EXPANSION OF AIRPORT BUILDING, OTHER ANCILLARY INSTALLATIONS AND ARRANGEMENT OF SURROUNDING SPACES ON THE STATE AIRPORT OF CHANIA «L. DASKALOGIANNIS»

Quick Appraisal Report

Regional and Urban Policy

December 2012

E-mail: regio-publication@ec.europa.eu
Internet: http://ec.europa.eu/regional_policy/index_en.cfm

Cataloguing data can be found at the end of this publication.
Luxembourg: Publications Office of the European Union, 2013
ISBN : 978-92-79-31079-9
doi: 10.2776/7337

Printed in Belgium
PRINTED ON ELEMENTAL CHLORINE-FREE BLEACHED PAPER (ECF)

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QUICK APPRAISAL REPORT

EXPANSION OF AIRPORT BUILDING, OTHER ANCILLARY INSTALLATIONS AND ARRANGEMENT OF SURROUNDING SPACES ON THE STATE AIRPORT OF CHANIA "L. DASKALOGIANNIS"

CCI 2012GR161PR009

Prepared for

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21st December 2012

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TABLE OF CONTENTS

1 INTRODUCTION

1.1 Project appraisal fundamentals

This Quick Appraisal (QA) is prepared in accordance with the "QA Check List" for major transport investment projects agreed with the EC – Directorate General Regional Policy Financial Greffe REGIO.

The objective of this QA is to support a constructive dialogue between the EU and the Applicants providing recommendations and suggestions, based on an in depth analysis of the application form and annexed documentation.

The structure of this report is in line with the sections and headings of the Quick Appraisal Check List and the Investment Application Form.

Along with the description of the findings of the analysis in each Chapter or Section of Chapter in relation to which: a) the quality of the information provided and available is not satisfactory, or b) the quality of the project is deemed to be improved, or c) the methodological and technical solutions adopted to undertake the CBA analysis, demand studies and project design are deemed as not adequate or reliable, the comments are highlighted in a recommendations and suggestions box.

In the key findings and concluding remarks Chapter we summarize the main considerations of our appraisal commenting on the essential elements of the project, and suggesting any potential solution that can improve its quality according to the findings of the analysis as appropriate. The concluding section highlights any important issue that should be considered before the Commission can approve the project.

1.1.1 Applicant and project managing authority

The Applicant is the Transport Interim Management Authority (*Ενδιάμεση Διαχειριστική Αρχή Μεταφορών*) which is responsible for the implementation of the 2007-2013 ERDF Regional Operational Programme. The project subject of this quick appraisal is included in this programme under the Priority Axis IV - Air Transport, Regional Airports, Improvement of Accessibility (*2007-2013 Ε.Π./ Ενίσχυση της Προσπελασιμότητας*).

The Beneficiary of the project is the Department of Public Works "Airport Projects of South Greece" (*Ειδική Υπηρεσία Δημοσίων Έργων «Αεροδρομίων Νοτίου Ελλάδας»*).

1.1.2 Documentation available

The application documents made available in electronic format through the CIRCABC system of the European Commission include the following:

- Application Form;
- Natura 2000 declaration;
- Cost-Benefit Analysis report;
- EIA compliance declaration of the Airport's works including its extension until 31/12/2013 and its amendment on 23/3/2011;
- Complementary Environmental Study;
- Non technical summary of the EIS;
- Decision on State Aid, No. C (2012) 5071 final/ 25-07-2012, SA 34586 (2012/N).

The project dossier is complete and complies with the EC Regulations. The information provided is consistent with Art. 40 Reg. 1083/2006, Annex XXI and Commission Regulation 1828/2006. Despite this the analysis of the application dossier reveals inconsistencies between the CBA report and the application form. We understand the application form is more updated than the CBA report. These incongruences do not facilitate the appraisal of the investment; the application dossier should present consistent information. Furthermore the application form itself includes incongruent information by comparing the Tables at Section H, which should be corrected.

2 PROJECT STRATEGY AND OBJECTIVES

2.1 Strategic objectives of the project

The investment under appraisal regards the expansion of the airport building, other ancillary installations and arrangement of surrounding areas of the *State Airport of Chania.*

The investment is deemed to contribute to the realization of all the specific objectives of the priority axis IV of the 2007-2013 ERDF Regional Operational Programme (*Ενίσχυση της Προσπελασιμότητας*) and the Thematic Priority 29 "Airports" – *Αναβάθμιση των περιφερειακών αεροδρομίων για τη βελτίωση του επιπέδου εξυπηρέτησης αεροσκαφών και επιβατών*.

The specific objectives of Priority Axis IV are consistent with the objectives of the Greek NSRF 2007-2013 and help to promote the strategic directives of the European Transport Policy (White Paper), the EC Strategic Guidelines for Cohesion, the renewed objectives of the Lisbon Strategy and the Integrated Guidelines for Growth and Employment.

The project also contributes to Thematic Priority 1: Investment in the productive sector of the economy - General Objective 1: Increase of openness and FDI inflows and Thematic Priority 5: Attractiveness of Greece and its Regions, as a place to invest, work and live - General Objective 13: Development and modernization of infrastructure and related services in the transport system of the country.

The project is coherent with all the objectives set by the National Policy for Transports and in particular with objectives 7, 3, 2 and 8 - Improvement of service levels, Elimination of bottlenecks, Reduction of time and travel costs (of passengers' and freight transport), Saving energy and natural resources. The investment is included in the list of proposed projects to be included in the transport strategic plans and development studies by 2020.

2.2 Project description

The major project under assessment concerns the construction of the expansion of the terminal building including the refurbishing and upgrading of existing facilities, the construction of a new control tower and the depot, the construction of a waste storage building and other ancillary facilities, and landscaping works at the State Airport of Chania "I. Daskalogiannis" in Crete. These interventions constitute a single and independent structural and functional project of total cost of nearly €110 million and as also stated in the application form – page 6 – no division into phases is needed.

Specifically, the project includes:

- Expansion of the existing terminal (currently 13,325.5 m^2) including upgrading of existing facilities, so that the final total area of the terminal will be 31,368.53 m^2 including basements, semi-open areas, storage and electromechanical installations areas (at four levels) and shaping and reshaping of the overall landscaping of the terminal;
- Construction of a new Control Tower of a total area of 1,872.98 m^2 (six levels) and landscaping;
- Construction of a new depot building of a total area of 2,566.00 m^2 (two levels) and landscaping;
- Construction of the new waste storage building of 483.50 m^2 and landscaping.

As for the surroundings, the project involves the reconstruction of the existing 21,600.00 m^2 area and its extension to reach a surface of 34,555.00 m^2.

The project under appraisal does not include:

- The reconstruction of the existing staff parking area (213 positions) with dimensions 140x36 = 5.040 m^2 (funded by CSF);
- The construction of a tourist bus parking area (56 positions) with dimensions 136x70 = 9.520 m^2 on the east of the terminal. This area exists already, but due to the expansion of the terminal area, it will be relocated.

The last two aforementioned works will be financed by the Civil Aviation Authority (CAA) own resources.

It is worth mentioning that the total construction area presented in the application form is 36,291 m^2. Yet in the CBA Study – page XVI – the total construction area is increased by 50.5 m^2. The CBA Study also adds to the surroundings area a surface of 5,392.5 m^2.

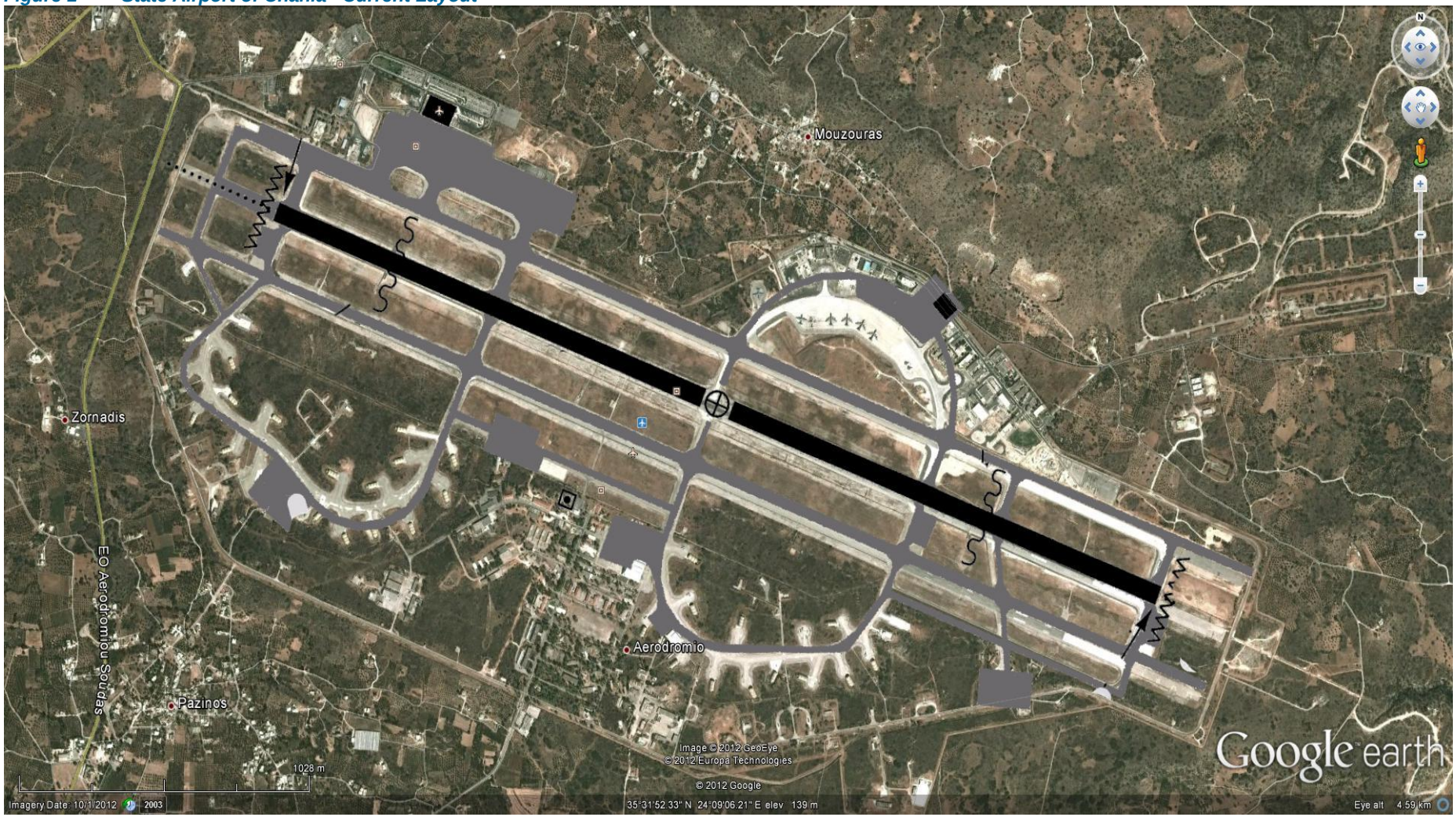
In addition the CBA analysis assumes that the cost for the reconstruction of the existing staff parking area (EUR 217,378) and the cost for the construction of a tourist bus parking area (EUR 448,500) are included in the total eligible cost. On the contrary, the application form – page 56 – clearly states that these two costs are not eligible since the relevant works will be financed by the Civil Aviation Authority (CAA) own resources. The CBA Analysis's financial results are based on the total investment cost (110,085,000 million) and not on the actual eligible cost of the project.

