



Independent Flood Review

Milton Keynes – 27th May 2018 Flood Event

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FINAL

Quality information

Prepared by	Checked by	Approved by
		
Matt Tandy C.WEM MCIWEM MInstLM Principal Engineer	Sarah Littlewood BSc (Hons) Senior Flood Risk Consultant	Emily Craven BSc MCIWEM CWEM CEnv, Project Director
Pauline Nouallet MSc Senior Economist	Jon Short MSc C.WEM MCIWEM Associate Director (Economics)	

Revision History

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Prepared for:

Milton Keynes Council

Prepared by:

AECOM Limited
Midpoint, Alencon Link
Basingstoke
Hampshire RG21 7PP
United Kingdom

T: +44(0)1256 310200
aecom.com

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Appendix A – Detailed Actions



Key:


Resource:	L = Low (Officer time only or < £10k)	M = Medium (Integrated approach needed or £10k to £50k)	H = High (£50k to £500k or requires significant engagement)	VH = Very High (>£500k)	V = Variable Dependent on scale of the issue and leading organisation		
Timescale:	I = Imminent (< 6 months)	S = Short (6 to 24 months)	M = Medium (2 to 5 years)	L = Long (> 5 years)	O = Ongoing		
Impact (in terms of):	L = Low	M = Medium	H = High				
<ul style="list-style-type: none"> - Manage the future risk of flooding. - Improve the response or recovery to flooding. - Improve the communications around flood risk. 							
Lead Organisation:	LLFA = Lead Local Flood Authority	MKC Integrated = Numerous MKC teams working together	TVLRF = Thames Valley Local Resilience Forum	EP = Emergency Planning	MKUH = Milton Keynes University Hospital	EA = Environment Agency	AWS = Anglian Water Services



Detailed Actions:



Section	Actions	Lead	Resource	Timescale	Impact
3: Review of Flood Investigation Reports (FIR) 	R.3.1 MKC's flood investigation policy and protocol should be implemented and published on a dedicated section of the MKC website. Monitoring the compliance of the policy should be undertaken and reported on an annual basis. This will help demonstrate the ongoing commitment of MKC fulfilling its LLFA duties. It is understood that MKC is committed to the implementation of this policy and protocol and is currently working on publishing the final version.	LLFA	L	I	L
	R.3.2 MKC's policy on flood investigations should be reviewed after all future flood events and following each iteration of the Local Flood Risk Management Strategy (LFRMS). This will enable MKC to reflect on the appropriateness of the policy in the context of specific flood event characteristics and ensure it includes the most current industry good practice.	LLFA	L	O	L
	R.3.3 The LFRMS for MKC should be updated to include the flood investigation policy. This will aid practitioners as strategic information of managing flood risk within the administrative boundary of Milton Keynes will be documented in one location.	LLFA	L	S	L
Content and Structure 	R.3.4 FIRs must identify specific roles and duties of each RMA and stakeholder, in the context of the specific flooding event under investigation. This will help all stakeholders to distinguish between their general responsibilities in flood risk management and their specific role relative to a particular flood event, as well as providing transparency for members of the public.	LLFA	L	I	M
Communication 	R.3.5 FIRs should be published within 6 months of a flood event. Following a significant flood event it is reasonable to expect this may take longer, however this should be communicated to members of the public and RMAs through the provision of an interim statement explaining investigatory works completed and planned.	LLFA	L	I	M
	R.3.6 MKC should notify all partners of the publication of a FIR. This will aid the relevant organisation or individual to take forward recommendations made in reports and therefore improve flood risk management.	LLFA	L	O	L



Section	Actions	Lead	Resource	Timescale	Impact	
4: Summary of flooding event	Operational 	R.4.1 MKC must investigate measures to manage the risk of flooding to properties which sit below the road and surrounding land. This should include reducing large areas of impermeable surfaces and exploiting the green spaces within the public realm.	MKC Integrated	VH	L	H
		R.4.2 Property owners, including housing associations, should help manage the risk of flooding to their properties and local area, where appropriate. They should inspect and maintain drainage systems within the curtilage of their properties, and be encouraged to replace impermeable surfaces with permeable alternatives to promote better surface water management at source. This must include guttering, downpipes and any other above or below ground features. Where works are required these should be planned appropriately. This may also include creating/joining a flood action group, installing property level flood resilience measures and helping to raise awareness of critical drainage assets in the local area.	Property owners	Variable	S	M
		R.4.3 MKC and landowners should investigate measures which can better manage surface water runoff from higher ground and flow within the associated ordinary watercourses, to protect properties in Stoke Goldington.	LLFA & land owners	H	M	H
		R.4.4 MKUH should investigate the flooding which emanates from the roof and identify what remedial works are required to resolve it.	MKUH	M	M	H
		R.4.5 AWS should investigate the flooding issue at Centre:MK in detail. AWS should establish if an opportunity exists to collaborate with Centre:MK to better manage this risk.	AWS	L	M	L
Intelligence 	R.4.6 MKC should investigate why properties are still unoccupied and understand what support would be beneficial to the residents.	MKC Integrated	L	I	H	
	R.4.7 All partner organisations should ensure reports of flooding are shared, including between internal departments, so all are aware and take the appropriate actions. This is in response to a high proportion of survey respondents explaining their property has flooded before and they have previously reported this,	All	L	O	M	




