

## **Thorne & Hatfield Moors Oral History Project**

**Interview with: Kevin Bull (part 2)**

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**Interviewer: Lynne Fox**

*Can you tell me how you came to be involved with the job that you do now?*

Well I, I mean it starts right back from my childhood. I mean, I'd got this affinity with the site, I just loved going on there, it's always appealed to me, the good, the bad and the different, you know, being chased off was always an experience, but just being on the moors I always enjoyed as a lad and, but I've always had a genuine interest in wildlife, even though, you know, you might find it a bit, bit misunderstanding but I mean I've done a lot of shooting in my time, I've collected birds eggs and think, well that's not very kind is it. But you get this general feel of wildlife, the countryside and I've always had that interest and as I say, the opportunity came, or it was probably forced back in the early '90s and I went back to university and college to get the qualifications I was told I would need. I had already made enquiries about trying to get that work, not just with English Nature but with the County Trust and the RSPB, and the same response was coming back all the time, it's great, I'm sure you know your stuff but to get past the interview stage, or even to get an interview you've got to have some relevant qualifications in those areas of work.

So that's what I did and then I started as a, on a contract basis with English Nature, then I was given what we call a fixed term appointment, for a full year, and then finally as the doors started to open up and the site started to expand I was given a full time post and that was what I'd set my stall out to. When I went back to university this is where I wanted to work and fortunately things started to develop and here I am.

*When you say you started off on a contract basis what kind of work were you doing?*

I was doing a lot more of the practical man management work than I do now and that would be doing the physical side of the job, getting out there doing scrub clearance, doing damming work, keeping the access routes open and developing new access routes for people to come and enjoy, getting involved with some of the schools, I used to go and either visit the schools or actually bring the schools out on site. They used to have a wonderful time and go back absolutely black [inaudible]. I can remember having a few complaints about the state of Johnny's footwear and, I think going back, but the kids love it coming out on site. It was easier then I think, I think the needs to, I'm sure there's gonna be moves to develop the education side of things, well I know there is, I mean I know there are some of my colleagues working on that. But ten years ago it just seemed that the school curriculum was much more flexible than it is now and therefore it was easier for the schools to, you know, for the teachers to bring the kids out from school. Now it seems very tight, so we've got to meet specific targets now to fit in with what that curriculum is at that school but I think that will be done. And I encourage any teacher out there to bring the kids out on site to experience what it's all about and the access is much better now so we can get kids out on site easier and to specific areas of the site much easier than we could back then, you know, so.

*When you came to work for English Nature where were they in terms of thinking about preserving and*

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*restoring the site?*

They were well on with it, I mean there was, there's been a small parcel of land, well about two hundred acres or so that's been a National Nature Reserve for, since the late '70s and it was all designated, a Site of Special Scientific Interest and then back in 1992, although it didn't actually develop until '94, there was a, what I, what I would call a major turning point in the two sites and that was that Fisons, as they were known at that time, actually gave all their freehold land over to English Nature, which, you know, if you'd have said to me a year before that happened that it was going to happen I would have said 'No way, will that ever happen'. But it did and so overnight English Nature became, became a massive land owner in the sense they own most of the two moors. But it was done on the understanding that English Nature would lease back some big areas of land that Fisons had already earmarked for peat extraction to continue. So the bulk of Hatfield was leased back, although we've got some areas, some fringe areas round Hatfield, and about sort of halfish of Thorne came back to English Nature and the remaining half to the north stayed with Fisons for further peat extraction and there was planning permission in place until 2025 and so, you know, there has been about eighteen, nineteen hundred hectare of land under conservation management since that time.

