



QUICK APPRAISAL REPORT

**RAMAL DE LIGAÇÃO FERROVIÁRIA AO PORTO DE
AVEIRO**

CCI 2011PT161PR002

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1 INTRODUCTION

1.1 Project appraisal fundamentals

This Quick Appraisal (QA) is prepared in accordance with the “QA Check List” for major transport investments 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 concluding remarks Chapter we summarize the main findings 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. This 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 *Programa Operacional Temático de Valorização do Território – POVT*, which is responsible for the implementation of the homonymous 2007-2013 CF and ERDF Operational Programme. The project subject of this QA is included in this programme under the priority Axis I – *Redes e Equipamentos Estruturantes Nacionais de Transportes e Mobilidade Sustentável*. The Beneficiary of the project is the Portuguese national rail infrastructure manager – *Rede Ferroviária Nacional – REFER, EPE*.

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 (Annex XXI);
- Cost Benefit Analysis;
- Environmental Impact Declaration;
- Project implementation and work construction GANTT chart;
- Natura 2000 declaration;
- Non-technical summary of the EIS;
- Legal basis for the establishment and operation of the Portuguese national rail infrastructure manager – *Rede Ferroviária Nacional – REFER, EPE*;
- Information on the selection of the project alternatives.

The project dossier is complete and complies with the EC Regulations. The information provided is consistent with Art. 40 of Reg.1080/2006, Annex XXI and Commission Regulation 1828/2006. The information and data included in the application form and in its annexes present however several inconsistencies regarding the time-schedule of project implementation, the project costs and the sources for the financing of the project, which undermines the reliability of the application.

2 PROJECT STRATEGY AND OBJECTIVES

2.1 Strategic objectives of the project

The *Ramal de Ligação Ferroviária ao Porto de Aveiro* major project contributes to the achievement of the priority objectives of the Axis I of the 2007-2013 CF and ERDF *Programa Operacional Temático de Valorização do Território – POVT – reforço da competitividade e da conectividade do território, à escala Nacional, Ibérica e Europeia, através do desenvolvimento de projectos estruturantes no domínio dos transportes*. Along with this, it also contributes to the realization of the following operational objectives:

- *Operacionalizar ligações em falta inseridas na Rede Transeuropeia de Transportes;*
- *Reforçar a posição de Portugal como plataforma de acesso à Europa, com destaque para a Península Ibérica, no conjunto das principais rotas marítimas e aéreas;*
- *Aumentar a atratividade territorial, nos diferentes contextos da sua inserção nacional, ibérica e europeia;*
- *Suprir as descontinuidades das redes de transporte no território continental e suprir as insuficiências da organização logística e do desenvolvimento da intermodalidade;*
- *Melhorar a interoperabilidade da rede ferroviária, em articulação com Espanha;*
- *Promover uma maior sustentabilidade económica e ambiental no uso das infraestruturas de transporte;*
- *Aumentar a mobilidade e a interoperabilidade dos sistemas de transportes nos principais centros urbanos, através do desenvolvimento dos sistemas ferroviários.*

The investment is coherent with the Convergence objectives of the CF and ERDF and with the overarching priorities and targets defined in the 2007-2013 Portuguese National Strategic Reference Framework – QREN.

As specified in the application form – page 4 – the investments subject of the major project under appraisal were included in the global project *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário ao Porto de Aveiro e Feixes Ferroviários*, which also represents the unit of analysis of the Environmental Impact Assessment documentation including the non-technical summary of the Environmental Impact Study enclosed to the application form.

The need to develop a rail link at the Port of Aveiro providing access to the main national and European rail network was originally formally included in the *Orientações Estratégicas para o Sector Ferroviário*, published by the Portuguese Government in 2006. In the same year the rail link was included in the national strategic logistic development plan – *Portugal Logístico* (See Figure 1 overleaf); according to this plan the rail link was to be constructed in between the marshalling yards located at the multimodal logistics platforms situated respectively at the *Terminal Norte* of the Port of Aveiro and at Cacia, adjacent to the Northern Line – *Linha do Norte* – these two areas both part of the *Plataforma Logística de Aveiro*.

It is worth specifying that according to the *Portugal Logístico* development plan, the rail link and the two yards, together with the road infrastructure to be built as part of the implementation of the multimodal platforms, were aimed at supporting the economic development of the country and territorial cohesion at both national and European levels, by establishing an integrated network of logistics platforms interconnected through the major road and rail national and international axis. On this basis, the project was also subsequently included in the *Orientações Estratégicas para o Sector Marítimo-Portuário*.

The *Plataforma Logistica de Aveiro* once completed, will be located on the E-80 corridor – together with the Logistics Platform at Guarda; this multimodal corridor will interconnect by rail (through Vilar Formoso) and road (A25) the Port of Aveiro and the Aveiro District to the Spanish Region of Castilla-Leon and Europe.

Figure 1 *Plataformas Logísticas – Portugal Logístico 2006*

Plataformas Logísticas	Área Total	Investimento (M €)	
	(ha)	Plataforma	Acessos
Plataformas urbanas nacionais			
Maia/Trofa	163,1	224	8
Pozosirão	220,0	290	17
Plataformas portuárias			
Leixões - Gaiões/Guifões	41,2	58	7
Leixões - Gonçalves	24,2	43	10
Aveiro	70,2	10	56*
Aveiro - Cacia	16,0	14	
Lisboa - Bobadela/Sobralinho	62,6	9	10
Sines - Pólo A	12,3	16	
Sines - Pólo B	73,6	49	
Plataformas transfronteiras			
Valença	47,5	66	5
Chaves	10,0	7	
Guarda	35,2	26	8
Elvas/Caia	37,5	52	7
Plataforma regional			
Tunes	30,1	43	3
Total	843,5	907	131

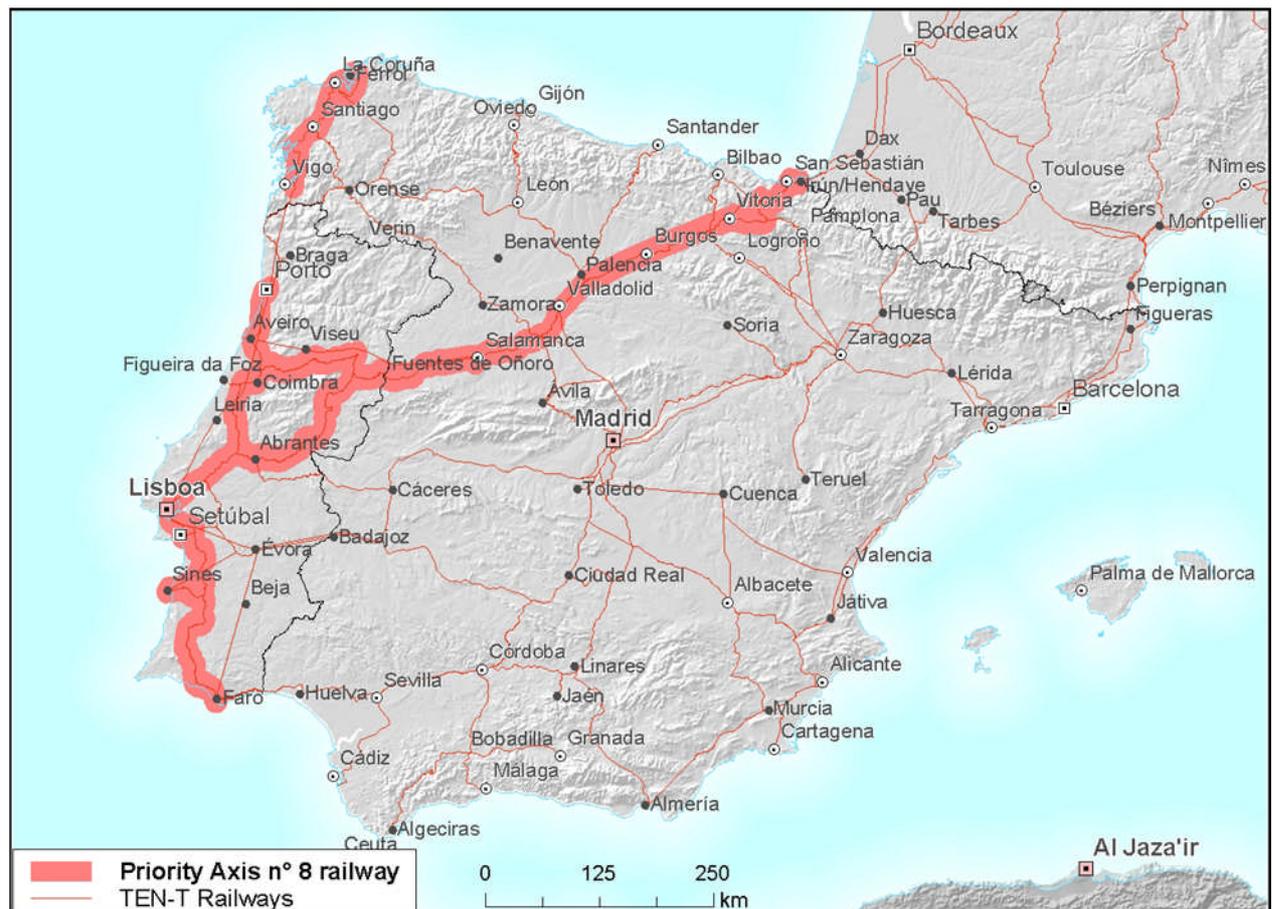
* Corresponde à ligação ferroviária do Porto de Aveiro à linha do Norte



Source: <http://www.imtt.pt/sites/IMTT/Portugues/PlataformasLogisticas/Paginas/PlataformasLogisticas.aspx>

Thanks to the *Plataforma Multimodal de Cacia* and the *Ramal de Ligação Ferroviária ao Porto de Aveiro*, the Port of Aveiro will be also directly interconnected to the *Linha do Norte* both North and South-bound; lying on the Priority Project 8 of the TEN-T network – *Multimodal axis Portugal/Spain-rest of Europe* (See Figure 2 overleaf), the Port of Aveiro will be also interconnected to the North of Portugal and Galizia as well as to the Port of Sines and from here again to Spain through the logistics platform of Elvas/Caia.

Figure 2 Plataformas Logísticas – Portugal Logístico 2006



Source: TEN-T Executive Agency

Source: http://tentea.ec.europa.eu/download/publications/progress_report_longer_version_25jan2011_final_web.pdf

The major project under appraisal is also included/mentioned in many additional plans, the most relevant ones listed below:

- *Plano Estratégico do Porto de Aveiro 2006;*
- *Plano Regional do Ordenamento do Território do Centro – 2008;*
- *Plano Estratégico do Conselho de Aveiro 2010;*
- *Plano Tecnológico;*
- *Plano de Desenvolvimento do Porto de Aveiro 2000-2014;*
- *Plano Estratégicos dos Transportes – Mobilidade Sustentável – 2011-2015.*

Figure 3 Plano de Investimentos no Porto de Aveiro 2000-2014 (From a recente presentation to the Portuguese Government- MOPTC)

PLANO DE INVESTIMENTOS NO PORTO DE AVEIRO



OBRAS CONCLUÍDAS

- **PLATAFORMA LOGÍSTICA PORTUÁRIA DE AVEIRO - PÓLO DE CACIA**
12,1 M€ / DEZ.2008
- **TERMINAL DE GRANÉIS SÓLIDOS**
32 M€ / DEZ.2007
- **PROJECTO AGRO-ALIMENTAR**
10 M€ (INVESTIMENTO PRIVADO) / JUL.2008
- **PARQUE DE TANCAGEM DE COMBUSTÍVEIS**
30 M€ (INVESTIMENTO PRIVADO) / MAI.2008
- **PARQUE DE ARMAZENAGEM E UNIDADE DE PRODUÇÃO DE BIOCOMBUSTÍVEIS**
27,7 M€ (INVESTIMENTO PRIVADO) DEZ.2007

OBRAS EM CURSO

- **3ª FASE DA VIA DE CINTURA PORTUÁRIA**
6,9 M€ / CONCLUSÃO SET.2009
- **LIGAÇÃO FERROVIÁRIA PORTUÁRIA À LINHA DO NORTE E LIGAÇÕES FERROVIÁRIAS INTERNAS (2ª E 3ª FASE)**
73 M€ / CONCLUSÃO DEZ.2009

OBRAS A LANÇAR

- **CONCURSO PÚBLICO PARA A EMPREITADA DE RECONFIGURAÇÃO DO ACESSO / BARRA PORTUÁRIA (PROLONGAMENTO DO MOLHE NORTE EM 200M)**
30 M€ / CONCLUSÃO DEZ.2011

Source: <http://www.povt.qren.pt/tempfiles/20111206162114moptc.pdf>

With specific reference to the last two mentioned plans, it is worth noting that the investments under appraisal are part of larger programme of investments planned at the Port of Aveiro, mostly co-financed by the European Commission through the CF and ERDF. These regards both the accessibility to the port by mean of supporting the development of intermodal transport and modal shift from road to rail (i.e. the investments under appraisal), the development of maritime related infrastructure (See Figure 2 above), as well as the promotion of combined transport and the start-up and consolidation of economic and business activities at the logistics park of Aveiro (ZALI — *Zona de Actividades Logísticas e Industriais*). To this last respect the *Plano Estratégicos dos Transportes – Mobilidade Sustentável – 2011-2015* actually mentions the following two strategic projects to be implemented by 2015¹:

- *Construção de Terminal Intermodal da Zona de Actividades Logísticas do Porto de Aveiro: Investimento em fase de estudo, promovido pela AP de Aveiro, SA, no montante total de 2 milhões de euros, financiado pelo FEDER. Construção de um terminal intermodal com uma área de 6,4 ha para a realização de operações de conexão dos fluxos de mercadorias do modo marítimo para o modo ferroviário;*
- *Infra-estruturação da Zona de Actividades Logísticas (ZALI) do Porto de Aveiro: Está a ser elaborado um estudo de investimento para dotar a restante área afecta à ZALI, 77.6 ha, das redes de serviços, como sendo a rede de água, de electricidade e de incêndios, e dos acessos rodoviários internos. O investimento será promovido pela AP de Aveiro, SA, no montante total de 8 milhões de euros, financiado pelo FEDER.*

2.2 Project description

Figure 4 shows the layout of the *Ramal de Ligação Ferroviária ao Porto de Aveiro*, which, as already said, is under the strategic stand point included in a wider number of investments aimed at developing the Port of Aveiro (See Figure 2 above); more specifically these investments were also included in the global project *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários*. Figure 5 and Figure 6 illustrate the planned and current layout of the *Plataforma Multimodal de Cacia* whose planned cost was € 14 million. Figure 7 and Figure 8 show the planned and current layout of the logistics platform at the *Terminal Norte* of the Port of Aveiro whose planned cost was € 56 million for the works related to the *Ramal Ferroviário do Porto de Aveiro* (including the multimodal platform and the yards) and € 10 million for the development of the logistic park.

