20TH SEMI ANNUAL **ENVIRONMENTAL MANAGEMENT REPORT** 01.01-30.06.2018

Environment Department OLYMPIA ODOS S.A.

OLYMPIA ODOS

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A. INTRODUCTION

Based on the Concession Agreement (article 11.2.2& 16.2), as amended and applied with L. 4219/2013 (Gov. Gaz. 269/A/11-12-2013), OLYMPIA ODOS S.A. is obliged, throughout the entire Concession Period to deliver to the Service, a semi annual environmental report. In addition to that, an annual environmental report incorporating the data of the two semi annual reports is submitted to EYPE/MEPPW.This is the Twentieth Semi Annual Environmental Management Report and covers the period 01.01.2018 to 30.06.2018.

The above mentioned semi annual and annual reports shall be publicized on the internet site http://www.olympiaodos.gr created and maintained by the Concessionaire, in accordance with the Concession Agreement.

During the motorway's construction and operation, both the constructor as well as the operator comply with all pertinent provisions, as they are recorded in the Greek Legislation, ensuring the same for their contractors and subcontractors.

Note: all appendices of the present report have been submitted to the Special Environment Service (DIPA) of the Ministry of Reconstruction of Production, Environment and Energy, responsible for the environmental supervision of the OLYMPIA ODOS project and are available upon request.

The work's progress of the Design-Construction Project contractual scope is notified to the Concessionaire, the Independent Engineer and EYDE/KSESP (former EYDE/MK/EPP) through Monthly Progress Reports, which are elaborated by APION KLEOS CJV as required by the contractual document.

Tables 1 below depict the progress of the Project's works during the 1st half of 2018.

TABLE 1 – PROJECT'S WORKS PROGRESS IN THE 1st HALF OF 2018

G.U.	SECTION	ACTIVITY	PROGRESS
1-3 & 35	**EL-KO & PBP**	Traffic Management.	Continuous process.
		Irrigation system installation.	Completed.
		Steel barriers installation. (ΜΣΟ 13).	Completed.
4-15	**EL-KO**	Traffic Management.	Continuous process.
		Marking and signing works.	Completed.
		H/M works at the motorway's open sections.	Completed.
		Irrigation system installation.	Completed.
		Culvert and structure restoration works	Completed.
		Asphalt restoration works.	In progress.
		Works at EL-KO Administration building.	In progress.
16-17	**KO-PA**	Traffic Management.	Continuous process.
		Storm-protection works: Box culverts construction	Completed.
		Bridges, Over-Passes, Under-Passes construction	Completed.
		Toll stations construction: Zevgolatio & Kiato lateral tolls.	Completed.
		Technical Base construction: architectural works, E/M infrastructures, steel constructions.	Completed.
		Safety barriers & fencing construction.	Completed.
		H/M works at the motorway's open sections.	Completed.
		Asphalt restoration works.	In progress.
18-21	**KO-PA**	Traffic Management.	Continuous process.
		Retaining walls construction (R282, G255, G283, G249, G279, etc).	Completed.
		Bridges, Over-Passes, Under-Passes (K203, K206, K214, B211, etc).	Completed.
		Box culverts construction (L110, L115, L119, L120,etc.).	Completed.
		Public Toilets at G.U. 19.	Completed.

		Drainage works (Lykoporia I/C).	Completed.
18-21	**KO-PA**	Asphalt works in Local Roads.	Completed.
		Asphalt works at G.U. 19.	Completed.
		E/M works at G.U. 19.	Completed.
22-25	**KO-PA**	Traffic Management.	Continuous process.
		Earthworks/embankments at G.U. 22-25.	Completed.
		Bridges, Over-Passes, Under-Passes (A344, A508, B343, etc).	Completed.
		Asphalt works at G.U. 22-25.	Completed.
		E/M works at G.U. 22-25.	Completed.
26-29	**KO-PA**	Traffic Management.	Continuous process.
		Storm-protection works: Box culverts construction (L416, L444, etc).	Completed.
		Retaining walls construction (G486, R458, etc.).	Completed.
		Bridges, Over-Passes, Under-Passes (K290, K291, K302, etc).	Completed.
		Asphalt works at Local Roads: Kalavrita I/C, etc.	Completed.
		Asphalt works: 69+500-74+700 (AK), 69+500-71+500 (ΔΚ), 75+660-83+700 (ΔΚ), 74+700-83+700 (AK), etc.	Completed.
		Tertiary irrigation network & planting	Completed.
30-34	**KO-PA**	Traffic Management.	Continuous process.
		Embankments/Cuts :93+300 - 94+100, 94+100 – 95+500, etc.	Completed.
		Storm-protection works: Box culverts construction (L504, L507, L580, etc.).	Completed.
		Retaining walls construction (R572, G510, etc.).	Completed.
		Bridges, Over-Passes, Under-Passes (K306, K326, etc.).	Completed.
		Tertiary irrigation network & planting	In progress
		Signing works (90+100-109+000).	Completed.
		Asphalt works at G.U. 30-34.	Completed.
		E/M works: 90+100-95+500, etc.	Completed.

Marking works at k.p. 40+050 to 42+550

Rehabilitation works at culvert S050

Planting at Aigio I/C West

Planting at k.p. 90+700

Fencing at side roads

Existing cut 44+170 – 44+230 – Placement of geogrid

A223 – Replacement of safety barriers and placement of safety guardrails

SR003L – Completion of works

B PROGRESS OF THE ENVIRONMENTAL AGENDA

1. GENERAL

Appendix A of Annex 2 of the Concession Agreement states the Common Ministerial Decisions (CMD) and the Law comprising the Project's environmental licensing and forming the main framework for the monitoring of the progress of the Project's environmental issues.

More specifically :

1. Law 2338/1995, Thiva I/C – Elefsina FTS
2. CMD 126393/16.02.2007, Elefsina – Korinthos (excluding Kakia Skala section), as amended and currently applies via Decision 4281/26.01.2017 (ΑΔΑ: Ω4ΛΠ4653Π8-8ΝΑ)
3. CMD 18112/20.09.1996, Kakia Skala, as amended and currently applies via Decision 4281/26.01.2017 (ΑΔΑ: Ω4ΛΠ4653Π8-8ΝΑ)
4. CMD 92073/16.05.1994, Isthmos – Ancient Korinthos I/C, as amended and currently applies via Decision 4281/26.01.2017 (ΑΔΑ: Ω4ΛΠ4653Π8-8ΝΑ),
5. CMD 104892/16.06.2006, Ancient Korinthos I/C – Patra By-Pass K1 I/C as amended and currently applies via Decision 25406/25.05.2017 (ΑΔΑ: 62ΘΚ4653Π8-7ΨΖ) ,
6. CMD 16049/12.08.2013, Patra By-Pass, as amended and currently applies via Decision 6666/26.01.2017 (ΑΔΑ: ΩΛΝ64653Π8-ΠΛΣ).

