Q&A Report: Introduction to Flood Risk Management			
#	Question	Answer	Answer Name
1	Are there any agreed best practice rules for the flood study scenarios to use in land use planning? How do we communicate flood studies outputs to land use planners?	I'm in Local Government in Victoria, AUS. They go hand in hand here. Statutory planning has a responsibility to have up to date flood mapping to guide developments so are involved in the process of flood mapping from start to finish. Flood mapping is added to the planning scheme as an amendment, most commonly discussed is the Land Subject to Inundation Overlay (LSIO) mapping layer, any developments proposed in these areas must take into account the flooding overlay. The Building Code also references this LSIO for new building works to set floor levels with respect to flood levels.	Attendee
		Thanks.. but what scnearios get used in overlays? I am trying to get planners here to understand that 1 %AEP alone is not good enough for the overlay	Attendee
		The LSIO layer is the 1% AEP, although many different AEP's are completed as part of the flood studies (for us at least) for information on different sized events. For Stat Planning, they need a specific event to use in the layer (I believe guided by legislation). It gets more complicated from there as different "Shared Socio-Economic Pathways (SSP)" can be used to assume a degree of global warming for the chosen year in the future. ie: a 1% AEP event in the year 2100 can be calculated with different SSPs and will give different degrees of flooding	Attendee
		Great conversation here. A handy, free tool that calculates the change in probability of flooding under different climate scenarios is available here: https://ccc.wmawater.com.au/	Krey Price
		In the Victorian context, overlays should be based on the 1% AEP event. It is becoming more accepted that this can inlcude climate change allowances (see Teesdale Flood Study panel report https://stfpbsprodapp01.blob.core.windows.net/amendmentfiles/Golden Plains C104gpla Panel Report_d27ef0cf-090b-ee11-8f6e-002248933fc5_7369b716-26d6-4b4e-bff0-a11bcf30afa8.pdf). The overlay is only a trigger for further assessment of works on the property.	Attendee
		At least in Australia many state organisations require a flood risk based approach to land use planning elements. Typical this involves using multiple flood frequencies up to the Probable Maximum Flood (PMF). Scenarios also need to consider long term guidance with regards to climate change (SSP) to ensure land use planning products are fit for purpose and have the ability to adjust to a changing climate and allowance for future growth. With regards to communicating outputs from flood studies, my personal preference is always graphical (which was shown briefly in the presentation)	Adam Berry
		You need to consider upper frequencies (such as the 0.2%, 0.05% etc) and also consider thee with other flood risk elements. I.e. if you have a 0.2% AEP event with very low hazards and no other flood risk constraints (flood islands etc), then you would use all of those elements to make a determination around the tolerability of that risk depending on the use. One example quickly type a million words a minute.	Adam Berry
		live answered	Catherine Walker

2	Whenever we do a flood modelling using a Elvis data, do we need to consider council stormwater network too or can we consider it as fully blocked?	Depends what you're trying to show/learn. For an overland flow study where the stormwater network plays an important role I wouldn't be fully blocking the pipe network. For a major riverine flood I would generally omit smaller pipes as they would probably be full anyway	Catherine Walker
		Blockage is a complex component of flood modelling and depends on a variety of circumstances (such as availability of debris, slope, vegetation cover etc). In addition, obviously pipe/culvert dimensions result in different blockage scenarios. Furthermore, the magnitude of the event can also impact on % blockage. Australian Rainfall and Runoff provides some good info regarding this	Adam Berry
		Ok. Thanks for your response.	Attendee
3	Are there any agreed best practice rules for the flood study scenarios to use in land use planning? How do we communicate flood studies outputs to land use planners?	Visually as above is my advice. In addition as expressed a few times in the presentation, we need to consider all elements of flood risk, not just flood frequency. It is also important to undertake a full exposure assessment of different scenarios and flood magnitudes to understand the impact on the number of properties/business and zone assessment. The constraints are coupled wit the growth patterns to understand available land supply. Further, a flood risk management study is also a critical component to ensure all elements of reducing flood risk are investigated and not just a land use planning perspective.	Adam Berry
4	Do we still use one in hundered language... I thought we tried to move away from that language., because people get confused about the chance of getting such a flood more than once in a few years	At least in Australia, "one in a hundred" is still accepted as long as it's expressed as an AEP without saying 1 in 100 "years". Preferred terms shown in blue here from Tony Ladson's blog: https://tonyladson.wordpress.com/2017/07/04/converting-between-ey-aep-and-ari/	Krey Price
		Technically we should be using Annual Exceedance Probability (AEP) as Krey has mentioned. In addition, there is more we can now do to simplify outputs to the community (such as referencing impacts via a flood gauges etc)	Adam Berry
