

Water Quality and Quantity Management 2011

Private boreholes.

(a) Issue of licences. In 2011 the Water Development Department (WDD) issued 1.289 licences for the drilling of irrigation boreholes and 731 licences for the drilling of boreholes for domestic purposes, of which 802 and 224, respectively, were issued with respect to boreholes that had already been drilled illegally.

We repeated our suggestion that the WDD considers the issue of fixed term water abstraction licenses so as to provide the opportunity to reassess the state of the aquifer and the applicant status before the reissue the licence.

(b) Private borehole inspections. Despite the assumption of jurisdiction of monitoring the boreholes by the WDD based on the Unified Water Management Law 2010, the WDD did not perform water meter inspections in licensed boreholes. We repeated our suggestion to plan the performance of such inspections, and record these in a registry, along with findings and the date of a follow-up audit.

Desalination plants

(a) General information. After their recent upgrade, the capacity of the desalination plants in Dhekelia and Larnaca stands at 60.000 and 62.000 m³ of water per day, respectively. During 2011 a mobile desalination plant in Episkopi was also operating, with a capacity of 20.000 m³ of water per day, and in November 2010 a mobile desalination plant in Paphos was put into operation, with a daily capacity of 30.000 m³. This plant was put in standby mode a few months later. The Limassol desalination plant, with a daily

capacity of 40.000 m³ of water expandable to 60.000 m³, was completed recently. The WDD has also reached an agreement with the Electricity Authority of Cyprus (EAC) for the purchase of water to be produced from the desalination plant under construction at Vassilikos, with a daily production capacity of 60.000 m³, however due to the extensive damage in the facilities of EAC that occurred on 11.7.2011 following an explosion at a neighbouring Naval Base, the project is expected to be completed late in March 2013.

(b) Purchase of water from desalination plants. The cost of the purchase of water from desalination plants amounted to €63,78 million and represents the value of 47,17 million m³ of water, compared to €58,15 million for 48,9 million m³ in 2010. The increase in the average production cost of desalinated water, from €1,188 / m³ in 2010 to €1,352 / m³ in 2011, due to the increase in the price of fuel and electricity, and the operation of the desalination plant in Paphos, the water production cost of which amounted to €3,091 per m³.

(c) Mobile desalination plant in Paphos. The decision to create a mobile desalination plant in Paphos was made by the Council of Ministers on 6.2.2008. On 26.2.2009 the Council of Ministers approved a new proposal by the Ministry of Agriculture, Natural Resources and Environment, to increase the capacity of the plant from 20.000 to 30.000 m³ of water per day.

The plant was put into operation in late 2010, operated until the early months of 2011 and remains in standby mode ever since. In 2011 the plant produced 2,88 million m³ of water and its operating costs, including standby costs, amounted to €8,9 million, that is the average cost of water produced amounted to €3,091 / m³. In July 2009, our Office expressed reservations

regarding the need to increase the capacity of the unit. It is worth noting that, according to data available to the WDD at the time of submitting the proposal to increase the capacity of the plant, the quantities of water that could be safely pumped out of boreholes, together with the quantities to be produced by the desalination plant under the initial capacity, would be enough to meet the water needs of Paphos, even if there were no water reserves in the dams, while on 30.4.2009, three weeks before the agreement to increase the capacity was signed, the reserves in the dams had significantly increased and were enough to meet almost all needs of Paphos for the next three years.

Irrigation of golf courses.

(a) As is described more extensively in our previous Reports, on 16.2.2005 the Council of Ministers approved a policy to encourage investment in golf courses, aiming to render Cyprus a high quality tourist destination. The decision explicitly notes that no applications to irrigate golf courses using boreholes or government dams will be approved, with the exception of the four existing golf courses in Paphos District, which would continue to be irrigated according to previously reached agreements.

With its later decision dated 5.2.2009, the Council of Ministers stated, inter alia, that no water shall be provided from governmental water works for golf courses, and irrigation of these courses will be made with desalinated water. Due to this decision, three of the investors of the existing courses who had signed agreements for water supply from government water works, have appealed to the Supreme Court.