2. ENVIRONMENTAL PERMITTING AND ENVIRONMENTAL MANAGEMENT

2.A ENVIRONMENTAL PERMITTING

In the framework of respecting the Concession Agreement environmental requirements, the approved environmental terms and the required environmental permits, requests were submitted, when required, in order forest and archaeological permits and opinions, permits to use water from drillings etc. to be issued.

a. Cooperation has completed with the Public Utility Organizations/ Archeological Services in order to relocate various networks located within the Project.
b. Permits have been received from Peloponnese, W. Greece & Ionian Islands Decentralised Administration, Water Resources Directorate for 2 new water drillings, so as to cover the irrigation, fire fighting and other needs that shall arise in the Project's short-term parking areas along EL-KO section.

s/n	Name	Mun.	K.P.
1	"Kyras Vrysi"	Loutraki-Ag. Theodoroi	78+050
2	"Tripoli I/C"	Korinthos	84+300

c. Measurements programmes were conducted regarding the effectiveness of the installed noise barriers along Drepano-Rio section of Korinthos-Patra road project.

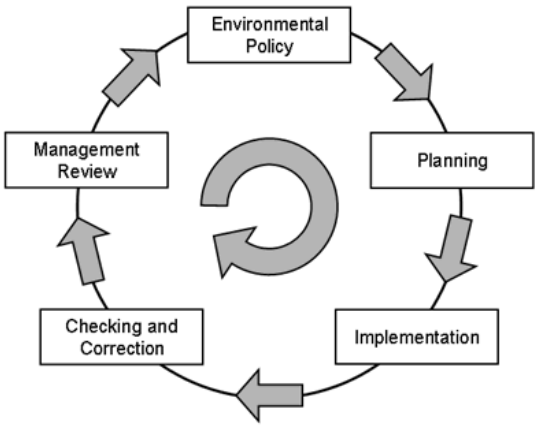
This programme was approved by KAPA Dir./MEECC via doc. No 25591/08-06-2018. According to the results of the approved measurement programme:

(a) In all locations were noise barriers were installed, the set noise limits were fully abided by, whereas
(b) No exceedances were identified in the other check points.

The noise barrier installation points are the ones cited in Table 10 of the Constructor's 1th annual and 19th semi-annual environmental management report.

2.B ENVIRONMENTAL MANAGEMENT

In the construction as well as in the operation phase, the procedures and directives for the works' environmental management are implemented by the Constructor, aiming at the in compliance with the terms and constraints of the above decisions.
APION KLEOS submits to OLYMPIA ODOS S.A. monthly reports regarding the progress of the construction related works.



Within the framework of the contractual obligations, the Constructor has developed an Environmental Management Plan (EMP) for the Project in accordance with ISO 14001.

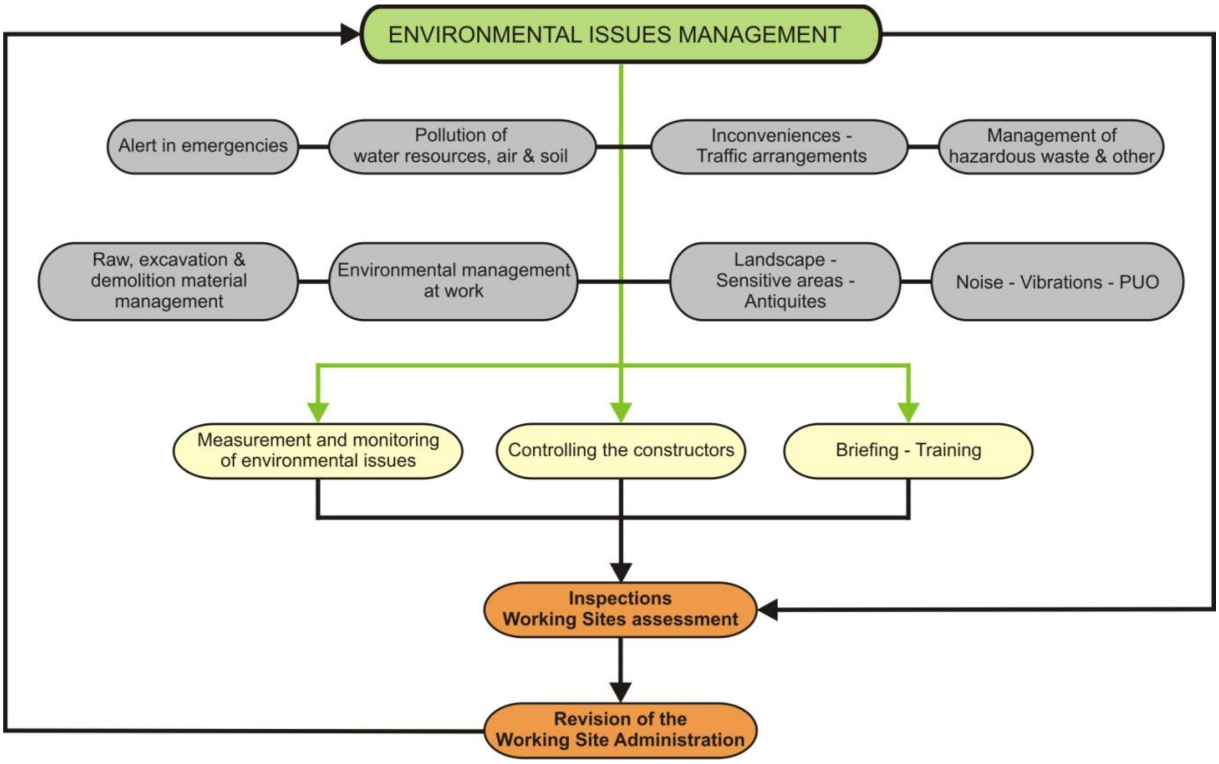
- controlling, monitoring and dealing with the environment impact of the project
- optimum management of liquid and solid waste of the Project
- promotion of best practices to reduce energy and resources consumption

The EMP includes the organizational structure, planning actions, duties allocation, technical methods, procedures as well as processes for the development, implementation, achievement, revision and support of the Constructor's environmental policy as well as the compliance with the Project's environmental terms.

The EMP constitutes the basic and overal framework for the management of environmental issues, whereas the procedures and directives area tool for the rational handling/ management of each environmental issue, taking into account the pertinent legislation and the decisions applicable to each case.

The advantages from implementing the EMP pertain to the following:

- saving natural resources (reduced consumption of raw materials, energy, water etc),
- reducing the waste and by-products process and disposal cost, minimizing fines due to law violations,
- reducing insurance costs by reducing the potential risks and having contingency plans



In the framework of the compliance with the environmental terms of the Project and the implementation of the Environmental Policy, the Operator received by TUV Hellas (TUV NORD) SA a **certification for the environmental management system according to the standard ISO 14001:2015**


TÜV HELLAS
TÜV NORD GROUP

ΠΙΣΤΟΠΟΙΗΤΙΚΟ

Σύστημα Διαχείρισης σύμφωνα με
ISO 14001 : 2015
Συστήματα Περιβαλλοντικής Διαχείρισης - Απαιτήσεις και Καθοδήγηση για τη χρήση του

ΟΛΥΜΠΙΑ ΟΔΟΣ ΛΕΙΤΟΥΡΓΙΑ Α.Ε.
32° χλμ. Ν.Ε.Ο. Αθηνών - Κορίνθου
Βόρειος Παράδρομος, Άνω Βλυχάδα
191 00 Μέγαρα
Ελλάδα

