

Emails associated with Q4: *Correspondence to IAMMWG, JNCC or SNH detailing advice or concerns from Marine Scotland or Marine Scotland Science relating to harbour porpoise SACs and Q5: Any IAMMWG, JNCC or SNH correspondence in response to Marine Scotland or Marine Scotland Science.*

These emails cover communication between JNCC and MSS or MS detailing the concerns raised with regard to the harbour porpoise SAC advice along with correspondence undertaken in response to MS/MSS. A large number of emails between members of IAMMWG concerning solely the development of collective responses are not included. The emails are presented in chronological order.

NOTE: All personal data such as email address and contact details have been removed from the copied emails. Any attachments referred to have been provided in the package of documents associated with this question and so have not been included here. Copy lists on emails have not been provided.

From: Eunice Pinn to Kate Brookes (MSS)

Sent: 29 April 2015 13:57

Subject: RE: Lunch?

Good to catch up over lunch and have a bit of an informal check on porpoises....

Kel – Kate will be at the meeting on the 18th (?) that you stuck your hand up for. We thought a meeting prior to that would be a good idea.

Having checked diaries Kate, both me and Kel are around next Wednesday (6th). What time suits? And do we want to hold it here or at the lab? Happy to investigate a room booking here and maybe bring lunch in (or we could do Campbell's?)

From: Kelly MacLeod to Kate Brookes/Eunice Pinn

Sent: 29 April 2015 14:38

Subject: RE: Lunch?

That would be good. Hopefully by then I'll have a better idea of what's needed! 6TH is good for me

From: Kate Brookes to Eunice Pinn/Kelly MacLeod

Sent: 29/04/2015 16:06

Thanks for this. As Eunice was aware I've been in a meeting within MS (just Science and Licensing) this afternoon to talk about this and what it means for licensing.

As a result I will now be putting together an email to send to policy folk in Edinburgh. I will pass it on to you both once I've done that, but just to forewarn you that some of it will require policy to come back to JNCC on some issues. I think that the three of us can make progress on some of the things next week so that we can provide some answers in the meeting on the 18th.

From: Kate Brookes to Eunice Pinn/Kelly McLeod

Sent: 30/04/2015 13:14

For info, this is the email I have sent to MS policy. [Kate's email to David Palmer and Phil Gilmour]

Sent: 30 April 2015 12:40

Subject: Harbour porpoise recommended draft SACs

Dear Phil and David,

MS Science and MS-LOT met yesterday to discuss the recommended draft harbour porpoise SACs and their associated Conservation Objectives, in advance of the meeting with developers on the 18th May. Clearly these designations are likely to have implications for the licensing process, including for developments that have already been consented.

We discussed the draft conservation objectives and the site selection process. Broadly we agreed that the conservation objectives were acceptable, and under our interpretation we feel that it would be possible to undertake HRA/AA based upon them, although we would welcome some discussion to add clarity. We felt that the wording left open the possibility to interpret the COs to mean that SAC animals were protected outside of the site boundaries (as is the case for other species), which we had been under the impression was not the intention (besides which, we don't have a means of identifying porpoises to know which are "SAC animals").

We were more concerned about the site selection process and the data analysis that underpins it, detailed in the report on JNCC's website (<http://jncc.defra.gov.uk/page-6991>). Are you aware of whether this report has been peer reviewed? JNCC undertook extensive external peer review of similar work used to identify the candidate suite of marine dSPAs, and it would be appropriate for the same to process to be followed for the harbour porpoise dSACs. If it has not, we would advise MPPD that a peer review should be undertaken before the results are used for a purpose such as designating SACs.

From my own reading of the JNCC report, there are several areas where there is not sufficient clarity to allow a full assessment of whether the work done is suitable. There are also some areas of concern, particularly around the incorporation of effort into the analysis, that need to be explored further. Additionally, the report builds upon analyses undertaken on the JCP data, but the JCP report is not yet available, making it difficult to understand the analytical process used.

We also discussed the selection criteria used after the porpoise distributions had been modelled and were unsure about how these had been translated from the EC guidance. Has this information been provided by JNCC in the same manner as it was for the dSPAs?

We are aware that there is a tight timeline for designating porpoise SACs. Is there still scope to revisit the modelling and analysis undertaken for site selection? I will follow up some of my concerns regarding the modelling undertaken for site selection with colleagues from JNCC.

We feel that it may be beneficial to have a discussion around some of these issues prior to the meeting on the 18th with the developers. Given the timescales, this may be best achieved through a TC/VC.

From: Kelly MacLeod to Kate Brookes

Sent: 30 April 2015 13:55

Subject: RE: Harbour porpoise recommended draft SACs

Discussing some of the issues you raise below would go well beyond our 'lines to take' – we are still in strict purdah!

Some of the questions, re analyses, can be discussed but as for detail on guidance/process to develop the SACs, a paper is being put together that will be released with consultation

docs. The HP Project Board will also so see it ahead of this. The COs in particular are still being worked on – at least their interpretation which should give light on how they are to be used in assessments. So, it's worrying that a draft version is being considered already and its implications.....(it was supposed to have a very closed circulation – official sensitive!)

So I think your questions will get answered but not all of them just yet!

With this in mind, the meeting you scheduled ahead of the meeting on the 19th is for 2.5 hours – not sure what we can discuss that would need that amount of time – unless we get some clarity from govts post-election on certain issues. But happy to meet for an hour?

Thanks

From: Kate Brookes to Kelly MacLeod

Sent: 30/04/2015 15:42

Subject: RE: Harbour porpoise recommended draft SACs

Thanks for this. That's fine, and good to know where the line is drawn at the moment. I passed on the email for your information about the thinking that is being done in Marine Scotland, rather than for answers. Issues other than the analysis in the report that has been published should be dealt with by my policy colleagues through a more formal route and I was not intending to discuss them next week. Please do not take the email to be the view of Marine Scotland – merely information about thought processes so far.

The document I have seen is marked official sensitive, and was passed to me for comment by colleagues in Marine Scotland Planning and Policy. We are also in purdah, but I'm not sure that matters between (or within) government departments.

In terms of things that I wanted to talk about I have:

- Issues relating to the analysis in the site selection document
- Briefing for the meeting on the 19th

I booked the room for 2.5 hours because I wasn't sure what your plans were regarding lunch etc, and rooms are a bit of a premium here. Having said that, I'm not sure that an hour is long enough if we get into the detail of report. Below is a list of things that I'm thinking about at the moment:

- Issues with the clarity of the document – some concerns that elements of the analysis haven't been described clearly enough to allow the reader to understand what has been done
- The stage of analysis at which the JCP data were incorporated into this analysis
- The way in which effort has been used in the analysis
- The data frame over which predictions were made
- The use and implementation of the hurdle model
- How the identification of hotspots works
- Whether there has been, or is intended to be a peer review of the analysis.

I would suggest an hour and a half would be better, so starting at 11 and having lunch at 12:30. I will leave the meeting request as it is at the moment, because it's also the room booking and if we decide on a different time then it's unlikely that the room would still be free.

Let me know if that sound OK to you.

From: Kelly MacLeod to Kate Brookes
Sent: 30 April 2015 18:01
Subject: Re: Harbour porpoise recommended draft SACs
Hi Kate,

Thanks for clarification. I panicked somewhat when I saw your email! 1.5 hrs is fine. By the way the report was peer reviewed and we had statistical advisor working with us throughout the Contract.

See you soon,

From: Kate Brookes to Kelly MacLeod
Sent: 30/04/2015 18:46
Subject: Re: Harbour porpoise recommended draft SACs
No worries - I probably should have given a little more explanation when I sent it!

From: Kate Brookes to Kelly MacLeod/Eunice Pinn
Sent: 19 May 2015 13:18
Subject: Report questions
Hope all's well.

I wondered whether you'd had any response regarding the questions you were going back to DHI with on the modelling report?

I've also had a look at the reviews of the report and wondered whether there was also a document detailing how the comments had been addressed in the final report that I might be able to see?

Thank you,

From: Kate Brookes to Kelly MacLeod/Eunice Pinn
Sent: 27 May 2015 10:47
Subject: RE: Report questions
Hi again,

Sorry to hassle about this, but I'm being asked to brief policy folks. Even just an update on whether you've heard anything back would be helpful.

Thank you,

From: Kelly MacLeod to Kate Brookes
Sent: 27 May 2015 10:51
Subject: RE: Report questions
Just about to head to a meeting – I'll get to the questions today though.
Sorry

From: Kelly MacLeod to Kate Brookes
Sent: 27 May 2015 18:19
Subject: RE: Report questions

With regard responses to comments from reviewers, we did not ask for a formal response from DHI but that they take the comments into account in their review of the **draft** report and in submission of the final report.

Your main question related to how survey effort had been dealt with effectively in the modelling & prediction & why effort had not been used as an offset. From DHI:

Well, the influence (bias) due to variation in spatial coverage was the main challenge for us in order to make robust estimates of long-term changes in the distribution of porpoises. This was especially the case in the North Sea where there was a general shift in effort from the north to the south over the period. This challenge was mainly tackled in two ways which are linked:

1. By designing the distribution models to describe the distribution in response to dynamic oceanographic habitat features rather than to fixed geographic features and coordinates of observations
2. By introducing 5-year spatio-temporal smoothers into the models'

The segment length was used to account for the fact that the probability of sighting a HP is larger in a longer segment. In the prediction file the segment length was 10 km. The predictions (probability) of the presence/absence model part was combined with the positive density model predictions by multiplying the two layers.

Using effort as an Offset was not an option as we were modelling density, not abundance and so didn't have to account for the area surveyed.

I hope this covers the main issues. Let me know if there are any outstanding.

Thanks

From: David Mallon (MS) to Mark Tasker

Sent: Wed 12/08/2015 16:08

Subject: HARBOUR PORPOISE dSACs

I understand you are in Copenhagen but if you have a few minutes could you phone me please (██████████)?

From: David Mallon to Mark Tasker

Sent: 13/08/2015 16:06

Subject: MSS COMMENTS ON dSAC ADVICE

Please find attached a short paper outlining Marine Scotland Science's (MSS) comments on JNCC's draft SAC advice on Harbour Porpoise for discussion on Monday at 11am. [\[see Document file for this paper\]](#)

From: Mark Tasker to David Mallon

Sent: Thursday, August 13, 2015 04:26 PM

Subject: RE: MSS COMMENTS ON dSAC ADVICE

Thanks

I am pleased to say that on first read-through I see no show-stoppers here. Nearly all items have been dealt with – something that MSS would have learned if that had bothered to pick up the phone, send an email or two or even walk 200m down the road. I also note that they have not read any of the various steering group minutes (which Marine Scotland of course has), nor looked at any of our presentations. I will do my best to deal with as much as possible in writing before Monday in order to expedite this – that will mean that I have to

work over the weekend and it is unlikely that I would be able to deliver response to you before Monday. Who should I address this to in MSS?

I hope that we can therefore keep broadly to the timetable for consultation and take some decisions towards this on Monday.

May I ask when exactly MSS were asked to review this work? It is not stated in the report. I presume that it was also yourself that requested this review.

I will copy the paper (and in due course my response) to my SNCB colleagues, but clarification of the above questions would help please

From: David Mallon to Mark Tasker

Sent: Thursday, August 13, 2015 21:57

Subject: RE: MSS COMMENTS ON dSAC ADVICE

The review was requested on receipt of advice as we normally do.

From: Mark Tasker to IAMMWG

Sent: 14 August 2015 08:52

Subject: OFFICIAL SENSITIVE Review of SAC advice

Please pick up a nice cup of tea or piece of chocolate or something stronger before reading the following.

On Wednesday evening I got an email from David Mallon (Marine Scotland) asking me to call him. I did so (I was in Copenhagen). David informed me that Marine Science Scotland (MSS) have been reviewing our work and have some strong concerns. This came as a complete surprise – there has been no mention of this by Marine Scotland at the Project Board, or any other time. We did though get requests from MSS for some of the draft documents back in April and May (date rather relevant for next paragraph). After a bit of “conversation”, David agreed to ask MSS to put their concerns in writing. The attached email arrived yesterday evening.

I have been through the comments and added my own on first pass – some of these need “redacting” to more diplomatic language but are attached here – please do NOT pass these any further! As you will see, most of the comments (c80%) relate to the DHI analysis. On that basis I asked David when the review was requested from MSS and was told “The review was requested on receipt of advice as we normally do.” – I have gone back to ask if that was the initial advice (last December, relevant to the (Ministerial) decisions to proceed on the basis of the AoS) or after mid June (which is far too late to comment on the fundamentals). I have not got an answer yet.

The upshot of this is that the Project Board meeting on Monday is technically cancelled, but a meeting including all PB members except DECC and MoD will occur to consider MSS comments. Initially Marine Scotland proposed not asking other SNCBs than JNCC, but I was somewhat insistent that this work overall is a joint effort – and as you will see in the comments, some are critical of SNH approaches in particular. Marine Scotland also proposed that we cancelled Tuesday’s IAMMWG – for reasons that I still do not understand – but this is our meeting and not theirs, and we need to all consider, discuss and understand how we are to go forward. I have copied Cathy into this email as she was also informed of this by Marine Scotland.

So, the agenda on Tuesday may be rather flexible. My immediate concern is to knock the response to MSS comments into shape before Monday – if anyone else has time TODAY to

take a look and add thoughts I would be very grateful. You will see that many of the points are reasonably easy to deal with and come about because MSS have obviously not seen many of the documents (or in at least one case, cannot have read them). I struggle a bit with some of the statistics and may see if I can get hold of either DHI or David Elston today. I would be interested to know who is attending the Monday "not quite Project Board" meeting (I know that Tom is calling in) and I may try to co-ordinate prior to the meeting.

Sigh....

From: Tom Stringell (NRW) to Mark Tasker

Sent: Fri 14/08/2015 18:30

Subject: RE: OFFICIAL SENSITIVE Review of SAC advice

I have finished reading the MSS document and will transfer my scribbles to track-changes this weekend sometime.

I find it quite astonishing, given the involvement of all govnts right from the beginning and the staged sign off, that MSS are bringing this up now, and why it has taken them so long (nearly a year) to review the science. Astounding.

I think it is fairly obvious where this push has come from; the catalyst was probably the Impact Assessment.

I'm in broad agreement with your comments. I'll add to them if that's OK.

There is an issue here in that each statistician has their favourite model/approach. No model is right, and each has advantages and disadvantages – that came out clearly in the differing reviews, and is presenting itself again here.

