

# Minutes

Report of	EC Technical Subgroup Noise
Meeting date	16 & 17 February 2011
Participants	René Dekeling, Mark Tasker (chairs) Leo de Vrees (EC-DG-Environment) Michael Ainslie, Mathias Andersson, Michel André, Arjen Boon, Karsten Brensing, John Dalen, Thomas Folegot, Cédric Gervaise, Santiago Lens Lourido, Alexander Liebschner, Mary Meacle, Jukka Pajala, Stephen Robinson, Frank Thomsen, Sandra van der Graaf, Stefanie Werner, John Young (participants)
Copy	Ian Boyd, Robin Fitch, Russell Leaper, Bill Nicholls, Marije Siemensma, Peter Sigray, Jan Stenløkk, Albert Willemsen

The EC TSG noise met for the first time on 16 and 17 February 2011 at TNO in Delft (The Netherlands). Attendance of this meeting was high, with 20 participants.

## **Purpose of the TSG Noise**

The representative of the EC (Leo de Vrees) explained the process that has led to establishment of the TSG noise (and litter). The MSFD requires MS to work towards Good Environmental Status (GES) in 2020, this is only possible by managing human activities. However, the pressures and impacts on the ecosystem have to be known.

The Marine Directors meeting in December 2010 approved the ToR of the TSG noise. The TSG noise is foreseen to run until the end of 2011, but it may very well continue in 2012 or even further (keeping in mind that in 2014 MS have to establish a monitoring programme and in 2015 proposals for measures).

It was stressed that defining Good Environmental Status is the responsibility of Member States and not of the TSG noise. The TSG can, however, share ideas on best practices and developments on GES.

The TSG noise will report to the WG GES, first in April 2011 and the next in October 2011.

## **1. Adoption of the Agenda**

## **2. Adoption of the Terms of Reference for the TSG Noise**

The ToR were adopted by the TSG. The TSG noted that the main work is in the Work Programme.

## **3. Objective of the meeting and proposal for work plan**

René Dekeling explained that the work plan is a breakdown of the tasks from the Terms of Reference. He explained that during the meeting the work plan would be adjusted, as appropriate.

Objective of the meeting is to adopt the work plan and to agree on the products and on task managers and people that will contribute to the products.

The technical discussions of the TSG will, in part, be based on the report of Task Group 11.

## **4. Presentation and discussion on the outputs and reasoning of TG 11 - Mark Tasker**

Mark Tasker, co-chair of the TSG Noise and chair of TG 11, explained in a presentation the reasoning behind the TG 11 report. *Presentation on sharepoint*

TG 11 decided to concentrate on three main adverse effects caused by three separate types of sound:

- 1) gaps in distributions of marine animals caused by behavioural alteration after low and mid-frequency impulsive sounds. The main activities that create the sounds that could create behavioural change and therefore distributional gaps were thought to be wind farm installation (pile driving), seismic surveys, sonars and explosions. These are usually licensed, often following EIA procedures. A key feature was that Regulators could know where the great majority of these sounds were going to be generated. The original indicator wording suggested by TG 11 included a threshold level of sound at source, based on using a precautionary received level for a temporary physiological change in small cetaceans.
- 2) Masking of communication caused by low frequency continuous sound. The main activity that this indicator addresses is shipping.
- 3) The third indicator suggested by TG11 was aimed at the effects of high frequency impulsive sound. These sounds probably disrupt communication of harbour porpoises (masking), but there is no empirical evidence so far. The sources are less uniformly distributed (generally a more near shore issue).

Only the first two were adopted in the commission decision, the third indicator was removed during European processes following TG11's report.

During the presentation the following was discussed:

Ad 1)

There was a lot of discussion on whether biological factors, such as distribution pattern of marine mammals, breeding seasons, etc, should be taken into account in this indicator. The TG11 report suggests one set of thresholds, otherwise the indicator would become too complicated to work with, given the unpredictability in effects and in the distribution of species as well as the many species concerned. All relatively local factors should be taken into account in Environmental Impact Assessments (EIA) for the activities concerned. The indicator was aimed at building above these instances to provide a way of understanding and managing potential cumulative impacts. This indicator would also help meet the needs to consider cumulative impacts within SEAs and EIAs.

The EC explained that the MSFD has 11 descriptors of which 4 are status-related and 7 are effect-related. For status-related indicators, there is no one-to-one relationship with any pressure.

Ad 2)

Sound level: some questions were asked about the sound level that was originally included in the descriptor. As for the sound level, there were good indications that 100 db was quite loud, and thus would be a reasonable cut-off, however, looking back it perhaps would have been more appropriate to put this level between square brackets, as this should be a MS/regional choice.

Band width: some questions were asked about the frequency bands and their widths and whether these were appropriate. Mark Tasker explained that the TG11 choice of these 1/3 octave bands as indicators of shipping noise was based on literature.

Leo de Vrees explained that the commission decision has gone through a long process involving MS and other DGs and the EP. However, there is a 6-years cycle foreseen so in 2016 there may be a new decision. On top of that the TSG can recommend to MS to look at other bandwidths, if appropriate.