The application dossier describes adequately the need for implementing the investment under appraisal. The project influences Western Crete - namely Chania and part (about 20%) of Rethymno. The airport of Chania (where the project is implemented) is the second airport of Crete, one of the leading airports nationally and complements the airport of Heraklion and the port of Souda.

The project's interventions (terminal, control tower, depot and waste areas) will ensure continuity and expansion of Chania State Airport "I. Daskalogiannis" operations, allowing better interconnection between the airport surrounding area of Crete and other significant economic, social and administrative centres of the mainland (including Athens). Its development was also planned to provide the capacity required to meet the growth in tourist demand which according to past trends represents an extremely important market, since tourism is the dominant economic activity in the area of the airport. Finally, these interventions are needed to significantly improve the management and flight safety (through the new control tower), the management and readiness of the mechanical equipment (through the depot that currently does not exist), and the management and protection of the environment (through the shed waste which also currently does not exist). The traffic at the airport increased over the past decade; according to the CBA Study – page 47 - during the decade 2000-2010, the growth rate of foreign tourist arrivals in the counties of Chania and Rethymno was 5.2% and 5.0% respectively - the highest in Crete. The foreign passengers reached approximately1.2 million per year accounting for 73% of the total traffic at the airport. These rates have been forecasted to increase also in the future.

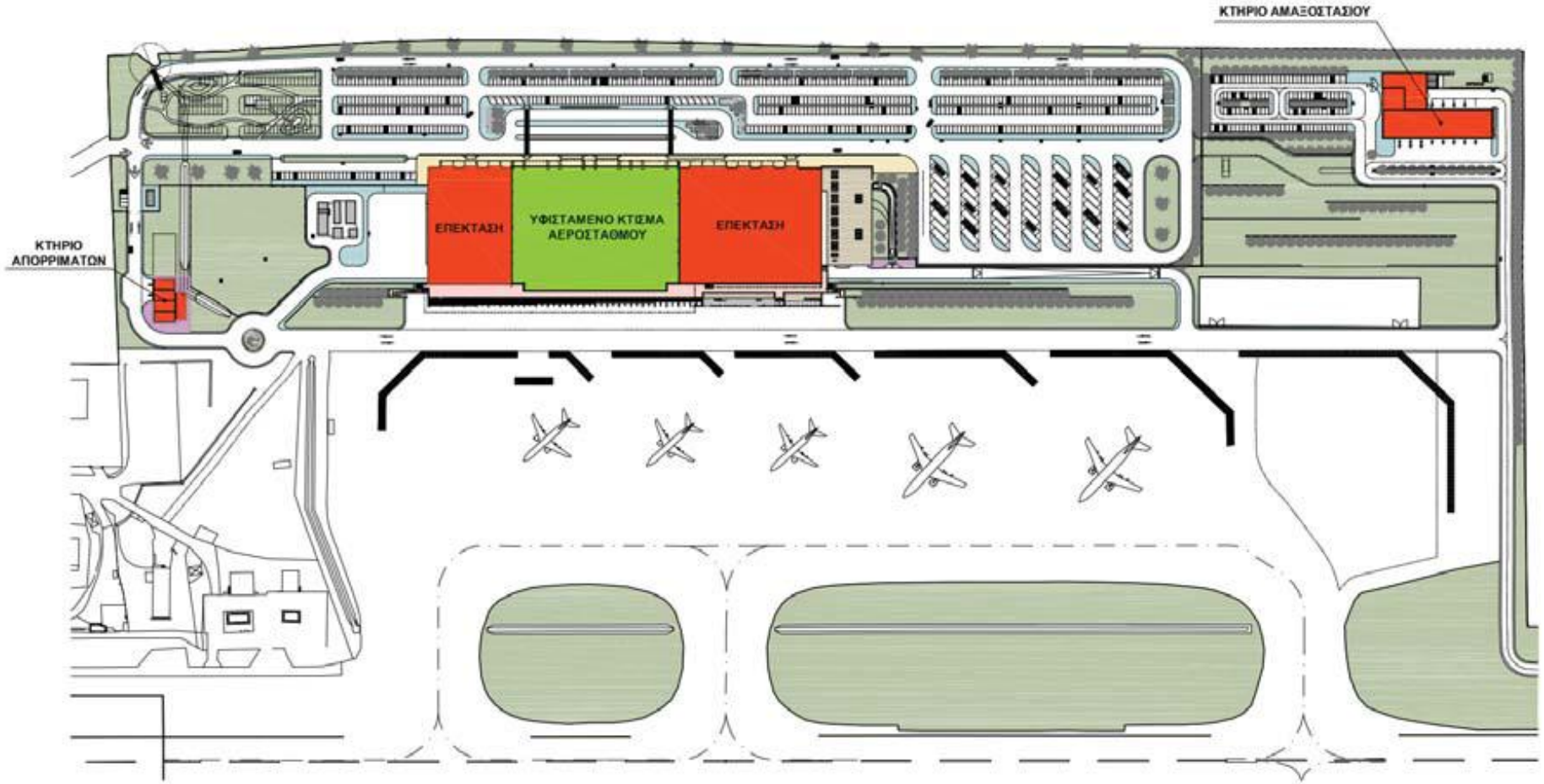
Figure 1 overleaf illustrates the current layout of the airport. Figure 2 and Figure 3 show the future layout of the airport.

Figure 1 State Airport of Chania– Current Layout



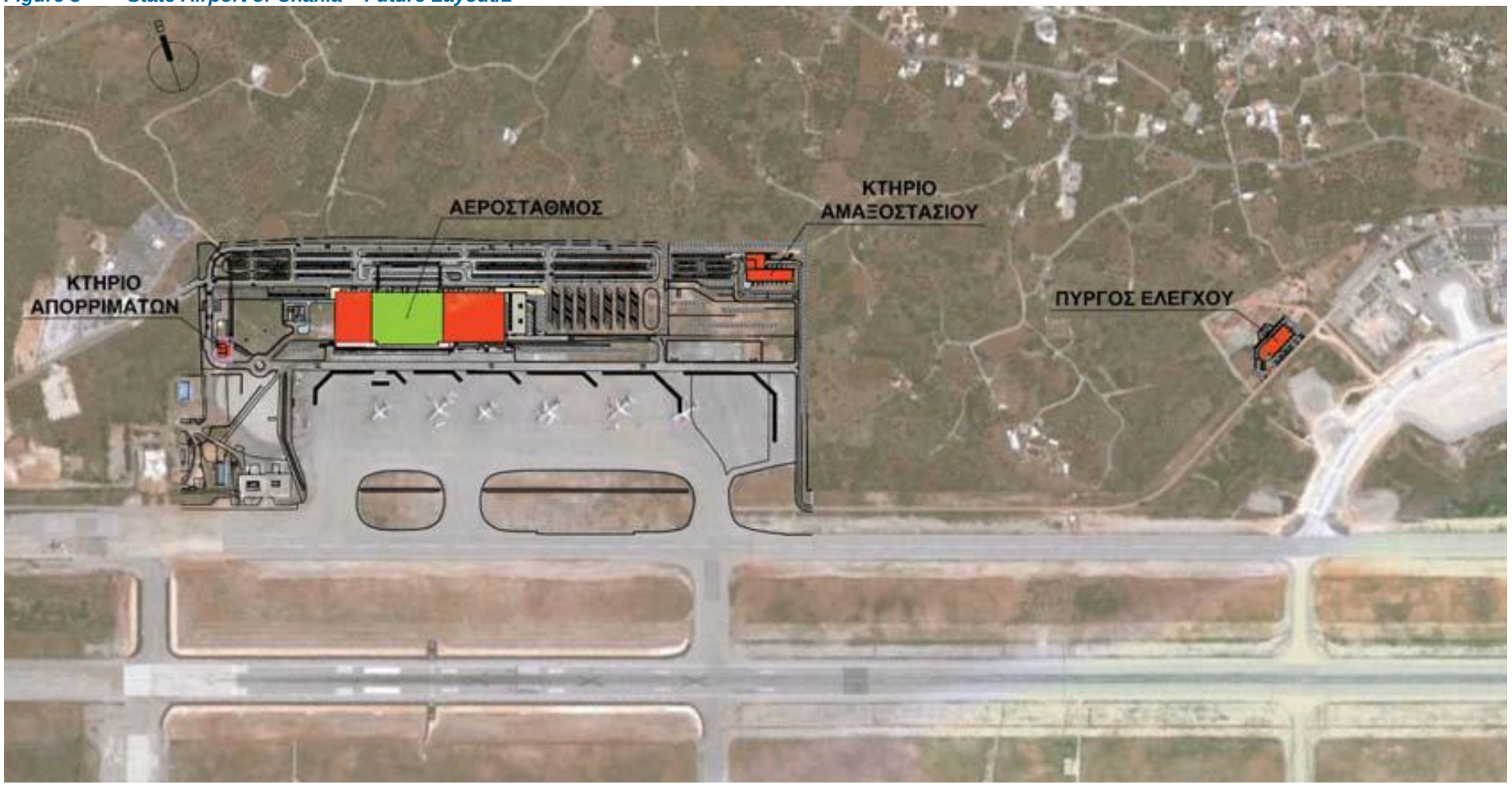
Source: Google Earth December 2012

Figure 2 State Airport of Chania – Future Layout/1



Source: Application Form

Figure 3 State Airport of Chania – Future Layout/2



Source: Application Form

2.3 Functional objectives of the project

The expansion and modernisation of the State Airport of Chania contributes to all the strategic and functional objectives as indicated in the application form pages 11 to 17. The investment is coherent with the direct achievement of the output indicator EI 0 of the Operational program "Airports' spaces which are being constructed/ upgraded" with a target rate of 48,660 m² in 2013.The main objective in the context of the Operational Programme, as determined by the output indicators, is the available terminal infrastructure of 48,660 m² in 2015. According to the application form a total of 36,291 m² will be implemented as part of the major project under appraisal, against the target of 48,660 m².

The main objectives of the project are to strengthen the tourism development of the region, Crete, and Greece and continue to ensure the mobility of the resident population and its connection with the mainland and its main centres. It is indeed worth noting that the traffic in the area is showing a gradual recovery, particularly for international traffic as illustrated in the following picture.