I think it will be important to get SNH to highlight the global grading decisions for Moray Firth (ie using past examples, which MS agreed to and signed off!). All of this is in the Analysis to Sites document. Perhaps MSS should see that!

Anyway, more later

From: Eunice Pinn to Mark Tasker

Sent: 17 August 2015 08:45

Subject: RE: OFFICIAL SENSITIVE Review of SAC advice

Just had a quick read of the report from MSS (difficult to concentrate with kids arguing in the background).....the one thing that strikes me is that they seem to suggest we worked from the JCP 3 results and not the cleaned data used for the JCP 3 analysis. That is a fundamental misunderstanding of our starting point if that is the case.

From: Rebecca Walker (NE) to Mark Tasker

Sent: Mon 17/08/2015 17:54

Subject: RE: OFFICIAL SENSITIVE Review of SAC advice

My apologies Mark – was out of the office on Friday, and had casework deadlines today. I did have a read through the MSS review and the comments from you and Tom, and didn't have anything else that jumped out at me.

From: Mark Tasker to Steve Gibson (JNCC Director)/Paul Rose

Sent: 17 August 2015 19:31

Subject: RE: Adaptive management - is there a 'document that sets it out' that you would refer to?

Thanks. I think Paul is probably a better judge of today's meeting. I feel seriously let down by Marine Scotland – I do not feel they are being either truthful or acting in good faith – and I experienced rather too much unwarranted aggression today. They claim good motives but I cannot believe that as they are not answering critical questions on timing and a number of other issues. It is also very obvious that the so-called impartial review has been designed with particular policy objectives in mind.

I'm sitting on the train at the moment wondering why I want to carry on working for such people – it is difficult enough marshalling the SNCBs without having untruthful policy people to work to. I do understand that they are working to a Government that wishes to bend the law as far as possible, but it is very unclear to me as to whether the policy side have actually briefed upwards fully in relation to the risks of doing that. I would be in a very difficult position if this ever went to court – you/Paul/EMB may wish to reflect on that in relation to reputational risks to JNCC (or perhaps with CSG in terms of same risks across the Agencies).

From: Paul Rose to Mark Tasker/Steve Gibson

Sent: Tue 18/08/2015 08:03

Subject: RE: Adaptive management - is there a 'document that sets it out' that you would refer to?

I pretty much agree with you on all points. It's also the position we chatted about before the meeting. My judgement is that the unwarranted aggression came when we started to successfully defend ourselves against their challenges. There are two questions. Have we done the best we can to identify sites for HP based on best available evidence – Answer Yes. Have we done enough to make the case robust enough to avoid successful legal challenge in the UK – Answer No. My guess is that this is what MS has realised so they have looked to identify anything else we might do, even if lower quality science, that might give a bit more weight to the work, and use this to argue for delay.

It was very obvious that they would not commit to any timeline for anything but did say that every window of time suggested by Defra was too short (1 week to respond to your comments, September/October consultation, can't rule out remodelling etc). We have a great deal of can't do's and no can do's.

If we end up in court (and we stand a good chance), EMB should give this a great deal of thought. My view is that we should be totally open and say exactly who was responsible for each decision/step and why we did what we did. Our job was to provide independent advice to government and we did. It also stands up to all challenges. If MS disagree for political reasons so be it. If there is personal reputational issues at stake then I will quite happily front this up and insist on taking full responsibility. I suspect all of CSG will do the same and very much stand shoulder to shoulder.

I'll try to ring you tomorrow.

From: Ian Davies (MSS) to Mark Tasker

Sent: Tue 18/08/2015 13:13

Subject: HP SACs

We have just had an internal meeting following up the meeting with Defra yesterday about HP SACs. I understand that you undertook to provide a number of documents to enable MSS to further review the work that JNCC has carried out. Could you please let me have a

list of the documents that you plan to send to us, and information on when you expect to be able to deliver them?

MSS is also a little confused as to which documents are now in their final form (perhaps just awaiting formal publication), and which are still being actively worked upon by JNCC. For example, the documents on the coastal and open water distributions are clearly final as they are published in your report series. However, we are less clear on the status of the models-to-sites document, and on the ABPmer impact assessment document, and also inevitably on the other documents that you are about to send us.

We would also be grateful for a copy of JNCC current thoughts on conservation objectives. We have been working on the basis of there being 3 COs for each site, but I am told that you suggested yesterday that there were 4.

From: Sarah Cunningham (SNH) to IAMMWG

Sent: Tue 18/08/2015 15:01

Subject: RE: Official-Sensitive: Final IAMMWG agenda

Karen, John and I have been through the document this afternoon. Not a huge amount to add to the comments already there but we've added a few. Hope they are helpful

From: Mark Tasker (on behalf of the SNCBs) to David Mallon

Sent: Wed 19/08/2015 09:38

Subject: OFFICIAL SENSITIVE: RE: MSS COMMENTS ON dSAC ADVICE

Here is the first of the papers that we are producing following Monday's "not quite the Project Board" meeting. This is the SNCB response to the Marine Science Scotland's comments on parts of our collective work. Although all comments have 'MLT' against them, they are in fact a collation of comments from all SNCBs and from the authors of the DHI report.

We set out to write the response as a series of short notes commenting on aspects of the MSS text, but as you will see we failed in that endeavour – we hope the points are still understandable. The number of comments could have been substantially greater where original misunderstandings and errors were compounded/repeated in later paragraphs; these repeats are not commented upon each time (put another way, most misunderstandings and errors are only flagged once).

As I wrote to you previously, we consider that nearly all of the misunderstandings and errors (and therefore many criticisms) could have been avoided had a) we been told that there was a review to be carried out – especially at the point that this was presumably started early in 2015; and b) if the reviewer(s) had taken the trouble to check on presumptions and assertions – something that could easily have been achieved given the time available and the proximity of Marine Science Scotland to the JNCC office in Aberdeen. We cannot understand why the information on the peer review was not provided earlier both to the SNCBs and to the Project Board. We have had a robust peer review process in place since the start of the whole enterprise, as indeed you have heard at many infraction board/project board meetings (and we are, following the request at Monday's meeting, writing a short paper to describe that). Our science-based processes always welcome timely peer review and we would have been very happy to add Marine Science Scotland processes to the system if requested. Nearly all of the points in the MSS review have been considered previously, some following SNCB own internal challenge and questioning, some following external independent peer review.

We will be reviewing all of the documents that are nearing completion (or in some cases have been completed) ahead of the consultation in the light of the MSS comments. It is

plain that some misunderstandings have occurred – and we will use the comments to see if we can rephrase some papers to reduce the risk of such misunderstandings occurring in the future. Given the complexity of the task that we have been undertaking, that of course cannot be guaranteed!

We trust that you and the Project Board will be reassured by these responses and that rapid decisions towards the consultation can now occur.

I have copied this to Ian Davies and other colleagues in Scottish Government that were copied into his email to me yesterday. I will be copying this also to the Inter-Agency Marine Mammal Working Group. I have added the OFFICIAL SENSITIVE tag to this in line with the decision by the Project Board that all emails in relation to this work are OFFICIAL SENSITIVE. We are also treating the MSS comments in that way. Please let me know if that is incorrect.

From: Mark Tasker (on behalf of the SNCBs) to David Mallon

Sent: Wed 19/08/2015 12:08

Subject: OFFICIAL SENSITIVE: Responses to peer review comments on draft report 544
Here is the second of the papers requested following Monday's "not quite the Project Board" meeting. This is the list of responses by the authors of the DHI report to the peer reviewers comments on a draft of their report. These responses have been provided previously to an external party in response to an EIR request.

I have copied this to Ian Davies and other colleagues in Scottish Government that were copied into his email to me yesterday. I will be copying this also to the Inter-Agency Marine Mammal Working Group.

We are working on the other two papers (Summary of the peer review process; a separate summary of the reasons for using method III in the modelling rather than method II) at present. I hope to get one of these to you today, but not both. I am on leave for three weeks from tonight, so either Eunice Pinn or Kelly Macleod will be sending any outstanding documents to you as soon as they are complete. They should also be contacted if any other documents are needed or if technical issues need to be discussed.

Best wishes

From: David Mallon to Mark Tasker/SNH

Sent: 19 August 2015 16:29

Subject: HARBOUR PORPOISE dSACS - MEETING WITH SSE

Marine Scotland has a weekly meeting with Scottish and Southern Energy (SSE) project and management staff on the BOWL development.

SSE have requested that the attendees at future meetings include officials that can cover the HP designation issue and Fergus Ewing has agreed.

I will attend to cover policy issues but can you please let me know who can attend for SNH/JNCC please?

The next meeting is at 9am on Tuesday.

An early response would be much appreciated

From: David Palmer (MS) to Mark Tasker

Sent: Wed 19/08/2015 17:50

Subject: RE: OFFICIAL SENSITIVE: RE: MSS COMMENTS ON dSAC ADVICE

Thanks for this, I'd have thought proper project management would require all the important documents to be circulated rather than those who will ultimately be at the sharp end of this process having to request them. As to Marine Scotland Science's review this was undertaken very quickly over the last 6 weeks, they will now undertake a detailed consideration of the documents. I would not necessarily anticipate that we will be in a position to make rapid decisions.

From: Mark Tasker to David Mallon

Sent: Wed 19/08/2015 18:27

Sent: RE: HARBOUR PORPOISE dSACS - MEETING WITH SSE

I am on leave now (well sort of!). I can investigate if someone could attend in some weeks, but we could not possibly attend every Tuesday. In addition, where is the meeting held?

In addition, as you are aware, there is very little extra we can say at present – most developments now are policy/political decision level.

From: Mark Tasker to David Palmer

Sent: 19 August 2015 20:41

Subject: RE: OFFICIAL SENSITIVE: RE: MSS COMMENTS ON dSAC ADVICE

Thank you for your email. I am not sure what "important document" that you refer to that has not been supplied. The project board has always been supplied with (or provided with links to) copies of completed documents core to the process, and have at critical points sometimes been given documents under development. David Mallon has of course been partly responsible, as the Scottish Government's board member, for overseeing my project management and I have yet to receive any hint that we got any aspect wrong or done anything improperly.

We understood that MSS started its review some time further back than 6 weeks – at least two of the folks on our side met Kate Brookes back in May, which in turn was five months after the essential document that the review focuses upon (the DHI report) had been provided to the Project Board ahead of a decision to proceed further based on the principles in that report. I have though never received a reply to my request to know exactly when the MSS review was originally asked for – perhaps you could let me know as we are keeping a detailed timeline and history bearing in mind the risk of legal challenge from several angles that you will be well aware of.

We have, to a great extent at the behest of the Scottish Government, been running a very onerous, detailed and rapid process, complete with all of the usual and proper checks, but binding in all the SNCBs and the Governments. It therefore comes as rather a strange turn that only now is the Scottish Government asking for a detailed consideration that might take some time.

Thank you in advance

PS I am now technically on leave, but may be able to respond intermittently

From: Kelly MacLeod to Kate Brookes

Sent: 20 August 2015 09:36

Subject: Official Sensitive: May meeting

I attach a short note of our meeting we had back in May with regard questions you had about the analysis in the DHI Report 544. I should have made a summary of the meeting at the time, but it seemed rather informal. However, there is a need to document our discussions and so if you could look at the attached and confirm you are happy with the content? I've strictly restricted it to things that were said at the meeting or were followed up in email.

Hope you are well. A lunch date must be overdue....

From: Mark Tasker to David Mallon

Sent: 20/08/2015 10:17

Subject: RE: OFFICIAL SENSITIVE: RE: MSS COMMENTS ON dSAC ADVICE

Here is the third of the papers requested following Monday's "not quite the Project Board" meeting. This is an extended and hopefully more readable reasoning for using method 3 in the harbour porpoise modelling. I think that given the better performance statistics in relation to explaining distribution it would be very difficult to argue using anything but method 3. The risk of bias that appeared to concern Marine Scotland Science is low, and it would be difficult to justify bias through an impartial examination of the boundaries drawn (of course a partial examination could conclude anything!)

I have copied this to Ian Davies and other colleagues in Scottish Government that were copied into his email to me of Tuesday. I will be copying this also to the Inter-Agency Marine Mammal Working Group.

We are still working on the final paper requested on Monday (Summary of the peer review process).

From: David Mallon to Mark Tasker

Sent: 20 August 2015 11:32

Subject: RE: HARBOUR PORPOISE dSACS - MEETING WITH SSE

The background to this request is that SSE find the weekly catch up with energy officials extremely useful and they would like environmental policy and SNCB officials to attend to answer questions on the protected areas proposals.

From: Mark Tasker to David Mallon

Sent: 20 August 2015 23:38

Subject: RE: HARBOUR PORPOISE dSACS - MEETING WITH SSE

I am not willing to commit one member of staff for a weekly meeting. This is for two reasons

1. We have a great deal to do in JNCC and all of my staff are part-time including myself. We do not have the capacity
2. We have strong legal advice that we have to treat all stakeholders approximately evenly prior to, and during, consultation. We certainly do not have the capacity to hold meetings with many stakeholders at weekly intervals. I am aware that the Scottish Government lawyers may have a different view of this fairness issue.

We can attend occasional meetings – especially if by phone – and of course are always available to answer specific written questions.

Sorry if this is disappointing – I hope that I'll be able to arrange someone on the phone for next Tuesday, but I am on leave (just arrived in Bogotá) and so far have no details of the meeting. I cannot guarantee to have internet everywhere here.

From: Phil Gilmour (MS) to Mark Tasker

Sent: 21/08/2015 11:16

Subject: RE: HARBOUR PORPOISE dSACS - MEETING WITH SSE

My own view is that JNCC should resource the first meeting as a minimum. You can then discuss handling/resourcing with David and SNH colleagues. I suspect that SSE once it has clarity on the way forward, albeit this may be shrouded in risk and uncertainty, will require less contact and input from the SNCBs.

SSE view on Beatrice is that there is significant risk that their project could fail due to uncertainty and delay and not on the grounds of being able to justify an environmentally sustainable project with the HP SAC in place given the constraints within the Investment Contract process.

As this would appear to be a significant risk this presents a special case and as such a bit of extra resourcing at this point would appear reasonable.

From: Mark Tasker to Phil Gilmour

Sent: 21/08/2015 11:35

Subject: RE: HARBOUR PORPOISE dSACS - MEETING WITH SSE

(from early morning in Bogota!)

I am happy to resource this first meeting (I think we have someone available, but not certain!).

