



# **7th ANNUAL (2014) AND 13th SEMI ANNUAL ENVIRONMENTAL MANAGEMENT REPORT 01.01.2014-31.12.2014**

Environment Department OLYMPIA ODOS S.A.





# Contents

<b>Introduction</b>	<b>5</b>
The Project's Environmental Profile for 2014	6
<b>1 Project's progress</b>	<b>8</b>
Project's works progress in the 1st half of 2014	10
Project's works progress in the 2nd half of 2014	12
<b>2 Progress of the environmental agenda</b>	<b>18</b>
General	19
Permits - Designs related to construction	23
Environmental management, waste management, hazardous and non hazardous materials	27
Environmental parameters, monitoring programme (noise, traffic load vibrations, air quality, water)	28
Environmental impact response measures during construction	36
Vegetation, planting and road cleaning	39
Management of extraordinary incidents, environmental accident, green areas fires	41
Antiquities	44
Training – awareness raising and inspection	45
Corporate Social Responsibilities actions 2014	47
Expenses of the project related to environmental protection measures and actions	50





# Introduction

Based on the Concession Agreement (article 11.2.2& 16.2), as amended and applies 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 DIPA/MRPEE. This is the seventh annual and thirteenth Semi Annual Environmental Management Report and covers the period 01.01.2014 to 31.12.2014.

The above mentioned semi annual and annual reports shall be publicized on the internet site [www.olympiaodos.gr](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.

Within this framework and as a part of its Environmental Management System, the constructor, Joint Venture APION KLEOS has developed the "Environmental Legislation Monitoring Procedure", incorporating all existing pertinent legislation and updated in case the latter is amended or updated. This procedure is communicated to all parties who are obliged to then communicated to all cooperating sub-contractors.

## Appendices

**APPENDIX 1** SECTION: ELEFSINA - KORINTHOS (EXCLUDING KAKIA SKALA)

**APPENDIX 2** SECTION: ANCIENT KORINTHOS I/C – K1 PATRA BY-PASS I/C

**APPENDIX 3** ARCHAEOLOGICAL INVESTIGATIONS FOR KORINTHOS – PATRAS – PYRGOS - TSAKONA

**APPENDIX 4** QUANTITY DATA PERTINENT TO THE ENVIRONMENTAL PROTECTION MEASURES DURING CONSTRUCTION AND OPERATION

## The Project's Environmental Profile for 2014



€2,000,000

environmental expenses



600 tons

of scrap for recycling



165 tons

of waste collected



650

Noise barriers installed



1435

New Jersey barriers recycled



3,681,329 Km

of highway patrolled



5,000m<sup>2</sup>

of archaeological excavations



275

emergency incidents managed



970

tonners recycled



370Kg

bulbs recycled

# 1 Project's progress





# Construction of the motorway

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

Please note that on 17-12-2013 the Suspension of Works ended (in force since the start of the 2nd half of 2011), all requirements of Concession Agreement Amendment Agreement articles 12 and 13

were fulfilled and therefore this date is the Amendment Effective Date in the sense defined in the Concession Agreement Amendment Agreement.

Tables 1 & 2 below briefly present the Project's works progress in the 1st and 2nd half of 2014.

