



**6TH ANNUAL (2013)  
AND 11TH SEMI ANNUAL  
ENVIRONMENTAL  
MANAGEMENT REPORT  
01.07.2013-31.12.2013**

Environment Department OLYMPIA ODOS S.A.





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# Introduction

Based on the Concession Agreement (article 11.2.2& 16.2), 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/YPEKA. This is the sixth annual and eleventh Semi Annual Environmental Management Report and covers the period 01.01.2013 to 31.12.2013.

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.

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.

**Note:** all appendices of the present report have been submitted to the Special Environment Service of the Ministry of Environment, Energy and Climate Change, responsible for the environmental supervision of the OLYMPIA ODOS project and are available upon request.

## Appendices

- APPENDIX 1** Section: Elefsina - Korinthos (excluding Kakia Skala) (CDM 126393/16.02.2007)
- APPENDIX 2** Section: Ancient Korinthos I/C – K1 Patra By-Pass I/C (CDM104892/16.06.2006)
- APPENDIX 3** Section: Midilogli I/C - Amaliada (CDM102696/30.05.2006)
- APPENDIX 4** Section: Amaliada – Pyrgos - Tsakona (CDM 100163/30.05.2006)
- APPENDIX 5** Archaeological investigations for Korinthos – Patras – Pyrgos - Tsakona
- APPENDIX 6** Quantity data pertinent to the environmental protection measures during construction and operation

# 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 elaborated by APION KLEOS CJV as required by the contractual document. Tables 1 & 2 below briefly present the Project's works progress in the 1st and 2nd half of 2013.

Please note that in the beginning of the 2nd half of 2011 and within the framework of the negotiations between all involved parties for the Concession Project's restructuring, the Concessionaire instructed the CJV to suspend all works until 31-07-2013. Hence the limited nature of the works executed within 2013.

TABLE 1 – PROJECT'S WORKS PROGRESS IN THE 1st HALF OF 2013

G.U.	SECTION	ACTIVITY	PROGRESS
1-3 & 35	EL-KO & PBP	Maintenance & small-scale works related to traffic safety (asphalt repairs, traffic arrangements, marking, E/M works, etc.).	Ongoing process
4-15	EL-KO	Maintenance & small-scale works related to traffic safety (asphalt repairs, traffic arrangements, marking, E/M works, etc.).	Ongoing process
16-17	KO-PA	Traffic arrangements.	Ongoing process
		Construction of 25th EBA Storage area – Workshop in Ancient Korinthos.	Completed and delivered to the State.
		Waste collection at N.N.R. K.P. 95+100, in G.U.16 and at K.P. 102+000 in G.U. 17.	Completed work
		Maintenance & small-scale works related to traffic safety, depending on the needs (e.g. marking etc.).	Ongoing process
18-21	KO-PA	Traffic arrangements.	Ongoing process
		Irrigation network restoration, repair.	Ongoing process
		Clearing and repair of ditches/ culverts and other hydraulic structures.	Ongoing process
		Restoration of damaged local roads.	Ongoing process
		Storm protection works in rivers, banks and along the N.N.R.	Ongoing process
		Maintenance of N.N.R. parking areas.	Ongoing process
		Maintenance & small-scale works related to traffic safety, depending on the needs (e.g. marking etc.).	Ongoing process