I am though alarmed by the minutes of last meeting sent through recently by David M. The handing over of documents to developers pre consultation is outside the agreed UK wide lines to take and brings into play all sorts of "fairness" issues.

We do not see the risk of the project falling, and would much rather have discussed that issue with yourselves and obviously SNH before any discussions with developers. There are very similar issues south of the border being dealt with in a different way.

I will leave this with my Director, Paul Rose as to how to handle as plainly this needs to move fast before I return from leave

I would note finally that the longer the decision on going to consultation is delayed, the longer is the uncertainty on these issues for all concerned!

From: Phil Gilmour to Mark Tasker

Sent: 21/08/2015 11:40

Subject: RE: HARBOUR PORPOISE dSACS - MEETING WITH SSE

Ok thanks, I have not seen the articulation of the handling strategy being adopted down south. Seeing this would certainly be very useful.

From: Eunice Pinn to David Mallon

Sent: 21/08/2015 12:11

Subject: RE: OFFICIAL SENSITIVE: RE: MSS COMMENTS ON dSAC ADVICE

As promised by Mark, here is the final paper of those requested following Monday's "not quite the Project Board" meeting. This outlines the peer review and Evidence and Quality Assurance (EQA) process that has been followed from the initiation of work to identify persistent high density areas through to the advice given to Governments in June 2015.

As with the other papers, I have copied this to Ian Davies and other colleagues in Scottish Government that were copied into the original email to Mark. This document will also to the Inter-Agency Marine Mammal Working Group.

From: David Mallon to Mark Tasker/Eunice Pinn

Sent: 21/08/2015 12:41

Subject: RE: OFFICIAL SENSITIVE: RE: MSS COMMENTS ON dSAC ADVICE

Many thanks for these papers.

We will discuss further with MSS and get back to you.

From: Eunice Pinn to David Mallon

Sent: 21/08/2015 13:24

Subject: RE: OFFICIAL SENSITIVE: RE: MSS COMMENTS ON dSAC ADVICE

It has just been brought to my attention that there was an omission from one of the Annex tables. This has been corrected in the attached document, so please ensure that this is used for the MSS discussions.

Apologies in advance for any inconvenience this may cause.

From: Mark Tasker to Phil Gilmour

Sent: Sat 22/08/2015 23:03

Subject: OFFICIAL SENSITIVE RE: HARBOUR PORPOISE dSACS - MEETING WITH SSE

Greetings from a brief stop-over in Bogota airport (may as well answer some email!).

I do not think that DECC/Defra or MMO have written down a handling strategy beyond the "lines to take" that have been agreed by the Project Board – and of course David can supply those if you have not seen them. If there is something beyond that written down then I have not seen it anyway (and it would surprise me given the southern adherence to those lines).

From: David Palmer to Mark Tasker

Sent: Mon 24/08/2015 13:48

Subject: RE: OFFICIAL SENSITIVE: RE: MSS COMMENTS ON dSAC ADVICE

Mark

As far as I am aware you were working on the other two papers (Summary of the peer review process; a separate summary of the reasons for using method III in the modelling rather than method II)" as these documents seem relevant and potentially critical I guess it would be them. Irrespective of whatever view one takes of the "science" this does highlight the key issue that the science case appears not yet to be complete, even if we accept all the science has now been delivered and I'm not clear it has, the science case is certainly not yet succinctly stated in 1 document. Consequently I am at somewhat of a loss as to how I can deliver the instruction from my ministers to explain the science to stakeholders when the case does not appear to contain all the science required to do so. As a bare minimum all the science needs to be drawn into one document.

Given that MS only received JNCC's advice on dSACs on 18 June (Detailed Assessments Against the Guidelines for the NC MPAs and Site Assessment Documents for the SACs) and we only received combined conservation objectives and management options papers and other supporting papers for the 4 Scottish HP SACs on 23 June 2015 I fail to see we could

have initiated a review in May. However, what I would accept is that Kate's conversations do indicate is a rising level of concern with both the process and outcome.

From: Phil Gilmour to Mark Tasker

Sent: Tue 25/08/2015 08:51

Subject: OFFICIAL SENSITIVE RE: HARBOUR PORPOISE dSACS - MEETING WITH SSE

I am happy to discuss with you and David on your return.

Some issues for you to consider.

When it comes to Sectoral Marine Plans we have a multi consultation approach ahead of the statutory consultation. We often find out key pieces of information from the bodies we target ahead of the formal stage. SNCBs, MOD and our sister planning authorities have all provided inputs which have changed our thinking on plan options and assessments.

We really value the inputs from others ahead of formal public engagement. There is always a risk that someone may be missed within a pre consultation but this risk should be significantly reduced at the statutory stage.

Our approach is very much about effective inclusion and we use Consultation Analysis and post adoption statements at the appropriate stages of plan building to demonstrate a proactive approach to the sharing of knowledge particularly science and assessment work.

As you will know the consenting approach has early, effective and statutory consultation at its heart. MS has for example developed Gap Analysis as its statutory consultation tool to feed back to developers on views and issues to be addressed before a decision on a project can be made.

Scottish Ministers are therefore used to open and transparent approaches being taken within decision making. They expect the SNCBs to provide science, expect MS to review this and that interested parties be given an opportunity to consider and provide views at the earliest stages. Ministers want to go to formal consultation with as much confidence as they can that the options they consult upon appear robust and defensible. Confidence should be increased once they have seen views and considered overlap or separation in advice and why this should be.

It is understood that infraction discussions must remain confidential but work underpinning emerging designation proposals need not. We also have to be minded not to start a formal consultation through a pre consultation initiative albeit we view this risk differently. We have engage in discussions with Fishing, Shipping, eNGOs ahead of statutory consultations and see this as part of a necessary checks and balances approach.

Also all bodies will have and take different approaches. We have to respect this, however, Scottish Ministers expect Marine Scotland as a competent authority, with a science arm to provide advice and views on plans, consents and designation proposals. They also consider that these approaches are open and transparent and allow those with significant interests to be engaged at the earliest stages.

As I say happy to discuss on your return,

From: Eunice Pinn to Ian Davies/Katie Brookes

Sent: Tue 25/08/2015 11:04

Subject: official sensitive: review and any outstanding documents

Just following up on the meeting held with SSE and the mention made of the ongoing review. Needless to say we would like the process completed as soon as is possible, just as SSE appear to require too.

As I said in the meeting Ian, I think the only outstanding document that has been request but not yet received is the JCP 3 report. This report is not actually relevant to our process but we will endeavour to get it to you as soon as we can. All we used was the cleaned segmented data, i.e. in effect the same input data, although we had a slightly narrower dataset as some providers did not allow permission for their data to be used in the SAC analysis.

Please let me (copying Kelly in) know if there is anything else you are expecting from us.

From: Ian Davies to Kelly MacLeod
Sent: 25 August 2015 16:40
Subject: FW: Official Sensitive: May meeting
Kate passed your email to me.

As you point out, the meeting was informal and minutes were not taken at the time. We do not consider that it is appropriate at this time, 3.5 months after the meeting, to attempt to prepare minutes. Contrary to your statement in the second line, MSS have not agreed with your "minutes".

From: Kelly MacLeod to Ian Davies
Sent: 25 August 2015 16:48
Subject: RE: Official Sensitive: May meeting
The line with the "*" was there just to ensure that if you did agree to the minutes, then this was clear. The note was sent with a request to comment and confirm whether you were happy or not. The minutes were made from notes taken during the meeting and subsequent email discussions (i.e. not drawn from memory).

I've copied your response onto Mark Tasker – he's currently on leave but will respond when possible.

From: Eunice Pinn to David Mallon
Sent: Tue 01/09/2015 14:54
Subject: official sensitive: Documents list
Please find attached the two lists completed as requested. I have added text from JNCC in red. Apologies for the colour, but it seemed the best to use with the blue text from Ian W. If you need any clarification on the additions, please get back to me.

Would it be possible to see the timetable prepared by Phil that was sent through to SSE and discussed at this morning's meeting? It was quite hard to follow that part of the meeting when I didn't have the document in front of me. I understand there are likely to be parts of the document that are not relevant to the SNCBs, such sections could easily be redacted particularly if they are of a confidential nature. However, where the review of the science behind the draft sites and the process up to consultation is concerned, it would be helpful to keep us informed.

From: Paul Rose to Nicola Molloy/Terence Illot (Defra)
Sent: 04 September 2015 13:06
Subject: Official sensitive: HP catch up

I have thought a little more about the Harbour Porpoise work JNCC has lead on behalf of the country conservation bodies and the challenges received from Marine Scotland Science. I have also spoken to Kelly who understands the science much better than I do.

First I want to confirm that I believe the science behind the work is strong. We have identified areas of persistent high density of Harbour Porpoises through the use of existing data. We are not aware of any alternative or additional techniques that could have significantly improved the analysis and the work is strongly supported by the Joint Committee and all of the country nature conservation body boards, many NGOs, the EC and several independent scientific reviewers. This is not to say that the analysis could not have been more robust had more and better data been available and this seems to be at the heart of the Marine Scotland Science concerns.

JNCC has provided a detailed response to the issues raised by Marine Scotland Science. I expect Marine Scotland Science to come back to us again in the near future and probably focus more on a few issues that they regard as critical. They did in fact say in the meeting that an accumulation of small issues had collectively contributed to a greater concern.

One suggestion from MS was to run another form of model (model 2 that had been systematically rejected by the JNCC analysis in favour of the model we eventually used), but this would have at least as many uncertainties and assumptions as the existing analysis and it isn't clear to me how we would deal with any differences between the outputs of the two models. You could favour the results from the better model or you could reject both. I don't really see how either of these outcomes takes us any further forward.

Perhaps the key issue is whether we can prove that we have not been biased towards selecting sites for which we have most data. The model we ran addressed this bias but did it work? Model 2 would definitely not be biased towards existing data but would run the risk of selecting sites that in reality do not contain persistent high densities of Harbour Porpoises. Harbour Porpoises are highly mobile and can be found in a wide variety of conditions. Species of this nature tend to correlate less predictably with the environmental variables we use when modelling distribution and density. For this reason it makes sense to add spatial aspects of the real data for this type of species. This is why model three was preferred to model two. The need to correct for sampling density and effort then becomes very important for model three and this has been recognised and accounted for in the analysis undertaken. Consequently, I do not believe that model three carries an increased risk of selecting sites for which more data exists. It might be worth having some discussion between experts to clarify this point as it seems to be the fundamental difference of opinion behind the challenges from MSS. I will speak to Chris Gilligan, our chairman, about this on Monday 7 September.

Finally, I have spoken to Kelly about the likely delay and costs of running Model II and we think this might be less time and cost than originally thought. I still can't see any value in doing this but understanding the implications still might be useful.

I hope the meeting today achieves some constructive ways forward.

From: Terence Illot to Paul Rose

Sent: 07 September 2015 09:30

Subject: RE: Official sensitive: HP catch up

Thanks very much. The meeting on Friday didn't get very far as the Marine Scotland representatives had no information from Marine Scotland Science on the response to JNCC's explanation. We emphasised the need for them to get the Marine Scotland Science view quickly.

They agreed that this had to be seen as a science led issue – if Marine Scotland Science still have concerns, they agreed that it could be helpful to have a high level meeting involving you, Chris G, Joe Horwood, and senior MSS figures as well as Defra and MS. They were also happy for me to speak to Colin Moffat at MSS.

Do let us know any views that you get from Chris today.

From: Paul Rose to Kelly Macleod/Eunice Pinn

Sent: Thu 10/09/2015 07:59

Subject: FW: official sensitive: RE: porpoise

I had to give a brief verbal feedback to committee and chairman decided to establish a small technical subgroup to defend the HP work and science should the need arise. Terence has been talking about a high level meeting to try and resolve the issue and avoid delay. The group is Chris Gilligan, Bob Brown (chair of MPA sub group and Joe Horwood (a modeller from the NE board). I agreed to give the three of them the model comparison note.

Joe has asked for some background to this note. Please can you explain its status to him as I am unsure myself. We are in the process of trying to mail the three other technical material but colour printing is proving difficult because of the confidential restrictions. Is this something that might be achieved more easily from the Aberdeen end?

Sorry to cause yet more work but hopefully it will pay dividends.

From: Kelly Macleod to Paul Rose

Sent: Thu 10/09/2015 10:49

Subject: RE: official sensitive: RE: porpoise

The paper was produced as part of JNCC & SNCB response to the MS Review. The minutes of a meeting on 17th August state 'Marine Scotland specifically asked whether a comparison between model II and III had been undertaken ...' and consequently there was an 'ACTION: JNCC to provide Marine Scotland with a summary document which provides detailed justification of model III over model II'. Attendees at that meeting were Defra, Marine Scotland, Welsh Government, DoE NI, JNCC, NE, SNH, NRW and Marine Scotland Science.

So the paper was for Marine Scotland and was submitted as part of the response. Myself and Eunice pulled the paper together, of course with review & input from Mark. It's content is drawn from the DHI report and some wider reading – well a little, given the time constraints!

I also attach a paper that I wrote last year which summarises the DHI analysis – Chair has seen this but sending again as might be useful just to refresh on the analysis approach.

Let me know if you need anything further.

From: Mark Tasker to Ian Davies

Sent: Tuesday, September 15, 2015 11:07 AM

Subject: RE: Official Sensitive: May meeting

I am back from leave and slowly catching up with a nasty backlog of email. I agree that minutes are not appropriate for "informal" meetings, but in light of subsequent developments (where the discussions in that meeting have been used by MSS in reviewing the work of ourselves and our sister conservation agencies) I felt it important that the notes made by

JNCC attendees were written down formally, and that we placed on record that an informal meeting had occurred. Kelly was merely offering MSS the chance to correct any of those notes. I note that you have decided not to agree with them, but have not been specific about which bits that you disagree with.

From: Ian Davies to Mark Tasker

Sent: Tue 15/09/2015 09:27

Subject: Re: Official Sensitive: May meeting

I am now on leave, and will not be back in the office until the end of the month.

It is more important that Kate devotes her time to progressing the current situation than to an informal meeting that is now more than 4 months old.

From: Mark Tasker to Ian Davies

Sent: Tue 15/09/2015 13:03

Subject: Re: Official Sensitive: May meeting

I was not expecting anything further at this point, sorry if I gave that impression. MSS position is clear, so I hope is ours.

Enjoy your leave!