ΟΛΥΜΠΙΑ ΟΔΟΣ ΛΕΙΤΟΥΡΓΙΑ

Λειτουργία και Συντήρηση Αυτοκινητόδρομου και ειδικότερα:
- Διαχείριση Κυκλοφορίας και Συμβάντων
- Οδική και ΗΗΜ Συντήρηση
- Συλλογή Διοδίων
- Παροχή Υπηρεσιών Τηλεδιοδίων
- Εμπορική Διαχείριση Συνδρομητικών Προγραμμάτων
- Εξυπηρέτηση Πελατών & Συνδρομητών
- Παροχή Συμβουλευτικών & Υποστηρικτικών Υπηρεσιών

Ισχύει από 2018-05-04
Ισχύει μέχρι 2021-05-03
Αρχική πιστοποίηση 2018

TÜV HELLAS (TÜV NORD) A.E Φορέας Πιστοποίησης
Αθήνα, 2018-05-04

IAF ΕΣΥΔ
TÜV NORD SYSTEM CERTIFICATION

3. ENVIRONMENTAL PARAMETERS MONITORING PROGRAMME (NOISE MONITORING TRAFFIC LOAD VIBRATIONS, AIR QUALITY, WATER

3.A NOISE MONITORING

- Korinthos Patra section

After KAPA Dir./ Dep. for Noise, Vibration & Radiation approved the Special Calculation & Implementation Acoustic Designs for "Korinthos-Patra Motorway", which cover the full update and detailed calculation for mapping the environmental traffic noise under EU Guideline 2002/49/EK and CMD No 211773/2012, the construction/installation has already been completed of 10000 m^2 of noise barriers in the following sections:

Table 3 provides the updated noise-barriers locations:

S/N	From k.p.	To k.p.	Direction
1	0+812	0+920	Korinthos
2	7+820	7+956	Patra
3	20+560	20+800	Korinthos
4	26+804	26+866	Patra
5	26+059	26+231	Korinthos
6	26+522	26+705	Korinthos
7	37+175	37+240	Korinthos
8	39+142	39+242	Patra
9	39+776	39+835	Korinthos
10	40+070	40+174	Patra
11	40+074	40+158	Korinthos
12	44+918	44+991	Korinthos
13	53+702	53+880	Patra
14	53+880	53+964	Korinthos
15	59+152	59+192	Patra (south)
16	59+180	59+242	Patra
17	59+379	59+609	Patra
18	76+076	76+186	Patra
19	82+452	82+539	Patra
20	83+645	83+718	Korinthos
21	88+494	88+590	Patra
22	91+440	91+623	Patra
23	91+815	91+945	Patra
24	96+182	96+261	Patra

25	96+955	97+017	Korinthos
26	97+104	97+254	Korinthos
27	97+190	97+314	Patra
28	97+772	97+831	Patra
29	98+710	98+798	Korinthos
30	98+850	98+965	Patra
31	107+843	107+990	Korinthos
32	111+591	111+922	Korinthos
33	111+794	111+968	Patra
34*	111+968	112+186	Patra
35	112+825	112+889	Patra
36	114+550	114+683	Korinthos
37	114+758	114+810	Korinthos
38	115+350	115+433	Korinthos
39	115+676	115+839	Korinthos
40	115+700	115+883	Patra
41	115+721	115,841	Korinthos
42	116+746	116+712	Patra
43	118+004	118+125	Patra
44	117+484	117+774	Korinthos
45	118+138	118+250	Korinthos
46	118+125	118+364	Patra
47	118+657	118+767	Patra
48	118+250	118+327	Korinthos

** Construction of noise barrier N^{o} 34 (K.P. 111+968 - 112+186) is in progress and expected to complete within the 2nd half of 2018.*

The noise barriers constructed in the above Designs are of the same type as the ones already approved and constructed for “Elefsina-Korinthos” and “Patra By-Pass”.

- Existing Sections (EL-KO & PBP)

Noise barriers along both EL-KO and PBP sections are all constructed and now delivered to OLYMPIA ODOS S.A. who in turn assigned their constant monitoring to OLYMPIA ODOS OPERATION S.A.

The location selection, where the 24-hour acoustic measurements were performed, depended on: the implementation of noise measures to protect sensitive receivers and residential uses.

Within the framework of noise monitoring program, the following 24-hour measurements were carried out in the section KO-PA P. 111+000 (Drepano) to P. 119+500 (Rio), using special moving noise monitoring stations, suitably designed to meet the requirements of the new European Noise Directive.

(a) 19 24hour road traffic noise measurements in November 2017
b) 26 24hour measurements in April 2018, in geographic locations, covering all the receivers, including special bridge joints.

Annex 5 presents in detail the results of the variability of noise indicators - that analyzed above - for each 24-hour measurement / position. The tables and diagrams summarize the results of the main noise indicators Lden, Ld-e and Lnight for each 24-hour acoustic measurement:

Observing the results of the 24-hour records and the analytical hourly variation given in detail in Annex 5, it is noted that:

-In all cases of application of noise barriers to section "DREPANO-RIO", we have efficient barriers operation and full compliance with the statutory limits.
- regarding position P70, which is outside the settlement boundaries, and exceeds the legal limits during the first measurement cycle (November 2017), after the noise barrier installation full compliance with the statutory limits is also observed.
- regarding position P89 within the boundaries of the settlement, the measurement was repeated in the 2nd measurement cycle (April 2018), due to the fact that during the first phase of registration, construction work was carried out. The results of noise recording are also within legal limits in both cases.
- regarding position T91 outside the settlement boundaries there is a minimal unimportant overrun of the Lnight index.
Finally, regarding position C98, Korinthos-Xylokastro section shows an unrealistic exceedance of the Lnight index. The installation of noise barriers according to the approved EAMYE for the immediate area protection is expected to eliminate it.

More specifically, taking into account the aesthetic/architectural requirements and the restrictions imposed by the constructions' static adequacy and road safety elements, the barrier surfaces created with transparent sheets used as much as possible are obviously not making the residents of the areas behind them feel "caged".

The barriers' formulation was based on the following architectural design principals:

- Selection of the proper dimensions for the vertical walls and combination with the transparent panels they support so as to achieve the best possible proportion of transparent and non-transparent parts of the overall barrier superstructure.

- Use of horizontal scotias on the narrow walls (they facilitate the wall's visual integration into the natural environment by breaking up its surface while also being compatible with the vehicles' horizontal direction).

- Alternation of walls and transparent panels so as to avoid – to the extent possible – a monotonous repetition of one single pattern.