*Why do you think that, that arose? Why do you think there was this, this interest grew in preserving the site?*

I think, I think you know, there's been a lot of political issues about peat extraction and quite rightly so. I mean, peat extraction is damaging, whether people want to accept it or not, it is a damaging activity to that site, and there's been a lot of campaigning over the years to try and, to try and get the peat extraction stopped and I'd like to think, and English Nature and the NCC have always felt that along the years as well. But having said that, to a certain degree the organisation's hands have been tied because of the designations and, well, because of the planning permission that were in place. Although there were designations in place which should protect the site, the planning permissions at the time over rid that and I think through careful negotiations on NCC and English Nature's behalf and other campaigning organisations and individuals I think the pressures that were put on Fisons at the time became so great that I think they had to be seen to be meeting some of their obligations towards nature conservation and I think that's how it came about.

But equally you have to accept that Fisons were a commercial enterprise, there's a lot of people employed by the company and they have to safeguard that side of things so I think that's why that agreement came about.

*I've heard other people talking about the impact of, that milling had when that was introduced.*

Yeah.

*What's your view?*

I think, I think when surface milling was first, the new technique brought onboard it did, it had a devastating effect, I think two fold really. One the sheer scale of the whole operation going on at the same time, I mean don't get me wrong the peat extraction side of things on Thorne and Hatfield Moors has always been a very big commercial exercise and there was possibly as much peat being taken off in the '40s and '50s as there has been in the '90s, '80s and '90s. But, it's the way the peat is taken off, it's the preparation of the land as well which is quite soul-destroying in the sense that massive areas, square

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kilometres of vegetation is removed from that, from that peat area all at once. So you get this huge sort of, people describe it as a moonscape, you know, just bare, nothingness and then there's huge drains dug, with drains with many, many drains connecting to the big drains to get this, to maximise the drying out of the peat surface so that surface milling can take place. So you've got thousands and thousands of metres of drains going in there and as I say, it was done on such a large scale that there was no refugia left in some of these areas so that when peat extraction ceased or when it was put on hold that the vegetation could start to rehabilitate itself naturally. Whereas under hand cutting, and to some degree some of the block cutting areas, the peat surface was cut away and it was basically thrown back to the areas which, that had stopped from, you know where working had ceased and so it would start to re-vegetate naturally as they went but ...

... on the surface milling it was done on such a large scale that that just wasn't viable at the time. So enormous changes when that came in and vast amounts of peat being taken off and we, I mean the campaigning continues because of that and in 19.., sorry 2001, although it didn't come about till 2002, there was negotiations taken place to actually buy out the remaining planning permission rights that Scotts, although they've now become Scotts, Fisons has now gone through Levington and then into Scotts, to buy that remaining peat volume out and that cost the government seventeen point three million.

So that came about in 2002 although part of the agreement allowed Scotts to take a further nine hundred and fifty thousand cubic metres of peat out of the ground over a three year period and that's what happened and in two, September 2004 peat extraction ceased completely. It finished immediately on Thorne Moors in 2002 but then finished completely on Hatfield in 2004 and then I had to start the whole ball rolling for the restoration of the two sites and that's what we're doing now.

*Can you tell me a bit about that please?*

Yeah, I mean, anybody who understands peat bogs will appreciate that the key factor, the key, the fundamental element to bogs being there in the first place and therefore bog restoration, is water and without rainfall these bogs wouldn't have been there in the first place. So what we need to do is, is to look at maximising water retention on the site, making sure we've got the right quality of water but also the right amount of water throughout that site to kick-start the whole rehabilitation of the site off. Bearing in mind we're in one of the driest parts of Britain as well, where on average we only receive about six millimetres of rainfall a year, we have to give this some serious thought of how we approach it. So you go out there we were given this huge area of land back, very, looks very flat, very bare, no vegetation and I think crikey where do we start.

The first, the first port of call is to understand what that peat surface is doing and how it sits in relation to adjacent land and how it sits within itself across that peat surface and although it looks flat it isn't so we had to do a full topographical survey of that surface and that would give us a clear understanding exactly where the low points are, where the high points are and how it deviates across, across the site.

*I'm sorry to interrupt you, but can you explain that a little bit that although the surface looks flat it's not flat.*

It isn't flat I mean, I will, it will rise and fall across that peat surface, so it may well be that, if we were to measure everything to above ordinance datum to sea level that some of the areas are two metres above sea level and some might only be one and that can deviate by a metre across the site.