From: Michael McLeod [took over from David Mallon MS] to Project Board including Mark Tasker

Sent: Wed 30/09/2015 17:41

Subject: RE: Official Sensitive: Harbour Porpoise Meeting

Apologies for the delay in sending. Please see attached Marine Scotland Science review for discussion on Friday.

From: Mark Tasker to Paul Rose/Marcus Yeo (JNCC)

Sent: Tue 29/09/2015 14:17

Subject: RE: OFFICIAL SENSITIVE MSS review

1. We still have not received a copy of the MSS review, however Marine Scotland “helpfully” announced this morning to the Moray Firth windfarm stakeholders that Kelly was sitting in on – her note was: “MS stated that the result of the review means that **we are not in scenario 1 i.e. the review is not entirely favourable and there remain issues.** As a result, MS consider that we are not ready yet to go into consultation. “
2. Kelly informed Kirsty who in turn asked me if it might be possible to organise our statistical advisors (Chair and Joe (and maybe David Elston??)) to join the meeting coming up this Friday.
3. I replied “I very much doubt that we can muster our chair and senior member of Committee (plus our Aberdeen based statistical advisor) for Friday, but I could try. I would though like to see what the “technical issue” is – if it is a “coding error” as was allegedly found previously, that would really need DHI’s input, not our big-wig statisticians. If on the other hand it is still “don’t like the model approach” then we would need them.”
4. So some warning – I hope that we will get the MSS review this afternoon, and can then assess need – but it would be handy to know what is possible and what is not possible.

Views welcome. I am in Copenhagen but on underwater noise (aka JNCC) business until Thursday, but will watch my email. I’ve copied Marcus in as I cannot see where you are!

From: Mark Tasker to Kirsty McGregor/Nicola Molloy

Sent: Wed 30/09/2015 13:09

Subject: RE: Official sensitive: SSE meeting note 290915

I think what is troubling me now as much as anything is the seeming complete break-down in Project structure. We had a Project Board, with me on it as project manager, with the inter-agency group as the delivery mechanism. All of the reports, although nominally JNCC, are interagency in origin and agreement. The analyses and advice have been derived and agreed among the agencies (with the level of "sign off" of agreement varying depending upon importance of the issue). The Scottish review is of inter-agency work, yet it seems that Michael is trying to contact Paul as a JNCC Director – I suspect that he is not doing the same to the relevant NE, NRW, SNH and DoENI equivalents. Under the agreed structure Paul is not responsible to them or for them (although some issues have been discussed at the inter-agency Chief Scientists group) – so either Michael is treating this review as if it is just a JNCC thing or there is another misunderstanding. Paul is not the "Director responsible for the work" – the Directors are all responsible collectively! None of the project structure of course gets in the way of the relationship between each Government and their respective agencies.

If the structure is now changed I think that it needs to be decided explicitly. From a personal point of view, am I still responsible for the links to the collective working level of the agencies or am I just responsible for JNCC staff? I thought there had been agreement across the Governments on the original structure, so any change ought to have the same consideration and agreement.

I realise that this is all slightly out of your control, but it would be helpful if you (or Terence?) could get some form of agreement across the Governments as to the way forward with the project structure and reporting/responsibility lines.

From: Kelly Macleod to Kirsty McGregor/Nicola Molloy/Mark Tasker

Sent: Wed 30/09/2015 13:47

Subject: Official sensitive: MSS review for info

Received an email from Phil Gilmour (about something else) and took the opportunity to enquire re. whereabouts of the MSS review. He claims that nobody said it would be circulated yesterday and adds 'there is a commitment to pass once the MSS Planning and Policy staff have reviewed and understood and that should be very soon'

My notes taken during the meeting are clear and underlined on this point....

From: Mark Tasker to Michael McLeod

Sent: Wed 30/09/2015 21:19

Subject: RE: Official Sensitive: Harbour Porpoise Meeting

Thanks for this – there do not seem to be any new issues here since the last review, so I guess it is a matter of decision around the differences of opinion, and of the risks of action/inaction. I've no doubt that each country will view these risks differently!

See you on Friday (I hope)

From: Eunice Pinn to Henrik Skov/ Stefan Heinänen

Sent: Thu 01/10/2015 08:04

Subject: Official sensitive: Contract C13-0241-0643

Marine Scotland have reviewed the work you did for us in Contract C13-0241-0643 and have called into question a number of key elements which we need to get resolved as soon as

possible, with a time frame of a week has been indicated. I have attached the review in full and would very much appreciate you finding the time to go through it and provide an answer to the technical points raised. From my reading of the review these need in the first instance at least to answer the following:

1. The issues raised about the modelling approach utilised. They are concerned that the areas identified being driven by effort and suggest that the statistical preference justification for the model is weak. These are largely expanded upon and explained in appendix 2. I know this has been dealt with previously but it would be worth going through again.
2. The issues raised about a potential bug in the code. Please can you check whether this is actually the case.
3. Consideration of how the reviewers comments were dealt with. Again we know you have already helped respond to this but it appears we need to maybe expand on the modelling methodology.

If it would help to discuss this I can be reached on my mobile (number is below) as I'm currently in the Hague at a meeting. Please be aware I may not respond immediately but can leave the meeting and ring you back.

Thanks very much in advance for your help with this.

From: Terrence Illot to Paul Rose/Mark Tasker

Sent: Thu 01/10/2015 08:34

Subject: FW: Official Sensitive: Harbour Porpoise Meeting

Clearly, it would be very helpful to have your views on this before the Friday meeting.

Paul – we agreed that, if this is a dispute over scientific methodology, we should seek to hold a high level science meeting including you, Mark, Chris Gilligan, Joe Horwood, and Marine Scotland Science. Colin Moffat, head of MSS, has also agreed to do that. It would be useful to have your view on whether that is still appropriate. I guess it depends on whether you and Mark consider that the MSS analysis is valid and that they have identified real concerns, or are simply restating points that you consider have already been adequately addressed.

From: Greg Mudge (SNH) to Kelly MacLeod

Sent: 06 October 2015 12:13

Subject: RE: Official sensitive: Response to MSS

SNH Directors are content with the response. I understand there may be some further tweaks from DHI and Sarah/Karen/John are about to send you, as 1 submission, some further edits from SNH.

From: Kelly Macleod to Mark Tasker

Sent: Tuesday, October 06, 2015 12:24 PM

Subject: Official sensitive: SNH advice

I had a call from Sarah at SNH today who wanted to know 'how much flexibility is there in their advice?' - i.e. can they change it? ! Not unexpected given the discussion with Karen yesterday – although at that point they were adamant they were not changing the advice.

However, this morning Greg & Katie have suggested that they could alter the OMF site so that the boundaries follow the top 10% and do not align with the NCMPA. Thereby appeasing MSS criticism of the approach to align and consider land based data.

My response was:

1. This issue is one of the less critical ones!
2. Changing the boundary to a smaller site gives MSS more fuel to get rid of it altogether – the area will be smaller, the abundance will be less, and the drop below the 1% of MU population will be evident. i.e. hard to make the case this is a B site
3. If it's altered, and stays as a proposed site, makes the situation worse for developers in terms of scale of impact on developments
4. Perhaps they could make it clear in the response to MSS that boundaries are not fixed and may be reviewed post consultation pending stakeholder views.

I said I'd let you know – they'd appreciate your thoughts!

From: Mark Tasker to Kelly Macleod/Eunice Pinn

Sent: 06 October 2015 12:38

Subject: Re: Official sensitive: SNH advice

Hi both

Email connection not good here so not sure when this will send. SNH/MS need to think about JR and possible continuing infraction as well (though the latter might just turn into scientific reservation for a while). There might also be knock-on effects on other sites (renewables pressure seen to have worked).

This would also give a good reason to Defra to split the consultation as reconsidering Moray Firth would take a while.

Personally I think this is a post-consultation option. It would be much the cleanest that way, but that is not a big driver with MS kjust now.

Will try to call later, meeting just restarting

From: Eunice Pinn to IAMMWG

Sent: 06 October 2015 13:28

Subject: RE: Official sensitive: MMS response

Tom raised the issue of persistence being 3 rather than 5 years under answer 8. Because I thought it was actually much longer, I went back to JNCC report 565, which says

'The confidence over each of the large contiguous persistent top 10% areas was then assessed based on three grades of confidence in the majority (>50%) of each area defined as:

High = the CV was less than 0.3 for 10 or more years;

Moderate = the CV <0.3 for 5 to 9 years; and

Low = where CV <0.3 for less than 5 years'

So I have altered the text to say 10 or more years but it doesn't mention the 1999 cut off. So I am now worrying that what is actually being referred to is the fuzzy logic stage rather than what we did. Needless to say, I prefer stating what we did!

Henrik's answer has arrived whilst I was typing this so I'll deal with that and then send through a collated version.

From: Kelly Macleod to IAMMWG

Sent: 06 October 2015 13:44

Subject: RE: Official sensitive: MMS response

The sentence is referring to the fuzzy logic stage not our criteria for defining AoS & sites. In my mind, it's at the fuzzy logic stage that the influence of repeated surveys in an area can give rise to bias....Hence, pointing out that the fuzzy logic needs a grid cell to have top 10% density in 5 years (out of the 18) and the most recent of these has to be post 1999 – if the cell doesn't meet this then it drops out of the 'persistent area'.

The 3 year cut-of in the DHI report has caused confusion on many levels!

From: Jim Robinson (NE) to Eunice Pinn/Kelly Macleod

Sent: 06 October 2015 13:46

Subject: RE: Official sensitive: MMS response

Hi Eunice and Kelly,

No further comment from me. I'm not in a position to second guess the statistical arguments as I'm not an expert on that area. The tone of the document is greatly improved and it's a thorough justification of the modelling and procedures.

A brilliant job which can't have been easy. Well done and thanks!!

From: Mark Tasker to Eunice Pinn/Kelly Macleod

Sent: Tue 06/10/2015 22:09

Subject: Response to MSS second edition of comments

After a lot of editorial work today by Eunice and Kelly, please find attached the final version of our response. This has received input from staff of our sister SNCBs and has also been seen in a near final version by SNH Directors. I have turned this into a pdf but we obviously can supply a word version if required. You will see that we have brigaded answers by topic (as I said we would at the meeting last Friday), and colour-coded the headings. These colours are echoed in the attached version of the MSS review to make it clear where we have responded to each point.

I think that it would be helpful if Ian Boyd had this in front of him for tomorrow's call.

From: Eunice Pinn to IAMMWG

Sent: 07 October 2015 08:40

Subject: Official sensitive: response to MMS review

Please find attached the response that went to the PB with regard to the MMS review.

From: Kelly Macleod to Steve Gibson (JNCC)

Sent: 08 October 2015 11:43

Subject: Official sensitive:

I attach a summary of the reviewers comments and how DHI dealt with them. Also, the reviews in case Jo hasn't seen them. The reviews were conducted on the draft report and then comments dealt with, leading to the final report. Because of time constraints, the final report was not sent to the reviewers for them to confirm that they were content with how their comments had been addressed. However, IAMMWG did review the final report and were content and considered DHI had done the best they could – this is probably minuted somewhere if you need that.....

I do have numerous emails between DHI and David Elston and I'm afraid to say that in the end, it was clear they just were not going to agree and David was not satisfied. I can send these if you need. From a quick re-read, it would appear David's issues are different from the

statistical points raised in the MSS review....so, conflicts between statisticians which is not uncommon (happened with the JCP review too)

From: Eunice Pinn to David Elston

Sent: Fri, 9 Oct 2015 12:55

Subject: official sensitive: MS review of DHI contract work

Tried to ring but you appear to be away at the moment.

As the work to identify possible SACs for Governments has developed, Marine Scotland asked MSS to review the DHI work underpinning the proposed sites. I have attached their review and our response which were discussed at an intergovernmental project board meeting today. It has subsequently been agreed that JNCC should seek additional independent advice from a statistical expert and, as you were involved in the project earlier and are therefore familiar with the approaches taken, we would very much appreciate your rapid input if you are available.

MSS think they have identified a coding issue (see answer 9 and further information in the appendix in the Second Response paper), and feel that 'Group' (in this case time periods) should have been incorporated as a main effect in the modelling. Thus enabling large changes in harbour porpoise density within the 6 years time groups to be taken into account. Biologically, large change in abundance are unlikely to have occurred, although changes in distribution did at some point between 1994 and 2005, but is the approach DHI took statistically sound?

DHI have responded to this issuing saying that although the inclusion of the factor as a main effect **is usual**, it is **not a requirement** and in this case, was considered inappropriate given the nature of the data and task. Not sure how relevant this is, but in earlier discussions of the work (IAMMWG meeting back in November 2013), DHI noted that when comparing densities in two time blocks, 1994-2003 to 2004-2011: 'The shift in higher density from the northern North Sea to southern North Sea evident from the two SCANS surveys was not that clear from the two DHI groupings. However, the change may have occurred late 90s and so may be masked by the 2003/2004 division. Changes in prey distribution may likely to be the key driver. Would be interesting if the timing of the shift could be identified.'

JNCC would like to know whether the approach adopted by DHI was reasonable (even if not necessarily perfect). There is a further intergovernmental policy meeting on Wednesday 14th October and if at all possible, we would appreciate some feedback in time for that.

Unfortunately, I am going on leave in the next few hours. If you would like to discuss this further, please ring Mark on [REDACTED]. He will be available on Monday.

From: David Elston (BIOSS Statistician on contract to JNCC) to Mark Tasker/Eunice Pinn

Sent: 09 October 2015 17:02

Subject: Fwd: official sensitive: MS review of DHI contract work

Sorry, it's taken me longer to get onto this than hoped due to the need to talk to a colleague who is about to go on leave.

As I discussed with Eunice earlier this afternoon, I had a discussion with Rob Fryer the MSS Senior Statistician about this before he sent in his comments, so what we say should not be considered independent.

In order to try to help as best I can, I've looked back at my previous comments again, my final round of written comments (typos and all) as follows, which I do not think I ever received any response to from DHI.

Re the point made by Eunice below, I can confirm with certainty that there is a potential problem in the R coding.

My own code demonstrating this is attached.

Whilst DHI are correct to state the omission of the main effect of the categorical variable, what I have called "group.f+", is not necessarily a problem, the difficulty is that Rob Fryer's graphs and my own calculations indicated that this could be a serious problem. Hence unless both models have been tried then we do not know whether we should be worried or not.

Re the bits in Appendix 2 of the file "MSS review.... .pdf" in blue highlight which Mark refers to, I can't see any blue highlights - file as sent by Eunice attached, please advise page / paragraphs to look at.