TABLE 1 – PROJECT’S WORKS PROGRESS IN THE 1st HALF OF 2013

G.U.	SECTION	ACTIVITY	PROGRESS
22-25	KO-PA	Traffic arrangements.	Ongoing process
		Storm protection works.	Ongoing process
		Daily monitoring of convergence by means of electronic survey equipment compared to the reference rates and the warning and alarm levels in Tunnels 11, 13A & 13B.	Ongoing process
		Maintenance & small-scale works related to traffic safety, depending on the needs (e.g. marking etc.).	Ongoing process
26-29	KO-PA	Traffic arrangements.	Ongoing process
		Platanos 15 Tunnel (South & North Portal) – Water pumping where required.	Ongoing process
		Daily monitoring of convergence by means of electronic survey equipment compared to the reference rates and the warning and alarm levels in Platanos 15 Tunnels 15 (South & North Portal).	Ongoing process
		Geo-mechanical and structural monitoring of Platanos settlement.	Ongoing process
30-34	KO-PA	Traffic arrangements.	Ongoing process
		Storm protection works in Tunnel 26.	Ongoing process
		Daily monitoring of convergence by means of electronic survey equipment compared to the reference rates and the warning and alarm levels in Tunnel 26.	Ongoing process
		Maintenance & small-scale works related to traffic safety, depending on the needs (e.g. marking etc.).	Ongoing process
36-38	PA-PY	Traffic arrangements.	Ongoing process
		Maintenance & small-scale works related to traffic safety, depending on the needs (e.g. marking etc.).	Ongoing process
38-41	PA-PY	Traffic arrangements.	Ongoing process
		Maintenance & small-scale works related to traffic safety, depending on the needs (e.g. marking etc.).	Ongoing process
41-42	PA-PY	Traffic arrangements.	Ongoing process



TABLE 2 – PROJECT'S WORKS PROGRESS IN THE 2nd HALF OF 2013

G.U.	SECTION	ACTIVITY	PROGRESS
1-3 & 35	EL-KP & PBP	Maintenance & small-scale works related to traffic safety (asphalt repairs, traffic arrangements, marking E/M works etc.).	Ongoing process
4-15	EL-KO	Maintenance & small-scale works related to traffic safety (asphalt repairs, traffic arrangements, marking E/M works etc.).	Ongoing process
		Completion of construction activities for Isthmos toll station widening.	Completed
16-17	KO-PA	Traffic arrangements.	Ongoing process
		Archaeological findings burial in Anc. Korinthos and Anc. Korinthos I/C.	In progress
		Maintenance & small-scale works related to traffic safety depending on the needs (e.g. marking etc).	Ongoing process
		General excavations and PST construction in Zevgolatio Toll Statio, right and left. Construction of embankment in k.p. 1+300 to 1+500. Construction of embankment and PST in k.p. 1+700-2+500. Construction of embankment and PST in k.p. 10+800-12+00. Construction of embankment in k.p. 16+100 έως 16+400. Construction of embankment and PST in k.p. 16+200-18+400. Construction of embankment and PST in k.p. 19+140-19+320. Construction of transitional embankment in B131 in k.p. 19+320, Elisona. Clearing and excavation in k.p. 18+400-19+300. Construction of 1st CDF layer in k.p. 2+500-2+900. Construction of drainage in k.p 1+700-3+000. Construction of transitional embankment in L125 in k.p. 17+918.	In progress
		Construction completion in B120 in k.p. 19+553, Peristerona. Construction of walls in B126 in k.p. 16+774, Asopos. Construction of top slab elements A, B, Γ, Δ. Restoration works at B138 beams in k.p. 1+200. Construction of transitional beams in K121 in k.p. 13+720. Construction of pile wall in K124 in k.p. 15+908. Construction of pile wall and transitional beams in K127 in k.p. 16+890. Construction of piles and cap joints in K128 in k.p. 17+683. Construction of pile wall in K129 in k.p. 17+290. Construction completion in K130 in k.p. 19+200. Construction of abutments A0 and A4 in A122 in k.p. 14+376.	In progress
		Construction of part of T101. Completion of pile wall G105 in k.p. 13+390. Construction of pile wall G128 in k.p. 16+900. Construction of top slab water insulation in L101 in k.p. 2+430. Construction of pile wall in L120 in k.p. 13+887. Construction of top slab in L122 in k.p. 15+011. Construction of transitional embankment in L125 in k.p. 17+918. Construction of culvert under the motorway in L132 in k.p. 1+536.	In progress
		Construction of E/M infrastructure in k.p. 1+700-3+000 and k.p. 10+500-11+600.	In progress