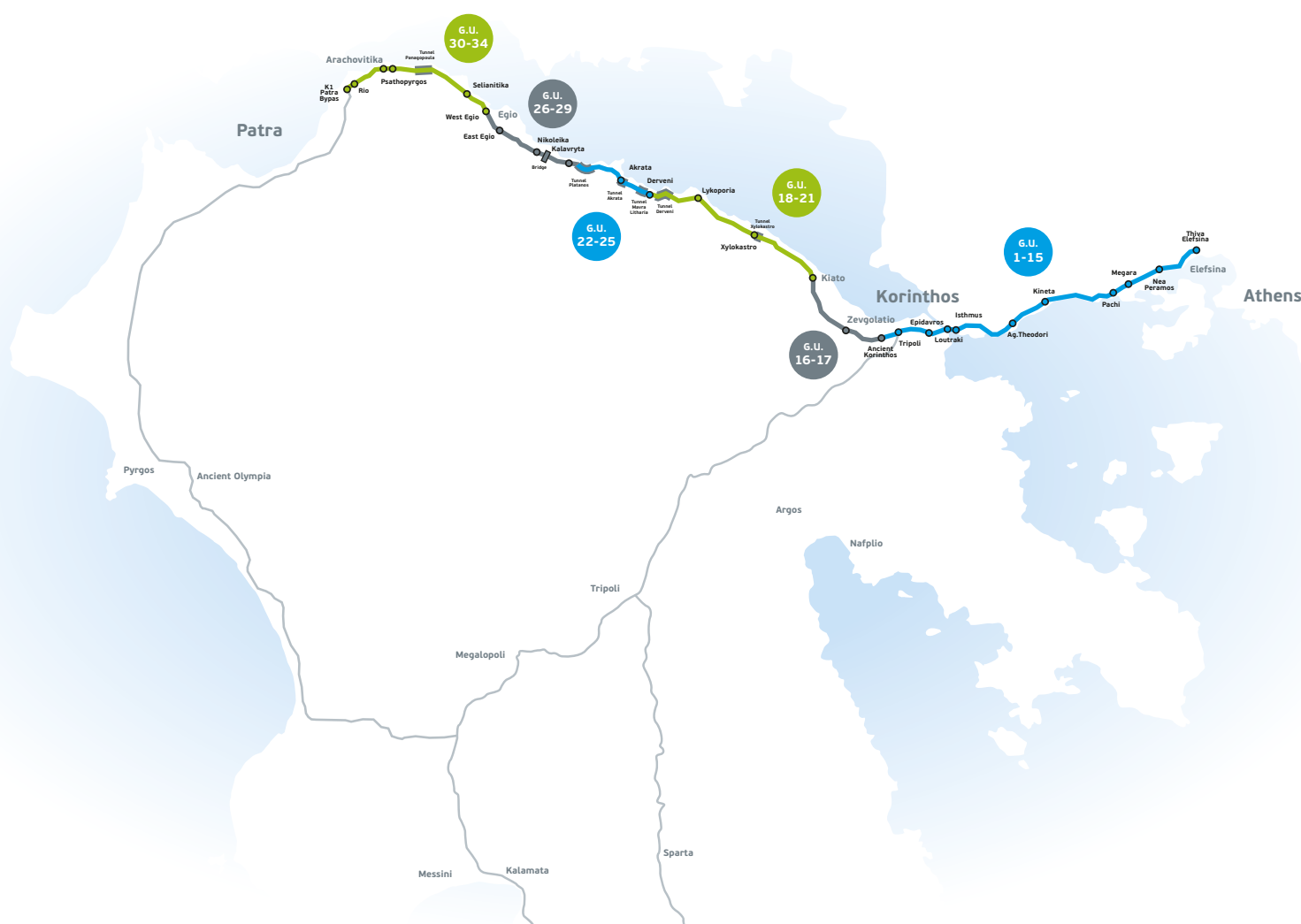


TABLE 1 – PROJECT’S WORKS PROGRESS IN THE 1st HALF OF 2014

G.U.	SECTION	ACTIVITY	PROGRESS
<b>1-3 &amp; 35</b>	<b>EL-KO &amp; PBP</b>	Slope stability OR3 at k.p. 27+500, OR15 at k.p. 31+800, etc	In progress
		Safety Barriers installation: T31+800 – T32+800, E32+800 – E32+000	In progress
		MOMC building: Surveying works, excavation works, brick laying & concrete works.	In progress
<b>4-15</b>	<b>EL-KO</b>	Traffic arrangements.	Continuous process
		Construction works at Isthmos Toll Station / Widening area / Islands 18 & 19.	Completed
		Construction works at Ag. Theodoroi, Pachi & N. Peramos Lateral Toll Stations.	Completed
		Finishing works at WC buildings of N.Peramos, Kakia Skala, Ag.Theodoroi & Kalamaki parking areas.	Completed
<b>16-17</b>	<b>KO-PA</b>	Traffic Management.	Continuous process
		Flood protection works: Construction of box culverts (L129, etc). Construction of drainage (1+050 – 1+900, 5+280 – 5+780, etc).	In progress
		Construction of retaining structures / retaining walls (R119, R138, R064, R045, G260, G261, G110 etc).	In progress
		Construction of Bridges, Overpasses, Underpasses (A101, A114, A123, K220, etc).	In progress
		Toll Stations: Construction of the building – FTS Zevgolatio (TAB, Tunnel, Canopy), 18+800.	In progress
		Pavement works: construction of PST-CDF layers (5+100 – 7+200, 10+500 – 13+500, 13+500 – 16+000, etc).	In progress
		Asphalt works: 2+100 – 7+200.	In progress
		E/M works: 1+050 – 1+860, 13+300 – 14+500, 16+500 – 17+680.	In progress
<b>18-21</b>	<b>KO-PA</b>	Traffic Management.	Continuous process
		Construction of retaining walls (R210, R219, R221, R222, G281, G232, etc).	In progress
		Flood protection works: Construction of box culverts (L201, L244, L247, etc).	In progress
		Construction of Bridges, Overpasses, Underpasses (K201, K202, K237, B204, B209, B210, B239, etc).	In progress
		Melissi Lane Cover C001: piles & wall construction.	In progress
		Derveni East Lane Cover C004: piles construction.	In progress
		Derveni Tunnel 7 & 8: portals construction & drainage.	In progress
		Derveni West Lane Cover C014: top slab construction.	In progress

TABLE 1 – PROJECT'S WORKS PROGRESS IN THE 1st HALF OF 2014

G.U.	SECTION	ACTIVITY	PROGRESS
22-25	KO-PA	Traffic Management.	Continuous process
		Construction of earthworks / embankments in G.U. 22-25.	In progress
		Construction of retaining walls (G323, G309, G321, G590, R535, R538, R548, etc).	In progress
		Construction of Bridges, Overpasses, Underpasses (K244, K247, K243, K264, K345, K507, etc)	In progress
		Tunnel Mavra Litharia: Final lining left & right branch.	In progress
		Tunnel Akratas: Phase A' completed.	In progress
		E/M works in GU 22-25.	In progress
26-29	KO-PA	Traffic Management.	Continuous process
		T015 South & North bore – waters pumping where needed.	Continuous process
		Daily monitoring of convergences displacement conducted by electronic topographical equipment in comparison with the referenced values and the warning and alarm levels at Platanos Tunnel 15 (South & North bore).	Continuous process
		Geomechanical and structural monitoring of Platanos village.	Continuous process
		Flood protection works: Construction of box culverts (L401, L402, L411, L412, L415, L416, etc).	In progress
		Construction of retaining walls (G402, G404, G405, R428, R429, R430, etc). Gabion walls, friction slabs.	In progress
		Tunnels: T015 Left, Excavation phase A, Excavation phase B, Lining east portal, Lining west portal.	In progress
		Tunnels: T015 Right, Excavation phase A, Excavation phase B, Lining east portal, Lining west portal.	In progress
		Construction of Lane Covers (Platanos, Temeni, Eliki, etc).	In progress
		Construction of Bridges, Overpasses, Underpasses (B269, B272, A274, K270, K271, K299, K276, K277, K290, K291, etc).	In progress
		Pavement works: construction of PST-CDF layers (82+500-84+100, 71+600-75+000, 89+700-90+100, etc).	In progress
		E/M works: 70+930-71+200, 71+600-75+000, 78+650-79+300, etc).	In progress
30-34	KO-PA	Traffic Management.	Continuous process
		Daily monitoring of convergences displacement conducted by electronic topographical equipment in comparison with the referenced values and the warning and alarm levels at Tunnel 26.	Continuous process
		Earthworks: Construction of embankments (90+100 - 91+300, 91+300 - 93+300, 94+100 - 95+500, etc).	In progress
		Construction of retaining structures / retaining walls (R505, R508, G516, G526, etc). Slope stabilization.	In progress
		Construction of Bridges, Overpasses, Underpasses (B303, B304, K307, K309, K314, K348, etc).	In progress
		Panagopoula Tunnel T26: West South, West North, East South, East North. Panagopoula Tunnels T25, T26.	In progress