From: Eunice Pinn to Statistician 1 (who wishes to remain anonymous)

Sent: 09/10/2015 16:35

Subject: Re: official sensitive: MS review of contract work undertaken for JNCC

Tried to ring but you appear to be away at the moment. I think you are aware that JNCC let a contract on behalf of the Statutory Nature Conservation Bodies back in 2013 which was published earlier this year as a JNCC report (see <http://jncc.defra.gov.uk/page-6991>). After completion of the contract, the SNCBs used this work as the evidence base for identifying possible harbour porpoise SACs for Governments. Marine Scotland have since asked MSS to review the DHI work underpinning the proposed sites. I have attached their review and our response, which were discussed at an intergovernmental project board meeting today. It has subsequently been agreed that JNCC should seek rapid additional independent advice from a statistical expert and we would very much appreciate your input if you are available.

There is no need to read all of both documents. The key bits on this issue are highlighted in light blue and in Appendix 2 of the MSS document and in equivalent response sections in our document. The board today wanted our response tightened up so the wording will change a little, for which we would like your input to this redrafting if possible.

MSS think they have identified a coding issue (see answer 9 and further information in the appendix in the Second Response paper), and feel that 'Group' (in this case time periods) should have been incorporated as a main effect in the modelling. Thus enabling large changes in harbour porpoise density within the 6 years time groups to be taken into account. Biologically, large changes in abundance are unlikely to have occurred, although changes in distribution did occur at some point between 1994 and 2005, but is the approach DHI took statistically sound?

DHI have responded to this issuing saying that although the inclusion of the factor as a main effect **is usual**, it is **not a requirement** and in this case, was considered inappropriate given the nature of the data and task. Not sure how relevant this is, but in earlier discussions of the work, DHI noted that when comparing densities in two time blocks, 1994-2003 to 2004-2011: 'The shift in higher density from the northern North Sea to southern North Sea evident from the two SCANS surveys was not that clear from the two DHI groupings. However, the change may have occurred late 90s and so may be masked by the 2003/2004 division. Changes in prey distribution may likely to be the key driver. Would be interesting if the timing of the shift could be identified.'

JNCC would like to know whether the approach adopted by DHI was reasonable (even if not necessarily perfect). There is a further intergovernmental policy meeting on Wednesday 14th October and if at all possible, we would appreciate some feedback in time for that.

Unfortunately, I am going on leave in the next hour or so. If you would like to discuss this further, please ring Mark on [REDACTED] (also copied into this email). He is currently travelling, but will be available on Monday.

From: Statistician 1 to Eunice Pinn
Sent: Friday, October 09, 2015 16:55
Subject: Re: official sensitive: MS review of contract work undertaken for JNCC
I'm in [REDACTED] this week...travelling to [REDACTED] tomorrow/Sunday for another course.

I can try to find some time to answer your question... [REDACTED]. So..perhaps Sunday/Monday. I don't know how long it will take. Maybe 15 minutes....maybe 2 hours to read it all and give some feedback? I assume this would be on a commercial basis?

From: Mark Tasker to Statistician 1
Sent: Friday, October 09, 2015 16:58
Subject: Re: official sensitive: MS review of contract work undertaken for JNCC
You missed Eunice going on leave by about 5 minutes! Thanks for your response. My guess is 2 hours max, probably much less.

Sunday/Monday fine –
Hope that helps

From: Statistician 1 to Mark Tasker
Sent: Friday, October 09, 2015 18:31
Subject: Re: official sensitive: MS review of contract work undertaken for JNCC
Yes..that it was I thought too. But sending an email with some text always consumes some time. But I will limit it to 2 hours.

From: Mark Tasker to Statistician 1
Sent: Friday, October 09, 2015 19:02
Subject: Re: official sensitive: MS review of contract work undertaken for JNCC
That is great thanks. If you need to talk, my numbers are [REDACTED] and (home on Sunday and Monday early) [REDACTED]. We are after a view on reasonableness of approach rather than absolutely the best approach – though of course if you do think the approach is that....!

From: Statistician 1 to Mark Tasker
Sent: Friday, October 09 October 2015 19:22
Subject: Re: official sensitive: MS review of contract work undertaken for JNCC
Can I just ask a quick question. I don't have the final report but they were referring to a 2015 document from 2 Danish. I downloaded it and glanced through it. I haven't read the pdfs that Eunice emailed me yet....will do so tomorrow in the plane.....but do I understand it well that hurdle models were applied?

I've been teaching hurdle models the entire day today. In such a model you analyse the data with a Bernoulli GLM/GAM. And also with a presence-only model. I saw the word Gamma and offset somewhere in the pdfs. Their real reason for using a Gamma (i.e. density)...

guess.... is that otherwise it would have to be a zero truncated Poisson with an offset. And mgcv can't do a zero truncated Poisson model.

But both the analysis based density and an analysis based on counts + offset assume that if you double the effort you double the numbers. $1/2 = 10/20 = 100/200$. The same for using an offset. Quite often doubling the sample effort does not mean twice the number of animals. Use sampling effort as a covariate in that case.

Also..quite often people forget that once you have fitted the two components of a hurdle model (i.e. the Bernoulli GAM and the Gamma GAM) you have to glue them again together in order to calculate the mean values and the variance of the hurdle model. For a Gamma hurdle that is:

$$E(\text{density}) = \pi * \mu / (1 - \exp(-\mu))$$

π is the outcome of the Bernoulli GLM and μ the mean of the Gamma GLM. Model predictions and model validation should be based on the Pearson residuals of the two 'glued-together' models..and not so much on the individual components. Quite often people forget this and write their story only around the two individual components.

I also saw the word 'spatial' correlation somewhere...and a discussion about random effects...and variograms not showing patterns. The analysis approach:

GAM --> check residuals --> no spatial correlation --> are we lucky

is in fact still pseudo-replication. Same if you use $s(X_{km}, Y_{km})$ in the fixed part of the model. A priori you know that there is dependency...so you should start with a model that contains spatial correlation. However....this would mean an INLA analysis....and lots of numerical misery for this type of data. What they have done is pragmatic. I have done the same in the past. But bottom line is...it is quick and dirty.

Ok..I will read Eunice's email tomorrow and will try to answer your question.

From: Mark Tasker to Statistician 1

Sent: 11 October 2015 21:30

Subject: Re: official sensitive: MS review of contract work undertaken for JNCC

Yes hurdle models were used. I would need to work carefully through your logic and compare with what DHI did, but it sounds at first read through at least roughly what they did. The work had to be quick and I think DHI really struggled with the nature of the data and deliberately did not spend too long on trying to make a more complex model work once they realised that the first attempt at this was not working. The debate though is more about a particular detail as Eunice outlined this has been described as "miscoding" but I actually think the debate is around something on the statistical nature of the data (in other words DHI argue one thing statistically and code correctly for it, while MSS reviewers argue another thing statistically and are then saying "miscode").

I'm happy you are on the case!

From: Statistician 1 to Eunice Pinn/Mark Tasker

Sent: 11 October 2015 10:00

Subject: Re: official sensitive: MS review of contract work undertaken for JNCC

So..in essence you are asking me whether the following model is valid.

y is response
x is a continuous covariate
z is a factor...

M1: $y \sim s(x, \text{by} = z)$

And the referee is saying that it should be this:

M2: $y \sim s(x, \text{by} = z) + z$

And the referee is also saying that M1 is faulty.

The way I teach this on our GAM/GAMM course is by saying that model M2 is the preferred one....but that model M1 is technically possible. Each smoother is centred around 0 to make the identifiable. The factor(z) will then change the intercept depending on the overall average per level.

What happens if you fit model M1? If the mean values of y do not differ per z level (your Group I believe) then there is no problem. If the average does differ per level of z, then two things may happen:

1. The smoother may try to capture it....if it can. For example if the higher values are on one side of the gradient x..and the lower values of the z level are on the other side of x. By changing the shape of the smoother it may be able to capture the z effect.
2. The smoother cannot capture it (e.g. because the mean values in y are not linked to x)....then you have a problem as your residuals will contain a residual pattern....and your model is faulty.

It would have been so easy to fit both models M1 and M2...compare them with an AIC/GCV/whatever and see which one is better. Or go for model M1, and compare the smoothers from M1 and M2 (see how much the smoothers change) and the residuals.

Do I agree with omitting Groupwell...that is not your question. Your question is a technical question...which translates as 'can we fit model M1'. In my understanding...the answer is 'yes you can'. Would I ever do it myself...that is a different question. Is it dangerous to do...that is also a different question.

I was then puzzled by the referee comment and criticism with respect to this point. The referee feedback in the entire report reads as if this person knows what he/she is doing. It is a person from Marine Scotland....which is formerly the Marine Lab in Aberdeen, isn't it? The idea that this could be feedback from Rob Fryer made me worry (as Rob is quite good with GAMs). Am I teaching the right thing? Am I giving the right answer to you? So..I did a bit of digging.

This is the help file from Simon Wood (?gam.models).

Note that when using factor by variables, centering constraints are applied to the smooths, which usually means that the by variable should be included as a parametric term, as well.

Note the word 'usually'. That confirms that my answer is correct. In most examples you would indeed include the z term. Technically...it can be omitted. So..that answers your question. But do you want to do this? I don;t know...I don;t have the data and I therefore don;t know. Besides...that was not the question.

I am still puzzled by the simulation example provided by the referee that shows that z should be used. I would be very interesting to see the R code of this simulation study. I guess something else is playing a role here. Perhaps you can ask for the R code? However....the word 'usual' in the text from Simon Wood already answers your question I guess. It translates as: 'Do it..unless you have good reasons not to do so.'

I thought I could do this in 5 minutes....the reality is that I started this email at 10.05...and now it is 10.47. If it would have been 5 minutes I would have said: Here is the answer for free. If you don't mind I would like to charge you for half an hour. Need to look up how much I charged you last time. The thing is that I get bombarded with emails that all take 15 minutes to answer..or an hour...half a day. Being self employed means that you have to draw a line somewhere...and most of the time that is at half an hour.

PS...I do agree with the referee that spatial dependency has been ignored.

From: Mark Tasker to David Elston

Sent: 12/10/2015 08:28

Subject: Fwd: official sensitive: MS review of DHI contract work

Thank you for your email and for taking the time with this. I understand the non-independence of your views – I hope that you let Rob know the same as well.

First the easy question at the end of your email: The whole of Appendix 2 should be viewed as being in the “blue” category, along with some sentences in the main part of the review.

Thank you also for your set of late comments on the DHI process – you should have got a response to those – or at the very least we should have an audit trail demonstrating that your issues had been considered and satisfactorily dealt with. I do not know if such exists (my short-coming as I was not closely involved with the modelling) – I hope that Eunice will be able to help when she returns from leave.

Coming at this cold, I am reading this is perhaps a little more basically. We use models to attempt to describe a rather variable natural world in a somewhat strict mathematical sense, with the statistics being used to describe the variability. In this case, the model takes existing information and extrapolates it to describe unmeasured parts of the natural world (porpoise distribution). My understanding from recent replies from the modellers at DHI is that in effect “group.f+” is related to the overall abundance of porpoises (within each 6 year time period/Management Unit). If it is included as in the models then that allows for any overall changes in abundance (within each 6 year time period/Management Unit), while the model actually used by DHI assumes that abundance does not change. So the “reasonableness” of each version of the model depends whether or not that assumption on no overall change in abundance is justifiable or not.

The only evidence that we have on this comes from two large scale abundance surveys approximately a decade apart that found no significant difference in relevant population abundance figures. Porpoises are also relatively long-lived, low reproductive species (maximum on calf per year), so I think this assumption is reasonably justifiable.

I do though agree that it would have been ideal to test this assumption (by running the model in a way that examines both Rob's and your potential problems). We are where we are though, and I guess we may provide this as an option to our policy makers if they wish to be doubly sure of the model, I think that you are confirming that the word “usually” (as used in DHI response in Appendix 2 under Bug in the R code “*In the help file it states that usually it should be included as a main effect*” does not mean “must” if there is good reason to not be worried.

I hope this makes sense – if not I would be very happy to chat – it has taken quite an effort to get my head around this and it is entirely possible that I have arrived in the wrong place!

From: Mark Tasker to Statistician 1

Sent: 12/10/2015 09:28

Subject: Re: official sensitive: MS review of contract work undertaken for JNCC

Thank you for this.

As I said before Eunice is on leave, so for the moment you have me!

I have to admit to having struggled a little through your explanation.

The way that I am reading this is perhaps a little more basically. We use models to attempt to describe a rather variable natural world in a somewhat strict mathematical sense, with the statistics being used to describe the variability. In this case, the model takes existing information and extrapolates it to describe unmeasured parts of the natural world (porpoise distribution). My understanding from the modellers at DHI is that in effect the factor z is an overall abundance of porpoises (within each 6 year time period/Management Unit). If it is included as in your model M2 then that allows for any overall changes in abundance, while model M1 assumes that abundance does not change. So the “reasonableness” of each model depends whether or not that assumption on no overall change in abundance is justifiable or not.

The only evidence that we have on this comes from two large scale abundance surveys approximately a decade apart that found no significant difference in relevant population abundance figures. Porpoises are also relatively long-lived, low reproductive species (maximum on calf per year), so I think this assumption is reasonably justifiable.

I do though agree that “It would have been so easy to fit both models M1 and M2...compare them with an AIC/GCV/whatever and see which one is better. Or go for model M1, and compare the smoothers from M1 and M2 (see how much the smoothers change) and the residuals.” We are where we are though, and while I guess we may provide this as an option to our policy makers if they wish to be doubly sure of the model, I think that you are confirming that the word “usually” does not mean “must”!

Please feel free to charge a little more than the half hour that you want to charge – I am sure that you needed more thinking time than just the time to write your email, and besides which you have sent other emails as well. I will have to leave payments etc to Eunice to deal with when she gets back from her leave –please rest assured that we will be fair!

Thanks again

From: Statistician 1 to Mark Tasker

Sent: 12/10/2015 10:01

Subject: Re: official sensitive: MS review of contract work undertaken for JNCC

Bottom line is: 'Usual' does not mean 'must'.

