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MINISTRY OF AGRICULTURE, NATURAL RESOURCES AND ENVIRONMENT

WATER DEVELOPMENT DEPARTMENT

NICOSIA

Kouris Reservoir Protection Ordinance

Final report - part 1/3

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NOTICE

The documents produced within the project "Reservoir Protection Zones for the reservoirs that are used for drinking water purposes" for the WATER DEVELOPMENT DEPARTMENT (WDD) of the Ministry of Agriculture, Natural Resources and Environment, are divided into three separate documents:

1. KOURIS Reservoir Protection Ordinance
2. KOURIS Reservoir Protection - Action plan and Recommendations for protection ordinance enforcement
3. Reservoir Protection Zones - Method for determining the zones

The Recommendations should be published by WATER DEVELOPMENT DEPARTMENT as Action plan, and, the final Ordinance should make reference to the Recommendations, so as they gain regulative power.

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A - INTRODUCTION

1. STATEMENT OF INTENT

The goal of the KOURIS Reservoir Protection Zones ordinance is to protect public health by an adequate protection of current or potential public water supply from the reservoir from the effects of point and non-point source pollution and inappropriate usage of water through the regulation of land use and development within the reservoir drainage area. The ordinance complies with the requirements of articles 4, 6 and 7 of the Water Framework Directive (WFD).

Four areas compose the Reservoir Protection Zone (RPZ):

- an Immediate Protection Zone (IPZ);
- a Close Protection Zone (CPZ);
- a Distant Protection Zone (DPZ);
- and a Riparian Protection Strip (RPS) along all perennial or temporary rivers.

The present ordinance references a document titled "***Kouris Reservoir Protection Action Plan and Recommendations***", produced by the WATER DEVELOPMENT DEPARTMENT, and which established all documents concerning general orientations, good practice methods, technical specifications, maintenance recommendations, control procedures and lists of priority actions necessary for the application of the present ordinance.

2. APPLICABILITY

Within the RPZ, all the activities, developments, constructions and equipments will comply with general Cyprus regulations. The ordinance gives specific complements to national regulation.

The special provisions established in this ordinance shall apply to proposed projects and existing developments identified as possible contaminating activities within areas designated as RPZ.

The limits of the areas designated in the ordinance and attached regulations and recommendations must be shown on all master zoning maps and mentioned in the documents attached to the maps. For what concerns the Riparian Protection Strip, the reference will be the cadastral maps produced by the Department of Lands and Surveys.

The protections perimeters have been settled on the basis of the protection of surface water bodies. No protection zones have been specially prepared for groundwater flow because aquifers, specially their part that is in connection with rivers and reservoir lakes, will be also protected by the rivers and lakes protection zones. Usages which can lead to pollution of underground waters are listed and forbidden in the CPZ prescriptions.

The boundaries of the zone perimeters have been delineated using the most current and best available geographical data. The RPZ boundaries may be modified as necessary by the governmental authority as new geographical data becomes available.

3. CADASTRAL ENFORCEMENT OF THE PROTECTION ZONES

3.1. IMMEDIATE, CLOSE AND DISTANT PROTECTION ZONES – IPZ, DPZ

The limit of the Zone perimeters will be superimposed over the cadastral maps, which are already georeferenced.

The plots will be managed according to their location in the different protections zones: Immediate, Close and Distant. Owners of plots or parts of plots designated as being inside a protection zone will be obliged to respect the restrictions of uses and activities of the zone.

If a plot lies within two or more different zones (Immediate, Close and Distant), it will be divided according to the limits of the zones below.

3.2. RIPARIAN PROTECTION STRIP- RPS

The RPS is established for all the temporary or perennial river reaches in the reservoir's catchment area as these are defined in the Cadastral maps.

4. DELAY OF APPLIANCE

The ordinance is to be applied as of the date of its publication.
The "Kouris Reservoir Protection Action Plan and Recommendations", must be produced by the WATER DEVELOPMENT DEPARTMENT within a delay of one year.
The actions detailed in this document must be fully applied and done within a delay of 5 years for what concerns public and private wastewater treatment and 3 years for all the others actions.

5. DEFINITIONS

Aquifer: Geologic formation composed of rock or sand and gravel that contains significant amounts of potentially recoverable potable water.

Bulk storage: Storage equal to or exceeding 2500 L. in a single above-ground container.

City Waste Water Sewage Plan: Defines the zones that will be connected to the central sewage system and treatment plant and the ones where individual wastewater treatment systems will be used.

Development: Any construction, external repair, land disturbing activity, grading, road building, pipe lying, or other activity resulting in a change in the physical character of any parcel or land.

Groundwater: All water found beneath the surface of the ground.

Hazardous Waste: Any type of waste which is hazardous to human health or the environment

Impervious Surfaces: Materials or structures on or above the ground that do not allow precipitation to infiltrate to the underlying soil.

Pre-existing installation, equipment… Installation, equipment… that existed, in its actual form, before the publication of the RPZ ordinance.

Reservoir: Any impoundment of surface waters designed to provide drinking water to the public.

Reservoir watershed: Any area lying within the drainage basin of any reservoir (see Watershed).

Storm Water Infiltration Basin: A water storage impoundment formed by excavation or by constructing an embankment that stores a defined quantity of stormwater run-off, allowing it to slowly exfiltrate through the permeable soils of the basin floor.

Toxic or Hazardous Material: Any substance or mixture of physical, chemical, or infectious agents posing a significant, actual, or potential hazard to water supplies or other hazards to human health if such substance or mixture was discharged to land or water. Toxic or hazardous materials could include, among other, synthetic organic chemicals, petroleum products, heavy metals, radioactive or infectious wastes, acids and alkalis, and also include such products as solvents and thinners in quantities greater than normal household use.

Time of concentration: The time needed for a drop of water to reach the outlet of a catchment from the most remote location in the catchment.

Tributary: Any perennial or intermittent stream, including any lake, pond or other body of water connected with, flowing either directly or indirectly into any reservoir.