TABLE 2 – PROJECT’S WORKS PROGRESS IN THE 2nd HALF OF 2014

G.U.	SECTION	ACTIVITY	PROGRESS
1-3 & 35	EL-KO & PBP	Slope stability OR3 at k.p. 27+500, OR15 at k.p. 31+800, etc.	Completed
		Safety Barriers installation.	In progress
		MOMC building: Surveying works, excavation works, brick laying & concrete works.	In progress
4-15	EL-KO	Traffic arrangements.	Continuous progress
		Asphalt works: 73+360-78+860.	In progress
		Safety Barriers installation and construction.	In progress
		Parking construction at A. Theodoroi, Kineta, N. Peramos, Kalamaki, Kakia Skala.	In progress
		Marking and signing works.	In progress
		Open road E/M works.	In progress
		Irrigation works.	In progress
16-17	KO-PA	Traffic arrangements.	Continuous progress
		Flood protection works: Construction of box culverts (L101, L103, L132, etc).	In progress
		Sewage construction at G.U. 16-17.	In progress
		Construction of retaining walls (R139, R138, G261, G262, G264, G265, etc).	In progress
		Construction of Bridges, Over-Passes, Under-Passes (A133, A223, B109, B126, K110, K132, K227, etc).	In progress
		Toll Stations: Construction of Zevgoliatis FTS building (TAB, Tunnel, Canopy), 18+800.	In progress
		Safety Barriers installation at G.U. 16, 17.	In progress
		Pavement works: construction of PST-CDF layers at G.U. 16-17.	In progress
		Asphalt works at G.U. 16, 17.	In progress
		E/M works at G.U. 16, 17.	In progress
18-21	KO-PA	Traffic arrangements.	Continuous progress
		Construction of retaining walls (R201, R202, R221, R222, R223, R226, G205, G206, G296, etc).	In progress
		Flood protection works: Construction of box culverts (L201, L244, L247, etc).	In progress
		Construction of Bridges, Over-Passes, Under-Passes (K201, K202, K203, B204, A209, B209, B210, B216, etc).	In progress
		Melissi Lane Cover C001.	In progress
		East Derveni Lane Cover C004.	In progress
		Derveni Tunnel 7 & 8.	In progress
		West Derveni Lane Cover C014.	In progress



TABLE 2 – PROJECT'S WORKS PROGRESS IN THE 2nd HALF OF 2014

G.U.	SECTION	ACTIVITY	PROGRESS
22-25	KO-PA	Traffic arrangements.	Continuous progress
		Eartworks/ embankments at G.U. 22-25.	In progress
		Construction of retaining walls (G323, G309, G321, G590, R535, R538, R548, etc).	In progress
		Construction of Bridges, Over-Passes, Under-Passes (K244, K247, K243, K264, K345, K507, etc).	In progress
		Tunnel Mavra Litharia: Final lining left and right branch.	In progress
		Tunnel Akrata 13A: Completed East – West portal. Tunnel lining In progress	In progress
		Construction of embankments at G.U. 22-25.	In progress
		E/M works at G.U. 22-25.	In progress
26-29	KO-PA	Traffic arrangements.	Continuous progress
		T015 South & North bore – waters pumping where needed	Continuous progress
		Daily monitoring of convergences displacement conducted by electronic topographical equipment in comparison with the referenced values and the warning and alarm levels at Platanos Tunnel 15 (South & North bore).	Continuous progress
		Geomechanical and structural monitoring of Platanos village.	Continuous progress
		Flood protection works: Construction of box culverts (L401, L402, L411, L412, L415, L416, etc).	In progress
		Construction of retaining walls (G402, G404, G405, R428, R429, R430, etc.). Gabion walls, friction slabs.	In progress
		Tunnels: T015 left, Excavation phase A, Excavation phase B, Lining east portal, lining west portal.	In progress
		Tunnels: T015 right, Excavation phase A, Excavation phase B, Lining east portal, lining west portal.	In progress
		Construction of Lane Covers (Platanos, Temeni, Ekliki etc).	In progress
		Construction of Bridges, Over-Passes, Under-Passes (B269, B272, A274, K270, K271, K299, K276, K277, K290, K291, etc).	In progress
		Toll Stations: Construction of Zevgolatio FTS building (TAB, Tunnel, Canopy).	In progress
		Pavement works: construction of PST-CDF layers at G.U. 26, 27, 28, 29.	In progress
		Asphalt works at G.U. 27, 28.	In progress
		Safety Barriers installation at G.U. 27, 28.	In progress
		Rain water sewage (pipes installation) (69+500-74-700-83+700-90+100).	In progress
		E/M works at G.U. 27, 28, 29.	In progress

TABLE 2 – PROJECT'S WORKS PROGRESS IN THE 2nd HALF OF 2014

G.U.	SECTION	ACTIVITY	PROGRESS
<b>30-34</b>	<b>KO-PA</b>	Traffic arrangements.	Continuous progress
		Daily monitoring of convergences displacement conducted by electronic topographical equipment in comparison with the referenced values and the warning and alarm levels at Tunnel 26.	Continuous progress
		Earthworks: Construction of embankments at G.U. 30-34.	In progress
		Construction of culverts (L571, 515, 516, 517, 565, etc).	In progress
		Construction of retaining walls (R575, R510, R560, R557, G585, G512, G515, G516, G518, etc.)	In progress
		Construction of Bridges, Over-Passes, Under-Passes (B303, B304, K307, K309, K314, K348, K323, K329, etc).	In progress
		Pavement works: construction of PST-CDF layers at G.U. 30-34.	In progress
		Panagopoula T26 Tunnel: Southwest, Northwest, Southeast, Northeast portal, Panagopoula T25, T26 Tunnels.	In progress

Since 17-12-2013 the Suspension of Works ended, all requirements of Concession Agreement Amendment Agreement articles 12 and 13 were fulfilled and therefore this date is the Amendment Effective Date in the sense defined in the Concession Agreement Amendment Agreement.