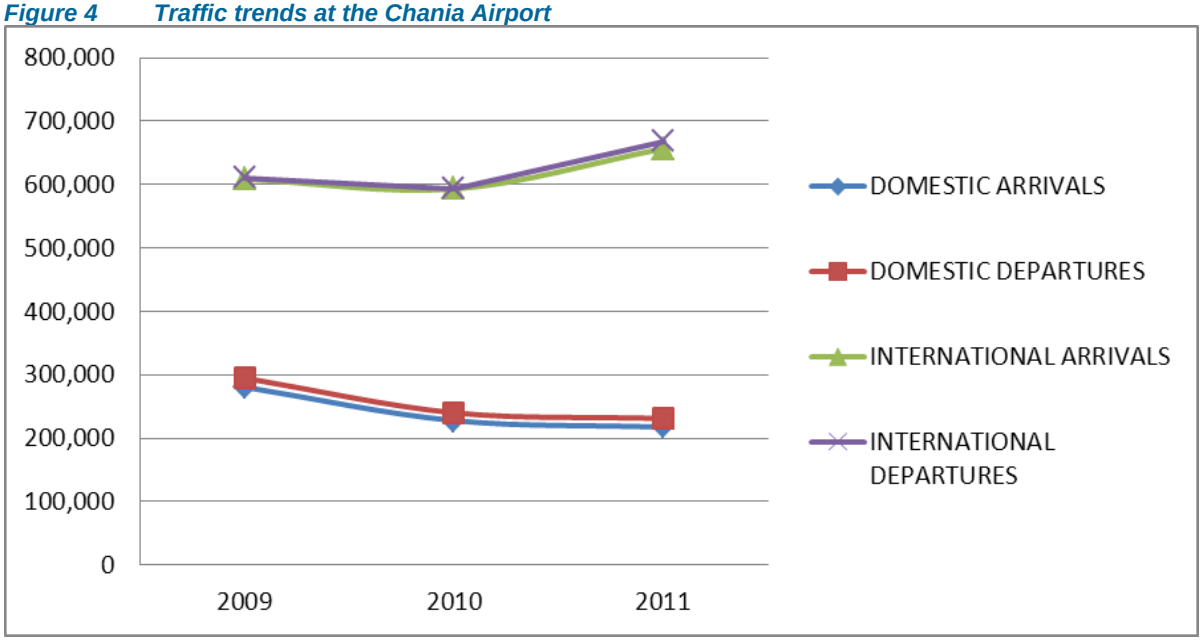
Table 1 Traffic in passengers per year in Greece and Crete

Airports	2008	2009	2010	2011	Var.% ('09-'08)	Var.% ('10-'09)	Var.% ('11-'10)
Chania	1,866,581	1,795,466	1,654,864	1,774,708	96.19%	92.17%	107.24%
Heraklion	5,437,068	5,052,840	4,907,337	5,247,007	92.93%	97.12%	106.92%
Athens	16,361,877	16,138,377	15,303,127	14,325,505	98.63%	94.82%	93.61%
Total Greek Airports	40,125,789	39,645,486	38,303,573	38,831,321	98.80%	96.62%	101.38%

Source: HCAA

The traffic in the airport is indeed generally increasing (excluding the stagnation of the international crisis period 2008-2010) and expected to expand in the future, mostly to serve foreign tourist traffic. The new terminal – which will be the first impression of the area to the visitors – will provide the required capacity of the terminal that responds to effective infrastructure management, improved security, and increased productivity of the employees.

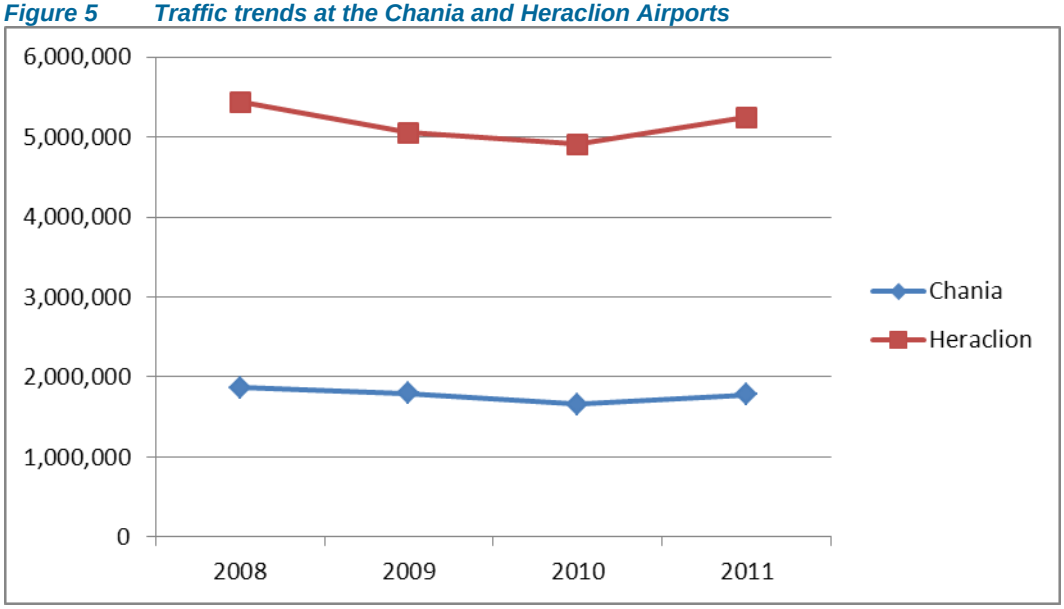
Figure 4 Traffic trends at the Chania Airport



Source: HCAA

As also commented by the Commission in their recent communication on State Aid – State aid No SA.34586 (2012/N) – Greece – Chania Airport Modernisation[1] – the Chania Airport is not in competition with the airport of Heraklion which is the largest one in the island. Regarding the traffic at this two airports, the fluctuation in the traffic between the two airports – with Heraklion showing an higher variation, and the traffic at Chania remaining more steady – let assume that the traffic at the Chania is not growing due to capacity constrain, as effectively assumed by the applicant and beneficiary in their application under appraisal.

Figure 5 Traffic trends at the Chania and Heraclion Airports



The existing terminal has a capacity of 1,100 passengers at a level of service "C". Already, in year 2010, hourly peaks of up to 1,570 passengers were observed. During these periods the service level dropped to "D".

Consequently, the existing terminal building has now reached its operational limits to serve passengers during peak periods - unlike the rest of the infrastructure (runway, parking spaces, etc.) that meet both the current, and the expected future demand.

The planned investment will maintain the level of service at "C", required to meet the increased demands of future passengers (especially international).

Currently, Chania airport is served by the Control Tower of the Air Force which, by its position and characteristics, cannot meet the business needs and the traffic volume of civil aviation. This shortcoming will be rectified by the construction and operation of the new Control Tower under the direct management of the Civil Aviation Authority (CAA).

There is currently no depot at the airport, so the vehicles (including ambulance, fire, etc.) remain outdoors, with all that this implies for their operational status and readiness of equipment and personnel. The new depot will both secure storage, maintenance and repairs (including all the safeguards for the protection of the environment) and will significantly improve the organization and operating conditions.

Today, the waste is collected in bins near the terminal building, resulting in unhealthy conditions for workers and passengers. The new hangar will create the conditions for a rational waste management (collection, storage, segregation, promotion, etc.) and will significantly reduce the environmental burdens.

[1] http://ec.europa.eu/competition/state_aid/cases/244257/244257_1360928_132_2.pdf

On the basis of the above considerations, the description of the investment's functional objectives is deemed satisfactory.

2.4 Consistency with other Union policies

The project is included for funding under Axis IV of the Operational Programme "Improvement of Accessibility" by Decision no. 261/Φ.95/08-02-2012 as amended by Decision no. 1729/Φ.95/11-10-2012.The sources for financing the investment are detailed at pages 23-24 and 53 of the application form. The project will be financed by mean of ERDF, State funds and internal resources from the Hellenic Civil Aviation Authority CAA.

According to the application form – pages 48 and 52– along with the Union policies concerning transport and regional development, the project is also in line with the policies concerning environmental protection due to the identified construction techniques. Specifically regarding State Aid competition, the Commission has already undertaken an analysis considering that the measure of financing the airport expansion is compatible with the internal market on the basis of Article 107 (3) (c) TFEU[2].

The publicity measures are not sufficiently described in the application form (page 60). It is anticipated that the contractor will bear the publicity related costs, which are included in the construction cost. Yet the cost for these measures is not provided.

B 2.4 Recommendations and suggestions

The publicity measures are not described satisfactorily and their costs not specified, although these are deemed to be included in the construction costs.

[2] http://ec.europa.eu/competition/state_aid/cases/244257/244257_1360928_132_2.pdf

3 TECHNICAL FEASIBILITY, PROJECT COSTS AND DEMAND ANALYSIS

3.1 Technical feasibility

3.1.1 Feasibility study

According to the application form, Section D.2.1. *Τεχνική Πρόοδος,* page 22, a feasibility study was undertaken between 2010 and 2011 and then finalised with the CBA in December 2011. The Feasibility Study and the Cost-Benefit Analysis were based on the General Development Plan (Master Plan) which was completed in April 2011. Technical studies started in 2003 and were completed in August 2011 when the Construction Design Study was prepared.

The analysis of the demand was included in the Cost-Benefit Analysis and has been integrated based on the operational results for the years 2000-2010. This will be further commented in §3.3 below.

The comments in the application form – pages 19 and 20 – relating to the project alternatives are sensible.

3.1.2 Technical concept

The application form contains sufficient information on the proposed technical structural and operational layout and arrangement to conclude that the project is technically and functionally sound. Although omitting the detailed data on the exact size and dimension of the proposed investments, the application dossier includes details on types and quantity of proposed infrastructure such as landside facilities, check-in desks, security, departure lounges and gates; executive lounges; Schengen and non- Schengen zones; administration offices, restaurant etc. The form of construction of the building and materials to be used for floors, walls and roof are all described in sufficient detail. Outline details of the electrical and mechanical installations are also provided.

The proposed layout is deemed appropriate to meet current and future traffic demand and to serve the type of airplanes and carriers potentially interested in operating at this airport, vocated to tourism traffic and local residents.

The application form does not confirm that provision has been made in the design of the building for disabled access and use. However it is stated that the design was implemented according to international standards and directives and thus it is assumed that disabled access was taken into account.

Regarding the dimensioning of the proposed terminal expansion, the application dossier (CBA report, page 96) states that the design of the airport terminal assumes as a technical operational standard the Level of Service (LOS) C. Based on that the passenger terminal is designed in order to operate a hour throughput (Typical Peak Hour) of 2,100 two-way passengers (arrivals & departures) or 1,400 one-way passengers (Typical Peak Hour).

According to this standard, the proposed terminal (31,368.53 m^2) will provide approximately 15 m^2 per passenger (2,100 two-way passengers at LOS=C), which is considered reasonable for this airport.

3.1.3 Environmental assessment

Environmental Impact Assessment. The investment under assessment belongs to the category of works included under Annex 1 of EIA Directive and therefore EIA was compulsory. The relevant environmental authority has been consulted (Ministry of Environment, Energy & Climate Change/Special Office for the Environment - Υπουργείο Περιβάλλοντος, Ενέργειας και Κλιματικής Αλλαγής/ Ειδική Υπηρεσία Περιβάλλοντος).

The project complies with Council Directive 85/337/EEC on Environmental Impact Assessment (EIA) and a non-technical summary is included in the project dossier.

The first EIA compliance declaration of the Airport's works was issued in 1995. In 2008 an extension was granted until 31/12/2013 and on 23/3/2011 the EIA was amended to include additional works.

Section D.2.2. *Διοικητική Πρόοδος,* page 23 of the application form, states that building permits will be issued by the Civil Aviation Authority (CAA) after the appointment of the contractor. Given the projected duration of the project construction (thirty (30) months), the CAA Department of Environmental Protection will take all necessary actions to ensure timely the new extended EIA after 2013. Provided the project layout will not change, compared to the one approved on the 23/03/2011, we do not see risks of delay in the implementation of the project or compliance with national and community environmental protection related legislation due to this.

The application form – page 45, point (b) – refers to compensation measures; the costs for the identified environmental impact related preventive, mitigation and compensation measures have not been estimated. We assume this cost is included in the overall construction costs, however this should be specified (See also Section 3.2 below).

The *polluter pay principle* applies to the airport operation activities as described at page 46 of the application form.

