

# *The 6<sup>th</sup> Nordic Drinking Water Conference*



**9<sup>th</sup> – 11<sup>th</sup> June 2008**

**Radisson SAS Scandinavia Hotel Oslo, Norway**

**Program and practical information**



**Norsk Vann**

**NORDIWA**

[www.norskvann.no/nvk2008/forside](http://www.norskvann.no/nvk2008/forside)

## Organizer and co-operating partners

The 6<sup>th</sup> Nordic Drinking Water Conference will be organized at Radisson SAS Scandinavia Hotel Oslo, 9<sup>th</sup> – 11<sup>th</sup> June 2008.

The Nordic Drinking Water Conference has been held every second year since 1998. The conference is circulated between the countries and in 2008 the conference will be held in Norway. Norwegian Water BA organizes the 6th conference in cooperation with the other Nordic water and wastewater associations, NORDIWA (the Nordic network of the International Water Association – IWA) and the City of Oslo.

## Program committee

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## **Objectives and content**

The intention of the conference is to stimulate the exchange of experience, knowledge and skills between the practitioners and scientists within drinking water technology in the Nordic countries. The conference aims at personnel and managers of water and wastewater works, consultants, contractors, scientists and authorities.

The Nordic countries have many common problems to be addressed within the field of drinking water and therefore the benefit of exchanging knowledge and experience is great. During the last years the cooperation has increased further through the establishment of NORDIWA coincident with a still closer cooperation between the water and wastewater associations in several areas.

NORDIWA has now got a stronger role concerning the Nordic water and wastewater conferences and has among other things drawn up guidelines about organizing of the conferences. For the first time the program committee has announced an open call for abstracts. The response on this has been good and the program committee received more abstracts to choose between than the conference had room for. According to the guidelines the committee in addition invited a less number of speakers to contribute.

The conference covers a number of relevant topics, both superior and more detailed technical aspects. The program consists of seven different sessions. On the first day we have a closer look at important challenges in management and changes in framework conditions for water works. On the second day microbiological challenges are addressed, combined with a session on water treatment and excursion to the new Oset water treatment plant. The main subject on the last day is Water Safety Plans, which many water works are currently implementing. All together this covers important and relevant topics for the drinking water sector in the Nordic countries.

This conference focus on the importance of sharing knowledge and experience in the drinking water sector. Poster presentations are therefore used to give a broad picture of work and experience within the field of drinking water during the last years.

Large cities in the Nordic Countries are invited to present their work on information and service to customers, and experience from activities aimed to create good relations with schools and the public in general.

A new water treatment plant at Oset water works are handed over to the City of Oslo in May. The programme committee and City of Oslo, Water and Sewerage works, are proud and happy to invite all participants at the conference to an excursion at Oset. In addition, the Norwegian Army will demonstrate their mobile water treatment plant during the excursion.

We wish you hearty welcome to the 6<sup>th</sup> Nordic Drinking Water Conference and hope that you will have interesting days in Oslo.

Kjetil Furuberg  
Chairman of the program committee

# Program

## Monday 9<sup>th</sup> June

08.30 Registration and poster set up

### 10.30 – 12.00 **Opening of the conference**

#### 10.30–11.00 **Opening and welcome**

- Arvid Libak, State Secretary, Ministry of Health and Care services
- Einar Melheim, Managing Director of Norwegian Water
- Managing Director, City of Oslo, Water and Sewerage works

#### 11.00–11.30 **«The New Insecurity» and Water Management**

Can this create new framework conditions for water and sewerage works in the Nordic countries, and should the Nordic countries have a global role?  
Terje Tvedt, *University of Bergen*

#### 11.30–12.00 **Challenges as a water supplier in different situations**

Customers reactions on the «The water incident» in Oslo in the autumn of 2007  
Eli Grimsby, *City of Oslo, Water and Sewerage works*

## 12.00 – 13.00 **Lunch**

### 13.00–14.30 **Session 1 Management**

Chair: Riku Vahala, Helsinki University of Technology

#### 13.00–13.30 **Challenges facing the water works due to climate change**

Management practice in the Nordic countries addressing these challenges.  
A-M Bomo, C. Vogelsang, I. Tryland and H. Liltved;  
*Norwegian Institute for Water Research (NIVA), NO*

