

EXPANSION, PHASE II: JUAN SANTA MARIA INTERNATIONAL AIRPORT COSTA RICA



Juan Santamaría International Airport / Photograph provided by AERIS.

Cristina Contreras and Juan Cristaldo prepared this case study under the supervision of Dr. Andreas Georgoulis, as part of the Harvard-Zofnass / IDB collaboration program. Richa Shukla and Anthony Kane provided comments and edits. The authors would like to thank Ana-Maria Vidaurre-Roche as a representative member of IDB, Roger Soto, Adriana Bejarano and Luis Fernandez from Aeris Holding Costa Rica, S.A. (AERIS) for their continuous support in developing this case.

© 2013 President and Fellows of Harvard College

To order copies, visit www.gsd.harvard.edu/research/research_centers/zofnass/, call (617) 496-3138 or write to Zofnass Program, Harvard Design School, 48 Quincy St, Cambridge, MA 02138. No part of this publication may be reproduced, stored in a retrieval system, used in a spreadsheet, or transmitted in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without the written permission of the Zofnass Program at Harvard University.

1	INTRODUCTION.....	3
2	BACKGROUND.....	3
2.1	Phases I and II. Scope of works.....	4
2.2	Phases III and IV. Scope of works.....	7
3	APPLICATION OF THE ENVISION RATING SYSTEM	8
3.1	Introduction.....	8
4	EVALUATION CATEGORIES.....	8
4.1	Quality of life.....	8
4.1.1	Growth, development and employment on the area.....	9
4.1.2	Enhance Public Health and Safety.....	10
4.1.3	Noise, vibration and light pollution.....	11
4.1.4	Preserve views, local character.....	12
4.1.5	Non applicable credits.....	12
4.1.6	Quality of life category, summary of results.....	15
4.2	LEADERSHIP.....	16
4.2.1	Facilitate commitment, collaboration and teamwork towards sustainability goals.....	16
4.2.2	By-product synergy and integration.....	18
4.2.3	Planning and monitoring.....	19
4.2.4	Address conflicting regulations and policies.....	19
4.2.5	Leadership category, Summary of results.....	19
4.3	RESOURCE ALLOCATION.....	20
4.3.1	Reduction in net embodied energy and support of sustainable procurement practices.....	21
4.3.2	Reduce excavated materials taking out off site and use regional materials.....	21
4.3.3	Divert waste from landfills and use of materials with recycled content.....	22
4.3.4	Renewable energy, monitoring and reduction of energy consumption.....	23
4.3.5	Fresh water monitoring, water availability and reduction in consumption.....	25
4.3.6	Non applicable credits.....	27
4.3.7	Resource Allocation category, Summary of results.....	27
4.4	NATURAL WORLD.....	28
4.4.1	Preserve prime habitat, prime farmland or Greenfield and biodiversity.....	29
4.4.2	Protect and maintain surface water.....	30
4.4.3	Preserve ground water contamination.....	33
4.4.4	Reduce pesticides and control invasive species.....	35
4.4.5	Restore disturbed soils, protect slopes and manage stormwater.....	35
4.4.6	Non applicable credits.....	35
4.4.7	Natural World, Summary of results.....	36
4.5	CLIMATE AND RISK.....	37
4.5.1	Reduce green house emissions and pollutants.....	37
4.5.2	Assess climate threat and avoids traps and vulnerabilities.....	39
4.5.3	Prepare for long- term and short –term hazard and adaptabilities.....	39
4.5.1	Climate and Risk category, summary of results.....	40
5	RESULTS AND CONCLUSION.....	41
6	Appendix A: Pictures.....	44
7	Appendix B: Acronyms.....	50
8	Appendix C: <i>Envision</i> points table.....	51
9	Appendix D: Credit details.....	52
10	Appendix E: Data provided.....	76

1 INTRODUCTION

This case study outlines the evaluation of Juan Santa Maria International Airport (SJO) in Costa Rica, applying the infrastructure sustainability assessment methodology developed by the Zofnass Program at Harvard University. The evaluation was made using *Envision Rating System for Sustainable Infrastructure, Version 2.0*¹ as a framework.

The economy of Costa Rica relies heavily on tourism, agriculture, and electronic products. Both exports and distribution on the three aforementioned economic activities depend primarily on air transportation. SJO airport is located in Alajuela, approximately 20 kilometers from San José, the capital city of the county. Indicatively, in 2013 the airport handled on average over 100 daily flights and about three million passengers per year. According to the Inter-American Development Bank (IDB), SJO revenue in 2007 was US\$ 50 million, representing an annual growth rate of approximately 8% since 2002.

Due to a continuously growing demand, the Government of Costa Rica (GoCR) requested the elaboration of a Master Plan in 1997. This document stated that the expansion of the airport was required. Since then, several improvements have been done within airport facilities. Considering the big investment required for the completion of the works, IDB started collaboration with the project's sponsors in 2010, providing financial support for the phase II of the expansion.

The scope of this evaluation refers to the modernization and expansion plan of SJO airport, Phase II.

2 BACKGROUND

SJO International Airport was inaugurated in 1958. The parcel of 190 hectares is located on the crest of a hill. Route 1 (the Pan-American Highway), limits the property to the north, Candela street defines the south and east limits, route 122 the west property boundary, and route 124 defines the border to the northwest.

The Government of Costa Rica (GoCR) undertook several repairs and alterations in the facilities, on the late 70s and late 90s, due to increases in the demand and to several other issues such as infrastructural obsolescence or earthquake related damages. The tourist industry boom during the last decade stressed the need of a general modernization and an increase of the capacity at the facilities.

TAMS, an international consulting firm was selected by GoCR to develop a master plan for the expansion and modernization of the airport in 1997. Based on this master plan, the modernization of the airport was divided into four phases. The beginning of the first phase was procured directly by the government. However, in May 2001 GoCR signed a concession contract with Alterra Partners Costa Rica (APCR), a private company. Under the terms of the contract APCR managed the airport operations and assumed the responsibility of completing the modernization works.

¹ This study uses *Envision* as a framework to rate the Juan Santamaría airport expansion project. The *Envision* system has been developed by the Zofnass Program at Harvard University, in collaboration with the Institute of Sustainable Infrastructure (ISI). *Envision* is available online for public use. However, this case study does not constitute an official certification or rating. The ISI as an organization oversees the official verification process in the United States for US infrastructure projects.