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*What causes that?*

It's, it's to do with the way the peat bog's shaped to start with because, I mean, in a pristine bog is like, a bit like a pudding basin turned upside down and so usually towards the centre is, it's higher, with more peat and then as it comes to the edge it lessens and so when the peat, peat extractors, the peat companies have been and taken peat off it isn't always taken off absolutely even across that site. Plus the substrate underneath can change as well and that can have an effect on the shape of the peat bog and so we needed that information and so then we could start to plan how we actually hold water back across that surface, because people may say 'well all you have to do is block all the drains up, don't let any water leave site and then when it rains we catch all that rainfall and it starts to rewet the site'. I think if you're on an absolutely billiard board table flat piece of land, which didn't deviate in any shape or form you could possibly nearly do that and then you'd have, you'd have mechanisms in place to let any excess water off the site. But because of the differences across the site we couldn't do that.

So we had to break, use this information to break the surface down into manageable chunks, into what we call management, management cells, so we can actually hold water, and we can terrace that water across the site so we'd have different terracing levels and then we would hold a specific amount of water in one of those cells and any excess water could then be allowed to, go through a piping system out into the next cell, make sure that was at optimum levels and then finally any excess water would find these main drainage systems, which I spoke about earlier, and we can get the excess water off site. If we have too much water on site then the vegetation won't start to grow, it just floods it out. If we don't have enough water, then in summer, it'll dry out and therefore the bog vegetation we're working to try and establish would die out and you would just get species like bracken, birch, and willow coming in which will start to dominate again and although we want a nice mosaic of different habitats and different vegetation across the site we don't want those particular species to dominate, because once they get away from us it's very difficult to retrieve.

So by holding the water at optimum levels and what we try to work to, and it's a very basic approach is this, if we, we think on an average year thirty centimetres of water standing above that peat surface is enough to sustain, on an average summer, that peat surface through the summer period. So we want a maximum of thirty centimetres above the water in winter and we don't want the water to drop more than ten to fifteen centimetres below that peat surface in the summer. If we can hold that, hold the water within that parameter, that maximizes the, the potential for rehabilitating the site, for getting the right vegetation back and that's ultimately what we're trying to do and I have to say, I've been absolutely amazed at how, how quickly parts of the site are starting to regenerate once we get the hydrology right. It's looking fantastic on some of the areas.

*Can I just ask you to tell me what size of work force you're working with?*

We've got eight thousand, eight thousand three hundred acres of land and we've, which is a huge area, and we've, there's just five site staff at the moment and I'm sure my site, my, the rest of my staff will remind you of this, I very rarely get out on site. So you can count me out of the equation in terms of actually delivering any practical land management on that site and one of the members of staff, their core area of work is to look at the sort of volunteer side of things, the community involvement, the education and the recreational value of the site. So their time really isn't spent delivering any practical side of the work. So the three, three chaps I have working out there are the only ones I've got. Having said that, I mean...

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*And that's on both Thorne and Hatfield?*

That's on both Thorne and Hatfield. So there's only five of us in total to manage, to manage the site. But we are, we do underpin that, and support that with a lot of contract workforce and obviously I have to bid, part of my, big, part of my job is to actually plan the work prog.. We have a management plan in place and then I, from that management plan I have to break that down and look at an annual work programme and look at what we want to deliver over that year and once I have decided what we're gonna try and achieve in that year then we've got to finance that and so I have to put bids in along with all the other site staff in the organisation to see if we can secure the allocation to carry out that work. We don't always get everything we want, we never will but once we've got the allocation back in I can then buy that contract work force in to actually deliver that annual work plan programme that we've signed up to do and it's worked very, very well.

