

MASTER PLAN OF VARNA AIRPORT ECOLOGICAL EVALUATION

NON-TECHNICAL SUMMARY

June 2007

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The Report of the Ecological Evaluation of the Master Plan for development of Airport Varna is worked out under the circumstances of the 17th clause or the Regulation for circumstances and order for ecological evaluation of plans and programs (up, State Gazette, 57 from 2nd July 2004, ch. State Gazette №3 from 10th January 2006) by observing the range, definite by art. 86, para. 3 of the Environmental Protection Law. The report is worked out by a group from "Institute of Air Transport". "Institute of Air Transport" is an author of reports for Evaluations of the influence on the environment, related to the Bulgarian Airports: for Airport Varna (2001) and for Airport Sofia (1996, 2000, 2001). Members of the group have participated in the preparation of reports for Ecological evaluation and analysis, related to airports, including Airport Varna (1996, 2002, 2004) and Airport Burgas (2002, 2004).

The list of the report's authors is:

Prof. Kosta Pehlivanov, PhD.	Head of the group, investigated the component "Atmospheric Air".
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Eng. Mirolub Bojinov	Investigated the factor "Waste".

General Aims of the Master Plan.

The general aim of the first phase of realization of the Master plan is solution of the problem facilities of passengers' service. According to that a new passenger terminal is supposed to be built. It will be built for 18-20 months, so it will start to operate in the end of 2009 or in the beginning of 2010. A new infrastructure, emergency power, water, sewage and drainage will be built, connected with the new passenger terminal. A new fire station will be built as well as other facilities for improvement of passengers' services and operations.

During the next phases - after 10, 15, 20 years-the passengers' services will be renovated and expended if necessary. A overlay of the runway and taxiway is supposed to be made after 15 years.

The stages of development of the Master plan are shown in figure 1 and 2.



Fig. 1. Master plan for development of Varna Airport 2010-2015

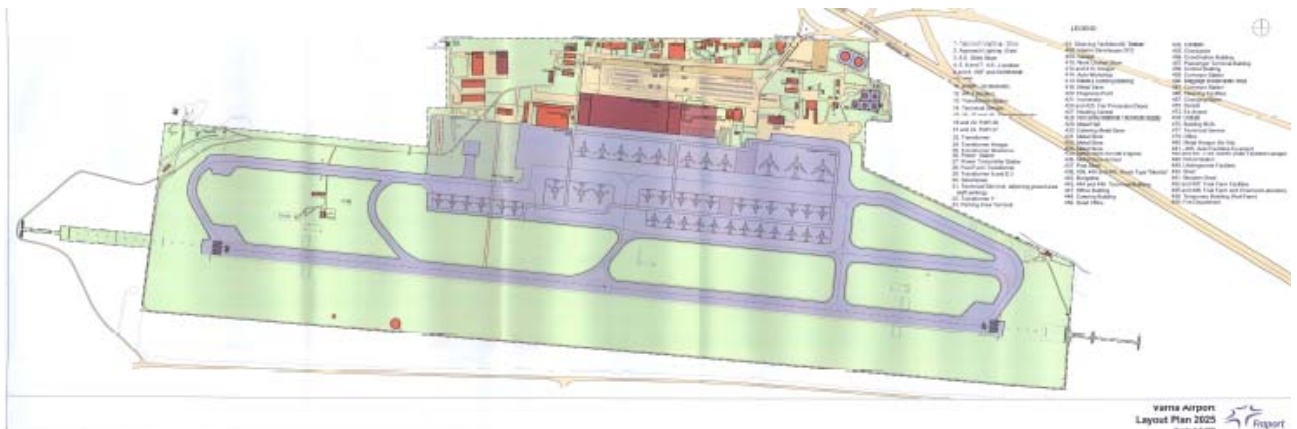


Fig. 2. Master plan for development of Varna Airport 2025.