Modelling: it was discussed whether modelling is an appropriate technique. The TSG concluded that while measurements are essential, modelling could be done additionally and for some applications this may be cost-effective.

Ad 3) This proposed indicator could be kept in mind for future use.

## **5. Progress on the work to identify and review existing data and monitoring methods on underwater noise (ToR 1)**

- *Presentation: Summary of knowledge and data within OSPAR CPs (product 1.1) – Sandra van der Graaf.*

The work was noted by the TSG.

- *Short Discussion: Is there any new knowledge that should be added to the review of existing knowledge on noise monitoring methods (Product 1.2)*

The work was noted by the TSG. A task manager was appointed to bring the work further. All participants are invited to bring forward any relevant documents.

- *Presentation: On a common comprehension of frequencies regions (low-mid-high etc) – John Dalen (Institute of Marine Research, Bergen).*

In his presentation John Dalen pointed out that there are many different definitions of low, mid and high frequency, and that the use of different language leads to confusion. He suggested that the group should agree on some common definitions.

The TSG discussed this proposal and decided that, although the TSG does not need to sort out all this confusion, the TSG should write down the definitions they use in a glossary or be precise in their recommendations.

- *Presentation: Progress towards common terminology – Michael Ainslie (TNO)*

Michael Ainslie addressed the two noise-indicators from the commission decision and pointed out some issues which were not unambiguous and that should be addressed in the further discussions of the TSG.

For indicator 11.2 these are the concept 'trends' and the concept 'average noise level'. Both need to be defined further e.g. is a trend a change from year-to-year or over 5-year periods? And is the average noise level the mean square pressure or the median?

For indicator 11.1 there are more points that are unclear, such as what is a significant impact? is the level a source level? And how do you define impulsive (how short is short)?

The following conclusions were made in the discussion:

- o Indicator 11.2 speaks of a trend. It is up to MS to rephrase this quantitatively, however, the TSG noise should make recommendations.
- o Indicator 11.1 is about the source level. Not all source levels, for example of pile-driving are known, however, this is not necessarily a problem. Activities should be identified that are producing these sounds and these should be registered and addressed under this indicator. The TSG noise could describe these sources (pile driving, airguns, explosives) and make clear how these should be registered.

## **6. Develop proposals for methodological standards for registering loud impulsive (low and mid-frequency) sounds (ToR 2)**

- *Discussion on indicator terminology (Product 2.1)*

A group will be formed to address the indicator terminology, keeping in mind the discussion under agenda item 5 (presentation Ainslie)

- *Presentation & Discussion: Proposal for the establishment of a register of loud impulsive low- and mid- frequency sound sources (Product 2.4) –Mark Tasker. Presentation on sharepoint*
- *Discussion on a framework of options for Member State decisions on levels of anthropogenic sound sources that exceed levels that are likely to entail significant impact on marine animals (Product 2.3)*

Mark Tasker presented the proposal for the establishment of a register of loud impulsive low- and mid- frequency sound sources. After that the discussion was on both the products 2.3 and 2.4.

The discussion addressed the following topics:

- Purpose of the indicator

Mark Tasker explained that the reasoning of TG11 was that an indicator is needed about displacement of animals. Aim of this indicator is to limit the number of, or persistence of, holes in animal distribution.

The TSG Noise initially agreed that the indicator is about displacement. However, later on in the meeting this was questioned and some members suggested it could also be about all other possible negative impacts of impulsive sounds on animals. This issue will be addressed in product 2.3.

- Proportion of days

There is a lot of discussion about the "proportion of days" indicator. One of the big problems will be defining the threshold for the number of days

- "Bang-days"

This measurement ignores the number of bangs on 1 day. A noise spread out over more days will seem more significant. Mark Tasker indicated that the TG11 has meant the "bang-days" to be precautionary: 1 bang on a day will already turn the square 'red'. For nearly all activities that produce the sounds in question, one bang is likely to represent a series (e.g. pile-driving, seismic surveys). Some members of the TSG questioned this and proposed that the number and sound level of bangs should be included. This though would add considerable complication to both the registration and management of these sounds.

- Acoustic levels

The TSG questioned the proposed use of threshold levels at a precautionary level. It is not possible to differentiate between sources with different source level. The use of source levels can be complicated. Stating the targeted activities, independent of the levels, would be much less complicated. However, this would not give any incentives to industries/governments to apply mitigation measures, neither would setting any thresholds at an unattainably low level.

- Noise level in adjacent cells

The indicator as it is now only addresses noise in the cell where the noise is produced (source). One could calculate the noise level in adjacent cells. However, Mark Tasker explained that TG11 had reasoned that this would make the indicator more complicated. There was a discussion about whether this in the TSG, this issue has not been solved during the meeting and will require further work, as part of the work package 2.3.