And what we have done recently is to try and encourage and engage better with the farming community around the reserve. We've got close on four to five miles of boundary which is nearly always up against the arable land, the farming land and I've tried to get some of the farmers to actually look at coming along and taking some of that work on as part of their, you know, their farming work programme. So we've encouraged them to go out and get some specific training with chainsaws, clearing saws, spraying with knapsack sprayers and such like and then we will contract them in and it's working really, really well. It's given us a much better working relationship and understanding of the farming community as well. I don't, I think years gone by we've always been looked at as, not that we couldn't be trusted, I think they were never certain what English Nature were all about and we were not secretive either but they were always a little bit unsure what it meant to them, what we were trying to achieve and there was always that, you know, that barrier there between getting on, and I'd like to think we've broken those barriers down now by inviting these people in and working with us and it's working out really well.

*You've mentioned volunteers?*

Yes.

*What kind of jobs would they do?*

We try to keep the volunteer work programme as varied as we can, because I went through the volunteer path. When I said I wanted to work for English Nature and work in nature conservation, one of the ways in there is to, is to actually to volunteer and so that's what I did initially, I signed up as a volunteer. But I also needed the qualifications to go with it to be able to get a job. So I'm very, very pro volunteer, but I'm also aware, I've been a volunteer and I know that you know, you can get fed up with mundane tasks, doing the same job day in, day out. So we try and keep it very varied, so what we do do we play to people's strengths as well, so we've got a very broad cross representation of volunteers who are associated with this particular site. We have people who like to do photography so we get them engaged in doing some fixed point photography which is part of our monitoring programme to look at change and whether what we're doing is working or not so we have people doing that. We have people who do video work for us. We have people who want to do some more science based work looking at monitoring of key species and then we have the practical side of it where people can come and do some scrub clearance for us, they can do some damming work for us, spraying work for us, we've got people who do some, a lot of work on the track ways who actually get on the tractor

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and mower and mow all the track ways this keep it all open for the public and we have to make sure these people are trained and so we try wherever we can to put as much, give as much support as we can financially and from the site staff's knowledge as well to train these people to carry out these tasks and, do them well, and they've got these extra, you know, they've got these extra sort of, skills to go away with and so that's what we try and do. So it's very varied, very varied work.

*And what about your relationship with Scotts?*

Scotts, I, we've got a very good working relationship with Scotts. It's been, there's been a lot of, it's been very tense over the years, because of who we are and who Scotts are and, especially when the peat extraction was still going on. We were expected to play, to have a very firm hand with Scotts to try and prevent any further damage going on.

*But they're not extracting any more so...*

No they're not.

*But they...*

But they've been key, I mean, when the seventeen million pound buy out came about, DEFRA found the money, we, which was fantastic, we then had to think now how are we going to deliver this work, how are we actually gonna rehabilitate this peat land and where are the skills gonna come from. I mean, we've got the skills in house to understand the ecological and the biological requirements of the site but that wasn't a problem, it was actually getting the skills out on site and actually deliver the practical side of the job, the engineering works which were required to actually sort of re-hydrate the site and kick the whole rehabilitation process off and it was clear to us that the people who were gonna have those skills were, ironically, the people who had actually, in some people's words damaged the sites with the peat extraction processes, and therefore one of the key factors in the success of restoring these sites was to be able to tap in to the Scotts personnel, especially the guys who were actually out on site doing the peat extraction, not the ones in the factory but the guys out on the field and therefore we bought into that and they become part of the, they were the contract workforce we, we brought into carry out this work under, under my supervision and to a certain degree the Scotts site manager's supervision as well and what I have to say is they've done a fantastic job for us. We'd got guys who have been working for us who wanted to work for us, not because they'd been asked to or been told to but they really wanted to put something back into the site and you can see that in the work. They've done a fantastic job and I know you've met a couple of them and I'm sure when you've interviewed them that comes out in that interview about how pleased they are as individuals that they've been, what they've been able to sort of contribute towards the site's rehabilitation.