5	How much has climate change impacted flood risks?	Great question. The authors of the Australian climate change guidance held a presentation and expert panel discussion on the topic here: https://www.youtube.com/watch?v=F9x88uQZLEA. A handy, free tool that calculates the change in probability of flooding under different climate scenarios is available here: https://ccc.wmawater.com.au/.	Krey Price
		Climate change can have a substantial impact over a 100 year timeframe particularly if using Socio Economic Pathway SSP5. This can be amplified obviously in communities impacted by costal and pluvial flooding with sea level rise and rainfall increases. Another important concept is to understand the impact of climate change over time and how it transitions depending on the type of problem being addressed (infrastructure or land use planning etc)	Adam Berry
6	Can anyone access this system?	Sorry, to clarify - is access to AWS - QGIS system accessible?	Attendee
		The data shown in Adam's presentation is specific to a particular flood study. There is some publicly accessible information, but the QGIS project shown was on a local machine.	Krey Price
7		No, this is a project of ours. But if any Australian organisations are keen to learn more about it on how to graphically present flood and operational risk, please contact me	Adam Berry

8	Should climate change factors be applied to the rainfall intensities? If so, which design year and SSP scenario should be considered? Thanks	While the uplift factors for rainfall intensities and soil losses are prescribed for each SSP in Australia, the selection of which SSP to use is generally left to individual industries or business risk profiles. ARR Book 1 Chapter 6 has a lot of background details: https://www.arr-software.org/pdfs/ARR_190514_Book1_V4.2.pdf; there is also a nice, concise description of the scenarios here: https://www.carbonbrief.org/explainer-how-shared-socioeconomic-pathways-explore-future-climate-change/ which describes SSP 2-4.5 as the "middle-of-the-road" scenario which a lot of groups are going with. There's uncertainty involved with all of them and a lot of factors like future political trends affecting which might be more likely.	Krey Price
		Climate change should always be considered, providing an answer to this though is not possible!! Many authorities unfortunately have varying risk appetites and understanding of the science and thus adopt different parameters. Another option is to adopt a % degree approach and adjust through time rather than selecting a specific SSP scenario	Adam Berry
		Thanks Krey, Appreaciate it!	Attendee
9	Could you please explain more on the difference between time f inundation and duration of inundation please?	The time to peak or arrival time tells us about evacuation times and guides early warning systems. The duration of inundation is the amount of time a particular road, building, etc. is underwater.	Krey Price
10	what does OSD stands for ? Thanks	On-Site Detention	Catherine Walker
11	If eliminating the risk altogether is not approrpaite, how should land use planners determine what level of risk is tolerable?	Question of the day!! It varies so widely between even neighbouring authorities. Best advice I can give is to present and crunch as much information as possible through a flood risk management study. Though primarily tolerance should be assessed with the community as they are ultimately the ones that are impacted by flooding and tolerability of flooding varies wildly through community. To get this level of understanding is VERY difficult though.	Adam Berry
12	2022 floods in Victoria can relate to your comments there Adam around levee banks	Would like to learn more Jim!!	Adam Berry
13	In terms of the Flood modelling exercise, what would you guys consider as the main blind spots of any given flood model? And how do you envision innovation in this space, either with better hardware, field work or software's processing capacity e.g. machine learning, AI?	Experience is key. I am still flood modelling extensively as a director in my company. AI, scripting etc has a place to speed up process and help background understanding but experience, judgement and a deep understanding of how flood information is used outside of the model is key.	Adam Berry
14	A bit spicy – but what power do we have to inform better decision making when politics overrides science? A recent example is government decision to solve the housing crisis by developing greenfield land in a flood prone area. The risk is being accepted, then passed on to unsuspecting customers.	Love the spiciness. Ill be spicy - I think our approach to housing in Australia is largely becoming out of control. It makes it very difficult to balance flood risk verse an insatiable demand for pushing more people into houses and eventually we will push into more hazardous land areas (and already are). Our perspective on growth in housing has long term implications for Australia's future in general and across multiple elements and thus makes it difficult to do our job. I really feel for strategic land use planners trying to juggle this imbalance. Without myself being able to influence those politics (because I know I cant!!), we need more flood risk managers to understand the process more and to develop holistic outputs to better understand and manage the risk moving forward. Having a line on a map like in the past doesn't suffice anymore and there are plenty of good projects out there that give a good indication we are moving in the right direction	Adam Berry

15	Just relevant to this topic. Recent sad incident happened. I hope everyone is aware of this. https://www.abc.net.au/news/2025-08-06/body-found-rothbury-hunter-valley-flood/105614954	Thanks for sharing. Most flood-related fatalities in Australia occur from vehicles crossing flooded roads; we covered this in a separate AWS webinar: https://www.youtube.com/watch?v=kpeKM6jAvOg for anyone interested in further discussion on the topic.	Krey Price