#### 13.30–14.00 **Benchmarking customer-experienced supply of water**

C.S. Schow<sup>1</sup>, H.-J. Albrechtsen<sup>2</sup>, E. Arvin<sup>2</sup> and A. Raben<sup>3</sup>;  
<sup>1</sup>*Orbicon*, <sup>2</sup>*Technical University of Denmark*, <sup>3</sup>*Rambøll, DK*

#### 14.00–14.30 **Practical regional cooperation in the water supply sector between 9 local municipalities**

A. D. Moen, R. A. Dupont, J. E. Skaret and T. Røren; *Glitrevannverket, NO*

## 14.30 – 15.00 **Coffee break**

## 15.00 – 16.30 **Session 2 Legislation**

Chair: Henning Saabøll, Birkerød Vandforsyning a.m.b.a.

### 15.00 – 15.30 **Revision of the Drinking Water Directive**

Jan Cortvriend; *Water Unit, DG Environment, European Commission*

### 15.30 – 16.30 **New legislation in the Nordic countries**

New legislation on water management in Denmark

Carl-Emil Larsen; *Danish Water and Wastewater Association*

New requirements to safeguard Finnish drinking water

Jari Keinänen; *Social Affairs and Health, Finland*

Public Waterservices Act in Sweden

Rita Lord; *Swedish Water & Wastewater Association*

Changes in regulations for the Norwegian Water Sector

Toril Hofshagen; *Norwegian Water*

Water Supply and Water Safety Regulations in Iceland

María J. Gunnarsdóttir; *Samorka*

### 16.30 – 17.00 **John Snow Society – Scandinavia**

[www.johnsnowsociety.org/news](http://www.johnsnowsociety.org/news)

## 18.00 – 19.30 **Reception in the City Hall**

### Tuesday 10<sup>th</sup> June

## 08.30 – 10.00 **Session 3 Biofilm in distribution systems**

Chair: Vidar Lund, Norwegian Institute of Public Health

### 08.30 – 09.00 **Biofilm formation and biofilm formation potential in Nordic drinking water – a review of research and full-scale experiences the last decade**

L.J. Hem<sup>1</sup> and V. Lund<sup>2</sup>;

<sup>1</sup>SINTEF, <sup>2</sup>Norwegian Institute of Public Health, NO

### 09.00 – 09.30 **Survival of Mycobacterium avium, Legionella pneumophila, Escherichia coli and caliciviruses in drinking water biofilms**

I. T. Miettinen<sup>1</sup>, M. J. Lethola<sup>1</sup>, E. T. Orvinen<sup>1,2</sup>, J. Kusnetsov<sup>1</sup>, T. Pitkänen<sup>1</sup>,

L. Maunula<sup>3</sup>, C. H. von Bonsdorff<sup>3</sup> and P. J. Martikainen<sup>2</sup>;

<sup>1</sup>National Public Health Institute, <sup>2</sup>University of Kuopio, <sup>3</sup>University of Helsinki, FI

## 09.30 – 10.00 Poster presentations

### **Bacterial biofilm development within cross linked polyethylene (PEX) pipes used for distribution of drinking water**

M. Anderson-Glenna and V. Lund; *Norwegian Institute of Public Health, NO*

### **Moulds, biofilm and drinking water**

G. Hageskal and I. Skaar; *National Veterinary Institute, NO*

### **Direct bacterial cell count of intact in situ biofilms formed in groundwater and surface water distribution systems**

P. Vuoriranta and E. Haume; *Tampere University of Technology, FI*

## 10.00 – 10.30 Coffee break

### 10.30 – 12.30 **Session 4 Operation and control of water works**

Chair: Gullvy Hedenberg, Swedish Water & Wastewater Association

### 10.30 – 11.00 **Challenges in operation and control of disinfection processes**

H. Ødegaard; *Norwegian University of Science and Technology, NO*

### 11.00 – 11.30 **Design and operation challenges in UV-disinfection**

B. Eikebrokk; *SINTEF, NO*

### 11.30 – 12.00 **Optimal operational monitoring of nanofiltration – results from destructive testing of microbiological break-through**