TABLE 2 – PROJECT’S WORKS PROGRESS IN THE 2nd HALF OF 2013

G.U.	SECTION	ACTIVITY	PROGRESS
18-21	KO-PA	Traffic arrangements.	Ongoing process
		Maintenance of NNR’s parking areas.	Ongoing process
		Maintenance & small-scale works related to traffic safety depending on the needs (e.g. marking etc).	Ongoing process
		Clearing & grabbing.	Ongoing process
		Works at Lane Cover C003	Ongoing process
		Over-Pass A223: Construction of M2 & M3 bunkers. Top slab woodwork & reinforcement.	Ongoing process
		Tunnel Y7X1 service building: Pillars & walls construction.	Ongoing process
22-25	KO-PA	Traffic arrangements.	Ongoing process
		Daily monitoring of convergence by means of electronic survey equipment compared to the reference rates and the warning and alarm levels in Tunnels 11, 13A & 13B.	Ongoing process
		Preliminary works for the construction of Platanos Lane Cover C007 & Akrata C006.	Ongoing process
		Preparation for embankment: land clearing in G.U. 22N, 23N and 25N.	In progress
		Under-Pass K267: Excavation. Under-Pass K250: completion of bottom slab, side walls and retaining walls. Under-Pass K261: Pillars construction. Krios bridge: Pillars construction.	In progress
		Preliminary works for the construction of retaining wall R302. RW G301 & RW G309 piles and caps construction. Piles construction in R304. Walls construction RW G309.	In progress
		Preliminary works for the construction of sidewalks in Krathis bridge B265.	In progress
26-29	KO-PA	Traffic arrangements.	Ongoing process
		Platanos 15 Tunnel (South & North Portal) – Water pumping where required.	Ongoing process
		Daily monitoring of convergence by means of electronic survey equipment compared to the reference rates and the warning and alarm levels in Platanos 15 Tunnels 15 (South & North Portal).	Ongoing process
		Geo-mechanical and structural monitoring of Platanos settlement.	Ongoing process
		Reinforcement of Platanos Tunnel 15 South & North Portal temporary support. Concreting and sealing of South & North Portal and restoration works where required.	In progress
		Construction of embankments in various K.P.: 75+500 to 75+800, 77+840 to 78+130, 82+100, 77+300 to 78+700, 80+480 to 81+030, 82+500 to 83+900, 81+400 to 81+750, 82+600 to 82+800.	In progress
		Water insulation & final lining in Temeni C015. Concreting of retaining wall and pile construction in Eliki C009. Construction and concreting of pillars.	In progress

TABLE 2 – PROJECT'S WORKS PROGRESS IN THE 2nd HALF OF 2013

G.U.	SECTION	ACTIVITY	PROGRESS
26-29	KO-PA	Preliminary works in retaining walls R487 & RW41R. Concreting of wall R491. Pile construction in wall RW40. Water blasting & concreting in wall RW41R. Gabions installation in K.P. 71+050, 79+209 to 79+240 RW39, 79+400 RW40.	In progress
		Pile construction & water insulation of Under-Passes: K270, K281, K282.	In progress
		Preliminary works for culverts: - L411, K.P. 80+642 - L412, K.P. 80+997 - L416, K.P. 82+823	In progress
		B269 Ladopotamos bridge: K.P. 70+855 to 71+048 repair and final works, restoration of reinforcement erosion & wall concreting in abutments A2R, A0R. B289 Selinountas: start of temporary support works.	In progress
30-34	KO-PA	Traffic arrangements.	Ongoing process
		Daily monitoring of convergence by means of electronic survey equipment compared to the reference rates and the warning and alarm levels in Tunnel 26.	Ongoing process
		Bridges B303, B304: Restoration of reinforcement erosion in exposed bars, construction of foundation bridge. Under-Pass K347: Pile construction. Under-Pass K307: Foundation & walls construction. Under-Pass K312: Pre-loading monitoring, excavation.	In progress
		Repair of existing water supply network: k.p. 98+700-99+350. Primary & Secondary water supply network: k.p. 98+700-99+350.	In progress
		Maintenance & small-scale works related to traffic safety depending on the needs (e.g. marking etc).	Ongoing process
36-38	PA-PY	Traffic arrangements.	Until the end of 2013 acc. to the Project's Revised Concession Agreement.
		Maintenance & small-scale works related to traffic safety, depending on the needs (e.g. marking etc.).	
38-41	PA-PY	Traffic arrangements.	Until the end of 2013 acc. to the Project's Revised Concession Agreement.
		Maintenance & small-scale works related to traffic safety, depending on the needs (e.g. marking etc.).	
41-42	PA-PY	Traffic arrangements.	Ongoing process

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.