16	For rural council like cessnock where budget is a constraint, what could be done to stop such incidents. Any suggestions	Sher without knowing your specific circumstances that's difficult but as mentioned in the presentation there are multiple ways to address flood risk. A good start is talking to your community about their flood risk and vice versa learning from them what they actually need during a flood event. Raising community awareness around flooding is an extremely effective and very cost effective way to reduce flood risk	Adam Berry
17	What community engagement methods do you find effective for communitcating flood studys? Particularly communicating to communities and council members who lack some understanding of 1% AEP scenarios and its importance in council planning.	Talking with the community I think needs a complete re-think. In my view, there is little chance of all of the community fully understanding technical jargon (remembering social vulnerability, we are dealing with a wide range of people). I know myself we had adjusted the way we communicate now using flood gauge increment mapping and landmarks throughout townships to communicate risk. That doesn't discount the use of the things like AEP's etc, it does just become hard. Another tip is to reference historical events to AEP magnitudes and even quote other areas that have larger floods (I always use Lismore in NSW as an example of what you could expect above a 1% AEP etc).	Adam Berry
18	Focus on floor levels is not always helpful, if there is no power or sewerage services uring a flood, people need to get out regardless. So need to look at thresholds for essential services to the properties as well.	This is true, but after evacuation you can return home quicker rather than having to rebuild.	Adam Berry
19	There are also cultural issues as we have seen with relocating aboriginal communities	Good point. Just relocating a community in general is not easy and everyone always has a connection to their "place".	Adam Berry
20	Glenda Dunn just made the same observation in the chat	live answered	AWS Admin
21	I have previously used Flood Modeller to assess flood risk in urban areas, and the results were very good. However, this approach relies heavily on hydrodynamic modelling, which is highly complex and may not be practical in certain situations. Are there any other methods or applications that are faster and more practical for assessing the flood risk?	Hi, if you are still using Flood Modeller they added a link to Fathom data last year. This can give you a good idea of flood risk without doing any modelling - https://www.floodmodeller.com/fathom	Attendee
22	I have previously used Flood Modeller to assess flood risk in urban areas, and the results were very good. However, this approach relies heavily on hydrodynamic modelling, which is highly complex and may not be practical in certain situations. Are there any other methods or applications that are faster and more practical for assessing the flood risk?	Thank you. I'll look forward this Fathom app.	Attendee
23	Study case: too populous people in one metropolitan city leads to there is no option but occupy the river boundaries. Meanwhile the flood events happens periodically. Question: How to find the best solution for this case?	Apply the full range of flood risk management measures as mentioned in the presentation. You may not remove the risk, but you can reduce it in almost all cases.	Adam Berry
24	Is there a common standard in Australia for zoning appropriate development in flood plains?	No, wish there was!!	Adam Berry
25	Is there allowance for wind and wave effects?	yes good point, these are usually included in the freeboard allowance	Catherine Walker
26	Could failure to adapt flood risk management policies to climate change projections expose Australian governments to legal action under administrative or human rights law?	The majority of clients I work with completely acknowledge climate change projections in their flood modelling and many are using it to set and define appropriate locations for development.	Adam Berry
27	Why do planning controls have a fixed 500mm freeboard as near cost this is close to 1 in 500, whereas inland may only be 1 in 110 plus error in modelling would be bigger?	coast not cost sorry	Attendee
28	Is the Australian standard a 100yr return period. In the US ASCE standards, depending in the Importance Level there is a different return period and free board requirement (i.e. 4 different flood return periods)	Historically it was standard, now Australia has moved to a risk based approach which considers multiple flood frequencies up to the PMF	Adam Berry
29	Is there any work happening to update the national technical guidelines for floodplain management with these new approaches?	In Australia - yes lots of guidance	Adam Berry

30	Which Climate Change change scenario is used (RCP / SSP) is used for the rainfall analysis...which feeds into flood plain and flood height /return period? to what horizon year? Does Australia or States/Territories have a policy on climate change scenario to use for design for rainfall and flood?	This varies unfortunately across jurisdictions and really needs addressing for consistency. The industry has been calling for this for some time. The federal government should be providing more guidance in this space in my view so we are consistent as a nation	Adam Berry
