



Science and Technology Committee

Corrected oral evidence: The effects of artificial light and noise on human health

Tuesday 16 May 2023

9.55 am

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Members present: Baroness Brown of Cambridge (The Chair); Lord Borwick; Viscount Hanworth; Lord Holmes of Richmond; Lord Krebs; Baroness Neuberger; Baroness Neville-Jones; Baroness Northover; Lord Rees of Ludlow; Lord Sharkey; Viscount Stansgate; Lord Wei; Lord Winston.

Evidence Session No. 13

Heard in Public

Questions 143 - 154

Witnesses

Rebecca Pow MP, Parliamentary Under-Secretary of State (Minister for Environmental Quality and Resilience), Department for Environment, Food and Rural Affairs; Dr Bill Parish, Deputy Director for Air Quality and Industrial Emissions, Department for Environment, Food and Rural Affairs; Rhian Thomas, Policy Lead, Noise and Statutory Nuisance, Department for Environment, Food and Rural Affairs; Hilary Notley, Evidence Lead, Noise, Department for Environment, Food and Rural Affairs.

USE OF THE TRANSCRIPT

This is a corrected transcript of evidence taken in public and webcast on www.parliamentlive.tv.

Examination of witnesses

Rebecca Pow MP, Dr Bill Parish, Rhian Thomas and Hilary Notley.

Q143 **The Chair:** I would like to welcome the witnesses to the committee's 13th and final evidence session for our inquiry into the effects of artificial light and noise on human health. In this panel, we are hearing from the Defra Minister. We are very pleased to welcome Rebecca Pow MP, Minister for Environmental Quality and Resilience at the Department for Environment, Food and Rural Affairs. With the Minister are Dr Bill Parish, deputy director for air quality and industrial emissions at Defra, Rhian Thomas, noise and statutory nuisance policy lead at Defra, and Hilary Notley, noise evidence lead at Defra.

The session is being broadcast on parliamentlive.tv. A full transcript is being taken, and this will be made available to you shortly after the meeting to make any corrections. If there is anything you would like to submit to us as formal evidence after the meeting, we would of course be very pleased to receive it.

Thank you again for coming. I will kick off. We have heard quite a lot from our expert witnesses that the scientific evidence around the health effects of noise and light pollution is a rapidly growing evidence base. We are interested to hear what steps Defra is taking to assess this evidence base for health effects and, indeed, update its policy accordingly. We note from your letter that there is a reform programme going on and we would be interested to understand the timescales for those reforms and for the data on the noise indicator for the 25-year environment plan outcome indicator framework—so both what steps Defra is taking and what timescale the various actions will be delivered on.

Rebecca Pow: Thank you for inviting me before this erudite committee, looking around at the names. I am very pleased to come to talk to you. I also welcome the officials I have brought along with me. I will refer to them as and when necessary because, as you can imagine, this is a complicated subject and if you need the fine detail I will refer to my officials, who I know have already been in communication with the committee, which I hope has been helpful.

I think we are talking specifically about evidence and this fast-changing area. It is true that it is really fast changing. Even when the 25-Year Environment Plan was set, we did not set targets as such because we did not have enough sound evidence. That evidence base has changed and escalated so quickly that a lot more has transpired even since then. As those on this committee will be completely aware, scientific evidence is critical when we make our decisions and when a decision is made to regulate.

It might be helpful to go over some of the things that are in process in relation to either gathering evidence or looking at the evidence. It is probably already quite obvious to the committee that noise is somewhat more advanced than light in terms of the data that we have and where

we are, but there is a great deal of work going on on both. For a start, we have had our regular five-year mapping under the Environmental Noise Regulations, which has helped inform where the most serious noise areas are. That is how we have designated our noise important areas, areas with the worst noise having the worst effects.

I specifically want to draw attention to this ground-breaking noise model that we are working on. I think you have already had some details about it sent to you. This is a really sophisticated piece of work. As far as we know, it is the first of its kind in the world and it is what you would describe as the digital twin. It is mapping basically every road, every rail and urban area—all areas, really—and gathering information about noise. It is a £6 million project and, once we have all that data, you can imagine what a powerful tool that will be for then being able to properly influence whether we should change regulations or target setting. It will also be incredibly useful for local authorities to inform their local plans and factor in noise issues in particular.

In terms of dates, we expect to have a lot of that evidence and data by summer 2023, so it will be very soon. That is very exciting and will be truly ground-breaking in this space.

The Chair: We were slightly concerned to hear that it will be averaging noise levels over 24-hour periods. An average level could be quite quiet, whereas actually there were some particularly loud noises for short periods during that time.

Rebecca Pow: Yes. I will bring my team in on that, but it will be 24-hour modelling so all those ups and downs will be clear. It is also very difficult to do just one-off monitoring, which is why it has to be 24 hours. Do you want to say anything on that, Bill?

Dr Bill Parish: To clarify, the modelling has to average out because it is very difficult to model or anticipate what the spikes might be. It depends on the source. For example, for rail you are less likely to get spikes but you will have an average when trains are coming through different areas. Some indicators, which my colleague Hilary Notley can explain, try to take into account the more pronounced peaks of noise, but when it comes to modelling we inevitably have to smooth it out because it is very difficult to anticipate when those spikes might occur. There might well be sources that periodically spike, and we can look into how we factor those in. It is a difficult thing to model with certainty at this point.

The Chair: In terms of both annoyance and disruption to sleep, which are big factors in the impact of noise, a sudden loud noise could well be much more disruptive than continuous noise. Yet in the model, it would potentially appear as less significant.

Dr Bill Parish: It might well be, but it depends on the source. If it is an unanticipated spike of noise because of an accident or something, or some process that suddenly goes wrong in the middle of the night, that is difficult to anticipate. How would you take that into account? The things we are mainly modelling at the moment in the noise map are railways and roads. Because we have lots of traffic flow data and rail data, it is

easier to model those and take into account the periods at which it might be quieter or noisier because they are the sources that spike less. Industrial sources might be different, but then the Environment Agency takes into account noise peaks et cetera, depending on the processes, because it manages noise levels through the permit process.