Given these developments, the Council of Ministers, with its decisions dated 3.6.2009 and 27.1.2011, approved annual extensions for the supply of water to the licensed courses under the agreed regime, so that the necessary time is given for the investors to conform with the provisions of the decision. The Ministry of Agriculture, Natural Resources and Environment has suggested to the Ministerial Committee that the licensed courses are given a time extension of two years, i.e. up to 3.6.2013. Despite the fact that the suggestion was not adopted or put before the Council of Ministers for approval, the WDD continues to provide water to these courses from government water works. As a result, in 2011 7.860 m³ of water were supplied for this purpose from the Paphos Irrigation Project and 355.880m³ from the Ezousa aquifer.

(b) (i) Following our suggestion regarding the allocation of the excess quantities of recycled water from the sewage treatment plant in Limassol to golf courses, at the price of desalinated water, a relevant proposal was submitted by the responsible Ministerial Committee to the Council of Ministers, which, on 3.1.2012, decided that a golf course in Limassol will be irrigated with recycled water, at the price of desalinated water produced with renewable energy.

(ii) Given the imminent operation of a wastewater treatment plant in the town of Polis Chrysochous, which will produce large quantities of recycled water, we suggested that timely arrangements are made for the utilisation of any quantities remaining after satisfying agriculture needs, for the irrigation of golf courses in the area. A proposal was submitted to the Ministerial Committee and was rejected.

The WDD, in its letter dated. 9.2.2012 to the Permanent Secretary of the Ministry of Agriculture, Natural Resources and Environment, forwarded a request of two companies for the irrigation of golf courses and relevant developments in the area using recycled water generated from the treatment plant, indicating relevant economic and environmental benefits. The issue was submitted on 1.3.2012 by the Permanent Secretary of the Ministry of Agriculture, Natural Resources and Environment to the Permanent Secretary of the Ministry of Commerce, Industry and Tourism, with a view of promoting it to the Ministerial Committee.

Quality of potable water in Communities.

(a) As is extensively described in our previous Reports, according to the results of a relevant study, the sources and boreholes used for water supply in several communities are continuously degrading due to the increased water demand, the repercussions of over-pumping and their insufficient replenishment.

We restated our view that the problem of ensuring adequate water supply to affected communities should be addressed by the Department so that the necessary measures are taken in time to deal with it.

(b) As is extensively described in our previous Reports, the Minister of Agriculture, Natural Resources and Environment, with the Regulatory Administrative Act 707/2004, delegated the responsibility of monitoring groundwater quality jointly to the WDD and the Geological Survey Department (GSD).

In June 2010, a procedures protocol has been implemented to ensure better coordination between the Departments involved, while the WDD plans to expand the groundwater monitoring network, in order to improve the monitoring of groundwater quality. Since the implementation of the protocol, the WDD has noted coordination problems among its departments and dissimilarities in the way of handling cases of samples with parameter values outside the limits set. It has been decided to take measures to deal with these problems. We inquired whether any improvement has been noted.

Protection zones for potable water supply boreholes.

(a) According to Regulatory Administrative Act (RAA) 707/2004 (Delegation of Authorities/Responsibilities concerning the Law on Controlling Water and Ground Pollution), the WDD is defined as the competent Authority for the implementation of article 10 of the Decree on Controlling Water and Ground Pollution (Groundwater Protection Measures) (RAA 45/96). The article in question provides for defining three protection zones around each borehole for potable water supply, with the objective of limiting groundwater pollution.

The WDD has so far defined protection zones for 140 out of the roughly 400 potable water boreholes that are estimated to be in use today. Furthermore, the WDD is in the process of issuing a Decree for another 60 boreholes and, in consultation with the Department of Town Planning and Housing regarding the review of the urban area plans, the WDD preliminarily defined zones for another 201 boreholes, for which the consultation process with stakeholders before issuing the Decrees is pending.

The Head of the Hydrometry Division of the WDD, by letter dated 17.11.2011, instructed the District Engineers of the WDD to perform inspections every six months in areas within the protection zones of potable water boreholes and record potential sources of pollution. We asked to be informed of the results of these inspections.

(b) At a meeting of the steering committee for the implementation of Measure 5.3 of the Programme of Measures of the Water Framework Directive in Cyprus, regarding protection zones of potable water boreholes, held on 8.3.2012, there was a review of the situation regarding protection zones of potable water boreholes and examined the need for modification / replacement of Decree 45/96, which regulates, inter alia, the establishment of such zones. During the meeting it was decided to set up a group of officers of the GSD and WDD for preparing a draft Regulation to replace Decree 45/96.