The photos below, present the progress  
of the project's works:



Isthmos Toll Station



Slope stability OR 3, 5, 15



North Bore - A' Excavation Phase



K318 A



Mavra Litharia Final Lining-Waterproofing works



Cut & Cover T007 West: segment 2





Asphalt works, A103



Concrete works with the slip forming machine



Plastering works at MOMC building (units 2 & 3)



Kalamaki parking area direction to Elefsina – Finishing works



Construction of B269



Construction of Underpass K311 at k.p. 92+297.49

# 2 Progress of the environmental agenda

## 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	<b>Law 2338/1995</b> Thiva I/C – Elefsina Toll Station
2	<b>CMD 126393/16.02.2007</b> as amended and currently applies via Decision 171503/04.11.2013 (ΑΔΑ: ΒΛ1ΨΟ-Α3Γ) Elefsina – Korinthos (excluding Kakia Skala section)
3	<b>CMD 108569/18.10.2006</b> Kakia Skala
4	<b>CMD 92073/16.05.1994</b> as amended and currently applies via Decision 168168/15.05.2013 (ΑΔΑ: ΒΕΝΔΟ-ΖΦ1), Isthmos – Ancient Korinthos I/C
5	<b>CMD 104892/16.06.2006</b> as amended and currently applies via CMD 172996/03.06.2014 (ΑΔΑ: ΒΙΥ10Α56), Ancient Korinthos I/C – Patra By-Pass K1 I/C
6	<b>CMD 16049/12.08.2013</b> as amended and currently applies, Patra By-Pass



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 14001:2004.

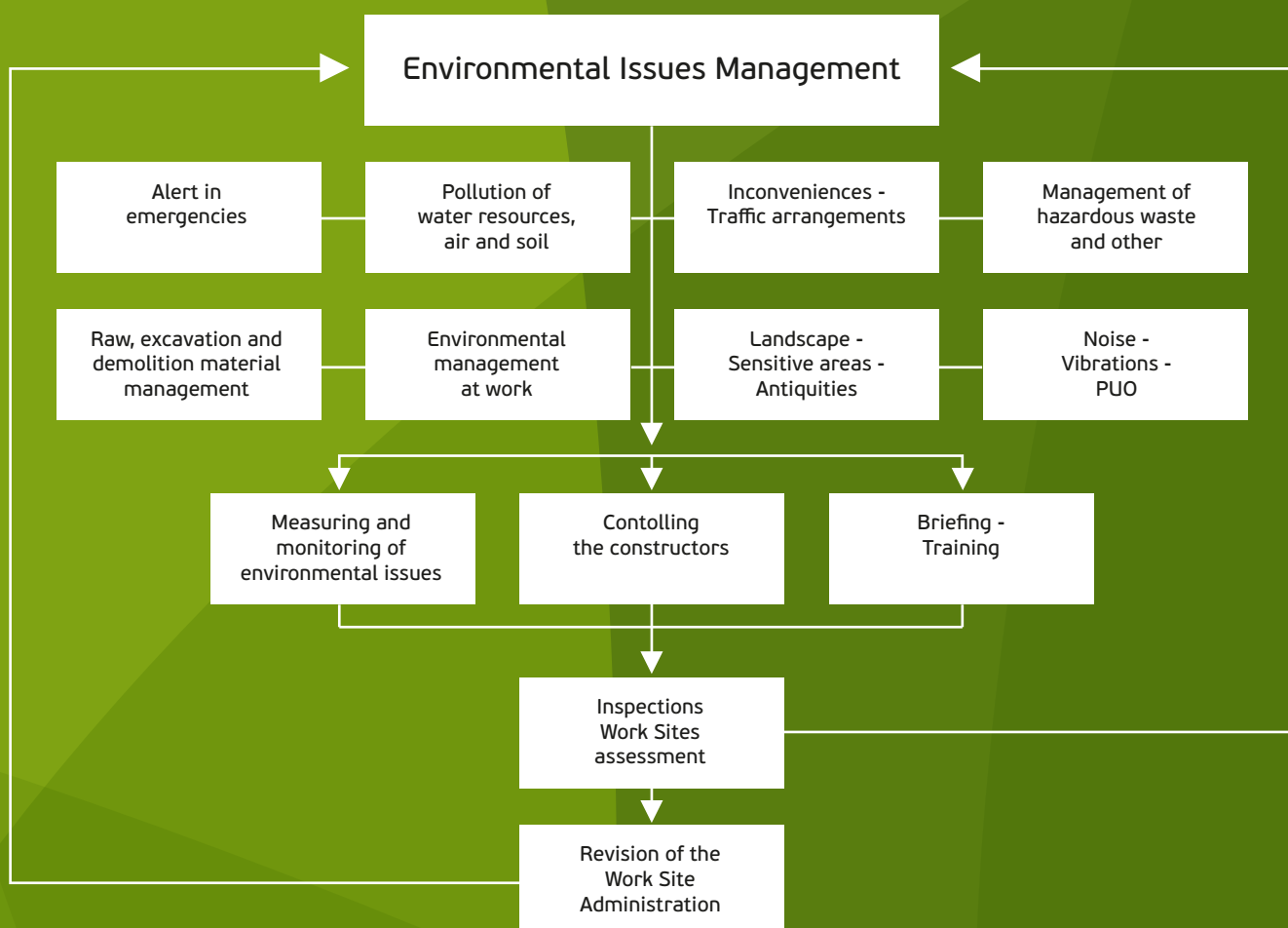
The EMP includes the organizational structure, planning actions, duties allocation, technical methods, procedures as well as processes for the development, implementation, achievement, revision and support of the Constructor's environmental policy as well as the compliance with the Project's environmental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

The EMP constitutes the basic and overall 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 and finally

The EMP as well as the environmental management procedures/ directives are at the disposal of the competent authorities involved in the Project.





The Operator in order to comply with the Project's environmental terms and the implementation of an Environmental Policy has developed an Environmental Management Plan for:

- 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



## Permits - Designs related to construction

In the framework of complying with the Concession Agreement environmental requirements, the approved environmental terms and the required environmental permits:

- a. Requests are submitted, when required, in order for forest and archaeology related permits and official opinions to be issued.
- b. Environmental Impact Study (EIS) was developed and submitted to DIPA/YPAPEN (acc. to L.4014/2011) in order to obtain Environmental Approval for the requested Borrow-pits – Quarries & Deposit-pits for the completion of the KO-PA section's construction. The approval process was completed with the issuance of a new ETAD (ADA : BIY10-A56) titled : "Korinthos-Patra road axis, upgrading the existing road into a motorway", regarding the additional quarries and borrow-pits sites in Korinthia and Achaia Pref. for the motorway's construction requirements.
- 3. The respective delineation designs have been prepared for the proposed sand-extraction locations and
- 4. Based on DCC article 21.3, the Concessionaire asked EYDE/MK/EPP to deliver to the Constructor the Vacant Possession and relevant Rights of Way of the above approved additional lands.
- c. Cooperation is in progress with the Public Utility Organisations in order to relocate various networks located within the Project.
- d. Hydro geological Design (AQUATERRA – Ch. Kapopoulos - E. Psarropoulou & Co) has been submitted to the competent Public Service. The above pertains to the excavation of seven (7) new water collection works, so as to cover the irrigation, fire fighting and other needs that shall arise in the Project's short-term parking areas along KO-PA section.
- e. EYPE/MEECC (now DIPA/MRPEE) approved the following Technical Environmental Designs (TED):
  - For drillings No KO-PA 2 & KO-PA 3 execution permit has been granted by W. Greece Water Dir./ Peloponnese, W. Greece & Ionio Decentralised Administration.
  - For drillings No KO-PA 1 & KO-PA 6 a positive recommendation has been issued by the Dep. Of Environment & Energy of the relevant Municipalities and the grant of the execution permit is expected. The process is under way.
  - Based on the above, the Constructor is already getting technical-financial quotes for assessment by various suitable crews so as to conduct drilling and test pumping at KO-PA 2 & KO-PA 3.

Please note that :

- 1. For the above lands and where required, the development of the Technical Exploitation Designs is under way,
- 2. Geotechnical reports have been prepared confirming that there are no disturbed areas among the proposed sand-extraction locations,

S/n	Name	K.P.
1	EL-KO 1	5+650
2	KO-PA 1	16+850
3	KO-PA 2	28+750
4	KO-PA 3	39+150
5	KO-PA 4	62+700
6	KO-PA 5	87+300
7	KO-PA 6	111+100

- For the installation and operation of 2 working sites around K.P. 77+300 (Svolos) and K.P. 84+100 (Papaleonidopoulos) [No 172189/20-6-2014],
- For the installation and operation of 3 working sites around K.P. 49+500 (Lygia, Evrostini-Xylokastro Mun.), around K.P. 99+900 (Lampiri, Aigialia Mun.) and around K.P. 108+600 (Rodini, Aigialia Mun.).

## Permits - Designs related to construction

- For the installation and operation of 2 working sites around K.P. 116+000 (Drepano) [No 175984/6-11-2014],
  - For the installation and operation of a working site around K.P. 50+500 ("YLI", Lygia) [No 176152/14-11-2014], and
  - For the installation and operation of asphalt bitumen production plant at "Soussana", Athikia, Mun. of Korinthos [No 176354/19-11-2014]
- f. TT& E S.A. has been assigned with the preparation of a Special Acoustic Design for the Calculation and Implementation of noise barriers for KO-PA section. 4 such Designs (from K.P. 0+000 to K.P. 36+000 and from K.P. 91+000 to K.P. 120+000) have been submitted in 2014 to the MRPEE's relevant Service, namely Dir. Gen. for the Environment/EARTH Directorate/Dep. for Noise determining the following locations where noise-barriers must be installed:

SOUND BARRIERS LOCATIONS				
Sound-barrier		Branch	Min Length	Barrier Height
from K.P.	to K.P.			
7+822,5	7+956,5	to Patra	134	3.0
20+566,5	20+796,3	to Korinthos	230	3.5
26+804,2	26+866,2	to Patra	62	4.5
26+059,0	26+231,5	to Korinthos	172	4.5
26+524,2	26+705,0		182	4.5
91+440,0	91+623,7	to Patra	184	3.0
91+816,7	91+943,8		128	3.0
96+183,6	96+259,6	to Patra	76	4.0
96+957,5	97+017,5	to Korinthos	60	3.0
97+192,6	97+424,6	to Patra	232	3.0
97+772,5	97+831,5		58	3.0
97+104,9	97+254,9	to Korinthos	150	3.0
98+852,6	98+964,9	to Patra	110	3.0
98+710,9	98+797,0	to Korinthos	88	3.0
107+843,6	107+990,6	to Korinthos	144	3.5
111+590,9	111+713,9	to Korinthos	122	3.5
111+794,9	111+879,0	to Patra	84	4.0
111+879,0	111+968,2		90	3.0
111+713,9	111+922,1	to Korinthos	208	3.5
112+825,9	112+889,3	to Patra	66	3.0
114+555,8	114+681,7	to Korinthos	126	3.0
114+770,5	114+852,4	to Korinthos	82	3.0
115+353,1	115+429,2		76	3.0
115+676,6	115+721,1		44	3.5
115+701,7	115+769,3	to Patra	68	3.5
115+769,3	115+883,4		114	3.0
115+721,1	115+841,4	to Korinthos	120	3.5
116+746,1	116+812,0	to Patra	66	3.0
118+006,6	118+190,5	to Patra	184	3.5
117+484,3	117+558,6	to Korinthos	74	3.5
117+547,5	117+773,7	to Korinthos	226	3.5
118+137,9	118+237,4	to Korinthos	100	3.5
118+190,5	118+362,9	to Patra	172	3.0
118+67,1	118+767,1	to Patra	110	3.0
118+237,4	118+327,2	to Korinthos	90	4.5



Please note that the noise barriers proposed in the Designs will be of the same type which have already been approved via DIPA/MRPEE's document No 122052/8-3-2010 and constructed along "Elefsina-Korinthos" and "Patra By-Pass" sections.

The process of completing the remaining Designs (from K.P. 36+000 to K.P. 91+000) is under way.

Construction Joint Venture by enforcement of article 5 law 3010/2002 and in accordance with the provisions of article 11.2.1 of the Project's Concession Agreement proceeded with the development of stream delineation designs (D. Sotiropoulos & 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. The designs are being 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 delineation designs for the rest KO-PA section's streams are under way including those pertaining to the stream parts where material is to be extracted from.







# 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.

The respective "Hazardous Materials Selection and Procurement Procedure" has been prepared describing all the constructor's actions contributing to the prevention of the uncontrollable use of hazardous materials during the Project's construction period.

During the construction and the operation of the project, waste of any nature is managed based on the pertinent legislation and the constraints/ requirements imposed by the approved environmental terms, both for the Project's existing and new sections. The respective "Waste Management Procedure" has been prepared for the management of waste, documenting the existing legislative framework and the means/ directives for their management.