Section	Actions	Lead	Resource	Timescale	Impact
Communications 	R.4.8 MKC should follow up with survey respondents who have identified they are unhappy with the service received during and after the event. This will help to understand why and how this could be improved in the future.	MKC Integrated	L	I	L
	R.4.9 Partner organisations should continue to collaborate to improve community awareness of flood risk within their area. This is in response to a high proportion of survey respondents from across MK who explained they were unaware of the risk.	All	L	S	M
5: Response to the flood event Emergency Plans 	R.5.1 The MAFP should be updated to reflect the recommendations of this IFR report, the Multi-agency debrief report and individual organisations own debrief reports or lessons learnt findings. The update process should have appropriate representation from all partner organisations, be in accordance with the relevant guidance, and completed biennially or after each major flooding incident. The MAFP update should include: <ol style="list-style-type: none"> a. A new communications strategy for before and during a flood event, to ensure all organisations are aware of a potential incident and enable information to be shared effectively. This would support duty officers in having greater levels of intelligence to make informed decisions around key actions and implementation of the plan. b. New activation criteria, to be established with support from all LRF members. All agencies should know when to activate the plan and feel empowered to call an incident if their assets or service is threatened. c. An update of the flood response procedure to improve advanced monitoring of weather alerts/warnings and multi-agency communication protocols. d. Critical network infrastructure should be identified and mapped in relation to the risk of flooding from all sources, highlighting the 'at risk' and 'flood monitoring' locations to reflect current intelligence. Each vulnerable location should have a supplementary incident response plan to reflect its specific characteristics and needs. 	TVLRF	M	S	H
	R.5.2 The TVLRF should establish the hierarchy of emergency plans relevant to Milton Keynes and communicate this to all RMAs and partner organisations.	TVLRF	L	S	M



Section	Actions	Lead	Resource	Timescale	Impact
	R.5.3 The draft Severe Weather Plan, authored by MKC's Emergency Planning team, should be progressed for formal adoption. Prior to this it should be reviewed and updated to reflect the findings of this IFR and other partner organisations consulted.	EP	L	I	M
	R.5.4 MKC must undertake an emergency flood exercise to test the updated plans and provide training to all partners organisations. This training exercise should be arranged within 18 months of the issue of this IFR report and continued biennially.	EP	L	S	H
Resources 	R.5.5 Partner organisations responding to a flood incident in the early stages should ensure duty officers are trained on the content and use of the MAFP, Severe Weather Plan, Communications Strategy and are trained to identify a deterioration in conditions which may require additional resources or a coordinated response. They should also be aware of the thresholds and activities of the various activation stages in the MAFP.	TVLRF	L	S	H
	R.5.6 MKC must review its availability of resources to respond to emergency events, particularly out-of-hours. This should include: <ul style="list-style-type: none"> Ensuring all staff are trained in emergency response and fully aware of relevant emergency plans and where to access them prior to fulfilling this role. A record of training must be kept and monitored by MKC. The importance of communication must be emphasised during the training. The ability to mobilise a DEPRO and Incident Director to attend a location within MK, in short notice. Specific consideration and to the availability of emergency planning practitioners who can implement actions and advise the DEPRO or Incident Director during an event. This is particularly relevant for out of hours where access to this expertise is only available through goodwill. 	MKC Integrated	M	I	M
	R.5.7 TVLRF members should collectively identify what incident management and communications systems are being used across the LRF and whether improvements could be made through collaboration, sharing experiences, and lessons learnt.	TVLRF	L	I	L

Section	Actions	Lead	Resource	Timescale	Impact
Operational 	R.5.8 MKC should develop an EOC manual which considers limiting the use of rooms identified for EOC to ensure they are available when required and staff feel empowered to do so. This should be progressed to support the setting-up and running of the EOC.	EP	L	I	L
	R.5.9 Partner organisations should consider if a more proactive approach to ‘amber’ or worse weather warnings is appropriate. Whilst the MET office ‘amber’ weather warning provided ahead of the flood event in May 2018 did not cover MK, proactive resourcing would have enabled RMAs and partner organisations to be better prepared.	TVLRF	M	S	M
	R.5.10 MKC should consider how enquiries from members of the public outside of normal hours, above the usual volume, can be received and recorded. This may need to include a process and training for Alarm Centre staff, or a recording system which enables quick and concise entry of information.	MKC Integrated	L	S	M
Communications 	R.5.11 Contact numbers for all partners should be updated as appropriate and shared between all TVLRF members. These numbers should not be for particular individuals but an ‘emergency number’ which is used by the emergency contact whilst ‘on-call’.	TVLRF	L	I	M
	R.5.12 Contact details and addresses for rest centres and temporary accommodation should be reviewed to ensure they are current and appropriate for out of hours occasions.	EP	L	I	L
	R.5.13 All partner organisations need to reflect on how members of the public can be kept abreast of their reports of flooding and progression for a resolution. Where an enquiry is passed on to another organisation due to them being better placed to lead or because the event is moving into the recovery phase, a process to manage and communicate this should developed and agreed with all RMAs and partner organisations.	All	L	I	L