In the meeting it was also mentioned that the GSD has prepared and sent to the WDD assessment reports for 207 boreholes, 17 additional reports are in their final stage, while the preparation of assessment reports for approximately 200 boreholes is pending. We asked to be informed of the results of these reports.

Protection zones for dams used for potable water supply. According to the Water Framework Directive (2000/60/EC) "member states shall implement the necessary measures to prevent deterioration of the status of all bodies of surface water" and for this purpose "may establish safeguard zones for those bodies of water". In Cyprus, the surface sources of potable water consist of 11 dams (reservoirs), for which protection zones will be defined. For this purpose, the WDD has prepared a draft Decree which will be modified

according to the comments of all Departments involved and will be submitted to the Minister for approval.

Domestic Sewage and Industrial Waste Processing Unit in Vathia Gonia – Recycled water production.

During 2011, a total of 1.930.266 m³ of recycled water (939.939 m³ in 2010) was produced by the Vathia Gonia Unit and the new wastewater treatment plant of the Sewerage Board of Nicosia, of which only 925.827 m³ (325.670 m³ in 2010), or 48% of total production was used for irrigation.

As we were informed by the WDD, the difference between production and distribution of recycled water arises due to its disposal during the winter months. Given the expected increase in production of treated water from the new wastewater treatment plant of the Sewerage Board of Nicosia, we asked to be informed of the measures taken to reduce the amount of water discharged as much as possible.

Production and management of water from tertiary wastewater treatment plants.

(a) Distribution of treated water. In 2011 25 million m³ of recycled water were produced in urban wastewater treatment plants, of which only 2 million m³ were used for irrigation. We were informed that the inability of the WDD to ensure utilisation of the treated water is mainly due to the lack of infrastructure such as irrigation systems for water distribution and storage reservoirs in which to store water during the winter months, when demand is low.

We expressed the view that the WDD should consider ways of improving the use of recycled water produced, so that water stored in dams is released for other uses.

(b) Distribution of treated water from the tertiary wastewater treatment plant in Anthoupolis. During 2011, 976.715 m³ of recycled water were produced by the Anthoupolis plant, of which only 468.000 m³ were allocated for irrigation and billed accordingly.

We noted that 272.369 m³ of water were allocated to a particular company, which is operates in the agricultural sector and the needs of which were calculated, according to the area declared to the Agricultural Payments Organisation, to approximately 128.000 m³.

Due to the fact that the price of recycled water allocated for agricultural purposes is very low (€0,07 / m³), we expressed the view that the WDD should verify that the quantities provided at this price are actually used for agricultural purposes. We also suggested that, in view of the available surplus quantities of recycled water, the provision of recycled water at a higher price for other purposes, such as irrigation of gardens and green spaces, is considered.

Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy.

(a) Water pricing policies. According to the provisions of the above Directive, member states should have ensured, by 2010, that water-pricing policies provide adequate incentives for users to use water resources

efficiently and thereby contribute to the environmental objectives of the Directive, while the water-pricing policies are such that enable the recovery of the costs of water services.

In order to conform with the Directive, the WDD has prepared draft Regulations on water pricing, which were approved by the Council of Ministers in July 2011 and were submitted to the House of Representatives for enactment. The Ministry of Agriculture, Natural Resources and Environment, with a letter dated 24.5.2012 to the Permanent Secretary of the House of Representatives, asked that the Regulations are withdrawn and re-submitted, apparently to avoid the expiration of the 60 day deadline, following which, according to the Unified Water Management Law, if the House of Representatives had not reached a decision to modify or cancel the draft Regulations, these would be published in the Republic's Official Gazette.

(b) River Basin Management Plan and Programme of Measures.

According to article 13(6) of the Water Framework Directive, river basin management plans should have been published by 22.12.2009 at the latest. The Plan was approved by the Council of Ministers on 9.6.2011 and was submitted to the European Commission with delay. Procedures have been initiated for the implementation of the Programme of Measures which was prepared as per article 11 of the Directive.

According to article 11(7) of the Directive, the programmes of measures should be operational by the end of 2012 at the latest, however the WDD has decided to extend this deadline and set the year 2015 as a new target for making the Programme of Measures operational.

