Interview Transcript[[1]](#footnote-1)

Subject 6: Director of environmental council

I: [explaining project]

[1:56]

I: First, why don’t you tell me a bit about your job position and what you do.

S: I am the director for the [organisation]. Are you aware of how [organisation] works?

I: I am not, no.

S: Okay. Each catchment in the UK, almost all catchments have their own [organisation]. So what we do in each catchment is to work with local communities, businesses, farmers, landowners, anybody who’s interested in or has a responsibility for the river, to work with those people to get the river in its healthiest possible state and to work with the different pressures that the river exerts itself or that others exert on it. So we are part of a national movement which is called the [organisation]. It’s called something slightly different in Wales, Scotland, and Northern Ireland such as the [organisation] so we have a national team who work on a European or on a UK national level to promote the interests of the [organisation]. But each [organisation] is an independent charitable organization.

[3:38]

I: What kind of decisions, then, do you make or does [organisation] make based on natural hazard information?

S: On hazard information. So the things that we are concerned about is the ecological status of the river so its form if it’s natural or otherwise, the water quality, looking at the life that lives in the river, which is dependent upon habitat channel form and water quality. Looking to connect where possible the river with its floodplains so that sort of function in a natural state. Part of that is looking at natural flood management so if you’ve got a heavily modified river, say it’s been straightened and hardened [unintelligible] water runs faster from its upper reaches down to its lower reaches and normally a river, you know like my river for example, [river], it starts off in the North Pennines on the high ground and it winds its way down to the sea. When you see issues with flooding reported on the news, then that’s normally in the lower parts of the catchment whereby farmers and others have got rid of the water as quickly as possible from their areas of interest and the bottom areas of the catchments are normally more urbanized than the top end, quite often they’re close to the teeth so if you’re getting a high flow coming off the upper catchment that’s been shed let’s say artificially quickly, particularly if that then coincides with high tide, then you can get flooding when the high tide and the river meet, and cause an issue. Part of what we try to do is to work with landowners and others to retain water for a longer period of time within the system. So for example, if you’ve got a mile of straight river, then it’s a mile. If you’ve got a mile of meandering river, then it could be five miles. So a river in its natural state, the water flows [unintelligible] meander themselves so there’s more opportunity for water to slow down and not to rush down and create problems at different pinch points further down the catchment. A lot of that can be exacerbated by land use so if you’ve got a lot of silt or topsoil washing into the river from the agricultural areas, then that’s going to cause a buildup of silt in lower areas. When the water slows down, it’ll drop the silt and can exacerbate the risk of flooding. So I don’t know if you were over here

 when the Somerset levels flooded a couple years ago?

[7:32]

I: Yes, I was.

S: Did you hear about dredging the rivers and making the rivers flow faster?

I: Yeah.

S: It’s fine, unless you were further down from that point, then it’s going to cause you a problem, but part of the issue, the reason that the rivers are silted up is that all that valuable topsoil with valuable nutrients on it has been washed down because of poor land practice further up. That’s why the river has become shallower and siltier and can be a contributor to flood risk. What we try and do is look at the whole catchment from source to sea and its various tributary rivers, which form over the whole catchment, try and look on a holistic basis. What we try and do is try and manage either the whole catchment or, more realistically, the subcatchments within that as management units.

[8:43]

I: Very cool. A lot of what you do then has to do with flooding, is that right?

S: Flooding is an important aspect, but it’s only one aspect of what we do. So for example, we’ve got a project at the moment whereby we’re looking to work with the water company and others to put in sustainable drainage systems. Have you heard of them? SUDs?

I: I have not.

S: Okay. That’s green drainage, if you like, so within the UK, lots of our drainage systems, the service water and the dirty sewage wastewater are a combined system. So you have relatively clean surface water from surface water drains going into combined drains with sewage and the whole lot goes to sewage treatment works and is processed. Now what happens when it’s wet is that those sewage treatment works can’t cope with the volume of liquid coming through so there’s things called combined sewer overflows. They’re a safety valve to avoid sewer flooding and they then spill, dilute raw sewage into the river. It’s not great, is it?

I: Not the best.

[10:35]

S: So that’s got obvious problems around water quality and if you’ve got poor water quality, that then affects the ecology of the river, but also it can contribute to flooding as well. So what we’re looking to do in certain areas with the water company and the local county council and others is to intercept surface water before it goes down into the pipework, into the drains. In fact, in North America, this is much more advanced than we are over here, and divert that water over onto the surface so then it can naturally infiltrate, hold it back and let it go again after the flow peaks come down. In so doing, by treating the surface water in a different way, you reduce the flood risk, you improve water quality, and you can create ecologically useful habitats in these green areas. It could be wetlands, it could be dry ponds, it could be grassy bores that then get filled up with water when it rains with the water runoff from houses, from roads, etc. and they can then be held there until the flow peak has passed or it can evaporate by evapotranspiration by using wetland plants in there or it may just naturally infiltrate into the soil. That’s called sustainable drainage systems. Working with them with local residents, with local authorities, housing providers, with the water company, etc. then we can make a big difference with how surface water is managed. And that in itself has an impact on the river: water quality and how it performs further down the catchment.