APCR fostered projects related with Phase I until 2009, and had completed most of the works for that phase (see figure 1) except for the refurbishment and extension of the main terminal building. Phase II works had also started already, but under a different concession agreement. In fact, in 2009 the airport concession was transferred to Aeris Holding Costa Rica, S.A. (AERIS). Initially, the concession contract with AERIS was conceived as a 15-year program, but later was expanded to 17. Therefore AERIS' concession will extend until May 2026.

AERIS undertook works related to Phase II from June 2009 to December 2010. A year and a half after the transfer of the concession to AERIS, the main works of the expansion in phase II were considered to be complete (Figure 2). Transitional works related with the implementation of phases III and IV were in progress during the writing of this case study. Main works related with aforementioned phases III and IV are expected to begin in the (boreal) summer of 2013.

2.1 Scope of works for Phases I and II

The main interventions that took place in Phase I are shown in figure, in the next page. These works included the following:

1. Construction of a new sewage treatment plant. Before the construction of this plant several septic tanks were distributed throughout the airport. Some of those tanks were in poor condition and posed a risks due to the possibility of leaks². Currently most of the airport's waste waters are treated by the new treatment plant.
2. Relocation of Costa Rican petroleum refinery (RECOPE). This facility is inside the boundaries of the airport. Before the relocation, RECOPE was located where the new airport installations are expected to be built. Once RECOPE's facility was removed, remediation works had to be done on the soil, since it was polluted.
3. Cargo apron expansion: This area around the hangars and terminals is used to park and refuel aircrafts, unload or load cargo, as well as for maintenance or boarding of both crew and passengers.
4. Expansion of the terminal building to the west, so as to increase its capacity.
5. Refurbishment of the old terminal building.
6. Expansion of the roads leading to the airport parking, improving accessibility.
7. Expansion of the parking lot to accommodate the increase of passengers.

² Phase I Environmental Site Assessment by Tylin International, December 10, 2012, Chapter 6.3 Storage Tanks, page 22



Figure 1: Location of the different works in phase I / Source: AERIS Engineering Department.

<ol style="list-style-type: none"> 1. Construction of a sewage treatment plant. 2. Relocation of RECOPE(Costa Rican Petroleum Refinery) 3. Cargo apron expansion. 4. Expansion of the terminal building to the west. 	<ol style="list-style-type: none"> 5. Old terminal refurbishment. 6. Expansion of parking access roads. 7. Expansion of the parking lot.
--	---

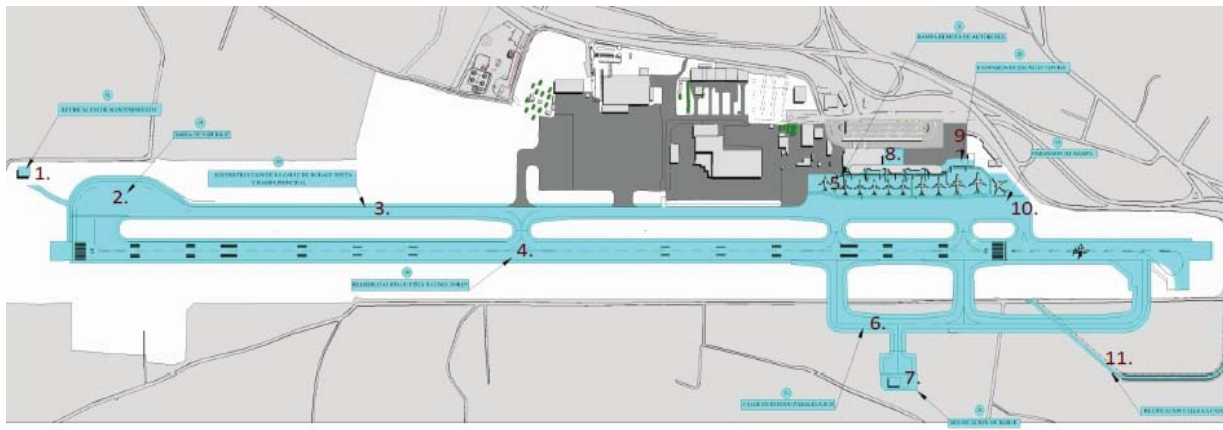


Figure 2: Location of the different works in phase II. / Source: AERIS Engineering Department.

COMPLETED WORKS IN PHASE II.	WORKS DEFERRED TO FUTURE PHASES
<ol style="list-style-type: none"> 2. Hold Pad 07. 3. Apron and taxiway delta rehabilitation. 4. Runway rehabilitation. 5. Remote bus apron – (fixed bridges and GSE road) 8. Rehabilitation and expansion of old terminal building – Done as a new building (East). 9. Hold rooms expansion. Block A, B, C, D, E and F and their respective boarding bridges. 10. Apron expansion. 11. La Candela road relocation – East portion completed 	<ol style="list-style-type: none"> 1. Relocation of maintenance facilities – Deferred to Phase IV 6. South parallel taxiway – Deferred to Phase IV 7. Relocation of Base II (police)– Deferred to Phase IV 11. La Candela road relocation –West portion deferred to Phase IV

certain areas in the old terminal, construction of an electrical substation in block F, construction works at the control tower, installation of emergency lights in the runway, as well as infrastructural improvements and the expansion of the parking lots.

2.2 Scope of works for Phases III and IV.

Construction works to be implemented in the future have been divided according to three time frameworks: short-term (2011-2015) medium-term (2016-2025) and long-term (2026 onwards). The Master Plan has been updated to account for demand changes in the mid and long-term projects. For the short-term projects, the overall implementation strategy consists in execute the works while maintaining the best operative conditions.

Certain projects will allow the transition between the operation of the old buildings and the new ones. Furthermore, there are structures that must be relocated to prepare spaces for coming projects. The time line for the implementation of future projects depends on several key issues, such as the increase or decrease in demand, the construction of the road from San Jose to San Ramón, the actual date of COOPESA's relocation, as well as the environmental remediation of the ground currently occupied by that facility.