Waste: Waste means any discarded material, or any material otherwise generated or produced as a by-product of any activity which is not intended for further use by the generator or producer.

Watershed: Lands lying adjacent to water courses and surface water bodies which create the catchment or drainage of such water courses and bodies

B - GENERAL PRESCRIPTIONS

1. IMMEDIATE PROTECTION ZONE – IPZ

This zone concerns the immediate environment of the pumping installations, water intake structure and equipment which are generally near the dam of the reservoir.

The goal of this zone is to:

- forbid access to the pumping point and to the water intake structure or pumping station;
- prevent damages on structures;
- prevent direct voluntary or involuntary introduction of pollutants in the water;
- protect the pumping zone from direct runoff and risk of pollutant spills from the banks.

1.1. REQUIREMENTS IN THE IPZ

In the Immediate Protection Zone, all activities are prohibited except the ones that are necessary to operate the installation and to maintain the equipment.

The land constituting this perimeter must be the full property of the public authority in charge of the reservoir management.

1.2. PHYSICAL PROTECTION

This perimeter includes a physical protection:

a) Fences: Closing any sensible area, and if possible erected down to the banks;
b) Anti-breaking and entering alarm system, if necessary;
c) Guarding of the installation, if necessary;
d) Ditches: If there is a possibility that an accidental spill (due to a truck accident for example) on a nearby road or parking place reaches the pumping zone, ditches shall be excavated in order to stop and contain the spill. Depending on local conditions, the spill could be canalized to a safety basin or at least downstream the dam.
e) Buoys line: a buoys line on the lake and/or on the river. This equipment is employed to forbid the approaching of boats or swimmers;
f) Floating dam: In case of an accident by floating pollutants like hydrocarbons (petrol, diesel or fuel oil, …), and if an alert is possible before the pollution reaches the intake structure, the temporary installation of a floating dam can be effective in preventing pollutants reaching the intake if installed around the pumping installation. It must be available within a short time notice, stored on site or out of site by a permanently mobilizable service, in a reasonable distance. According to the layout of the place, one or several installation sketches must be prepared. Regular alert and installation exercises must be performed.

For what concerns the pumping place, its position will determine the extension of the part of the IPZ intended to protect it. The bank will be concerned if the pumping zone is close to it; then a continuity between the fence line and the floating buoys should be pursued.

1.3. CHEMICALS AND HYDROCARBON PRODUCTS

The storage of all chemical products and hydrocarbons necessary to operate or maintain the equipment will be kept within the minimum necessary amounts.
All tanks must be located inside an impervious structure (generally concrete slab and walls) able to retain the whole content of the tank in case of leakage of the tank.

1.4. ROADS INSIDE OR IN THE VICINITY OF THE IPZ

When possible, the access road to the reservoir should be through a non-asphalted dead-end road in order to limit traffic around the reservoir. If a road reaches the dam or the reservoir and allows “through traffic”, the traffic should be deviated and the access road to the dam converted to a dead end road.
Any unavoidable “through traffic” road lying near the dam or the river banks must be equipped with crash barriers.

If there is a possibility that on a “through traffic” road, an accidental spill (due to a truck accident for example) reaches the pumping zone, ditches shall be excavated in order to contain the spill and divert it away from the reservoir. According to local conditions, the spill could be channeled to a safety basin or at least downstream the dam.

1.5. VEGETATION

The vegetation growing within this perimeter will be mechanically managed and neither weed killer nor pesticide will be used.

2. CLOSE PROTECTION ZONE - CPZ

The goal of the CPZ is to keep the reservoir and the rivers feeding it away from point and non-point source pollution accidental and non-accidental pollution that that can be driven to them directly or by surface or subsurface runoff.

The delineation of the CPZ takes into account the risk of pollution of the reservoir and the main tributaries that feed into it and concerns the reservoir and rivers whose flow contribution is considered as significant.

2.1. REQUIREMENTS IN THE CPZ

In the Close Protection Zone, any activity, deposit or installation that is likely to be directly or indirectly the cause of pollution of surface or underground waters, or pollution vectors, must be regulated or forbidden.

2.2. LAND REGULATION IN THE CPZ

In the CPZ, no modification of the Town planning zones that would favor development can take place.

Furthermore, in the CPZ, the government should approve no application for development permit at deviation of the existing zoning rules.

All new developments not allowed by existing zoning rules shall be located outside the CPZ.

2.3. SEWAGE MANAGEMENT IN THE CPZ

2.3.1. PUBLIC SEWAGE SYSTEM

In the CPZ, all villages must have a wastewater collection system and a tertiary treatment plant.
In urban areas, each house must be connected to the public sewage system.
Effluents must be directed towards ponds for irrigation purposes.
The discharge of effluents from the treatment plant in any permanent or non-permanent river of the CPZ is forbidden.

A list of villages in the CPZ is established by the WATER DEVELOPMENT DEPARTMENT and indicates their wastewater management. This list shows priority for:

- villages to be provided with a central Waste Water collection system and treatment plant: permanent plus summer population over 200;
- villages whose existing treatment plant does not have sufficient capacity with regard to the permanent population and/or summer population;
- villages whose existing treatment plant must be upgraded to tertiary process.

The list will be included in the document "***Kouris Reservoir Protection Action Plan and Recommendations***", and a list of corrective actions will be established and scheduled.

2.3.1. INDIVIDUAL WASTEWATER MANAGEMENT SYSTEM

In rural areas (where size of plots is 2000 m² minimum) and when the connection to the public sewage system is not economically sustainable, individual wastewater management systems will be used.

The house density cannot exceed a maximum of 5 houses / hectare.

The allowed systems are either:

- Individual home Sewage Treatment Systems - IHSTS (septic tank connected to a disposal field);
- Cesspools.

Cesspools

Cesspools must be watertight and periodically emptied by authorized company; the content being compulsory transferred to a public waste water treatment plant.

Individual Home Sewage Treatment Systems

The use of soak away at the exit of the septic tank is forbidden.