Section	Actions	Lead	Resource	Timescale	Impact
7: Asset Management and Maintenance 	R.7.1 MKC should consider its programme of highway drainage renewal and improvement works in context of annual budgets and determine whether a business case can be developed to increase available funding.	Highways	L	I	M
	R.7.2 MKC should update its gully emptying programme to increase attendance in ‘at risk’ areas. The programme could be further improved by the incorporation of intelligence from previous visits and from the new asset management system, such as silt levels, to inform the required frequency.	Highways	M	I	M
	R.7.3 All partner organisations should review their protocol for inspecting flood assets upon receipt of a weather or flood warning, and managing situations where asset ownership is unknown or reported problems may require more complex/time-consuming resolutions. Particular attention should be given to inspecting assets in known flood risk areas to identify if immediate works are required. This should include ongoing communication with members of the public and councillors as appropriate.	All	L	S	M
	R.7.4 The Environment Agency should consider how all of its flood defences can be brought to the target condition grade. This may require collaborative working with partner organisations and landowners.	Environment Agency	M	M	M
Intelligence 	R.7.5 MKC’s asset register could be improved by defining ‘significant effect on flood risk’ and identifying those assets and structures which meet this criterion. Furthermore, the format of the register could be more intuitive to improve functionality and the benefits it can deliver.	LLFA	L	I	L
	R.7.6 All partner organisations and landowners should collaborate to establish a better understanding of general flood risk and drainage assets. This should include: ownership, condition, design standard, and where investment is required. Survey and investigatory works may be required to fill gaps and this will likely need to be programmed over a number of years. MKC should promote enhanced maintenance programmes through the Anglian Regional LLFA and other partner organisations.	LLFA	H	M	H

Section	Actions	Lead	Resource	Timescale	Impact
Communications 	R.7.7 MKC should reflect on its 'Customer Service Standards' to consider how it can meet these in relation to received queries and how members of the public can be kept better informed of the progress related to the problem they have reported. Of particular importance in relation to this IFR are those enquiries related to assets and flood risk. Monitoring of performance against these standards should also be undertaken. MKC should collaborate with partners to develop a consistent approach.	MKC Integrated	L	I	L
8: Future Flood Alleviation Schemes Operational 	R.8.1 MKC Highways should reflect upon its current programme of Flood and Drainage Projects and identify those which don't have a formal design and hydraulic calculations to support them. Whilst it is recognised that works are being pursued with all the right intentions, the opportunity to achieve a higher standard of protection may be missed and/or the desired outcomes not met.	Highways	M	S	M
	R.8.2 All organisations proposing to deliver Flood and Drainage Projects should consider the incorporation of sustainable and multi-beneficial solutions. Where works to a drainage system are being undertaken, the inclusion of SuDS which deliver the four pillars should be explored. The SuDS Manual ² is an industry accepted document providing guidance and good practice which should be referred to.	All	Variable	O	M
	R.8.3 MKC LLFA and AWS should reflect on the scope of IFR Scheme Ref 3 (Table 8-1) and consider the extent and prioritisation of which assets are included. There are numerous balancing lakes across MK performing surface water and flood risk management function where the capacity and design standard is unconfirmed. Consideration also needs to be given to communities outside of the study area but affected by flooding. They may feel drainage assets important to their locality should be included; therefore clear and consistent messaging will be required to manage relations with these communities.	LLFA	Variable	S	L

Section	Actions	Lead	Resource	Timescale	Impact
Intelligence 	R.8.4 MKC LLFA should progress IFR Scheme Ref 2 (Table 8-1) at the earliest opportunity. This will improve understanding of the problems and identify possible solutions in the areas affected by flooding during the event in May 2018. Subsequent FASs will need to consider the findings of this IFR and relevant FIRs. They will likely include a range of measures including engineered defences, property level resilience, and community flood action groups.	LLFA	VH	L	H
Communications 	R.8.5 Partner organisations and neighbouring local authorities should regularly meet to share information on flooding and drainage issues and identify where opportunities exist to collaboratively support Flood and Drainage Projects. MKC, as the LLFA, and the Environment Agency should champion and coordinate this within MKC. The LLFA and partner organisations may prove a good starting point. Operational meetings should be held to discuss technical issues, and flood partnership meetings for strategic discussions.	LLFA	L	I	L
	R.8.6 Partner organisations should better share with communities where Flood and Drainage Projects are planned within MK. It would need to be made clear at what stage each Flood and Drainage Projects is, including those in the pipeline and aspirational. This would provide a transparent programme for members of the public and help them feel progress is being made.	All	L	O	M
	R.8.7 MKC LLFA should maintain contact with the landowners of Winterhill to keep abreast of its investigation. The findings of the investigation could prove useful for MKC and it may have an opportunity to steer any future FAS at this location.	LLFA	L	I	L
9: Review of Local Policy Partnership Working 	R.9.1 AWS, MKC and BGDB should work together to publish joint plans to manage surface water flood risk. The National Infrastructure Assessment recommends this is completed by 2022. Reference to 'collaborative maintenance' should be integrated into the LFRMS objectives	LLFA	L	S	M
	R.9.2 Shared responsibilities associated with flood and water management should be more clearly defined within local policy by MKC and partner organisations where appropriate. For MKC it is considered most appropriate to include this information within the LFRMS.	LLFA	L	S	L