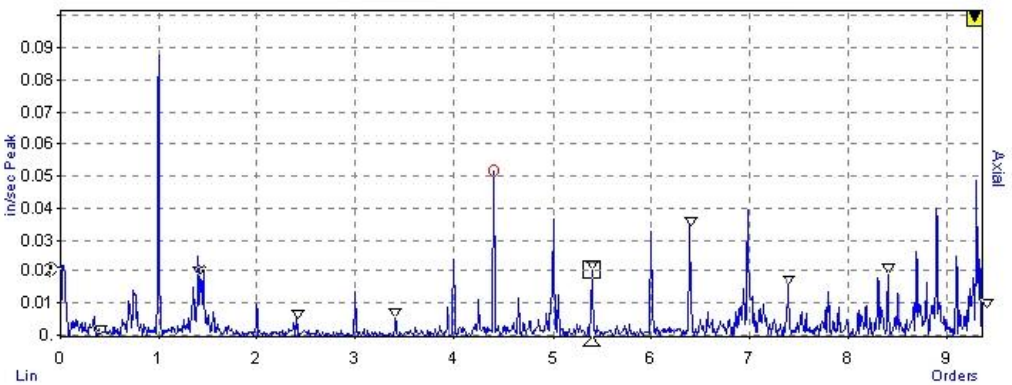
- The reinforced concrete non-transparent panels have been placed with proper width variation so as to give a sense of varying degrees of density. This is done in an attempt to distract the viewer from any single part of the construction and make him/her see the whole picture.

Please also note that protective measures have been taken to prevent birds from crashing on the barrier's transparent parts. To that end, suitable bird images have been stuck on the panels following the successful methods used in other similar cases.

Stickers are the most widespread method in Europe since it requires no a priori selection of potential sections to paint. Rather, one can a posteriori apply the stickers on the locations where birds are establish to fly and hence there is a risk of them crashing on the panel.

3.B TRAFFIC LOAD VIBRATIONS

During the Project's execution, due care is given to minimise vibrations caused by the construction activities to buildings and sensitive locations within the Project's zone of influence.

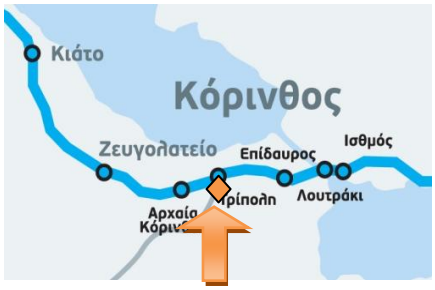


To that end, measurement and recording systems of all significant variables of the phenomenon (soil movement, speed and acceleration) were installed at critical points.

In parallel, the Operator carries out traffic counts at the Project's toll plazas. More specifically, each month the company drafts an operation report, including precise traffic data, i.e. number of vehicles passing through all toll plazas and the traffic composition; said report is duly submitted to the competent supervising Services of the Ministry of Infrastructures, Transport and Networks. The company has at its disposal both the primary and the processed traffic data.

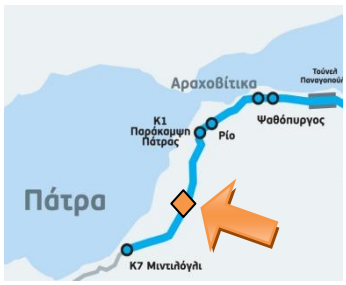
3.C AIR QUALITY AND METEOROLOGICAL DATA MONITORING

Complying with the C.A.'s environmental requirements, three (3) permanent Air Pollution & Meteorological Data stations were constructed and put to operation to monitor the impact of the motorway on the wider region.
Three (3) of them have already been delivered to the Concessionaire since 2016 and now operate under the Operator's supervision.



Station at Tripoli H/C

Station at Aigio MSS



Station at Glafkos IC

Please see below the Glafkos I/C and Tripoli Semi-I/C stations' pollution values:

Station	Suspended particles PM10 & PM2.5	CO	NO NO2 NOx	SO2	O3	BTEX
Korinthos	x	x	x	x	x	x
Glafkos	x	x	x	x	x	x

The following meteorological parameters are also cited:

- Wind direction and speed
- Atmospheric rtemperature and relevant humidity
- Sunshine
- Precipitation

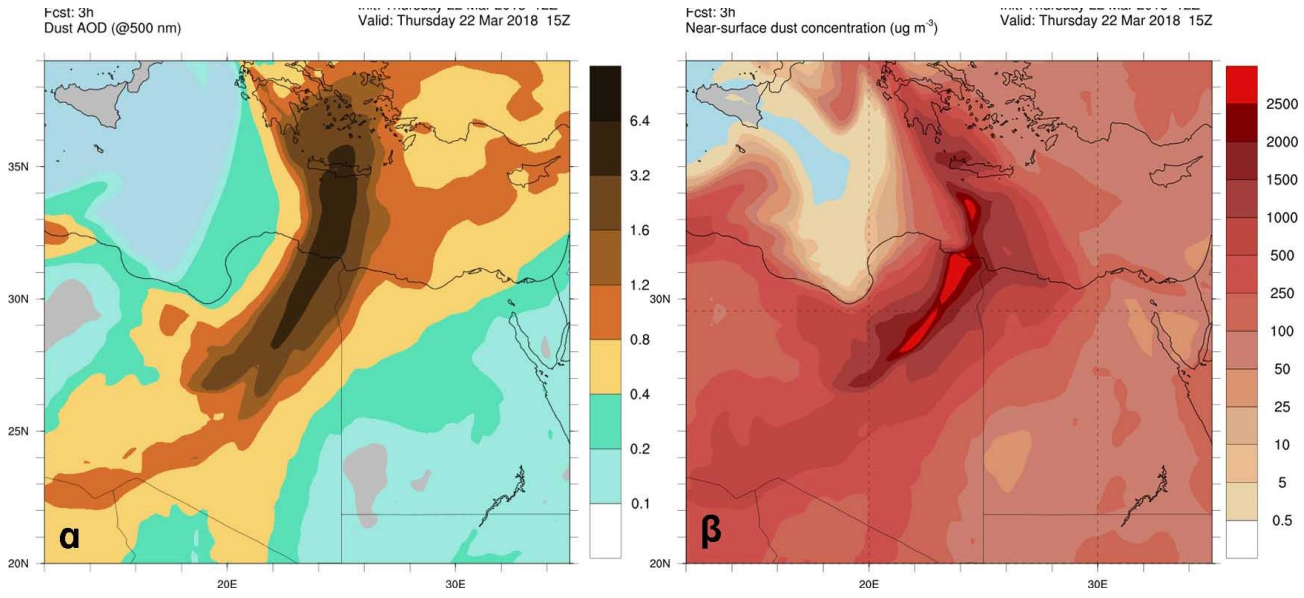
Based on the latest air quality report which can be found as Appendix 4 of the present report, we can draw the following coclusions :

The available data for drawing safe conclusions come from all three stations (Korinthos, Aigio and Patra), that were operational during the entire first semester 2018.

During the fist semester, it was noted that there was extensive transport of African dust in Greece, mostly in March and in April; this phenomenon affected among others the areas crossed by the motorway "Elefsina-Korinthos-Patra"

The African dust, which appears even more frequently in Greece during the last years, is due to the desertification phenomenon recorded in Sahara. Specifically in Sahara, the arid areas extend against the arable lands at a staggering and incalculable rate, resulting in the dramatic increase of the dust amounts transported in the atmosphere.

Picture 8.1 indicatively presents the atmospheric optical depth of the dust (Picture 8.1a) and the dust concentration near the ground in μg/m3 (Picture 8.1.b) on Thursday 22/03/2018 at noon, as forecast by the dust transport model (WRF-Chem) of the Hellenic Observatory/meteo.gr.