The discharge of effluents in any permanent or non-permanent river of the CPZ is forbidden.

This IHSTS must be inspected by the administration before the end of the construction works so that the administration can check the good connection of all sewage pipes to the tank or cesspool, the connection of the septic tank with the draining field (draining pipes still visible before covering). The end of work certificate deliverance is submitted during this inspection.

House owners are informed that the administration can at any time perform an inspection of the private sewage system and request proofs of regular and good maintenance of the system (septic tank and drainage field maintenance, periodic emptying of the cesspool).

The WATER DEVELOPMENT DEPARTMENT is responsible for writing all technical documents concerning technical specifications, use and maintenance recommendations, control procedures.

2.4. ACTIVITIES ALLOWED UNDER CONDITIONS WITHIN THE CPZ

2.4.1. NEW CONSTRUCTIONS: PRIVATE HOUSES

Special conditions will strictly be mentioned in the building permit:

- Run off management:
  - The total impervious surface of the total surface of the plot minus the surface of the house, will not exceed 20%. This rule is not applied in areas designated as urban areas by the Town planning zones.
  - Roof runoff will be managed on site by one of the following methods: collection in a tank or basin for re-use, soak-away or infiltration trench (allowed for rain water only), pond.
- Domestic sewage management: All produced quantities of sewage in the plot will be directed to a convenient public or private sewage treatment system.

2.4.2. EXTENSION OF EXISTING PRIVATE HOUSES

When the extension of existing private houses is requested in the framework of the margin allowed by the building coefficient of the Zone, the above rules apply for the sum of the existing plus the new construction.

2.5. FORBIDDEN ACTIVITIES WITHIN THE CPZ

All potential contaminating activities are forbidden, and more precisely:

a) New constructions other than private houses: farms, industrial building, warehouse, hotels, …
   Exceptions: If already allowed by existing zoning rules (center of villages), small businesses (small shops, bed and breakfast hostels, wineries, …) are allowed, by permit of WATER DEVELOPMENT DEPARTMENT, if it is established that these specific activities will not affect water quality and will comply with the sewage management regulation in the CPZ.
b) Extension of existing buildings.
   Exception: extension of private houses according to existing land use regulation.
c) New roads and existing road resizing to higher traffic capacity.
d) Boreholes, pits, drains which are not approved by the public authority.
e) Sand and gravel extraction, quarries.

f) Earthwork including filling and/or excavation.
Exception: earthwork including filling or excavation by inert materials performed by or under the responsibility and control of the administration.
g) Burial or disposal of solid waste: scrap, rubble, excavated material, hazardous material.
h) Garbage dumps, even the controlled ones.
i) Disposal, spreading or infiltration of:
    - industrial waste waters even after treatment;
    - manure and liquid manure;
    - domestic waste waters even after treatment;
    - septic tank and cesspools sludge;
    - direct discharge in stream is of storm water runoff from impervious areas as retail facilities, parking of more than 10 places, industrial parking surfaces, circulation lanes in developments, ... Water must be collected in an impervious system and must pass through a sediment and oil trap before being send in a ditch or an infiltration system.
j) Pipes.
Exception:
    - pipes carrying clear water;
    - natural gas;
    - wastewater effluent transport towards the treatment plant;
    - wastewater effluent transport from the treatment plant to storage ponds.
k) Activities involving the manufacture, bulk storage, transport or any type of distribution of petroleum, chemical or asphalt products or any materials hazardous to a water supply including but not limited to the following general classes of materials:
    - oil and oil products;
    - radioactive materials;
    - any material transported in large commercial quantities (such as 200 L. drums), which is a very soluble, acid or base, or is highly biodegradable exerting a severe oxygen demand;
    - biologically accumulative poisons;
    - insecticide, fungicide and rodenticide products as well as active ingredients for their preparations;
    - lethal substances to mammalian or aquatic life.
l) Tanks or other storage facilities of liquid hydrocarbons.
Exception: Storage of a maximum of 1000 L. when necessary for the functioning of a pre-existing installation. In that case, tanks must be placed on an impervious concrete basin whose dimensions are calculated so that the basin is able to hold the total capacity of the tank.
m) Automobile service stations.
n) Truck terminals.
o) Intensive animal breeding (more than 50 sheep or goat heads, 20 cows heads, 10 pigs, …) [1];
p) Livestock grazing (especially goats and sheep): The opening of new zones to sheep and goats grazing is forbidden. This means that the number of animal heads which pasture on the CPZ cannot increase. The aim is to reach the maximum vegetation cover in the CPZ.
q) Use of weed killers, fertilizers and pesticides for agriculture and infrastructure maintenance.
r) Intensive agriculture as cereal growing, biofuel, lawn and grass surfaces for sport or leisure activities on more than 1.5 hectare with a limitation of once per 50 hectares.
s) Indigenous vegetation shall be preserved to the maximum extent possible. Areas where vegetation has been destroyed (fire, ancient earthworks …) will be reforested.

[1] Number of heads limits are to be given by Cyprus Agricultural ministry, according to national regulation and practice.

2.6. GENERAL EXCEPTIONS TO FORBIDDEN ACTIVITIES WITHIN THE CPZ

These above interdictions shall not apply to developments which are necessary for:

- the production, supply, distribution or storage of water by a public water supplier;
- stormwater management facilities if this equipment is a part of a watershed stormwater management program;
- rehabilitation programs authorized by a government agency for treating hazardous material that existed on the site prior to the adoption of this ordinance.

Disturbed areas shall be planted with trees and shrubs.

2.7. PRE-EXISTING FORBIDDEN USAGES AND ACTIVITIES IN THE CPZ

Existing usages in the CPZ driving to forbidden activities.

Forbidden land use and activities which pre-exist within the CPZ and are listed in the prohibited activities are not to be questioned but, if necessary, their impact must be reduced. An assessment has to be made taking account dangerousness, possibility of reducing the risk or possibility of eliminating the activity.