Section	Actions	Lead	Resource	Timescale	Impact
Sustainable Placemaking 	R.9.3 MKC's local policy should be strengthened to include blue green infrastructure, natural flood management, and consideration of wider benefits. Policies FR1 and NE4 of the Local Plan should be updated in future updates.	LPA	L	S	H
	R.9.4 MKC must incorporate long-term sustainability and Water Sensitive Urban Design into its regeneration plans. Urban and landscape design must ensure buildings and infrastructure are located in areas at least risk of flooding.	MK Futures	L	S	H
Managing and reducing flood risk 	R.9.5 MKC should provide clarity within local policies when referring to updated 'national policy and guidance' and should signpost key local policy documents. Examples include policies FR1 and FR2 of the Local Plan where such national policies and guidance documents are not clearly referenced. Key local documents that should be signposted are outlined in Table 10 1).	LPA	L	S	L
	R.9.6 MKC should reflect recent changes in terminology across relevant planning policy documents. This will promote improved and consistent understanding for all audiences. For example, the Updated Flood Map for Surface Water (uFMfSW) is now known as the Risk of Flooding from Surface Water (RoFSW). Similarly, DG5 registers are now termed hydraulic risk registers.	MKC Integrated	L	S	L
	R.9.7 MKC should incorporate the provision of pre-application support into its LFRMS. Specifically, MKC ought to reflect this within its role and responsibilities as an LLFA and include within Measure 1.3: 'Ensure drainage infrastructure for new development is future proofed for its design life'. The benefits to the developer (i.e. cost-savings, reduced risk of delays) should be clearly outlined to enhance uptake.	LLFA	L	S	M
	R.9.8 MKC must improve use of the SWMP outputs to facilitate an increasingly stringent and holistic approach to flood risk management in new development. As highlighted within the LFRMS, this ought to include: <ul style="list-style-type: none"> • Consideration of Critical Drainage Catchments (CDCs) within planning applications to identify: multiple or interlinked sources of flood risk; flood depth and extent; flood hazard; potential impacts on people, properties and critical infrastructure; groundwater flood risk; significant underground linkages and cross-boundary linkages. 	LLFA	L	S	M

Section	Actions	Lead	Resource	Timescale	Impact
	<ul style="list-style-type: none">Use of the 'Measures Opportunity Assessment' as developed within the SWMP, to inform the types of SuDS which can be used, as part of the pre-application phase.				
	<p>R.9.9 It is recommended that MKC increase the number of LLFA staff including an experienced practitioner to coordinate, manage and lead the team. A full assessment of MKC's capability and resource needed to deliver the statutory requirements of the F&WMA, and the wider remit of flood risk and drainage management, should be undertaken</p>	LLFA	M	I	H

Appendix B - Stakeholder Engagement

1 Milton Keynes Council Internal Engagement

- 1.1 MKC identified internal lead officers within relevant Council Departments to engage with and provided the IFR team with their respective contact details.
- 1.2 The IFR team assessed and further refined the internal stakeholders provided by MKC, in order to tailor the engagement approach. The analysis of the longlist allows the allocation of different priority levels of engagement for each of the MKC lead officers initially identified.
- 1.3 Priority levels of engagement were assigned based upon the following criteria:
 - Department's day-to-day role and responsibilities: prioritising representatives of departments having flood risk management functions (from either a strategic or operational level) and/or having emergency responses-related functions.
 - Individual's implication during the flood event: prioritising key internal officers who played a crucial role during and after the event (emergency and recovery phases respectively).
- 1.4 The below MKC representatives, identified as being senior or key internal officers to engage in the IFR, were invited for one to one interviews at the MKC offices. The job titles are correct as those applicable at the time of the event.
 - Head of the Environment and Waste Department;
 - Director of Strategy and Futures of the Corporate Core Department;
 - Highways Client Services Manager of the Highways Department;
 - Service Director of the Housing and Regeneration Department;
 - Neighbourhood Manager of the Housing and Regeneration Department;
 - Head of Communities from the Housing and Regeneration Department; and,
 - Customer Services Team Leader of the Resources and Commercial Development Department.
- 1.5 Other key priority officers were identified during the first phase of the engagement process/interviews. Although a one to one interview is one of the best methods of engagement to capture an individual's opinions, it is a time consuming process which also requires having availability. Therefore, the following officers were invited to complete an online questionnaire:
 - Service Director Adult Services from the Adult Social Care and Joint Commissioning;
 - Head of Communications from the Communication Department;
 - Service Director of Finance and Resources;
 - Community Cohesion manager from Housing and Regeneration;
 - Assistant Director of Public Health from the Public Health Department;
 - Housing access manager (Housing and Community); and,
 - Housing Manager (Housing and Community).
- 1.6 The aim of the interviews and online questionnaire is to inform the IFR on the impacts of the flooding event from the perspective of various relevant MKC Departments, including how those departments responded before, during and after

the event. Each interview and questionnaire was designed to capture the points of view of the Department on the successes and challenges of the flood event management, as well as to understand what could be improved to manage future flood events.

- 1.7 As a result of this process, seven interviews have been completed, and five online questionnaire responses received.
- 1.8 Interview notes have been reviewed and analysis of online questionnaire responses completed. Further data and documents were requested by emails when necessary to inform the IFR.