The Chair: Does it include aviation noise?

Dr Bill Parish: Aviation is also covered for large airports. Hilary, do you want to add anything on that?

Hilary Notley: The airports do their own modelling, because historically they have been doing it for such a long time that they have the expertise to do that. Defra then reviews it to make sure it meets the required standards. That is also averaged over 24-hour periods. The reason is, as Dr Parish said, that there are no agreed standards for how you would model maximum or peak noise levels in a modelling scenario. If you have measurements, various standards take account of the peaks you mentioned. For example, HS2's design documents have taken account of the maximum noise as it passes by properties. It is just not in these large models that look nationally at a scenario, but case by case you can take the maximum levels into account.

The model that we are building has been designed with the flexibility that if these standards come about we can build them in to that model and enhance it at a later date. Internationally, nobody is modelling peak or maximum noise levels from transport noise sources.

Q144 **Lord Krebs:** I have to say, apropos that last discussion, that I did not find the answer totally convincing because I think that for rail noise, for example, if a heavy goods freight train goes past a housing development it makes a spike of noise and then there could be silence for the next 20 minutes and then another spike of noise. I will not pursue that further because I think you have given us the best answer you can.

I want to ask about Defra's work to fill the evidence gaps in relation to noise and light pollution. In your written evidence, you gave a list of priority areas for air quality, noise and soundscape. I have a number of questions about that. Why was there nothing on light? It was only on noise. For the three out of seven priority areas that refer to noise, can you give us a sense of how much money you are spending on research to understand the health impacts of noise and how you relate your work to the work that may be funded by UKRI? Why nothing on light, how much do you spend on noise and how does that link to the work of UKRI?

Rebecca Pow: I have something that may be relevant to add to my first answer, about gaps. That is why we set up the Interdepartmental Group on Costs and Benefits for noise, which was triggered after the WHO report that came out in 2018. That was so that we could look at data to see whether we have right the cost-benefit calculations on noise, which are used in the decisions made on new infrastructure developments and, in particular, roads and the transport network. It would be the Green Book and the analysis that the Department for Transport uses. We set up

that piece of work across departments to do a whole lot of research, which effectively would look at some of these potential gaps to see whether we have it right in terms of influencing the balance that is given to the importance of noise pollution in particular, with reference to the health and knock-on effects. That is one thing.

There is also a lot of research under way. Defra commissions research and there are a whole lot of projects. One piece of research under that group that has already been published is in relation to sleep deprivation and the impacts of noise on that. There are some other pieces soon to be published on strokes. Another piece of research is the effect on diabetes, hypertension and a whole range of areas that we need more evidence and data on to effectively fill the gaps that I think you are particularly referring to if we are also talking about the impacts on health. Hilary is very involved in the health issues.

You asked, I think, about the money and how much we are spending.

Lord Krebs: How much are you spending on noise and why are you not spending anything on light? How does that relate to what UKRI is funding?

Rebecca Pow: I will bring Hilary in. I think you are right in saying that there is less research on light. For Defra in particular, I am quite surprised that no links to wildlife, nature and biodiversity are included in this inquiry, because we are funding some light research on marine areas, particularly birds. There is research and data out there on whether the migratory paths of birds are affected by things such as light. It is not part of this inquiry, but I personally think that there has to be a link there.

The Chair: We are spending a lot more looking at wildlife than we are looking at the health of humans in this area.

Rebecca Pow: It affects the health of the wildlife—I will leave it there. I will bring Hilary in quickly on the research projects that we are doing. I do not have the details of the amount of funding but I am very happy to write to you on that if Hilary cannot enlighten us.

The Chair: It would be very helpful if you could do that. We would appreciate it. Thank you.

Hilary Notley: On funding going into noise, most of our resource at the moment is going into the development of the new model. Last year we invested about £200,000 into other projects relating to noise, some of which the Minister has referred to. We have a similar budget for this year as well. The projects are not yet fully confirmed for that budget, so some could go into light.

We have tended to prioritise where we think we can get the best return for that investment, and because the evidence base is more advanced on noise it has tended to go in that area. As the Minister has said, there is a lot of light research occurring with our biodiversity colleagues elsewhere in Defra. I do not have the values for how much they are spending on

light research and I realise it is out of scope for this committee, but if you were interested we could get you that value.

On interaction with UKRI, we do not tend to interact directly with it but we work closely with a group called UKAN+, which stands for United Kingdom Acoustic Network. That is a group of academics and industry leaders who are trying to target priority areas in acoustics research, so we feed in our requirements through it. We also work with the Institute of Acoustics Research Co-ordination Committee, which is again working with the academics. We support their bids, writing letters of support and helping out where we can for that research. I believe you spoke to people from the Institute of Acoustics earlier in this inquiry.

Lord Krebs: I have one tiny extra question. We have heard that in some areas of scientific evidence, Defra and other government departments have expert committees such as the Committee on the Medical Effects of Air Pollutants, for example. There appears to be no expert advisory group on either noise or light in relation to human health or, indeed, in relation to the natural environment. Why is that?

Rebecca Pow: I will draw your attention back to the interdepartmental group on the costs and benefits that has been set up. That will involve engaging a whole lot of experts to advise that group on all those different research projects that they are looking into, which are very much linked to the health impacts of noise.

Of course, while Defra is responsible for protecting the environment and this area, an awful lot of the levers are in other departments. A lot of them are conducting their own research. We highlight the issues to them, and a good example of that would be heat pumps and the business department. There is obviously a proviso in favour of those things from that department, but we have highlighted the issue of noise and now it has commissioned a piece of work and research on the impacts of the noise. Similarly, the Department for Transport is doing a piece of work on noise cameras so that it could pick up which vehicles are causing the most noise.