2.7.1. EXISTING CONSTRUCTIONS WHICH CANNOT BE CONNECTED TO PUBLIC SEWAGE SYSTEM

Direct discharge in permanent or not permanent rivers will no more be allowed.

Owners whose houses are equipped with:

- Septic tank and a soak away, will replace the soak away by an infiltration field within a delay of 5 years after the publication of the present ordinance;
- Cesspool, can continue using it.

Both systems have to be monitored by public authority (see above prescriptions).

2.7.2. EXISTING WASTE WATER TREATMENT PLANTS

Refer to 2.3 - Sewage management in the CPZ.

2.7.3. EXISTING SAND AND GRAVEL EXTRACTION, QUARRIES

Existing installations must be assessed and if necessary:

- polluted sites must be cleaned and put within the environmental norms: removal of waste materials (oilcans, old engines, polluted soils);
- engine maintenance areas must be covered by a concrete slab with peripheral ditch connected to a oil collector basin that will be regularly emptied by an authorized company;
- tanks must be placed on an impervious concrete basin whose dimensions are calculated so that the basin is able to hold the total capacity of the tank, in case of a complete leakage of the tank.

2.7.4. EXISTING DOMESTIC GARBAGE DUMP

Controlled and uncontrolled garbage dumps must be listed and assessed. For the assessment, the following information needs to be collected:

- precise location;
- villages using the dump area;
- status of the garbage dump: controlled or uncontrolled;
- the known or probable leakage pollution problems;
- sides of valleys affected by leakage.

Controlled garbage dumps: If some are within the CPZ, they must be closed and their leakage carefully controlled and managed.

Uncontrolled garbage dump: If some are within the CPZ, they must be closed and their leakage must be controlled. If containing an important part of hazardous materials, the garbage is to be removed.

The list will be included in the document "***Kouris Reservoir Protection Action Plan and Recommendations***", and a list of corrective actions will be established and scheduled.

2.7.5. EXISTING INDUSTRIAL WASTE DUMPS

Industrial waste dumps must be totally forbidden in the CPZ. Existing ones must be treated and the hazardous materials of the most dangerous ones, in terms of water pollution risk, must be removed.

2.7.6. EXISTING PIPES, TANK OR STORAGE OF LIQUID HYDROCARBONS, CHEMICALS, INDUSTRIAL EFFLUENTS

The existing gas stations in function in the CPZ, must be carefully inspected and recommendations made in order to have corrective measures if needed. A special attention will be given to:

- the buried tanks. At old installations the tanks are generally "single skin" and are frequent the cause of underground leakages;
- the collection system of stormwater running on the areas where cars stop for filling and oil change and where the gas station is supplied by tankers. The frequent leaks by overfilling bring, day after day, large quantities of hydrocarbons that are sent to the subsurface soil or in the pluvial collecting system by rain or washing. The presence of a special settling tank for separating oily component from water is compulsory according to standards. A specialized company must collect this oil regularly.

The WATER DEVELOPMENT DEPARTMENT is in charge of the establishment of a list of gas stations inside the CPZ and in the watershed. For those in the CPZ, the following information must be collected:

- precise location;
- general state of the station;
- conformity to environmental standards;
- destination of storm water runoff;
- if river is concerned, kind of connection to the river: directly, indirectly;
- any other information judged useful.

The list will be included in the document "***Kouris Reservoir Protection Action Plan and Recommendations***", and a list of corrective actions will be established and scheduled.

2.7.7. EXISTING LIVESTOCK GRAZING

Grazing activity must be reduced or at most be retained at the existing levels.

2.7.8. EXISTING AGRICULTURE

Agricultural activity must be reduced or at the most be retained at the existing level.
Action in favor of reasoned or organic agriculture could be specifically taken in the direction of farmers in the Close Protection Zone in order to encourage them to move or develop less polluting practices. Reservoir Close protection Zones should be included in the list of areas where economic support is to be given for the practice of organic agriculture.

2.7.9. EXISTING ROADS IN THE CLOSE PROTECTION ZONE

The WATER DEVELOPMENT DEPARTMENT will identify the sections of roads judged dangerous and the following corrective actions must be taken for sections where a risk of pollution of water bodies is identified in case of an accident:

- crash barriers;
- ditches excavated behind the crash barriers in order to prevent an accidental spill, due to a truck accident for example, flow on the surface of a slope in the direction of the reservoir or the river
- concrete ditches and impervious collecting basins where roads cross over a significant tributary;
- shifting away dangerous roads from the reservoir or tributary bank;
- prohibition of transport of any chemical, hydrocarbons or dangerous substances at these roads.

Bridge passing over main rivers of the CPZ

They must be equipped with a spill protection system according to document "***Kouris Reservoir Protection Action Plan and Recommendations***" – Annex "*Technical recommendations for the equipment of road bridge passing over a main river of the CPZ and RPZ*", produced by the WATER DEVELOPMENT DEPARTMENT.

2.8. DEVELOPMENTS IN PROGRESS THAT INCLUDE FORBIDDEN USAGES AND ACTIVITIES IN THE CPZ

After the publication of the ordinance, some new projects containing forbidden usages and activities could be sufficiently in progress so that it would not be possible to stop and forbid them. In these cases, all the projects have to be examined by the WATER DEVELOPMENT DEPARTMENT and re-orientated according to the WATER DEVELOPMENT DEPARTMENT advice, taking into account their dangerousness and the possibility of reducing the risk.

If the state of progress of the project is such that has already been given administrative authorization, and if the stakes are high regarding the reservoir protection, the administration will take action to ensure the safety of the drinking water source (financial compensation, extra work subsidy, exchange of land …).

3. DISTANT PROTECTION ZONE - DPZ

The Distant protection Zone reinforces the Close Protection Zone.
The hydromorphological characteristics of the natural water network in Cyprus watersheds makes the rivers of the CPZ very sensitive to the quality of flow which can come quickly from the permanent or not permanent rivers outside the CPZ. Consequently, a great care must be taken in water quality management in the DPZ.