Over the course of the past years the above mentioned global project in which the investments subject of this appraisal were included – *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários* – was gradually constructed; this was done implementing operational phases not always corresponding to self-sufficient functional units or in any case to self-sufficient units of analysis under the economic and financial stand point. From the application dossier we understand the investments under the global project are grouped under the two following main projects:

- *Plataforma Multimodal de Cacia* – located adjacent to the *Linea do Norte* in an area of slightly more than 140,000 m², the multimodal platform consists of 98,000 m² of which 63,000 m² dedicated to the development of a logistics park (this area granted in concession to the *Autoridade Portuária de Aveiro* in April 2009). The project also included the construction of a container loading area of 29,300 m² on a total paved surface of 43,000 m² and a yard of 8 wide Iberian gauge railway lines, 3 of which electrified (25 KV), for a total length of 6.470 km, allowing the passage of trains with up to 25 tons per axle, travelling at a maximum speed of 60 km/h. The investment also includes administrative buildings for 600 m², drainage works, water and electricity related utilities. The works only excluding signalling and telecommunication on the yard (these were indeed implemented as part of REFER

¹ http://www.portugal.gov.pt/media/152472/pet_mobilidade_sustentavel_rcm.pdf

contract 2870 – See Table 1 overleaf) were completed between 2007 and 2009 – at the cost of € 6,691,207.16².

- *Ramal de Ligação Ferroviária ao Porto de Aveiro* – consists of about 9 km of wide Iberian gauge non electrified railway line between the two yards at Cacia and at the *Terminal Norte* of the Port of Aveiro. The project also includes 5 lines built at the multimodal platform located at the *Terminal Norte* of the Port of Aveiro, for a total length of 6 km. All the lines allow the passage of trains with up to 25 tons per axle, travelling at a maximum speed of 60 km/h.

Based on the project description provided in the application form – pages 3 to 5 – its related annexes, as well as additional public available documentation, Table 1 below summarizes the main contracts and phases for the implementation of the global project *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários*, also including the works part of the major project under appraisal.

Table 1 Units under the functional and/or analysis stand point

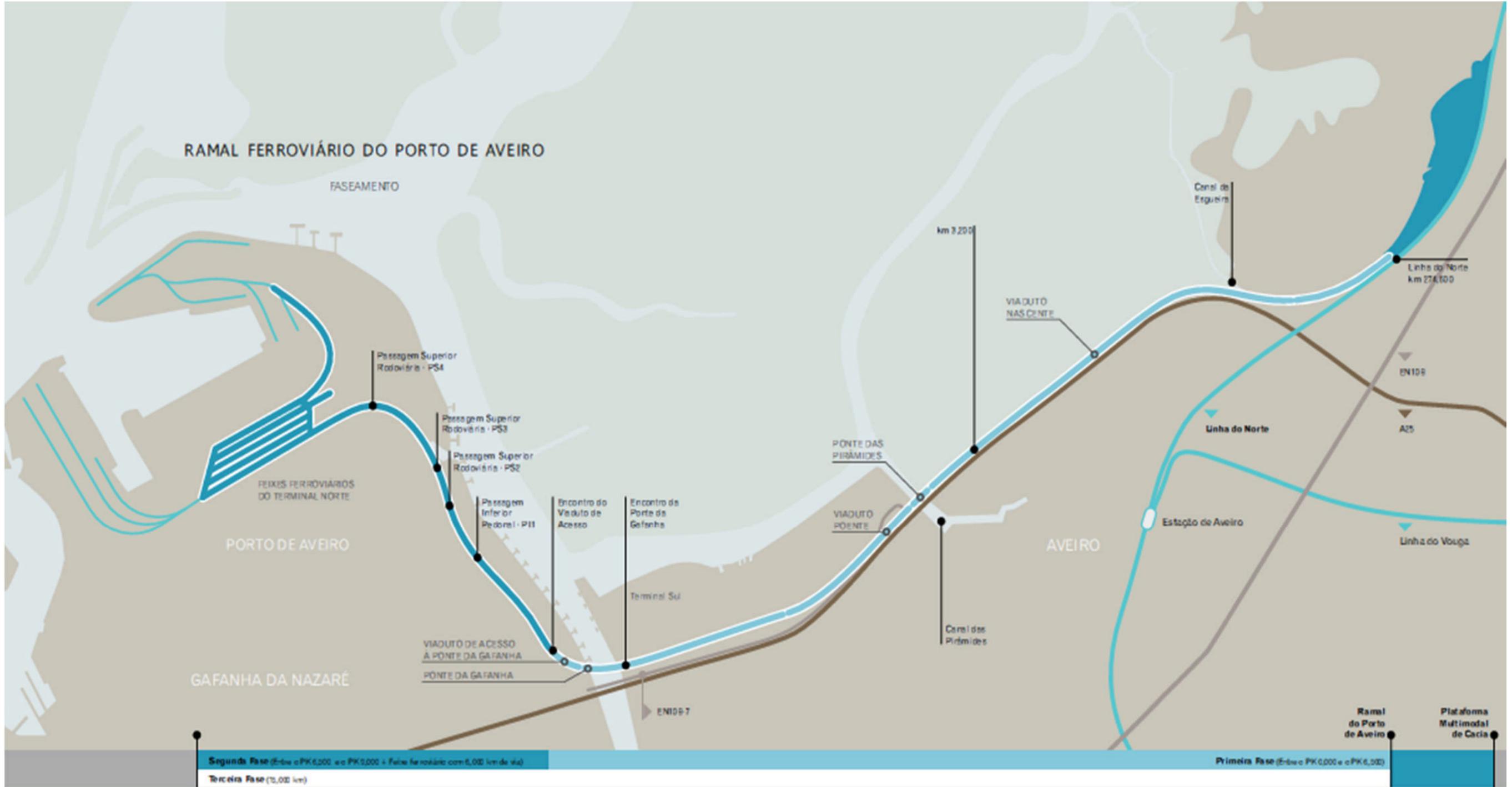
Operational Phases		Refer Contract References		Ramal de Ligação Ferroviária ao Porto de Aveiro	Plataforma Multimodal de Cacia	Request for Funding		Major Project Under Appraisal CCI2011P T161PRO 02
						Programa Operacional de Acessibilidade e Transportes - POAT 2000-2006	Programa Operacional Temático de Valorização do Território – POVT 2007-2013	
Plataforma Multimodal de Cacia		Main Contract	n.a.		X	X		
1st Phase	Ligação ferroviária de acesso ao porto de Aveiro Entre o km 0+000 e o Viaduto de Acesso à Ponte da Gafanha	Main Contract	2702	X		X	X	X
		1st addendum	10002176388	X		X	X	X
2nd Phase	Empreitada do " Ramal ferroviário de acesso ao Porto de Aveiro	Main Contract	2901	X		X	X	X
		1st addendum	5110000040	X		X	X	X
		2nd addendum	5110000221	X		X	X	X
		3rd addendum	5110000312	X		X	X	X
		Passagem Inferior Pedonal	501000098	X		X	X	X
3rd Phase	Superestrutura de Via	Main Contract	5490	X			X	X
4th Phase	Sinalização e telecomunicações do Terminal de Cacia e Ligação ao Porto de Aveiro	Main Contract	2870	X	X		X	X

Notes: although the main contracts relating to the implementation of the global project are included in the table, this table may be not completely exhaustive in terms of all investments undertaken to complete the infrastructure

In addition to the investments included in the table above, the investments undertaken by the *Autoridade Portuária de Aveiro* at the *Terminal Norte* and at the Solid and Liquid Bulks Terminals relating to the construction of rail lines interconnecting the terminals to the multimodal yard at the *Terminal Norte* are worth mentioning (See Figure 3 below).

² <http://ted.europa.eu/udl?uri=TED:NOTICE:43621-2007:TEXT:PT:HTML&tabId=1>

Figure 4 Ramal Ferroviário do Porto de Aveiro



Notes: The map shows the first three phases of implementation of the project. Source: <http://www.refer.pt/LinkClick.aspx?fileticket=gZJoc1EPCvQ%3D&tabid=191>

FIGURA 10 – LAYOUT INDICATIVO DA PLATAFORMA LOGÍSTICA DE AVEIRO (PÓLO DE CACIA)



FONTE: MINISTÉRIO DAS OBRAS PÚBLICAS, TRANSPORTES E COMUNICAÇÕES (2006)

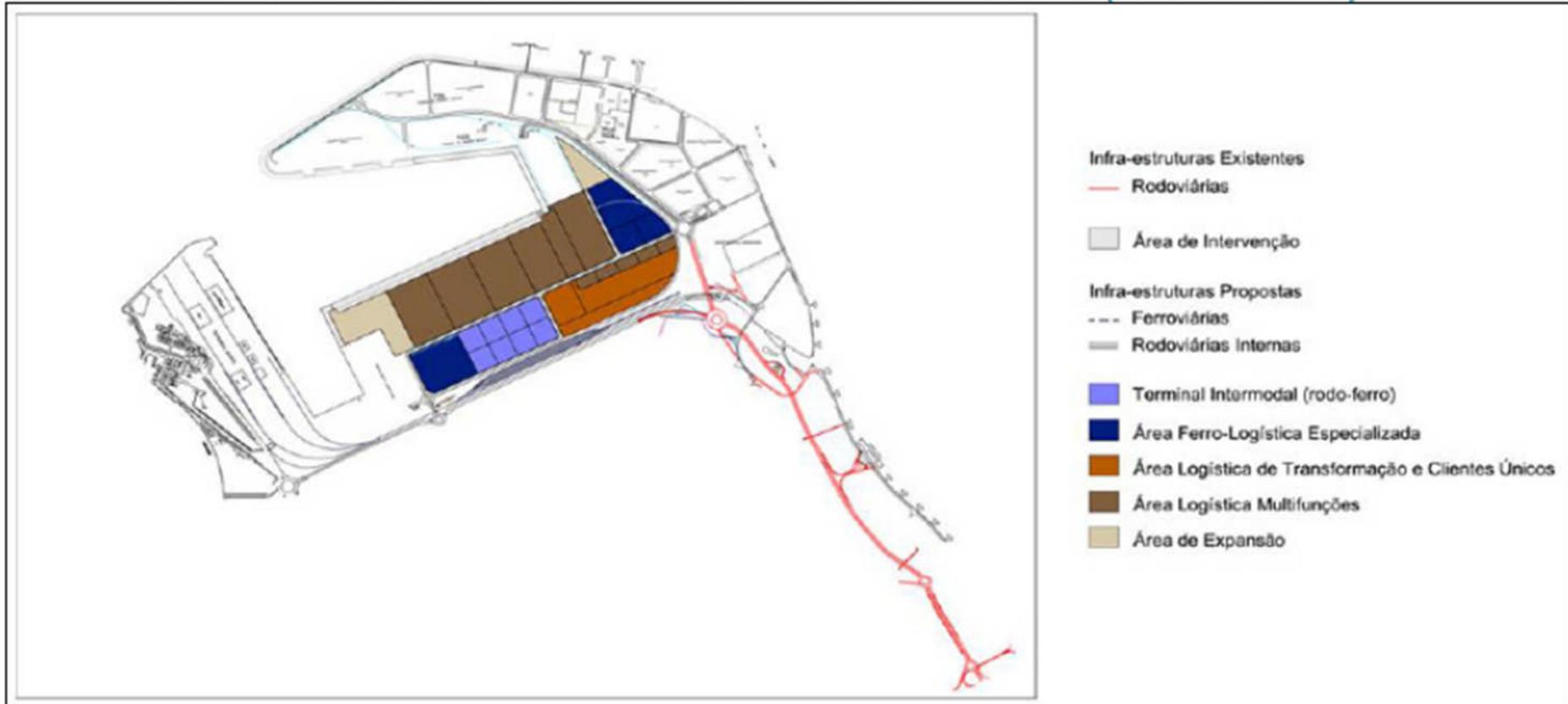
Figure 6 Logistics Platform and Yard at Cacia – August 2011



Source: Google Earth – Last available image dated 09-08-2011 and <http://cinovacao.blogspot.nl/2009/08/comboios-ja-operam-no-polo-de-cacia.html>