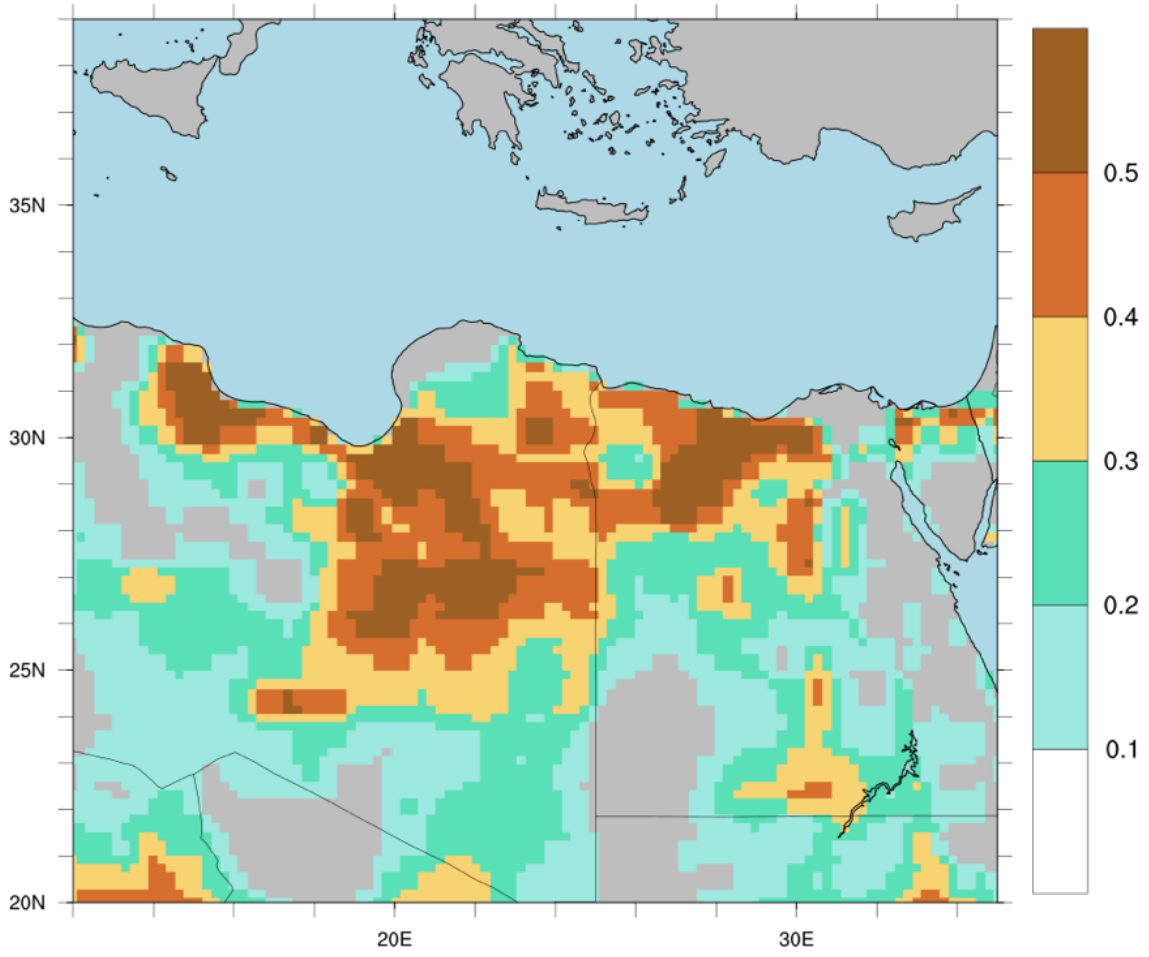


Picture 8.1 Prognostic Charts of the numerical model of the Hellenic Observatory/meteo.gr displaying the atmospheric optical depth of the dust (a) and dust concentration near the ground in μg/m3 (b) on Thursday 22/03/2018 noon.

It can be clearly observed that there is dust transport from the area near the boundaries of Libya (Cyrenaica) and Egypt towards Greece. The intense brown colour corresponds to optical depth values larger than 5, justifying the significant reduction in the visibility and in the incoming solar radiation (the atmospheric optical depth is a figure for the evaluation of the radiation attenuation due to its absorption and scattering by suspended particles).

Picture 8.2 shows the allocation of the desert dust sources used in the WRF-Chem model of the Hellenic Observatory/meteo.gr The dust sources are characterized by the so-called erodibility factor, with its greater values corresponding to soils from where the dust can be "elevated" more easily and in larger quantities (on condition that the wind blows over some critical level)

By comparing Pictures 8.1 and 8.2, it can easily be observed that in the significantly high dust concentrations recorded contributed the fact that the dust seems to have come from the area of the middle/east Libya, where there are higher values of the erodibility factor (>0.5).



Picture 8.2 Allocation of the desert dust sources used in the WRF-Chem model of the Hellenic Observatory/meteo.gr

Taking the above into account it is noted that:

1. Regarding the **monthly** variation of pollutants and according to the available recordings, the following conclusions can be drawn:
   - In all three stations, the PM_{10} presented their highest values during February, March and April, i.e. when the phenomenon of African dust transport was on the increase.
   - In all three stations, the secondary pollutant ozone (O_3) reaches greater values during the summer period. The increased values in ozone concentration during the summer months are mainly due to the increased sunlight, both in duration and in intensity, that these months present, given that this pollutant is formed through photochemical processes, in which solar radiation plays a determining role.
   - In all three stations, nitrogen dioxide (NO_2) presents a small divergence from the average, without a clear monthly variation.
   - Regarding benzene, there are common features among the three stations.

2. Regarding the **daily** variation of pollutants and according to the available recordings, the following conclusions can be drawn:
   - The three stations share common features regarding the daily variation of SO_2. In Korinthos and in Aigio station the greater values are recorded on Sunday, while in Patra station the lowest values are recorded on Monday.
   - As to the CO in Korinthos station, the greater values are recorded on Tuesday, in Aigio station on Tuesday and on Saturday, while in Patra station the greater values are recorded on Monday.
   - Regarding ozone (O_3) , the highest values in all three stations are recorded on Sunday and on Monday.
   - Regarding NO_2, the lowest values in all three stations are recorded on Monday.
   - All three stations share common features regarding the daily variation of PM. The highest values were recorded in Patra station.

3. Regarding the **hourly** variation of pollutants and according to the available data, the following conclusions can be drawn:
   - In Korinthos station the the primary pollutant SO_2 reaches two higher values around 13:00 and 14:00 In Aigio station, the highest values are presented between 12:00 - 16:00, whereas in Patra station between 12:00 - 17:00.
   - In all three stations the primary pollutant CO has common features regarding the hourly variation reaching the lowest values between 02:00 - 07:00.
   - In all three stations, nitrogen dioxide NO2 reaches its highest values during morning hours (08:00-10:00 in Korinthos station and 06:00-09:00 in Aigio and in Patra stations) High values in Korinthos station are also recorded between 18:00-22:00 , whereas in Aigio between 19:00--23:00.
   - In Korinthos station the daily maximum for O_3 is reached in the early afternoon (between 14:00-18:00), when the solar radiation intensity and temperature reach their maximum. In Aigio station, the daily maximum is presented between 12:00 - 16:00, whereas in Patra station between 13:00 - 17:00.

