



Netherlands Commission for  
**Environmental Assessment**

# Digital interactive Environmental Assessment Report

Advisory report

28 March 2017 / project number: 3195





# 1. Summary

RoyalHaskoningDHV (hereafter 'RHDHV') has adopted the idea of a digital interactive environmental report (EA report). The Ministry of Infrastructure and Environment, Directorate-General for Public Works and Water Management (hereafter Ministry of I and E) and RHDHV have jointly taken the initiative to conduct a pilot project in which most of the existing EA report on strengthening the Houtrib dike has been converted into a digital interactive form that discloses the information via a website and uses modern visualisation techniques.

The Netherlands Commission for Environmental Assessment (hereafter 'the NCEA') believes that providing access in the form of a website creates opportunities for presenting the information in an EA report more accessibly. This is achieved partly by rigorous editing, which can also be applied to a 'regular' EA report. What is distinctive about a digital interactive EA report is that it can better be tailored to the specific information needs of the different users of EA reports, and the reader can quickly get to the information of interest. The use of modern presentation techniques, such as 3D visualisations, enables the accessibility of the information to be improved even more. It is important that these visualisations give a realistic picture of the expected impacts.

In this advisory report the NCEA presents points to be considered for the further development of the digital interactive EA report. These points relate to further improving accessibility and user-friendliness, and to statutory requirements and robustness in legal proceedings. It asks for attention to be given in particular to version management and the possibility of freezing the information at the time/date of public disclosure and quality assurance by the NCEA, and thereafter when the plan/decision has been adopted, because it must be clear on which information the adoption has been based.

The NCEA recommends that more research be done on the specific wishes and needs of the other users of EA reports, and on the possibilities of developing the current digital interactive EA report into a platform where parties involved in designing the plan and project, in the participation process and in drawing up the EA report can exchange knowledge and information in an interactive process. In addition, the costs and benefits of a digital interactive EA report should be compared with those of a traditional EA report (in report form or in pdf format), taking into consideration the options that could be used to optimise the information in a traditional EA report and present it more accessibly.

## 2. Background

### 2.1 Rationale

The Ministry of I and E, together with RHDHV, have taken the initiative to carry out a pilot project for a digital interactive EA report, in which the information is disclosed via a website and use is also made of modern presentation techniques such as 3D visualisations. In the pilot project, RHDHV converted most of the existing EA report on the strengthening of the Houtrib dike into a digital and interactive form.

## 2.2 Scope of the investigation

The Ministry of I and E requested the NCEA to advise on:

- the added value of a digital interactive EA report versus a traditional report (analogue report or pdf format);
- the points to consider in the case of further development, including the robustness of a digital interactive EA report in legal proceedings.

The NCEA has evaluated the above primarily from its role as assessor of the quality of EA reports. It has therefore looked at what requirements a digital interactive EA report must satisfy to ensure that complete and correct information is made available that can be used for adequate environmental assessment when planning and decision-making.

## 2.3 Method

For its advisory report the NCEA set up a working group of external experts and NCEA secretaries.<sup>1</sup> The starting point for the advisory report was the digital interactive EA report for the strengthening of the Houtrib dike. RHDHV and the Ministry of I and E explained the initiative and the website on the Houtrib dike pilot project to the working group in a start-up consultation.

# 3. What opportunities does a digital interactive EA report offer?

## 3.1 Accessibility of current EA reports

Moving towards a digital interactive EA report fits in with the growing trend in the Netherlands and abroad for government and companies to make information available digitally – sometimes exclusively so – and to handle issues increasingly interactively. Whereas in the past, EA reports were made available in analogue form (i.e. as a report), nowadays they are often only available in digital form, usually in pdf format. EA reports mostly consist of a main report and various supplementary reports focusing on specific environmental aspects. In addition to the main report and supplementary reports, other relevant information is also presented in separate background documents, such as draft decisions, public submissions, council records, grounds of appeal and model data.<sup>2</sup> The NCEA points out that main and supplementary reports and background documents are increasingly being made available without a clear contents list or explanatory note for the reader, with the result that it is not always clear where a particular type of information can be found. Furthermore, a considerable part of the information in supplementary reports is repeated in the main report. This does have the advantage that both the main report and the supplementary report can be read independently, but the disadvantage is that the total EA report can become very bulky.