P. Pillipenko<sup>1</sup>, T. Håkensen<sup>2</sup> and H. O. Gjerdrum<sup>3</sup>;

<sup>1</sup>*Fluidtech AS*, <sup>2</sup>*VA-Support AS*, <sup>3</sup>*Gjerdrum kommune, NO*

## 12.00 – 12.30 Poster presentations

### **Technology advance with a new Scandinavian ozongenerator**

E. Eriksen<sup>1,2</sup> and J.Å. Borgström<sup>2</sup>;

<sup>1</sup>*SINTEF RMB, NO*, <sup>2</sup>*Primozone Productions AB, SE*

### **Drinking Water Reservoirs – problem areas and preventive maintenance**

M. Mattson; *Amphitech AB, SE*

### **Use of chitosan as a coagulant alternative**

#### **– summary of practical experiences**

H. Helgesen<sup>1</sup> and T. Håkensen<sup>2</sup>;

<sup>1</sup>*Haugesund kommune*, <sup>2</sup>*VA-Support AS, NO*

## 12.30 – 13.30 Lunch

### 13.30 – 15.00 **Session 5 Microbiological risk**

Chair: Maria Gunnarsdottir, Samorka

#### 13.30 – 14.00 **Microbiological risk assessment by modelling the combined efficiency of treatment processes in water works**

J.L. Abrahamsson; *Leva in Lysekil, SE*

#### 14.00 – 14.30 **Analysis of microbial contaminations and risk of outbreaks in Danish drinking water supplies**

H-J. Albrechtsen<sup>1</sup>, C.C. Engelsborg<sup>1</sup>, U.T. Andersen<sup>1</sup>, L. Bagge<sup>2</sup> and S. Ethelberg<sup>3</sup>;

<sup>1</sup>*Technical University of Denmark*, <sup>2</sup>*Environmental Protection Agency*,

<sup>3</sup>*Statens Serum Institut, DK*

#### 14.30 – 15.00 **Poster presentations**

##### **Early-warning alarm system and quantification of toxin producing blue-green algae and their toxins in water**

M. Vehniäinen<sup>1</sup>, E. Jokisalo<sup>1,2</sup>, M. Meriluoto<sup>3</sup> and H. Hautala<sup>1</sup>;

<sup>1</sup>*University of Turku*, <sup>2</sup>*VWR Life Science*, <sup>3</sup>*Åbo Akademi, FI*

##### **Recommendations from the Expert group on microbiology in EU on microbiological parameters in the DWD**

L. Bagge; *Agency for Spatial and Environmental Planning, DE*

##### **Disinfection of a contaminated distribution system in Koege, Denmark**

A. Raben; *Rambøll Denmark, DE*

## 15.00 – 15.30 Coffee break

### 15.30 – 19.00 **Excursion to the new water treatment plant at Oset water works**

### 20.00 **Conference dinner at the hotel**

**08.30 – 11.30 Session 6 Water Safety Plans**

Chair: Andreas Wiberg, Swedish Water & Wastewater Association

**08.30 – 09.00 Managing Waterwork with systematic preventive approach as HACCP and Water Safety Plans – what is the gain?**

Gudmundur Davidsson<sup>1</sup> and Páll Pálsson<sup>2</sup>;  
<sup>1</sup>Vatnsveita Egilsstaða, <sup>2</sup>Skaðafjardarveitur, IS

**09.00 – 09.30 Generic framework for integrated risk management in Water Safety Plans**

L. Rosén<sup>1</sup>, P. Hokstad<sup>2</sup>, A. Lindhe<sup>1</sup>, S. Sklet<sup>2</sup>, J. Røstum<sup>2</sup> and T.J.R. Petterson<sup>1</sup>;  
<sup>1</sup>Chalmers University of Technology, SE, <sup>2</sup>SINTEF, NO

**09.30 – 10.00 Poster presentations**

**Assessment of drinking-water contamination factors in a distribution system: pressure transients and soil microorganisms**