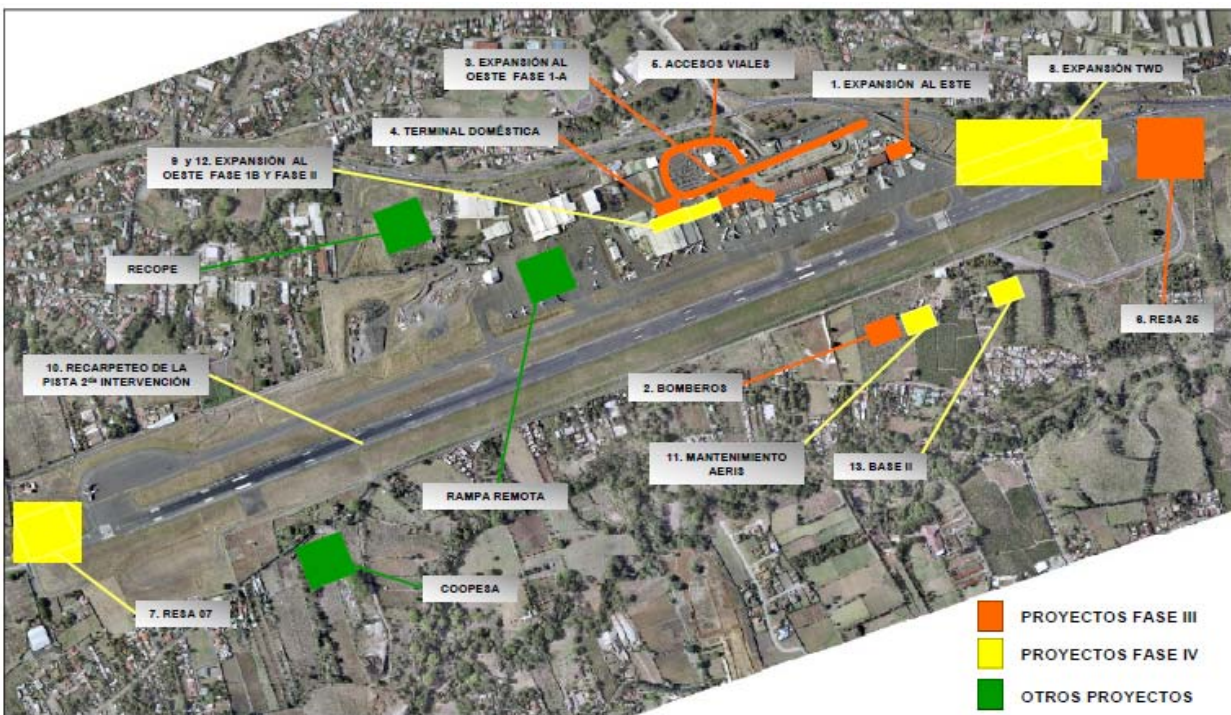


Figure 4: Projects in phase III and IV (2012-2021). / Source: AERIS Engineering Department.

Figure 4 portrays a combination of short-term, mid-term and long-term projects, to be executed on Phases III and IV. It is restated however, that this case study does will only evaluate works related with the Phase II of the expansion project.

3 APPLICATION OF THE ENVISION RATING SYSTEM

3.1 Introduction³

The *Envision* rating system is a set of criteria that assess and evaluate any specific piece of infrastructure. In this case the infrastructure to be assessed is the Phase II expansion of Juan Santamaría International Airport (SJO). The main intent of this report is to evaluate the expansion works and provide recommendations for the future Phases III and IV. Phase II is considered to be complete.

Envision consists of 60 credits grouped into five categories: Quality of Life, Leadership, Resource Allocation, Natural World, and Climate and Risk. Each credit pertains to a specific indicator of sustainability such as reducing energy use, preserving natural habitat, or reducing greenhouse gas emissions. Each credit is rated on a five-point scale referred to as a ‘level of achievement’: improved, enhanced, superior, conserving, and restorative. Evaluation criteria are provided to determine if the qualifications for each level of achievement has been met for a particular credit. In each of the five categories there is a specific credit called “Innovative or exceed Credit Requirements”. This is an open window to reward exceptional performance or the application of innovative methods.

The criteria for the levels of achievement vary from credit to credit but generally an ‘improved’ level of achievement is awarded for performance that slightly exceeds regulatory requirements. ‘Enhanced’ and ‘superior’ levels indicate gradual improvement, while ‘conserving’ often indicates performance that achieves a net-zero or neutral impact. ‘Restorative’ is the highest level and is typically reserved for projects that produce an overall positive impact for the given credit criteria. The *Envision* system weighs the relative value of each credit and level of achievement by assigning points. Credit criteria are documented in the *Envision Guidance Manual*, which is available to the public on the ISI⁴ and Zofnass⁵ Program websites.

Appendix D provides a table with the detailed project assessment, specifications for each of the credits, and recommendations for the project.

4 EVALUATION CATEGORIES

4.1 Quality of life

The first category of the *Envision* rating system is Quality of Life. The assessment here mainly refers to the impact of the project on the surrounding communities and their well-being. “Quality of Life particularly focuses on assessing whether infrastructure projects are in line with community goals, incorporated into existing community networks, and will benefit the community long term.”⁶ It also determines if the project is aligned with community needs.

³ Anthony Kane, Zofnass program research director and Salmaan Khan, research assistant, have written this section.

⁴ www.sustainableinfrastructure.org

⁵ www.zofnass.org

⁶ *Envision* Guidance Manual, p.30

This category is divided into 3 subcategories and 12 credits: Purpose (QL 1.1, QL 1.2, QL 1.3), Community (QL 2.1, QL 2.2, QL 2.3, QL 2.4, QL 2.5, and QL 2.6) and Well-Being (QL 3.1, QL 3.2, QL 3.3).

1	PURPOSE	QL1.1 Improve community quality of life	2	5	10	20	25
2		QL1.2 Stimulate sustainable growth and development	1	2	5	13	16
3		QL1.3 Develop local skills and capabilities	1	2	5	12	15
4	COMMUNITY	QL2.1 Enhance public health and safety	2			16	
5		QL2.2 Minimize noise and vibration	1			8	11
6		QL2.3 Minimize light pollution	1	2	4	8	11
7		QL2.4 Improve community mobility and access	1	4	7	14	
8		QL2.5 Encourage alternative modes of transportation	1	3	6	12	15
9		QL2.6 Improve site accessibility, safety and wayfinding		3	6	12	15
10	WELLBEING	QL3.1 Preserve historic and cultural resources	1		7	13	16
11		QL3.2 Preserve views and local character	1	3	6	11	14
12		QL3.3 Enhance public space	1	3	6	11	13
			13	27	62	150	151

Figure 5: Quality of life category, credits distribution.