The way that I am reading this is perhaps a little more basically. We use models to attempt to describe a rather variable natural world in a somewhat strict mathematical sense, with the statistics being used to describe the variability. In this case, the model takes existing information and extrapolates it to describe unmeasured parts of the natural world (porpoise distribution). My understanding from the modellers at DHI is that in effect the factor z is an overall abundance of porpoises (within each 6 year time period/Management Unit). If it is

included as in your model M2 then that allows for any overall changes in abundance, while model M1 assumes that abundance does not change. So the “reasonableness” of each model depends whether or not that assumption on no overall change in abundance is justifiable or not.

That is 100% correct. The factor(z) term is like a 1-way anova. Each level (i.e. each 6 year time period) represents the difference in mean valuyes to the first 6-year period. The motivation of DHI for dropping it is as follows. In a model with $y \sim \text{factor}(z) + s(x)$ you may have the situation that the factor(z) grabs/takes/steals some information from x. This may happen due to collinearity. They wanted the pure x effect...hence their choice. But.....if there is really a factor(z) effect...and if it is not in the model...then $s(x, by = \text{factor}(z))$ will try to catch it.....hence the referee comments.. It means that the smoother may not represent only x...but also a hidden z effect.

Formulated differently...

1. If there are two important covariates x and z...and they are collinear....then they will fight/compete with each other for the information. Bad.
2. If there are two important covariates x and z...and they are not collinear....then all is good. Provided you include them both.
3. If only x is important and you fit a model with x and z. Not a problem.....z will not be significant..but who cares.
4. If x and z are important and you fit a model with only x. Then a referee should question this..as happened.

In scenario 4....is x is fitted as a smoother...then it may capture some of the z effects.....hence the word 'usual' in Simon Wood his text.
And it should be easy to check all this with an AIC.

The only evidence that we have on this comes from two large scale abundance surveys approximately a decade apart that found no significant difference in relevant population abundance figures. Porpoises are also relatively long-lived, low reproductive species (maximum on calf per year), so I think this assumption is reasonably justifiable.

I am not familiar enough with the data to comment on this.

I do though agree that “It would have been so easy to fit both models M1 and M2...compare them with an AIC/GCV/whatever and see which one is better. Or go for model M1, and compare the smoothers from M1 and M2 (see how much the smoothers change) and the residuals.” We are where we are though, and while I guess we may provide this as an option to our policy makers if they wish to be doubly sure of the model, I think that you are confirming that the word “usually” does not mean “must”!

Please feel free to charge a little more than the half hour that you want to charge – I am sure that you needed more thinking time than just the time to write your email, and besides which you have sent other emails as well. I will have to leave payments etc to Eunice to deal with when she gets back from her leave –please rest assured that we will be fair!

Ok.... Let me know if you have any further questions. I'm at [REDACTED] this week...but will have time to answer emails in the evenings.

From: David Elston to Mark Tasker

Sent: 12 October 2015 10:17

Subject: Re: official sensitive: MS review of DHI contract work

In the simple case Rob and I have worked with, the problem with omission of "group.f+" occurs when there is a difference in mean values between the two levels of "group.f". The situation becomes more complicated with bigger models, since there may be variation in mean values of covariates between levels of "group.f", i.e. differences between survey period, which might induce a requirement for different parameter values for each group in the modelling even though the means ignoring the covariate are similar. [If the data in (x,y) format are (1,1),(2,2),(3,3) for group 1 and (4,1),(5,2),(6,3) for group 2, then mean values of y are 2 for both groups, but a model containing x as a covariate would need a group main effect to fit the data well].

The majority of Rob's comments in Appendix 2 pick up on concerns which I also had, though as stated they are not independently written. I think the first line of my comments of 6th March 2014 stating that I did not want to be associated with the report is informative: my assessment was that DHI's expertise in oceanographic modelling offered the potential to construct covariates that might prove useful to modelling the spatio-temporal distribution of harbour porpoise, but that did not seem familiar with analysing response variables of the type required by this project.

In particular, I was never happy with DHI's insistence of chopping the data into discrete time slices, nor with the bundling of several modelling decisions into 4 'packages' without trying to tease out what made one bundle appear better than another.

I did accept DHI's proposal to split the modelling into two parts (modelling presence/absence; then modelling density given presence) as a valid way of tackling the analysis although not the way everybody would choose to do it.

I'm certainly happy to talk through any issues that you would like clarification over.

From: Mark Tasker to David Elston

Sent: 12 October 2015 12:16

Subject: Re: official sensitive: MS review of DHI contract work

Thanks again.

I understand your point about difference in mean values between the two levels of "group.f" but I am struggling a little to see why this would occur with harbour porpoises. "Group.f" seems to be associated with annual abundance and I would expect this figure not to behave in a differing way between time periods (their biology would remain reasonably constant). I can see that this might be different for some of the commercially-harvested fish population statistics that Rob might usually look at, or short-lived, potentially highly reproductive mammals whose abundance that might respond rapidly to environmental variation. I think that this is the angle that the DHI response is coming from – in other words they are modelling based on an understanding of the biology of the species in question.

On the discrete time-slices issue, we do know that porpoises move in their geographic distribution over at least decadal scales, with some reasonable evidence that there is seasonal movement too (this not just from the modelling). Would this movement not have been lost if the data had not been cut up? I would agree that it would be good to tease out the factors behind the differences between the bundles, however we were (and still are) under extreme time pressure and we rather wanted a model that was reasonably good and justifiable rather than a perfect model. (It appears that Scottish Government may now have changed their mind and are demanding perfection – in which case they are likely to have to fund this themselves!)

Given that the majority of Appendix 2 are similar to yours, how do you respond to the comments in red – (they were largely written by DHI with some light editing to improve the Danish English). My guess is that these responses would be largely similar to those that you should have got to your last set of advisory comments.

I am just about to catch a plane southwards – I may try calling later depending on your reaction. Can you remind me of your numbers?

From: Mark Tasker to Joe Horwood (JNCC Member) and Chris Gilligan (Chair, JNCC)

Sent: Monday, October 12, 2015 2:25 PM

Subject: Statistics/coding issues

Please see attached email trails. These were started by Eunice (now on leave for two weeks at my prompting after Friday's meeting).

Eunice first approached David Elston (our statistical advisor) but found that he had been talking closely to Rob Fryer at Marine Science Scotland, so could not be counted as independent of the discussion. After that, she approached [REDACTED], but found that he had been contracted by the Moray Firth developers (Marine Scotland have given them all the papers) so could not take on work from ourselves. Then Statistician 1 was approached – he was willing and able to respond. David Elston also responded (he is in fact still on contract to ourselves for advice if needed when dealing with responses to the consultation (when it happens). I have corresponded with both, essentially (I hope) using the arguments that you so usefully provided me with on Friday.

The email trails are fairly self-explanatory.

I have included Statistician 1's latest response separately from my earlier response to him; I think Statistician 1 is supporting our general logic though he admits not knowing much about harbour porpoises.

David's responses are though more concerning, and I was a bit alarmed to find that some of his earlier concerns appear not to have been explicitly responded to. There is no doubt that MSS have drawn upon his earlier concerns in putting together their response. This puts me in an awkward situation. MSS can now claim that even our statistical advisor had concerns (and no doubt those concerns may well have arrived with the windfarm developers too – the east coast of Scotland does all talk to each other!). It might be that I do get a grudging "ok" from David in the end, but if not I am needing a bit of guidance as to what to do next. I guess that we have to tell Defra of this story, but do you think there is anything else we can do before then?

We need to get something to Defra soon!

PS I am in meetings for next 2 days, but should be able to call during breaks.

From: Joe Horwood to Mark Tasker

Sent: 12 October 2015 18:15

Subject: Re: Statistics/coding issues

Text below is from [Modelling Joint Cetacean Protocol Datasets for the purposes of identifying persistent high density areas of harbour porpoises: approach and assumptions.]: The final model for each MU was a GAM with a three-way interaction term between coordinates (X and Y), time period (as a factor) and the habitat variables. The inclusion of time periods captures any changes in the distribution of porpoises over time. An interaction

with coordinates was added to explain some of the geographical variation not accounted for by the habitat variables alone.

The statisticians below are referring to “smoothers” is this different from the interaction term? I’m lost in this as I don’t use R or the notations used below.

What I was looking for was, first, a clarification of what the 2 models are (ie the DHI one and the one implied by using “by”) in statistical english {as in the text above} not code. Then to consider their biological meaningfulness. This is important because we know that model 3, as fitted, gave the best performance of those considered. If there is reason to believe that model 3 has a decent biological basis then I would be content with it; assuming, as we have been told, the residuals lack pattern.

Some of the discussion has focussed on the problems of not including z as a factor if it does change between periods. But DHIs comment (that I can’t confirm), that inclusion would bias the results towards effort, appears to push in the other direction, and has been ignored below.

Given where we are it’s a pity they just didn’t statistically test for it; but I can well understand why given the slow population growth and very noisy estimates.

You refer to David Elson comments but they are not included. We know about model 4 (and I am content it’s not used), but apart from the z discussion MSS’ other points don’t seem very strong.

I don’t know if that helps any!

From: David Elston to Mark Tasker

Sent: 12 October 2015 19:07

Subject: Re: official sensitive: MS review of DHI contract work

Perfection is way out of sight - would have required data collected for the purpose, as well as addressing modelling issues and protected area issues being discussed now.

I think DHI’s argument that the means should be similar is exactly the wrong way to go about addressing the coding bug issue, and repeats their approach to my comments previously - if you don’t like a comment, argue and hope you get away with it - applied for example to my stated concerns about not teasing apart the differences between the classes of models they used (numbered 1 to 4) or adequately justifying model 3.

Re the coding bug, what’s required is some evidence-based investigation.

In the attached addendum to my previous code, I’ve added a covariate whose mean values differ between the levels of group.f, and the problem identified by Rob seems to melt away. Not corroborative that this carries over to the modelling DHI did, but suggestive.

Re the discrete time slices, it may be that there is decadal variation, but that’s not to say the steps (if any) coincide with those used by DHI (selected by when observations made, not what they were). I always thought they should model space-time as a continuum, and that if gaps were a problem then fitted values would come with large associated errors. The biggest problem with the 3-slices approach is that, unless there is substantial variation in fitted values due to covariates varying within time slices, then the fitted values for each spatial sector effectively come in sets of size 3 (values for years within time slice 1, virtually all equal; values for years within time slice 2, virtually all equal; values for years within time slice 3, virtually all equal). This variation within time slices was one of the things I was trying to have DHI investigate. Also requested was investigation into the magnitude of

covariate-driven variation in fitted values as against variation driven by the spatial smoothers: without that, it is not clear whether the covariates (oceanographic variables / habitat descriptors) are the principal drivers of difference in the fitted values, or whether the principal drivers are the spatial smoothers (encapsulating unexplained variation). If the covariates are the principal drivers, then it's possible to pick out areas as being likely to be highly suitable for harbour porpoises even if few observations were made there. If the spatial smoothers are the principal drivers, then it's likely the areas picked out by the models as most suitable for harbour porpoises will be areas that have at least some observations, amongst which both presence and density tend to be higher than elsewhere.

I'm appreciative of the predicament you find yourself in, and will continue to do the best I can to support, but NB that I'll be away from my office tomorrow and may not have much if any access to email during the day.

From: Chris Gilligan to Mark Tasker/Joe Horwood

Sent: Tue 13/10/2015 12:46

Subject: Re: Statistics/coding issues

1) My view of the issue under discussion: the question centres upon whether it is necessary to include a main effect (due to a factor) when the main effect is included as an interaction in a model.

2) The consensus emerging from Statistician 1's review is that while this is not usual, it is possible to fit a model with a missing main effect. Discussion with a colleague here who specialises in GLMs (but not GAMs) evoked surprise at omitting the factor main effect but a simple simulation suggested it was possible.

BUT, I think we ought to consult further on this to seek the views of several practicing statisticians - preferably with the support of some simulations. Do you have anyone, who could do this? By all means report the interim conclusion from Statistician 1 but then update.

I will forward some information for Joe's benefit on Smoothers.

From: Mark Tasker to Chris Gilligan

Sent: Tue 13/10/2015 13:03

Subject: Re: Statistics/coding issues

Thank you for this.

I talked to Defra this morning to keep them up to date as they are planning a "policy only" meeting tomorrow. The issue rests as to whether what has been done is a valid (but unusual?) statistical choice, or whether it is an error. My judgement is that this is still in the "choice" category. If that is the case, Defra (et al) would be ok in going for a consultation, whereas if they know there is an error, it would not be reasonable to go ahead. A conclusion as to whether further modelling was required could then be kept until post consultation - with perhaps some further exploration during consultation.

The news from the Defra end was that they have received a note from UKrep in Brussels saying that the Commission are asking about whereabouts of the consultation.

I am trying to get hold of DHI (in gaps in the meeting that I am in) to find out how much time they might need for some exploratory modelling. Further views from (non associated) statisticians would be very welcome of course

From: Joe Horwood to Mark Tasker/Chris Gilligan

Sent: Tue 13/10/2015 13:25

Subject: Re: Statistics/coding issues

I note David refers to smoothers and covariates, so the model seems to be more complicated than I thought. I await the info from Chris.

You will see that Simon Wood is mentioned in dispatches. Prof stats and ecology at Bath. He worked with me. He might do something if asked.

I wonder rather than look at the principle of including/not a main effect, we could just ask DHI to test for it in the normal way. If one can claim normality. If we suspect/can see changes in distribution over time, I would think that keeping the interaction in and then including/excluding time as a factor could be a way to proceed?

From: Mark Tasker to IAMMWG

Sent: 16 October 2015 11:08

Subject: RE: Official sensitive: response to MMS review

Dear all (and especially those that attended last Friday's "not quite the project board")

My apologies for a slight radio silence, life has been a touch hectic (and to quote Monty Python, my head hurts). Last Friday's meeting was broadly content with our response to MSS, but were very helpful in clarifying certain aspects – particularly around model choice and the so-called mis-coding. I should thank Tom here particularly for his help.

Although the two JNCC/NE senior statisticians/modellers present were happy, I was tasked with going away and trying to get further input on the Coding issue. The key issue to cut to the chase was whether the DHI modelling, although not "usual" was valid in both statistical and a biological sense. In other words was their model erroneous or a valid choice. After reviewing what I have received from DHI, David Elston, Alain Nuur (Highland Statistics), Joe Horwood and Chris Gilligan, I am content that the choice made by DHI was reasonable. It would have been ideal if the alternative more "usual" model had been run so that the two sets of results could be compared, but that did not happen (and I understand would take 6 weeks or so for DHI to do now – mostly due to other work that they are contracted to do). I also noted that the QA trail of our responses to David Elston's earlier comments was a little obscure (so we will tidy that up in the same way that we dealt with our external reviewers comments).