It is not only Defra doing the research; it is spread across government and this interdepartmental group is very much pulling people together. I will speak to Ministers in other departments just before our noise model is published to make sure that they are fully aware of its findings and how they could use it and put scenarios into it to inform policy.

You mentioned an expert committee. My view is that it is spread over lots of departments, and to have an expert committee to cover all those bases—we will see what this committee recommends—or one specialist or a couple of specialists who are experts in all this would be very difficult. It is very much an evolving area. The evidence, the data and the research are moving incredibly fast. Bill looks as if he would like to come in.

Dr Bill Parish: I was just going to highlight that when it comes to public health research we work closely with the Department of Health and Social Care and with the Health Security Agency. The Health Security Agency

has experts in the public health aspects or impacts of noise and light. I know that it has given evidence to this committee. In the same way, for example, the Committee on the Medical Effects of Air Pollutants is a DHSC committee but we are very closely linked in and attend those meetings. At the moment, the Health Security Agency experts and my colleagues are very well networked with the community. We need to think carefully, alongside the Department of Health and Social Care, about what added value there would be in setting up a formal committee. What more would that give us beyond the network we have with lots of established experts in assimilating and interpreting a fast-moving evidence base?

The Chair: Thank you. We will need to move on a bit more quickly with the questions or we will not get to the end.

Q145 **Lord Borwick:** I want to ask about the priorities when you are choosing subjects to be researched. There is such an enormous variety of different things, problems where we do not know the answers, and noise and light are in that category. There seems to be a particularly large number of people who feel convinced that noise has a very bad effect on human health, but there does not seem to be much evidence in the form of published papers in scientific journals showing that it does. With that background, how do you prioritise research into noise above other subjects where it is quite clear that this factor has a bad effect on human health? I am thinking, for example, of air pollution and stuff like that.

Rebecca Pow: It is a good point. One comment is that there is an analysis of all the complaints put in under statutory nuisance that go to local authorities every year.¹ From that, some assessment can be drawn about what the main complaints are that people are making. Most of this is taking place at a local level. As an MP, I get a number of people coming to me about noise issues in particular, whether it is seagulls, construction noise, roads or whatever. That is then for the local authority to go in and deal with. That highlights what some of the issues are.

A review was done of the light issues after the Royal Commission on Environmental Pollution report came out. That was in 2009, and Defra did a review of policy then. That was on light and looked at a whole range of different issues, consulting on exemptions from those statutory noise provisions—because there are some areas that get exemptions—public information about minimising light pollution, and research projects in a whole range of areas. At that time it concluded that there was not enough evidence to do anything to change the way we regulate. That was quite some time ago now and evidence is building and changing all the time.

That is why, as Dr Parish was saying, we work closely with other departments, and air pollution is a good example of where we work with health to pick up on the links between air pollution and health. We have

¹ Undertaken by the Chartered Institute of Environmental Health (CIEH): CIEH survey of noise complaints.

more and more data, so now we can start to go up a gear on that. The same thing is happening with noise.

That is why our noise model will be so important. It will inform us as to where the noise is coming from. Is it continuous? Is it 24 hours? Are there big spikes? The pieces of research that we are doing have been triggered by a lot of scientific evidence. A lot of universities are doing work on that, and I think you have had lots of papers presented to you in regard to it. Defra has the ability to commission research wherever we think it would be most useful and, as we have this outcomes framework in our 25-year environment plan, to come up with a noise exposure indicator. Clearly, we are targeting research and we will use the noise model results to inform that. Dr Parish, do you want to add anything to that?

Dr Bill Parish: In the criteria we use for prioritising our research, at the moment the top priority is improving our capability in understanding population exposure. That is basically in the model, but we all want to use that model as much as possible in the future to do scenario planning. If we extend various mitigation factors such as low-noise tarmac et cetera, what impact will that have in reducing people's exposure? We can start doing that scenario planning.

The other one is to make sense of the growing evidence base we have on health impacts, partly because we need to keep abreast of what the latest science is saying but we also want to quantify the impact on health so that we can update our damage costs. If we update our damage costs, that means we can do more accurate and updated cost-benefit assessments about how much it is worth investing in sometimes very expensive solutions to noise problems. That needs to be driven by how much public health benefit we will get as a result. That is a major plank of our expenditure on our current research programme.

The other thing is that we are reactive where there is emerging evidence of problems such as that with air source heat pumps, which is continually raised with us by local authorities. Therefore, we engaged with the Department for Energy Security and Net Zero to ask it to do more research into what mitigation options there might be. We want to encourage a technology that will help us get to net zero, but we also want to mitigate any unforeseen or unintended consequences. We go to the relevant department to see whether there is a solution that can be put in place to reduce that impact.

Lord Borwick: Minister, you referred to the amount of annoyance of individuals, which of course is terribly important as to whether they react to the noise, but is there not a bit of a leap from that annoyance to the health impacts of the noise? Because somebody is annoyed, is it proved that that is bad for their health? Lots of people get annoyed on a whole bunch of different subjects, as we know.

Hilary Notley: The World Health Organization classes annoyance from noise exposure as a health impact.

Lord Borwick: We have heard that, but there does not appear to be a

link between that and a scientific paper saying it is clear that that is the reason and that annoyance is bad for health.

The Chair: I think this team will find it difficult to answer that. There is quite a lot of scientific evidence that high levels of stress caused by annoyance can be bad for health, and we have talked about that in some of our evidence.

Rebecca Pow: The critical thing is that, of course, it is all individual as well.

Lord Borwick: It is very individual.

Rebecca Pow: It all depends on where you are based. Somebody in a big city with vibrant nightlife is probably much more tolerant of noise than I would be in my village. You have to factor all those things in. It is a very complicated space.

The Chair: What you can do to get away from it, yes.

Rebecca Pow: Not to mention this thing called non-acoustic factors, which touches on the annoyance issue. We all have an individual experience of that. Mine might be lawn-mowers, but another person might be much more tolerant than I am of mass lawn mowing on a weekend. It is very difficult, but there is research on this non-acoustic evidence going on. It is quite early days, but some airports such as Heathrow take into account some of that evidence in their planning.