4.1.1 Growth, development and employment on the area

One of the fields of assessment in its first category is Growth, development and local employment. The expansion of the International Airport Juan Santamaría (SJO) represents a significant contribution to the county’s development, and promoted employment in the surrounding communities. The economy of Costa Rica is based on tourism, agriculture, and export of electronic products. The distribution of these products relies, among other factors, on a good international network of air transportation.⁷

The Master Plan states that: *“The Airport is connected with non-stop services to 27 international markets in 15 countries and handles approximately 82,000 metric tons of air cargo per year. [...] The Airport is well positioned to take advantage of this growth as it handles 86% of the international traffic to Costa Rica. Since 2002, passenger growth has increased on average over 8% per year.”*⁸

Furthermore the Master Plan assert that without the completion of the expansion works in the coming years, present capacity at the airport will be insufficient for the services required of it. Based on the forecasts for years 2015 to 2025, transportation of goods and passengers are expected to grow exponentially.

During this process of growth and development, one of the main goals has been to align community needs with project requirements. A Social Management Program Plan⁹ has been developed at the beginning of 2013 and is currently being implemented. A new program called “Suggestions, complains and allegations program”, implemented in 2013, aims to assess community and customers’ needs. This program collects, analyzes and processes suggestions, complaints or allegations regarding to the quality of the services provided at SJO, or any other issue associated with the relationship between SJO International Airport and the community.

⁷ Master Plan, updated August 2011, chapter 1.1 page 1-2 “Function and history of the airport”.

⁸ Ibid, page 1-2 and 2-3 “Historical and projection based passenger”.

⁹ Social Management Plan Actions - Juan Santamaría International Airport matrix point 10.2.

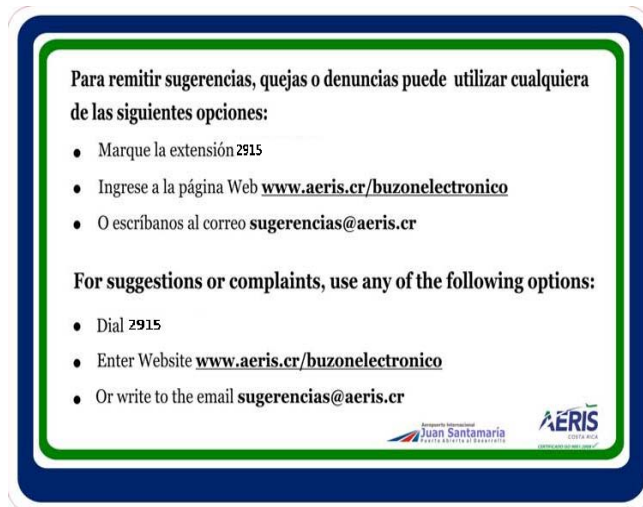


Figure 6: Information about the “Suggestions, complain and allegation program”
Source: AERIS.

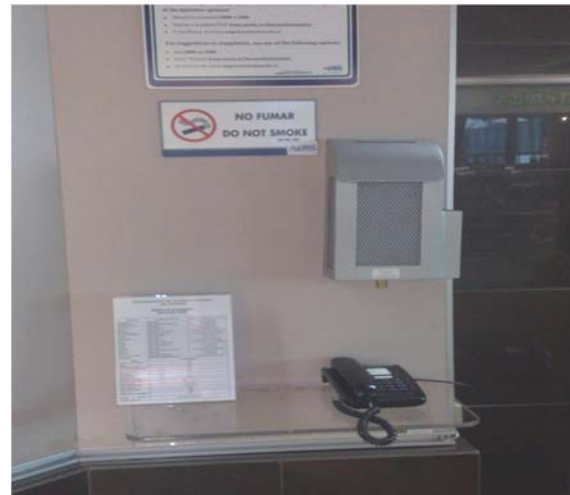


Figure 7: Information about the “Suggestions, complain and allegation program” Mail box and telephone for suggestions.
Source: AERIS.

The project will also generate substantial employment potential for local companies during construction. The expansion will likely lead to hundreds of jobs in the next years, and benefit local economies. The Environmental and Social Management Report states that: *“during construction, as many as 300 workers will be required between direct hires and subcontractors...”*¹⁰ The Environmental Analysis Report, prepared by Siel-Siel in 2009, emphasizes the importance of giving priority to hiring duly trained local labor for the execution of the works, and states that: *“The expansion of the airport could result in more employment opportunities for the area and stimulate the growth of local industries”.*¹¹

4.1.2 Enhance Public Health and Safety

The project has taken into account the risk created by the use of new materials, technologies, and construction processes. Futuris Consulting has conducted several site visits pointing out changes required to minimize such risks.¹² Furthermore, specific methodologies and protocols have been applied to the treatment and management of hazardous materials. For instance the treatment used to refurbish the runway, implies the use of a bituminous substance with a specific application methodology. The risks associated to the deployment of this methodology required an independent risk evaluation.

¹⁰ Environmental and Social Management Report by IDB, Oct. 2009, page 4.

¹¹ Environmental Analysis Report. Siel – Siel, 2009, page 16.

¹² Construction EHS Risk Review, by Environmental, Health and Safety Advisors. Report June 2010 and update August 2010.

4.1.3 Noise, vibration and light pollution.



Figure 8: Recommendations for COOPESA relocation \ Source: Noise Technical Report 2013, Exhibit 7.



Figure 9: Surrounding communities
Source: Picture taken during onsite visit, April 2013



Figure 10: School playground next to the fence of the airport
Source: Picture taken during onsite visit, April 2013

One of the main issues related with the airport is the disturbance of the adjacent communities by noise and light pollution. The noise peaks occur mainly during take-off, landing, and while performing engine run-ups. Those impacts are inherent to the operation of an airport. However, periodic monitoring should ensure that these noises do not exceed the maximum allowable values. The Noise Technical Report states that: *“None of the Master Plan projects would result in noise impacts that exceed significant thresholds*

established per U.S. FAA¹³ standards; therefore, no mitigation is required¹⁴. The referred document, prepared in February 2013, provide specific recommendations to prevent possible noise exposures in the area managed by AERIS, and in the area managed by COOPESA, stating that “any mitigation [measures] required due to the impacts of [COOPESA’s relocation] will be a responsibility of that institution”¹⁵

In terms of light pollution, several companies are in charge of the proper illumination of the airport. The main drivers taken into consideration are safety, glare prevention, and to a lesser extent, avoid community disturbance. The possibility of light pollution is controlled following specific regulations related with airports. Indoor areas promote the best use of natural light to reduce energy consumption.

There are no reports of vibration problems related with the operation of the Airport, in the communities surrounding SJO.

4.1.4 Preservation of views and local character

The Environmental Impact Assessment has provided some information on processes for the conservation of the landscape¹⁶. However, there is no evidence to support the notion that the preservation of views and local character has been a criteria taken in consideration while designing the project. As a result the credit has been assessed as “not achieved”.