- Appropriate scale

The size of grid unit remains to be defined in the Commission decision. TG11 suggested units of ¼ ICES statistical rectangle (15 NM N/s x 30 min E/W). This was a precautionary choice as the empirical evidence for one species (harbour porpoise) indicates average effects at ranges beyond 20 km. Other grid units might be the block system used to licence oil and gas activities (most NW European MS have such a system). There is also the issue of the rectangles varying in size due the earth being a sphere. In order for TSG to suggest appropriate scales, it would be very useful to understand the current spatio-temporal distribution of these sounds in MS waters. It was agreed that the TSG would ask MS for information on this through the WG GES.

A discussion took place about whether Indicator 11.1 fulfills the need for proportionality. One argument is that the use of a threshold, independent of both duration and repetition, might result in a lack of proportionality. On the other hand, by including the words "significant impact", the proportionality is automatically included.

The TSG noise concluded that they will produce guidance for MS (product 2.3). It is a responsibility of member states to determine the way they want to register which levels, but the TSG Noise should give advice on how to decide on appropriate levels. The guidance should at least include:

- 1) Series of options on sound levels
- 2) Series of options on spatial scales
- 3) Series of options on number of days figures

These options will be related to the effects and to practicality (what is manageable)

The TSG noise concluded that the proposal for the establishment of a register for of a register of loud impulsive low-and mid- frequency sound sources (Product 2.4) should be further developed before the next meeting

### **7. Develop proposals to monitor low frequency continuous sounds (ToR 3)**

- *Presentation: Proposal for a monitoring scheme for low frequency continuous sounds (Product 3.1) – Frank Thomsen. Presentation on sharepoint*

After the presentation the TSG concluded that there should also be a product about the interpretation of this indicator. The group added this to the work plan.

The TSG discussed the location of hydrophones, some points that were discussed:

- o Should there be hydrophones placed in reference ("quiet") areas?
- o Historical data will be difficult to model because of changes in ships propulsion systems.
- o Hydrophones should preferably be placed in areas that are likely to have higher levels of shipping sound (hot spots) but not near to places where sounds might be dominated by a single source (such as a ferry route)

The TSG agreed that they will prepare an advice on the distribution of measuring stations, keeping in mind all of the above, the need for replication and the physical differences between seas (for example shallow and deep water).

- *Michel Andre – presentation of map of "Listening to the Deep Ocean Environment" project.*

The maps shown during this presentation are available at the project's website:

<http://lido.epsevg.upc.es/> . The TSG noted the maps produced by the project and agreed that this could be a suitable approach.

### **8. Assessment of the need to develop criteria and indicators for other forms of energy (ToR 4)**

The TG 11 report contains information on three other forms of energy (page 26-32)

- o devices to deter marine mammals
- o electromagnetic fields
- o heat release

as well as on the high-frequency impulsive sounds that were not taken forward in the Commission Decision.

It was decided that the TG11 work should form the basis of this work. A few suggestions were made of possible additional forms of energy (particle motion through pile-driving, radar and light). A small group will have a look at the necessity to add these before the next meeting. The work will be split up in 1) other noise indicators and 2) other forms of energy.

The TSG decided that if the TSG should consider that further indicators should be developed then reasoning was required as to why this form of energy would have an ecosystem effect and why it influences GES.

### **9a. Opportunity for participants to bring forward any relevant material on Good Environmental Status (ToR 5).**

There was some discussion about what the TSG is supposed to deliver on this point. Leo de Vrees indicated that the sharing of best practices would be an appropriate task for the TSG. Some of the members of the TSG noise are involved in national process. The TSG should be a platform where we can share and discuss their views and their progress.

Furthermore he explained that the MSFD is about sustainable use, not about a pristine status. He referred to the definition of 'Good environmental status' in the MSFD<sup>1</sup>.

The TSG agrees that the chairs will address a letter to the WG GES asking them to forward information on their progress on defining GES and setting targets for MSFD descriptor 11 to the TSG noise. This information can be reviewed and discussed during the next TSG noise meeting and possible conclusions may be drawn.

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<sup>1</sup> MSFD Art 3.5: 'Good environmental status' means the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations.

**9b. Opportunity for participants to bring forward any research needs (ToR 6).**

Any suggestions for further research will most likely come out of the work on the other products, in particular product 1.2. A small group has been established that will combine all suggestions in a document for the next meeting. If necessary a framework for prioritisation can be made.

**10. Adoption of the work plan and appointment of task managers**

The work plan with the adjustments made during the meeting is approved. The list of products and task managers is reviewed. Each task (except so far 2.2 and 5.1) has a task manager and a group of contributors.

**11. Any other business**

*Arrangements for the next meeting*

- The next meeting will be hosted by the UK
- Provisional meeting date: 6+7 October (directly after ambient noise meeting in Southampton).
- Location: Teddington, near London
- The meeting should be 1,5 or 2 days. Participants prefer that the meeting finishes early on afternoon of Friday 7<sup>th</sup>.

**Attachments to the report:**

**A. Adjusted Work Plan**

**B. List of Products and Task managers**