*One of the other things that came up particularly actually visiting the site with someone working on the restoration from Scotts, was the knowledge and the depth of knowledge that they have of that site.*

Yeah, yeah I mean, you know, I, when I first put the restoration plan together I'd got a clear, it was clear in my mind what we wanted and as I've said we've carried out all the necessary survey and monitoring to be able to underpin that decision-making on what we wanted doing. But when you, you can do this in theory, to a certain degree it will work but when you get out on site very rarely does all that theory fall into place because of all sorts of reasons and what's made the difference in terms of being able to be successful in delivering this work has been the in depth knowledge of the guys on the

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ground who, you know, you can look at an area of land and think well the drainage is gonna work in this way and if we block that drain up it'll send water this way and the other, and it should work like that but when you get out on the ground it doesn't and the guys who understood that are the guys who have actually put the drainage works in themselves and there was two guys specifically, in fact there's three guys out there who I know between them have got more than a hundred years experience of working out on site, you know and these are the guys who've put the drainage in and I think there's one guy who has been there nearly fourteen years, another one thirty five and another one round about twenty five, twenty eight years or something, so there's nearly a hundred years of experience there, all working on the drainage system.

So if anybody's gonna know how to reverse that drainage and to maximise the water we get on site it was gonna be by these guys. And I've been out on site, I've said I want this doing, it's gotta be done in a certain way and he, everyone of them at some point said 'well we can see why you wanna do it like that but my thoughts are this', and I've listened to them, you know, because they've got such a good, in depth understanding of the site and it's pay dividends. Good, good bunch of boys. I wish I could take them all on tomorrow to continue working for us when, you know, when the contract comes to an end.

*Is that fairly soon?*

It is, I mean, technically it should have ceased on the 30th September this year but we've, you know, over a four and a half year contract we've not done bad, we've slipped by a month and most of that work is to do with exit works. Part of the agreement was that Scotts would take all the infrastructure off site at their cost, so the railway, you know, any stone, any, any physical structures that we don't want to retain has gotta be done by Scotts and that's basically what they're doing now so all of the restoration work is just about completed, it's just the exit works that they're now finishing off.

*Now Scotts aren't just going to disappear, the extraction's stopped but they're still around aren't they?*

Yeah, yeah they are yeah. Very much so and I hope they continue to, to operate because I mean my personal view is that, you know, there's some wonderful guys who work for them, work for Scotts they need a, you know, a living to make and they've got families in the area and I do know that the peat processing side of things is gonna continue. What I want to hopefully tap into as well is, although this restoration work technically is coming to an end now, that doesn't mean that the management work on the site is going to finish because this is a long drawn out job. I've got no doubt whatsoever that, although we think we've got the bulk of the work right on the restoration work, we will want some tweaks, some changes, things may not go exactly how we want them to go although things are looking very good and therefore it's quite, it's quite encouraging to know that, you know, Scotts are still there and if I need to call on that expertise again with that specialist machinery they've got I can do that, I can tap into that if I need to do it. Because they have got the specialist kit to get out there and as the site starts to rewet that's gonna become more and more difficult and, but they've got these machines and their big wide tracks and, and we can get them out on the site to do work for us.

*Now I'm conscious that we've been talking a long time and you've got other things to do, but I wondered if I could ask you a little bit more detail about the restoration work?*

Sure.

*Initially, firstly, for people who've never been out on the site, the way that it's often described, makes*

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*you imagine it in certain ways, either that it's woodland or that it's a big open wet bog in the way you think of maybe the Norfolk Broads, kind of, you know, big flat and wide open. Can you, can you describe to me what it's actually like and what, and maybe perhaps your view on what it might have been like before large scale peat extraction?*