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<sup>1</sup> The composition of the NCEA working group is in Annex 1 of this advisory report. More information on the project can be found by typing [3195](#) in the search window at [www.commissiener.nl](http://www.commissiener.nl).

<sup>2</sup> It is not uncommon for the NCEA to be sent 10 – 15 and sometimes even 40 different main and supplementary reports and background documents for evaluation, sometimes merged into a single document without a search function.

## 3.2 Providing layered information

Disclosing information via a website, as has now been done in the pilot for the strengthening of the Houtrib dike, provides good opportunities for presenting the information in a more accessible way. Layering the information can:

- prevent unnecessary repetition of information/text and enable readers to quickly access the information they are interested in;<sup>3</sup>
- be well matched to the specific need for information of the different target groups.<sup>4</sup>

One way information can be layered is to begin the presentation from an overview table in which plus and minus signs for the various environmental themes indicate the evaluation of the alternatives for a plan or project. By clicking on these plus and minus signs, interested parties wishing to find out more can find what this impact assessment actually contains. The next layer down can give details: for example, about the model used to determine and evaluate the impact, about the input data and about the uncertainties accompanying the determination and evaluation of the impact.

## 3.3 Modern presentation options

The use of modern presentation options can improve the accessibility of the information even more. The NCEA sees this increasingly being applied in practice: in participation processes and environmental assessments. Examples are the use of 3D simulations to visualise the repercussions on the landscape<sup>5</sup> or audios of anticipated noise nuisance by comparison with the noise level in the reference situation.<sup>6</sup> The NCEA expects that in future, techniques such as virtual and augmented reality<sup>7</sup> could also play an important role. The bottom line must be that the presentation techniques used have added value for users and give a realistic picture of the anticipated consequences:

- for example, although a bird's eye view can give a good overview of a plan or project, it is not the viewpoint from which people will experience a new activity. The chosen viewpoint should therefore be from eye height – for example, from a residential area, from a main road on a dike, or from a popular tourist spot;
- it is also important to attune the detail of the visualisation to the level of detail of the decision, as this prevents unrealistic expectations being raised that later are not (or cannot) be fulfilled. Thus, when a decision is more abstract, one should always opt to use grey shading;

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<sup>3</sup> Currently, frequent searches in annexes and/or background documents are often necessary. Moreover, the NCEA notes that in more traditional EA reports (analogue or in pdf format), the information could be presented more accessibly.

<sup>4</sup> Administrators and elected public representatives will be primarily interested in the most important environmental consequences of the options before them. They need a management summary that is not too detailed. People living nearby are primarily interested in the environmental consequences for their own environment, the environmental aspects to which they attach great value and possible mitigating measures. Civil servants, experts and lawyers require more detailed information: they want to know what the conclusions are based on, what the uncertainties are in the determination and evaluation of impacts, and what the legal risks are.

<sup>5</sup> Here it holds that 'a picture is worth a thousand words'.

<sup>6</sup> See for example <http://www.alderstafel.nl/routes-en-geluid.html>.

<sup>7</sup> Virtual reality is a digital technology by means of which the user's senses are manipulated such that he or she experiences this virtual reality as a new reality in which he or she can move around. The user sees, hears, feels and experiences this new world and in addition is able to make changes interactively. Augmented reality is a technology that links together reality and the virtual world; furthermore, extra digital content is added to the user's field of view.

- a computational model may give the false impression that the impacts at a given location are known for certain. The uncertainty in a visualisation should therefore always be made clear, for example, by indicating the pixel size the model uses;
- how noise is experienced depends greatly on the type of equipment on which the noise clip is played, and its settings. For an objective evaluation, the sound played must be calibrated. In addition, the noise should be reproduced as it is experienced relative to other sounds (such as birdsong, children playing, or a passing vehicle).