Strategic Environmental Assessment. The application form redirects to the SEA report developed for the 2007-2013 ERDF regional operational program *Ενίσχυση της Προσπελασιμότητας*. A link to the site of the 2007-2013 ERDF related SEA report is provided in the application form, although not specifically including the details of the project under assessment. Evidences concerning the implementation of the SEA process and of the consultation programme implemented as part of it are also available on the 2007-2013 ERDF Website[3].

Natura 2000. A certificate from the national environmental authority – *Υπουργείο Περιβάλλοντος, ενέργειας και κλιματικής αλλαγής – Γενική Διεύθυνση Περιβάλλοντος* has been enclosed to the application form (Annex I) stating that the project will not cause significant impacts on the Natura 2000 site, taking into account the Environmental Impact Assessments and the 92/43/EC Directive.

3.1.4 Project implementation scheme and time schedule

The project will not be implemented as a PPP project. The Beneficiary of the project is the Department of Public Works "Airport Projects of South Greece" (*Ειδική Υπηρεσία Δημοσίων Έργων «Αεροδρομίων Νοτίου Ελλάδας»*). The Civil Aviation Authority (CAA) is responsible for the operation of the State Airport of Chania. The daily management of the airport is done by the airport master, who falls under the authority of CAA. The airport is organized into departments and offices authorised by CAA.

Specifically regarding State Aid competition, the Commission has already undertaken an analysis considering that the measure of financing the airport expansion is compatible with the internal market on the basis of Article 107 (3) (c) TFEU[4].

The duration of the construction (30 months) is reasonable, provided that the tender procedure regarding the implementation of the works will soon restart; it is indeed worth noting that as stated at page 24 of the application form, the procedure was stopped by a Decision of the State Council accepting an appeal from the second and third bidders against the first one.

[3] http://www.saas.gr/Default.aspx?tabid=106&language=el-GR
[4] http://ec.europa.eu/competition/state_aid/cases/244257/244257_1360928_132_2.pdf

The application form - Section B.5.1, page 13 – also considers this possible delays and it is assured that the applicant will take all appropriate measures to make sure the issue is solved within the minimum time established by the legislation, in order to speed up the implementation of the works.

The application form sets out a project timeline either regarding the construction and operation of the airport, which is satisfactorily detailed with respect to the process to be followed and the works to be implemented. We understand – page 21 of the application form – that the project is planned to be implemented gradually in order to allow the airport continuing its operations. Few information was given regarding the works' implementation phases and the interaction of the construction works with the simultaneous operation of the airport. Although the completion of the works may be delayed by this strategy, we do not see a risk for completion of the works after December 2015.

B 3.1.4. Recommendations and suggestions

The proposed time-table is acceptable in principle and there should be low and limited risks regarding the completion of the construction works by end of year 2015. This will mostly depend on the timely and positive solution of the tendering procedure currently interrupted by a pending Decision of the State Council on the process. Possible delays may also be caused by the need for extension of the validity of the EIA related documentation. Provided the project layout will not change, compared to the one approved on the 23/03/2011, we do not see risks of delay in the implementation of the project or compliance with national and community environmental protection related legislation due to this.

3.2 Project costs

The total cost for the construction of the works part of the major project under appraisal is EUR 118.415 million including VAT (which is not recoverable). Against the new constructed terminal with floor area of 18,043.03 m², this equates to a unit rate of EUR 2,877 per m². Against the upgraded terminal with floor area of 13,325.50 m², this equates to a unit rate of EUR 1,165 per m² and considering the final terminal (new and existing), this equates to an average unit rate of EUR 2,150 per m². These unit costs are reasonable.

More in detail, the information provided in the application dossier and relating to the building and infrastructure as well as installations and equipment costs is reasonable.

The project does not involve expropriation costs (on public land). A 9% contingency has been applied. Given that the project timeline indicates that all the design has been completed and the project is about to start, this rate is considered appropriate.

Although considered slightly high (probably due to changes in the design and proposed solutions between 2003 and 2011), the costs relating to studies were appropriately described. Disbursements for the studies of the project started in 2003 and completed in 2011. The bulk of these payments relates to studies carried out by individuals (outsourcing), starting in 2003. In 2011 prices and current values, the cost of these studies is EUR 6.9 million before VAT. With compound interest disbursements from previous years at 5%, the cost amounts to € 8.8 million in 2012 value (NPV). In addition to these, a Master Plan and the Feasibility Study were also prepared by the CAA and they are priced approximately at the level of EUR 93,000 (not subject to VAT).

The supervision of the construction of the project will be done by the Transport Interim Management Authority (*Ενδιάμεση Διαχειριστική Αρχή Μεταφορών*), has an indicated cost of

about 10% of the sum that was spent for the studies. This is a lower amount that would be spent in the event the supervision works would be outsourced.

Excluding VAT, the investment cost as identified in accordance with article 92 D, Decree 163/06, would result in EUR 88.96 million according to the application form.

Table 2 Construction Areas

Works	m²	Cost - €		
		Before Revision		
		Before GE & OE, Contingency (EUR '000)	After GE & OE, Contingency (EUR '000)	Total after Contingency (EUR '000)
Terminal				
New - Expansion	18,043.03	37,890	48,734	51,911
Upgrading	13,325.50	11,326	14,568	15,518
Total	31,368.53	49,217	63,302	67,429
Other Buildings				
Control Tower	1,872.98	3,933	5,059	5,389
Depot	2,566.00	5,473	7,040	7,499
Waste Facility	484.00	1,016	1,307	1,392
Checkpoint	50.00	105	135	144
Total	4,972.98	10,528	13,541	14,424
Surroundings				
New - Expansion	34,555.00	4,838	6,222	6,628
Upgrading	5,392.50	377	485	517
Asphalt		400	472	503
Total	39,947.50	5,615	7,180	7,648
TOTAL				
Buildings	36,341.51	59,745	76,844	81,852
Surroundings	39,947.50	5,615	7,180	7,648
TOTAL		**65,360**	**84,024**	**89,500**

Source: CBA Study (page XVI)

The application dossier actually presents some inconsistencies between the application form and the CBA report both relating to the total investment costs excluding VAT and the total eligible costs. Regarding the first ones, the costs included in the application form amount to EUR 88.96 million, whereas the ones indicated in the CBA report are EUR 89.5 million (Table 2).

Table 3 Cost analysis

	Description	Total Project Cost (EUR '000)	Non-eligible Project Cost (EUR '000)	Eligible Project Cost (EUR '000)
1	Planning and Design Expenditures	6,190	6,190	
2	Land			
3	Building and Infrastructure	45,479	541	44,937
4	Installations and Equipment	31,647		31,646
5	Contingency	6,899		6,899
6	Revisions	5,476		5,476
7	Technical Assistance			
8	Publicity			
9	Supervision	899	899	
10	Sub-total	96,590	7,632	88,959
11	Vat	21,824	1,364	20,460
12	**TOTAL**	**118,415**	**8,996**	**109,419**

Source: Application Form (page 55)

The total eligible cost of the project stated in the application form, Section H.1, are EUR 109,419,181.87 including VAT and contingency as presented at Table 3, whilst the CBA report shows that the eligible cost is 110,085,000 including VAT and contingency as summarised at Table 4.

Table 4 Construction Works

Description	Current Values (EUR '000)
Construction Works	
Building and construction	38,141
Asphalt	400
Facilities (including E/M, fire etc.)	21,635
Machinery and equipment	748
Special equipment (e.g. control tower, management-baggage handling, passenger check etc.)	4,230
Furniture, office equipment	206
Total before GE & OE, Contingency, Revision & VAT	65,360
GE & OE18%	11,764
Total before Contingency, Revision & VAT	77,125
Contingency 9% not including Asphalt	6,899
Total before Revision & VAT	84,024
Revision 6,52%	5,476
Total before VAT	89,500
VAT 23%	20,585
TOTAL	**110,085**

Source: CBA Study (page XVII)

These inconsistences relate to the reconstruction of the existing staff parking area cost (EUR 217,378) and the construction of a tourist bus parking area cost (EUR 448,500) that will be financed by the Civil Aviation Authority (CAA). We understand the application form is more updated than the CBA report although this should be confirmed and the application dossier revised as appropriate.

B 3.2. Recommendations and suggestions

The application dossier shows some minimal inconsistencies between the total investment costs and the eligible costs presented respectively in the application form and CBA report. These inconsistences relate to the reconstruction of the existing staff parking area cost (EUR 217,378) and the construction of a tourist bus parking area cost (EUR 448,500) that will be financed by the Civil Aviation Authority (CAA). We understand the application form is more updated than the CBA report although this should be confirmed and the application dossier revised as appropriate.

The costs for environmental impact mitigation, preventive and compensation measures and the costs for publicity measures are probably included in the costs relating to construction works; however this should be clarified and confirmed by the Applicant and Beneficiary.

3.3 Demand analysis

The State airport of Chania is one of the most important regional international airports of Greece, with a current annual traffic of about 500,000 domestic passengers and 1,200,000 international passengers. The total traffic amounted to 1,654,864 passengers in 2010 and 1,774,623 in 2011, with an increase of 7.2%. Opposite to the total trend for Greece and that of the Heraklion airport, the Chania airport registered a positive growth also during the first 9 months of 2012.

Table 5 Traffic trends per month (first 9 months, years 2011-2012)

	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Total first 9 Months
Total Greece	1,411,474	1,258,888	1,553,428	2,272,261	3,715,790	5,011,083	6,233,150	6,391,918	5,214,887	33,062,879
Heraklion	69,101	62,403	80,974	220,291	554,357	785,345	999,220	1,061,025	835,872	4,668,588
Chania	30,757	31,189	43,879	79,427	189,061	261,116	342,725	308,742	272,392	1,559,288
	Jan-12	**Feb-12**	**Mar-12**	**Apr-12**	**May-12**	**Jun-12**	**Jul-12**	**Aug-12**	**Sep-12**	**Total first 9 Months**
Total Greece	1,297,864	1,166,656	1,426,962	2,211,193	3,367,012	4,730,103	5,967,019	6,144,618	5,083,540	31,394,967
Heraklion	65,112	60,050	74,853	221,470	509,003	751,024	970,952	1,036,350	849,177	4,537,991
Chania	29,585	28,055	36,026	91,770	194,557	281,458	335,410	330,012	292,903	1,619,776
	Jan-11/Jan12	**Feb-11/Feb12**	**Mar-11/Mar-12**	**Apr-11/Apr-12**	**May-11/May-12**	**Jun-11/Jun-12**	**Jul-11/Jul-12**	**Aug-11/Aug-12**	**Sep-11/Sep-12**	**Total first 9 Months**
Total Greece	-8.0%	-7.3%	-8.1%	-2.7%	-9.4%	-5.6%	-4.3%	-3.9%	-2.5%	-5.0%
Heraklion	-5.8%	-3.8%	-7.6%	0.5%	-8.2%	-4.4%	-2.8%	-2.3%	1.6%	-2.8%
Chania	-3.8%	-10.0%	-17.9%	15.5%	2.9%	7.8%	-2.1%	6.9%	7.5%	3.9%

Source: HCAA

In Crete two more airports exist in addition to the Chania one, the Heraklion International Airport "Nikos Kazantzakis", with an annual traffic of around 5,000,000 passengers, and the Municipal Airport of Sitia serving the eastern end of the island with an annual traffic of just 40,000 passengers. The function of the two basic airports of the island is not competitive as also confirmed by the analysis included in the mentioned Commission decision on State Aid Competition[5]. The study "Research of Airport Demand in Crete Island and Training and Development Master Plan of the National Airport Heraklion" prepared by the National Research Polytechnic in 2001, showed that 93% of passengers landing in the airport of Chania had a destination in Chania and 7% in the northern part of Rethymno. Research has also recorded the complementary operation of the two airports to serve the island during peak periods (typically summer).