The respective "Water Resources Management Procedure" has been prepared for the management of water resources, presenting in detail all the constructor's actions contributing to the minimization of the adverse impact the construction has on the adjacent water resources.

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 4 of this Report.



Patras OMC



Kiato TB

## Environmental parameters, monitoring programme (noise, traffic load vibrations, air quality, water)

Air quality management as well as noise obstruction minimization due to the motorway's construction are amongst the main objectives of the Project's Constructor and its Operator.

The Constructor, based on the relevant study, (TTE Consultants S.A.), designs, elaborates and implements a programme for the Project's environmental monitoring and audit, in order to ensure compliance with the Project's environmental requirements.

By this programme, environmental factors as noise, water and air pollution, waste, social disturbance, natural wealth, sensitive areas etc. are monitored.

### Existing Sections (EL-KO & PBP)

#### Sound barriers:

Following the "Special Acoustic sound barriers design" approved by DIPA/MRPEE via document No 122052/8.3.2010 which also determined the barrier type to be used, the barriers' installation along the Project's existing sections started and is for the most part completed. Their installation is foreseen to be completed within

the EPD set by the Concession Agreement.

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.





## Environmental parameters, monitoring programme (noise, traffic load vibrations, air quality, water)

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.

Note that the approval is pending of the submitted, to DIPA/MRPEE, "Supplementary Special Acoustic Noise Protection Design and Special Noise Barriers Design" for "Elefsina-Korinthos" section, pertaining to the protection of "Isthmos Bridge" settlement in Loutraki – Perachora Mun., Korinthia Pref. Thus, the noise barriers proposed by the design cannot be placed in this area.



### Monitoring of air pollution & basic meteorological data

Complying with the Concession's Agreement environmental requirements, the relevant technical specifications were determined referring to the procurement, installation and commissioning of two (2) permanent Air Quality & Meteorological Data measurement stations to monitor the impact of the motorway on the wider region.

- The station at Tripoli Semi-I/C (to be installed within 2015) will be able to monitor the impact in the area of Korinthos, caused by the operation of the new motorway.
- The station at Glafkos I/C along Patra by Pass section has been completed and set in operation in December 2014. The point at the south end of the Patra by Pass section can monitor and provide all indications regarding the pollution from the road usage while also reflecting the pollution from the motorway accesses.

The following meteorological parameters are also cited:

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

To measure pollution, the station have been equipped with analysis devices approved under the National Law (CMD H.Π. 14122/549/E.103/2011 (Gov. Gaz. 488/B`/30.3.2011) Measures

to improve atmosphere quality, in accordance with guideline 2008/50/EU "on the air quality for a cleaner atmosphere in Europe" of the European Parliament and the Council of Europe on May 21st ).



The stations coordinates are as follows:

Location	Latitude	Longitude
TROPOLI SEMI-I/C	37°55'6.49"B	22°54'28.38"A
GLAFKOS I/C	38°12'13.34"B	21°46'16.88"A

Please see below the Glafkos I/C station's pollution values:

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

# Environmental parameters, monitoring programme (noise, traffic load vibrations, air quality, water)

## New Sections (KO-PA)

Along the Motorway's new sections and within the framework of preparing the "Special Final noise protection Design & Special noise barriers Design" acoustic measurements were conducted to register the current traffic noise conditions (TTE Environment S.A.) for "Anc. Korinthos I/C – K1 Patra By-Pass I/C", Mintilogli I/C – Kato Achaia" sections and Rio-Antirrio bridge road accesses. The design, which will also determine the barrier type to be used, is foreseen to be completed within the second Semester of 2014.

critical points – of measurement and recording systems (EKSORYKSI S.A. or privately-owned working site equipment) of all significant variables of the phenomenon (soil movement, speed and acceleration). The local working sites will keep complete records of the recorded data.

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

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 is dealt with (by the local Working Sites) with great success by use of the following measures.

Control of the dust release is affected through simple management methods and the impact level greatly depends 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, stabilised pavement infrastructure, water soaking and traffic regulations (aiming to reduce dust in the dry season and traffic-induced erosion in the wet season),
- Sprinkling during transfer and deposit of sand, aggregates or/and excavation materials



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, the installation is foreseen – at

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.



significantly reduces released dust,

- According to greek law, all trucks transferring loose materials (e.g. excavation products) are covered. The vehicles entering or leaving the working site are clean.
- It is forbidden for the trucks to pass through settlements during quiet hours,
- Liquid rather than dry concrete is used in the mixing and preparation,
- All machinery and equipment used in works are in good condition and fulfill 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 being conducted in parallel and now fast-track under the extremely tight completion time-schedule,
- the water resources available along the Project during summer season are limited, any impact after the above measures are deemed slightly negative with a very short-term effect and can be dealt with.

The residents of the areas temporarily "affected" will benefit from the project's timely completion as well as all other users (visitors, tourists etc) whereas all financial parameters and activities along the area



(road safety, accessibility, faster transportation of people and goods, reduced transportation costs, reduced environmental transportation impact etc). will be positively influenced.

In any event and to further reduce dust, the Constructor is looking to implement – apart from the above –

alternative solutions to the problem (e.g. use of man- and environment-friendly biodegradable materials to maintain fixed humidity levels by turning water repellent particles to hydrophilic ones and increasing agglomeration thus reducing dust and constantly absorbing new dust set on the street due to trucks constantly passing through).







# Environmental impact mitigation 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 shall be paid during construction of sections passing by geologically sensitive zones, as in those areas stability problems might emerge at the formations. In those sections shall intervene as little as possible.



### c. Ecosystems - Vegetation

In the areas where the technical structures are constructed, and mostly in the areas where bridges are constructed, all the necessary precaution are taken in order to avoid any impact on the riverside ecosystems. All possible efforts are made in order to use the fewer possible quantity of concrete. Where possible the use of gabions is preferred and the proper application/use of additives (e.g. betonite), which are 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 are taken in order to avoid dust emissions (infusion of earth materials, trucks' load covered with nets).

In some case the cleared vegetation originated materials are cut and temporarily stored in mounds in order to create organic fertilizer for future use in planting technical activities. After clearance, excavation, collection and temporary disposal of the superficial fertile soil layer follows.