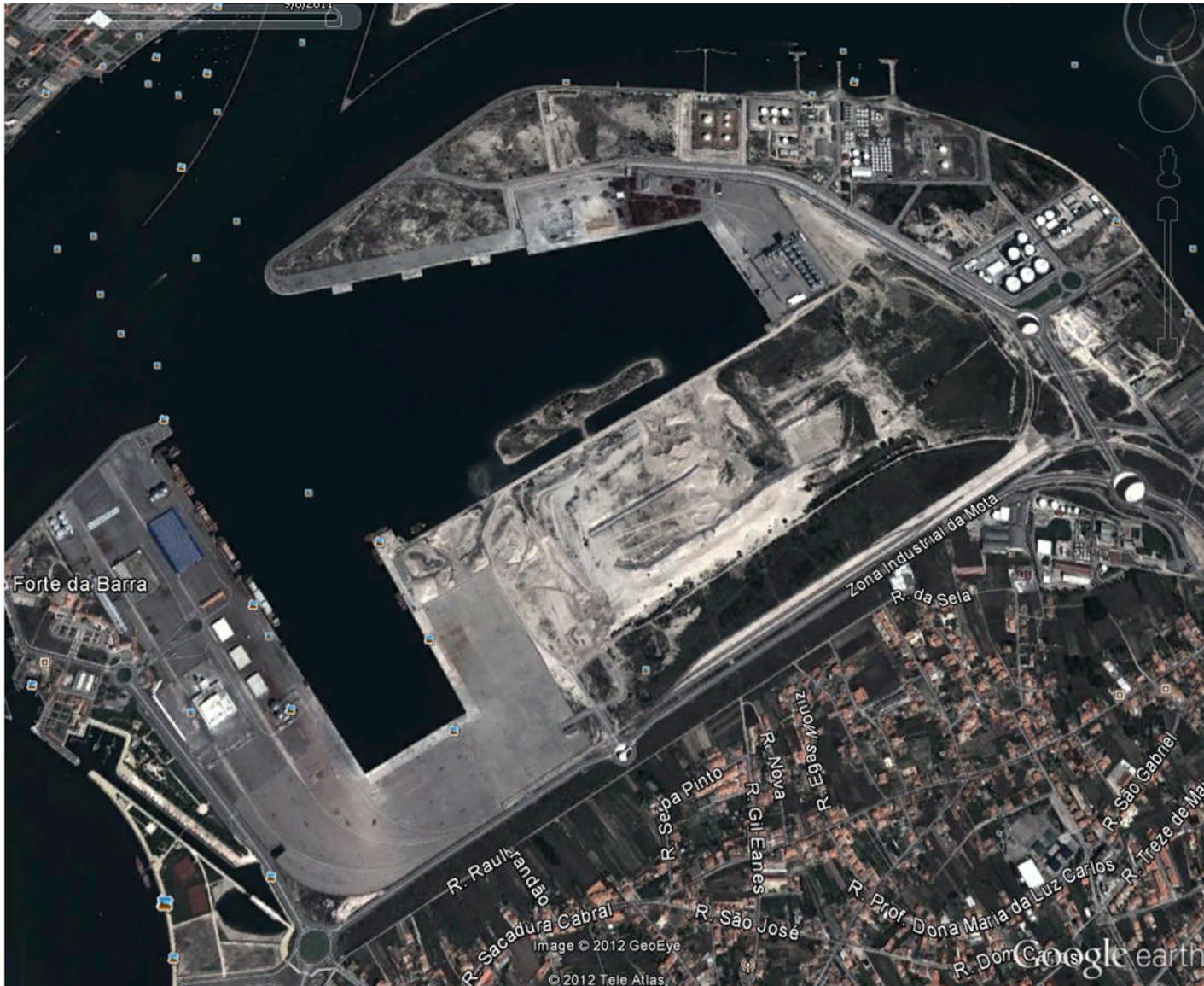
Figure 7 Logistics Platform at the Terminal Norte of the Port of Aveiro – Planned 2006

FIGURA 9 – LAYOUT INDICATIVO DA PLATAFORMA LOGÍSTICA DE AVEIRO (PÓLO PORTUÁRIO)



FONTE: MINISTÉRIO DAS OBRAS PÚBLICAS, TRANSPORTES E COMUNICAÇÕES (2006)

Figure 8 Logistics Platform at the Terminal Norte of the Port of Aveiro – August 2011



Source: Google Earth 2011 – Last available image dated 09-08-2011

The following table summarizes the assumptions of the application dossier regarding the functional and appraisal units of analysis.

Table 2 Units under the functional and/or analysis stand point

Engineering works	<i>Ramal de Ligação Ferroviária ao Porto de Aveiro</i> Operational Phases 1, 2, 3 and 4
Procurement and contracting	Operational Phases 1, 2, 3 and 4
Development consent and environmental certifications	Global Project <i>Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários</i>
Infrastructure management	Global Project <i>Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários</i>
Economic and financial analysis	<i>Ramal de Ligação Ferroviária ao Porto de Aveiro</i> Operational Phases 1, 2, 3 and 4
Major project funding related accountability	<i>Ramal de Ligação Ferroviária ao Porto de Aveiro</i> Costs eligibility limited to some works under the operational phases 1 and 2 and to the operational phases 3 and 4

Concerning the engineering, procurement and contracting as well as the development consent and environmental impact assessment related procedures and processes, it is worth specifying that the investments part of the major project under appraisal as well as those relating to the road and rail infrastructure included in the wider global project *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários* have been all already completed. The unit of analysis relating to the project design, development and construction, and to the environmental impact assessment and infrastructure management and operation are acceptable.

The assumptions relating to the consideration of the major project under appraisal as a self-sufficient economic and financial unit of analysis are instead only partially acceptable. Whilst we overall agree with the consideration that the investments under appraisal represents a self-sufficient economic and financial unit of analysis in what concern the market/demand assumptions underlying the calculation of the revenues and of the benefits, the assumptions concerning the definition of the project costs should be revised. This position is based on the consideration that contrary to the *Plataforma Multimodal de Cacia* (also part of the above mentioned global project) the *Ramal de Ligação Ferroviária ao Porto de Aveiro* does not actually represent an independent unit of analysis under the operational-functional stand point. More in detail it is not technically possible for the trains originated and directed to the Port of Aveiro to access the *Linha do Norte* and from here the national and international railway network, without passing through the yard and rail infrastructure at the *Plataforma Multimodal de Cacia*, this last one representing an intermediate terminal/station for the rail link to the port. On the basis of this consideration the costs relating to the investments allowing the operation of the trains from and to the port terminals – including but not limited to the yard at the *Terminal Norte* platform – should be included in the total investment costs of the major project under appraisal. This means that in addition to the ones already taken into account, the economic and financial analysis of the *Ramal de Ligação Ferroviária ao Porto de Aveiro* should also consider the investments regarding the tracks, signalling and telecommunication, junctions and additional rail infrastructure and equipment at the *Plataforma Multimodal de Cacia*, as well as the costs of the lines at the terminals of the Port of Aveiro other than the ones at the yard at *Terminal Norte* multimodal platform (which, as already said, are included in the analysis).

This specified, it is worth repeating that we agree in any case with the assumption of not considering in the analysis the benefits, costs and revenues relating to the operations and demand generated from the development of the logistics park at the Port of Aveiro which relates to the operations and traffics that are and will be generated in the future by the development of

the two multimodal platforms at the *Terminal Norte* of the Port of Aveiro and at Cacia (It is worth noting that the investments relating to the development of this logistics park are still to be implemented and that the CBA do not assume any increase in the rail traffic due to the development of these areas, mainly assuming a constant capture from road to rail in an overall growth scenario of the freight traffic at the Port of Aveiro, related to a wider hinterland and demand capture area of the Port, thanks to the rail link but not specifically related to the development of the logistics activities).

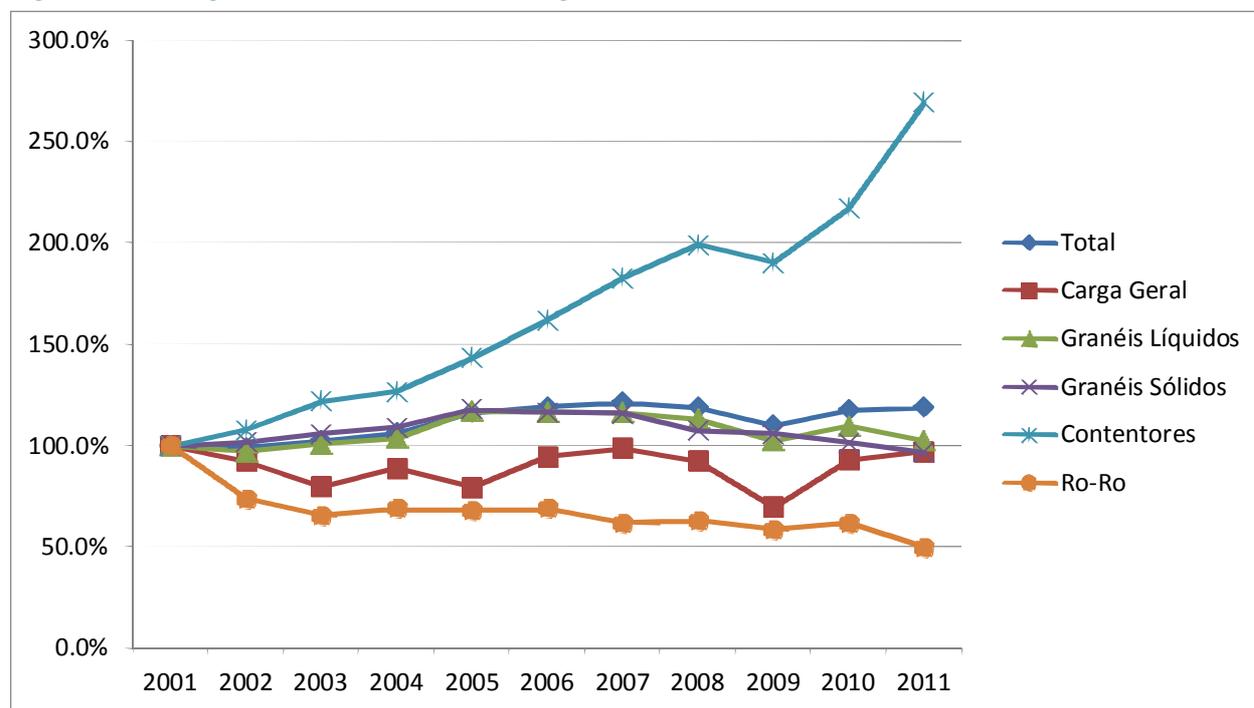
In line with the interpretation that the project costs should include all rail infrastructure investments allowing the rail transport of freights from the ports terminals to the *Linha do Norte*, and with the fact that the analysis should not consider the benefits and revenues from the logistics and road related activities at the multimodal platforms either located at the *Terminal Norte* and at Cacia, the application for this major project may actually exclude the investments related to the infrastructure regarding these operations. More in detail we agree on the appropriateness of non considering: 1) the costs to be incurred by the *Autoridade Portuária de Aveiro* and the private investors in the future development of the logistics park of Aveiro – among which the ones mentioned in the *Plano Estratégicos dos Transportes – Mobilidade Sustentável – 2011-2015* – as well as 2) the benefits from the rail traffic generated following the start of their operation, and 3) the revenues from the concession agreement signed at April 2009 between the *Autoridade Portuária de Aveiro* and REFER for the use of the areas at the *Plataforma Multimodal de Cacia* to develop such activities – which were appropriately not assessed in this application dossier.

2.3 Functional objectives of the project

The *Ramal de Ligação Ferroviária ao Porto de Aveiro* major project is expected to support the development of the Port of Aveiro widening the hinterland of this port, providing a direct rail interconnection between the port, the District of Aveiro and the Spanish Region of Castilla-Leon. As already said, the project is strategically located on the Priority Project 8 of the TEN-T network – *Multimodal axis Portugal/Spain-rest of Europe*. Under the functional stand point it is expected to support modal shift from road to rail transport, promoting both combined and intermodal transport at the Port of Aveiro – the main benefits relating to the reduction of environmental pollution due to the reduction in road freight traffic and related accidents.

Figure 9 below and Table 3 overleaf show the traffic trends relating to the Port of Aveiro in the wider Portuguese and Iberian Market.

Figure 9 Freight Traffic Trends in % – Portugal, All Ports



Source: Instituto Portuário e dos Transportes Marítimos, I.P and INE

Table 3 Traffic trends and composition at Portuguese Ports 2004-2011

Ports	CARGA GERAL				GRANÉIS SÓLIDOS					GRANÉIS LÍQUIDOS				TOTAL GERAL
	Fraccio-nada	Contento-rizada	Ro-Ro	TOTAL CG	Carvão	Minérios	Produtos Agrícolas	Outros GS	TOTAL GS	Petróleo Bruto	Produtos Petrolíferos	Outros GL	TOTAL GL	
2004														
Porto de Viana do Castelo	172,411	-	-	172,411	-	17,532	-	379,760	397,292	-	-	50,846	50,846	620,549
Porto de Douro e Leixões	467,036	3,548,831	10,755	4,026,621	-	364,771	729,461	1,284,035	2,378,268	3,758,433	3,226,376	313,807	7,298,616	13,703,505
Porto de Aveiro	1,455,171	28	-	1,455,199	4,801	12,034	373,949	680,102	1,070,886	-	50,319	557,252	607,571	3,133,656
Porto de Figueira da foz	476,964	108,271	-	585,236	-	-	-	413,311	413,311	-	-	-	-	998,547
Porto de Lisboa	462,777	5,263,521	20,810	5,747,108	23,007	-	3,001,244	1,736,405	4,760,656	-	899,452	376,298	1,275,750	11,783,514
Porto de Setúbal	1,720,308	186,916	389,763	2,296,987	636,221	378,008	396,463	1,681,045	3,091,736	-	934,464	198,582	1,133,045	6,521,769
Porto de Sines	45,016	250,159	-	295,175	5,234,538	4,319	2,400	174,663	5,415,920	9,883,056	6,570,791	311,126	16,764,973	22,476,068
Total Portos de Portugal	4,799,683	9,357,727	421,327	14,578,737	5,898,567	776,664	4,503,517	6,349,321	17,528,069	13,641,489	11,681,402	1,807,911	27,130,802	59,237,609
Total Portos Espanha	49,428,145	103,810,835	71,767,656	225,006,636					105,499,245				138,434,057	410,469,205
Total Península Iberica	54,227,828	113,168,562	72,188,983	239,585,373					123,027,314				165,564,859	469,706,814
2007														
Porto de Viana do Castelo	258,326	233	-	258,559	5,390	3,442	-	232,673	241,505	-	-	43,297	43,297	543,361
Porto de Douro e Leixões	740,121	4,426,654	32,799	5,199,574	-	429,928	800,917	875,445	2,106,289	3,353,387	3,818,982	470,253	7,642,622	14,948,486
Porto de Aveiro	1,399,038	41	11	1,399,089	-	10,148	270,190	1,027,143	1,307,481	-	46,321	517,770	564,091	3,270,661
Porto de Figueira da foz	466,702	127,738	-	594,440	33,043	-	-	572,271	605,314	-	-	-	-	1,199,754
Porto de Lisboa	489,437	5,712,499	4,881	6,206,817	12,237	22,581	4,030,450	1,540,668	5,605,936	-	842,314	503,884	1,346,198	13,158,951
Porto de Setúbal	1,739,552	118,264	325,252	2,183,068	409,844	426,085	234,209	2,625,570	3,695,708	-	783,504	171,705	955,209	6,833,985