I: Yes. Absolutely. Really, really interesting. So I guess my next question is first of all when you’re dealing with flooding, what kind of information do you get and do you pass that information along?

[13:27]

S: Yes. Just one more thing about the SUDS. If you just Google SUDS. S-U-D-S. You’ll be able to see some illustrations as to what I mean. It could be quite useful.

I: Yeah. Absolutely.

S: So, in terms of flooding, we look at rainfall data, we have a number of sites with rain gauges on them. We have a number of locations where we monitor flows on different streams and we work with others, university consultants who can maybe build hydrological models to predict on a given intensity of rainfall over a certain period, looking at the topography of the land, at the land use, what the likely impacts are going to be. So that’s what we’re doing with the SUDS project is that we’ve identified an area within this particular town where if we interrupt the service water, we know that two of these combined sewer outflows, there’s 13 CSOs in this particular stretch, but those two account for 95% of the spills from the system. So if we can then interrupt the service water to those two subsystems, then we could have quite a significant impact on water quality and also, to a lesser extent, on flooding further downstream.

I: That is very, very cool. And you said that’s based on the hydrologic models that your university partners are running?

[15:53]

S: Yes. I’ve got some money to be a pay a private consultant, but we also do a lot of work with the university, particularly, and currently we’re hosting three PhD students, we’ve hosted a number of PhD and master’s students in the past so we actively utilize or work with the university to provide research opportunities, but also use the expertise that the students are developing with their academic supervisors to help us with our project development and project delivery. For example, I’m working with a PhD student at the moment who is interested in public perceptions of flooding. So he’s working with a range of partners, talking to the local community about what they think of their part of the river, why they think it floods, what should be done about it, and, by the way, here are some thoughts that we’ve got that we’d like to do in your neighborhood to resolve this problem.

I: That’s very cool.

[17:28]

S: Between that particular student and a private consultant that I’ve got we are getting a range of hydrological modeling being done to (a) inform what we need to do (b) to generate the information to pass on to the local community. Because obviously if we can’t get the local community on board and if they don’t want it to happen, then it won’t happen. Community participation and engagement is a key part of what we do.

I: Oh, absolutely. Going back to the hydrological models, so what kind of output are you personally seeing from the models? Are you seeing a graphic? A map? Charts? What kind of things are you getting from the models?

[18:30]

S: Combination of all of those things really. The [organisation] have got flood mapping, you know, 1 in 10, 1 in 30, 1 in 100, 1 in 1000 year floods, that kind of thing. We have the university students has done a basic model looking at the topography and rainfall records to predict where surface water flows would run and also which areas would generate surface water runoff. He’s going to redo that and stamp on the footprints of buildings as well. So at the moment, he’s done it straight on the topography, but he’s going to do it again and put the buildings where they are, the streets where they are, which will then obviously affect what the model is telling us.

I: Very cool. Is it possible for you to share some of the outputs with me? We’re just looking from a design standpoint of what people are receiving. We’re not going to pass it on or use it in any way. We’re just kind of curious the format that these things are in.

[20:07]

S: I’d say yes. I will obviously need to seek the permission of those who actually own the information, but yeah, I don’t see a problem with that.

I: Thank you. Also with the model output, do they share any uncertainty information with you about the model output?

[20:29]

S: We are very well aware that the model outputs are what they are. So for example, we would conduct underground surveys as well to validate what any model is telling us. So for example, we’ve got a different project on abandoned metal mine pollution. Have you heard of [software]?

I: No.

[21:11]

S: That’s a computer package whereby rainfall, typography, and the river systems. It’ll highlight areas of higher or lower risk of erosion. We’re adapting that to look at around abandoned metal mines in the north Pennines where the most likely areas of pollution are going to be. So that’s geology, past industrial use, and the types of water courses they have there because this is an old industry and it was water powered, it was pre-electrical. A lot of the processing, the crushing of the ore and all that stuff was done through water power. Consequently, lots of the spoil heaps and the remnants of that industry were all on the floodplain or actually on or around water courses. We are modeling that information and then what we’re going to do is use volunteers or expert volunteers who know a lot about mining go out with our river people in pairs and then look at what we think is there and then validate that with the on-site survey and take water samples and sediment samples. And then what we’ll do then is take that information and then work up measures and cost measures to reduce the input of contaminated silts from these sites, which can be quite expensive into the river.