## 4. Points for consideration in the case of further development

In chapter 3 of this advisory report the NCEA has noted that by comparison with the original EA report, the information in the digital interactive EA report on the strengthening of the Houtrib dike has been presented more accessibly. This has partly been achieved by rigorous editing. The digital interactive EA report has a clear menu that enables easy navigation. For readers/users not to become lost it is important that at all times it is clear to them where they are in the website and that there are not so many links that they become confused.<sup>8</sup> Work has begun on preparing a summary of the most important results and conclusions. More in-depth information is given on subsequent webpages or via links.<sup>9</sup>

In the following sections the NCEA gives points to be considered for further development. These points relate to further improving accessibility and user-friendliness of the digital interactive EA report, and to statutory requirements and robustness in legal proceedings.

### 4.1 Accessibility and user-friendliness

#### *Add an internal search engine*

Website users often need an internal search engine for use when they cannot access the information they require directly or fast enough via the usual pathway (i.e. via the navigational structure). A search function is also useful for obtaining a total overview of a certain topic in the EA report.

#### *Provide an annotation function*

Experts like those in the NCEA, who must evaluate the accuracy and completeness of the information in EA reports, need to be able to add annotations digitally and to have insight into which information on a certain topic has already been viewed (and thus which not yet).

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<sup>8</sup> By using a click path, the user always knows where he or she is.

<sup>9</sup> Simply presenting the summary in website form, with links to in-depth information in pdf format, already seems to be an improvement by comparison with a more traditional EA report. Moreover, a non-technical summary is one of the few statutory requirements imposed on an EA report (Sections 7.7 and 7.23, Environmental Management Act).

#### *Make the information accessible for people with a disability*

Ensure that the information can also be accessed by people with a disability, such as the visually impaired (for example, offer the option of enlarging the font size and ensure there is sufficient contrast on the webpages) and people with dyslexia (provide a listen function).<sup>10</sup>

#### *Provide a print option*

People read from screens differently than from paper. When reading a screen, they have to concentrate more and they absorb information less well.<sup>11</sup> For these reasons, many people prefer information to be on paper, so the NCEA recommends also offering the option to print out clearly the information in the digital interactive EA report.<sup>12</sup>

## 4.2 Statutory requirements and robustness in legal proceedings

A digital interactive EA report must of course also meet the requirements regarding:

- the contents of an EA report, as stipulated in the Environmental Management Act;
- the management and archiving of digital files as included in the Public Records Act;
- the reuse of government information, as included in the Reuse of Public Sector Information Act.<sup>13</sup>

A digital interactive EA report must also comply with the European guidelines on website accessibility and, preferably, the guidelines for website construction quality (see [www.digi-toegankelijk.nl](http://www.digi-toegankelijk.nl)).

The NCEA asks for particular attention to be given to good version management and the possibility of freezing the information in the digital interactive EA at the moment of inspection and quality assurance by the NCEA, and thereafter when the plan/decision has been adopted, as this will ensure transparency about which information the decision has been based on. It must be ensured that the links to external information are stable, especially if they pertain to crucial information. This can be achieved by making a mirror image of this information, which is also available offline.

## 5. Necessary follow-up research

### 5.1 Carry out a usability study

The success of the digital interactive EA report depends on how well it meets the wishes and needs of the various users (administrators/elected public representatives, people living nearby, civil servants, experts and lawyers). The NCEA therefore recommends carrying out a

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<sup>10</sup> The requirements of the European guidelines regarding accessibility of websites can be found at [www.digitoegekelijk.nl](http://www.digitoegekelijk.nl).

<sup>11</sup> See for example M. Spitzer, *Digitale dementie* (2013). ISBN13: 9789045024332.

<sup>12</sup> A printout also makes it possible to capture a certain version. See also section 4.2 of this advisory report.

<sup>13</sup> Investigate the possibility of making it easier to unlock and reuse information: for example, by linking to the Environment and Planning Act digital system.

usability study. The different users of EA reports should be surveyed to find out their specific wishes relating to content, accessibility and user–friendliness. The study should analyse how the information is best absorbed and how the digital interactive EA report is used in practice. For example, it should be found out how often the internal search function is used. Frequent use could indicate that the regular navigational structure is too complex or is unclear. The most frequently used search terms should also be ascertained, as they could indicate that certain information needs to be made more visible in the navigational structure. The desirability and possibilities of achieving a more or less fixed format for a digital interactive EA report need to be ascertained, as a fixed format could have advantages for the compilers and users of EA reports.