I think if we start before large scale peat extraction started place, I think, a bog when it's in pristine condition to the average person in, you know, out there, it wouldn't be I guess that appealing, because it's, they can be quite featureless and they can be, as we described earlier, not the most pleasant sites to go and visit because of the extremes in variation of temperature and the exposure you've got out there from when it's cold to when it very, very hot and also the midges and everything involved. But pristine bogs can also be very, very pretty to look at. I mean when you've got a lot of these sort of heathers and they're out in flower and the cotton grasses, I mean, there's sphagnum moss in there, I mean there's some absolutely stunning areas to other people. So it depends where you're coming from in that sense. Ironically, and it needs to be, it needs to be, I need to be careful how I say this, but the peat extraction has actually made the moors probably more diverse than it was when it was in pristine condition and that's from, probably that's from a vegetational point of view but probably from an inverts. point of view as well. Botanically there'll be more different species on there now simply because of the damage and the different conditions that that site now has to offer, if that's the way to describe it. You've got dry bits, you've got wet bits, you've got elevated bits, you've got low bits, you've got different types of peat exposed now, you may even have some substrate exposed so you've got different vegetation establishing itself on there.

But what you would see nowadays would be a very mixed habitat type, a mosaic of different habitats ranging from bare peat still, where there's nothing growing at the moment but it starting to come back, to areas of open water, depending on the time of the year, to stunning areas of bog where we've now got all the bog vegetation back in and it's starting to lay peat down again, so we class that as being, as recovering and going towards favourable condition, to wetland dry heath dominated by *Erica*, you know, sort of *Erica* plants such as *Calluna* and cross-leaf heath right through to woodland and so we've got a lovely mixture of habitat types and as the site starts to develop that mixture will continue simply because of what I said about the topographical difference across the site and although we're trying to maximise as much as we can to rewet, because it is an SAC it's a Special Area of Conservation under the Habitats Directive and therefore we feel as though we should be trying to deliver as much of that as possible.

There will be areas that we can't rewet and therefore that will develop and re-vegetate in a different way and that could be a crucial element to the targets we've got for the nightjar. The site is, what we call a Special Protection Area under the European Birds Directive solely on the back of the nightjar and therefore we must try and maximise, where we can, the potential for developing that side of things and get the numbers increased and so those elevated areas will have that, will have a management which will go towards those targets.

But it's gonna be a wonderful mixed site, a site with good access, a site which will offer a lot of variety to people to come and visit especially now that we are over at Hatfield and we've all the ex sand and gravel extraction works back and we've got a hundred and twenty hectare, nearly three hundred acre of land there which are disused quarries, we've had them landscaped and we've got some lovely areas of open water which people love, I mean people like water they like to, they like to come to the water's edge, and they like to see the duck on there and all the other species associated with it. So that, that will give you a lot more variety to the public to come and enjoy and we've got some really good



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network of pathways worked out there, good interpretations in place now, they're all colour coded way marked roads, so people can come with some security now knowing that they're not gonna get lost. Because one of the big issues we have in the past and still have to a certain degree is that people have been a little bit, sort of daunted by the prospect of going out there, the sheer scale of it all can be a bit off putting, but now we're getting these networks of pathways back and the interpretation to go with it, it does encourage people to go a bit further a field and experience what I described earlier to you about the wilderness factor, because although there are some very key species associated with the site, I still think generally what excites me still, as site manager and somebody who's known the site for forty odd years, is that large scale, wilderness factor, I mean, there's nothing like it.

From being out when it's foggy and cold to being out on an evening when the sun's setting, I can get, I would say you can't get any better sunset anywhere. What a fantastic sight to see, the sunset over the water on Thorne Moors there's some fantastic photographs about. My predecessor, Peter Roweth, who was very much into his photography has taken some stunning shots of the moors, of the sunset and likewise in the morning as well as the sun's rising. So it's got everything, for people to come and enjoy, and it will go from strength to strength because the site is restoring really, really well and the key species that go with it are all on the increase. We've got record numbers of nightjar on site this year which is really encouraging, bearing in mind we're trying to rewet as much as we can, we're still managing to get this habitat right for the nightjars.

*You talk about rewetting and it makes it sound simple.*

Yes.

*You know, you just blocked the drains up and you've already talked about that...*

Yeah.

*But it isn't obviously that simple.*

No.