2 External Engagement

- 2.1 External engagement includes RMAs (such as the Environment Agency, Anglian Water, etc.) and other external partner organisations.
- 2.2 MKC identified external partner organisations to engage with and provided AECOM with their respective contact details.
- 2.3 The list of external partner organisations was further refined, and stakeholders assessed in order to tailor the engagement approach to the IFR. The analysis of the longlist allows the allocation of different priority levels of engagement for each partner organisation initially identified.
- 2.4 Priority levels of engagement were assigned based upon the following criteria:
 - Organisation's day-to-day role and responsibilities: prioritising representatives of organisations having flood risk management functions (from either a strategic or operational level) and/or having emergency responses-related functions.
 - Severity of flood related impacts incurred by external organisations: prioritising external organisations and critical infrastructure which were reported to have experienced significant impacts due to the flooding event.
- 2.5 The following organisations have been identified by AECOM as being key external partners to engage in the IFR:
 - Environment Agency;
 - Anglian Water Services;
 - Buckinghamshire Fire and rescue Service;
 - Milton Keynes University NHS Foundation Trust;
 - The Central Milton Keynes Shopping Centre (thecentre:mk);
 - Winterhill Retail Park; and,
 - StadiumMK.
- 2.6 The aim of the interviews and online questionnaire is to inform the IFR on the impacts of the flooding event to the various relevant external organisations, and how those organisations responded before, during and after the event. Each interview and questionnaire was tailored to capture individual's points of view on the success and challenges of the flood event management, as well as to understand what could be improved to manage future flood events.
- 2.7 As a result of this process to engage with key external organisations, 5 interviews were completed, and 4 online questionnaire responses were received.
- 2.8 Interview notes review and analysis of online questionnaire responses were carried out to complete a data gap analysis. Further data requests were made by emails when necessary to inform the IFR.

- 2.9 More detailed analysis of the responses provided by the RMAs and other external organisations is provided in other relevant sections of this document.

3 Public Engagement

- 3.1 Public engagement includes engagement with communities and business.
- 3.2 Questionnaire surveys were developed in order to engage with affected local communities and businesses.
- 3.3 This technique of engagement helped to inform the IFR by providing large datasets relating to the flooding event and the extent of its impacts incurred by communities and businesses. This form of engagement also allows individuals and businesses to have their issues identified and heard.
- 3.4 The content of the questionnaire surveys differs slightly for businesses and communities. Examples of each questionnaire survey are provided in Appendix C and Appendix D.
- 3.5 The surveys were sent out by MKC to 6194 residential properties and 317 businesses accompanied by a briefing letter prepared by AECOM detailing the purpose and objectives of the independent review.
- 3.6 In order to determine the addresses for issuing the questionnaire, AECOM used a database held by MKC recording all properties which were reported to have flooded. This information was used to map and extract postcodes, allowing for all addresses within 50m radius of those properties identified as “affected” properties by MKC. This conservative approach was taken to identify individuals that may not have reported flooding.
- 3.7 A total of 351 responses were received (338 from residents and 14 from businesses). The information provided has been used to inform the IFR and referenced throughout. All responses will be provided to MKC to hold on record and use in future initiatives.

4 Site visit

- 4.1 On 6th March 2019 AECOM visited affected areas around MK to better understand the impacts caused by flooding. The visits were led by two MKC staff members who have an understanding of the flooding that occurred on 27th May 2018 and the general drainage arrangements of the area.

Appendix C - Resident Questionnaire Survey

27th MAY 2018 FLOODING
MILTON KEYNES

***Please note:** Information provided will be shared with other flood risk management agencies (such as the Environment Agency, Anglian Water etc.) **except** for personal details and individual cost information. If you can't fill out a particular section don't worry, please just send us as much information as you can to help us with the independent review of the May 2018 floods.*

Personal Details

Name/on behalf of (if different): _____

Email address: _____

Phone number: _____

Address and postcode: _____

Your residential property

1. Who owns the property? Tick the box as appropriate:

- You are the owner Milton Keynes Council
 Housing Association: please specify _____
 Private Landlord Organisation

2. How many people live at the property?

___ Adults ___ Children

3. What is the type of your property? Tick the box as appropriate:

- Detached Semi - detached Terrace
 Bungalow Flat Other:

During the flooding in May 2018

4. Were you aware of a risk of flooding on the day of the event (Met Office or Environment Agency warnings, weather forecasts, etc.)?

Yes No

5. Was your property affected by the flooding?

Yes No (If No, please go to the **Q11**)

If yes, please specify the type of flooding:

Internal External (gardens, driveway)
 Roof leak Outbuildings (incl. garages)

If your property was flooded internally, what was the approximate depth of the water at its highest point? _____

6. Did you have to evacuate your property? Yes No (If No, please go to **Q.7**)

If so, how long were you evacuated for? _____ hours/days/months

If overnight, please provide information on any temporary accommodation used:

Type of accommodation (Hotel, B&B, hostel, rented, family/friends etc.): _____

Approx. cost per day: _____

Duration of stay: _____

7. Did you have any vehicle damages? Yes No

If yes, please provide details on the number and type of vehicles damaged:

8. Did you experience any utility outages (electricity/water/gas/telecoms cut)? Yes
 No

If yes, please provide details:

Type of outage(s): _____

Duration of outages(s): _____

9. Have you experienced flooding to your property prior to 27th May 2018?

Yes, internally Yes, externally Yes, Roof Leak

Yes, Outbuildings (incl. garages) No

If yes:

a. When did this flooding take place? (Please specify day, month and year if possible):

b. What was the source of flooding?