- Regarding the suspended particles PM 10, the Korinthos station has a peak during the morning hours between 07:00-09:00 and the evening hours between 20:00-24:00. In Aigio station an extended peak was noted between 09:00-23:00 and respectively in Patra station between 10:00-21:00.

4. Regarding **limit values:**

- Duringthe first semester 2018, with regard to the **monthly** as well as the **daily** variation of pollutants (SO_2, CO, NO_2, O_3) and according to the available data, no exceedance cases were observed according to the legislation in force.
- Maximum daily average PM_{10} value was exceeded 3 times in Korinthos, 6 times in Aigio and 17 times in Patra. The limit value should not be exceeded more than 35 times a year.
  In Korinthos the exceedances were noted on 26/03/2018 and 17 & 18/04/2018, in Aigio on 02/02/2018, 05&26/03/2018 and 14, 17 & 18/04/2018, in Patra on 07/02/2018, 05, 07, 17, 18, 22 & 26/03/2018, 12, 13, 14, 15, 16, 17, 18, 19 &30/04/2018 and 23/05/2018.

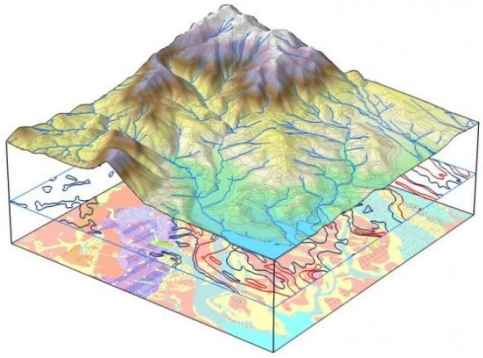
  According to the Air Pollution Value Reports both by the Hellenic Observatory and by Western Greece Regional Authority (http://www.pde.gov.gr/gr/enimerosi/anartitea/airpollutionofpatras.html) , respective exceedances were noted in stations installed in Korinthia, as well as inside the city of Patra (Drosopoulou square and Georgiou square stations).

  The exceedances in the maximum daily average is exclusively due to the phenomenon of African Dust Transport, which affected all the Regions where the motorway "Elefsina-Korinthos-Patra"crosses.

3.D WATER MONITORING

Permits have been received from Peloponnese, W. Greece & Ionian Islands Decentralised Administration, Water Resources Directorate for 2 new water drillings, so as to cover the irrigation, fire fighting and other needs that shall arise in the Project's short-term parking areas along EL-KO section.

s/n	Name	Mun.	K.P.
1	"Kyras Vrysi"	Loutraki-Ag. Theodoroi	78+050
2	"Tripoli I/C"	Korinthos	84+300



Towards enforcing article 5 law 3010/2002 (as amended via L. 4258/2014 and currently applies) and in accordance with the provisions of article 11.2.1 of the Project's Concession Agreement, the CJV proceeded in the elaboration of stream delineation designs (*D. Sotiropoulos & Co, L.S. Lazaridis & Co*) for the stream's section extended along the Projects construction zone or abutted to it and along Korinthos - Patras section for five hundred meters downstream excluding the cases where downstream to the Road Project and up to 500m. HSRL/OSE structures exist or another delimination is in place. The designs have been submitted to the Technical Services of the local Prefectural Administrations for approval and any other administrative act necessary in order to be rendered fully effective.

The Constructor has now fulfilled his obligations out of the C.A. regarding stream delineation.

3E . ENERGY AND CLIMATE CHANGE

In order to minimize the high energy costs of the project and in the meantime contribute to the battle against climate change, Olympia Odos has launched an extensive energy saving program which shall be implemented in several phases. The first phase of its implementation concerns the older tunnels lighting system, situated in Eleysina-Korinthos and Patras-by-Pass sections, which have the highest energy consumption of Olympia Odos motorway. Beginning of 2016, we have conducted a detailed power consumption measurement campaign for each tunnel in Kakia Skala and Patra-by-pass. These measurements permitted to clearly identify the consumption sources and period (lights, jet fans, buildings, pumps…) and concluded that replacing the HPS lighting by LED would generate important savings.

The LED technology offers a much lower power consumption for the same lighting, and this lowers the total power consumption of the installation, offering advantages for the heavy maintenance of electrical panels, transformers, UPS batteries, etc. All the above will have lower stress and they will require less maintenance due to the fact that the total current that will be required for lighting will be much less.

I. Power Consumption

The LED upgrade project started from the rest of Kakia Skala tunnels (Skiron tunnels was the pilot and it has finished the previous year) on April. The works commenced on the direction towards Patras and more specifically from the left side of tunnels Geraneia, then Efpalinos and last Ethra. The left side luminaires were replaced completely by end of June and the works are continuing on the right side. The project is continuing on schedule and we expect the works to be finished on the direction towards Korinthos by the end of August and then we will proceed to the direction towards Athens with the Thisseas tunnel. The tunnels were painted in order to help the lighting efficiency but before the painting, all tunnels are checked thoroughly for cracks and if necessary repairs are carried out.

On September the LED upgrade will start all on the tunnels of Patras-by-Pass (12 tunnels) with expected delivery by the end of the year. At the same time the tunnels will be painted in order to help the lighting efficiency. Before the painting, all tunnels are checked thoroughly for cracks and if necessary repairs are carried out.

All the older luminairies are handled by a specialized recycle company. The materials after the disassembly are loaded on specialized recycle bins therefore no waste is created in the process.

4 ENVIRONMENTAL MANAGEMENT, WASTE MANAGEMENT, HAZARDOUS AND NON HAZARDOUS MATERIALS

During the motorway's construction and operation, both the constructor and the operator as well as the cooperating contractors and sub-contractors comply with all pertinent provisions, according to the Greek Legislation. Joint Venture APION KLEOS in the frame of its Environmental Management Plan has developed procedures for the management of waste.

We prioritize the measures and actions towards an effective and rational waste management for the sustainable use of resources and the prevention of downgrading or the restoration, preservation or improvement of the environment.

Waste management is primarily based on sorting waste (prevention, re-use, recycle, recover, final disposal) and their environmentally proper management. The ultimate goal was an more effective management of natural resources and waste by reducing the produced waste, re-using it, recycling and recovering it and managing it environmentally properly thereby reducing as much as possible the risk to human health and the environment.

The respective "Hazardous Waste Management Procedure" has been prepared for the management of waste, documenting the existing legislative framework and the means/ directives for their management.

Kiato TB

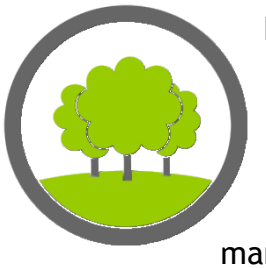
Akrata TB

The results of the Project's environmental performance, such as material recycling, mineral oil, batteries, vehicle tyres, hazardous materials, polluting substances, area restoration, excavation and demolition products etc management are presented in Appendix 3 of this Report.

Since the first semester of 2017, Olympia Odos has been registered to the Electronic Waste Registry and submits digitally its reports regarding the waste production associated with the operation of the project, according to the JMD 43942/4026/2016 (B' 2992) and article 42 of the law 4042/2012 (A' 24).