[23:25]

I: Very cool. So you’re using, basically, a combination of modeling and validation for both projects.

S: Yes.

I: Okay. With respect to the uncertainty information, basically you understand that there’s inherent uncertainty in this whole field. Is that correct?

S: Correct, yeah. Within natural systems, there are so many variables and all of these modeling systems, they’ll take a snapshot, make various assumptions and it gives you a starting point from which to work and we’ll then either go out and validate that either using volunteers or staff on the ground.

[24:22]

I: Okay. So with the model output, since, like you say there are loads of assumptions you can make, do you ever get multiple outcomes, or multiple options? Or do you typically just get one line or one map showing just one of the options?

S: We will get a range of scenarios, basically, so looking at a certain intensity of rainfall over a short or a more extended period, the whole thing is really presented on a continuum we would specify the particular things that we’re interested in and try and secure that information to then make a decision or to build a picture and part of what we do is that we work with our partners and we share information. So, for example, the water company will share information with us in terms of the operation of their combined sewer outflow so that’s how we know that the two CSOs I mentioned represent 95% of the spills. So the water company know when the CSOs spill and how long. What we don’t have is what the water quality’s like coming out of the CSO. We don’t have what the flow has been. All we know is that the CSO went off 20 times last month, but whether it’s gone off for 10 hours or 10 minutes, we don’t know that.

[26:36]

I: So when you pass this information along, you said you get information from your partners and that helps you work with these projects and you have these modelers who are helping you come up with scenarios of what could happen, which kind of helps these projects, moving them along. Presumably, you have to then share all that information and all of this that you’ve gathered with the public and community and other partners. Is that correct?

S: Yes. Have you heard of the catchment-based approach?

I: I have not, no.

S: That’s been in since 2011. It’s a government-sponsored initiative from [organisation] and this thing called the catchment-based approach, the intention is basically to do what I explained to you at the start of the conversation. It’s designed to pull partners together to work together for the good of the whole catchment and share information. Through that process, we have a thing that’s called the [organisation] and that consists of 11 or 12 organizations who all do work on the river so we aim to coordinate, to integrate, to share data amongst ourselves and then what we also have under the auspices of the [organisation] is a range of local delivery groups. Most people are interested in what’s happening outside of their back door, not necessarily what’s happening 20 or 30 miles away. What we aim to do is to work through, with, and under the leadership of, ideally, the local people to deliver projects in their back yards so to speak. So what you find there is that you have a range of partners from the [organisation] working together in a local area with a local partnership, does that make sense?

I: Yeah, that does make sense.

[29:29]

S: Information that we’ll have is quite technical, we share it amongst ourselves on a technical level, but we share on a simplified, local level, with local people. And if a person is interested in learning more, then we’ll point him or her in the direction to learn more, but we find that there’s a lot of jargon and a lot of technical stuff like most people won’t really understand unless they put a lot of time and effort into doing that. We tend to communicate the concept, so for example, the SUDs concept I mentioned before, we’ll communicate about what it is, what it does, and why we’re doing that. And if people want to get into the technical design, then that’s fine. If they don’t, then that’s fine as well.

I: Well I don’t want to take too much more of your time, this has been absolutely fantastic. I guess for now, if you can get access and you get permission to share some of the model output that you’re given, that would be helpful. And if there’s any powerpoints or pictures or anything that you share with your partners from the model output and the streamflow data, rainfall data, that sort of stuff that we’ve talked about, that would be really helpful for us.

S: If you Google something called [software], that’ll give you a lot of information. It’s reasonably technical. Essentially what it does is it lays out the information by individual water body as to what the ecological status is for various elements, measured on a water body. So it’ll help you understand what happening with that. If you also Google the [organization plans], and also flood and coastal risk management plans as well. There’s huge amounts of information there.

[32:25]

I: Okay. And those are the typical sources that you would go seek out?

S: Those rise to a very high level. They’re both statutory instruments, but the two kind of set out quite clearly what the priories are. I think you’ll probably find them quite useful.

I: Perfect. That’s all I have. Do you have any other questions or anything else you want to share?

S: Not really, no, Kelsey. I don’t want to blow your brain with too much information at once.

I: Well thank you for spending so much time this afternoon chatting to me. In the future if we have further questions or if you’re interested in giving us information for our decision game, do you mind if we contact you in the future?

S: Yeah. That’s fine. I’ll talk to a few people and see if I can send you some information.

I: That would be great. Well thank you again. Have a great day.

S: Okay well thank you.

1. The interviewer is denoted by “I” and the subject as “S” [↑](#footnote-ref-1)