River/watercourse/ditch Rising groundwater Wastewater

Highway drains and/or surface water sewer (e.g. water surcharging out of a gully or manhole)

Surface runoff/overland flow Mains water/other/don't know

c. Did you report this flooding to anyone, if so who? (Milton Keynes Council, Fire service, Town Council, etc...)

After the flooding

10. Were you able to claim for any flood damages? Yes No
If yes, please provide details about your claim(s) including, *if you are willing*, the value**:

11. Have you incurred any other costs yourself? If yes, please provide details**:

*****Please note:*** Cost information provided in this questionnaire survey will be kept confidential. It will only be used for purposes of calculating the overall estimated costs of flooding in Milton Keynes. No individual data will be published.

12. Are you aware of any repair or improvement work completed in your area after the flood event which may help with future flood events?

13. Have you or your family completed any work to your property to protect it from future flooding?

Please continue to the '**Other Information**' section on the next page.

Other information

Use the box below to provide any other information/comments you feel would assist in the independent flood review, for example, comments on your experience of any emergency response during and after the flooding, any evidence of flowpaths and any suggestions for reducing the impact of future floods. Photographs showing the flooding are welcome.

Please note: if you have already completed a questionnaire as part of the flood investigation by Milton Keynes Council, you do not need to repeat any detail already provided in the other information section as we have access to this.

Appendix D - Non-Resident Questionnaire Survey

FLOOD EVENT ON 27th MAY 2018
MILTON KEYNES

Please note: Information provided will be shared with other flood risk management agencies (such as the Environment Agency, Anglian Water etc.) except for personal details and individual cost information.

Business/Organisation Details

Name of business/organisation: _____

Address: _____

Name and position of respondent: _____

Your business/non-residential property

1. What is the sector type of your business? Tick the box as appropriate:

- | | | |
|------------------------------------|--|------------------------------------|
| <input type="checkbox"/> Retail | <input type="checkbox"/> Offices | <input type="checkbox"/> Warehouse |
| <input type="checkbox"/> Leisure | <input type="checkbox"/> Sports centre | <input type="checkbox"/> Car Park |
| <input type="checkbox"/> Marina | <input type="checkbox"/> Public Buildings | <input type="checkbox"/> Industry |
| <input type="checkbox"/> Education | <input type="checkbox"/> Other type of business: | |

2. Business specialisation (if applicable): _____

3. What is the approx. internal ground floor footprint of the building? _____ m²

During the flood event in 27th May 2018

4. Were you aware of a risk of flooding on the day of the event (Met Office or Environment Agency warnings, weather forecast, council communication)?

- Yes No

5. Was your property affected by the flooding? Yes No (If no, please go to **Q.8**)

If yes, please specify the type of flooding:

- | | |
|------------------------------------|---|
| <input type="checkbox"/> Internal | <input type="checkbox"/> External (gardens, driveway) |
| <input type="checkbox"/> Roof Leak | <input type="checkbox"/> Outbuildings (incl. garages) |

If your property was flooded internally, what was the approximate depth of the water at its highest point? _____

6. Did you have to evacuate your property? Yes No
7. Do you have a flood emergency plan to help protect equipment, staff and stock during a flood event?
- Yes No No, but would be interested in having one
8. Have you experienced flooding to your property prior to May 2018?
- Yes, internally Yes, externally Yes, Roof Leak
- Yes, Outbuildings (incl. garages) No (If no, please go to **Q.9**)
- If yes:
- d. When did this flooding take place? (Please specify month and year):
- e. What was the source of flooding?
- River/watercourse/ditch Rising groundwater Foul sewer
- Highway drains Surface water Don't know
- f. Did you report this flooding to anyone, if so who? (Milton Keynes Council, Fire service, Town Council, etc...)

If you did not experience flooding on 27th May 2018 please go to **Q12**.

After the flood event on 27th May 2018

***Please Note:** Any cost data that can be provided would be extremely useful in enabling the true economic damage costs to be calculated for the flood event. Critically this data needs to be provided as a part of the justification in any business cases for future flood risk management schemes to protect Milton Keynes. All information provided will only be used for the purposes of calculating the overall cost of flood damages in each area of Milton Keynes and will be combined with data from organisations and services. No individual data will be published.*

9. What was the approximate cost of re-instating the structure and fabric of the property after the flooding (excluding services and fixtures and fittings)? £
10. What services in your premises were affected by the flooding event? Please, tick boxes
- Cabling Staff Power Supplies Lifts
- Plumbing Water Heating Air conditioning
- Electrical CCTV/security alarm

Others (please specify): _____

Cost of moveable equipment (if known):

What is the approximate capital cost of damaged moveable equipment (excluding VAT)? £ _____

Cost of fixtures and fittings (if known):

What is the approximate capital cost of damaged fixtures and fittings (excluding VAT)? £ _____

Cost of stock/raw materials (if known):

What is the average capital cost of damaged stock and raw material (excluding VAT)? £ _____

Cost of cleaning (if known):

Please give an indication of clean up requirements following the flood event? £ _____

Please give an approximate cost for the loss of business, if applicable: £ _____

11. Were you able to claim for the flood damages? Yes No

If yes, please provide details about your claim(s) including, if you are willing the value:

12. Where there any impacts on personnel, such as additional staffing costs or loss of pay if staff were unable to work? Yes No

If yes, please provide details: _____

13. Are you aware of any repair or improvement work completed in your area after the flood event which may help with future flood events?