4.1.5 Non applicable credits

According to Phase II scope of works, the improvement of accessibility and the promotion of alternative modes of transportation were not part of AERIS obligations. For this reason *QL2.4 Improve Community Mobility and Access*, and *QL2.5 Encourage Alternative Modes of Transportation*, were considered to be “non-applicable” in the assessment of the project.

The roads that connect to the airport are currently the main ways of accessing the area. Private cars, public buses, hotel shuttles, buses or taxis are the main modes of transportation used to reach the airport. The road network usually operates at its maximum capacity and is prone to traffic jams. Long-term improvements in the surrounding roads are expected to ameliorate this problem.¹⁷

¹³ Due to the lack of specific regulations related with aircraft noise in Costa Rica, norms established by the U.S. Federal Aviation Administration (FAA) were applied.

¹⁴ Noise Technical Report by Landrum & Brown, February 2013, page 22.

¹⁵ Ibid, page 23.

¹⁶ Master plan, landscape and visual effects management chapter 7

¹⁷ Master Plan, updated August 2011" page 1-24 (look at the maps).



Figure 11: Roads surrounding the airport. \Source: Master plan, updated August 2011 page 1-24



Figure 12: Main terminal entrance.
Source: Picture taken during onsite visit, April 2013



Figure 13: Access roads to the airport from Alajuela.
Source: Picture taken during onsite visit, April 2013

Regarding site accessibility and way-finding, the works that are currently in progress are clearly signposted and as a result, dangers and disturbance for both workers and passengers are avoided. Daily inspections, following international standards, control the proper lettering and signage in the terminal building and the entire airport facilities. As indicated in the Environmental and Social Impact Assessment, there are areas without sidewalks in the surroundings of administrative offices, and this represents a risk for pedestrians.¹⁸ The construction will proceed in phases in order to minimize the disruption of normal airport operations. *Regency Environmental Report 101* states that posters providing general information about the project are displayed in locations with high visibility.¹⁹

The credit *QL3.1 Preserve Historic and Cultural Resources*, has not been considered in this evaluation. As stated in several documents presented, the possibility of finding archaeological heritage in the area is considered remote²⁰. “The risk of archaeological site impact is insignificant as the Project is being conducted within built areas. An archeological study was completed for Phase I and II and the results were approved by SETENA. Although the chances to find archeological remains are minimal, the Project has an established procedure as part of its Environmental Management Plan”. The aforementioned procedure is established in a protocol,²¹ which states the need to notify the National Museum of Costa Rica for any necessary actions.

¹⁸ Initial Environmental and Social Impact Assessment. By Futuris, table 17.4, page 122 point 3.2

¹⁹ Regency Environmental Reports num. 101 page 24, C30.

²⁰ Environmental and Social Management Report by IDB, October 2009, point 5.8 page 12

²¹ P-14014 Archaeological findings.

4.1.6 Summary of results for the Quality of Life category,

The distribution of credits as well as the level of performance achieved in each credit are portrayed in the table below. The overall level of achievement in the category Quality of Life (QL), is the third best result of this project, with a percentage of achievement of 47. In this category, the project obtained 64 points out of 136 possible.

INTERNATIONAL AIRPORT JUAN SANTAMARIA, COSTA RICA			PT.	Performance	max.	
1	PURPOSE	QL1.1 Improve Community Quality of Life	10	Superior	25	
2		QL1.2 Stimulate Sustainable Growth & Development	13	Conserving	16	
3		QL1.3 Develop Local Skills And Capabilities	2	Enhanced	15	
4	COMMUNITY	QL2.1 Enhance Public Health And Safety	16	Conserving	16	
5		QL2.2 Minimize Noise And Vibration	8	Conserving	11	
6		QL2.3 Minimize Light Pollution	8	Conserving	11	
7		QL2.4 Improve Community Mobility And Access-	0	Not Applicable	0	NA
8		QL2.5 Encourage Alternative Modes of Transportation	0	Not Applicable	0	NA
9		QL2.6 Improve Site Accessibility, Safety & Wayfinding	6	Superior	15	
10	WELLBEING	QL3.1 Preserve Historic And Cultural Resources	0	Not Applicable	0	NA
11		QL3.2 Preserve Views And Local Character	0	Non Achieving	14	
12		QL3.3 Enhance Public Space	1	Improved	13	
QL0.0 Innovate Or Exceed Credit Requirements			0	Non Achieving		8
QL			64		136	

Figure 14: Summary of results in Quality of life category

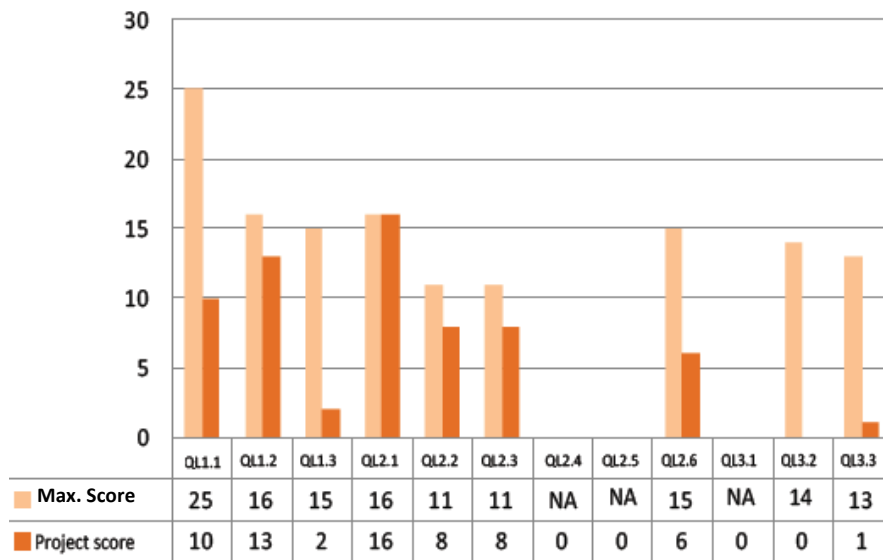


Figure 15: Summary of results in Quality of life category

4.2 LEADERSHIP

Envision's Leadership category evaluates the collaboration, management and planning among the project team as well as its stakeholders. *Envision* states that “communicate and collaborate early on, involve a wide variety of people in creating ideas for the project, and understand the long-term, holistic view of the project and its life cycle.”²²

The 12 credits in this category are divided into three subcategories: Collaboration (LD 1.1, LD 1.2, LD 1.3, and LD 1.4), Management (LD 2.1, LD 2.2) and Planning (LD 3.1, LD 3.2, and LD 3.3).