The analysis of traffic trends at the State airport of Chania covers the period from 2000 to 2040, and the data for the annual traffic that are used to analyse the current situation and to make the forecasts, for the period of 2000 to 2010 are derived from the Civil Aviation Authority for the years 2003 - 2010 and from the Airport's Master Plan for the period 2000 - 2002.

The analysis of the demand is described in the CBA report annexed to the application form. The forecast of passenger traffic (total number of passengers per year and corresponding air traffic) is based on econometric models that were drawn independently for the two main categories of passengers, domestic and international. The econometric model of the study utilises multiple regression (least squares method) to describe the relationship between a dependent variable and multiple independent variables with the form of a mathematical function. The reliability of this approach is measurable, based on the correlation coefficient (r^2) provided. In this way, the demand can be evaluated under different evolution scenarios of the influence variables

[5] http://ec.europa.eu/competition/state_aid/cases/244257/244257_1360928_132_2.pdf

(population, gross domestic product, tourists, etc.). The historical development of these variables, beyond their immediate impression, “reflects” the indirect effects of changes in the socioeconomic environment that influences the evolution of the dependent variable.

The independent variables used for the creation of econometric models is the historical evidence of population, GDP (at various levels such as national, departmental, regional), arrivals of domestic tourists, foreign tourist arrivals, total tourist arrivals and total tourist infrastructure in during 2000-2010. Apart from the above "real" variables tested, “virtual” variables were also implemented to illustrate differences in the time series of historical data, especially during the years of economic crisis. A total of 30 variables were examined.

The evaluation of the demand for the *do nothing* scenario is provided within the demand analysis. Section C.1.1 of the application form presents a summary table of the expected demand taking into account the *do something* and the *do nothing scenario*, while more detailed information is given in the CBA Study, Chapter 7, pages 85-93.

Table 6 Demand Forecast

Year	WITH the Project			WITHOUT the Project		
	Domestic Traffic	Foreign Traffic	Total	Domestic Traffic	Foreign Traffic	Total
2010	493,933	1,174,824	1,668,757	493,933	1,174,824	1,668,757
2015	458,024	1,289,485	1,747,509	458.024	1,289,485	1,747,509
2020	568,657	1,444,866	2,013,522	546,593	1,388,805	1,935,397
2025	698,924	1,619,404	2,318,329	619,914	1,436,336	2,056,250
2030	881,892	1,804,263	2,686,156	700,737	1,433,638	2,134,375
2035	1,048,897	2,024,667	3,073,563	733,718	1,416,282	2,150,000
2040	1,275,896	2,263,588	3,539,484	775,022	1,374,978	2,150,000

Source: Application Form (page 18)

Basically the research concludes that the *do-nothing* scenario would have the effect of reducing the accessibility to and from the area of the State airport of Chania, with all the subsequent negative effects on tourism and development around this economic activity. Taking into account the significant seasonal fluctuations of the State Airport of Chania and the hourly peaks of up to 1,570 passengers that were observed in the existing terminal (which has a capacity of 1,100 passengers at a level of service "C"), the excess demand can only be accommodated in time periods that reduce the competitiveness of the airport, meaning that the traffic will not grow.

The *do-nothing* scenario is therefore excluded from further consideration and the potential alternatives for upgrading the capacity of the terminal are:

- Demolition of the existing building and construction of a new one in the same position with suitable dimensions;
- The construction at another location, of a new terminal, the size of which will ensure the desired capacity;
- The expansion of the existing terminal.

The application dossier analytically explains that the expansion of the existing terminal is essentially an unambiguous choice to ensure the required capacity because of its comparative advantages, which are:

- The use of existing infrastructure;
- Economy, to the extent that the necessary size of the infrastructure is ensured from the expansion - and not from the construction of a new building;
- Adequate airport operation during project construction with the provision of appropriate programme details.

The methodology and the results of the demand analysis are acceptable. The *do-nothing* and *do-something* scenarios have been clearly defined and assessed adopting a stochastic methodology that has the potential to show the dynamics of the whole system including but not limited to the airport of Heraklion. The analysis is clearly presented; despite the uncertainties associated to this type of analysis and to some of the assumptions adopted, the results are generally sensible. The developed models have been validated; the growth rates are plausible compared to previous historical and recent traffic trends. In addition, induced demand analysis, was properly assessed and quantified.

4 COST BENEFIT ANALYSIS

The CBA analysis presented in the application dossier has been developed according to the guidelines published by the European Commission Directorate General Policy "*Guide to Cost Benefit Analysis of Investment Project*", July 2008.

The financial and economic analysis of the project under assessment are both included in the Annex II of the documentation provided – *Μελέτη Σκοπιμότητας και Κόστους Οφέλους και Σύνταξη Αίτησης Χρηματοδότησης του μεγάλου έργου ΕΣΠΑ του ΕΠ-ΕΠ: Νέος Αεροσταθμός του Α/Δ Χανίων, Τελική Έκθεση, Ανάλυση Κόστους - Οφέλους*.

The CBA unit of analysis includes the investment under appraisal. As discussed in Section 3.2, the eligible costs presented in the CBA report are not consistent with the ones presented in the application form (approximately € 500,000 higher). Although the difference is minimal and does not impact on the results of the financial and socio-economic analysis, the application dossier should be consistent.

The time horizon for the analysis is 25 years including the construction period (30 months), as recommended in the EC guidelines (Guide to Cost Benefit Analysis of Investment project, July 2008, page 35). According to the CBA report – page XVII – the construction period is 2012-2014, which is not consistent with the information included in the application form (2013- 2015); therefore the CBA should be updated.

As further illustrated in the following sections, the incremental approach is applied correctly and the *do nothing* scenario is defined properly according to the methodology suggested by the EC guidelines.

4.1 Financial analysis

It is worth highlighting the following elements of the financial analysis included in the application form and in its Annex II:

- The financial discount rate is assumed to be 5% net of inflation;
- The residual value of the investment is equal to the 37% of the initial investment, which seems reasonable also considering that airport buildings have an expected asset life longer than 30 years and the existing terminal was built in 1996;
- The financial analysis was developed based on an incremental approach: after a detailed analysis of airport charges and revenue for the period 2006-2010, the future financial revenue of the airport was forecasted up to 2036 for both the *do nothing* and *project* scenarios, based on the respective traffic forecasts. The income from passengers (airport modernization and development fee), aircraft carriers fee, leasing spaces (according to the applied practices of HCAA) and various other sources (fees, fines, various services, etc.) were calculated. Also an empirical distinction of fixed and variable costs was carried out and the future annual costs of the airport were estimated for the *do nothing* and *project* scenarios including staff costs, overheads, contractors' cost and equipment maintenance. All these estimates were combined in the formulation of the financial flows (in-flows and out-flows) at constant 2011 prices.

The following project cash flows have been included in the financial analysis:

- Cash out-flows: investment costs (studies, construction costs and supervision) and operating costs (adding the cost of replacing fixed assets for the whole analysis period);
- Cash in-flows: residual value of the assets and the incremental revenue.

Based on these flows, the indicators *Discounted Investment* Cost – *DIC* – and *Discounted Net Revenue* – *DNR* – and the funding gap were calculated. Thereafter, taking into account the maximum rate of Community contribution for the 2007-2013 ERDF Regional Operational Programme, the maximum EU financial assistance was calculated.

Based on the financial flows, the financial performance indicators of the total investment – *FRR(C)* and *FNPV(C)* – were estimated. The corresponding state aid indicators were also calculated (the maximum EU financial assistance was abstracted from *DIC*).

4.1.1 Cash out-flows

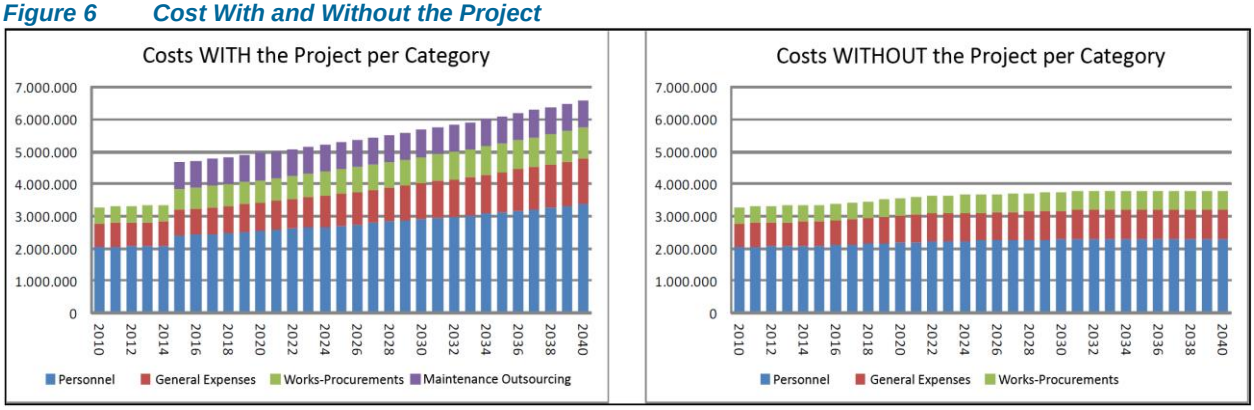
Total cost of the investment in the financial analysis is equal to € 93.8 million in 2011 constant prices. We notice that prices are net of VAT, which is a common practice in the preparation of EU funding applications submitted by applicants recovering VAT. According to the application CAA does not transfer VAT to the State; the inclusion of VAT in the financial cash out-flows would impact on the calculation of the Funding Gap rate (and therefore on the EU co-financing rate) by increasing its value.

As mentioned above, the eligible cost described in the CBA (€ 110.1 million) is not consistent with Table H.1 of the Application Form (€ 109.42 million); although this does not impact on the results of the financial and socio-economic analysis, the application dossier should have been presented consistent in the information included.

The future operational costs of the State Airport of Chania - staff costs, overheads and labour costs, procurements - are divided into fixed and variable costs. In the *do nothing* scenario the fixed cost is assumed to remain constant at the 2010 level throughout the period of analysis whereas in the project scenario a "one-off" increase at 2015 is assumed (in concomitance with is the start of operations. This cost remains constant over the subsequent period. The variable costs are assumed to vary according to the demand forecasts in both scenarios (with and without the project). Especially in the project scenario another category of maintenance costs is added (at the level of 1% of construction-equipment costs beginning in 2015), given the increased needs (including specialized maintenance equipment), especially in the new terminal and the new control tower.

The expected evolution of the costs in both scenarios is presented in Figure 6.

Figure 6 Cost With and Without the Project



Source: CBA Study (page XX)

It should be noted that the CBA assumes that the construction will end in 2014, whereas according to the application form the construction period ends in June 2015. Therefore the above-mentioned increases of the costs are expected to occur in 2016.

The CBA analysis – pages 163 to 167 – includes the relevant estimates of the flows at constant 2011 prices using the incremental approach. Based on the available documentation, we consider that these estimates are reasonable.

The present value at 2011 of the estimated incremental costs for the period 2015 to 2036 (also calculated at discount rate of 5%) amount to € 18.5 million, comprising of 29% staff costs, 8% overheads, 12% works-procurement and 52% incremental cost of new facilities and equipment maintenance.