14. Have you or your organisation completed any work to your property to protect it from future flooding?

15. Would you be interested in understanding the risk of flooding specific to your business/organisation premise and learning how may be able to protect it from future flooding?

Yes No

Other information

Use the box below to provide any other information/comments you feel would assist in the independent flood review including any suggestions for reducing the impact of future flood events.

Information/comments on your experience of any emergency response during and after the flooding and/or photographs showing the flooding are welcome.

Please note: if you have already completed a questionnaire as part of the flood investigation by Milton Keynes Council, you do not need to repeat any detail already provided as we have access to this

Appendix E – Rights and Responsibilities

This section describes the rights and responsibilities of the various RMAs in relation to flood risk management. As previously indicated, the rainfall event that occurred on 27th May 2018 was extreme and it is therefore considered that the implementation of the following would not have entirely prevented the flooding and resulting impacts.

Communities and Residents

It is the responsibility of householders and businesses to:

- Protect their property (through property level resilience and resistance measures).
- Maintain a proper flow of water in any watercourse running through their land.

Milton Keynes Council (MKC)

MKC, as the LLFA, has a responsibility to investigate and report on flood incidents (to the extent it considers necessary) under Section 19 of the F&WMA. MKC are also responsible for:

- Ensuring drainage of surface water from local highways and residential streets (excluding private roads).
- Maintaining the road drains on minor roads, including kerbs, road gullies, ditches and the pipe network which connects to the Anglian Water Services sewers.
- Developing and implementing an emergency plan, contingency plan and business continuity plan.
- Ensuring flood risk is considered during the preparation of the Local Plan.
- Making decisions on planning applications which may be at risk of flooding or increase flooding elsewhere.
- Consenting any works to ordinary watercourses (i.e. streams, ditches) which may affect the flow or storage of water outside the Bedford Group of Drainage Boards (BGDB) Drainage District.
- Managing flood risk from ordinary watercourses that are not within an Internal Drainage Board (IDB) district.
- Maintaining Council owned assets such as drainage ditches, gullies, trash screens and culverts, which have a flood risk management function.
- Statutory consultee (as the LLFA) for major planning applications with surface water drainage implications.

Highway Authority (Milton Keynes Council and Highways Agency)

As a Highway Authority, MKC is required by the Highways Act 1980³ to ensure that all local highways are drained of surface water and where necessary maintain highway drainage systems.

The Highways Agency is responsible for managing highway drainage from the motorways and major trunk road network, including the slip roads to and from trunk roads. Within Milton Keynes, this includes the M1, A5, A421 and A509.

Anglian Water Services (AWS)

³ Communities and Local Government (2012) National Planning Policy Framework
<http://www.communities.gov.uk/documents/planningandbuilding/pdf/2116950>

AWS is responsible for:

- The drainage of surface water from development via sewers adopted by Anglian Water.
- Maintaining public sewers owned by AWS into which much of the highway drainage connects.
- Maintaining a number of the balancing lakes within Milton Keynes.
- Maintaining and improving its water mains and other pipes to reduce the risk of leaking or burst pipes.
- Reporting its performance each year to OFWAT, including in respect of internal sewer flooding of properties.

Environment Agency

The Environment Agency is responsible for:

- Managing flood risk from main rivers (e.g. River Great Ouse and River Ouzel in MK), reservoirs, estuaries and the sea.
- Providing a national strategic overview for all sources of flooding.
- Providing flood warnings to the public and protecting and improving the natural environment.
- Regulation of works in, over, under and within 8m of the top bank of main rivers.

Bedford Group of Drainage Boards (BGDB)

The BGDB is a consortium comprising the Buckingham & River Ouzel Internal Drainage Board (IDB), the Bedfordshire & River Ivel IDB and the Alconbury & Ellington IDB. Buckingham & River Ouzel IDB cover the area within MK containing Newport Pagnell.

The BGDB is responsible for:

- Managing water levels in the watercourses designated to each IDB and working in partnership with other authorities to actively manage and reduce the risk of flooding within the board's district.
- Supervise all matters relating to the drainage of land within their districts and manage water levels in the watercourses designated to each IDB.
- Manage and reduce the risk of flooding within the IDB's districts.
- Permissive powers to undertake maintenance on ordinary watercourses within their districts.

Milton Keynes Parks Trust (MKPT)

MKPT is a charitable trust that owns and maintains most of the parkland in MK. The MKPT is responsible for:

- Riparian ownership of the watercourses through the linear parks in Milton Keynes.
- Maintaining the linear parkland in the river valleys to allow them to effectively function as floodplains.
- Managing the land around the large balancing lakes within the linear parks and recreational use of the lakes.
- Managing a number of Sustainable Drainage Systems (SuDS) in some residential and commercial estates.