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



Ch 71+131 at B269 Ladopotamos- transitional embankment



Ch 82+530 abutments pile construction at K282



K270 ch 72+570 piles left branch



Ch 79+209-79+240, RW39 gabions construction



Lane Cover Derveniou – Pavement works



Earthworks-Ditches 22N-Derveni area



K247-Retaining Wall G.U. 23



Xylokastro Lane Cover C003: Pouring of 2nd phase of top slab, segment 3



Xylokastro Lane Cover C003



Overpass A223: Pouring deck slab

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# Progress of the environmental agenda

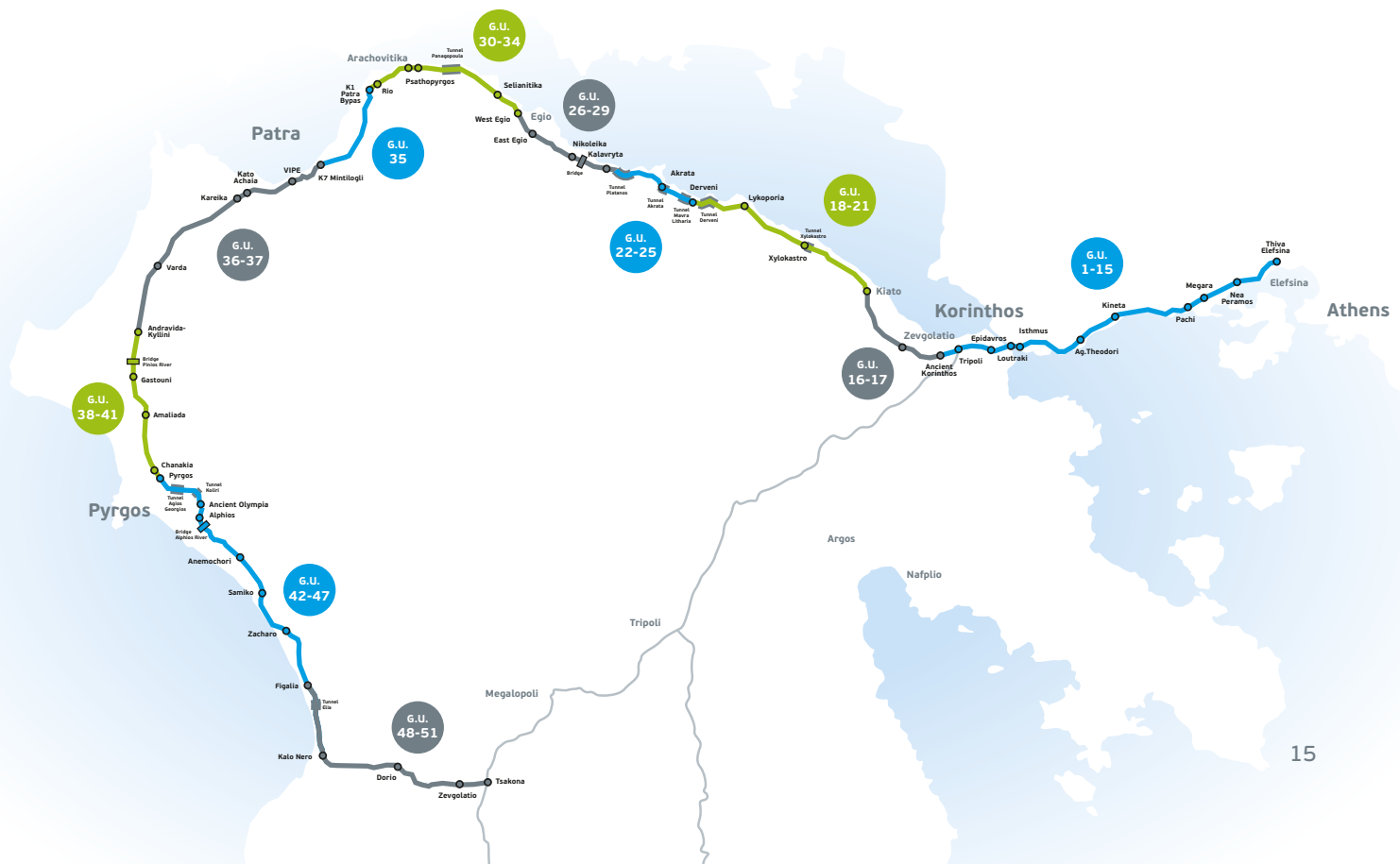
# General

The course – progress of the Project’s construction activities is submitted by APION KLEOS Construction Joint Venture to the Concessionaire via the design - construction monthly progress reports.

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 <b>Thiva I/C – Elefsina Toll Plaza</b>