Ports	CARGA GERAL				GRANÉIS SÓLIDOS					GRANÉIS LÍQUIDOS				TOTAL GERAL
	Fraccionada	Contentorizada	Ro-Ro	TOTAL CG	Carvão	Minérios	Produtos Agrícolas	Outros GS	TOTAL GS	Petróleo Bruto	Produtos Petrolíferos	Outros GL	TOTAL GL	
Porto de Sines	37,943	1,977,169	20	2,015,131	4,621,069	8,675	2,405	329,919	4,962,069	9,009,239	9,803,624	509,016	19,321,879	26,299,079
Total Portos de Portugal	5,131,119	12,362,598	362,962	17,856,679	5,081,584	900,858	5,338,171	7,203,688	18,524,302	12,362,626	15,294,745	2,215,925	29,873,296	66,254,277
Total Portos Espanha	61,357,446	139,349,731	44,605,035	245,312,212					116,860,986				150,411,077	483,137,215
Total Península Iberica	66,488,565	151,712,329	44,967,997	263,168,891					135,385,288				180,284,373	549,391,492
2010														
Porto de Viana do Castelo	335,346	2,372	-	337,718	4,696	53,176	-	111,633	169,505	-	-	16,917	16,917	524,140
Porto de Douro e Leixões	595,812	4,992,512	23,984	5,612,309	-	327,063	741,796	1,158,032	2,226,891	2,995,128	3,246,961	487,629	6,729,718	14,568,919
Porto de Aveiro	1,340,888	-	-	1,340,888	-	-	550,203	909,545	1,459,748	-	355,152	596,884	952,036	3,752,671
Porto de Figueira da foz	770,160	176,967	-	947,126	-	-	19,320	649,445	668,765	-	-	-	-	1,615,891
Porto de Lisboa	287,128	5,170,116	40,254	5,497,498	10,731	42,667	3,384,586	1,220,272	4,658,256	-	1,270,580	567,238	1,837,818	11,993,572
Porto de Setúbal	1,695,964	498,158	255,285	2,449,406	570,013	334,409	226,965	2,724,598	3,855,986	-	499,445	201,417	700,862	7,006,253
Porto de Sines	77,894	4,380,183	-	4,458,077	2,789,594	3,500	3,000	200,178	2,996,272	8,194,016	9,446,463	389,930	18,030,409	25,484,758
Total Portos de Portugal	5,103,191	15,220,308	319,523	20,643,022	3,375,035	760,815	4,925,870	6,973,702	16,035,422	11,189,145	14,818,601	2,260,014	28,267,760	64,946,204
Total Portos Espanha	52,505,695	137,848,486	39,859,099	230,213,280					78,644,046				148,573,067	431,242,493
Total Península Iberica	57,608,886	153,068,794	40,178,622	250,856,302					94,679,468				176,840,827	496,188,697
2011														
Porto de Viana do Castelo	282,166	5,757	-	287,923	-	39,764	-	89,768	129,532	-	-	26,164	26,164	443,619
Porto de Douro e Leixões	841,360	5,408,506	10,066	6,259,932	-	479,356	871,239	1,143,392	2,493,986	3,337,895	3,463,541	705,084	7,506,520	16,260,439

Ports	CARGA GERAL				GRANÉIS SÓLIDOS					GRANÉIS LÍQUIDOS				TOTAL GERAL	
	Fraccionada	Contentorizada	Ro-Ro	TOTAL CG	Carvão	Minérios	Produtos Agrícolas	Outros GS	TOTAL GS	Petróleo Bruto	Produtos Petrolíferos	Outros GL	TOTAL GL		
Porto de Aveiro	982,546	-	-	982,546	-	-	301,811	999,183	1,300,993	-	374,100	659,879	1,033,980	3,317,519	
Porto de Figueira da foz	831,475	181,214	-	1,012,688	-	-	17,420	648,222	665,641	-	-	23,503	23,503	1,701,833	
Porto de Lisboa	238,282	5,584,587	20,126	5,842,995	-	21,916	3,128,029	1,474,978	4,624,923	-	1,232,061	660,565	1,892,626	12,360,544	
Porto de Setúbal	2,166,782	735,737	265,071	3,167,590	374,896	623,027	185,712	1,913,492	3,097,127	-	398,790	229,080	627,870	6,892,587	
Porto de Sines	94,500	5,495,162	-	5,589,662	3,902,175	4,069	-	135,350	4,041,594	7,029,965	8,734,852	385,839	16,150,656	25,781,913	
Total Portos de Portugal	5,437,109	17,410,963	295,264	23,143,336	4,277,071	1,168,131	4,504,210	6,404,385	16,353,797	10,367,861	14,203,344	2,690,115	27,261,320	66,758,452	
Total Portos Espanha	55,940,092	157,322,822	41,326,203	254,589,117					79,250,806				150,403,311	456,998,205	
Total Península Iberica	61,377,201	174,733,785	41,621,467	277,732,453					95,604,603				177,664,631	523,756,657	
Variation '10-'11															
Porto de Viana do Castelo	-15.9%	142.7%		-14.7%		-25.2%			-19.6%	-23.6%			54.7%	54.7%	-15.4%
Porto de Douro e Leixões	41.2%	8.3%	-58.0%	11.5%		46.6%	17.4%	-1.3%	12.0%	11.4%	6.7%	44.6%	11.5%	11.6%	
Porto de Aveiro	-26.7%			-26.7%			-45.1%	9.9%	-10.9%		5.3%	10.6%	8.6%	-11.6%	
Porto de Figueira da foz	8.0%	2.4%		6.9%			-9.8%	-0.2%	-0.5%					5.3%	
Porto de Lisboa	-17.0%	8.0%	-50.0%	6.3%		-48.6%	-7.6%	20.9%	-0.7%		-3.0%	16.5%	3.0%	3.1%	
Porto de Setúbal	27.8%	47.7%	3.8%	29.3%	-34.2%	86.3%	-18.2%	-29.8%	-19.7%		-20.2%	13.7%	-10.4%	-1.6%	
Porto de Sines	21.3%	25.5%		25.4%	39.9%	16.3%		-32.4%	34.9%	-14.2%	-7.5%	-1.0%	-10.4%	1.2%	
Total Portos de Portugal	6.5%	14.4%	-7.6%	12.1%	26.7%	53.5%	-8.6%	-8.2%	2.0%	-7.3%	-4.2%	19.0%	-3.6%	2.8%	
Total Portos Espanha	6.5%	14.1%	3.7%	10.6%					0.8%				1.2%	6.0%	

Ports	CARGA GERAL				GRANÉIS SÓLIDOS					GRANÉIS LÍQUIDOS				TOTAL GERAL
	Fracciona- nada	Contento- rizada	Ro-Ro	TOTAL CG	Carvão	Minérios	Produtos Agrícolas	Outros GS	TOTAL GS	Petróleo Bruto	Produtos Petrolífero s	Outros GL	TOTAL GL	
Total Península Iberica	6.5%	14.2%	3.6%	10.7%					1.0%				0.5%	5.6%
CAGR '04-'11														
Porto de Viana do Castelo	7.3%			7.6%		12.4%		-18.6%	-14.8%			-9.1%	-9.1%	-4.7%
Porto de Douro e Leixões	8.8%	6.2%	-0.9%	6.5%		4.0%	2.6%	-1.6%	0.7%	-1.7%	1.0%	12.3%	0.4%	2.5%
Porto de Aveiro	-5.5%			-5.5%			-3.0%	5.6%	2.8%		33.2%	2.4%	7.9%	0.8%
Porto de Figueira da foz	8.3%	7.6%		8.1%				6.6%	7.0%					7.9%
Porto de Lisboa	-9.0%	0.8%	-0.5%	0.2%			0.6%	-2.3%	-0.4%		4.6%	8.4%	5.8%	0.7%
Porto de Setúbal	3.4%	21.6%	-5.4%	4.7%	-7.3%	7.4%	-10.3%	1.9%	0.0%		-11.5%	2.1%	-8.1%	0.8%
Porto de Sines	11.2%	55.5%		52.2%	-4.1%	-0.8%		-3.6%	-4.1%	-4.7%	4.2%	3.1%	-0.5%	2.0%
Total Portos de Portugal	1.8%	9.3%	-5.0%	6.8%	-4.5%	6.0%	0.0%	0.1%	-1.0%	-3.8%	2.8%	5.8%	0.1%	1.7%
Total Portos Espanha	1.8%	6.1%	-7.6%	1.8%					-4.0%				1.2%	1.5%
Total Península Iberica	1.8%	6.4%	-7.6%	2.1%					-3.5%				1.0%	1.6%
CAGR '11/'07														
Porto de Viana do Castelo	9.2%	2370.8%		11.4%		1055.3%		-61.4%	-46.4%			-39.6%	-39.6%	-18.4%
Porto de Douro e Leixões	13.7%	22.2%	-69.3%	20.4%		11.5%	8.8%	30.6%	18.4%	-0.5%	-9.3%	49.9%	-1.8%	8.8%
Porto de Aveiro	-29.8%			-29.8%			11.7%	-2.7%	-0.5%		707.6%	27.4%	83.3%	1.4%
Porto de Figueira da foz	78.2%	41.9%		70.4%				13.3%	10.0%					41.8%
Porto de Lisboa	-51.3%	-2.2%	312.3%	-5.9%		-2.9%	-22.4%	-4.3%	-17.5%		46.3%	31.1%	40.6%	-6.1%

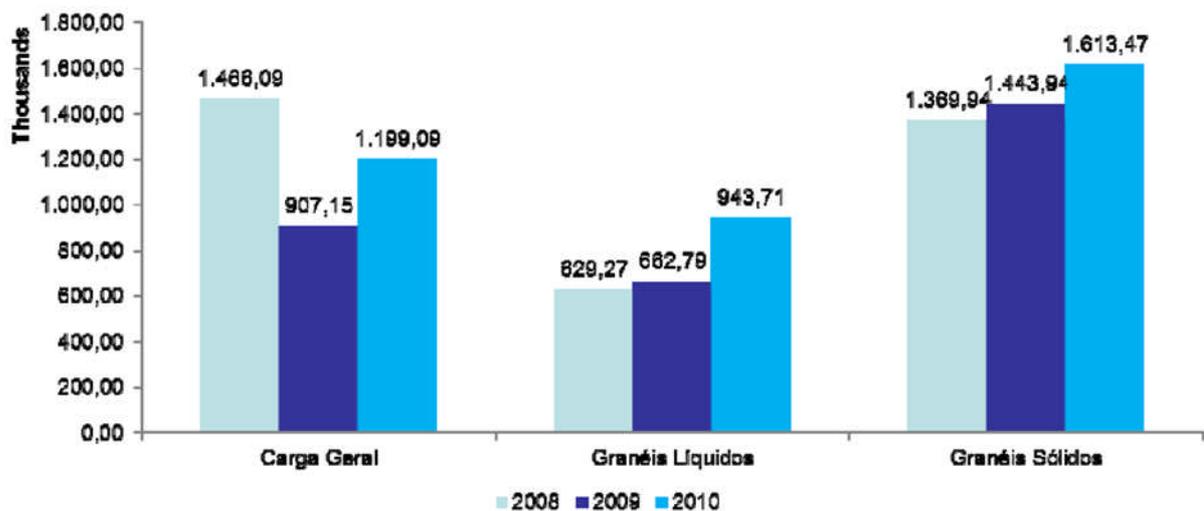
Ports	CARGA GERAL				GRANÉIS SÓLIDOS					GRANÉIS LÍQUIDOS				TOTAL GERAL
	Fraccionada	Contentorizada	Ro-Ro	TOTAL CG	Carvão	Minérios	Produtos Agrícolas	Outros GS	TOTAL GS	Petróleo Bruto	Produtos Petrolíferos	Outros GL	TOTAL GL	
Porto de Setúbal	24.6%	522.1%	-18.5%	45.1%	-8.5%	46.2%	-20.7%	-27.1%	-16.2%		-49.1%	33.4%	-34.3%	0.9%
Porto de Sines	149.1%	177.9%	-100.0%	177.4%	-15.6%	-53.1%		-59.0%	-18.6%	-22.0%	-10.9%	-24.2%	-16.4%	-2.0%
Total Portos de Portugal	6.0%	40.8%	-18.7%	29.6%	-15.8%	29.7%	-15.6%	-11.1%	-11.7%	-16.1%	-7.1%	21.4%	-8.7%	0.8%
Total Portos Espanha	-8.8%	12.9%	-7.4%	3.8%					-32.2%				0.0%	-5.4%
Total Península Iberica	-7.7%	15.2%	-7.4%	5.5%					-29.4%				-1.5%	-4.7%

Source: Instituto Portuário e dos Transportes Marítimos, I.P and Puertos del Estado

The analysis of the traffic trends at the Port of Aveiro in the wider Portuguese and Iberian context confirms that the demand and benefits expected from the investment under appraisal may be undermined by the current economic crisis and would actually suggest adopting more conservative assumptions concerning the total traffic demand growth in the short period as commented under Section 3.3 below.

Overall the Portuguese market - in line with the Iberian and international ones – registered a strong growth in container traffic over the past decade, which is however a segment particularly relevant for Sines and Leixões but not for Aveiro. General Cargo and Ro-Ro traffic show an overall declining trend however solid and liquid bulks registered a constant slight increase over the period even if less relevant than the one for container traffic.

Figure 10 Freight Traffic at the Port of Aveiro 2008-2010



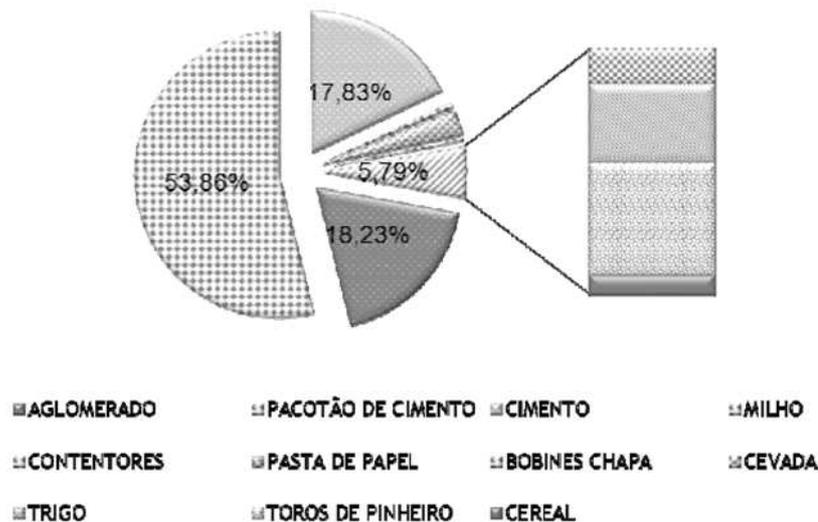
Source: http://www.ordemengenheiros.pt/fotos/dossier_artigo/portodeaveiro_luis_cacho948172024ddf7468d74d4.pdf

Specifically concerning the Port of Aveiro, the trends show a significant growth for liquid bulks and a growth of solid bulks traffic over the period 2004-2010, the former segment resisting to the impact of the economic crisis. For solid bulks it is worth noting the negative variation between 2011 and 2010 in the agricultural products which, based on the data regarding the first nine months of operation of the rail link at the Port of Aveiro, represents one of the segments supporting rail related traffic growth together with cement and paper and wood related products (See Figure 11 overleaf).