Atmospheric Air

The condition of the atmospheric air in the airport area is investigated. The organized stationary pollution sources, situated at Varna Airport are analyzed. The obtained concentrations of dust, SO₂ and NO₂ near the surface are considerably lower than the national limited standards. An evaluation of the emissions from the engine of the aircrafts, using Varna airport for landing and taking off is made.

There are not determined any evidences for existing ecological problems, related to the component "Atmospheric Air" and the Master plan. The planed activities will not change the background pollution of the air in the area.

The conclusion is that Varna Airport should not be treated as an above the standard source of pollution of the neighbour areas nowadays and in the future.

Surfaces and underground water.

There are not regions of particular ecological importance near the investigated area, including sanitary-safe areas around the drinking water and mineral water sources.

The surfaces and underground water in the area of Varna airport are evaluated.

The water sources and geological area are described.

The ways by which surfaces and underground water could be affected by the airport area's activities as well as the oil discharge stage in the village of Topoly are analyzed. Special attention is paid to the potential waste water sources.

The capacity and quality of out falling waste waters are evaluated. It is established that no disturbance of the normative order is observed related to the indexes of out fall of waste water in the urban drainage.

In relation to the oil discharge stage in Topoly is established that the waste water, containing oil products enter a waste tank. This is a potential pollution source of underground water and this entrance should be stopped. It is recommended the tank to be reconstructed in a device with impermeable walls and bottom.

It is recommended that the areas of the stage for chemical treating (deicing) of the aircrafts should be drained. As an alternative in case of waste emitting in water pool an out fall permission is required.

According to the analysis of the existing ecological problems and their relation to the aims of water protection, a conclusion could be made that a significant influence on waters of the Master plan for development of Varna Airport, which could prevent its realization is not possible. To achieve total equivalent to the standard water order a realization of a complex of administrative procedures, sanitary activities, technical requirements and monitoring are required. In the evaluation are presented some particular ways for achieving this aim. A realization of a plan for water monitoring is important element of this tendency.

Biodiversity . Vegetation.

The biodiversity of plants in the area of Varna airport as well as surrounding areas is described.

There are not defensive natural areas in the areas of Varna airport and in the immediate vicinity of it's boundaries. The defensive natural areas, which could be indirectly dependent on the airport activities are situated at far distance from it. The description of these territories is in the evaluation. The results from the analysis of plants samples from the area of Varna airport and it's surroundings in 2007 show a high level of Zn (almost twice over the standard) in the start region. The level of Pb, Cd and As in the plants samples corresponds with the standards..

It is established that the realization of the changes in the Master plan of the airport would not lead to loss of habitants, fragmentation, disturbance in the biodiversity , because it will be made at a territory used as an airport for a long time.

The realization of the changes in the Master plan will not take away new areas from the defensive natural areas and will not exert extra negative influence.

The application of some limits which will prevent or reduce possible negative influence is proposed.

Biodiversity. Animal world.

There are various reptile and amphibious species in the airport's area, most of which are among those under the protection of Biodiversity law; part of them are in the Bulgarian Red Book.

In the area of Varna airport there are many birds, locked in two large lakes around Varna. Almost every route of the flying flocks of rambler birds as well as songbirds and herons pass through. They fly through the so called „*Via Pontica*“, which is the second most important migratory way in Europe after the Atlantic way.

In the area of Varna airport there are some mammals: hare, fox, marten, wild cat, jackal, wild-boar (*Sus scrofa*) and the threatened with extinction otter.

There are not defensive natural areas in the investigated area and in the immediate vicinity of its boundaries. The defensive natural areas, which could be indirectly dependent on the airport activities are situated at long distance from it. The ecological evaluation describes in details the defensive natural areas as well as the defensive zones from Natura 2000.

The building and the exploitations of the new terminal is not supposed to cause any influence on the animal world. Because of that reasons a monitoring is not necessary.

Some recommendations, related to the flights safety for preventing birds crash are given.