2	CMD 126393/16.02.2007 <b>Elefsina – Korinthos (excluding Kakia Skala section)</b>
3	CMD 108569/18.10.2006 <b>Kakia Skala</b>
4	CMD 92073/16.05.1994 <b>Isthmos – Ancient Korinthos I/C</b>
5	CMD 104892/16.06.2006 <b>Ancient Korinthos I/C – Patra By-Pass K1 I/C</b>
6	CMD 106321/28.07.2006 <b>Patra By-Pass K1 I/C – Mydilogli Semi-I/C</b>
7	CMD 102696/30.05.2006 <b>Mydilogli I/C - Amaliada</b>
8	CMD 100163/30.05.2006 <b>Amaliada – Tsakona</b>



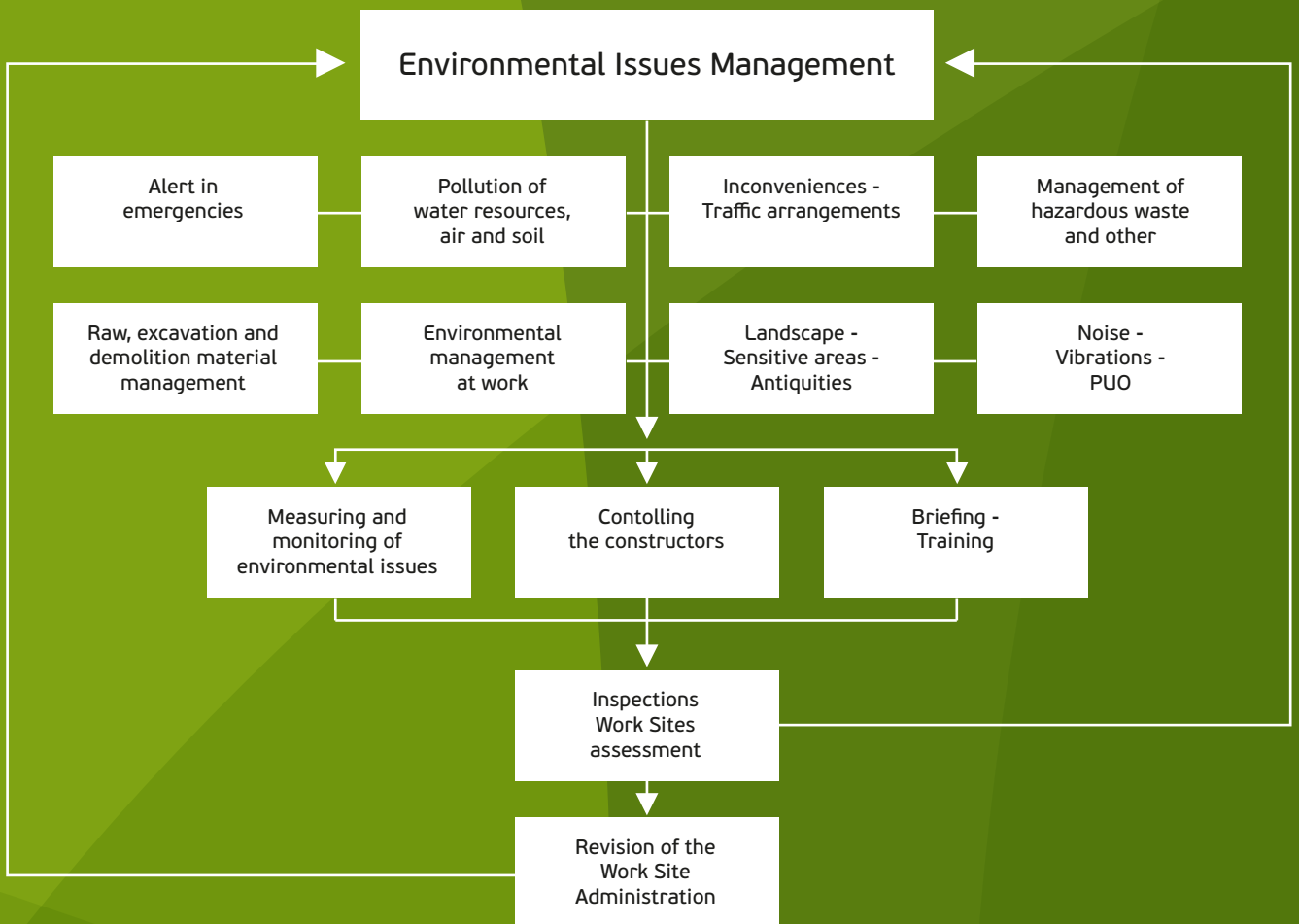
In the construction as well as in the operation phase, the procedures and directives for the works' environmental management are implemented by the Constructor, aiming at the in compliance with the terms and constraints of the above decisions. APION KLEOS submits to OLYMPIA ODOS S.A. monthly reports 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 are a tool for the rational handling/ management of each environmental issue, taking into account the pertinent legislation and the decisions applicable to each case.