Figure 11 Main Solid Bulks transported by rail at the Port of Aveiro in 2010

- 1º Cimento
- 2º Aglomerado

Representaram cerca de 80% das mercadorias movimentadas



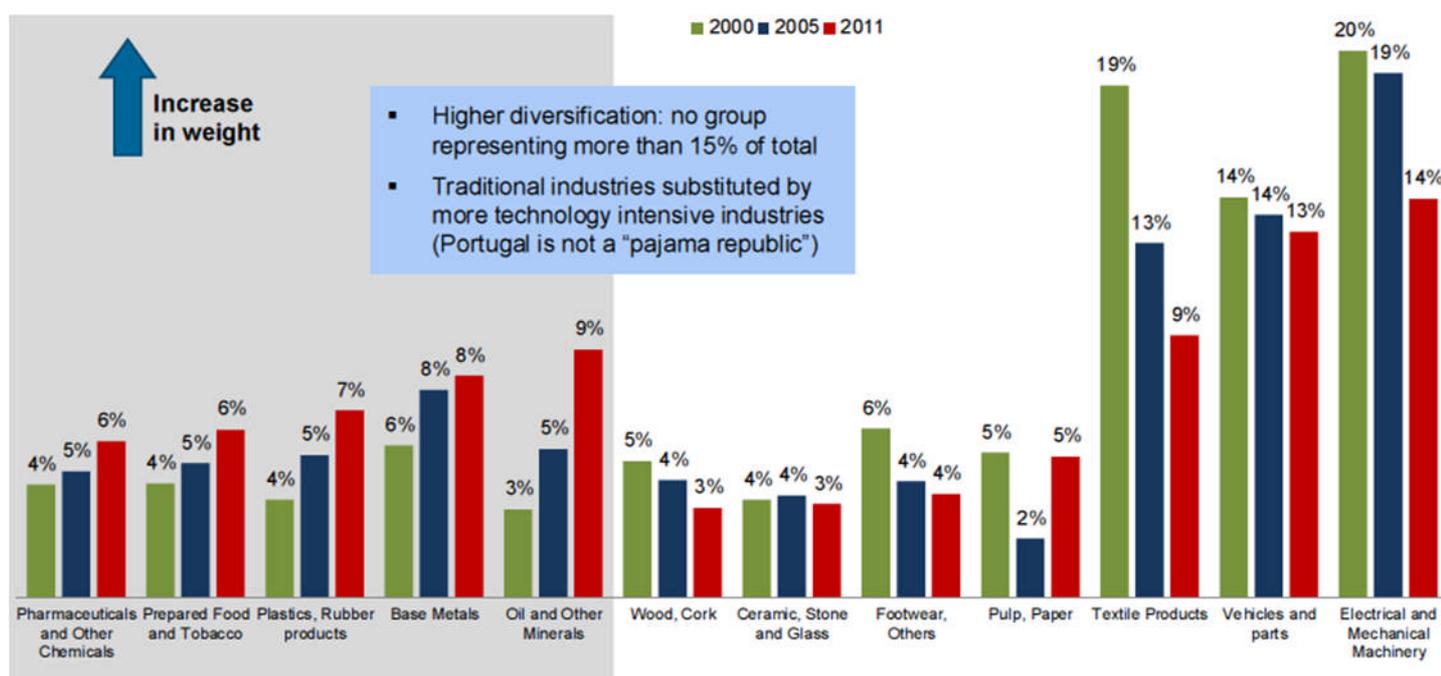
Source: http://www.ordemengenheiros.pt/fotos/dossier_artigo/portodeaveiro_luis_cacho948172024ddf7468d74d4.pdf

The overall trend in maritime transport for Portugal and Spain shows a recovery in 2010 and 2011 in line with an increase in the in world trade related traffic, particularly reflected by the increase in container traffic. Despite a growth between 2010 and 2008 (See Figure 10 above), the Port of Aveiro registered a decline in the total traffic between 2011 and 2010 (See Table 3 above), and although liquid bulks are growing at the Porto of Aveiro, the trend in solid bulks is less stable. Unfortunately the application dossier omits carefully describing and supporting the analysis of the existing demand and particularly the one expected to be captured by the rail services per type of good and maritime transport segment (general cargo, container, liquid and solid bulks).

Figure 12 Export composition by product of Goods

Export composition by product, Goods

As percentage of total



Source: National Statistics Office



MINISTÉRIO DAS FINANÇAS

28

Source: http://www.portugal.gov.pt/media/621207/20120605_mef_ibmc.pdf

Whilst we recognize the recent trends in the growth of types of exported goods (export represented about 91% of rail traffic during 2010), we also consider the potential impact of the persisting economic crisis, which is currently (2012) affecting also non-European countries, elements which in our opinion may slow down the development of the Port of Aveiro and of the ZALI at its logistics platforms.

In absence of more detailed information and evidences regarding the segment and market served by the newly introduced rail link, we overall accept the methodology adopted for the estimation of the demand on the rail link – based on the growth of the total freight volumes – however, on the basis of the comments in the previous paragraphs, we would suggest adopting more conservative port freight traffic growth and rail capture rates assumptions in the short period for the assessment of the investments under appraisal (See also section 3.3 below).

2.4 Consistency with Other Union Policies

The sources for the financing of the *Ramal de Ligação Ferroviária ao Porto de Aveiro* major project are detailed at page 23 of the application form. The sources for the financing of the project are also specified in the CBA report although there are inconsistencies between the two documents (See also Section 4.1 below).

The mentioned global project *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários* also including the investments part of the major project under appraisal were financed by mean of public funds and the Cohesion Fun and were also supported by loans from the European Investment Bank (€110 million loan n. 25133 of 10-09-2009 relating to several REFER proposed investments also including the rail link to the Port of Aveiro). As already mentioned in the previous sections, part of the works relating to the *Ramal de Ligação Ferroviária ao Porto de Aveiro* were also already co-financed during the previous programming period. The application form – page 25 – also

mentions a study co-financed by the European Commission and regarding the development of Multimodal Logistics Platforms in proximity to Portuguese Ports, including the one of Aveiro. We suggest therefore cross-checking the consistency between the results of this appraisal with the ones from the previous assessments by the European Commission and the European Investment Bank and relating to the mentioned global project.

The project is in line with the policies of the DG MOVE regarding the development of an integrated and interoperable railway network, the development of combined and intermodal transport by sea, rail and road. The rail link to the Port of Aveiro is included in the Priority Project 8 of the TEN-T network – *Multimodal axis Portugal/Spain-rest of Europe*. To this respect it is worth noting that the rail superstructure and particularly the tracks were built using polyvalent sleepers easily allowing in the future the conversion of the line to the European gauge standards. The signalling and telecommunication system is furthermore in line with the policies of the European Commission concerning the interoperable and safe operation of railway transport (ERMTS and ETCS standards).

The publicity measures described at page 36 of the application form comply with Regulation 1028/2006. The cost for publicity measures has been indicated at table H.1 of the application form and is reasonable.

B.2. Recommendations and suggestions

The major project under appraisal was originally included in the global project *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários*. The *Ramal de Ligação Ferroviária ao Porto de Aveiro* is now going to be implemented as a separate project from the *Plataforma Multimodal de Cacia*. Whilst we overall agree with the definition of the economic and financial unit of analysis of the major project under appraisal as defined in the application dossier, particularly in what concern the market/demand assumptions underlying the calculation of the revenues and of the benefits generated by the project, the assumptions concerning the definition of the project investments costs within the financial and socioeconomic analysis should be revised, including all costs related to the railway infrastructure allowing the transportation of freights from the port terminals to the *Linha do Norte* (main national and international railway network).

The application form specifies that under the accountability stand point the investment costs considered as eligible under this major project do not correspond to the total investment costs for the 4 operational phases relating to the implementation of the rail link under assessment. Particularly considering that the works part of the *Ramal de Ligação Ferroviária ao Porto de Aveiro* – and of the wider global project – *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários* – were partially co-financed under the previous programming period and are partially or entirely eligible under this programming period, and considering that also some works under the 4th operational phase relate to the *Plataforma Multimodal de Cacia*, it is generally recommended confirming the number of the contracts relating to the major project under assessment and checking their scope and amount. To this respect it is indeed worth noting that our analysis of additional sources published by the Beneficiary, seem actually supporting the consideration that the total investments for the 4 operational phases or in any case for the construction of the *Ramal de Ligação Ferroviária ao Porto de Aveiro*, are higher than those specified in the application dossier (See also Section 3.2 below).

Apart from the articulated and non-linear description of the project, the application dossier also shows inconsistencies in the presentation of the investment costs and of the financial sources for the financing of the major project, which further complicate the assessment of the application dossier and actually undermine the reliability of the assumptions and the results of the CBA.

The application dossier should be revised or in any case the information provided supported by a more clear and referenced presentation of the costs of the investments under appraisal.

3 TECHNICAL FEASIBILITY, PROJECT COSTS AND DEMAND ANALYSIS

3.1 Technical Feasibility

3.1.1 Feasibility studies

As stated in Table D.1. *Calendario*, page 9 of the application form, feasibility studies were originally undertaken between July 1998 and January 2001 (a first study actually undertaken during the '80s). A summary of the criteria used for the analysis and identification of the preferred options at this initial stage of development of the project is provided in Annex VII to the application form; these criteria included: investment costs, length, functional requirements and project layout and impacts on environment and society. The selected project layout was subsequently modified based on the consultation with other relevant public institutions including the *Câmara Municipal de Aveiro*, *Aveiro Polis*, the *Centro de Estudos da Faculdade de Arquitectura – CEFA*, SIMRIA. The changes were aimed at dealing with specific requests from the *Câmara Municipal de Aveiro* and technical problems adduced by SIMRIA. The rationales at the basis of the selection of the layout are reasonable.

The analysis of the demand is commented at Section 3.3 below.

3.1.2 Technical concept

Based on the analysis of the application form, of the *Resumo não técnico do Estudo de Impacte Ambiental* and of the summary of the project as provided in a public available information from the works' construction coordinator and safety supervisor DHV S.A³, it can be concluded that the project is satisfactory under the technical stand point concerning the layout, techniques and methodology proposed to undertake the works as well as the adopted construction materials.

As already said the project is also in line with the European standards for the construction of interoperable and safe railway infrastructure. In what respect the characteristics of the link and the policies of the Union related to sustainable and environmental friendly transport, it should also be noted that although the link is not currently electrified (only 3 out of the 8 tracks at the *Plataforma Multimodal de Cacia* are electrified), the line was constructed to allow its conversion.

Under the operational stand point the rail link and the yards at the *Terminal Norte* of the Port of Aveiro as well as at Cacia are satisfactory to allow the effective operation of the expected demand.

3.1.3 Environmental assessment

Environmental Impact Assessment. The EIA development consent was given in October 2005 based on a *Declaração de Impacte Ambiental – DIA* – issued by the *Secretário de Estado do Ambiente* on the basis of the analysis of the Environmental Impact Study related documentation. The declaration specifies all environmental related mitigation, preventive and compensation measures, whose cost has been identified corresponding to the 1% of the investment costs which is reasonable considering the measures detailed in the DIA enclosed to the application form. These measures both regarding the construction and operation phases, also include monitoring plans related to the potential impacts relating to noise and air pollution as well as the impacts on the vegetation and fauna. A non-technical summary of the Environmental Impact Study has been provided enclosed to the application form as appropriate; the project belongs indeed to the categories of projects listed under Annex II to the EIA Directive.

An addendum to the DIA published in 2005 was subsequently issued by the same authority in March 2006 integrating the previous DIA.

³ <http://www.dhv.pt/referencias/principais-projetos/gestao-de-empreendimentos-e-fiscalizacao>

Strategic Environmental Assessment. The application form refers that the project was originally included in a plan – *Portugal Logístico* – approved after the completion of the EIA process. Probably most relevant is that the SEA Directive was transposed in Portugal only following approval of Decreto-Lei n.º 232/2007 in July 2007. In any case public consultations were undertaken as part of the EIA process and Environmental Authorities were consulted as also referred to in the application form.

Natura 2000. A certificate issued on the 22nd of February 2006 by the national environmental authority – *Instituto da Conservação da Natureza* – has been enclosed to the application form stating that the *Ramal de Ligação Ferroviária ao Porto de Aveiro* will not have effects on the Natura 2000 site crossed by the infrastructure – namely *Zona de Proteção Especial da Ria de Aveiro PTZPE0004* – provided that all preventive, mitigation and monitoring measures as detailed in the EIA declaration and related documents will be implemented and fulfilled. A map showing the Natura 2000 area crossed by the rail link has been also provided as part of the application dossier.

3.1.4 Project time schedule and implementation scheme

As shown in the GANTT chart enclosed to the application form the project was constructed between September 2007 and February 2010 (actually the application form states construction works ended at December 2011, which is probably a typo). As already commented in Section 2.2 and Table 1 above, the works for the construction of the *Ramal de Ligação Ferroviária ao Porto de Aveiro* were implemented through 4 different operational phases all supervised by a same contractor. The rail link is officially in operation since the end of March 2010.

The 9 km link is managed directly by REFER. The operation of the trains is undertaken by the local freight operators CP Carga and Takargo. With reference to the global project – *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários* – in which the major project under appraisal is included, the areas to be dedicated to the development of the logistics activities at Cacia, owned by REFER, were given in concession to APA on the 3rd of April 2009⁴. According to a recent presentation by the *Autoridade Portuária de Aveiro* – APA⁵, the Authority is planning to develop the logistic district at the logistic platform of Aveiro in 2012. To this respect it is worth repeating that the development of the logistic park at Aveiro- both at the *Terminal Norte* and at Cacia – is also included in the *Plano Estratégicos dos Transportes – Mobilidade Sustentável – 2011-2015*.

The application dossier actually omits providing detailed information on this concession agreement, specifically on the amount paid to REFER for the use of these areas by the *Autoridade Portuária de Aveiro*. Regarding this aspect, on the basis of the same mentioned available information, on one side we may assume the business model for the development of the logistics district at Aveiro is probably still to be defined; on the other it is also worth specifying that particularly the CBA does not base the project scenario on the development of these platform, which is a reasonable conservative approach given the current economic crisis and the fact that in any case the rail link is already in operation and may even work independently from the development of these areas (See also the considerations on the economic and financial unit of analysis at Section 2.2 above).