# Vegetation, planting and 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 developed for Elefsina – Korinthos section. This design was approved by the project's Independent Engineer. The planting process is foreseen to be completed according to the approved works time-schedule.

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

In order to facilitate the fulfillment of the above obligations the cjv conducted a relevant tender in order to find the suitable designer (agriculturalist, landscape architect) for the elaboration of planting-technical design for Korinthos – Patra section.

Based on the tender's results the designer (Klea Volovini) was determined, the relevant agreement was concluded and the data collection commenced towards the elaboration of the planting-technical design for the surrounding area, the respective i/cs, embankment/cut slopes as well as the sections of the existing national road which shall not be

included in the motorway. The design elaboration process has begun.

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 45 parking areas.

For green maintenance works the Operator has entered into contract with the following subcontractors:

- TOMI (District 1)
- J&P AVAX (District 2)

## Cleaning

During 2014, the Operator's 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 cleaning pertains to the entire cross section until the expropriation limits.







## Management of extraordinary incidents, environmental accident, green areas fires

During the operation of the working sites, all fire prevention measures are 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 is organised, was controlled and approved by the competent Fire Service before the beginning of the works.

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

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.

After the termination of the fire prevention period, all the fire related incidents have been tracked and a reduction of approx 45% compared to the incidents tracked in 2012 has been noted. 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 the framework of road safety, the Operator has Patrollers and Intervention Teams patrolling the Project with specially marked vehicles dealing with incidents (immobilized vehicles, accidents, traffic problems etc.) by implementing temporary signage to safely arrange traffic and assist the emergency services (Police, Fire Brigade and Paramedics). In this framework, during 2014:

- 3,681,329 km were travelled by Patrols and Interventions teams (about 10,090 per day) for supervising the road network, of which 1,825,300 during the second semester of 2014
- 23,407 incidents were managed with the Company's assistance (of which 13,130 during the second semester 2014), as indicatively: 12,487 (of which 7,090 during the second semester 2014) immobilized vehicles (mechanical failure, flat tyre, out of fuel, abandoned), 8,652 (of which 4,866 during the second semester 2014) obstacles on the pavement, 1,145 (of which 626 during the second semester 2014) accidents (37 with victims and 1,108 with material damages of which 23 and 603 respectively during the second semester 2014), 765 problems with users (pedestrians, contra flow, non authorised users, dangerous traffic violations) of which 391 during the second semester 2014), 83 traffic congestions (of which 34 during

the second semester 2014) and 275 other emergency incidents (fires, adverse weather etc.) of which 123 during the second semester of 2014), of which:

- 13,745 (of which 7,863 during the second semester 2014) were dealt with immediately by the Company, as they were detected by company or subcontractors vehicles.
- 9,661 incidents (of which 5,266 during the second semester 2014) were handled within 12' in average by the Company, since they were otherwise detected (phone, cameras etc.), while regarding the response of the subcontractors respectively: 18' for light vehicles and 33' for heavy vehicles

## Management of extraordinary incidents, environmental accident, green areas fires



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 its 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** Adverse weather conditions
- B.9** Large scale incident in tunnel
- B.10** Incident on Korinthos-Patra NNR

The Constructor shall work and cooperate closely with the Environmental Service and other departments of OLYMPIA ODOS S.A. in the application of the procedures – directives for the management of such issues.





# 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 has direct contact and collaboration with the competent archaeological services. 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.


Appendix 3 herein presents detailed information / actions taken to protect antiquities and photogaphs.



Aerial photographs of Ancient Sikyona









- In case of archaeological findings do not remove the remains.
- Do not re-cover the findings with inert materials.

- Immediately stop the works in the archaeological findings area.
- Mark a security perimeter around the remains.
- Immediately inform the Site manager about the finding.





# Training - awareness raising

Environmental training aims 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.

The Construction Joint Venture is organizing training and briefing seminars whereas all internal inspections are 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 are 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 conduct 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 are 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 is 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 01/01/2014 – 31/12/2014.

TRAINING TYPE	TIME (HRS)
SPECIALISED TRAINING	90
GENERAL TRAINING	50









# Corporate Social Responsibility Actions 2014

In 2014, OLYMPIA ODOS S.A. initiated strategic alliances with important bodies in the following three major fields: environment, culture and sports.

## Cooperation with "DIAZOMA" Association to set up the Cultural Route of Northern Peloponnesus

This is an effort to mobilize all institutional and other local bodies of the Regional Districts of Korinthia, Achaia and Ilia to cooperate and adopt the undertaking of elaborating a brand-name tourism product, i.e. the Cultural Route through the Archeological Sites located along Olympia Odos.

This cultural route is a cultural tourism product aiming at becoming the lever for growth and development of the relevant regions; a sustainable development in terms of the economy, the community and the environment.

The objectives of the Route are the following:

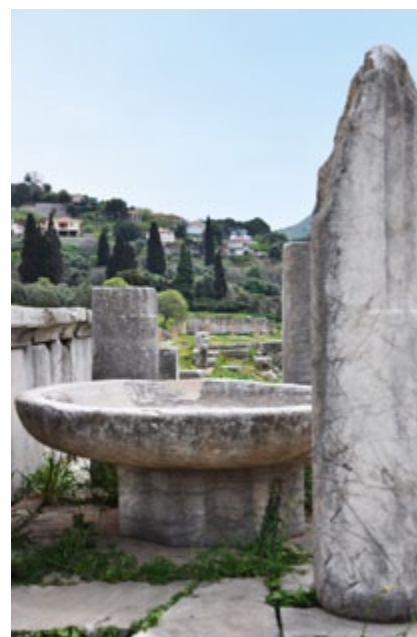
- Attract visitors in this specific area;
- Create opportunities for businesses, product manufacturers and service providers active in this specific area to increase their income;

- Attract new investments;
- Lengthen the tourist period;
- Ensure, if possible, resources for the conservation of the archeological sites and monuments.

The Cultural Route is proposed to focus on the archeological sites located along Olympia Odos and in particular the sites of Isthmia, Ancient Korinthos, Sikyon, Aigeira, Kerynia, Klitoria, Leondio, Ilida and Platiana, as well as the three archeological parks of Elefsina, Patras and Olympia.