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 and implements a **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 optimum practices to reduce energy and resources consumption

## Permits - Designs related to construction

In the framework of respecting 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 elaborated and submitted to EYPE/MEECC (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. Within the framework of the public discussion, an EIS supplementary data document was submitted by the Construction JV containing a response memo to remarks and objections raised by Municipalities, Organisations and Clubs as well as further documentation and alternative proposals for natural materials sources. The approval process for the issuance of a new ETAD is in progress.
  - 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 eleven (11) 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. The process is in progress.
- 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 & 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. 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.

Please note that for the above lands and where required, the elaboration of the Technical Exploitation Designs is under way.

# 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.



Nea Peramos OMC



Nea Peramos OMC



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 6 of this Report.

# 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 EYPE/MEECC 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. Its full completion is foreseen to take place within the first months of 2014.

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.



Note that the approval is pending of the submitted, to EYPE/MEECC, "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 deisgn 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 Pollution & Meteorological Data stations to monitor the impact of the motorway on the wider region.

Subsequently, the CJV conducted the relevant tender to find the suitable supplier for the procurement, installation and comissioning of these stations. Based on the tender's results, a contract was signed (12/2013) with Purcon M.Ε.Π.Ε. – I.B. Καμνάς Ε.Π.Ε. joint venture. The stations' installation and comissioning process is expected to be completed within the first Semester of 2014.



## 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 first Semester of 2014.

The preparation of a programme has been assigned (TTE Environment S.A.) and will start within the first Semester of 2014 for the measurement of vibrations

and AΣ 2,5 & 10 floating particles both along the motorway sections where noise limits were exceeded (acc. to the recent acoustic measurements programme) as well as in the locations of the operating working sites.

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 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 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.



### Water resources management

Towards enforcing article 5 law 3010/2002 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) 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.

Due to the following:

1. 32-34 months have passed idle after the 60-day deadline from the submission of the above designs to the competent State services,
2. The requested delimitations designs are – under C.A. art. 14 – "Permits" and therefore C.A. art. 14.3 on the deemed issuance applies and in view of the Project's resume, the Constructor asked EYDE/MK/EPP to certify the deemed issuance of the above designs' Permit and publish it in the Government Gazette. The process is in progress.