4.1.2 Cash in-flows

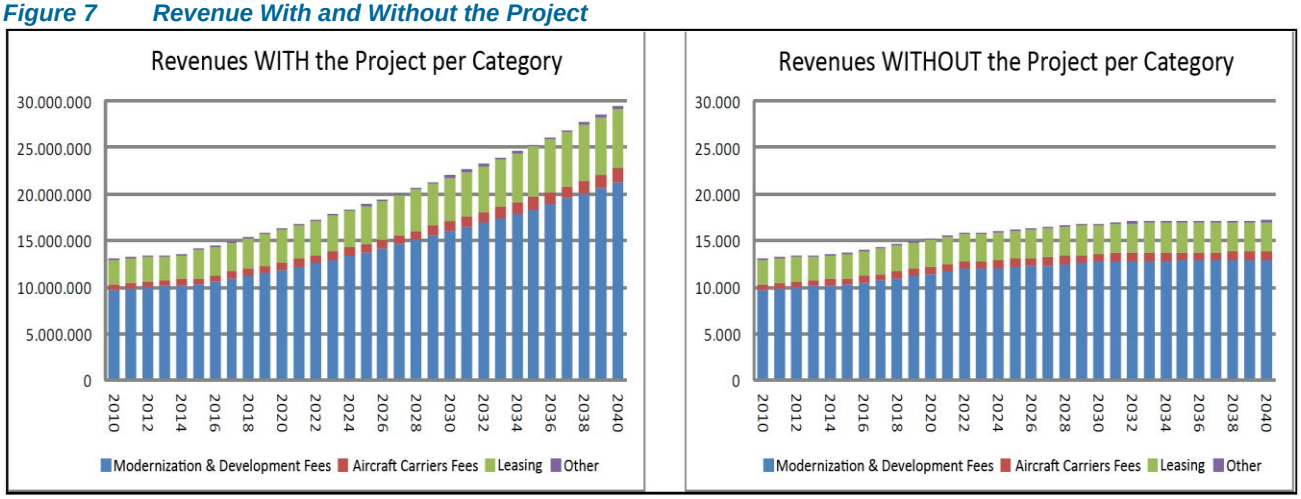
The cash in-flows included in the analysis are the incremental revenue generated by the airport activities and the residual value.

Future financial revenue of the State Airport of Chania will be generated from the same sources as today. Future revenue from airport modernization and development are calculated considering the existing unit charges (€ 12 per passenger departing from airports in the EU, the EEA and Switzerland and € 22 per passenger from other destinations) and determined based on the estimated future demand, *with and without* the project. The future evolution of revenue from aircraft carriers depends on the maximum admissible take-off weight of the aircraft - which is different for domestic and international flights - and, the number of flights expected to depart from State Airport of Chania. The future revenue from leasing airport spaces are correctly estimated based on existing leasing practices, considering the new facilities to be leased and the construction costs of these facilities (including the presumed rent market values). The analysis assumes additional revenue from various other sources at the level of 1% of the total revenue in present values.

Revenues for each of the above categories were calculated for both scenarios and the incremental revenues were then estimated.

The present value (at 2011constant prices with a discount rate of 5%) of incremental revenue for the period 2015-2036 amounts to € 31.9 million encompassing the 59% airport modernization and development revenue, 4% aircraft carriers, 36% leasing and 1% other revenue. The expected evolution of revenue in both scenarios is presented at Figure 7.

Figure 7 Revenue With and Without the Project



Source: CBA Study (page XIX)

4.1.3 Funding Gap and Financial Indicators

Based on the assessment of the cash flows included in the financial analysis, the calculation of the funding gap described at page 29 of the application form is correct.

The financial performance indicators are calculated based on the total investment cost, without taking into account the EU contribution, according to the EU guidelines. The relevant calculations are presented at Table 10.3 of the CBA – page 165 –, at constant prices 2011, while the financial performance indicators are summarized in Figure 8 overleaf.

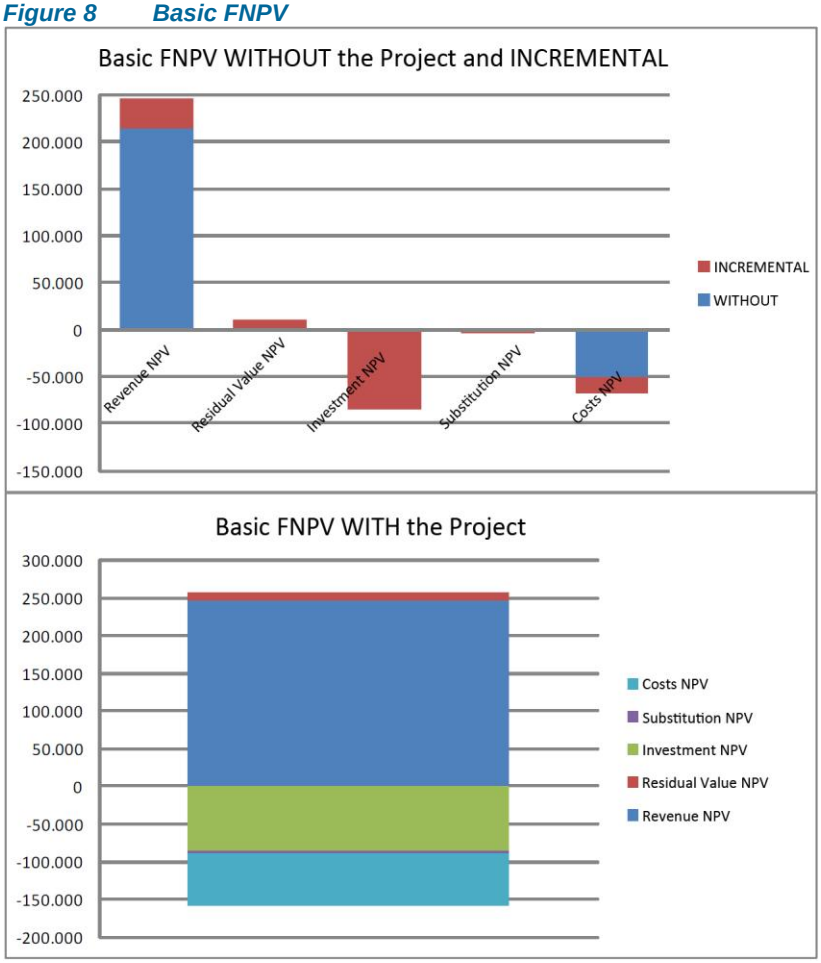
The results of the financial analysis are as follows:

- FRR(C): -1.50%;
- FNPV(C) using a discount rate of 5%: € -66 million.

These indicators are low – thus confirming that the project needs EU contribution.

After calculating the EU contribution, the financial return on equity is positive (*FRR(E)* = 2.39%) but still remains low, loosing attractiveness for private investors particularly during the current economic crisis and uncertainty/risk in Greece.

Figure 8 Basic FNPV



Source: CBA Study (page 164)

The analysis of the financial sustainability of the project has been developed and presented at Chapter 10.4 of the CBA. The calculations are presented and refer to the entire project, including works funded by national and EU resources. The general remark is that based on planned capital flows, the project is indeed viable. The cumulative net cash in-flows are positive in the long-term and the cumulative non-discounted net cash in-flow during the entire period of analysis is strongly positive (€ 333.6 million, with a net present value in 2011 equal to € 174.4 million, calculated at a discount rate of 5%).

4.1.4 Public Contribution Viability

In the application form the European Contribution is indicated to be € 71.3 million, which seems correctly estimated (See Table H.2.1). The national funds corresponding to €12.6 million and CAA own resources € 26.2 million may not to be updated as the sum of the total financial resources equals to €110.1 million, in line with the CBA report, but not with the updated application form (See Table H.2.2, page 58 of the application form). Furthermore these figures are also different from the ones included in the Commission State Aid notification – No. C (2012) 5071 final/ 25-07-2012, SA 34586 (2012/N) – which indicates that the EU contribution is € 66.1 million, and the national funds are € 11.6 million. Again we assume the application includes more updated values, although the tables presented in Section H are also showing incongruences. The application form should be updated, clarifying on any relevant changes with respect to previous calculations and other official sources.

EU financial assistance will accelerate the implementation of the project and be essential since the financial analysis shows that the project is not self-sufficient. As shown in §4.1.3, the project could not be implemented without EU contribution also due to the critical shortage of national public funding and the difficulties for Greece to access the financial markets.

According to the application form – Table H.1 – VAT is included correctly as an eligible cost, which is acceptable since the beneficiary does not transfer VAT (Art.3 Reg. 1084/2006); VAT, as already pointed out it was not included in cash out-flows prices (See Section 4.1.1 above).

As stated in §4.1.1, the CBA report wrongly assumes that the eligible cost is € 110.1 million. This results in the incorrect calculation of the EU grant contribution, which however, is calculated properly in the application form – Table H.2.1. at page 57.

B.4.1. Recommendations and suggestions

The information included in the application dossier documentation is not consistent, which hampers the quality of the financial analysis and does not facilitate its assessment. In particular we understand that the application form is updated but not the CBA report. Incongruences are also and in any case present in the application form (see Tables H.1., H.2.1 and H.2.2). The application form should be updated showing consistency among the presented values. By undertaking the revision of the application form the CBA report and analysis could also be updated reflecting the updated project calendar included in the application form.

4.2 Socio-economic analysis

The CBA analysis was developed based on an incremental approach, evaluating the project benefits and costs due to the project implementation compared to the *do-nothing* scenario. The socio-economic analysis methodology is overall consistent with the methodology proposed in the 2008 DG REGIO CBA guidelines. The social discount rate is 5%, which is in line with the benchmark range suggested by the EC (3.5% - 5.5%).

The socio-economic analysis includes both costs and benefits. The internal costs are based on investment and operating costs as included in the financial analysis, but converted from market to accounting prices based on specific conversion factors. Environmental externalities are not included in the project economic costs.

Starting point of the economic analysis were the financial results identified in §4.1 above. Then financial conversions were performed and the investment costs and the maintenance and operational costs of the project were determined before taxes. In this context, the socio-economic taxes inputs were identified.

The shadow wage of labour costs was calculated (in the construction and maintenance-operation of the project) in accordance with the relevant algorithm specified in the DG Working Document n°. 4. Considering the unemployment rate in the region of Crete, in June 2011, and the rates of security and taxes, the shadow wage was calculated at 42.86% of the corresponding financial wage. Therefore the socioeconomic labour costs surplus was identified, and (by abstracting the taxes) the socioeconomic costs of the project implementation and maintenance-operation were calculated.

The analysis includes the *converted* financial cash out-flows, the socio-economic incremental revenues, the added value from the generated traffic of foreign tourists, the road traffic operation savings (vehicles), the travel time savings (road traffic), the road traffic accident savings, the environmental savings (from road traffic) and the residual value of assets. Table 7 below illustrates the relative percentages of each benefit.