The Chair: Yes, and we have heard that evidence. I think we need to move on to Lord Sharkey.

Q146 **Lord Sharkey:** I am going to ask a little more about the noise-mapping exercise, but it occurred to me to ask first whether the exercise includes the Tube system.

Rebecca Pow: I will have to get back to you on that. I have a feeling it does, because it includes all rail.

Hilary Notley: It includes the elements of the Underground that are overground but not the underground bits of the Underground.

Lord Sharkey: Not the underground bits?

Rebecca Pow: The overground; the bits that come up to ground level, but it is still called the Underground.

Lord Sharkey: Okay. Personal experience tells me that there are parts of the Tube system where the noise level is almost intolerable for relatively brief periods. I just wondered whether you were interested in looking at that.

Rebecca Pow: This is a very new piece of work and this is its first tranche. No doubt it will become more sophisticated as it goes on but it will be possible for local authorities, for example, where they have these noise issues with particular scenarios such as the Tube, to factor that into their modelling later on when they are proposing new plans. I think it will be very useful for informing local decisions where noise is a key issue.

Lord Sharkey: Can you tell me in a slightly more detailed way what parameters the noise mapping measures? Is it simply noise? Is it simply the decibel count or are there other factors that are measured by the system?

Rebecca Pow: It is monitoring from the outside, so it is not indoor monitoring; I make that clear to start with. As you will know, monitoring sound is very complicated physics. Hilary, can you give us a bit more detail on the actual nitty-gritty of what they are mapping?

Hilary Notley: I can, but can you give me an example to make sure I have understood your question correctly?

Lord Sharkey: We have been told by witnesses that the response to noise is based not entirely on noise level itself but also on psychological and other non-acoustic factors. I want to know whether you are measuring or trying to measure any of these non-acoustic factors in the noise-mapping exercise.

Hilary Notley: No, the model predicts the decibel levels external to the façade of dwellings, but it cannot take account of the non-acoustic factors because we do not know the details of the people within those dwellings. We do not know the size and shape of the rooms, what furnishings they have in there, what health conditions they have, their age, their gender and things like that, so we cannot take account of that at that point.

Lord Sharkey: When Dr Parish made his solo appearance in front of the committee he talked about a lack of understanding of non-acoustic factors as being a major reason why the Government were not setting specific targets for noise pollution. I think, Dr Parish, you just said that you are spending money on research, or have research in hand or in mind, to look at understanding these non-acoustic factors. Is that right?

Dr Bill Parish: We are working closely with the UK Health Security Agency, which is, with its network of experts, trying to understand what the key elements of those non-acoustic impacts might be. Because there is so much diversity in the triggers that might cause stress for people, and as the Minister said it is very individual, it will take us a while to work out. Before we commission more research on it we will have to be rather careful about the questions we ask, because we just might end up with more complexity that is difficult to interpret. We will need some time to work through the non-acoustic factors and then work out where we will best focus resources on research and what the key questions are that we need to home in on to help us to improve standards or set standards.

Q147 **Viscount Stansgate:** Good morning, Minister. We have heard a lot about noise but we know that there is no central map of light pollution. Should we have one?

Rebecca Pow: Thank you for that, Viscount Stansgate. I think I made it clear at the outset that we have more knowledge and evidence on noise. Light is very much a developing area of pollution but it is referenced in our 25-Year Environment Plan, alongside all other pollutants, so we are taking that very seriously.

More generally, in our 25-Year Environment Plan and our Environmental Improvement Plan there is a real focus on restoring nature and tranquillity, and part and parcel of that is a holistic approach that will inevitably involve considering light and noise. You will know that we have an excellent dark skies programme in this country. In fact, we have more dark skies designated than anywhere in Europe. That is voluntary. That is where people are conscious of the light and have taken a conscious move to designate. While Defra has not imposed that, we are very supportive of it and encourage it.

Your question was about whether we should map light pollution. We are doing it for some projects for migratory birds, and certainly the CPRE does some of its own light mapping. There are a lot of limitations to our ability to do that right now. In fairness, we need more research and the linked technology to enable us to establish the clear effects, the methodology, the metrics and what we are measuring, to make it of benefit or use. It is a growing area. We can, of course, as we have said, commission research into any of these areas to give us more knowledge and more data.

Viscount Stansgate: Congratulations on guessing my follow-up question, which is: will you be commissioning research?

Rebecca Pow: In the light of this, Viscount?

Viscount Stansgate: On your reference to the dark skies, that was in part the product of a Science and Technology Select Committee report in the Commons about 15 or more years ago, which recommended that there should be dark skies areas, and it has had some effect. Can you tell us a bit more about the research that you might like to commission or be able to commission to produce a map of light pollution in Britain without our necessarily having to wait 25 years for the plan to take full effect?

Rebecca Pow: Is it not pleasing that when we are on these Select Committees—and I was on a number when I was a Back-Bencher—somebody takes notice of what we recommend? Those dark skies programmes have worked extremely well and have lots of other spin-offs for the areas, such as tourism. People love to go there to look at the stars and so forth. I stress that it is still incredibly early days in deciding what we need or want for light pollution.

Viscount Stansgate: Are there resource constraints that would prevent you undertaking it?

Rebecca Pow: We have a research budget. It also covers so many departments, not just Defra. For example, National Highways has its strategy and it has to consider lighting for its highways. Local authorities have their responsibilities for lighting. Local planners can influence it, too. They can put restrictions on when lights have to go off and so forth.

It is a very complicated space but, with growing knowledge, potentially we will be looking at commissioning some light research, particularly with impacts linked to health. It will be similar to some of the research that we have already commissioned on things impacted by noise. We are looking

at diabetes, stroke, increased heart rate and hypertension. Potentially, a lot of those things will also be affected by people being exposed to too much light and driven mad by lights being on. I have blackout blinds in all my rooms, so I am somebody very sensitive to light. Bill, would you like to add to that?