TABLE OF POINT VALUES

			Improved	Enhanced	Superior	Conserving	Restorative
13	COLLABORATION	LD1.1 Provide effective leadership and commitment	2	4	9	17	
14		LD1.2 Establish a sustainability management system	1	4	7	14	
15		LD1.3 Foster collaboration and teamwork	1	4	8	15	
16		LD1.4 Provide for stakeholder involvement	1	5	9	14	
17	MNGMT.	LD2.1 Pursue by-product synergy opportunities	1	3	6	12	15
18		LD2.2 Improve infrastructure integration	1	3	7	13	16
19	PLANNING	LD3.1 Plan for long-term monitoring and maintenance	1	3		10	
20		LD3.2 Address conflicting regulations and policies	1	2	4	8	
21		LD3.3 Extend useful life	1	3	6	12	
			10	31	56	115	31

Figure 16: Leadership category, credits distribution.

4.2.1 Facilitate commitment, collaboration and teamwork towards sustainability goals

The commitment of the project to achieve sustainable or environmental goals is clearly stated in several documents. The line of responsibilities regarding environmental issues is well defined. Protocols to be followed in the event of an environmental impact are specified. A new department of Environment and Sustainability was created in 2011-2012. This department has several responsibilities, such as monitoring soil and air pollution, control spills and provide training to AERIS' team in issues related with the environment.²³

A list of objectives towards sustainability has been published, establishing goals for the year 2013.²⁴ Protocols of Control for Environmental Management are provided.²⁵ A monitoring process was developed during construction phase and the results were summarized in several Environmental Regency reports. There are clearly defined processes to follow, from the location of any given problem to the solution that is deployed. Environmental obligations must be accepted in all contracts signed between AERIS and any subcontractor, according to the Environmental Regency Reports.

²² *Envision* Guidance Manual, p.60

²³ MA-14000 Manual of the System of Environmental Management, Social Health and Safety Chapter 5, page 16.

²⁴ Policy Management 14001/OHSAS 18001/ISO 26000 // Environmental objectives Aeries Holding Costa Rica S.A./ Occupational health and safety objectives Aeries Holding Costa Rica S.A.

²⁵ Special Report by Environmental Regency, modification of PGA, version II.

Figure 18: Environmental objectives AERIS.
Source: AERIS Environmental department.



Figure 17: Policy Management 14001/OHSAS 18001/ ISO 26000.
Source: AERIS Environmental department.



A comprehensive commitment from AERIS' team to meet Sustainability goals was established. A Monitoring process of the initiatives to promote sustainability has been recently implemented. These initiatives are mainly focused in controlling energy and water consumption, as well as possible spills. Annual reports of Environmental Regency summarize the most important issues of that period and the different problems that still need to be addressed. Finally, weekly meetings are conducted to inform the team about the progress of the project and other issues.

As mentioned previously, certain measures have been recently implemented, to involve stakeholders in the work towards sustainable goals. These measures include the creation of electronic mailboxes and a website²⁶ to assess the satisfaction of customers, as well as receive suggestions. This information will be used to create the communication strategy for stakeholders.

²⁶ <http://190.10.79.155/buzonelectronico>

As stated at ESHS Management Social Plan (2013), some of the measures currently implemented are: Strengthening the education on issues of sustainability and social responsibility; Involvement with topics of community interest; as well as the construction of a communication and involvement strategy with the stakeholders.

ESHS Management System Social Plan 2013					
Fase	#	Actividad	#	Sub-Actividad	Indicador
Fase I. Cultura y Acercamiento con grupos de interés	1	Fortalecer la cultura en temas de sostenibilidad y responsabilidad social a lo interno	1	Generar un plan de capacitación al personal de AERIS en temas de sostenibilidad y Responsabilidad Social alineado a ISO 26000	Cumplir al menos con el 80% de las horas programadas de capacitación para el año 2013.
			2	Crear Comité de Sostenibilidad (RSE) (formado por grupo de trabajo de diferentes departamentos de AISJ y con representantes de la gerencia)	
	2	Involucramiento con los temas de interés	1	Priorización de grupos de interés mapeados en evaluación de impacto social y ambiental	Comunicar los proyectos de expansión del AISJ al 50% a la población que conforma los Grupos de Interés, para el año 2013. Cumplir con el 50% de las acciones que conformar el plan de trabajo del Comité de Sostenibilidad, para el año 2013.
			2	Establecer la estrategia de involucramiento con la comunidad	
			3	Establecer el cronograma de reuniones con los grupos de interés prioritarios para el 2013 (Establecer un plan de trabajo para el años 2013).	
	3	Desarrollo de estrategia de comunicación e involucramiento con los GI	1	Definir exactamente que información se va a compartir con los GI y qué medio se va a utilizar para la comunicación de la información. En términos generales determinar los medios, niveles y tipos de comunicación a ser compartidas.	
			2	Revisión y actualización del procedimiento de comunicación con la comunidad para asegurar una comunicación regular con los GI y que ellos entiendan los métodos para contactar a AERIS, cuando haya una queja o una preocupación.	
			3	Capacitar al personal de AERIS que recibe y tramita quejas y denuncias de la comunidad	
			4	Establecer las iniciativas para con base en los temas claves	

Figure 19: ESHS Management System Social Plan 2013
Source: AERIS Environmental Department.

4.2.2 By-product synergy and Integration.

The expansion project aims to integrate the new phases of the airport with the existing infrastructure, especially the surrounding roads. Several alternatives were analyzed in the Master Plan, in order to find the best way to connect new and existing buildings, while addressing short and long term impacts related with the airport’s expansion.²⁷

In regard to by-product synergy, no specific program for using unwanted materials from nearby facilities has been developed. To reduce project costs and the use of raw materials, soil extracted from the excavations was used in fillings and leveling works.

²⁷ Master Plan, updated August 2011 Chapter 4, pages 4-1 to 4-82.

4.2.3 Planning and monitoring

Long-term monitoring and maintenance procedures have been established for construction phase and subsequent stages. A maintenance plan, updated yearly, includes all airport installations and is supervised by Civil Aviation authorities. Furthermore, there are training programs for monitoring and maintenance personnel.