Table 7 Economic value of identified benefits

Benefits	Unit Value (€)	Total Value		% of total benefits	
		Residual (€ million)	ENPV	Residual	ENPV
Socioeconomic Cost Inputs of the financial analysis		34,732	26,162	7.6%	14%
Socioeconomic Incremental Revenue		7,777	3,007	1.7%	1.6%
Added Value from the Generated Traffic of Foreign Tourists	640	317,109	123,169	69.4%	65.8%
Road Traffic operation Savings (vehicles)	0.73	12,335	4,841	2.7%	2.6%
Travel time savings (road traffic)	216.69	28,647	11,244	6.3%	6
Road Traffic Accident Savings	1.18	19,947	7,893	4.4%	4.2%
Environmental savings (from road traffic)	0.10	1,620	636	0.4%	0.3%
Residual Value of Assets		35,072	10,357	7.7%	5.5%
Total In-flows		**457,241**	**187,247**	**100%**	**100%**

Source: Application Form (page 34)

The main socio- economic impacts of the project consist of the following:

- A wider economic benefit calculated as the incremental added value of the revenue in Chania and in Greece from the tourist expenditure that constitute the generated traffic - namely tourists wishing to arrive in the State Airport of Chania directly from their countries of origin, who if the project is not implemented due to capacity constraints of the terminal, would choose another destination country;
- Travel time savings (road traffic) between the airport of Heraklion and the area of Chania for the tourists, who, without the project, would choose to arrive in Heraklion airport and then travel by road to Chania.

These estimates were based on an appropriate classification of the tourist market by different segments, identified according to the existing arrivals and departures data of the State Airport of Chania, the domestic and foreign tourist arrivals forecast in the region, the expected economic developments in different areas with regard to the emergence of new economic powers in populous countries of the Far East and America that will create outbound tourism, the objective of maintaining the share of the country in the tourism industry and the evaluation of the comparative advantages with regard to existing and possible future dynamics.

The generated tourist expenditure in the region was also evaluated based on data from the Association of Greek Tourist Enterprises (*ΣΕΤΕ*) on the expenditure per tourist arrival in Greece during 2010.

We assume the incremental revenue for Chania Region (and more widely Greece) is reasonably considered as a benefit generated by the major project subject of this appraisal but this should be a more marginal one in comparison with other more important benefits associated with the increased capacity of the Chania airport (from level of service D to C in peak hours) which were actually not considered.

As an illustrative example, the *FAA Airport benefit-cost analysis guidance* lists the following expected benefits due to the airport capacity increase:

- Environmental Benefits associated with Capacity Projects such as noise benefits and air emission;
- Valuation of Delay Reductions:
  - Valuation of Aircraft Delay Reductions;
  - Valuation of Passengers Delay Reductions;
  - Valuation of Air Cargo Delay Reductions;
  - Valuation of Meeter/Greeter Delay Reductions.
- Safety Benefits of Capacity Projects;
- Airport Operating and Maintenance Benefits.

On the basis of the above list and we would for instance suggest including the valuation of airport delay reduction and the transport service' provider costs savings which were not considered, instead of giving such relevance to the previous benefit (in the submitted application revenue form tourists arrivals is the first benefit totalling about 66% of the whole benefits).

Again, accordingly to the *FAA* Guide, benefits generated by Airport Terminal Building (ATB) capacity projects will improve passenger benefits due to the reduction of the ATB congestion, shortened passengers paths, and faster luggage's unloading. Also, these time savings may induce some passengers to arrive at the ATB in time with the flight schedule. ATB delay reduction benefits may extend to aircraft operations thanks to the accessibility to more gates and faster connection flights. Other benefits of these projects are related to air cargo handling, lower ATB operating and maintenance costs, and improved passenger comfort and convenience.

The following Sections, from 4.2.1 to 4.2.5, comment on the adopted benefits into more detail.

4.2.1 User benefits estimation

The travel time savings (road traffic) between Heraklion Airport and Chania was correctly estimated based on the relative distance, travel time and data from Greek car companies, the HEATCO and IMPACT EU programs, the Egnatia Observatory and the Greek Statistical Company.

The unit time value is expressed in € per bus drive hour, given the coverage hours of the average distance from Heraklion airport to Chania region and the average occupancy (30 passengers per route). The value of a traveling passenger hour is calculated based on the HEATCO (Harmonised European Approaches for Transport Coaching) data for Greece in 2002 prices, adjusted to 2011 prices by the consumer price index of the Greek Statistical Company;

As mentioned above, no users' benefits are taken into account in the analysis with regard to the passengers using the airport facilities both in the *do nothing* and *do something* scenarios, which is not correct given that this demand segment will experience some benefit in terms of improved services and travel time savings provided by the more modern terminal layout and facilities. In addition to the passengers, other relevant beneficiaries are simply excluded from the analysis, such as the airlines and the aircraft operators.

4.2.2 Other direct social benefits

The economic analysis correctly considers the other following direct benefits:

- Unit road traffic operation savings (vehicles) which is expressed in € per vehicle- kilometre. It is calculated based on research of vehicles, professional coaches' companies etc.;
- Unit Road Traffic Accident Savings which is estimated based on HEATCO accident data for deaths, heavy and light injuries and damages costs in Greece. The frequency of fatal accidents on regional/national roads (not highways) is calculated using the Egnatia Observatory data for the period 2000-2009 (TRA08 – Road Safety, May 2010). The incidence of other types of accidents is calculated using the 2009 data of the Greek Statistical Company;
- Unit environmental savings (from road traffic) which is calculated in € per vehicle - kilometer, using IMPACT-HEATCO data for Greece in 2000 prices, adjusted to 2011 prices by the consumer price index of the Greek Statistical Company;

The methodology is acceptable, except the fact that the incremental revenues should not be included accordingly to the EU guidelines because they are pure financial transfer of money from users to the airport company.

4.2.3 Safety benefit

The safety benefit included in the analysis is estimated based on the road traffic accidents savings. The CBA Report analyses and calculates – Chapter 11.3, pages 181 to 187 – the safety benefit based on the assumption that the bus/coach traffic accidents will be reduced after the implementation of the project.

As stated in §4.2.1 above, the frequency of fatal accidents is based on data from the Egnatia Observatory. In the same report, the indicator of "dead people" every 1,000 km of highway is 55, which is similar to the European indicator (49.6 in EU-16) and much less than the Greek average (149.6 in year 2005). According to the European Road Safety Observatory, in 2008, 2.9 deaths/ million inhabitants occurred in Greece, involving a bus or a coach, compared to 138 deaths/million inhabitants involving all types of vehicles.

As already mentioned above, the CBA report omits to include other direct or indirect of safety benefits, such as aircraft approach to the terminal, gates increase, etc.

4.2.4 Regional development benefit

The airport is expected to generate benefits in terms of the development of the regional economy by increasing the number of tourists visiting the region.

According to the Application Form – page 38 – the project will have a positive impact on the development of Crete, which currently accounts for 5.4% of the population and the country's GDP, 15% of arrivals and 24% of overnight tourists. These percentages are assumed to increase for foreign tourists to 22% and 31% respectively, suggesting not only that tourism is the dominant activity in the region, but also that tourism in the region is important for the development of the whole country under the current crisis. In addition, upgrading the State Airport of Chania will help to improve the overall transport system of Crete, complementing the Heraklion airport and the ports of Suda and Heraklion.

The unitary expenditure of foreign tourists is (according to the Association of Greek Tourist Enterprises) € 640 per a foreign tourist arrival, considering that the generated traffic will increase by 1% per year at constant prices. The added value created by generated traffic is considered a benefit to the national economy. The tourism multiplier in Greece is 2.184, thus it is reasonable assuming that the expenditure of the foreign tourists could generate benefits for the national

economy, including its effects to industries such as construction, transport, wholesale and retail trade, agriculture etc.;

Also, these wider economic benefits should include only marginal net social benefit excluding the opportunity cost associated with those benefits. Therefore, the amount of social benefit does not correspond to the total amount of revenue. A correct estimation of the benefit could be limited to the increase in taxes for social welfare.

4.2.5 Environmental externalities

The project is expected to produce negative environmental externalities due to increased electricity consumption by the airport facilities, additional CO_2 emissions due to the increased number of flights and increased CO_2 emission for the incremental demand accessing the airport by road. These types of environmental externalities have not been assessed. In addition, the negative environmental impacts due to incremental air and road traffic should include all externalities (noise, emissions other than CO_2, road and air safety).

Table 8 Unitary transport external costs In Europe

AVERAGE COSTS IN 2000 BY COST CATEGORY & TRANSPORT MODE

	Average Cost Passenger							Average Cost Freight						
	Road				Rail	Avia-tion	Over-all	Road			Rail	Avia-tion	Water-borne	Over-all
	Car	Bus	MC	Pass. total				LDV	HDV	Total				
	[Euro / 1000 pkm]							[Euro / 1000 tkm]						
Accidents	30.9	2.4	188.6	32.4	0.8	0.4	22.3	35.0	4.8	7.6	0.0	0.0	0.0	6.5
Noise [1]	5.2	1.3	16.0	5.1	3.9	1.8	4.2	32.4	4.9	7.4	3.2	8.9	0.0	7.1
Air Pollution	12.7	20.7	3.8	13.2	6.9	2.4	10.0	86.9	38.3	42.8	8.3	15.6	14.1	38.5
Climate Change High	17.6	8.3	11.7	16.5	6.2	46.2	23.7	57.4	12.8	16.9	3.2	235.7	4.3	16.9
Climate Change Low [2]	*(2.5)*	*(1.2)*	*(1.7)*	*(2.4)*	*(0.9)*	*(6.6)*	*(3.4)*	*(8.2)*	*(1.8)*	*(2.4)*	*(0.5)*	*(33.7)*	*(0.6)*	*(2.4)*
Nature & Landscape	2.9	0.7	2.1	2.6	0.6	0.8	2.0	10.9	2.0	2.9	0.3	3.8	0.8	2.6
Up-/Down-stream [3]	5.2	3.9	3.0	5.0	3.4	1.0	3.9	22.4	7.4	8.8	2.4	7.4	3.3	8.0
Urban Effects	1.6	0.4	1.1	1.5	1.3	0.0	1.1	5.2	1.1	1.5	0.5	0.0	0.0	1.3
Total EU 17 [4]	76.0	37.7	226.3	76.4	22.9	52.5	67.2	250.2	71.2	87.8	17.9	271.3	22.5	80.9

Table 21 Average external costs of transport in the EU17 countries
Remarks:
1) The modal differences in noise costs are directly related to the national noise exposure databases used and thus might be subject to different ways of noise exposure measurement.
2) Average climate change costs for the low scenario (for information only, values not used to calculate total costs))
3) Climate change costs of up- and downstream processes are calculated with the shadow value of the 'Climate Change High Scenario'
4) Total average costs calculated with the climate change high scenario.
5) Noise costs for freight trains might be under-estimated as the simplified traffic allocation procedure applied did allocate most freight trains to daytime traffic.

Source: INFRAS/IWW, 2004

Table 8 above includes the unitary costs estimated by the INFRAS/IWW[6] average costs in Europe, showing that the Climate Change due to the CO_2 emissions is not the only effect which is worth including in the analysis, given that overall it counts only for 34% of transport externalities.

[6] *External costs of transport, Update Study, October 2005, INFRAS/IWW.*

The CBA report only analyses the environmental savings (from road traffic for the bus/coach), using IMPACT-HEATCO data for Greece in 2000 prices, adjusted to 2011 prices, as already commented in §4.2.1 above.

4.2.6 Conversion of market to accounting prices

Financial cash flows were converted from market to accounting prices, in order to reflect the social opportunity cost of inputs and outputs. The conversion factors are in line with those included in 2008 EU Guidelines. It should be noted that outputs include the financial cost of the project and the financial incremental costs (including the cost for the replacement of assets). The inputs also include the related tax and socio-economic labour costs inflows.