Dr Bill Parish: In light of this inquiry, we will need to think about what scoping work we need to do and what light mapping might need to involve. As the Minister says, there are two different lenses we can look at this through, or perhaps three. One is impacts on wildlife. Another is impacts on health and how we map people's exposure to light so that we have a better fix on population exposure and, therefore, what the consequential health impacts might be. Then there is the dark skies element, which might be less about health but certainly ensures that people can enjoy proper darkness, astronomy et cetera.

There are different lenses that we can look at the problem through. I think we need to scope what is possible, because satellite data gives you an above-the-country view of what the lighting might look like from space, but that might be very different from the ground-level experience. We would need to think about how we would use the data in a meaningful way to map something and do the consequential interpretations. We would have to scope about how we go about it.

Viscount Stansgate: It is not something that the fact that this committee has had this inquiry has so far triggered you to do?

Rebecca Pow: In particular to do with light, it is important that most of our regulations, such as they are, and guidance deal with safety issues to do with light: keeping people safe and crime. You have probably heard that in the committee. There has been very little focus on other areas, such as the health impacts, and that potentially is an area that should have more focus. There is a lot of guidance—

Viscount Stansgate: You mentioned migratory birds, did you not?

Rebecca Pow: Yes.

Viscount Stansgate: Am I right that for the first time ever, a United Nations heritage area has been the designation of the east coast flight route of migratory birds, in which case light pollution might affect them, as you indicated earlier?

Rebecca Pow: I have heard that. These are all things that should be factored in; I think there is a link with nature and wildlife. The reason it came to my attention is that before I was an MP I went to the wonderful island of Skomer and there was some research going on there on the amazing Manx shearwater birds. They were weighing all the chicks because there had been such a drop in the weight of these chicks and lots were not surviving. The ethos for the piece of research—I think it was a university student—was whether their flight paths were being affected by light steering them off course. I do not know what happened to that piece of research, but I was fascinated by it. It is the kind of thing that potentially needs to be considered.

There is quite a lot of guidance on lighting, but lots of it is in different places. For some of it you have to pay to access British Standards and so forth. Potentially, that should be clearer. That is one thing that might be useful.

The Chair: We felt that there was too much guidance at times. It was quite complicated to work out where you might look for it.

Rebecca Pow: Yes, exactly.

Q148 **Baroness Neville-Jones:** I want to ask you a little bit about how the machinery of government is functioning. Defra has an unenviable co-ordinating role, with several departments that have a strong interest in both noise and light: health, transport, local government and levelling up. What is more, the network of established experts that you talked about, Minister, tends to belong to those departments rather than to you, which to some extent puts them in the saddle rather than you. How do you go about your co-ordinating role? What mechanisms can you use to try to push policy in helpful directions to reduce the health impact of this pollution?

Rebecca Pow: It is a good point. Defra leads but it is for other departments. They have the policy levers, as I said earlier. We can highlight issues to them and we are responsible for protecting the environment. We have all our targets for that, particularly on pollution and so forth.

In a way, our role is as facilitators to work with the other departments to highlight issues and then raise them up the agenda—as we have with heat pumps, which we have mentioned a number of times—so that that department is then responsible for coming up with a way of solving the issue. Defra works incredibly closely with at least 10 different departments and agencies, and my officials engage across all these different departments. Defra could not possibly hold all the experts on all those areas just to do with light and noise, because we cover all pollutants.

That is working effectively and has triggered a lot of research in these other departments into areas that we have already mentioned. The Department for Transport is responsible for road, rail, aviation and then working up how it can deal with, for example, noise issues. At the end of the day, it is also responsible for ranking where that fits in its order of priorities. How does it rival safety and security?

Baroness Neville-Jones: Minister, with great respect, different departmental priorities do not add up to a national strategy. They do not necessarily add up to a coherent policy. How do you try to make sense of what different departments are doing so that you have a policy that is moving the situation forward and at the same time reflects real priorities and not just particular obsessions of different departments?

Rebecca Pow: We have set it in our 25-Year Environment Plan and we will have our outcomes framework—

Baroness Neville-Jones: Twenty-five years is a very long time.

Rebecca Pow: It is rolling. We have just had the EIP, which is the update of the 25-Year Environment Plan. Noise and light are in there as pollutants, and Defra is the lead department on it. It is our responsibility to work with other departments to co-ordinate what they are doing.

Baroness Neville-Jones: I will turn the question around. If you had your dollars, what would you like to have by way of power to get things done?

Rebecca Pow: That is why evidence is so important and why we are doing our noise model, because we cannot change regulation unless we have the clear evidence to do it. That baseline is critical and, as I mentioned earlier, light is a changing, fast-growing area. More evidence is coming to light, and once we have that it is obviously easier to change policy or regulation. The guidance—our *Noise Policy Statement for England*, for example—states that we have to promote good health and good quality of life through the effective management of noise. That is used in the development of policy and planning by national and local government when they are coming up with their local plans. Their local plans have to adhere to that statement, and that all goes via an inspector.

Baroness Neville-Jones: You do see the plans of departments when they are developing them, do you not?

Rebecca Pow: They go to the Secretary of State, who then appoints an inspector. He then has to make sure that what is in it aligns with policy. That is the link. Because noise and light are so local and because of all these individual experiences, there is a lot of local-level ability to bring in the issues if they see fit.

Baroness Neville-Jones: There is a lot of action elsewhere. From what you say, the capacity to generate evidence would be one of the keys to having some real clout in what I think everyone agrees is a complex and fast-moving area. Do you agree that having a bit more money and a bit more clout to generate the evidence and do light mapping as well as sound mapping would be advantageous?

Rebecca Pow: Everybody would like more money, but at the moment we have our £6 million noise-modelling project and we have triggered all these other research projects. It is perfectly within our remit to commission further pieces of evidence. The critical thing is getting the right pieces of evidence to make sensible decisions and then making sure that across government all that is factored into how we come up with our policies.