After the above, the following Gov. Gazette Sheets were issued ratifying the delineation determination of the first ten (10) streams along KO-PA section:

1. Zapanti (K.P. 9+892) Gov. Gaz. 594/Δ/28-11-13
2. Peristeronas (K.P. 13+552) Gov. Gaz. 602/Δ/28-11-13
3. Elisonas (K.P. 19+320) Gov. Gaz. 616/Δ/6-12-13
4. Seliandros (K.P. 23+173) Gov. Gaz. 603/Δ/28-11-13
5. Tholero (K.P. 28+641) Gov. Gaz. 596/Δ/2-11-13
6. Katharoneri (K.P. 29+663) Gov. Gaz. 607/Δ/29-11-13
7. Fonisa (K.P. 38+926) Gov. Gaz. 25/Δ/9-12-13
8. Kato Pitsa (K.P. 42+255) Gov. Gaz. 599/Δ/28-11-13
9. Skoupeiko (K.P. 46+774) Gov. Gaz. 597/Δ/28-11-13
10. Rozena (K.P. 55+252) Gov. Gaz. 601/Δ/28-11-13

The delineation designs for the rest KO-PA section's streams are under way.

Hydro geological Design (AQUATERRA – Ch. Kapopoulos - E. Psarropoulou & Co) has been submitted to the competent Public Service. The above pertains to the excavation of eleven (11) 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. The process is in progress.

# 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 each of the construction sites.

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 is 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 the least possible interventions are made.

## 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 related I/Cs, slopes and median strips was developed for Elefsina – Korinthos section. This design was approved by the project's Independent Engineer.

The planting of Patra By-Pass is in very good shape due to its "recent" construction and maintenance for the last period of time.

## New Sections

In order to facilitate the fulfillment of the above mentioned obligations Construction Joint Venture conducted a relevant tender in order to find the suitable designer (agronomist, landscape architect) for the development of Planting-Technical Design for Korinthos – Patra section.

The designer (klea volovini) undertook the project ,the relevant agreement was made and the data collection commenced towards the development 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 will not be included in the motorway. The process was suspended until

the end of 2013. Along with the project's resume, this process is also foreseen to resume.

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 2012, 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.

It is noted that the 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.

As it has been stated in the 10th Semi Annual Environmental Report, 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 apprx 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" and "Patra By-Pass K1 I/C – Midilogli Semi-I/C" sections.

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 2013:

- 3,650,697 km were travelled by Patrols and Interventions teams (about 10,228 per day) for supervising the road network, of which 1,795,754 during the second semester of 2013
- 21,908 incidents were managed with the Company's assistance (of which 11,519 during the second semester 2013), as indicatively:
- 12,625 (of which 6,827 during the second semester 2013) immobilized vehicles (mechanical failure, flat tyre, out of fuel, abandoned), 6,946 (of which 3,549 during the second semester 2013) obstacles on the pavement, 1,074 (of which 587 during the second semester 2013) accidents (36 with victims and 1,038 with material

damages of which 21 and 566 respectively during the second semester 2013), 813 problems with users (pedestrians, contra flow, non authorised users, dangerous traffic violations) of which 398 during the second semester 2013), 104 traffic congestions (of 44 during the second semester 2013) and 346 other emergency incidents (fires, adverse weather etc.) of which 164 during the second semester 2013), of which:

- 12,354 (of which 6,415 during the second semester 2013) were dealt with immediately by the Company, as they were detected by company or subcontractors vehicles.
- 9,554 incidents (of which 5,154 during the second semester 2013) 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: 17' for light vehicles and 32' for heavy vehicles

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

## Patrol 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 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 5 herein presents detailed information / actions taken to protect antiquities and photographs.



Aerial photographs of Ancient Sikyona

## 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 elaborated 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 9 describes the whole number of hours (persons x time) for environmental training during 01/01/2011 – 31/12/2013.

TRAINING TYPE	TIME (HRS)
SPECIALISED TRAINING	40
GENERAL TRAINING	20



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