*And do you have, what kind of expertise and experience of other places or, or whatever, have you been able to draw into this?*

Well we have tried to draw on some experiences elsewhere, I mean there's some key areas over in Germany, where there's been some large scale restoration work attempted. We've even done some trial plots at, earlier on, on Thorne Moors, I'm going back, again back to '95, '96, we knew at some point that we were going to have to get our heads round how we were going restore the site so we engaged with Sheffield University to come and actually trial some techniques and that was to put these bunds in to break the surface up into manageable chunks and look at specific water levels and we'd done that. So we'd got, and we knew what the results from that were, and it was quite favourable in what was happening and so we got that experience to draw on. But we'd got other key players, we'd got a chap called Roger Mead who was our peatland expert, our peatland adviser, and Roger had got a huge amount of experience of seeing what had happened to peat bogs elsewhere across the world, mainly in Eastern Europe and so we bought into that experience as well.

But I have to say, in all honesty, we are to a certain degree very much pioneers in the restoration of

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these two peat bogs, it's never been done on this scale anywhere else, certainly in the UK and we're one of the biggest restoration programmes in Europe and therefore what we've been doing is, it's been very much pioneer work and I don't mind admitting this, we were never quite sure what we were doing was gonna work hundred percent so it's been a little bit, the old saying suck it and see, although it's not been quite as simple as that. I mean, we were always confident to a certain point that what we were proposing to do would work, but we won't know until thirty, forty, fifty, a hundred years, that what we've done is actually gonna work and we could look back in as little as ten years and say we're just about there but perhaps if we'd have just maybe done this, or done the other, it may have worked a little bit better. But I can't see what that would be.

Early on in the restoration work we looked at trying to level off some of these surfaces and I've talked about the topography and we thought that it might advantageous to have a very flat area so what we were proposing to do, or what, we thought about it at one point, was to bring some machinery and level that surface off as much as we could and we trialled an area over at Hatfield to do that and it was, it was evident right from day one that it just wasn't gonna be a practical approach, it was actually gonna cause more damage than it was gonna be good and so after just one day's experimental work I called a halt to that and just said we have to work with the surface rather than try and work against it and that's why we've taken it forward.

*And you talked about other sites that you've drawn on from elsewhere in the world. How does Hatfield and Thorne Moors, in terms of the success of the restoration, how does that compare with the other sites that you know of?*

From what I know is, and this is why I phrased it earlier how pleased I am and surprised to a certain degree, we've helped perform, if that's the way to put it, or out performed our expectations in terms of the, the change on site, the way the site's, crikey what's the word I'm looking for, the way the site's responded to what we've done is much quicker than anticipated. We thought that we wouldn't get sphagnum starting to come into the site, for at least ten years, we've got it in three and four, and so we're very, very surprised at that and it maybe something to do with the climate, where it sits, even the peat type may have something to play with it. But it's so, it can be so complex can peat restoration, we know what the key elements to it, I would say water, but it's when you get that water, it's what the quality of that water is, it's where the site sits in relation to the rest of the country, it's the underlying substrate, all these things can have an effect on how successful you're going to be with the restoration of the work and fortunately everything has gone our way. But it's been, it's been hard work, it's taken a lot of my time in the last five years, probably to the point of stretched my wife and my family to the limits. I mean, I've put a lot of effort in the last four or five years and, but it's been well worth doing it.

*Well there is obviously a reason why the peat bog is where it is to start with but it's surprising when you said about the, the lack of rainfall because obviously the reason why the bog's here is because it's extremely wet in this area and if it's, if you're saying that rainfall is very low it makes you wonder why..*

It does but I think what you've gotta bear in mind is these peat bogs probably started to form sort of four, five thousand years ago so the climate was different then. Not only in terms of the rainfall but also ground water and therefore you know, and the two sites are different, you've got Thorne basically what's, what I would describe as being sat on a perched water table, you've got this very thick layer of alluvial clay under there which is a remnant of Lake Humber and therefore, the bog, the water has had nowhere to go other than laterally out of site, so it's not, we haven't lost any water vertically anywhere

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and so the bog started to form on the top of that. And Hatfield is slightly different because Hatfield formed under conditions what we would describe as paludification where the ground water levels have been so high it's been right up at the surface and that's come about possibly from sea level rise which has then pushed the, the water back up the river systems and the ground water generally rose in the area, and then it's started to develop on top of the sand and gravel moraine which sits on Hatfield and so the conditions were totally different then and then there was enough rainfall coming in through to the system to keep that topped up. There still is now, so if these sites hadn't been damaged and drying and cut over, there is still enough water coming through the system to sustain it, we've worked out the water budget, scientifically we've had people working on it, hydrologists and other people, and we know what rainfall's coming in there's still less leaving the site than what's coming into the site.