3.1. DELINEATION OF THE DPZ

Considering the very short time of concentration of reservoirs watersheds under high flow conditions, the whole watershed is considered as the Distant Protection Zone minus the Immediate and Close protection Zones.

3.2. REQUIREMENTS IN THE DPZ

The authority in charge of the protection of the resource must identify existing and potential new activities within the watershed that generally drive to degradations like:

a) Risk of accidental pollution of soil and rivers: chemicals and hydrocarbons storage, supply and transport;
b) All wastes used as fertilizer: treatment plant and industrial sludge, livestock wastes (dung, manure),;
c) Intensive agriculture using significant quantities of fertilizers and pesticides;
d) Garbage dumps;
e) Acceleration of the flow: Creation of impervious surfaces, deforestation, intensive or semi-intensive sheep and goats grazing …

Priority actions will be taken in the direction of these activities in order to:

- gain full respect of existing regulation (putting existing installations within the norms);
- encourage the use of good practices: reasoned agriculture, organic agriculture …

3.3. DEVELOPMENT IN THE DPZ

If any unusually large development project (i.e. development over 10 houses) or other potentially polluting activity as mentioned above in 2.5 is planned in the DPZ, the opinion and permission from the WATER DEVELOPMENT DEPARTMENT must be asked and special rules may be requested or even the WATER DEVELOPMENT DEPARTMENT will have the authority to deny such a project if there is a high pollution risk of the drinking water source.

In any case, the following rules must be respected in any project submitted to the administration:

- The project must be designed so as no run off from the impervious surfaces of the development can reach directly the CPZ and rivers in the CPZ, and especially under storm conditions.
- Management of runoff from the impervious surfaces must be done by the use of a Storm Water Infiltration Basin, within the development land, in order to collect all runoff from theses surfaces. The basin will be equipped with an oil trap and a calibrated outflow so that water is slowly discharged in the natural network after settling. The installations must allow a sampling of mud at the bottom of the ponds and a sampling of the outflow in any conditions.
- Runoff from the impervious and non-impervious surfaces of the development must be free of pesticides, weed killers, insecticides or any entropic chemical product.
- All runoff must be managed in such a way so that it can be sampled and analysed (non filtered water) according to a frequency given by the administration. A control sampling by the administration must be possible at any time, especially under storm conditions. If the runoff analysis shows an excess in any parameter according to drinking water regulation (except turbidity) a treatment will be demanded.

4. RIPARIAN PROTECTION STRIP - RPS

The goal of the rivers Riparian Protection Strip is to preserve:

- fauna and flora species;
- rivers from direct pollution due to activities near the river.

4.1. DELINEATION OF THE RPS

The RPS is established for all the temporary or perennial river that reaches in the reservoir's catchment area as these are defined in the Cadastral maps of the Lands and Surveys Department.

The RPS consists of a strip of 10 meters on each side of the stream axis. Its extension is defined on site, measuring a distance of 10 meters, perpendicularly to direction of flow, on both left and right banks.

4.2. REQUIREMENTS IN THE RPS

In the RPS, any activity, deposit or installation that is likely to be directly or indirectly the cause of pollution of the river is forbidden.

The RPS will be kept free of potential polluting activity or equipment and without any construction, earth work, agricultural activity, roads …

The use and storing of any chemical or hydrocarbon product is forbidden in this riparian protection strip.

The vegetation will be kept at its maximum possible growth and priority should be given to the preservation of native vegetation: trees, shrubs and grass.

C - WATER BODIES AND FACILITIES TO BE PROTECTED

The present ordinance establishes the protection zones of Kouris Reservoir whose water comes from three sources:

1. The watershed which feeds directly KOURIS Reservoir which is composed of the watershed of three mains rivers, KOURIS River, KRYOS River and LIMNATIS River and a smaller one ALASSA River.
2. KOURIS Reservoir receives water from ARMINOU Reservoir, through DHIARISOS diversion tunnel which is connected to KRYOS River as a part of the Southern Conveyor project.
3. Water from KHAPOTAMI River is diverted towards Kouris Reservoir by a shaft into DHIARISOS diversion tunnel.

The protection of KOURIS Reservoir is composed by the protection of the following zones:

Kouris Reservoir water sources	*Immediate Protection Zone IPZ*	*Close Protection Zone CPZ*	*Distant Protection Zone DPZ*
KOURIS Reservoir Capacity: 115 MCM Average: #40 MCM/year	The zone where water the intake structure is located for sending water to the Southern conveyor.	CPZ of reservoir and main rivers (KOURIS, LIMNATIS and KRYOS) and their main tributaries.	The whole watershed of KOURIS, LIMNATIS and KRYOS Rivers.
ARMINOU Reservoir (DHIARIZOS diversion) Average: 21 MCM/year	The two zones where water is collected (the intermediate basin and the entrance of tunnel) and sent into DHIARISOS diversion tunnel towards KOURIS Reservoir. and The place where DHIARISOS diversion tunnel is connected to KRYOS River.	CPZ of reservoir and main rivers and tributaries.	The whole watershed, which feeds ARMINOU Reservoir.
KHAPOTAMI River	Mainly for safety reasons: the location where KHAPOTAMI water is diverted into DHIARISOS diversion tunnel through a shaft towards KOURIS Reservoir, via KRYOS River.	CPZ of KHAPOTAMI River upstream the diversion point into DHIARISOS diversion tunnel shaft, and its main tributaries.	The whole watershed, upstream the diversion point into DHIARISOS diversion tunnel shaft.

The protection zones for KOURIS and ARMINOU Reservoir and CHAPOTAMI River are shown together on map given in “Figure 1 – general view of the Close and Distant protection zones for KOURIS Reservoir, ARMINOU Reservoir and CHAPOTAMI River” in **Erreur ! Source du renvoi introuvable.**.