The pilot study for the strengthening of the Houtrib dike entailed converting an existing EA report into a digital interactive form. The NCEA recommends that a follow–up study create a digital interactive EA report from scratch, using an EA report with several alternatives/variants, and with studies of the impacts on, for example, nature, landscape, noise and air quality, to which different parties have contributed content.

## 5.2 Fit in with the planning and participation processes

In addition to the opportunities for a digital interactive EA report mentioned in chapter 3 of this advisory report, the NCEA also sees opportunities for achieving more interactive planning and decision–making processes. The added value of better interaction between the planning and participation processes on the one hand and, on the other hand, environmental assessment, arises if the participation process yields questions, concerns and ideas for the EA report and, vice versa, if the EA report delivers new insights to the planning and participation processes. By setting up the EA report more from the planning and participation processes than is currently the case, the NCEA expects that the most important issues for the decision–making will be more influential in the final EA report. This will benefit both the quality and scope of the EA report. At the same time, the planning and participation processes will profit because it will be possible to use the knowledge generated by the EA report’s compilers. Such joint fact–finding will thus raise the quality of the development of plans and projects.

The NCEA therefore recommends investigating to what extent the current digital interactive EA report can be developed into a platform where parties involved in designing the plan and project<sup>14</sup>, in the participation process and in compiling the EA report can exchange knowledge and information in an *interactive* process. Moreover, the NCEA points out that a traditional EA report can also be set up more interactively and participatorily.

## 5.3 Do a cost–benefit analysis

During the start–up consultation, RHDHV stated that in the long term, after the initial development costs, the expected costs of achieving a digital interactive EA report will be less than those of a more traditional EA report. However, the NCEA believes it is conceivable that the possibilities a digital interactive EA report offers will create an extra need, which will give rise to extra work and higher costs.

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<sup>14</sup> Where digital drawing tables are often used.

The NCEA therefore recommends carrying out a cost-benefit analysis in which the costs and benefits of a digital interactive EA report are compared with those of a traditional EA report (reference situation – the zero alternative) and an optimised version of a traditional report (the zero-plus alternative). This zero-plus alternative uses the options available for presenting the information in a traditional EA report (analogue or pdf format) more accessibly. The NCEA recommends analysing which type of plans/projects best do justice to the advantages of a digital interactive EA report.

## Annex 1: Project information

### Activity:

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The Ministry of Infrastructure and Environment requested the NCEA to advise on:

- the added value of a digital interactive EA report versus a traditional report (analogue report or pdf format);
- the points to consider in the case of further development, including the robustness of a digital interactive EA report in legal proceedings.

### Procedure:

Advice application: 16 January 2017

Advice released: 28 March 2017

### Project number:

3195

### Composition of the NCEA working group:

For its advisory report the NCEA set up a working group of external experts and NCEA secretaries:

Mr G.P.J. Draaijers (senior technical secretary)

Mr G.A.J.M. Hoevenaars

Mr J.A. Huizer

Mr J.F.F.M. Lembrechts

Ms W. Smal

Mr C.Th. Smit (Deputy chairman)

Mr R.L. Vogel

### More information:

More information on the development of a digital interactive environmental assessment report can be obtained from the Ministry of Infrastructure and Environment, Directorate-General for Public Works and Water Management (Mr B. Barten; [bart.barten@rws.nl](mailto:bart.barten@rws.nl)) and Royal Haskoning-DHV (Mr P Eijssen; [paul.eijssen@rhdhv.com](mailto:paul.eijssen@rhdhv.com)).

**Visiting Address**

A. v. Schendelstraat 760  
3511 MK Utrecht  
The Netherlands

**Postal Address**

P.O. Box 2345  
3500 GH Utrecht  
The Netherlands

t +31 30 2347666  
e [mer@eia.nl](mailto:mer@eia.nl)  
w [eia.nl](http://eia.nl)