Factor “Waste”

As a result of the airport's activity and the activities of other enterprises in the area, different by kind, characteristics and amount waste are generated. A detailed analysis of the generated waste by kind and amount is given in the ecological evaluation.

The applied system for collecting and treating of waste is described. The stages for temporary waste deposition, management of the activities and the Program of waste management of “Fraport Twin Star Airport Management” – Varna Airport are analyzed.

There are not currently existing ecological problems, related to factor “Waste”. There are some points, devices or zones at the territory of and in the activities of Varna Airport, which are not current problem or source of negative influence on the environment at the moment of evaluation. Nevertheless these could turn into sources

of ecological problems under certain circumstances. The incinerator, which activities are terminated, the stage for waste deposition areas, under and over-ground tanks at the fuel depot, the manoeuvre area, and the oil discharge stage at the village of Topoly are described.

In the Master plan for development of Varna Airport the requirements of the current order, related to the management of waste activities are taken under attention. The specific conditions for treating of urban, industrial, building and dangerous waste are reported.

A prognosis for increasing of general types of waste, related with the airport activities is made. According to it when there is a good organization and acquirement of the industrial activities, waste's flow and life cycle, as well as duly prognosis of the expected amount of waste, controlling, monitoring and preventing of the possibilities of emergency floods and other incidents, and sources for suitable collecting, temporary deposition, transportation and treating, a significant influence of the environmental factor "Waste" is not expected.

The preventive measures, related to the monitoring during the time of plan's application are described, as well as the administrative and management plan of self monitoring and emergency action plan.

According to the evaluation no significant influence of factor "Waste" on the environment is expected.

FACTOR "NOISE"

The Master plan is not directly related to the solving of "aircraft noise" problem.

Describing the current condition (2006) of the factor "aircraft noise", it is stated that in 2006 nearly 78000 of the citizens of the town of Varna live in buildings, situated in the contour of the maximal noise level area, due to the aircrafts flying. Respectively nearly 42 000 people live in buildings situated in the contours of permissible equivalent noise level at night time. The territory, concert from the permissible equivalent noise level at night time in 2006 is shown in fig. 3. The territory, concert from the maximal noise level in 2006 is shown in fig. 4.



Fig.3. Noise contours around the airport in LAeq, dB(A), 8h, summer night.