31	Often Council apply freeboard to urban catchments as a flood risk measure, how reasonable do you think this is? Seems highly conservative, where FB usually protects against wind driven waves, although maybe helpful where momentum may drive an urban flash flood flow up to a ground floor.	I previously worked in council on urban flooding. We certainly considered how much FB to apply - the standard 500mm is probalby not suitable when the flood depth is small. Lots of uncertainties in flood modelling though to consider not just wind driven waves..	Attendee
32	How do we get retrofitting benefits reflected in insurance premiums?	I am developing a Proeprty Flood Certificate aimed at providing the evidence for insurers/underwriters	Attendee
		This is a real challenge. There has been some limited success but more advocacy is needed to ensure this occurs as there are huge cost savings for insurers and residents	Adam Berry
33	There's been rhetoric in the NSW system, particularly since the major floods in Lismore, that there would be no more new development on the floodplains. According to the NSW system, this includes up to the PMF. Is this actually possible or achievable, particularly in regional, non-coastal areas with flatter catchments?	No, banning development out to the PMF is not possible. There I've said it. I also believe that many politicians don't actually know what the "floodplain" is. It is a throw away term used by some to reference an area that has flooded recently I believe - but not the true extent out to PMF. As a result if we keep pushing more people in, there has to be a balance and that is a where a risk based approach is required understanding multiple elements of flood risk and what use is most appropriate depending on that overall risk. As an example we need to understand the constraints such as isolation/road immuntiy/duration and time to inundation of flooding to better manage where we put people in the floodplain.	Adam Berry
34	Community is usually notified of flood if the level rise up to 5% AEP event, any thoughts on timing, how long it will take for the flood to rise up to 1% AEP event and any thoughts on adequate time to evacuate.	We shouldn't be using design flood terminolgy in actual flood events (at all). This is where a total flood warning approach should be adopted and use more informative forecasts and warnings	Adam Berry
35	Who should be responsible for empowering people, particularly renters and new home purchasers etc, on flood awareness? Where can this fit? How can we at the planning stage be sure this will be achieved?	Its been dealt with adding a covenant on Certificate of Title notifying of event and owners obligations and whether its ongoing or tenure based.	Attendee
36	For flooding related to dams in Australia, who is responsible for Flood Warning Systems? Is it SES or Dam Owners? Who is responsible for community liaison	It varies across states. There are state government authorities that generally manage large water supply and flood mitigation dams though. Community liason is a shared responsibility across multiple agencies and is complex	Adam Berry
37	Some Council's have asked for assessment of PMF impacts for small residential developments in Sydney metropolitan areas ie not increasing levels more than 100-150 mm or not increasing velocities by 10% etc. Do you think this is excessive??	Possibly, again we need to understand the frequency of the PMF and its overall risk (which is very low as a result of the frequency). But I would think 100-150mm impacts are signficant and I would not expect to see that from small developments in the PMF?	Adam Berry
38	With respect to community involvement does this include land holders that have the rivers traversing their land and engaging them with stability and flood plain management improvement to reduce flooding impacts	I mentioned the environment several times and ive been invovled on several natural flood management projects. I do think this has a role to play in some of our smaller floods and should absolutely be considered in the context of flood risk management (i.e. revegation of banks and floodplains to slow velocities and flood peaks)	Adam Berry
39	When working with government entities I have observed a reluctance to want to talk to the community on the property level measures like flood proofing, due to how emotional charged it can be, how long it can take and some of the political implications involved. Do you have advice for floodplain managers for when starting to look into these measures?	If it is wet proofing it can be done piecemeal and in stages to meet budgets	Attendee
		Talking with a community can be super emotionally charged, ive interviewed over 200 residents after one large flood in NSW and the best thing you can do to start with is actually listen to them. Don't think like an engineer, you are dealing with people's livelihoods - be compassionate. Most people just dictate to residents because they think they know better - start by listening, then slowly educate if you are afforded the time. if you don't have trust, you have nothing.	Adam Berry

40	being that councils often overule not building in floodzone locations for the sake of growth and development..... what comeback is there for already existing locals to cover their ever increasing insurance costs due to claims that shouldn't even eventuate if planning is acknowledged and taken on board	It would be preferable to build upwards.....not outwards.....Correct???	Attendee
		If you are pushing further into heavily constrained lands, then yes densification must be considered.	Adam Berry
41	Talk more about Green and Brown field lands development sceniorios.	This was an introduction course to strategic flood risk management and land use planning is only one component of the approaches to reduce flood risk. Upcoming course will be more specific.	Adam Berry