S. Gaborit and D. Lenés; *Veolia Vann AS/Veolia Vatten AB/Veolia Vand AS*

**3-D modelling of surface water in order to secure drinkingwater source**

A. König<sup>1</sup> and H. Kierulf<sup>2</sup>; <sup>1</sup>DHI, <sup>2</sup>Trondheim kommune, NO

**Experiences from Swedish Drinking Water Protection Area Processes**

M. Liedholm; *Sweco Viak AB, SE*

**10.00 – 10.30 Coffee break with sandwiches**

**10.30 – 11.30 Water Safety Plans and HACCP in Helsinki Water**

H. Härkki and V-P. Vuorilehto; *Helsinki Water, FI*

**Integrated risk analysis from source to tap – case study Göteborg**

A. Lindhe<sup>1</sup>, L. Rosén<sup>1</sup>, T. Norberg<sup>1</sup>, T. Petterson<sup>1</sup>, O. Bergstedt<sup>2</sup>,  
J. Åström<sup>1</sup> and M. Bondelid<sup>1</sup>; <sup>1</sup>Chalmers University of Technology,  
<sup>2</sup>Göteborg Vatten, SE

**Risk and vulnerability assessment («ROS-analysis») of the Bergen water supply system – a source to tap approach**

J. Røstum<sup>1</sup>, A. Aasen<sup>2</sup> and B. Eikebrokk<sup>1</sup>; <sup>1</sup>SINTEF, <sup>2</sup>Bergen kommune, NO



## 11.30 – 11.45 Coffee break

### 11.45 – 13.15 **Session 7 Asset management**

Chair: Kjetil Furuberg, Norwegian Water

#### 11.45 – 12.15 **New demands for quality of drinking water and pipe materials – a challenge for the Nordic countries?**

R. Mäkinen, M. M. Keinänen-Toivola, T. Kaunisto, T. K. Kekki, M. H. Ahonen and M. Luntamo; *FIDW/Prizztech, FI*

#### 12.15 – 12.45 **Field investigations of plastic water supply pipes. Environmental projects 1049 and 1167 for the Danish Environmental Protection Agency**

I. A. Fugelsang<sup>1</sup>, L. M. Nielsen<sup>1</sup>, E. V. Fischer<sup>1</sup>, J. A. Falkenberg<sup>1</sup>, S. Rasmussen<sup>2</sup> and K. Hanzi<sup>2</sup>;  
<sup>1</sup>*NIRAS*, <sup>2</sup>*Danish Environmental Protection Agency, DK*

#### 12.45 – 13.15 **Condition assessment of water pipes**

A. C. Vangdal; *Breivoll Inspection Technologies, NO*

### 13.15 – 13.30 **Closing of the conference**

## 13.30 Lunch

## Reception in the City Hall

In addition to being a work place for some 450 municipal employees and politicians, Oslo City Hall also attracts more than 100,000 guests, visitors and tourists every year. It is the capital's most important venue for formal ceremonies, and also an arena throughout the year for 400 or more large and small arrangements, the best known being perhaps the presentation of the Nobel Peace Prize.

The reception at the 6<sup>th</sup> Nordic Drinking Water Conference will take place on Monday the 9<sup>th</sup> June from 18:00 to 19:30 in the City Hall. Fingerfood and soft drinks/wine will be served. Informal/smart dress. After the reception it is possible for interested persons to attend a short guided tour in the City Hall.

More information about the City Hall is available at

[www.radhusets-forvaltningstjeneste.oslo.kommune.no/oslo\\_city\\_hall](http://www.radhusets-forvaltningstjeneste.oslo.kommune.no/oslo_city_hall)

## About the excursion

The excursion will take place Tuesday 10<sup>th</sup> June and goes to the new Oset Water Treatment Plant. The busses leave from the conference hotel at 15:30, and returns at hotel at 19:00.

In addition to a guided tour inside the new treatment plant, there will be information in a media room and demonstration of a mobile water treatment plant, used in deployments abroad, by the Norwegian Army. Fingerfood and soft drinks are served.

### The new Oset water treatment plant

The new Oset water treatment plant will be the largest treatment plant in the Nordic countries owned by a municipality. The project started in November 2003 and ends in May 2008. Oset water works will supply up to 90 % of the people in Oslo (ca. 500 000 persons) with drinking water of high quality. The treatment plant has a total capacity of 390 000 m<sup>3</sup> per day. The total cost is estimated to NOK 725 millions.

The treatment plant are build into the mountain and designed as compact as possible to limit the need for blasting and transportation. The new plant has two independent, identical production lines situated in two main halls which are 27 meters wide, 16 meters high and approximately 150 meters long.