I was also tasked with rewriting the MSS response to make certain aspects clearer. That I have tried to do – see attached tracked and clean versions. I would like to submit this to the Project Board ASAP (Monday?) along with a recommendation that the coding issue is not a miscoding but a part of a valid debate over sets of reasonable models – and that the SNCBs are still content with the modelling choice used. I need your agreement to do this – so comments as soon as possible please. I can supply the key email trains from the external statisticians if you want to read those too – let me know soonest (they are quite complex!).

I will be sending this to Joe Horwood, Chris Gilligan and Paul Rose (our member of CSG) also for their comments.

I am sure that Governments will not take any decisions on consultation until after this advice is sent.

From: Paul Rose (JNCC Director Standards and Advice) to Michael McLeod

Sent: Mon 19/10/2015 10:25

Subject: Catch up

Mark Tasker passed on a request from you to catch up on various things including an initial discussion on the services JNCC provides for Scotland. I don't think we have met before so this would be very welcome from my point of view. I am in the office all of this week so I'd be very grateful if you have half an hour to spare for a chat on the phone?

I have worked in JNCC for a long time now but only recently taken on responsibility for some of our marine work, which is probably why we haven't met yet.

From: Mark Tasker to Henrik Skov (DHI)

Sent: 19 October 2015 11:17

Subject: Remodelling

It was good to speak to you last week. It now looks as if we will need a re-modelling of the existing data to cover that bit of controversial coding – you know the bit:

Bug in R code

There is no bug or error in the code. Capturing the spatial patterns in the data was important and because there could potentially have been a change in distribution between the periods the interaction term between coordinates and periods [Groups] was used. There was no reason to assume a change in abundance during the time periods (i.e. that the data is capable of describing a change in abundance) and therefore it was assumed to be more or less equal between time periods. This negated the need for the factor to be a main effect.

DHI concluded that including a factor variable would bias the spatial density estimates towards the effort, which the SNCBs wanted to avoid. In the help file it states that usually it should be included as a main effect. If there was equal survey effort between years, DHI would have included it as a main effect, however, this was not the case. DHI wanted to avoid a bias in the predicted patterns which would have been created had the factor variable been used, resulting in a bias towards the effort.

The GAMs with a spatial smoother for each time period are coded with a model formula of the form e.g.

```
cor_EstDen ~ s(S_s,k=5) + s(Depth5km,k=5) + s(Sed5foc15,k=5) +  
s(Easting,Northing,by=as.factor(Groups3),k=20)
```

(page 105). However, unless there are no differences in mean level between Groups, the use of by in a smoother also requires Groups to be included as a main effect (see gam.models help files). For example as

```
cor_EstDen ~ s(S_s,k=5) + s(Depth5km,k=5) + s(Sed5foc15,k=5) +  
as.factor(Groups3) + s(Easting,Northing,by=as.factor(Groups3),k=20)
```

If I understood you correctly, you thought this would not take too long but you could not do this straight away as you had a lot of other work to do.

Assuming that is the case, can you book the relevant amount of time for yourself/Stefan to do this work and tell us when that is likely to be? (I think you said by late November or early December). I cannot handle the money/paperwork for this, and Eunice (who can) is away on leave until next Monday – could you let her know of costs etc? We also need a little more justification of “*DHI concluded that including a factor variable would bias the spatial density estimates towards the effort*” but I guess that could be straight-forward once you have done the extra modelling.

We are not yet certain that this work will be needed before things can move forward over here, but are getting the remodelling done anyway to cover the argument.

I hope that is clear – come back to me if not

From: Mark Tasker to Jim Robinson (NE)

Sent: 19 October 2015 11:28

Subject: RE: Official sensitive: response to MMS review

I tried to cover your query in my second paragraph “After reviewing what I have received from DHI, David Elston, Alain Nuur (Highland Statistics), Joe Horwood and Chris Gilligan, I am content that the choice made by DHI was reasonable.” It turned out the CREEM have a contract with the windfarm developers in the Moray Firth for statistical advice, and therefore turned down our approach on the basis of conflict of interest. Hence asking Alain Nuur of Highland Statistics. We also asked David Elston, but he was now working with Marine Scotland, so also did not consider himself independent (but nevertheless gave a helpful reply). I can supply the emails from them all if you wish (although note that none are biologists – we put that knowledge in!)

From: Kelly Macleod to Jim Robinson

Sent: 19 October 2015 11:32

Subject: RE: Official sensitive: response to MMS review

Obviously I wasn't at the meeting, but I contacted a friend at [REDACTED] a couple of weeks ago to ask advice on the 'coding' (without giving anything away!). I was pointed to the R- helpfile and this did confirm, at least that when the term 'BY' is used in the smoother (interaction) that the factor Groups should also usually go in the model as a main effect. So, it confirmed that MSS query was a good one!

However, it does say 'should' rather than 'must' – and DHI have given a valid explanation as to why not in this case. If I understand it correctly, the justification is purely a theoretical one and is not based on what the 'abundance data' in the analysis dataset actually shows. So, we as biologists have to consider whether this is valid or not.

(now seen Mark's response but as might well send anyway!)

From the help file - 'Note that when using factor by variables, centering constraints are applied to the smooths, which usually means that the 'by' variable *should* be included as a parametric term, as well.'

From: Ceri Morris (NRW) to Mark Tasker

Sent: Mon 19/10/2015 12:28

Subject: RE: Official sensitive: response to MMS review

See attached for NRW's comments – mostly minor corrections relating to points of presentation and consistency (eg missing references), as well as some grammatical corrections. Please don't take this as any criticism, we all acknowledge what a mammoth task this has been to turn around in such a short timeframe. However this document is highly likely to find its way into the public domain at some point, so it worth being as thorough as we can be.

We feel that this is an extremely comprehensive and thorough (and ultimately unforeseen) piece of work. We doubt if the scientific basis of SAC selection for any other habitat or species has ever been so thoroughly tested (with the possible exception of the Severn Estuary!).

From: Jim Robinson to Mark Tasker

Sent: 19 October 2015 14:11

Subject: RE: Official sensitive: response to MMS review

You were obviously too subtle for me on a Monday morning! Apologies for not picking this up. Thanks to you and Kelly for the clarification.

From your e-mails it appears that, although the approach is not the norm, there are biological reasons that justify it and it is reasonable in statistical terms to take that approach. On this basis I am happy with your recommendation.

From: Mark Tasker to Nicola Molloy/Kirsty MacGregor for Governmental Policy Officials

Sent: Tue 20/10/2015 11:59

Subject: OFFICIAL SENSITIVE Edited second response to MSS Advice on harbour porpoise SACs

Please find attached an edited version of the SNCB response to MSS comments. It is largely a tidied up version of the earlier version, hopefully also clearer not used to working regularly with statistics.

This follows discussions at the meeting on 9 October where I was also tasked with obtaining further statistical advice and consideration on the issue described as “mis-coding” by MSS. JNCC approached David Elston (our original external statistical expert), [REDACTED] and Statistician 1 for further external views. The first two declared a conflict of interest (they were either working with MSS or relevant windfarm developers). After reviewing what I have received from DHI, David Elston, Statistician 1, Joe Horwood and Chris Gilligan, I am content that the choice made by DHI was reasonable and this view is supported by SNCB colleagues. It would have been ideal if the alternative more “usual” model had been run so that the two sets of results could be compared, but that did not happen – there obviously remains the option for that to happen – I understand from DHI that they would be able to do this in about 6 weeks time.

I hope that you will be able to distribute this to the Project Board/Governments. I will be sending to SNCB colleagues.

I hope that this will enable Governments to decide on the way forward for the work on harbour porpoise SACs (and in some cases other consultations). I look forward to hearing from you

From: Mark Tasker to IAMMWG

Sent: 22 October 2015 14:57

Subject: OFFICIAL SENSITIVE: Update on hp SAC process

Dear all

Just to let you know what I know as it might aid your planning.

1. The edited second response to MSS comments have been distributed to all Project Board with a clear message that we (SNCBs) considered the analysis carried out reasonable.
2. JNCC are investigating the cost of re-running the analysis using existing data but with the slight change in coding to allow for possible abundance change. If we go ahead with that it will be so that we can cover off the question that may well come up at consultation. We know that DHI need approximately 6 weeks due to other work they have underway that has priority at their end. If the results are markedly different, the “what does this mean biologically” argument will come up again – and I would still maintain that we have chosen the better option!

3. There is a policy level meeting on Monday afternoon for all Governments to consider the next steps.
4. Unless something radical happens, I am expecting Scottish Government to continue an existing strong line on no consultation until the middle of next year at least, and for Defra and Welsh Government to wish to go ahead now.
5. Northern Ireland have more issues to consider, but I think it likely that they will want their part of the North Channel site consulted upon.
6. I have indicated to Northern Ireland that their part of that site is important in achieving sufficiency for the UK (sufficiency is judged at UK level, not at constituent country level).
7. If the policy level meeting does decide on a consultation for non-Scottish areas, then we have a large editing task at JNCC. This may or may not have to include some NI and SNH input to check contentment.
8. A policy level decision in favour of consultation triggers the submission of papers to respective Ministers, who then need to give approval to consult. They would obviously need to weigh up the pros and cons of going ahead with a partial UK consultation.
9. JNCC editing would though start straight away after a policy level decision (we would save all existing documents just in case of a contrary Ministerial decision!)
10. Consultation launch could only be after Ministerial decisions, but would either be in November or January due to the Christmas/New Year break. A consultation launched in November would have 2 weeks added to it to allow for that break.
11. You'll see from this what I expect will be discussed at the 3 November IAMMWG meeting, though ironically (because we will be in Edinburgh) there may be less for SNH to talk about. I think we may need at least another meeting, maybe of a smaller group, ahead of any consultation launch.

I hope that we at least get clarity after Monday's meeting, even if it is not ideal and throws up further problems.

From: Tom Stringell to Mark Tasker (following supply of statistician's comments)

Sent: Fri 23/10/2015 18:01

Subject: RE: Official sensitive: response to MMS review

Thanks for these Mark. Interesting reading.

It would seem the only way to determine the outcome for sure is to rerun the model with the main effect included and compare the diagnostics/model outputs. I doubt this would take long – it could be run for the North Sea MU firstly.

If the differences are large and the smoothers from the 2 models are very different, however, then this might have effects on the AoS outputs (depending on the sensitivity of that particular driver/set of variable combinations – eg it might not contribute hugely to the overall variation – difficult to tell without seeing the full model outputs). Producing those outputs (GIS) would obviously take a lot of time, but running the R models, not so (prob overnight).

Additionally, understanding the differences in abundance among the levels of the factor 'Groups' would be useful. If they are broadly similar, then there is much better justification for not running the model with the main effect 'Groups'. If not, then I think we might want to investigate whether a newly specified model would give significantly different answers.

Would be interested to know what is decided going forward.

From: Eunice Pinn to Paul Rose

Sent: 29 October 2015 12:52

Subject: official sensitive: additional DHI work and possible MS contribution

Following on from yesterday I was wondering if you have had a chance to contact Michael yet regarding the reanalysis contract with DHI?

Mark has the initial versions of the business case, single tender form and the annex A, and is planning to look at them today. Once I have them back and have tidied up, I'll send through to Dora and yourself so that you have everything needed for EMB.

From: Paul Rose to Eunice Pinn/Mark Tasker

Sent: 29 October 2015 14:05

Subject: RE: official sensitive: additional DHI work and possible MS contribution

I am arranging a time to chat with Mike but before I finalise can I just check how much Marine Scotland know about what we are doing already? At one time we were considering doing this for our own peace of mind but I assume it is now a request from Scotland/the project board?

I should have asked this yesterday but it was as much as I could do to try and keep up with the main matters at hand! And on that note thank you both very much for your input to yesterday. The discussions were difficult but I think we uncovered really useful information and are now well placed to present unified advice to governments.

I have had a catch up with Steve and talked to him briefly about yesterday but we didn't get as far as next steps before other stuff swamped us.

From: Eunice Pinn to Paul Rose

Sent: Thursday, October 29, 2015 14:17

Subject: RE: official sensitive: additional DHI work and possible MS contribution

Mark would need to give the definitive answer regarding PB. There has been no formal request to for this from PB or MS as far as I know, but (informally at least) Defra have indicated it would be helpful to get it done for peace of mind. In a completely separate meeting, MS indicated that they still need to consider how best to identify sites in Scotland and may choose to do something quite different.

From Mark Tasker to Paul Rose

Sent: 29 October 2015 16:03

Subject: Re: official sensitive: additional DHI work and possible MS contribution

This is for our peace of mind as recommended by chair, Joe etc. If however it is what MS need doing then Defra at least think that MS should contribute. You will remember that I asked David P if he wished to discuss hp and was told firmly "no" whereas it seems that you have had success talking to Michael. Therefore I think it best that you call, not me.

From: Mark Tasker to Paul Rose

Sent: 29 October 2015 16:31

Subject: RE: official sensitive: additional DHI work and possible MS contribution

Ok

Thanks. I'll talk to Mike tomorrow and try to determine how MS want to proceed. I'm happy to proceed as Joe and Chairman advised but if MS are going to ask us to do it anyway we might as well join up. I also think MS should contribute but if they can't I'd rather pay ourselves to keep the work moving along and this doesn't cause us major problems.

From: Mark Tasker to Paul Rose

Sent: 30 October 2015 05:46

Subject: RE: official sensitive: additional DHI work and possible MS contribution

Just one further addition: if MS are going to completely ignore our work – even if redone, then we would not remodel West of Scotland just now. What we need is truthfulness from Scotland over their actual intentions. We have not had truthfulness or consistency since the first intervention on this. They cannot do nothing or they will be infracted, and rapidly, and would not have a scientific leg to stand on. Although we would obviously not support an infraction, there is enough material out there for Commission to do an easy job. So they either have to go with our current work, plus some reassurance from the remodelling, or initiate some different work more or less immediately. That different work would need to come up with different biological reasoning to that we have agreed across all agencies (and therefore presumably would need to come from somewhere other than SNH. Essentially my view is the “different work” line is an even bigger hole to climb out of than the one they are now in. Supporting the re-analysis by funding half cost would be reasonable.