Baroness Neville-Jones: Would it be helpful if you had tsars for light or noise? Do you think that is a helpful idea?

Rebecca Pow: The tsar would have to be super informed about both light and noise, and that in itself might be quite tricky given how much we have described this as a fast-moving and changing area of research. That is not to say that it would not be helpful, and I will wait to see whether this committee decides to put that recommendation forward.

The Chair: Do we need a light policy statement equivalent to the noise one?

Rebecca Pow: It is listed as a pollutant in our 25-Year Environment Plan and I think we would come up with a light policy statement only if we had the evidence to do such a thing. I know that some other countries have gone a step further, and we will look closely at what they have done. It is certainly something that could potentially be considered. Light can already be considered under our statutory nuisance regulations, which local authorities oversee and administer.

Baroness Neville-Jones: Can I ask about one last aspect of how government works at the moment? Clearly, factoring the effects of noise, sound and light into planning policy, and indeed building regulations, it is a fairly key, important element. Do you think that as things stand at the moment that works effectively? How do you feed into that to ensure that the regulations are up to date?

Rebecca Pow: In fairness, the noise policy statement is important. That feeds into DLUHC's planning and practice guidance for noise. That has to be taken into account in the local plans. The inspector checks whether all that is lining up—

Baroness Neville-Jones: Are you able to keep those up to date?

Rebecca Pow: There is an opportunity potentially coming up, because there is going to be a review of the National Planning Policy Framework. From a Defra point of view, and from what has been discussed here in this committee, there is an opportunity there to potentially raise light and noise up the ladder.

Dr Bill Parish: We have an opening with the revision of the framework, and I think we would like, in addition to other pollutants, to use the opportunity to enhance what we have at the moment.

I will just pick up on the point that it does not matter how much co-ordination we do or how much leadership we exert; our best lever is having a better understanding of exposure and the progress we are making. First of all, we get feedback about which policies are working and therefore where it is worth us pressing harder and going further. Also, if there are areas where we are not making enough progress, that evidence base is crucial to us being able to exert more leverage on whichever sectors—

Baroness Neville-Jones: That is why I picked up what is being said about the evidence base. It seems to me to be a very important lever for you.

Dr Bill Parish: Yes.

Baroness Neville-Jones: Thank you very much.

The Chair: I am conscious that we have about eight minutes for the last three questions to make sure we can enable the Minister to leave on time.

Q149 Lord Holmes of Richmond: Good morning, Minister and team. One concern that has been raised about responses to light and noise pollution is that while Defra policies such as the *Noise Policy Statement for England* are clearly national, this is inherently a local phenomenon and there are inconsistencies in planning guidance and mitigation measures. What is Defra currently doing to work with local authorities to assist them in the application of such a national policy?

Rebecca Pow: It refers back to the whole way the system works in the development of the local plans, which have to align with the planning policy guidance, which has to align with our policy statement, in particular on noise. It is for the local authorities to develop their local plans and work out what their priorities are. Every plan is different. They are all bespoke, in effect, and the demands and concerns of one area will be very different from the demands and concerns of another.

The local authority has the powers to investigate complaints about noise nuisance and then to decide whether it adheres to policy or is enough of a local issue for it to act. While Defra owns the policy on statutory nuisance legislation, it is still for the local authority to operate it. We have a lot of case law on that. We have about 150 years of case law on noise, and that is where the difference comes in. We do not have 150 years of case law on light because we brought light into consideration only in 2005. That is why this evidence, and this research that will potentially be triggered in this fast-changing space, will be so important in future.

Lord Holmes of Richmond: I completely accept that point about local specificity, but how do you currently ensure coherent underpinning consistency while appreciating that there are local specific circumstances?

Rebecca Pow: It is a good point; that is very tricky because it so individual and specific. I will give you an example. The Netherlands set a target for noise levels, and a consequence was that in one area a children's playground had to be shut because it was considered too noisy. Quite clearly, people did not think that was a good idea. You have to be very careful of the unforeseen consequences, which is why it is very individual and these issues to do with noise and light are not of a one-size-fits-all nature.

Lord Holmes of Richmond: People's recourse is very much at a local level too, but what does the department do to try to ensure consistency in responses to complaints? They will often necessarily be specific, but one would want to see a consistency in how such complaints are dealt with across the country.

Rebecca Pow: It still goes back to the local level because it is local authorities that have those powers on statutory nuisance, and then it is for the courts to make those decisions. That is why the guidance is important, why the policy statement is important and why the local plans lining up with all that should potentially all link together. I do not think we can say any more on that. Bill?

Dr Bill Parish: We have hundreds of local authorities, each doing its best to tackle specific problems. We do not audit what they do currently, and

nor have we imposed a burden on them to provide reports on how they are managing nuisance. In all honesty, we do not have an accurate handle on what every single local authority is doing. Also, I think we need to be mindful that if we were to step in and ask for something—feedback or some sort of auditing of what was happening—we would inadvertently be providing them with an extra burden on top of the environmental health officer trying to sort out a nuisance problem. We do not provide a central role in watching what they do and providing further guidance, because there are so many.

Lord Holmes of Richmond: Minister, do you currently think that local authorities have the resources they need in this area?

Rebecca Pow: That does not fall under Defra, because local authority funding is ring-fenced and that is a matter for DLUHC and the Treasury. It is not for Defra to answer that question.

Lord Holmes of Richmond: I will try this as a final one, then. Germany and the Netherlands have quite a lot of interesting stuff to look at, particularly on noise. What other international comparators should we look to learn from on noise and light pollution?

Rebecca Pow: It is a good point. We always look at what our international colleagues are doing, and I am never too proud to steal an idea if it is a good one. France, Croatia and Puerto Rico have brought in some legislation on how long you can have your lights on—some of them involve when you have to turn your lights off looking over the sea—so I will certainly ask my officials to have a look at that. There are some very interesting suggestions.

What was the other bit of your question? You mentioned Germany.