Responsibilities regarding control and monitoring processes are clearly stated. Protocols explain how to proceed in the event of non-conformities and establish corrective or preventive actions. The yearly budget associated to maintenance and the works carried out are specified in the maintenance plan. In conclusion, several monitoring programs have been implemented in 2013. The main monitored aspects are energy and water consumption, strategies to prevent spills and contamination produced by solid waste.

4.2.4 Address conflicting regulations and policies

Two different issues related with conflicting regulations have been identified, and this could create barriers to the implementation of sustainable practices in the airport. The first conflict refers to the location of COOPESA. This aircraft maintenance facility is not directly controlled by AERIS. In order to continue the expansion process as planned, COOPESA’s relocation is required. There are strong indications that the ground under the facility is polluted. Presumably pollution is related with spills of hazardous materials, primarily hydrocarbons, which occurred along the operation of this facility. The decontamination of the ground is expected to take place after the relocation of COOPESA. Currently (2013) there is no information about when this is going to happen.

The second conflict that may affect the future expansion of the airport is the growth of the surrounding communities. One of the ways to minimize the impacts of SJO on nearby communities, is to prevent urban expansion towards the boundaries of the airport. Currently, expansion plans for SJO and urban development plans for the area seem in concordance but future growth may pose issues.

4.2.5 Summary of results for the Leadership category

The distribution of credits as well as the level of performance achieved in each of those credits is shown in the table below. The score of the Leadership category (LD) has been the second highest in this project, after Natural World. The credits achieved scored 61 points out of 121, or a 50% of the total. There weren’t any “non applicable” credits in this category.

13	COLLABORATION	LD1.1 Provide Effective Leadership And Commitment	9	Superior	17	
14		LD1.2 Establish A Sustainability Management System	7	Superior	14	
15		LD1.3 Foster Collaboration And Teamwork	8	Superior	15	
16		LD1.4 Provide For Stakeholder Involvement	5	Enhanced	14	
17	MINGMT.	LD2.1 Pursue By-Product Synergy Opportunities	1	Improved	15	
18		LD2.2 Improve Infrastructure Integration	7	Superior	16	
19	PLANNING	LD3.1 Plan For Long-Term Monitoring & Maintenance	10	Conserving	10	
20		LD3.2 Address Conflicting Regulations & Policies	8	Conserving	8	
21		LD3.3 Extend Useful Life	6	Superior	12	
		LD0.0 Innovate Or Exceed Credit Requirements	0	Non Achieving		8
		LD	61		121	

Figure 20: Summary of results in Leadership category

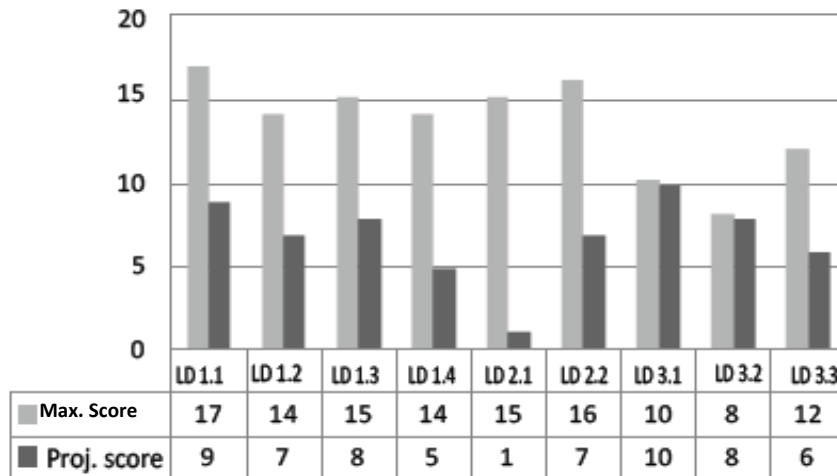


Figure 21: Summary of results in Leadership category

4.3 RESOURCE ALLOCATION

Resource Allocation (RA) category deals with the quality and source of the materials used in the project, during its construction and operation phases. It has been proven that the use of the right materials has a great impact on the overall sustainability of the project. RA is divided into 13 credits: materials (RA 1.1, RA 1.2, RA 1.3, RA 1.4, RA 1.5, RA 1.6, RA 1.7), energy (RA 2.1, RA 2.2, RA 2.3) and water (RA 3.1, RA 3.2, RA 3.3).

TABLE OF POINT VALUES

			Improved	Enhanced	Superior	Conserving	Restorative
22	MATERIALS	RA1.1 Reduce net embodied energy	2	6	12	18	
23		RA1.2 Support sustainable procurement practices	2	3	6	9	
24		RA1.3 Use recycled materials	2	5	11	14	
25		RA1.4 Use regional materials	3	6	9	10	
26		RA1.5 Divert waste from landfills	3	6	8	11	
27		RA1.6 Reduce excavated materials taken off site	2	4	5	6	
28		RA1.7 Provide for deconstruction and recycling	1	4	8	12	
29	ENERGY	RA2.1 Reduce energy consumption	3	7	12	18	
30		RA2.2 Use renewable energy	4	6	13	16	20
31		RA2.3 Commission and monitor energy systems			3		11
32	WATER	RA3.1 Protect fresh water availability	2	4	9	17	21
33		RA3.2 Reduce potable water consumption	4	9	13	17	21
34		RA3.3 Monitor water systems	1	3	6	11	
			29	66	112	170	62

Figure 22: Resource Allocation category, credits distribution.

4.3.1 Reduction in net embodied energy and support of sustainable procurement practices

Environmental standards must be accepted by any subcontractor who signs a contract with AERIS. However, there is no specific data about suppliers' performance regarding to sustainable procurement. It is unknown if materials have been purchased from suppliers that follow sustainable practices. There is no data available to prove that a life cycle energy assessment on used materials, was performed in accordance to recognized and accepted methodologies.

4.3.2 Reduction of excavated materials taken off-site and use of regional materials

One of the main issues in terms of sourced materials is the transportation of such material to the project site.²⁸ Certain materials used, such as asphalt and concrete, were locally sourced. One of the main materials, the soil, comes from excavations taking place into airport and is been reused for filling or leveling. There is no information about the exact amount of reused excavated material. A vast amount of soil is stockpiled in the airport for future reuse. Several reports of Environmental Regency, asseverate that only the necessary soil for the completion of the works has been excavated²⁹.