From: Paul Rose to Mark Tasker

Sent: 30 October 2015 08:55

Subject: RE: official sensitive: additional DHI work and possible MS contribution

I agree wholeheartedly. I am becoming uncomfortable with not knowing how Scotland want to proceed so will try to talk to Mike about this. I think we need a bit more clarity before going ahead with running the variation on the model so it is excellent that the work is done to prepare for this but we just need a couple more days before proceeding further as it would be ideal if MS were involved. Chairman and Joe also think it ought to be possible to estimate the impacts of the variation without running it which could just be a day or two's work. Off the record Tom Stringell also suggested to me that he thought this quick piece of work ought to be possible so we need to explore this a little too. I will speak to Mike as soon as I can and get back to you immediately.

From: Paul Rose to Michael McLeod

Sent: Fri 30/10/2015 09:02

Subject: HP modelling work

Thanks for the chat last Friday. I found it really helpful.

The team in Aberdeen are now starting to think about next steps and it would be useful to get some idea of what MS might want our support on. It would seem logical to do some more work on the modelling to try and address MS concerns but this of course is something for you to consider.

Before we go much further with our plans it might be useful if we had a quick chat. I am around on and off today and free pretty much all of Monday.

From: Mark Tasker to Paul Rose

Sent: 30 October 2015 09:09

Subject: RE: official sensitive: additional DHI work and possible MS contribution

Running the model is the simple bit, but I think Tom, chair and Joe do not understand the degree of post-R processing to arrive at the persistent top 10% areas. See the original report for this. I do not think we will be able to justify things with the model run alone.

Henrik is here with me in South Africa, so if you (or Eunice & Kel) have any further questions of him, ask me today

From: Eunice Pinn to Paul Rose

Sent: 30 October 2015 09:46

Subject: RE: official sensitive: additional DHI work and possible MS contribution

Without the fuzzy logic element to derive the persistent top 10% of areas, the outputs will not be comparable in the way MS would likely need them to be, so I support Mark's view. Henrik may be able to provide a quick feel of how different the initial modelling is likely to be, but this would probably more valuable to us (i.e. SNCBs) in deciding how much effort might be required in further defending what we have done. I sincerely doubt that it would be sufficient for a significant change of view elsewhere, which requires the identification of the persistent areas over the longer term (assuming science can change that view).

From: Paul Rose to Eunice Pinn

Sent: 30 October 2015 10:21

Subject: RE: official sensitive: additional DHI work and possible MS contribution

You are probably right. And you take us back to Marks's main point – What do MS want to do next? Without some idea of MS thinking it is very hard to move so I will place talking to Mike my top priority.

From: Ian Davies (MSS) to Mark Tasker

Sent: Monday, November 02, 2015 04:45 PM

Subject: Porpoise

We hear a rumour that JNCC have commissioned some further modelling from DHI. Is this correct? Can you send us some details of what will be done?

From: Mark Tasker to Ian Davies

Sent: Mon 02/11/2015 20:21

Subject: Porpoise

I am on leave in South Africa. I do not think that JNCC has yet commissioned anything but I believe Paul (copied here) was trying to talk to Michael about Scottish needs and ideas. I have not been updated beyond that. Do you have any needs and plans? I tried to ask this earlier but was told that there was no need.

From: Eunice Pinn to Paul Rose

Sent: 04 November 2015 15:00

Subject: official sensitive: discussion with MS regarding DHI work

In light of the email we received from Ian Davis (MSS) to which Mark responded, I was wondering if you had had a chance to speak to Michael McLeod yet and what the outcomes of the discussion were. Are our proposals to repeat the modelling with the 'miscoding' corrected the sort of work they consider is required?

We had an IAMMWG meeting yesterday and it also appears SNH have had no formal notification from MS yet with regard to the potential split consultation which, needless to say, makes progress quite difficult in some areas.

An update would be much appreciated if you have one to give.

From: Mark Tasker to Paul Rose

Sent: 09 November 2015 16:39

Subject: RE: Official Sensitive: HP chat with Mike McLeod

I am in Defra ahead of tomorrow's PB. It is plain that neither Michael nor anyone else in MS has talked to either Defra or DoENI on these issues and that MS are believing their own untruths/not full truths. I love the "better openness with stakeholders" in this – they have hardly talked to NGOs so far, and have told the renewables industry everything, while at the same time not briefing their own Scottish renewables regulators!

I would certainly appreciate any rapid feedback after your chat tomorrow if at all possible.

From: Paul Rose to Mark Tasker

Sent: 10 November 2015 07:03

Subject: RE: Official Sensitive: HP chat with Mike McLeod

I replied yesterday but I'm not sure it sent. I had a bad crash as a result of Virgin WiFi and can't see any emails I sent or received between 1515 and 1730!

I think my main message is that while frustrating we just have to move on and try and be as helpful to marine Scotland as we can. Other governments on the project board can try to move them but I'd rather it wasn't us. I also recognise this might have resource implications for us if we have to run two processes and Scotland require different things but the timing with our review is now very sensitive and I will find ways to help the resource stretch if I have to. I could do with a chat if you are available some time? I'll look at your calendar and send an invite.

I might not get to speak to Mike but if I do it will be 1100-1130 and I'll feedback immediately.

There are a few bits of missing information that I will try to get but the most useful would be a bit more on this west coast thesis he talks of. Have you any idea what he might be talking about?

Two more tip offs. Chris thinks the contractors should have re-run the model without having to be asked and covered themselves by so doing. He also refuses to believe it needs to be more than a couple of days work. I think I know what he is getting at but need to talk more. For the time being Joe has been very firm that re-running the model doesn't help anybody so Chris has backed off. I'm not sure for how long though.

Finally, please watch DECC carefully today. MS have been talking to them a great deal and apparently with a lot of success. There could be quite some politics today but JNCC should stick to the implications for the science.

Please let me know the main outcomes if you can.

From: Mark Tasker to Paul Rose

Sent: 10 November 2015 08:13

Subject: RE: Official Sensitive: HP chat with Mike McLeod

I did not get anything from you yesterday, bad luck with Virgin. Thanks for this though. I have no problem with Marine Scotland choosing a different policy approach, what I do dislike is not telling the truth. Come talk to us about the issue and we will do what we can. The brush off from David Palmer was also unnecessary.

I agree with Kelly that we do not know what MS are talking about in terms of the west coast thesis. The only past thesis (by Clare Embling) that I am aware of has been used by ourselves already and was really a demonstration of how part of the technique we used worked.

I guess that we could go with Chris's approach sometime – the real problem would then be understanding what the results mean. I think that what has not been understood by Marine Scotland Science is how much the results in terms of sites are controlled by the “fuzzy logic” part of the model, and how little the front end modelling that they are “concerned” about really affects the end results.

Which bit of DECC? – three parts are coming today – renewables, O&G and nuclear(!). I assume renewables. I also got information that Minister Gove is being VERY down on anything European at present, so UK Ministerial sign off is certainly not a foregone conclusion.

From: Paul Rose to Mark Tasker

Sent: 10 November 2015 12:12

Subject: Re: Official Sensitive: HP chat with Mike McLeod

Mark

Just managed a quick chat with Mike. He was not giving away anything but emphasised that a wider UK conservation plan for hp is probably what Ms would value most. He will not press for this today.

He also expects to get isolated today with others moving to consultation. He also thinks this could backfire on Defra as other Whitehall depts get wind of it.

Mike will wait for Defra to breakcover on the consultation before he announces anything about next steps in Scotland but it is likely to be a wide attendance workshop including Jncc.

From: Katie Gilham (SNH) to Eunice Pinn/Kelly Macleod

Sent: 16 November 2015 22:53

Subject: harbour porpoise method

I wondered whether you could help. I remember a while back when the harbour porpoise modelling was being undertaken, I think Eunice got in touch with Morven and asked whether the same approach that we'd used for identifying areas for cetaceans and basking sharks wrt NC MPAs could be used for harbour porpoise. This was roughly based on looking at areas where the density of animals was predicted to be more than average on a persistent basis (it wasn't exactly 10 years because of the differences between species in terms of data availability but we were basically looking at persistence being of the order of a decade). Do you know whether the contractors tried this approach for harbour porpoise? If so, are the results recorded anywhere – published or unpublished? Grateful for any pointers.

From: Kelly Macleod to Katie Gilham

Sent: 17 November 2015 10:41

Subject: RE: harbour porpoise method

In short, if your main question is did the porpoise contractors (DHI Ltd) 'look at areas where the density of animals was predicted to be more than average on a persistent basis' – the answer is yes, that's exactly what they did. From what I understand of the Scottish contract, CREEM were contracted by SNH for the ncMPA work - their approach was to use the JCP datasets for Scottish waters and model density within (territorial?) waters. They then looked at persistency. So, the ambitions of both analyses were exactly the same – model density and look for persistency over time.

There are a lot of similarities between CREEMs approach and that of DHI. Fundamentally, both approaches used the JCP data and it's standardisation approach, albeit the scale was

different (Scottish v UK datasets). Both modelled density, both included environmental variables but DHI's inclusion of environmental variables was much more extensive than those used in the CREEM analysis; and both included space (lat and long) as a spatial smooth in the models. The JCP data used spanned approximately the same time period (1994-2012 CREEM; 1994 – 2011 DHI). The methods that CREEM used to model abundance (density) were GEEs whereas DHI used GAMs - both methods are extensions of Generalised Linear Models.

So, DHI took a similar approach but there are aspects that are different. For example the use of GEEs v GAMs – the argument to use the former for the porpoise work was not that convincing. CREEM also used 'CRESS' and 'SALSA' – spatial smoothing techniques for modelling around convoluted coasts (I think) but whilst this might be appropriate for a coastal analysis, particularly on the west Scotland, the argument to use these methods is not so strong for models that aim fit at much wider scales (Management Units) covering inshore & offshore environment.

I hope this helps – do get back to me if you've got any further questions.

From: Katie Gilham to Kelly Macleod

Sent: 17 November 2015 11:33

Subject: RE: harbour porpoise method

Are the mapped outputs of the 'areas where the density of animals was predicted to be more than average on a persistent basis' included in the main DHI report? If so, grateful if you could point me to where I can find them. I'm interested to see the results and what comes out before the 10% threshold was applied.

From: Kelly Macleod to Katie Gilham

Sent: 17 November 2015 11:59

Subject: RE: harbour porpoise method

I've just sent you the link to the DHI report. The outputs were annual and seasonal maps of HP density by season and MU – these are not available in the report because it was 18 years, 3 managements units for each and 2 seasons! However, there is an average picture of density in the second report I attached to you in the previous email.

The 'more than average' bit you refer to is, for the DHI contract, defined as density values above the 90TH percentile (i.e top 10% as per Embling et al. 2010 – porpoises on west Scotland). The top 10% was identified for each of the annual layers and then 'fuzzy logic' applied – a method that evaluates both the number of years when high densities were predicted and the degree to which high densities were predicted to occur recently. A grid cell in the annual density surface was scored and would only be graded as 'persistent' if it had a value of density in the top 10% for more than five years and the most recent top 10% estimate occurred after 1999.

On a related matter, I presume that MSS reviewed the CREEM report to SNH given that it was for the purposes of identifying ncMPAs? If so, is it possible to send me a copy?

From: Katie Gilham to Kelly Macleod

Sent: Tue 17/11/2015 12:06

Subject: RE: harbour porpoise method

No, we weren't reviewed by MSS! Basically stakeholders haven't raised any concerns so MS policy didn't ask for a review (as far as I know). All very different....

On the figures/results, I should have been more precise. I was interested in whether anything above the 50th percentile had been mapped?

From: Mark Tasker to Katie Gilham

Sent: 17 November 2015 12:32

Subject: RE: harbour porpoise method

Out of interest, do you know if MSS were involved at all in the CREEM ncMPA work (the statisticians on the east coast seem to talk to each other rather a lot)?

And no, if we had gone for 50% I think the whole range of porpoises would have been chosen (prior to the fuzzy logic application)

From: Katie Gilham to Mark Tasker

Sent: 17 November 2015 13:19

Subject: RE: harbour porpoise method

No, don't know whether MSS were involved. My guess would be they weren't, but you never know...

On the 50% question, that was part of the reason for choosing the method so it would help us distinguish between e.g. white-beaked dolphins which dropped out of the process because they were so widely distributed and basking sharks which stayed in. Would be interesting to see what the result for harbour porpoise would be using the NC MPA method.

From: Katie Gilham to Mark Tasker

Sent: 17 November 2015 13:51

Subject: RE: harbour porpoise method

Is there a paper/report that I could look at that describes how you went from the CREEM report to the identification of the ncMPAs? It's not clear how the 50% threshold you refer to was applied and whether it was done so in isolation or in combination with consideration of persistency?

It would be really helpful if there was a document that describes this process. Would aid us to consider more fully what the implications might have been of following such an approach.

From: Katie Gilham to Kelly Macleod

Sent: 17 November 2015 14:57

Subject: RE: harbour porpoise method

The best thing would be to read the CREEM report (although you may have already done that).

http://www.snh.org.uk/pdfs/publications/commissioned_reports/594.pdf

The relative density (it wasn't actually a 50% threshold – I was using that as a short-hand but this is defined in the report), persistency and confidence were all wrapped up in the outputs from the model. Because we have multiple features (including sea bed habitats and geo features) in the MPA proposals, we didn't go any further with statistical techniques to define boundaries. We overlaid the data on the various features and then effectively drew round them following the MPA Selection Guidelines process. See page 37 in the link below:

<http://www.gov.scot/Topics/marine/marine-environment/mpanetwork/mpaguidelines>

There is another document that MS has asked for, to help explain more detail on the boundary setting. I'm planning to have a complete draft by next week so can share with you then. It won't be hugely detailed though – just giving some examples so people can better understand our approach.

From: Mark Tasker to Katie Gilham

Sent: 18 November 2015 05:46

Subject: RE: harbour porpoise method

Sorry about the temporary radio silence. I am a little reluctant to spend more money on this just now – interesting certainly but not essential. We could suggest it in due course to MS, but I am rather keen on letting any heat in that direction die down and then to look for positive ways forward.

I was told that both the SPAs and the ncMPAs had been reviewed, but obviously that information was mistaken.

From: Katie Gilham to Mark Tasker

Sent: 18 November 2015 09:26

Subject: RE: harbour porpoise method

Sorry, wasn't suggesting we do this now – definitely not a priority as you say until we understand more from MS. Was just wondering if it had been tried as part of initial work.

From: Kelly Macleod to Katie Gilham

Sent: 18 November 2015 10:35

Subject: RE: harbour porpoise method

That's helpful and I look forward to seeing the 'boundary setting' draft sometime soon.