The treatment plant is build to meet stronger demands to water quality and to have a much more reliable delivery of treated water. The city of Oslo wishes to reduce the great dependence of the main water source Maridalsvannet, and the treatment plant are therefore planned for handling water from both Maridalsvannet and a future water source.

The treatment processes are chemical precipitation and filtration, combined with UV-treatment. Chlorination is not used in the treatment, only as an option if the UV-treatment fails. When the new treatment plant is fully functional, the water supply in Oslo will meet all the demands in the Norwegian drinking water regulations.

## Poster exhibition

There will be a poster exhibition in connection to the conference hall which can be visited during the breaks. The exhibition has to types of posters, ordinary poster and poster presented in the plenary session. In addition a number of large water works are having stands presenting their work on information and service to customers and the public in general. Questions connected to the poster presentations are to be answered at the poster during breaks in the program.

Ordinary poster registered:

1. Water management in the Vombsjön area – in accordance with the Water Framework Directive.  
A-C. Sundahl<sup>1</sup>, L. Tilly<sup>1</sup> and J. Schuster<sup>2</sup>; <sup>1</sup>Tyréns AB, <sup>2</sup>Sydvatten AB, SE
2. Prevention of biofilm formation in pipelines and water reservoirs  
– results from introductory testing of a new coating.  
T. Håkonsen<sup>1</sup>, M. Khait<sup>2</sup>, H. Efraimsen, and A. Hermansen<sup>3</sup>; <sup>1</sup>VA-Support AS, <sup>2</sup>ITTG Group, <sup>3</sup>Nedre Romerike Vannverk, NO
3. Long term trends of TOC and colour in raw water caused by increased precipitation and changed precipitation chemistry.  
D. Hongve<sup>1</sup>, S. Haaland<sup>2</sup> and G. Riise<sup>2</sup>; <sup>1</sup>Norwegian Institute of Public Health, <sup>2</sup>Norwegian University for Life Science, NO
4. Taste and odour remediation in Swedish tap water.  
D. Benanou, D. Bernali, D. Richard, and A. Recherche; Veolia Vann AS/Veolia Vatten AB/Veolia Vand AS
5. Risk assessment and risk management in drinking water systems  
T.J.R. Petterson<sup>1</sup>, P. Hokstad<sup>2</sup>, L. Rosén<sup>1</sup>, R. Beuken<sup>3</sup> and A. Lindhe<sup>1</sup>;  
<sup>1</sup>Chalmers University of Technology, SE, <sup>2</sup>SINTEF, NO, <sup>3</sup>Kiwa Water Research, NE
6. Implementation of water safety plans  
J.C. Joret, B. David, C. Pagotto and S. Jacob; Veolia Vann AS/Veolia Vatten AB/Veolia Vand AS
7. Development of a future water source for Dar Es Salaam  
I. Helland and E. Helland-Hansen; Norconsult AS, NO
8. SENSOWAQ – development of on-line sensors for drinking water quality  
H-J. Albrechtsen and C. B. Corfitzen; Technical University of Denmark, DE
9. How long can E. coli and coliforms (K. pneumoniae strains) survive in drinking water in contact with plastic pipes?  
Ó. K. Vang<sup>1</sup>, C. B. Corfitzen<sup>1</sup>, B. Lindhardt<sup>2</sup> and H.-J. Albrechtsen<sup>1</sup>; <sup>1</sup>Technical University of Denmark, <sup>2</sup>Gentofte Vandforsyning, DE
10. Removal of cyanobacterial toxins from aqueous solutions by probiotic bacteria  
S.M.K. Nybom<sup>1</sup>, S.J. Salminen<sup>2</sup> and J.A.O. Meriluoto<sup>1</sup>; <sup>1</sup>Åbo Akademi University, <sup>2</sup>University of Turku, FI

For poster presented in the plenary session, please refer to the programme for a description of the posters.

## Registration for the 6<sup>th</sup> Nordic Drinking Water Conference

Please use the electronic registration at the website:

<http://www.norsk vann.no/nvk2008/forside>. Deadline for registration is Friday **9<sup>th</sup> May 2008**.