5 ENVIRONMENTAL IMPACT RESPONSE MEASURES DURING CONSTRUCTION

a. Geomorphology - Soil



In order to protect the soil from fuel leaks etc special areas with sealed floor and graded collection drain that ends in a sedimentation basin are provided in order to swill the machinery.

In the machinery maintenance or in other suitable and safe area, used oils from black oils change are temporarily stored. The management of the used oils is in accordance with the provisions of PD 82/2-3-2004. By the PD is given priority to collect and dispose used oils for regeneration treatment.

All necessary measures are taken in order to avoid erosion or filtration at the slopes during the tunnel construction and the water and clay supply to the final acceptor. The sediment before being disposed is being treated in apposite sedimentation tanks.

b. Geology

Special attention was paid during construction of sections passing by geologically sensitive zones, as in those areas stability problems might emerge at the formations. In those sections as slight interventions as possible were conducted.

c. Ecosystems - Vegetation

In the areas where the structures are constructed, and mostly in the areas where bridges are constructed, all the necessary precautions were taken in order to avoid any impact on the riverside ecosystems. All possible efforts were made in order to use the fewer possible quantity of concrete. Where possible the use of gabions was preferred and the proper application/use of additives (e.g. betonite), which were used in order to add improved features to the boring effluents during the borings.

Especially during the dry period, in the construction phase, all the necessary measures were taken in order to avoid dust emissions (infusion of earth materials, trucks covered by dust).
In some case the cleared vegetable materials were cut and temporary stored in mounds in order to create organic fertilizer for future use in planting technical activities.
After clearance, excavation, collection and temporary deposition of the superficial

fertile soil layer followed.

d.Dust emissions avoidance and reduction

During the Project's execution aerial pollutants are released and especially dust from the working sites. Depending on the distances from the nearest buildings (e.g. residencies) they could have adverse implications. This dust release was dealt with (by the local Working Sites) with great success by use of the following measures.

Control of the dust release was affected through simple management methods and the impact level greatly depended on the control measures applied at the source as follows:

- Sprinkling and often – effective clearing of routes within the site and the excavation areas,
- Interventions at the work surface – front where necessary, focusing on the excavations,

- Rain-water run-off to prevent particles from re-entering the atmosphere,
- Maximum speed limits along all non-asphalt-paved surfaces,
- Along the routes of the road building vehicle, the usual control methods are applied in the case of non-asphalt-paved routes ie, asphalt paving where feasible, stabelised pavement infrastructure, water soaking and traffic regulations (*aiming to reduce dust in the dry season and traffic-indiced erosion in the wet season)*,

- Sprinkling during transfer and deposit of sand, aggregates or/and excavation materials significantly reduces released dust,
- According to greek law, all trucks transfering loose materials (e.g. excavation products) were covered. The vehicles entering or leaving the working site were clean.
- It was forbidden for the trucks to pass through settlements during quiet hours,
- Liquid rather than dry concrete was used in the mixing and preparation,
- All machinery and equipment used in works were in good condition and fulfilled the manufacturer's specifications, thus minimising dust release.

Combined, the above measures comprise the so-called Best Management Practises. Given that:

- it is a linear project with many construction activities conducted in parallel and now fast-track under the extremely tight completion time-schedule,
- the water resources available along the Project during summer season were limited,

any impact after the above measures were deemed slightly negative with a very short-term effect and could be dealt with.

The benefits from the project's timely completion reach the residents of the areas temporarily "affected" as well as all other used (visitors, tourists etc) and positively influence all financial parameters and activities in the areas (road safety, accessibility, faster transportation of people and goods, reduced transportation costs etc).

In any event, the local Working Units were conducting PM10 Dust Measurements under standardized ELOT EN 12341 method, with a certified sampler, by a certified firm.

During the measurements, the motorway's construction activities were conducted normally. Each measurement lasted 24 hours and run through one calendar day so that the findings could be directly compared to the maximum rates / target aims set by the current legislation.

Atmospheric PM10 measurements are covered by the current Official Implementation Field of Certification (No 329-3). The methodology to estimate suspended particles has a certified accuracy measurement and it provides a full depiction of the pollution's changes over time along with a good mapping of an area's pollution levels.

The measurements findings reports can be found at the local Working Units' offices while they have also been copied to the Project's Independent Engineer.

6 VEGETATION – PLANTING - ROAD CLEANING

The vegetation and planting pertain to the environmental integration and protection of the areas adjacent to the project.

- Existing Sections

In order to facilitate the fulfillment of the above obligations, a Final Planting Design (*S. Voutsinos & Co*) for the surrounding areas, the respective I/Cs, slopes and median strips was elaborated for Elefsina – Korinthos section. This design was approved by the Project's Independent Engineer. The planting process has been completed according to the design findings.
The planting of Patra By-Pass is in very good shape due to the "recent" construction and maintenance for the last period of time.

- New Sections

The Planting Design focuses on the aesthetic incorporation of the new Korinthos-Patra Motorway and the secondary Local Road Network works into the wider narutal environmental of the area they are passing through.

The Planting Design was prepared according to the Design Investigation Standards (DIS). During the 1st half od 2018 most of the planting (>95%) in the areas indicated by the design has been done.

The designs aimed at describing the prevailing conditions on site and the nature of the problems which arose due to the road's construction. The proposed planting interventions aim to the best possible restoration of the damages caused to the landscape by the Motorway's construction.

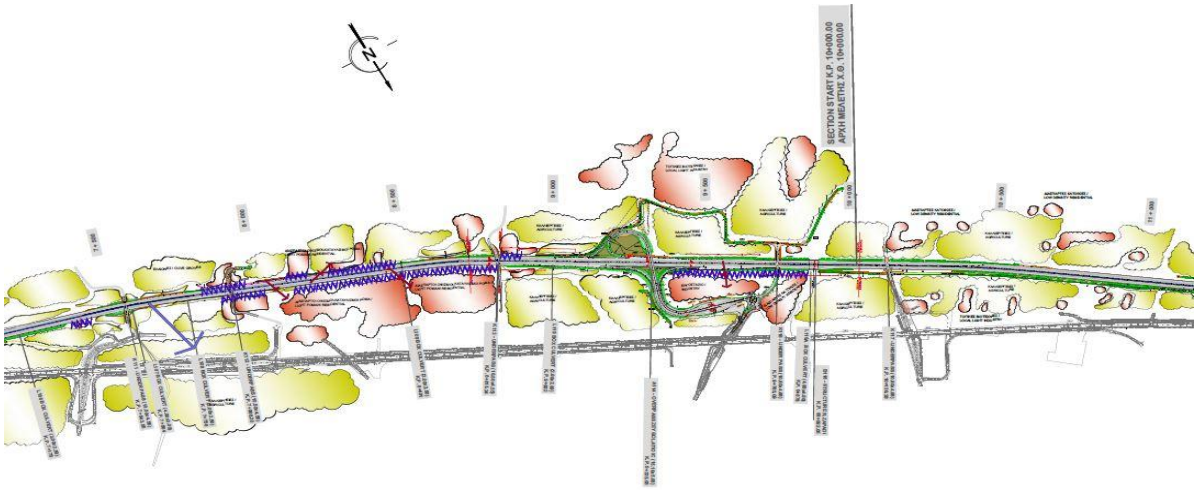
The planting was designed with the main target of adjusting the new plants to the existing vegetation. Trees and bushed are planted taking into account the volume they will take at the final stage of their development.