Lord Holmes of Richmond: Indeed.

Rebecca Pow: I think they will be looking at us and our new noise model because, as far as we know, nobody else is doing this. Although there have been suggestions that there is not enough detail about various bits in it, in itself it is a ground-breaking piece of research and other countries will be looking at us to see the results of that and how it might inform future policy.

The Chair: I will slip in a very quick follow-up. If Defra makes policy but there is no audit or report back from the local authorities that have to implement it, how do we know whether policy is effective? How can we judge whether it is working?

Rebecca Pow: It is a good point but, of course, it goes through different channels in terms of taking people to court and the statutory nuisance legislation. We will check this for you, but there is an assessment of what all those nuisances are and what is being reported from each local authority. We will get you the detail of that.

The Chair: There is a feedback loop.

Rebecca Pow: Yes.

The Chair: Thank you. That is very helpful, and we would be interested to see that.

Q150 **Lord Wei:** Many of our witnesses have suggested a range of interventions to reduce noise pollution: quieter road surfaces, tyres, lower speed limits, noise barriers, insulation in the worst-affected areas, and more money spent on enforcing existing laws. We do not have a sense of the value-for-money aspect of these propositions. Is that Defra's job to assess? What is the role of government cost-benefit analysis groupings around this?

Rebecca Pow: That is why we set up the Interdepartmental Group on Costs and Benefits, which was triggered after the WHO guidelines and set up to have a look at this—do we have the right data and the right figures when we are costing out building our transport links and infrastructure? The results of that will be so important in informing how we cost out exposures to noise or light and then where, for example, the Department for Transport puts its focus.

I had a recent meeting with a constituency MP about a very busy piece of motorway with noise issues. It was about what practical things could be done, whether it was putting up concrete barriers, a hedge X metres behind the barrier or quiet road surfacing. Then they have to cost in what the cost of all those things would be, the effect on the community and which takes precedence. They had commissioned a lot of research on this area.

The Green Book and the DfT's TAG valuations, its transport analysis guidance, give it detail to follow at the moment but, when we come back with this cost-benefit analysis, some of those costings might potentially change. I think it will be a very important piece of work. We have already triggered a lot of research, which we heard about earlier in the session, relating to that, and there will be an awful lot more to come. Whatever the valuations are, every solution still ends up being individual because every case is very different. We cannot get away from that.

We do not have that for light. That is just for noise.

Lord Wei: Obviously, there is the cost of the intervention and the reduction of the noise, as objectively as you can. Are you looking at the cost-benefit in terms of the impact on human health and how that can help prioritise decision-making?

Rebecca Pow: That is the focus of this group. It is specifically related to the effects on health. It will determine the disease burden—that term that they use—and how you can cost that. How can you say that it was because of this noise that these people have diabetes? If you can say that, what cost do you put on that? As you will know—we have lots of scientists in this room—these are incredibly complicated things to sort out, but that is why the evidence is so critical.

Lord Wei: Do you have a sense of the timeline and when we can start to get the first estimates or data that can inform decision-making from that

group?

Rebecca Pow: We have had the first review back already, on the effects on sleep disturbance from some of these things, and we are waiting now for the cardiovascular one. Do we have the times for them, Hilary?

Hilary Notley: Yes, they are here.

Rebecca Pow: They are all coming on stream now.

Hilary Notley: Some of the annoyance work is published. The sleep work is published. The ischaemic heart disease work is published. We are expecting the stroke and diabetes work perhaps towards autumn next year, 2024, and hypertension towards the end of this year.

Q151 **Baroness Northover:** This is on an issue that has already come up in our inquiry, on the potential impact of new technology—for example, electric cars, heat pumps, which you have mentioned, and drones. You said a little about how you are co-ordinating with other departments on this.

You will know that the House of Lords Environment and Climate Change Committee did a report on heat pumps. One of the things that was quite striking was the visit to Octopus, which was responding to public concern about the noise of heat pumps rather than government concern. The evidence that we were presented with—I was then on that Select Committee—was that they had now become much quieter, and you could see a commercial drive to try to achieve that. Can you say a bit about how you are trying to assess the impact of these areas and how you are co-ordinating, particularly with business?

Rebecca Pow: I think we have covered quite a bit of this before. We are working closely with all these other departments and really, in a way, putting the onus on the department to find the solution. We have raised, for example, the issue of heat pumps. We have very much brought that to the table with the Department for Energy Security and Net Zero, and now it is taking that very seriously. It has commissioned research into it and is well aware that on this big programme to roll out heat pumps, noise is now one of the issues that it has to deal with.

I have had letters from constituents about these things, so it is definitely on the radar. We are very much encouraging the market to get involved because, if there are opportunities and a company can get ahead of its rival, clearly that is how the market works. Innovation in technology is growing at pace in these areas because they are growing business areas. Government is directing the direction of travel to reduce fossil fuels and have alternative technology, and that obviously gives an opportunity to the market.

Heat pumps are one. Electric vehicles are another area where research is under way and the Department for Transport is taking that very seriously. Obviously it is great that electric vehicles are quiet, but then we have the issue that in some places they are too quiet and so there is a problem for people with visual impairments. It is already bringing in

measures in some places. If you are going to have a lot of electric buses, people need to know that the bus is coming and that it is not so quiet that we have a safety issue. That research is under way, but that is for the other departments to do.

You touched on drones. That is another area that is booming. We have a number of departments and agencies working on research on drones. We have the Department for Transport, the Department for Business and Trade and the Civil Aviation Authority all working on that, as well as many universities; I believe they are doing work at Reading and Salford. All those areas are really specific and detailed, so would require resource from those different departments to put into their research. I do not think, realistically, one can expect Defra to be responsible for all that. Our responsibility is to bring it to the table and make sure it is being addressed in the right way.

Baroness Northover: Coming on to light, there has been quite a lot of discussion in this Select Committee on LEDs. Clearly, there is a move in that direction for all the right reasons in terms of the environment, but nevertheless they may have contributed to light pollution. There are potentially ways, we have heard, to address that. Can you comment on that area?