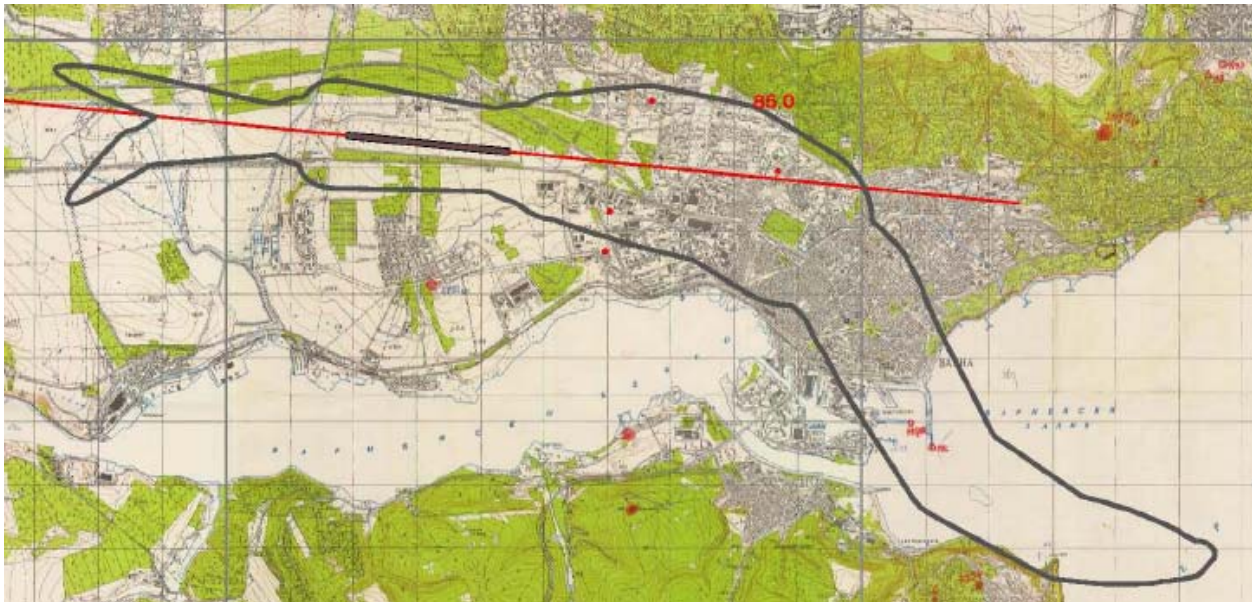


Fig.4. Noise contours around the airport in L_{AMAX} dB(A), pick summer twenty-four-hour period, 2006

The obtained noise contours $L_{AMAX} = 85$ dB (A), $L_{AEQ} = 55$ dB(A) и $L_{AEQ} = 65$ dB(A) can estimate the sanitary-defense area of Varna Airport in the terms of Order №7 for sanitary requirement for health defense of the urban area, view to the limited values of the maximal noise level, due to the aircraft flight over a defined territory, noise level at night and day time. Obviously the sanitary-defense area should be one that is supposed to correspond to the contour of the largest urban area. A contour of that kind is the contour of maximal noise level, due to the aircraft flight, so it should be the contour, describing the sanitary-defense area of Varna Airport. The general area of this territory is 33.96 km², 13 km² of which is dense settled urban territory of the town of Varna. The rest of the area are sea, agriculture lands, water areas, roads, poorly settled regions and industry zones.

The prognosis results (the influence of the factor in 2015, 2025 is prognosticated) shows a contour $L_{AEQ} = 55$ dB (A), including 10 km² but concerning less than 1000 people (fig.5). The contour of maximal sound level, due to overlying aircrafts $L_{AMAX} = 85$ dB (A), includes already nearly 11 km² or 1/3 from the permitted usage of louder aircrafts. Only 2 km² of these are dense settled urban territory of the town of Varna, where live nearly 10000 people.

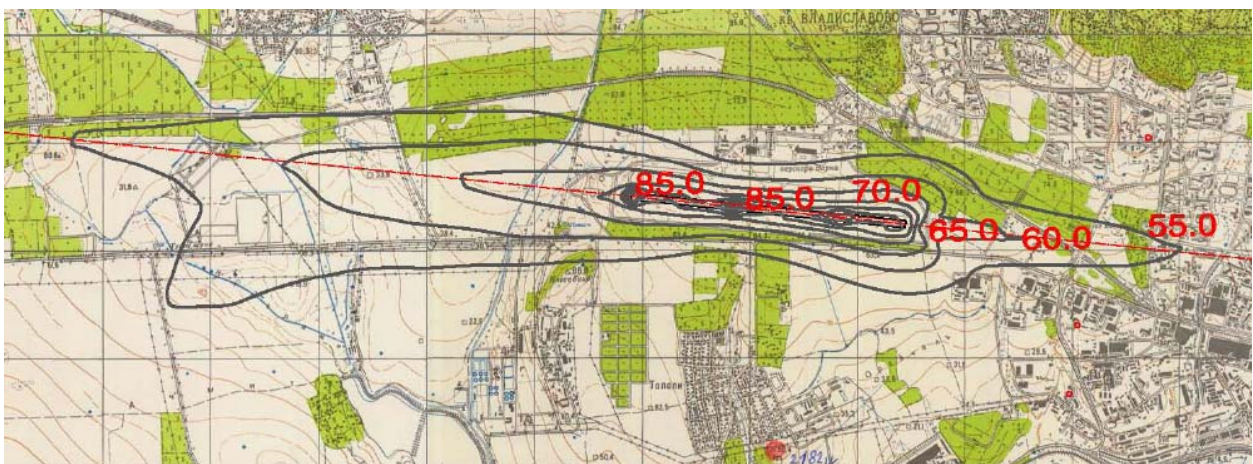


Fig.5. Noise contours around the airport in LAeq, dB(A),8 h, summer night 2025.