Landowners and Developers

Riparian owners are responsible for:

- Maintaining the banks and beds of the watercourses, including trees and shrubs growing on the banks, and any flood defences that exist on it.
- Clearing litter from the watercourses and banks, even if it did not come from their land.
- Maintaining and clearing any structures on their stretch of watercourses including culverts, weirs and mill gates from obstructions (natural or otherwise) so the normal flow of water is not impeded.
- Accepting the natural flow from the upstream neighbour and transferring it downstream without obstruction, pollution or diversion.
- Applying to MKC for formal consent to carry out any works within any ordinary watercourses, or to notify MKC of any works adjacent to any ordinary watercourses outside BGDB Drainage District.
- Applying to the Environment Agency for formal consent to carry out any works in, over, under or within 8 metres of a main river.
- Applying to Buckingham and River Ouzel Internal Drainage Board for formal consent to carry out any works within 8 metres of any watercourse in the Drainage District.

Appendix F – Combined and summarised recommendations from the three FIRs.

General Recommendations

Responsible authorities or individual

A joint Drainage Service review should be undertaken and seek to rationalise responsibility and maintenance functions

MK Highways and LLFA functions, Anglian Water and other stakeholders with drainage assets.

Nominate a Community Flood Warden to help coordinate the following:

- Produce an overall plan of the catchment area which can be used to plan a strategy of ownership, maintenance and improvements of the existing drainage system. This can form the basis of a Community Flood Plan, which should include as a minimum: Identification of any historic routes of drainage from the various catchment areas of the village, which could be reinstated or improved; Identification of riparian ownership and responsibilities for drainage systems, including ditches, culverted watercourses and open watercourse sections; Identify any land uses within the catchment that may unduly affect the normal flow of surface water.
- Prepare Household Emergency Plans for any vulnerable properties in the village.
- Regularly inspect ditches and culverts in the area of flood risk. Report blockages or other issues to the landowner and the LLFA.
- Explore options for property level resistance and resilience and, where possible, implement any recommendations.
- Explore community wide solutions (e.g. attenuation areas, overland flow routes)
- Continue to report flood incidents to the LLFA. Endeavour to obtain as much evidence of flood events as possible, such as photographic and video evidence.
- Request that landowners inspect and maintain or clear any flood related assets including ditches and watercourses in order to reduce the risk of flooding in the community.

Communities and Residents

- Work with the Emergency Planning Team and the Environment Agency to support the Community Flood Warden.
- Work with the Emergency Planning Team, the Environment Agency and other flood management authorities to support the community in the production and implementation of a Community Flood Plan and provide advice to residents to how to explore options for property level protection.
- Inform those affected, and any owners of drainage systems and watercourses within the overall surface water catchment area, once this investigation report has been published reminding them of their legal responsibilities.
- Review of street cleaning/grass cutting operations to reduce the amount of material that could cause blockages to the drainage system
- Promote the use of SuDS, for use on new developments. Milton Keynes to consider replacing off-street car parking areas with attenuating permeable paving, for use on new and existing development.

LLFA(Milton Keynes Council)

General Recommendations

Responsible authorities or individual

- | | |
|--|---|
| <ul style="list-style-type: none"> Undertake regular highway drainage cleansing throughout Stoke Goldington. The timing and frequency of this work should be determined in conjunction with the Parish Council and residents, taking into consideration any limitations as a result of wildlife legislation. Assess the capacity of their assets and identify any areas with insufficient capacity for draining runoff from the highway. Where this leads to flood risk to properties, improvement works should be considered. Work with the community and LLFA to clarify ownership and maintenance responsibilities for drainage systems and watercourses, particularly where they are located within or near to the highway, or effective highway drainage is dependent on them being operational. | <p><i>Highway Authority (Milton Keynes Council and Highways Agency)</i></p> |
| <ul style="list-style-type: none"> Assess the capacity of their assets and identify any areas of insufficient capacity. Where this leads to flood risk to properties, improvement work should be considered. Work with other parties to clarify ownership and maintain responsibilities for culverted watercourses, particularly where these are recorded as public sewers. | <p><i>Water Authority (Anglian Water)</i></p> |
| <ul style="list-style-type: none"> Work with the MKC Emergency Planning Team and the LLFA to support the community and the Community Flood Warden. | <p><i>Environment Agency (EA)</i></p> |
| <ul style="list-style-type: none"> Undertake regular inspection and maintenance of their drainage systems in accordance with a defined maintenance regime. Identify and develop a detailed plan of their assets to share with the LLFA, other flood risk management authorities and their community. Assess the capacity of their drainage systems and identify any areas with insufficient capacity for the collection, conveyance, storage and disposal of surface water. Where this could lead to runoff to the public highway or to private properties, improvement works should be considered. | <p><i>Landowners</i></p> |
| <ul style="list-style-type: none"> Work with MKC to ensure all development is completed in accordance with approved plans and documents, and planning policy. Suitable mitigation will need to be identified to manage the risk of flooding to the development itself and it needs to be demonstrated that proposals will not increase flood risk to third parties and, where possible, developments should contribute to reducing offsite flooding. | <p><i>Developers</i></p> |