⁴ <http://www.refer.pt/MenuPrincipal/REFER/AEmpresa/Cronologia.aspx>

⁵ http://www.ordemengenheiros.pt/fotos/dossier_artigo/portodeaveiro_luis_cacho948172024ddf7468d74d4.pdf

3.2 Project costs

On the basis of public available information published by REFER, it was possible to fill in Table 4 below relating to the cost of the investments implemented within the scope of the 4 operational phases through which the *Ramal de Ligação Ferroviária ao Porto de Aveiro* was constructed. The costs provided in the application dossier do not seem to include all the investment costs related to the major project under appraisal. In addition to this, there are inconsistencies between the figures regarding the total investment costs reported at Table under point H.1 and Table under point E.1.2 of the application form respectively (these last ones corresponding to the costs included in the Table at page 4 of the CBA report).

Table 4 Project Costs

		REFER References		Table H.1 Value	
		REFER Main Contract Number	Contract Value		
Honorários de planeamento/concepção			1,122,697		
Acquisição de terrenos			5,406,010		
Construção			52,288,062	48,000,655	
Operational Phase	Description				
1st Phase	Ligação ferroviária de acesso ao porto de Aveiro Entre o km 0+000 e o Viaduto de Acesso à Ponte da Gafanha	Main Contract	2702	27,793,298	
		1st addendum	10002176388	1,210,264	
		Total		29,003,561	
2nd Phase	Empreitada do " Ramal ferroviário de acesso ao Porto de Aveiro	Main Contract	2901	9,950,000	
		1st addendum	5110000040	1,327,411	
		2nd addendum	5110000221	482,152	
		3rd addendum	5110000312	295,659	
		Passagem Inferior Pedonal	501000098	710,996	
Total		12,766,217			
3rd Phase	Superestrutura de Via	Main Contract	5490	3,712,021	
		Materiais de via fornecidos pela REFER		3,351,000	
		Total		7,063,021	
4th Phase	Sinalização e telecomunicações do Terminal de Cacia e Ligação ao Porto de Aveiro	Main Contract	2870	3,455,261	
		Total		3,455,261	
Instalações e máquinas			785,195		
Revisões de preços			1,438,741		
Assist. Técnica Proj. -Lig. Porto Aveiro		4203	66,000	66,000	
Publicidade			61,268		
Fiscalização e Coordenação de Segurança da Ligação Ferroviária ao Porto de Aveiro		4065	2,224,766	2,428,856	
TOTAL EXCLUDING VAT			63,392,739	59,309,422	

Sources: Relatórios e Contas e Governo da Sociedade da REFER 2008, 2009 and 2010

(<http://www.refer.pt/MenuPrincipal/REFER/AEmpresa/RelatoriosdeGestao.aspx> and

<http://www.refer.pt/MenuPrincipal/REFER/AEmpresa/GovernodaSociedade.aspx>) as well as Diário da República

(<http://dre.pt/pdf2sdip/2009/04/064000000/1255412579.pdf>); for the costs related to the construction materials

provided by REFER within the scope of the 3rd operational phase, see <http://www.refer.pt/Default.aspx?TabID=377>

We suggest requesting the applicant and beneficiary to complete/integrate the information provided at Table 4 specifying any other additional cost relating to the investments needed for the construction of the *Ramal de Ligação Ferroviária ao Porto de Aveiro* (the table does not actually include some additional minor contracts i.e. contract numbers 4580 and 5353⁶). This is particularly relevant considering that the major project is already completed and that the rail link is already in operation; all the real costs incurred in its construction should be actually available.

⁶ <http://dre.pt/pdf2sdip/2009/04/064000000/1255412579.pdf>

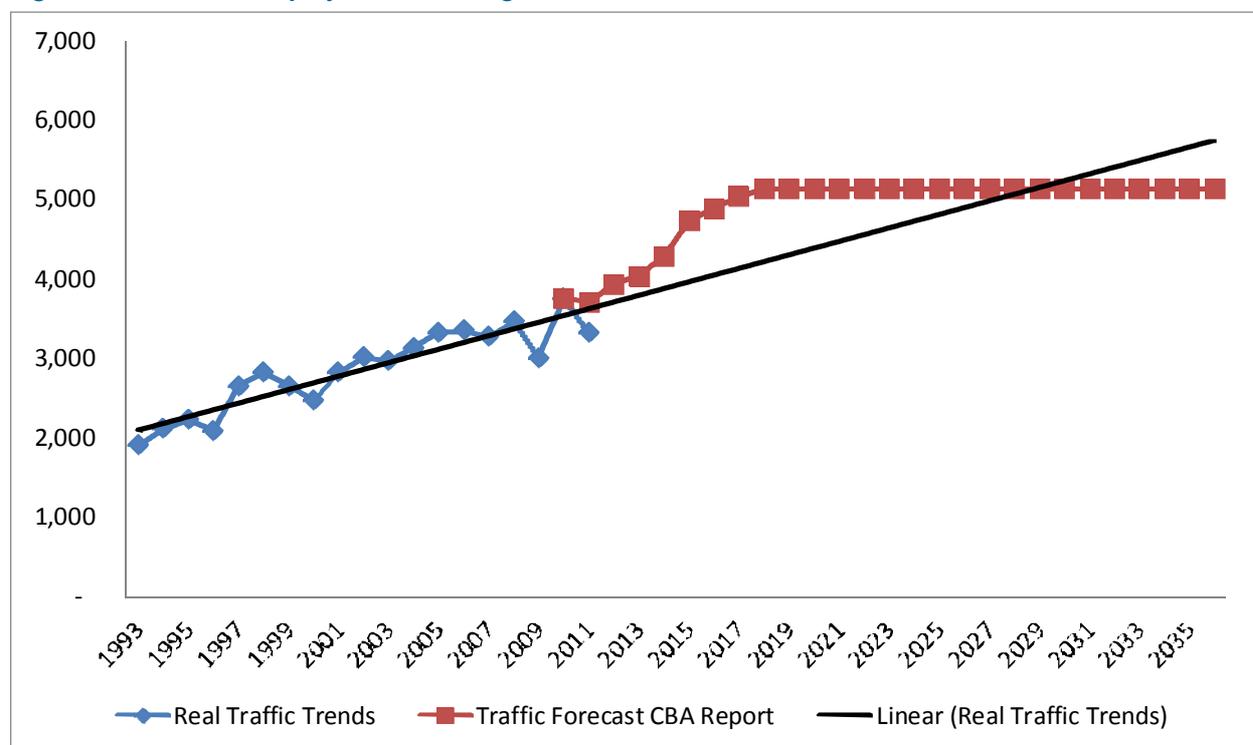
This specified – and provided that the possible additional costs will not significantly increase the total project value – it is possible concluding that the construction related costs is acceptable. It is worth adding to this respect that on the basis of the project description provided in the application dossier and other available documentation as already mentioned in the previous sections, the project includes several expensive infrastructure including bridges and viaducts as well as works (i.e. special foundations), justifying the price.

Concerning the project costs it is also worth adding that the other costs related to the project design, works coordination and supervision are acceptable. Finally the land acquisition costs are also acceptable specified that based on public available information⁷ these relate to about 20,500 m², corresponding to an average value of € 265/m².

3.3 Demand analysis

Port traffic projections. As already commented in the previous Section 2.3, the basic assumption underlying the incremental *do project* scenario, is represented by an expectation of growth in the total freight traffic volume at the Port of Aveiro. Although this is also due to the construction of the new rail link that will contribute to increase the traffic at the Port of Aveiro by widening the hinterland and capture area of the port and interlinking it to the main national and international logistic and freight transport hubs, the application dossier do not specifically analyse in detail this scenario, mainly assuming the overall demand will grow in the future. We understand this expectation is also supported by the analysis of the historic trend, as well as by the investments already undertaken and planned at the port and relating to the improvement and expansion of its capacity (See also Figure 3 above). The figure below actually shows the trend in total freight traffic volumes at the Port of Aveiro, comparing the real traffic to the estimations from the CBA report.

Figure 13 Historical and projected total freight traffic at the Port of Aveiro



Source: CBA Report and Autoridade Portuária de Aveiro

The chart reveals that the total freight demand forecast at the Port of Aveiro, as estimated in the application dossier, is above the trend we could expect based on the historic pattern.

⁷ <http://dre.pt/pdf2sdip/2008/04/065000000/1441914421.pdf>

Table 5 Freight Traffic Growth at the Port of Aveiro – 1993 to 2011 expressed in CAGR

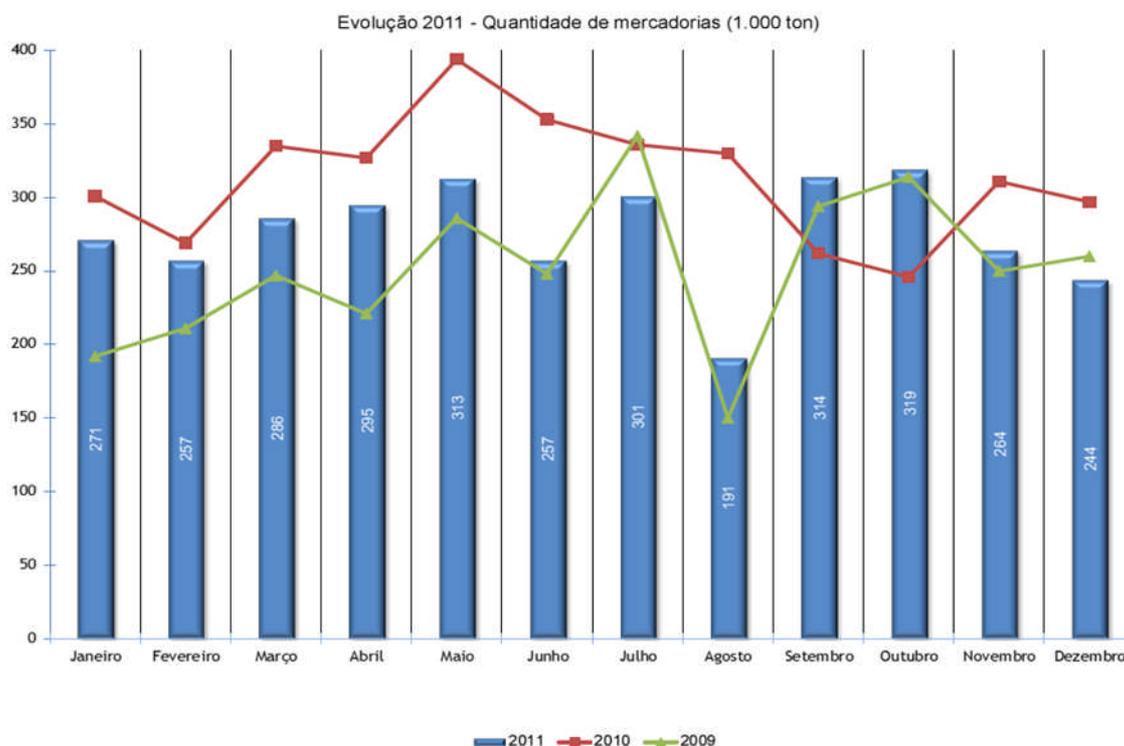
CAGR 1993-2007	4.0%
CAGR 1998-2007	1.6%
CAGR 1993-2011	3.1%
CAGR 1998-2011	1.2%

Source: CBA Report, Autoridade Portuária de Aveiro

More in detail in the application dossier the traffic between 2010 and 2018 is expected to grow at an average rate of 4% per year. Actually, as also shown in Table 5 above, this rate is in our opinion optimistic. Even considering the improvements due to the numerous investments at the Port of Aveiro and concerning accessibility, the expansion of the terminals and the logistics related developments, the growth scenario assumed in the CBA actually neglects the fact that the decade between 1998 and 2007 already registered a growth of only 1.6% and particularly in the short term do not consider appropriately the impact of the current crisis, which is a structural one, rather than cyclic (worth noting that the performance of the Port of Aveiro for the year 2011 was worse than the one at 2010, the total volume at 2011 being more or less the same as the one at 2006).

On the other hand, it is worth noting that the traffic projections assume no traffic growth after 2018, which can be considered a conservative assumption, counterbalancing in the long term the effect of the optimistic growth assumption for the short period. Based on these considerations, we would suggest adopting a more conservative approach for the short and medium term, but allowing traffic growing for a long period, with marginally declining growth rates, up to the same long term total volumes adopted in the current CBA.

Figure 14 Traffic by Month at the Port of Aveiro (2009, 2010 and 2011)



Source: Autoridade Portuária de Aveiro

Although we understand these considerations relate to the total traffic volumes, de facto neglecting differences in the trends of specific types of goods, some of which effectively associated to a growth in trade, as already commented in Section 2.3 above traffic data also show relevant variations for certain products expected to be transported by rail (i.e. agriculture related). In such an uncertain scenario it is in our opinion not appropriate adopting the best performance registered in the past to predict future trends, especially for the short term.

Rail freight traffic projections. As already said the rail link is already in operation since the end of March 2010. Data concerning the operation of the link are provided in Annex III to the CBA report. Considering 9 months of operation about 4 trains per calendar day used the infrastructure, 2 excluding the ones between the *Terminal Norte* and the *Plataforma Multimodal de Cacia*.

The application dossier seem not considering the rail link will generate induced demand, rather mainly capturing existing and future demand from road transport. After an initial period of sustained growth for three years, the rail link will allow transporting the 10% of the total traffic volume to and from the Port of Aveiro. Whereas the 10% of capture on the total demand may seem a sensible assumption – also in view of the results of the first 9 months of operation of the rail link which registered a share of 7.35% of the exports according to recent public available information⁸ – we would recommend providing additional clarifications supporting the initial 3 years of sustained growth. Unless specific commercial agreements are already under way with freight operators, we would recommend distributing the growth in the rail modal share over a longer period (i.e. 10 years).

Table 6 Rail Traffic Growth

Anos	Tráfego total previsto para a ferrovia	Tráfego Total	Share
	Toneladas (2)	Previsto (Toneladas) (2)	%
2010 (1)	143,065	3,761,056	3.8%
2011	185,250	3,705,000	5.0%
2012	315,200	3,940,000	8.0%
2013	404,000	4,040,000	10.0%
2014	429,000	4,290,000	10.0%
2015	473,968	4,739,680	10.0%
2016	488,968	4,889,680	10.0%
2017	503,968	5,039,680	10.0%
2018	513,968	5,139,680	10.0%
Após 2018	513,968	5,139,680	10.0%

Source: CBA Report

B.3 Recommendations and suggestions

The information provided concerning the cost of the project is not satisfactory and should be improved. The application dossier presents inconsistencies between the information provided in the application form and in the CBA report. In addition to this, the costs considered in the analysis seem not including all costs effectively incurred for the completion of the works relating to the *Ramal de Ligação Ferroviária ao Porto de Aveiro*. Finally the revision of the costs should be done considering the analysis and comments regarding the assumptions adopted for the definition of the unit of analysis for the economic and financial analysis.