Rebecca Pow: The rollout of LED lighting is another fast-growing area. Used correctly and sensitively, of course, it is really beneficial to have LED lighting and a lot of it can reduce the impact of pollution. At our Somerset county cricket ground in Taunton—I do not know whether any of you has been there—we had the first LED lights anywhere in the country. They are on great big pillars and it was carefully worked out with the local planning authority, because they are quite a landmark feature. Huge research and attention were given to the fact that the light did not spread beyond the cricket ground. They are working brilliantly, but that is not the same for all LED lights.

We have LED light in the Department for Transport. National Highways is aiming to get LED lighting, I think, on 70% of the strategic road network by 2027. It will include technology that can dim the lights when there is low traffic flow. There is a lot of technology out there. There is also a wealth of guidance that Baroness Brown referred to and I mentioned earlier. There is a lot of guidance but it is in lots of different places and there is an opportunity there, perhaps, to consolidate it. There may be opportunities in the NPPF on that point. Some of this guidance, I believe, has to be paid for, which might help the operation of whatever the organisation is that is getting it together, but is that stopping some people getting the right information? Those are things that could be looked at.

Q152 **Lord Rees of Ludlow:** Good morning, everyone. One concern we have heard from most of our witnesses is that noise and light pollution may end up being seen as forgotten pollutants compared with others that are clearly more evident and where there is more scientific evidence. Taking that into account, I wonder whether, in order to get effective action, one

needs to take into account not just the health but the nuisance and environmental effects of these issues, particularly light pollution.

Is it a frustration for Defra that it is being asked to consider just one aspect and not all of them together? To take an example, the noise of motorbikes and things like that may not be unhealthy but it is certainly something we would like to see reduced. Given that the aim ought to be to have regulations that improve our lives, is it a sort of handicap to isolate the health issues from the other reasons why we may want to cut down sound and light pollution?

Rebecca Pow: Thank you for that question. While the intergovernmental committee is focusing on health, the noise model is looking at general exposure, not only health. Health is the new thing we are bringing to the table because light, for example, is already looked at in terms of security and safety because that is what most of our standards relate to. It is whether we, as a result of gathering all our evidence, would be able to broaden that out.

I would not say that they will be the forgotten pollutants, not least because of the work that this committee is doing and not least because I am the Environment Minister. We are not short of pollutants. Everywhere we look, the more noise we get, the more evidence we get, we realise that we have more pollutants. I am the Chemicals Minister too. We have pollutants—I will not say “coming out of our ears” but we do have them. The more knowledge and evidence we have as a society, the more we are able to put the right levers in place to tackle these things so that we can lead happy, successful lives. That is the aim of it. I hope you agree.

Lord Rees of Ludlow: Yes. My point is that in order to motivate public and parliamentary interest one perhaps has to add the somewhat uncertain health benefits to the other benefits of dark skies, the environment, the animals and all that, in order to make a compelling case that will lead to more action.

Rebecca Pow: I think you are saying, “Why do we have to go down the road of showing all the negatives to trigger action?”, but in our 25-Year Environment Plan we have this really big programme to restore nature and biodiversity, and part and parcel of that is giving people access to nature. We also mention tranquillity and enjoyment, and all that is linked to the wonderful benefits we get from having dark skies and a peaceful place to go. But then, it might be peaceful but we love birdsong. That is noise. That shows how complicated this is. Bill, do you want to come in there?

Dr Bill Parish: We have had a similar challenge with the wood-burning stove and particulate pollution. There is a lot of evidence about the health impacts. It is sometimes difficult to communicate and socialise the health impacts of different sorts of pollution. With noise, perhaps, it is not widely recognised what real health impacts those pressures or the stress that it can bring on can have. There is a communications challenge here. We will continue to refine our damage costs in the Green Book but we do not want that to be an economic exercise purely for planning purposes. That

evidence can also tell a story about compelling reasons to improve environments.

Lord Rees of Ludlow: The question really is the extent to which possible health concerns will strengthen your case.

Dr Bill Parish: Yes.

Rebecca Pow: Yes.

Q153 **Lord Winston:** Once you have your map of sound, how do you relate that to the health effects in the area?

Rebecca Pow: It will pick out, as we do already in our five-yearly cycle, the worst areas for sound. That is why we currently then trigger action plans in that 1% of the worst areas. The local areas then have to work on how they will overcome that. This will be on a much bigger scale, and it will be used to feed into the exposure indicator that we have highlighted in the 25-year environment plan, through the outcomes framework that we will develop. I see it as directly being able to influence that. Then it will be a drip feed coming down, influencing everything else that occurs.

You are right, the purpose of it is that it will give us the information we need to make changes where necessary.

Q154 **Viscount Hanworth:** To come back to the business of the map of sound, it was not at all clear to us what is being mapped. As far as sound is concerned, there is volume, frequency, intermittency and harmonic coherence. What exactly are you intending to measure?

Rebecca Pow: In the model?

Viscount Hanworth: Yes, for the sound map.

Rebecca Pow: I will bring in Hilary, but I think Dr Parish has already been in another session and explained something. Perhaps, Baroness Brown, it would also be useful if we sent you detail of what is being mapped. Obviously, we have only a certain amount of time here and so we are talking quite generally. We have outdoor modelling, we are mapping 24 hours, we are doing road, rail and urban, the whole country, but if you want some more detail of the nitty-gritty of the measurements and so forth—

Viscount Hanworth: Yes, I do.

Rebecca Pow: I think it might be helpful to send it to the committee.

The Chair: That would be very helpful, yes.

Viscount Hanworth: It seems to me that you are mapping the source of the sound and identifying the sources, not just the volume of sound. What? We just do not know.

The Chair: We look forward to seeing the detail. Thank you.

Rebecca Pow: That might be the most helpful way of doing it.

The Chair: Yes. Thank you very much to the Minister and her officials.