1. IMMEDIATE PROTECTION ZONES (IPZ)

The WATER DEVELOPMENT DEPARTMENT is in charge to bring the protection of the Immediate Protection Zones for :

- KOURIS Reservoir;
- ARMINOU Reservoir;
- and KHAPOTAMI River

to a satisfying level according to the requirements given in §1 - Immediate Protection Zone – IPZ – page 7.

If complementary protections are necessary, the document "***Kouris Reservoir Protection Action Plan and Recommendations***", will contain the list of actions to be taken for that purpose.

- The whole Kouris IPZ lies on KANTOU and YPSONAS villages' territories.
- The whole ARMINOU IPZ lies on ARMINOU and AGIOS NICOLAOS villages' territories.
- The whole KHAPOTAMI RIVER IPZ lies on POTAMIOU village territory.

This comment will be removed in final document	*Note for WD* *Villages covered by the IPZ are to be checked.* *It can be also decided not to mention them in the ordinance.*

2. CLOSE PROTECTION ZONES (CPZ)

2.1. PLAN OF THE CLOSE PROTECTION ZONES

- KOURIS Reservoir CPZ plan is given in ANNEX.
- ARMINOU Reservoir CPZ plan is given in ANNEX.
- KHAPOTAMI RIVER CPZ plan is given in ANNEX.

The list of the cities and villages, which are completely or partly in these three CPZ, are given in ANNEX.

Precise delineation maps, at the cadastral maps scale, are available at the WATER DEVELOPMENT DEPARTMENT offices and in town councils of each of the above listed cities and villages.

3. DISTANT PROTECTION ZONES (DPZ)

3.1. PLAN OF THE DISTANT PROTECTION ZONE

- KOURIS Reservoir DPZ plan is given in ANNEX.
- ARMINOU Reservoir DPZ plan is given in ANNEX.
- KHAPOTAMI River DPZ plan is given in ANNEX.

The list of the cities and villages which are completely or partly in the DPZ is given in ANNEX.

Precise delineation maps, at the cadastral maps scale, are available at the WATER DEVELOPMENT DEPARTMENT offices and in town councils of each of the above listed cities and villages.

4. RIPARIAN PROTECTION STRIP

The riparian protection Strip is defined according to the general prescriptions mentioned above in B4.

D - ANNEXES

1. KOURIS RESERVOIR, ARMINOU RESERVOIR AND CHAPOTAMI RIVER PROTECTION ZONES

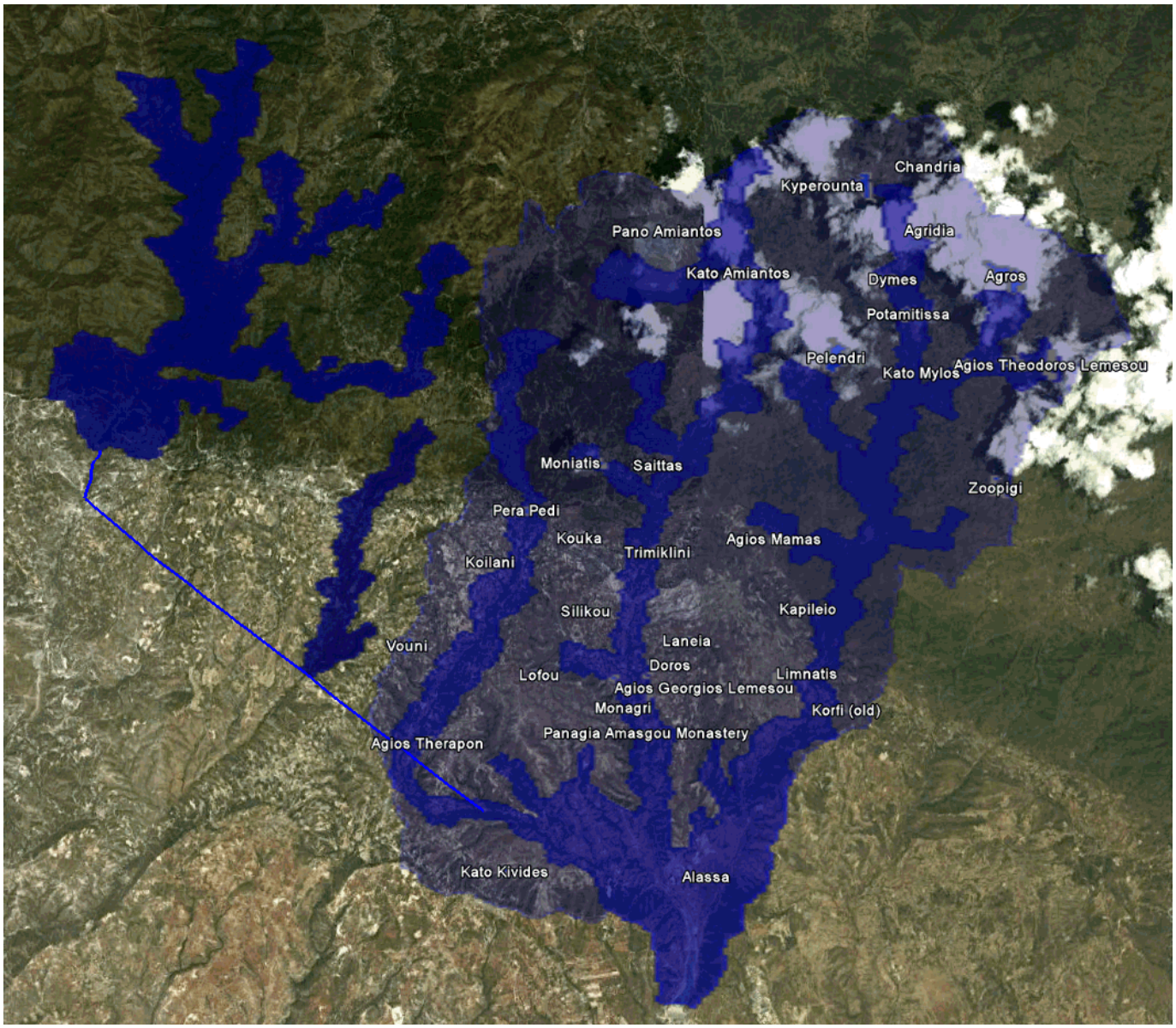

Figure 1 – general view of the Close and Distant protection zones for KOURIS Reservoir, ARMINOU Reservoir and CHAPOTAMI River