Overall, the demand projections seem acceptable in the long term, but optimistic in the short and medium term, not reflecting the historical trends and the current economic outlook. We would therefore suggest:

- Adopting a more conservative approach for the traffic growth at the Port of Aveiro for the short and medium term, but allowing traffic growing for the long period, with marginally declining growth rates, up to the same long term total volumes adopted in the current CBA;
- Distributing the growth in the rail modal share over a longer period (i.e. 10 years), rather than in the very short term (3 years), as currently assumed in the CBA.

⁸ http://www.ordemengenharios.pt/fotos/dossier_artigo/portodeaveiro_luis_cacho948172024ddf7468d74d4.pdf

4 COST BENEFIT ANALYSIS

The Cost-Benefit Analysis (CBA) has adopted the methodology recommended by the European Commission in the *Guide to cost-benefit analysis of investments projects, European Commission Evaluation Unit, DG Regional Policy*, versions of 2003 and 2008. This methodology is based on an incremental approach and on the discounted cash-flow methodology.

The unit of analysis considered in the CBA is represented by the investments included in the operational phases described under Section 2.2 and Table 1 above.

The do-nothing scenario considers the scenario without these investments. In this scenario, the freight transport between the Port of Aveiro and its final destinations – including the *Plataforma Multimodal de Cacia* – is done by road. In the do-something scenario, with the operation of the new railway connection, the analysis considers that part of the total freight traffic volume at the Port of Aveiro will be transferred from the road to rail. As commented in the previous Sections relating to the definition of the units of analysis – Section 2.2 – and the demand – Sections 2.3 and 3.3 – these assumptions are acceptable.

In terms of calendar, the CBA considers that the construction phase (including end of project design) occurred between 2006 and 2009, and that the new infrastructure started its operation in 2010. Although we understand several works were completed only after 2009 and actually lasted up to March 2010, this calendar is in any case coherent with the official inauguration of the new railway link which, as mentioned above, took place on March 27, 2010.

The analysis is performed for a time frame of 30 years (4 construction years + 26 operation years) which is in line with the recommendations that the EC proposes in its 2008 CBA Guide. The base year of analysis has been considered at 2006.

4.1 Financial analysis

The financial analysis was based on the cash-flows (outflows and inflows) incurred by REFER, which is the entity responsible for the management of the Portuguese main national rail network, including the new rail section. The assumed financial discount rate (in real terms) was 5.0%; this value is in line with the recommendations of the 2008 CBA Guide.

The financial analysis took into account the following cash-flows:

- Investment costs;
- Operational costs;
- Revenues.

4.1.1 Cash out-flows

Investment costs

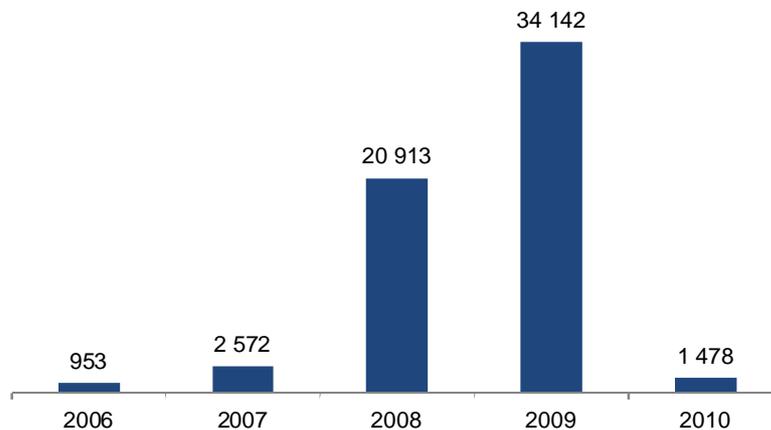
The project investment cost considered in the CBA is € 60,058,454 million which is coherent with the values present in table E.1.2 of the application form. However, there are discrepancies between these values presented in the CBA and in Table E.1.2 of the application form, in comparison to the ones presented at Table H.1 of Annex XXI. In the latter one, the investment costs totalize indeed €59,309,422. As already mentioned at Section 3.2 above, these inconsistencies relating to the project costs should be corrected and actually the total investment costs for the completion of the major project under appraisal should be verified and corrected as appropriate as these impact on the results of the CBA.

Also, as already said at Sections 2.2 and 3.2 above, the investment costs should take account of the entire investments required to operate by rail the freight volumes from the port to the main railway network – *Linha do Norte* – including the rail infrastructure within the port terminals, and

the one at the *Plataforma Multimodal de Cacia*, allowing the interconnection to the main national and international European railway network.

The investment cost allocation along the construction period is considered acceptable when compared to the calendar of the project.

Figure 15 *Planned investment cost (in thousands of Euros)*



Source: *Project Dossier*

It was also considered an additional investment concerning a technological upgrade of the signalling and telecommunications systems valued at 198 thousand EUR which is equivalent to 25% of the initial investment (795 thousand EUR). This investment is to happen after 20 years of operation and will occur between 2027 and 2029.

The residual value of the investment has a value of 25 Million EUR and was considered in the last year of appraisal as a cash inflow of the project. The methodology used to calculate the residual value was clearly presented in the CBA, namely through the presentation of the expected life of the different components of the infrastructure, which are considered in line with the standard values used in rail projects. A linear depreciation of the infrastructure was considered to determine the residual value.

Operational costs

The analysis considers the operational costs related to the maintenance of the railway track and the signalling and telecommunications systems. The costs considered in the analysis is commented using the most recent historical costs incurred by REFER for similar infrastructures.

In what concerns the maintenance of the railway track, the analysis is disaggregated in general track and bridges, which is appropriate considering the type of infrastructure characterizing the rail link.

For general railway track, it has been assumed that the cost per km would be identical to the section Vidigal – Vendas Novas, belonging to the REFER network, and presenting similar characteristics to the project in analysis (is included in the same infrastructure cluster⁹). The maintenance cost is therefore considered to be 10,300 EUR per km. The justification of this value is clearly described in Annex I of the CBA and therefore considered acceptable.

The analysis considers that this cost is the maximum cost incurred and that will be achieved after 10 years of operation. In the first 5 years of operation, the maintenance costs will only be 58% of the maximum costs, and between the 6th and 9th year of operation, the maintenance cost

⁹ REFER classifies its network in clusters, grouping network section with similar characteristics

will be 83% of the maximum value. Albeit the justification of this assumption is not presented, we agree that the maintenance costs are supposed to increase over time. Therefore, we consider this assumption acceptable.

For the calculation of the maintenance costs with bridges, Annex I of the CBA presents a report written by the REFER's maintenance department, which illustrates the estimation of the costs associated to bridge maintenance for this project. The maintenance costs are estimated at 12,000 EUR a year, which is acceptable.

In what concerns the maintenance of the signalling and telecommunications systems, the CBA has also considered historical data from other REFER operations. According to the most recent information, and based on the number of equipment's necessary in the new section, it is expected that the maintenance costs are 2,000 EUR per km each year. The justification of these costs is clearly presented in Annex I of the CBA and therefore the costs are considered reasonable and acceptable.

Due to the short length of the new rail line the analysis did not assumed additional resources for its operations, either in terms of personnel or new equipment. Therefore, the only operational costs considered in the CBA were those referred above.

4.1.2 Cash in-flows

The revenues considered in the financial analysis are the infrastructure use charges paid by the train operators that will in the future use the infrastructure.

The charges considered in this analysis are those currently in use on the REFER's network. Annex III of the CBA report presents the assumptions made for the calculation of the annual revenues. The methodology used and results presented are considered acceptable.

4.1.3 Funding Gap and Financial Indicators

The Financial Gap is calculated based on the discounted cash flows and the results are presented in the table E.1.2 of the Application Form.

The methodology used to calculate the Funding Gap is correct. Given the assumptions of the study, the financing gap of the project is 87.83%.

The relevant financial indicators – FNPV(C), FRR(C), FNPV(K), FRR(K) – are presented in the CBA report.

The CBA presents all the relevant cash-flows in a year basis allowing a good comprehension of the results.

Despite this, the investment costs considered in the CBA report seem inconsistent with the values presented in Chapter H of the application form which are also to be confirmed on the basis of the analysis and additional comments provided at Section 3.2 above. In addition to this the application dossier also shows inconsistencies concerning the sources for the financing of the major project. We suggest therefore revising and recalculating the financial indicators as appropriate, following confirmation of these essential elements.

4.1.4 Public Contribution Viability

The co-financing rate of the project is defined as being 85%, in accordance with the 2007-2013 Operational Programme in which the project is inserted (*"Programa Operacional Temático de Valorização do Território"*).

Given the inconsistencies related to the investment costs and the sources for the financing of the project, the determination of the public contribution viability should be recalculated/confirmed as appropriate.

In terms of eligibility of costs, 43% of the project costs were considered eligible for the purposes of the financial aid request under analysis. It is worth mentioning that the costs prior to June 30, 2009 had already been subject to a funding request from EU funds. The project also benefited from funds from the EIB. As already mentioned at Section 2.4 above, it is appropriate cross-checking the scope of the applications for financial/accountability purposes.

Finally, the CBA considers the following sources for the financing of the *Ramal de Ligação Ferroviária ao Porto de Aveiro*:

- State aid in the amount of € 1,948,835;
- ERDF funding in the amount of € 17,610,825 (65% of the total costs incurred till 30 June, 2009);
- EIB in the amount of € 84,323,936;
- EU funding from the Cohesion Fund - National Strategic Reference Framework in the amount of € 18,931,541 (estimated co-financing rate of 70%).

These information is not consistent with the one included in the application form which we assume is more recent and updated, albeit this should be confirmed, and in particular:

- The project does not benefit from state aid;
- The co-financing rate is 85%;
- The EIB funding cannot be higher than the total project investment cost.

The application dossier should be revised as appropriate and made consistent.

B 4.1 Recommendations and suggestions

The methodology used in the financial analysis is overall correct and follows the methodology proposed by the DG REGIO 2008 CBA Guide to evaluate transport infrastructure project. Nevertheless, there are several inconsistencies between the CBA and the application form – and even within the application form – which make the results of the financial analysis and more generally the application dossier unreliable and require its revision:

- The investment costs should be revised, as they currently do not take account of the entire investment required to operate by rail the freight volumes from the port to the main railway network. Therefore, the investment costs should include the rail link between the *Plataforma Multimodal de Cacia* and the *Terminal Norte*, but also the rail infrastructure within the port terminals, and the one at the *Plataforma Multimodal de Cacia*, allowing the interconnection to the main national and international European railway network.
- There are inconsistencies between the investment costs presented in the CBA and at Table E.1.2. of the application form and the values at Table H.1. of the application form; in addition to these the costs should be confirmed based on the analysis and comments presented at Section 3.2;
- The sources for the financing of the project presented in the financial analysis of the CBA report are not coherent with the ones at Tables H.2.1. and H.2.2 of the application form. Opposite to the application form, the CBA report even mentions that the major project benefits from state aid;

The calculation of the financial parameters, the identification of the funding gap and the determination of the EU contribution should be revised/confirmed based on the revision/confirmation of the investment costs and of the sources for the financing of the project.

4.2 Socio-economic analysis

It is referred that the socioeconomic analysis has been developed according to the methodology and recommendations of the *Guide to cost-benefit analysis of investments projects, European Commission Evaluation Unit, DG Regional Policy, 2008*.

A social discount rate equal to 5.5% has been applied, in line with the recommendations of the 2008 EU CBA Guide.

As discussed in the financial analysis, the investment costs should take account of the entire investments required to operate by rail the freight volumes from the port to the main railway network – *Linha do Norte* – including the rail infrastructure within the port terminals, and the one at the *Plataforma Multimodal de Cacia*, allowing the interconnection to the main national and international European railway network.

4.2.1 Conversion of market to accounting prices

The market prices of the project, namely those related to investment and operational costs, have been converted to accounting prices based on a conversion factor of 0.9, justified by the fact that this was the value used in the 2003 CBA Guide.

It is worth noting that the values presented in the CBA Guide in its examples are not supposed to be used without criticism in other projects. Despite the fact that 0.9 is in line with conversion factors used in analysis of this nature, this factor should be calculated according to the reality of each country.

If no relevant information on this aspect is available, the mathematical formulation proposed in the 2008 CBA Guide, considering the export (FOB) and import (CIF) prices, should be applied. Therefore it is suggested that a conversion factor for the Portuguese reality may be determined and, if necessary, used instead of 0.9.

4.2.2 Revenues from infrastructure use

The economic analysis considers that REFER's revenues from infrastructure use charges is an economic benefit of the project. However, according to the 2008 EU CBA Guidelines, money transfers between two entities should not be accounted as economic benefits of the investments since the revenue of one entity is the cost of other, and therefore the balance for the society equals zero.

4.2.3 Economic benefits estimation

The analysis affirms that the new infrastructure would generate economic benefits of several natures:

Table 7 Quantification of economic benefits according to CBA report

Benefit Description	Net present value (10 ³ €)
Travel time	13,740,500
Vehicle costs	1,936,521
Accident reduction	2,215,950
Noise	793,077
Air pollution	13,995,473
Climatic change	4,478,551
Nature and landscape	825,733
Effects on urban areas	279,909
Additional costs	2,295,258
Congestion	3,784,376

Source: CBA report

Benefits calculation methodology

The methodology used to determine the economic benefits associated to the project does not seem to be appropriate and does not seem to consider the incremental approach as recommended by the 2008 CBA Guide.