This effect of using less lauder aircrafts (which are corresponding to the current standards of aircraft noise) can be achieved and retained just if the sanitary-defense area of Varna Airport is not expanding and new buildings are not built.

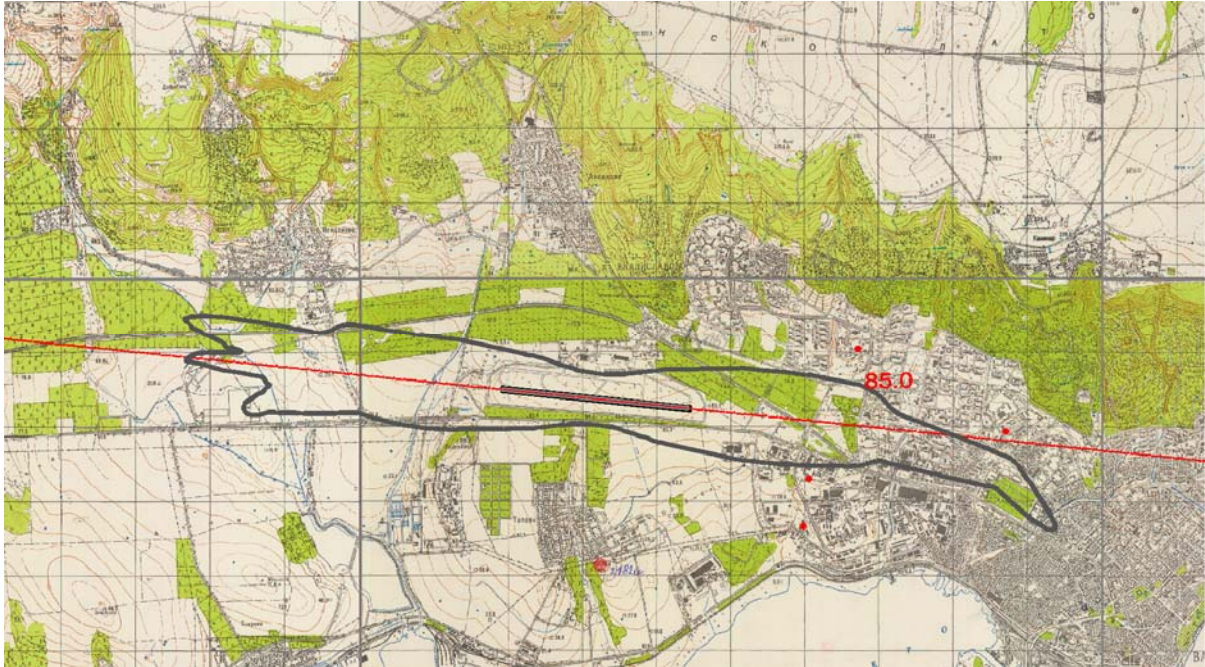


Fig.6. Noise contours around the airport in LAMAX dB (A), pick summer twenty-four-hour period in 2015.