⚠ *This comment will be removed in final document*	*Note for WD* *This figure is a is to be replaced by a map whose legend identifies :* - *Watershed, CPZ, DPZ for KOURIS, ARMINOU and CHAPOTAMI* - *IPZ are too small to be shown* - *DIARIZOS diversion pipe and tunnel (continuous dash line from Arminou dam to thee exit of Maria tunnel into Kryos River).* - *main rivers* - *main villages.*

2. KOURIS CLOSE AND DISTANT PROTECTION ZONES

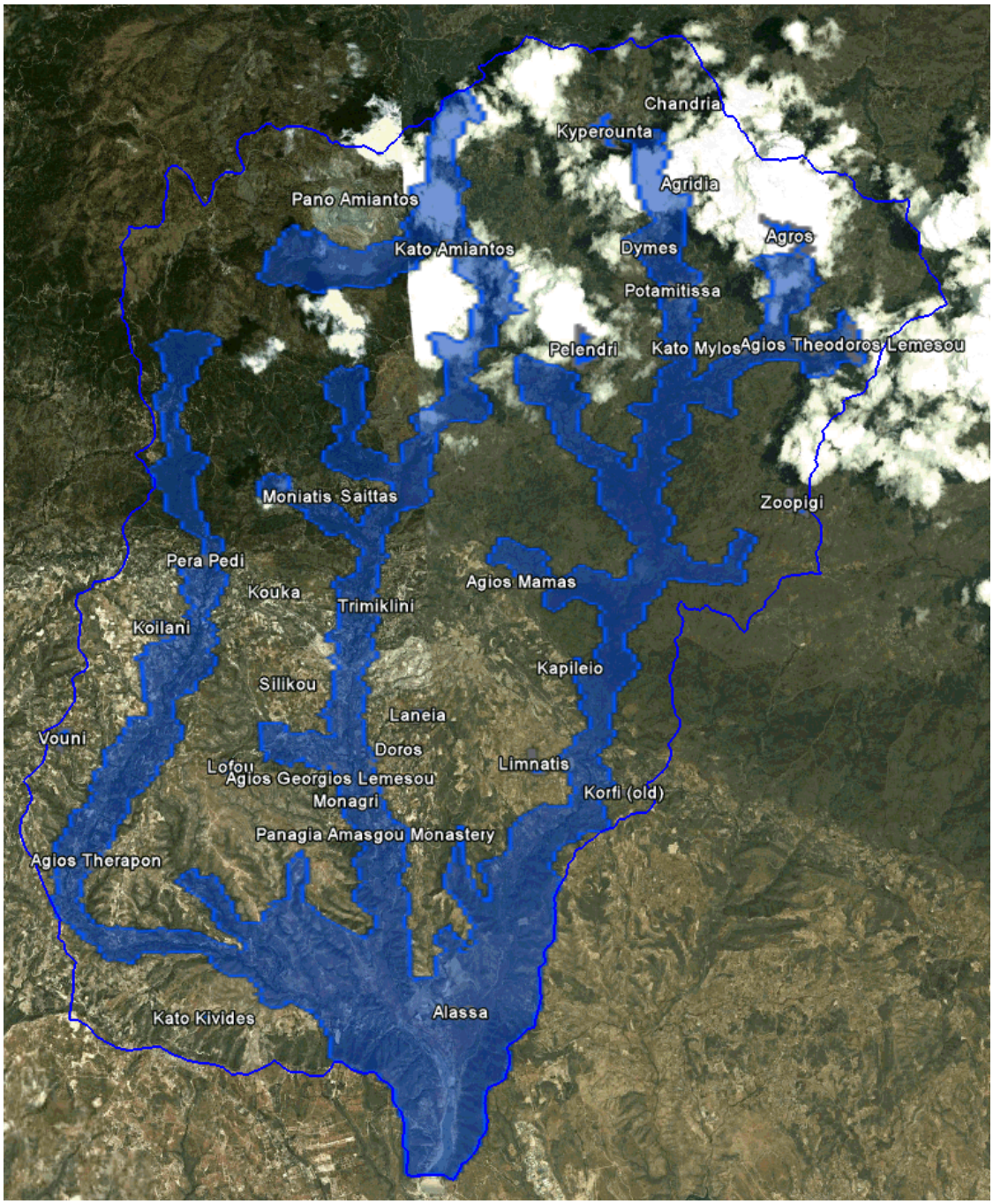

Figure 2 - KOURIS Close protection zone and Distant Protection Zone (Kouris dam watershed)

This comment will be removed in final document	*Note for WD* *This figure is a is to be replaced by a map whose legend identifies :* - *CPZ, DPZ (watershed) for KOURIS* - *main rivers* - *main villages.*