At the same time, it will include the ancient theaters located in the above sites, such as the Eleusis Telesterion, the ancient theater of Isthmia, the Theater of Sikyon, the Theater of Aigeira, the Roman Odeon of Patras, the Patras amphitheater/stadium, etc. The route will, therefore, constitute a tour of the splendors of the monuments and nature, which if associated with the productive forces (farmers, hotel owners, food, folklore and popular culture etc.) will qualitatively upgrade the tourist economy in the area of NW Peloponnesus.

OLYMPIA ODOS S.A. as member of "DIAZOMA" Association will participate in this undertaking by supporting the actions of the Association in the direction of achieving synergies between all involved bodies.



The Cultural Route



# Corporate Social Responsibility Actions 2014

## Supporting the “Observatory of Western Greece and Peloponnesus Road Axes”

Olympia Odos supports the newly-established “Observatory of Western Greece and Peloponnesus Road Axes” since October 2014.

The Observatories of major road projects and infrastructure projects in general are, according to the international experience and practice, the most appropriate and effective tool to identify, evaluate and monitor the financial, social, development, spatial, transport and environmental impacts of such projects on the areas they operate in.

The Observatory will constitute a particularly useful tool for the central and regional authorities as well as all interested bodies to study and analyze the socioeconomic development indicators for the entire western geographical axis of Greece.

In brief, the indexes to be monitored by the Observatory will describe the nature of the economy of the affected areas and will examine their variations over time. Moreover, as regards the socioeconomic impacts, it will be hence possible to analyze issues as, by way of example, the following ones:

- Accessibility
- Employment
- Social cohesion
- Impacts on the land uses

## Participation in the Sponsorship Program of the Hellenic Paralympic Committee

OLYMPIA ODOS S.A. will support the Paralympic movement as official supporter of the Hellenic Paralympic Committee, thus participating in the preparation of our athletes for the Olympic Games of 2016.

Sport is a public good and as such is everyone’s concern. In particular, however, the sporting movement for disabled people is a fundamental issue of isonomy and equality as well as an incomparable message of strength and commitment to the goals set.

Apart from the afore mentioned strategic alliances, OLYMPIA ODOS S.A. and OLYMPIA ODOS OPERATION S.A. in the frame of their 2014 CSR action plan, have supported a wide range of activities that encompass the total or partial funding of initiatives undertaken by local authorities or civic society organizations as well as the provision of goods and man hours of their staff or of their subcontractors.

- Support of cultural/sport events
- Provision of goods and/or manhours
- Donation of food and clothes
- Support of the operation of various civic society organizations
- Education and awareness raising









## Expenses of the project related to environmental protection measures and actions

According to the certified construction expenses of the project for 2014, the expenses related to environmental protection for the year 2014 are up to the amount of 1,752,000 euros (value without VAT).

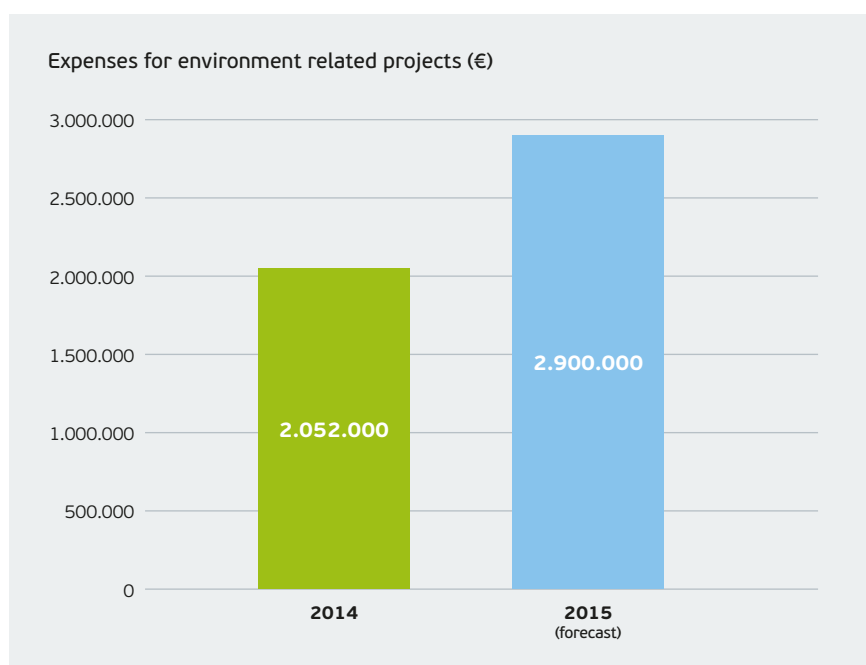
This amount corresponds to the 1.2% of the total certified expenses for the construction of the project.

The afore mentioned expenses are related to

1. Work site studies
2. Sedimentation tanks construction
3. Bag filters used in asphalt and cement production sites
4. Oil traps/oil separators
5. Anti dust measures
6. Volatile emissions / dust measurements
7. Water quality measurements, vibrations measurements
8. Slopes planting
9. Personnel related costs from the Allottees

The expenses related to the management of waste of the construction activities are not presented in this report.

The total of the construction related expenses as well as the type of construction activities and the progress of the project, are incorporated in the reports that the Concessionaire and the Construction J.V. are dully submitting to the competent authorities and the Independent Engineer.



Along with the environmental expenses related to the construction of the project, we must add another 300,000 euros that are related to the waste management of the operation of the motorway and the fees to environmental consultants. We must also highlight that during 2014, OLYMPIA ODOS OPERATION S.A. has changed part of its fleet with new technology vehicles, thus reducing the emissions and influencing in a positive way the overall environmental performance of the project.

According to the 2015 planning and forecast, the environmental protection expenses is up to 2,900,000 euros.

These expenses include the expense categories as of 2014 as well as sound protection measures, environmental monitoring activities and liquid waste management technical works in the new facilities related to the operation of the motorway.







**Olympia Odos S.A.**

4, Rizariou street, 152 33 Halandri, Greece

Tel +30 210 68 43 041

Fax +30 210 68 43 049

Email [environmentservice@olympiaodos.gr](mailto:environmentservice@olympiaodos.gr)

[www.olympiaodos.gr](http://www.olympiaodos.gr)



**OLYMPIA  
ODOS**



Project co-financed by the European Union