4.2.7 Effects on employment and other non-monetized effects

The CBA includes the evaluation of the impact of the project on the employment, in terms of staff directly employed in the design, construction and operational phase and in terms of additional employment generated by the project (pages 203-208 of the CBA report).

The analysis is clearly presented; the assumptions adopted were based on the CAA human resources practices, while data were also derived from the Regional Authority; the results seem generally sensible.

In particular, the analysis clearly shows that the implementation of the investment creates 1,014 new full-time positions of 16 years average duration. Specifically:

- 11 positions of 10 years duration during the design;
- 314 positions of 3 years duration during the construction and supervision of the project;
- 17 direct positions in CAA during the 22 years of operation;
- 26 positions to other operators at the airport, lasting 22 years;
- 899 positions in tourism and services, lasting 21 years.

The employment directly generated by the project is correctly considered in the CBA only in the conversion of labour costs from market to shadow wage.

4.2.8 Economic performance indicators

The results of the economic analysis are included in Section E.2.3 of the application form and are positive (B/C ratio is equal to 1.73, ERR is equal to 9.81%, while ENPV is EUR 78,905,598).

We have some concerns on these indicators because the main wider economic benefit (corresponding to 66% of the total benefits) seems overestimated based on the above-mentioned amendments (§ 4.2.5). Moreover, the socio-economic incremental revenues should be not included in the analysis because they are pure financial transfer of money from users to the airport company.

At the same time we are of the opinion that other benefits – actually not considered in the CBA report – should have been considered in the analysis (in particular the *valuation of airport delay reductions* benefits). The CBA should be revised in order to confirm the generated added value for society.

4.2.9 Risk assessment and sensitivity analysis

The methodology adopted for the risk and sensitivity assessment is in line with the Community guidelines (*Guide to Cost Benefit Analysis of Investment Projects, July 2008 European Union*) and the guidelines of the Greek Ministry of Economy (ΥΠΟΙΚ).

The critical variables are determined, namely the cost of investment impact on FNPV and the generated expenditure of foreign tourists impact on ENPV. However, the way of calculating the construction cost, the documentation (and estimates of reliable agencies) on tourist forecasts, in addition with the lack of reliable surveys and studies to identify potential price differentiation, suggest that the odds of price differentiation of the two critical variables, from higher to decreased values than those of the basic scenario, are equal.

The sensitivity analysis was extended to a wider range of variations of all parameters affecting the performance indicators - project costs, incremental revenues and costs, generated tourist expenditures and road transport cost savings fluctuations of ± 30%, as well as discount rate change by one percentage point.

The resultant maximum, minimum and intermediate indicators of financial performance are summarized as follows:

Table 9 Financial Indicators

	% EE	FRR/C	FNPV/C (000 €)	FRR/K	FNPV/K (000 €)
max min median	74.62% 55.68% 65.15%	-0.18% - 3.09% -1.50%	-44,954,393 - 87,051,473 -66,002,933	3.14% 1.29% 2.39%	-12,352,452 -19,338,265 -15,935,156

Source: CBA Study (page XXV)

The corresponding variation of socioeconomic indicators is as follows:

Table 10 Socio-economic Indicators

	ERR	ENPV (000 €)	B / C
max min median	12.33% 7.90% 9.81%	115,856,492 41,954,704 78,828,941	2.20 1.39 1.73

Source: CBA Study (page XXV)

In no case, the ERR indicator falls below 5%, the ENPV below 0 and the ratio B/C below 1.

Even in the pessimistic scenario, if both the cost of implementation (construction) and maintenance - operation costs resulted 30% greater than those of the basic scenario, while socioeconomic revenue in-flows, generated tourist expenditure and road transport cost savings resulted 30% less than those of the basic scenario, the ERR indicator will remain higher than 5% (equal to 5.66%), the ENPV greater than zero (EUR10.8 million) and the ratio B/C greater than one (1.08).

The sensitivity tests and risk analysis were undertaken for the main benefits of the project and the choice of parameters that were examined is considered reasonable.

B.4.2. Recommendations and suggestions

The socio-economic results are not reliable due to over-estimated *regional development benefit* and to the inclusion of socio-economic revenues which is not acceptable because they are pure financial transfer of money from users to the airport company.

The following aspects should have also been considered, in order to improve the quality of the application:

- Based on the above considerations (§ 4.2), and as illustrated in the *FAA Airport Benefit-Cost Analysis Guidance* (FAA 1999), the analysis should identify many of the most relevant benefits related to the increased project capacity (e.g. *valuation of airport delay reduction*);
- The CBA Report omits to include any analysis of the impacts due to environmental externalities. The analysis could benefit from considering all types of externalities, such as noise, emissions, road and air safety, etc.

We suggest revising the CBA and its results takings into consideration the above amendments in order to confirm the generated added value for society.

5 KEY FINDINGS AND CONCLUDING REMARKS

5.1 Key questions for project appraisal

(a) Is the application dossier complete?

The project dossier is complete and complies with the EC Regulations. The information provided is consistent with Art. 40 Reg. 1083/2006, Annex XXI and Commission Regulation 1828/2006. Despite this the analysis of the application dossier reveals inconsistencies between the CBA report and the application form. We understand the application form is more updated than the CBA report. These incongruences do not facilitate the appraisal of the investment; the application dossier should present consistent information. Furthermore the application form itself includes incongruent information by comparing the Tables at Section H, which should be corrected.

(b) Does the project meet the expected strategic and functional objectives?

The construction of the new terminal building at the State Airport of Chania is reasonably expected to contribute to the strategic and functional objectives as described in the application form. The expansion of the existing infrastructure is considered appropriate to solve the existing and future capacity constrain at the Chania airport. The investment is also aimed at improving the safe operation of the airport and adequate storage and treatment of wastes, thus contributing to environmental impact mitigation and protection [See § 2.3].

(c) Is the project consistent with the EU policies?

The project is consistent with the most relevant community policies also with the ones concerning environmental protection. Regarding State Aid competition, the Commission has already undertaken an analysis considering that the measure of financing the airport expansion is compatible with the internal market on the basis of Article 107 (3) (c) TFEU [See § 2.4].

The publicity measures are not described satisfactorily and their costs not specified, although these are deemed to be included in the construction costs [See Recommendations and suggestions box 2.4].

(d) Is the project technically sound?

The overall scope of the works, including the architectural details, has been described to a reasonable level of detail for the purpose of the application form. It comprises all necessary data and parameters describing the investment. The technical solutions described are in line with conventional international practice. In addition to this, detail is provided explaining the determination of the design hour passenger throughput and consequently the design rationale giving rise to the proposed areas to cater for that throughput. The investment is considered adequately dimensioned to operate the existing and future traffic [See § 3.1.2].

The proposed time-table is acceptable in principle and there should be low and limited risks regarding the completion of the construction works by end of year 2015. This will mostly depend on the timely and positive solution of the tendering procedure currently interrupted by a pending Decision of the State Council on the process. [See Recommendations and suggestions boxes B.3.1.4].

The information on the environmental assessment related processes, procedures and outcomes is deemed satisfactory. Section D.2.2. Διοικητική Πρόοδος, page 23 of the application form, states that building permits will be issued by the Civil Aviation Authority (CAA) after the appointment of the contractor. Given the projected duration of the project construction (thirty (30) months), the CAA Department of Environmental Protection will take all necessary actions to

ensure timely the new extended EIA after 2013. Provided the project layout will not change, compared to the one approved on the 23/03/2011, we do not see risks of delay in the implementation of the project or compliance with national and community environmental protection related legislation due to this [See § 3.1.3 and Recommendations and suggestions boxes B.3.1.4].

e) Are the project costs reasonable?

The application dossier shows some minimal inconsistencies between the total investment costs and the eligible costs presented respectively in the application form and CBA report. These inconsistences relate to the reconstruction of the existing staff parking area cost (EUR 217,378) and the construction of a tourist bus parking area cost (EUR 448,500) that will be financed by the Civil Aviation Authority (CAA); we understand the application form is more updated than the CBA report although this should be confirmed and the application dossier revised as appropriate [See Recommendations and suggestions box B.3.2].

The costs for environmental impact mitigation, preventive and compensation measures and the costs for publicity measures are probably included in the costs relating to construction works, however this should be clarified and confirmed by the Applicant and Beneficiary [See Recommendations and suggestions box B.2, and § 3.1.4].

(f) Are the results of the demand analysis acceptable?

The methodology and the results of the demand analysis are acceptable. The do-nothing and do-something scenarios have been clearly defined and assessed adopting a stochastic methodology that has the potential to show the dynamics of the whole system including but not limited to the airport of Heraklion. The analysis is clearly presented; despite the uncertainties associated to this type of analysis and to some of the assumptions adopted, the results are generally sensible. The developed models have been validated; the growth rates are plausible compared to previous historical and recent traffic trends. In addition, induced demand analysis, was properly assessed and quantified. [See § B.3.3].

(g) Are the results of the Financial Analysis acceptable?

The information included in the application dossier documentation is not consistent, which hampers the quality of the financial analysis and does not facilitate its assessment. In particular we understand that the application form is updated but not the CBA report. Incongruences are also and in any case present in the application form (see Tables H.1., H.2.1 and H.2.2). The application form should therefore be updated showing consistency among the presented values. While updating the application form, some amendments to the CBA report may be also considered [See Recommendations and suggestions box B.4.1].

(h) Is the value of EU contribution correctly estimated?

Despite some inconsistencies among the CBA report and application form regarding the values adopted in the calculation of the EU contribution, this parameter was correctly estimated in the application form [See Recommendations and suggestions box B.4.1].

(i) Are the foreseen socio-economic benefits likely to be attained?

The socio-economic results are not acceptable due to over-estimated *regional development benefit* and to the inclusion of socio-economic revenues which is not acceptable considering that these revenues are pure financial transfer of money from users to the airport company.

We suggest adding other relevant benefits omitted in the CBA report such as the *valuation of airport delay reductions* and environmental impacts (e.g. noise and air emission) in order to improve the quality of the documentation and making the results more reliable. [See Recommendations and suggestions box B.4.2].

(j) Are the results of the Cost Benefit Analysis acceptable?

The results of the CBA are positive but not reliable in consideration of the amendments described in the above Section 4. By adding the benefits related to the increased project capacity, we are of the opinion that the socio-economic analysis will still remain positive; we therefore suggest revising the CBA in order to confirm the generated added value for society [See Recommendations and suggestions box B.4.2].

5.2 Concluding remarks

The major project under appraisal is reasonably expected to generate added value to society by solving the existing and future capacity constrain at the Chania airport. The investment is also aimed at improving the safe operation of the airport and adequate storage and treatment of wastes, thus contributing to environmental impact mitigation and protection.

The project is sound regarding the proposed technical solutions and costing; we see however a limited but possible risks of delays in its implementation. These mostly depend on the timely and positive solution of the tendering procedure currently interrupted by a pending Decision of the State Council on the process. Possible delays may also be caused by the need for extension of the validity of the EIA related documentation.

Despite this overall positive assessment of the project, the quality of the application and CBA analysis should be in our opinion improved before approving the co-financing of the major project:

- There are some inconsistencies among the project dossier documentation and particularly between the application form and the CBA report. We assume that the information included in the application dossier is the most updated one, although this should be confirmed. Some incongruences are also present within the application form – Section H, which should be amended.
- In addition to this, the socioeconomic analysis should be revised reconsidering the benefits relating to the increase of the airport capacity, in order to provide more reliable evidences confirming that the project is worth co-financing.

KN-01-13-398-EN-N