3. ARMINOU CLOSE AND DISTANT PROTECTION ZONES

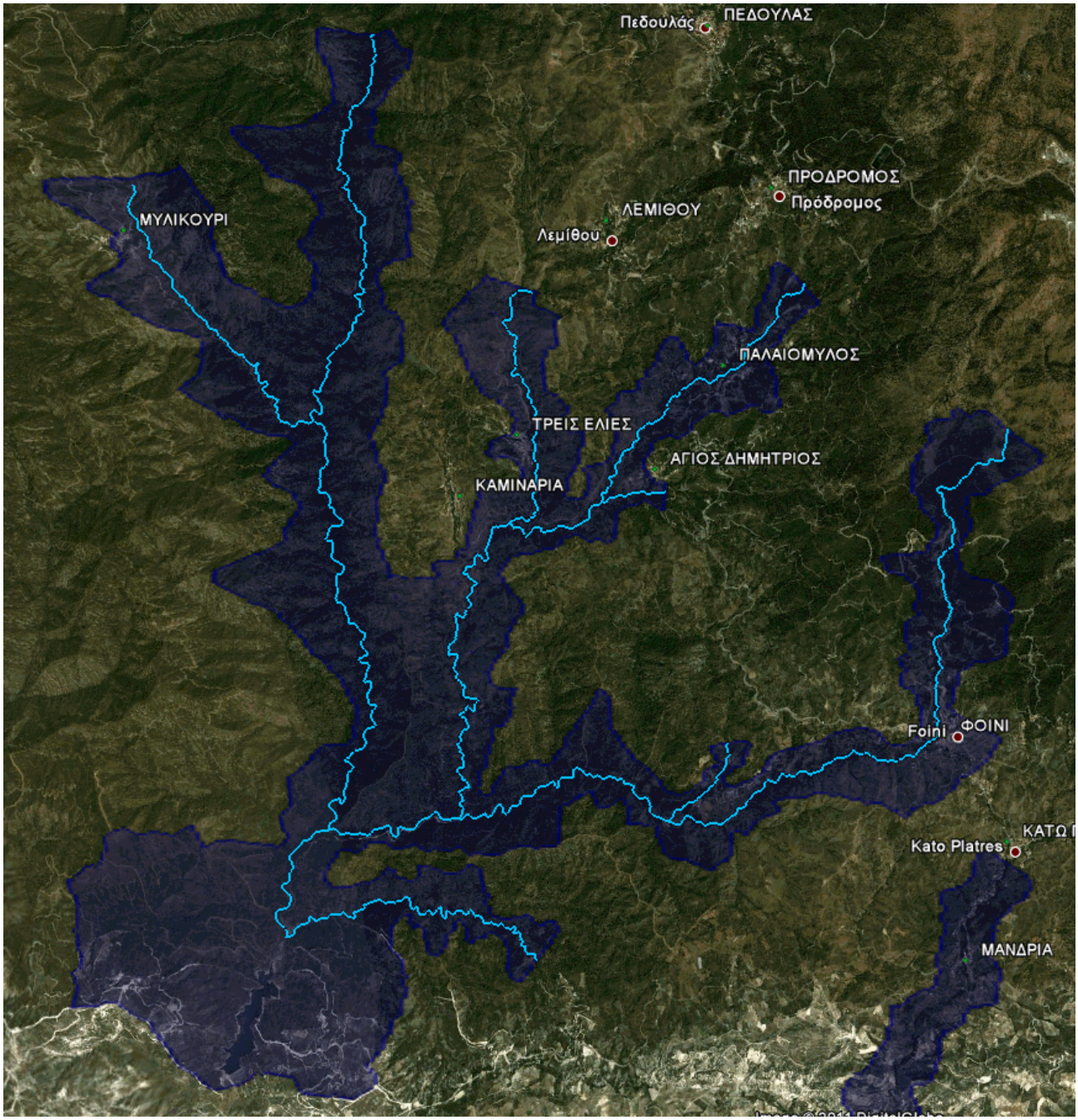

Figure 3 – ARMINOU Reservoir Close protection zone and Distant Protection Zone (ARMINOU dam watershed)

This comment will be removed in final document	*Note for WD* *This figure is a is to be replaced by a map whose legend identifies :* - *CPZ, DPZ (watershed) for ARMINOU* - *main rivers* - *main villages.*

4. KHAPOTAMI CLOSE AND DISTANT PROTECTION ZONES

Figure 4 – KHAPOTAMI River Close protection zone and Distant Protection Zone (KHAPOTAMI watershed)

This comment will be removed in final document	*Note for WD* *This figure is a is to be replaced by a map whose legend identifies :* - *CPZ, DPZ (watershed) for KHAPOTAMI* - *main rivers* - *main villages.*

5. KOURIS, LIST OF VILLAGES CONCERNED BY THE CLOSE AND DISTANT PROTECTION ZONES

City / Village name	% of area in Kouris water-shed	% of area in the Close Protection Zone	% of area in the distant protection Zone
AGIOS GEORGIOS LEMESOU	100		
AGIOS IOANNIS LEMESOU	100		
AGIOS MAMAS	100		
AGIOS THEODOROS LEMESOU	53		
AGIOS THERAPON	100		
AGRIDIA	100		
AGROS	**100**		
ALASSA	100		
CHANDRIA	100		
DOROS	100		
DYMES	100		
KALO CHORIO LEMESOU	21		
KANTOU	6		
KAPILEIO	100		
KATO AMIANTOS	100		
KATO KIVIDES	100		
KATO MYLOS	100		
KOILANI	85		
KORFI	50		
KOUKA	100		
KYPEROUNTA	100		
LANEIA	100		
LIMNATIS	100		
LOFOU	100		
MONAGRI	100		
MONIATIS	100		
PANO AMIANTOS	100		
PANO KIVIDES	31		
PANO PLATRES	88		
PELENDRI	100		
PERA PEDI	100		
POTAMITISSA	100		
SILIKOU	100		
SOUNI ZANAKIA	?		
TRIMIKLINI	100		
VOUNI	41		
YPSONAS	5		
ZOOPIGI	90		

Table 1 - The list of the cities and villages, which are completely or partly in the CPZ and the DPZ

This comment will be removed in final document	*Note for WD* This table and the 2 following ones are to be made through GIS request.

6. ARMINOU, LIST OF VILLAGES CONCERNED BY THE CLOSE AND DISTANT PROTECTION ZONES

City / Village name	% of area in Kouris water-shed	% of area in the Close Protection Zone	% of area in the distant protection Zone

Table 2 - The list of the cities and villages, which are completely or partly in the CPZ and the DPZ

7. KHAPOTAMI, LIST OF VILLAGES CONCERNED BY THE CLOSE AND DISTANT PROTECTION ZONES

City / Village name	% of area in Kouris water-shed	% of area in the Close Protection Zone	% of area in the distant protection Zone

Table 3 - The list of the cities and villages, which are completely or partly in the CPZ and the DPZ