### **BOOKING OF HOTEL ROOM HAS TO BE DONE DIRECTLY TO THE HOTEL.**

If you are not able to use the electronic registration, please use the registration form beneath.

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Municipality/company: \_\_\_\_\_

Address: \_\_\_\_\_

Postnumber and town: \_\_\_\_\_

Telephone: \_\_\_\_\_

Possible separate invoice address and/or other additional information:  
\_\_\_\_\_  
\_\_\_\_\_

The registration form shall be sent to: Sissel Løvås-Hauge, telefax: +47 62 55 30 31  
or [sissel.lovass@norskvann.no](mailto:sissel.lovass@norskvann.no) **within 9<sup>th</sup> May 2008**.

## **Conference fee**

The conference fee is Norwegian kroner 4.900:– which includes a book with copy of the papers, lunches, coffee, social program day 1 and excursion and conference dinner day 2.

Confirmation of the registration will be sent out by email within 23<sup>rd</sup> May provided that the email address is correct.

The conference fee will be invoiced before the conference.

## **Possible cancelling of registration**

Cancelling of registration before 9<sup>th</sup> May is free. If cancelling after 9<sup>th</sup> May, full registration fee will be invoiced. If you are prevented from participation you may send another person in stead.

## Practical information

### Time and venue for the conference

9<sup>th</sup> – 11<sup>th</sup> June 2008. Radisson SAS Scandinavia Hotel Oslo, Holbergsgate 30, NO-0166 Oslo, Norway. For road description and additional information; [www.radissonsas.com](http://www.radissonsas.com).

The SAS Airport Bus connects the hotel directly with Oslo Gardermoen Airport, with departures every 20 minutes throughout the day to and from the main entrance of the hotel. Travelling time is estimated to 45 minutes.

The Airport Express Train takes 25 minutes to reach the National Theatre station, which is a 5 minute walk from the hotel.

### Program and registration

The program can be found at: <http://www.norskvann.no/nvk2008/forside>.

Here you can register electronic for the conference. We appeal to use the electronic registration.

### Conference language and interpretation

The main language at the conference is Scandinavian (Swedish, Danish, Norwegian) with simultaneous interpretation to English. The speakers can also use English. Powerpoint presentations to be shown shall be written in English.

### Conference manager

Kjetil Furuberg, Norwegian Water, Vangsvegen 143, NO-2317 Hamar.

Email: [kjetil.furuberg@norskvann.no](mailto:kjetil.furuberg@norskvann.no). Telephone directly: +47 62 55 30 32.

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### Registration

Sissel Løvås-Hauge, Norwegian Water. Email: [sissel.lovass@norskvann.no](mailto:sissel.lovass@norskvann.no).

Telephone: +47 62 55 30 29. Telefax: +47 62 55 30 31.

### Booking of hotel room

#### The conference hotel

There are 230 rooms pre-booked at the conference hotel from 9<sup>th</sup> to 11<sup>th</sup> June, and also 90 rooms from 8<sup>th</sup> to 9<sup>th</sup> June. The price is NOK 1295,- per day included breakfast for single room. For double room the price is NOK 1595,- per day included breakfast.

Booking of hotel room has to be done directly to the hotel: Telephone: +47 67 82 31 00.

E-mail: [reservations.scandinavia.oslo@radissonsas.com](mailto:reservations.scandinavia.oslo@radissonsas.com).

State: «KKNORVANN» when you book. Payment for room has to be done directly to the hotel.

### **Rica Holberg Hotel**

There are also pre-booked 30 single room from 9<sup>th</sup> to 11<sup>th</sup> June, and also 30 rooms from 8<sup>th</sup> to 9<sup>th</sup> at Rica Holberg Hotel. The price is NOK 930,- per day included breakfast.

Booking of hotel room has to be done directly to the hotel: Telephone: +47 23 15 72 00.

E-mail: [rica.holberg.hotel@rica.no](mailto:rica.holberg.hotel@rica.no). State: «1168354» when you book. Payment for room has to be done directly to the hotel.

For road description and additional information; [www.rica.no](http://www.rica.no). The hotel is situated in the same street as the conference hotel.

Deadline for booking of hotel room is **9<sup>th</sup> May for both hotels.**



*The new Oset water treatment plant under construction.*

PHOTO: CF WESEBERG



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