The proposed planting took into account the following fundamental principles:

- Traffic safety
- Planting – landscape relationship
- Road equipment

During the arrangement of the various greenery (medium, high) to be planted, the following was taken into account:

- ensuring the area's unobstructed function
- the area's general and specific ecological conditions
- the area's aesthetic requirements
- creating natural continuity of the area's flora.



The greenery species were selected based on the following:

- Their properties (final dimensions, τάσεις, hardwood, evergreen, flowering season, flowers colour etc.)
-The area's ecological data
- The functional aim they are intended to fulfill (decoration, soil retention, groups, growth etc.)
- The local micro-climate
- Ensuring aesthetic harmony and biological equilibrium between the species comprising the groups, growths etc.
- The dimensions of the area and each separate location
- The species' market availability
- The species' locality and that they represent the surrounding area.

Cut & embankment planting standards

The OLYMPIA ODOS OPERATION S.A. (Operator) personnel and the competent subcontractors carried out regular trimming, weeding and cleaning works for the most part of the project, and specifically of 97 km of central reserve, 402 km of shoulders and of the 28 interchanges and their branches, as well as of the parking areas.

Cleaning

During the first semester of 2018, personnel in collaboration with external subcontractors carried out and still does regular cleaning works along the entire project (202 km), in the 28 interchanges, the toll stations (lanes, booths, pavement, surrounding area, buildings), in the tunnels and in the 45 parking areas (washing, sweeping, waste removal from bins and surrounding areas).

It is noted that the cleaning concerns the entire road cross section, as well as the wider area within the fencing of the motorway.

7 MANAGEMENT OF EXTRAORDINARY INCIDENTS, ENVIRONMENTAL ACCIDENT, GREEN AREAS FIRE

During the operation of the working sites, all fire prevention measures were taken in order to prevent fire coming potentially from working machinery, working teams, transportation of explosives and to minimize the danger of fire being expanded to adjacent areas. The way according which the fire belt was organised, was controlled and approved by the competent Fire Service before the beginning of the works.

More specifically, fire management measures were taken in order to protect forest areas on both sides of the road.

Every year before the commencement of the fire period, the Operator of the Project sees to clean the shoulders and the boundaries of the road from greens that may be the cause of a fire.

The Concessionnaire has also appointed a specialized forestry expert to develop a report on the condition of the vegetation and on the fire protection measures that need to be taken.

The Concessionaire, undertook a series of forest fire prevention measures along the Korinthos Patra NNR within the boundaries of the project.

This intervention has been decided in order to effectively deal with the results of the suspension of the construction activity on our Project and despite the fact that every year before the commencement of the fire period, the Operator of the Project sees to clean the shoulders and the boundaries of the road from greens that may be the cause of a fire.

Within the framework of elaborating the fire hoses designs along the EKPPT motorway, maps were prepared depicting the forest land for “Elefsina – Korinthos”, “Ancient Korinthos I/C – Patra By-Pass K1 I/C”.

In this framework, during the 1st semester of 2018:

- **2,790,725 kilometers** (about 15,418 per day)of Patrols and Interventions were covered to supervise the road network
- 9,020 incidents were handled with the Company’s assistance, such as: 5,326 immobilized vehicles (mechanical failure, flat tire, lack of fuel, abandonment), 2,704 obstacles on the pavement, 436 road accidents (24 with injured and 412 with material damage), 300 user problems (pedestrians, vehicles

moving in the opposite direction, non authorized users, dangerous traffic violations), 35 traffic congestions and 219 other emergency incidents (fire, adverse weather conditions, etc.) out of which:

- 4,778 were handled immediately by the Company, since they were detected (located) by its own vehicles, or by its subcontractors' vehicles
- 4,242 incidents were handled within 13' in average by the Company, since they were otherwise detected (phone, cameras etc.), while regarding the response of the subcontractors respectively: 19' for light vehicles and 37' for heavy vehicles

The Operator's competent personnel (Intervention Teams) implement on a daily basis temporary signage for incidents and for the safe execution of works carried out on the road either by the Operation Company or the Construction Joint Venture. Regarding Korinthos-Patra NNR special attention is paid due to it features (no central reserve) and the sections with steep turns and limited visibility.

The Operator has action plans related to the protection of the environment either within routine maintenance or emergency and abnormal situations.

B.1 Congestion
B.2 Road Accident
B.3 Immobilized vehicle
B.4 Problem on the pavement
B.5 Problem on infrastructure or equipment
B.6 Problem with user
B.7 Other emergency incidents
B.8.b Large scale natural phenomena
B.9 Incident in tunnel
B.10 Incident on Korinthos-Patra NNR

Further to the above the Operator, in the framework of dealing with accidental pollution incident has entered into contract with a commissioned company, which has the proper equipment, in order to proceed to immediate prevention of pollution dispersion and safely management and disposal of eventual toxic or harmful substances.

8 ANTIQUITIES

Under the principle that cultural heritage and antiquities along the motorway shall be protected, a principle that constitutes prerequisite for the construction of the road, the Constructor was in direct contact and collaboration with the competent archaeological services along the motorway. According to the Concession Agreement and the Design – Construction Contract, Construction Joint Venture is responsible for the execution of archaeological investigations pursuing a recommendation by the pertinent archaeological service.
Works in the positions indicated in the Concession Agreement (article 13.1) and where there is a great potential of Antiquities being revealed have commenced.

9 TRAINING – AWARENESS RAISING

Environmental training aimed to reinforce knowledge and raise awareness about the environment, to develop the necessary skills, to form the right behaviour, to activate and make informed decisions and responsible actions.

Audit/ inspection is a tool of the environmental management system, including the systematic, substantiated, periodic and objective assessment of the performance of the working sites, the environmental protection management system and processes.

The Construction Joint Venture was organizing training and briefing seminars whereas all internal inspections were accompanied by the training and briefing of all competent persons at working sites regarding issues and developments pertaining to the environment.

Each working site's environmental engineers were regularly organising meetings with all parties involved in the Project's construction, providing them with the suitable training and briefing.

The Construction Joint Venture's Environmental Department in cooperation with the project engineers conducted regular inspections, give the necessary instructions or directions pursuant to the Project's EMP regarding any arising environmental issue. To fulfill that goal, special reports were developed documenting the test results, proposing measures to deal with any environmental issues identified and accompanied by a complete photographic survey.

Environmental training during the Project's construction was divided in 2 categories. The first one pertains to the specialized environmental training of the staff related to the Project's environmental management (environment engineers, foremen in sensitive areas) and the second one to the general environmental training of the whole staff.

Table 3 describes the whole number of hours (persons x time) for environmental training during 01/01/2018 – 30/06/2018.

TABLE 3	
TRAINING TYPE	TRAINING TIME (HOURS)
SPECIALISED TRAINING	15
GENERAL TRAINING	9