According the comparison of the results, related to the factor “aircraft noise” in and after 2006 the following conclusions can be made:

1. In the end of 2006 the contour $L_{AEQ} = 65$ dB (A), corresponding to the current order for equivalent daily noise level is 4.83 km². The prognosis is it to become 1.92 km² и 2.82 km² in 2015 and 2025, respectively. These results are evidences that the actual prohibition for flights of IL 86 and TU 154, TU 134 aircrafts leads to significant (2.5 time for 2015 и 1.71 time for 2025) restrain of the contour area of the over limited equivalent noise level at day time due to the aircrafts, landing and taking off Varna Airport. The decrease of the area of limit level of daily noise is achieved including significant increase of movement in 2015 and 2025 in comparison to those in 2006 (1.3 times in 2015 and 2 times in 2025).
2. In the end of 2006 the counter $L_{AEQ} = 55$ dB(A), corresponding to the current order for equivalent night level noise, is 15.07 km², The prognosis for the area of this counter are 7.17 km² and 10.6 km² for 2015y. и 2025, respectively. These results are evidences that the actual prohibition for flights of IL 86 and TU 154, TU 134 aircrafts leads to significant (2.1 time for 2015 и 1.42 time for 2025) restrain of the contour area of the over limited

night equivalent level of noise, caused by aircrafts, landing and taking off Varna Airport. The decrease of the area of limit noise level at night time is achieved including significant increase of movement in 2015 and 2025 in comparison to those in 2006y. (1.3 times in 2015 and 2 times in 2025).

3. In 2006 the contour L_{AMAX} 85dB (A) corresponding to the current order for maximal noise level is 33.96 km². The prognosis for the area of this contour is 10.94km² and 11.09km² for 2015 и 2025, respectively. These results are evidences that the actual prohibition for flights of IL 86 and TU 154, TU 134 aircrafts leads to significant (nearly 3.1 time) restrain of the contour area of the over limited maximal noise level due to the aircrafts, landing and taking off Varna Airport.
4. In 2006 the contour of noise L24 (CNEL) 55dB (A) is 21.37 km². The area of this contour is 25.7km² (increase nearly 1.2 times) in 2015 and 42,49km² (increase nearly 2 times) in 2025. This is due to the increase of the movements, including flights in the evening and in the night. (1.3 times in 2015 and 2 times in 2025) Since there are no investigations in Bulgaria, that could act as a base for some orders', related to index L24, determination, the obtained results are practically not important for conclusions or recommendations, related to this index.

The analysis show that the general reasons for the relatively great negative influence of the aircraft noise, caused by aircrafts, which are landing and taking off from Varna Airport are:

1. The bad urban plan, which led to expansion of the town to close to the airport, disrespecting any sanitary-defense zone.
2. The organization of landing and taking off, under which circumstances the aircrafts fly over significant urban areas, which leads to over standards noise level of the population in Varna.
3. The lack of the effective system for management of the air traffic, which gives priority to that kind of managing, which minimizes the flights over the town.
4. The lack of objective control over crews, who do not obey the recruitment, related to minimization of noise over the area.
5. The lack of effective order base, allowing to sanction people, breaking the noise reduction rules for flights.

According to these statements the following general measurements for restricting of the influence of the aircraft noise over the town of Varna can be applied:

1. Optimization of the tracks for departure from runway 09 connected with the restriction the flights over the town.
2. Creation of an organization for obligatory observance of the procedures for reduces noise in the area of Varna Airport.
3. Creation of monitoring system for the traffic in the area of Varna Airport and restriction to the objective minimum (considering to performance of the aircrafts, metrological conditions and safety of flights) of over flights above the town.

4. Determination of the sanitary-defense zone of Varna Airport should be corresponded to the maximal noise level contour.
5. In the limits of the sanitary-defense zone the building of houses should be forbidden. The possibilities for noise reduction for the already existing buildings should be investigated.
6. A regulatory order that allow the airport administration and respectively the concessionaire to fine for breaking the define rules for decreasing the noise, caused by aircrafts traffic in the airport area. The collected resources should be used for the measure in point 5.
7. Creation of slot organization, in the view to minimizing night flight at Varna Airport.

It is recommended the airport operator to create a system for monitoring of the aircraft noise.

In conclusion: The realization of the Master plan for development of Varna Airport does not worsen the indexes, related to the factor "Aircraft noise."