polygon) of the Flood Risk Area.	Pick the source from which there is a significant flood risk. Refer to the PFRA guidance for definitions of sources.	If there is also significant flood risk generated by another source (other than the Main source of flooding), report the source(s) here, using the same source terms.	Pick a broad level of confidence in the Main source of flooding from; 'High' (compelling evidence of source - about 80% confident that source is correct), 'Medium' (some evidence of source but not compelling - about 50% confident that source is correct) 'Low' (source assumed - about 20% confident that source is correct) or 'Unknown'.	Pick a mechanism from; 'Natural exceedance' (of capacity), 'Defence exceedance' (floodwater overtopping defences), 'Failure' (of natural or artificial defences or infrastructure, or of pumping), 'Blockage or restriction' (natural or artificial blockage or restriction of a conveyance channel or system), or 'No data'.	Pick a characteristic from; 'Flash flood' (rises and falls quite rapidly with little or no advance warning), 'Natural flood' (due to significant precipitation, at a slower rate than a flash flood), 'Snow melt flood' (due to rapid snow melt), 'Debris flow' (conveying a high degree of debris), or 'No data'. Most UK floods are 'Natural floods'.	Has the Flood Risk Area been identified as a result of significant consequences to human health?	Record the number of residential properties where the building structure would be affected either internally or externally by the flood.	Where residential or non-residential properties have been counted, it is important to record the method of counting, to aid comparisons between counts. Choose from; 'Detailed GIS' (using property outlines, as per Environment Agency guidance), 'Simple GIS' (using property points), 'Estimate from map', or 'Observed number'.	If the Flood Risk Area has been identified as a result of other Significant consequences to human health, describe them (such as information about the number of critical services flooded).	Has the Flood Risk Area been identified as a result of significant economic consequences?	Record the number of non-residential properties where the building structure would be affected either internally or externally by the flood.	Where residential or non-residential properties have been counted, it is important to record the method of counting, to aid comparisons between counts. Choose from; 'Detailed GIS' (using property outlines, as per Environment Agency guidance), 'Simple GIS' (using property points), 'Estimate from map', or 'Observed number'.	If the Flood Risk Area has been identified as a result of other Significant economic consequences, describe them (such as information about the area of agricultural land flooded, length of roads and rail flooded).	Has the Flood Risk Area been identified as a result of significant consequences to the environment?	If the Flood Risk Area has been identified as a result of Significant consequences to the environment, describe them (such as information about national and international designated sites flooded, and pollution sources flooded).	Has the Flood Risk Area been identified as a result of significant consequences to cultural heritage?	If the Flood Risk Area has been identified as a result of Significant consequences to cultural heritage, describe them (such as information about the number and type of heritage assets flooded).	Pick the origin from either; 'Indicative' Flood Risk Area, 'Amended' Flood Risk Area (in which case Amended Flood Risk Area rationale is mandatory), or 'New' Flood Risk Area (in which case New Flood Risk Area rationale is mandatory).	Pick the main rationale from either; 'Geography', 'Past floods', or 'Future floods'. Then provide further detail in Rationale detail. This is not mandatory if the Flood Risk Area was an indicative Flood Risk Area and has not been amended, or is a new Flood Risk Area.	Pick the main rationale from either 'Past floods', or 'Future floods'. Then provide further detail in Rationale detail. This is not mandatory if the Flood Risk Area was an indicative Flood Risk Area.	Summarise the rationale for amending an indicative Flood Risk Area, or identifying a new Flood Risk Area. Refer to Defra & WAG guidance to LLFAs on "Selecting and reviewing Flood Risk Areas for local sources of flooding". If the Flood Risk Area was an indicative Flood Risk Area and has not been amended, record "Indicative Flood Risk Area".	This field will autopopulate using the LLFA name provided on the "Instructions" tab, and the Flood Risk Area ID. It is an EU-wide unique identifier and will be used to report the Flood Risk Area information. Format: UK<ONS Code><A><LLFA Flood ID>. "ONS Code" is a unique reference for each LLFA. "A" indicates it is a Flood Risk Area. "LLFA Flood ID" is a sequential number beginning with 0001.
Example:	1	London	SX1234512345	Surface runoff	NA	High	Natural exceedance	Natural flood	Yes	50000	Detailed GIS		No				No		No		Indicative	NA	NA	indicative Flood Risk Area	UKE10000012A0001
Records begin here:		4 Birmingham BUASD 31 Coventry BUASD																							UKE08000029A0004 UKE08000029A0031