Illegal construction of private dam.

Around 1973, a small diversion dam was illegally constructed near the mouth of the Ha river, and was extended in 2002-2003. Since then, the water stored in the dam, of a total capacity of 500.000 m³, has been used by a company to irrigate a golf course and, due to the dam being illegal, no charges are being imposed by the WDD with regard to the quantities of water used.

On 29.12.2006 a town planning permit was issued, according to the terms of which the applicant should obtain a permit for intervention on government land. On 21.5.2008 the Council of Ministers rejected the company's application for this permit, and the Paphos District Administration by letter dated 30.1.2009, requested the company to demolish the dam by 31.5.2009.

The immediate demolition of the dam proved difficult, since the dam had overflowed, and the issue was discussed between the Ministry of Interior, the Paphos District Administration and the company, at a meeting held on 25.6.2010, during which the company representative refused to accept the company being charged for the water pumped from the dam.

According to a study assigned by the WDD to private consultants, regarding the environmental impact from the potential demolition of the dam, preserving the dam, is, at that moment, the best option. The Game Fund expressed its opposition to this conclusion, but the WDD, which under Law 79(I)/2010 has the exclusive jurisdiction over the issue, by letter sent by the Permanent Secretary of the Ministry of Agriculture, Natural Resources and Environment to the Permanent Secretary of the Ministry of Interior, adopted the conclusion

of the study and proposed that additional conditions are imposed to the revoked town planning permit issued in 2006.

The WDD, by letter dated 9.3.2012 to the Permanent Secretary of the Ministry of Agriculture, Natural Resources and Environment, forwarded the company's request for approval of the use of water from the dam to cover the irrigation needs of the golf course, by derogation from the decision of the Council of Ministers. According to the letter, the company's claim may be met, provided that the cost of water from the dam will not be lower than the cost of producing water with a private desalination plant, and therefore investors who will build desalination plants to irrigate their golf courses are not put at a disadvantage.

Illegal diversion of water from the Karkotis river by Kakopetria residents.

A large area of the Kakopetria community is illegally irrigated with water from the Karkotis river, causing problems to the residents of Kato Solea area, who, despite being entitled to use of the water, are being deprived of it. In order to deal with the issue, the WDD has drilled boreholes and constructed an irrigation network for the area, however, despite completion of the works, the community refused to accept the project, demanding a licence to draw water from the river.

Despite the number of years passed, the issue remains unresolved, while the WDD holds the view that measures should be taken at the political level.

Lympia Water Work. The Lympia dam, with a capacity of 230.000 m³ of water, covers the irrigated area of the Lympia, Mosfiloti and Alambra Communities, of a total of 58,4 hectares.

To date, the pumping of water by farmers is not controlled, since the majority of farmers have no water meters installed, resulting in water used not being charged, while many complaints have been filed regarding excessive water use and water use by non-licensed farmers.

The WDD initiated legal proceedings against offenders and constructed a reservoir of a capacity of 500 m³ to cover the needs of the area, while an irrigation network is planned to be constructed, which is estimated to resolve the problems observed.

Risk Management – Ensuring the continuous operation of the WDD.

As mentioned in our previous Report, in view of the fact that the WDD manages one of the most essential resources, we asked to be informed:

(a) Whether the WDD has undertaken a risk analysis and evaluation, and whether any plan has been drawn up or measures established to address these risks.

(b) Whether the WDD has assessed which of the infrastructure and systems are of critical importance for its continued operation and whether any measures have been taken to safeguard them.

(c) Whether there are alternatives to ensure continued water supply, at least in the case of potable water, in the case of a serious accident / damage (eg in a desalination plant or major pipeline).

(d) Whether a disaster recovery plan has been drawn up for the WDD.

We have been informed that the WDD intends to perform risk analysis and draw up a disaster recovery plan, which does not currently exist in an integrated form. We were also informed that, in the stage of designing and

constructing individual water works, the above were taken into account and in most cases alternative water sources exist.

Recognising the dependence of potable water supply to Nicosia on the Tersefanou pipeline, and given a recent incident of interruption of water supply to Nicosia due to damage caused to water pumps, we asked to be informed whether there exists a reliable alternative to supply water to Nicosia in the case where, for whatever reason, water supply from the specific pipeline is interrupted.