So therefore the budget works for us at this moment in time. But who's to say whether that's gonna be the case, you know, in years to come when we're, hearing all the time now about climate change and the climate is changing and so we'll have to wait and see. It may well be that we, we get a lot more rain in winter and less in summer. I mean from a, from my point of view I'd like to see a little bit more in summer, not quite so much in winter because therefore I wouldn't have to hold as much water in winter at the levels I do, we'd have enough coming through the system to top, to top the, you know, the water levels up. A colleague who works up in Wedholme Flow which is the other site which was bought out at the same time as Thorne and Hatfield Moors, up in Cumbria there they receive nearly twice as much rainfall as we do and a good proportion of that can be through the summer period and therefore, he's probably got some, you know, he can be relaxed a little bit more than I could about enough rainfall coming through the system on an annual basis at the right time.

*Because, of course, there was a lot more water coming down in the rivers.*

Yeah.

*Before the big drainage.*

Yeah.

*In the seventeenth century.*

Yeah. I mean the other, the other thing is, I mean, again we're looking into this so when I say this we need more evidence, but I mean there's a lot more demand placed on water generally now I mean, the population's huge isn't it I mean, if you look at what industry and like you and I are doing, the demands we're placing on water is massive and therefore the aquifer underneath Thorne and Hatfield has been tapped into. Thorne we haven't got an issue because, I've just said, we're on that perched water table and therefore what's going on underneath the aquifer shouldn't be a problem but Hatfield we are in a different situation and we're still working with Yorkshire Water and the Environment Agency to look further into this as to whether there is any risk to the site from extraction from the aquifer and the sand and gravel moraine is porous to a certain degree and there maybe a risk to losing water vertically if it's continually drained and that something that's ongoing at the moment.

*And you've talked about climate change. Of course, Thorne Moors have, and Hatfield as well to a degree I believe, have been used to have a look at climate change in the past and so that's..*

Oh yeah, I mean it's all there in the peat archive in the stratigraphy of the peat. If you cut through it,

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you can actually see, I mean, what's been, what's been happening over millennia, you can see that and from you know, some of the seed that's identified in the peat layers there you can tell what was growing and therefore that, and that would give an indication of what the climate was like and you can clearly see we go through wet and dry periods so, I mean, I'm not making light of it in any shape or form about climate change because that's something that clearly is happening and I think it's happening at a very quick rate. But this isn't anything new, this is a natural phenomenon what goes on and you can see that, and you can see it indicated in the peat profile. We've gone through some very dry periods throughout the bogs' history where it's nearly completely dried out and you can see that it's been invaded by a much, you know, by sort of species such as bracken and birch and whatever and then you come back into these wet periods and those species can no longer tolerate the wet condition and they die away and then your bog starts to go again so, so it does fluctuate.

*Just to conclude, could you tell me the designation that the site now has?*

Yeah, I can, it's a Site of Special Scientific Interest both of them, both sites are called, are SAC, which is Special Area of Conservation under the European Habitats Directive. The whole of Thorne Moors is also an SPA, a Special Protection Area under the European Birds Directive and that's solely on the back of the nightjars as I've described and a proportion of Hatfield, the area that at the time the designation was being looked at it was vegetated, was also a designated as SPA. So they're the designations and it's all, they're all now National Nature Reserve as well. So the whole of the site's designated as a National Nature Reserve.

*Thank you very much.*

[Recording Ends]