For instance, for the travel time benefits, the analysis considers that the new railway section and the consequent freight transfer from road to rail will result in a 20 minute decrease in travel time. Then, the analysis determines the benefits by multiplying these time savings by the value of time (not explaining to each mode the VOT refers to) and by the volume of freight transferred.

$$\text{Benefits_TIME} = \text{Time_Savings} \times \text{VOT [EUR/h/ton]} \times \text{Tonnes}$$

However, this is not the incremental methodology proposed by the 2008 CBA Guide. The correct methodology for the determination of the benefits is to compare the costs between the do-nothing and do-something scenarios. Therefore, the benefits associated to travel time savings should be calculated as follows:

$$\text{Time_Cost}_{\text{RAIL}} = \text{VOT}_{\text{RAIL}} \times \text{Travel_Time}_{\text{RAIL}} \times \text{Tonnes}$$

$$\text{Time_Cost}_{\text{ROAD}} = \text{VOT}_{\text{ROAD}} \times \text{Travel_Time}_{\text{ROAD}} \times \text{Tonnes}$$

$$\text{Benefits_TIME} = \text{Time_Cost}_{\text{ROAD}} - \text{Time_Cost}_{\text{RAIL}}$$

The same comment applies to the calculation of the benefits associated to vehicle operational costs. The CBA calculates the benefits by multiplying the truck operational cost, by the average travel distance and by the volume of freight transferred.

$$\text{Benefits_VOC} = \text{VOC}_{\text{ROAD}} [\text{EUR/ton-km}] \times \text{Travel_Distance}_{\text{ROAD}} \times \text{Tonnes}$$

In fact, what is calculated by this formula is the cost for the road transport in the do-nothing scenario. To determine the economic benefits, this value must be compared to the costs necessary to transport the same amount of freight by rail transport. The benefits associated to vehicle operational costs savings should be calculated as following:

$$\text{VOC}_{\text{RAIL}} = \text{VOC}_{\text{RAIL}} \times \text{Travel_Distance}_{\text{RAIL}} \times \text{Tonnes}$$

$$\text{VOC}_{\text{ROAD}} = \text{VOC}_{\text{ROAD}} \times \text{Travel_Distance}_{\text{ROAD}} \times \text{Tonnes}$$

$$\text{Benefits_VOC} = \text{VOC}_{\text{ROAD}} - \text{VOC}_{\text{RAIL}}$$

While it is not possible to analyse the methodology used for the calculation of the other economic benefits considered, we also recommend revising these results in view of the recommendations presented before. We believe that the same methodology was used to calculate all the benefits and therefore we recommend a full revision of the results.

Environmental benefits

According to the CBA, positive impacts on air pollution and climate change are a substantial share of the total benefits. However, we understand that the rail link connection to the port will not be electrified, and that therefore the rail freight transport will be operated – at least on this section - by diesel engines. Therefore, the environmental costs due to the emissions of pollutants and greenhouses gas due to the operation of diesel engines should be included in the analysis.

Relevance of the benefits

Analysing the nature of the economic benefits considered in the analysis, we conclude that the CBA report has considered the benefits suggested in the IMPACT study and that are presented in the document *Handbook on estimation of external costs in the transport sector – INFRAS/IWW*.

This study is actually a general one possibly applying to more context (urban/extra urban etc....) and architectural or natural landscapes. Whilst the referred benefits are actually exhaustive for all these different contexts, it is appropriate selecting them on the basis of the specific project under assessment. In these terms we are of the opinion that some of the economic benefits considered in the CBA may not be relevant when analysing the nature of the major project under appraisal; these are the ones related to effects on urban areas, congestion, and effects on nature and landscape. These should be in our opinion removed, unless their inclusion is supported by a clear and evidenced supported rationale.

4.2.4 Other economic benefits

The CBA also mentions that the project is expected to generate additional economic benefits which were however not quantified; these relate to the following aspects:

- Job creation during the construction phase and after its conclusion;
- Regional development;
- Environmental protection;
- Social rights and opportunities.

4.2.5 Economic performance indicators

The results of the economic analysis are included in Table E.2.3 of the application form. On the basis of the economic indicators it would be possible concluding that the project will generate benefits for the society. The ERR is indeed 6.43%, which reflects the expected economic benefits of the project, albeit this is lower than the benchmark for rail projects as presented in the CBA Guide 2008 (11.62%).

Despite this and on the basis of the comments and analysis presented in the previous sections, we recommend a recalculation of the economic indicators. This revision is strongly recommended, also considering that the amendments suggested might significantly change the outcome of the analysis, further weakening the performance of the project.

4.2.6 Risk assessment and sensitivity analysis

The sensitivity and risk analyses are useful since they allow an evaluation of the impact in the financial and economic indicators of the projects for variations in the most important variables of the project.

Therefore we consider and recommend in principle that both sensitivity and risk analysis should include more variables: operational costs, demand growth rate, first year of operation demand, cost indicators used for the economic benefits, etc. Specifically concerning the major project under appraisal, we would recommend undertaking a risk assessment and sensitivity analysis at least for the demand growth rate.

On the contrary, the sensitivity and risk analysis was performed only for one variable: investment costs. Whilst we do not see any risk relating to this element as the project is already completed and in operation, we notice under the methodological stand point that on the basis of recent practices also at the international level, it seems unreasonable to consider that the uncertainty associated to the investment costs may be explained by a normal function. Recent cases actually show that it is more likely that the final cost of the project is higher than the predicted and that there are few cases in which the contrary happens. Therefore, we would suggest the adoption of a distribution function for the investment cost.

B 4.2 Recommendations and suggestions

The economic analysis presented in the CBA report raises some doubts concerning the methodology used to identify and calculate the economic benefits of the project:

- Although the application dossier mentions the adoption of the DG REGIO 2008 CBA Guide, the CBA does not seem to have been undertaken following the recommended incremental approach;
- The benefits related to effects on urban areas, congestion, and effects on nature and landscape. should be in our opinion removed, unless their inclusion is supported by a clear and evidenced supported rationale;
- The environmental costs related to the emissions of pollutants and greenhouses gas due to the operation of diesel engines between the Port of Aveiro and the and the *Plataforma Multimodal de Cacia* should be included in the analysis;
- REFER revenues resulting from charges paid by the train operators by using the infrastructure should not be considered as an economic benefit. In fact, these revenues are a transaction between two entities, and therefore are not considered a gain for the society;
- Finally, it is suggested a revision of the conversion factor used to convert accounting price to market prices. This factor should be representative of the country where the project is being implemented. The 2008 CBA Guide proposes a formulation for the determination of this value which should be used in case no other data is available.

The socio-economic analysis should be revised on the basis of these considerations. In addition to this a sensitivity and risk analysis should be undertaken at least in relation to the demand growth rate.

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 of Reg.1080/2006, Annex XXI and Commission Regulation 1828/2006. The information and data included in the application form and in its annexes present however several inconsistencies regarding the time-schedule of project implementation, the project costs and the sources for the financing of the project, which undermines the reliability of the application [See § 1.1.2 and § 4.1 as well as recommendations and suggestions boxes B.2. B.3 and B.4.1].

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

The major project under appraisal meets the expected strategic and functional objectives. The *Ramal de Ligação Ferroviária ao Porto de Aveiro* is included in the Priority Project 8 of the TEN-T network – *Multimodal axis Portugal/Spain-rest of Europe*. The project is furthermore included in the relevant local and national plans and programmes, including the most recent Portuguese Government *Plano Estratégicos dos Transportes – Mobilidade Sustentável – 2011-2015* [See § 2.3 and § 3.1.4 and recommendations and suggestions boxes B.2. and B 3.1.4].

The major project under appraisal was originally included in the global project *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários*. The *Ramal de Ligação Ferroviária ao Porto de Aveiro* is now going to be implemented as a separate project from the *Plataforma Multimodal de Cacia*. Whilst we overall agree with the definition of the economic and financial unit of analysis of the major project under appraisal as defined in the application dossier, particularly in what concern the market/demand assumptions underlying the calculation of the revenues and of the benefits generated by the project, the assumptions concerning the definition of the project investment costs should be revised. This position is based on the consideration that contrary to the *Plataforma Multimodal de Cacia*, the *Ramal de Ligação Ferroviária ao Porto de Aveiro* does not actually represent an independent unit of analysis under the operational-functional stand point. More in detail it is not technically possible for the trains originated and directed to the Port of Aveiro to have access to the *Linha do Norte* and from here to the national and international railway network, without passing through the yard at the *Plataforma Multimodal de Cacia*, this one representing an intermediate terminal/station for the rail link to the port. On the basis of this consideration the costs relating to the investments allowing the operation of the trains from and to the port terminals – including but not limited to the yard at the *Terminal Norte* platform – should be included in the financial and socioeconomic analysis of the major project under appraisal. This means that in addition to the ones already taken into account, the economic and financial analysis of the *Ramal de Ligação Ferroviária ao Porto de Aveiro* should also consider the investments regarding the tracks, signalling and telecommunication, junctions and additional rail infrastructure and equipment at the *Plataforma Multimodal de Cacia*, as well as the costs of the lines at the terminals of the Port of Aveiro other than the ones at the yard at *Terminal Norte* multimodal platform (which, as already said, are already included). This specified, it worth repeating that we agree in any case with the assumption of not considering in the analysis the benefits, costs and revenues relating to the operations and traffic generated from the development of the logistics park at the Port of Aveiro which relates to the operations and traffics that are and will be generated in the future by the development of the two multimodal platforms at the *Terminal Norte* of the Port of Aveiro and at Cacia [See § 2.2 and recommendations and suggestions box B.2].

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

The project is in line with the policies of the DG MOVE regarding the development of an integrated and interoperable railway network, the development of combined and intermodal transport by sea, rail and road. [See § 2.4 and recommendations and suggestions box B.2].

The investments part of the *Ramal de Ligação Ferroviária ao Porto de Aveiro* were partly already co-financed during the previous programming period. The investments part of the global project *Ligação Ferroviária ao Porto de Aveiro – Plataforma Multimodal de Cacia/Ramal Ferroviário do Porto de Aveiro e Feixes Ferroviários* – which also includes the investments under appraisal – also benefited from the support of the European Investment Bank. We suggest therefore cross-checking the scope of the projects and the consistency between the previous applications and the results of their appraisals where available and as appropriate. This is particularly relevant under the project financial accountability stand point considering the complexity in terms of identification and verification of the eligible costs [See § 2.4 and recommendations and suggestions box B.2].

(d) Is the project technically sound?

The construction of the project was completed early 2010 and the rail link is in operation since the end of March 2010 (actually Table D.1 in the application form mentions the works were completed December 2011, opposite to the GANTT chart, which is probably a typo). The project is technically sound both concerning the proposed layout, the technical standards and the environmental impact related procedures. Specifically concerning its technical standards, it is worth noting that the rail superstructure and particularly the tracks were built using polyvalent sleepers easily allowing in the future the conversion of the line from the wider Iberian to the narrow European standard gauge. The signalling and telecommunication system is furthermore in line with the policies of the European Commission concerning the interoperable and safe operation of railway transport (ERMTS and ETCS standards). Although the rail link is not electrified (only three out of 8 lines at the *Plataforma Multimodal de Cacia* are electrified), the line was constructed allowing its electrification in the future. [See § 2.4 and § 3.1 and related sub-sections].

(e) Are the project costs reasonable?

The information provided concerning the cost of the project is not satisfactory and should be improved. The application dossier presents inconsistencies between the information provided in the application form and in the CBA report. In addition to this, the costs considered in the analysis seem not including all costs effectively incurred for the completion of the works relating to the *Ramal de Ligação Ferroviária ao Porto de Aveiro*. Finally the revision of the costs should be done considering the analysis and comments regarding the assumptions adopted for the definition of the unit of analysis for the economic and financial analysis [See § 3.2. and recommendation and suggestions box B.3.].

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

Overall, the demand projections seem acceptable in the long term, but optimistic in the short and medium term, not reflecting the recent trends and the current economic outlook. We would therefore suggest adopting more conservative traffic assumptions for the short and medium term both for the total traffic at the Port of Aveiro and the rail capture rates [See § 2.3, § 3.3 and recommendations and suggestions box B.3].

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

The methodology used in the financial analysis is overall correct and generally complies with the methodology proposed by the DG REGIO 2008 CBA Guide to evaluate transport infrastructure projects. Nevertheless, there are several inconsistencies in the financial sources which make

the results of the financial analysis unreliable. We also specifically recommend confirming and revising the amount of the investment costs, not only including the ones relating to the rail link between the *Plataforma Multimodal de Cacia* and the *Terminal Norte*, but also the rail infrastructure within the port terminals, and the one at the *Plataforma Multimodal de Cacia*, allowing the interconnection to the main national and international European railway network [See § 2.2 and recommendations and suggestions boxes B2, B3.2 and B.4.1].

h) Is the value of EU contribution correctly estimated?

The amount of the EU contribution should be revised based on the amendments to be introduced in the Financial Analysis [See recommendations and suggestions box B.4.1].

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

The estimated benefits generated by the project are not realistic; the methodology and quality of the analysis should be overall improved. The overall amount of benefits included in the CBA seems overestimated and should be revised, adopting the incremental approach, excluding irrelevant benefits (effects on urban areas, congestion, and effects on nature and landscape) and revising the environmental costs related to the emissions of pollutants and greenhouses taking into account the negative impact due to the operation of diesel engines between the Port of Aveiro and the and the *Plataforma Multimodal de Cacia*. Also, revenues resulting from charges paid by the train operators by using the infrastructure should not be included as an economic benefit [See recommendations and suggestions box B.4.2].

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

Given the incorrect evaluation of the benefits combined with the omission of some of the investment costs required to effectively operate the rail freight services, we recommend revising the socioeconomic analysis as appropriate. The economic indicators provided in the Application Form do not constitute a reliable base to judge the project viability [See recommendations and suggestions box B.4.2].

5.2 Concluding remarks

Before approving the application for funding of the major project under appraisal we would recommend the EC requesting the Applicant and Beneficiary to improve the quality of the application form and its annexes.

The information relating to the project investment costs should be clarified and revised as appropriate; the application dossier should be made consistent concerning the values presented in the application form and related annexes and all project costs should be considered in the analysis. In addition to this we also suggest integrate the major project costs with the ones relating to the entire railway infrastructure interconnecting the *Ramal de Ligação Ferroviária ao Porto de Aveiro* to the *Linha do Norte* and thus to the national and international European railway network. These revisions are essential to make the application reliable, and make consistent the assumptions underlying the infrastructural and demand scenarios adopted for the CBA.

In addition to the above, the application should also be improved concerning the inconsistencies regarding the sources for the financing of the major project which are to be confirmed. Finally the methodology adopted for the socio-economic analysis should be revised, adopting an incremental approach, revising the identification of the benefits and recalculating their effective monetary impact.

It is worth noting that the inconsistencies and incompleteness of the assumptions relating to the inputs and the shortcomings in the methodology adopted for the socio-economic analysis undermines the results of this analysis. As a result the CBA does not provide robust evidence that the major project is worth co-financing.