Figure 23: Re-use of excavated material.
Source: Picture taken during onsite visit, April 2013



Figure 24: Re-use of excavated material.
Source: Picture taken during onsite visit, April 2013

²⁸ *Envision Guidance Manual*, p.92. "Transportation is a major consumer of fossil fuels and the source of greenhouse gas emissions and other pollutants. Wear and tear reduces the lifespan of transportation infrastructure while sea freight pollutes waters and damages marine environments. This is compounded by the large quantities of materials often needed in infrastructure projects. Regional materials, even materials sourced or processed on site, reduce the impact of long transport and supports local economies"

²⁹ Environmental Regency Report. Num.96, page 15, C2.

4.3.3 Divert waste from landfills and use of materials with recycled content

Documents shows that waste management efforts have led to high rates of recycling.³⁰ A description of procedures related with recycling at SJO passenger terminal is included in document P-14017.³¹ The 2012 annual report states that the percentage of recycled material has increased in the last three years. As a result, the amount of waste sent to the landfills has decreased since 2010.³²

Year	Ordinary Waste Recycled (t)	Hazardous Waste Disposed of (t)	Landfill (t)	Total Waste Generated (t)
2010	15.3	14.1	995	1024.4
2011	33.4	5.8	873	912.2
2012	61.1	3.5	774	838.6
TOTAL	109.8	23.4	2642	2786

Figure 25: Amount of recycled content in the last three years / Source: Annual Report 2012, page 27

The Waste Management Plan, approved by the Ministry of Health, is currently being implemented. The Environmental and Social Management Report by IDB mentions that *“With the expansion of the airport, an increase in the demand of services provided by local governments is expected. The most important impact will be the increase in volume of waste sent to local landfills, related with non-international waste.”*³³



Figure 26: Recycling of solid waste.
Source: Picture taken during onsite visit, April 2013



Figure 27: Treatment of Bio-hazardous waste.
Source: Picture taken during onsite visit, April 2013

³⁰ Initial Environmental and Social Impact Assessment, by Futuris, chapter 11, Page 49-53/ Table 11.4 Amount of recycling materials in the last years (2006-2010).

³¹ P-14017 Management of Recycling in the AIJS Passenger Terminal.

³² Annual Report 2012 by AERIS. Page 27

³³ Environmental and Social Management Report by IDB, Oct. 2009, point 5.11 page 13.

Different residues are being sorted and processed by different companies. For instance, "Servicios Ecológicos M.B.B. S.A" recycles items such as cardboard, paper, newspaper, plastic bags, plastic bottles, aluminum cans, or fluorescent lamps, among others. Used oil and absorbent material are also recycled.³⁴

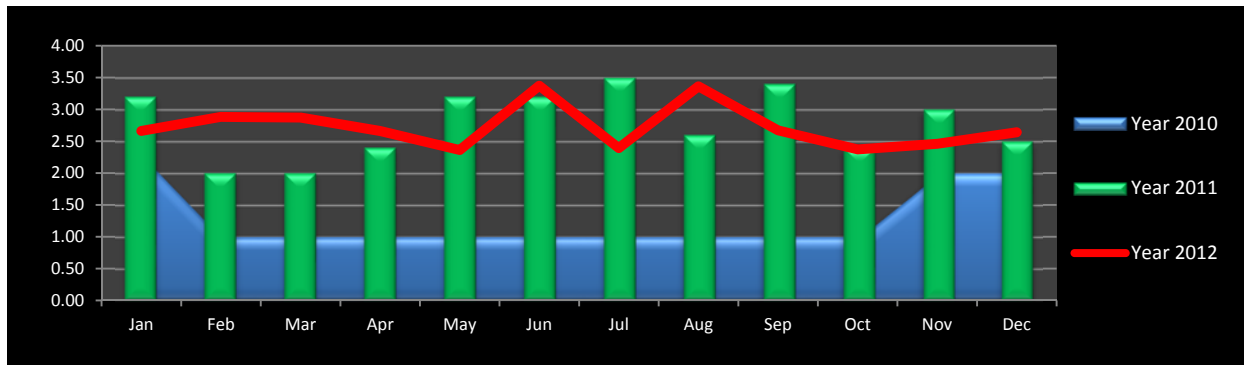


Figure 28: Recycling of non-hazardous waste per month, for 2010-2012
Source: Environmental Department (AERIS)

No information has been provided about the use of material with recycled content. As stated in the Construction Works Manual at SJO (MA-1124), one of the criteria for choosing materials is design and aesthetic harmony: *“building materials used by all commercial subcontractors, must respect the same features, qualities and construction procedures [...] In this way, all the works inside the terminal, must harmonize and complement in design with the existing ones”*. Therefore, the materials will likely be specified from the same sources as the existing ones.³⁵

There is an established protocol to authorize materials that were not used previously at the project. After studying the technical specifications of the materials, use is authorized or denied. No data provided indicates that recycling is a criteria followed to authorize the use of materials.

4.3.4 Renewable energy, monitoring and reduction of energy consumption

Measures to reduce energy consumption have been implemented at SJO airport. These measures include maximize use of natural light, using LED bulbs in the parking building and the installation of a wind generator to provide electricity for that facility. Furthermore, solar panels were installed to provide energy to the runway and the weather station, as well as escalators that stop automatically when there are no users.

A detailed monitoring process was created during early 2013, focused on reducing energy consumption. Aeris expects significant energy savings throughout the project life cycle. Since these measures have been only recently implemented, there is still no data about the overall success of these efforts.

³⁴ Regency Environmental Report. Num.92, Annex 4, waste management/ Regency Environmental Report. Num.94, page 16, C28/ Regency Environmental .Report Num.96, page 20, C10.

³⁵ MA-1124 Construction Works Manual at AIJS, Annex D, page 51.



Figure 29: Eolic Generator provides electricity to the parking
Source: Picture taken during onsite visit, April 2013



Figure 30: Energy-saving escalator
Source: Picture taken during onsite visit, April 2013



Figure 31: Natural lighting allows for electricity savings.
Source: Picture taken during onsite visit, April 2013



Figure 32: As a result of a proper use of natural light, lamps in the terminal are switched off most of the time.
Source: Picture taken during onsite visit, April 2013



Figure 33: Use of solar energy to provide power to the meteorological station.
Source: Picture provided by AERIS April 2013



Figure 34: Change of the parking lights with LED ones
Source: Picture provided by AERIS, April 2013

4.3.5 Fresh water monitoring and water consumption reduction.

Opportunities to optimize fresh water consumption have been identified at SJO airport operations, such as the reuse of water required for the tests on fire protection systems or the usage of waterless urinals. Several projects are expected to be implemented in the short and long-term, to guarantee water availability. The measures applied in water monitoring are very recent, and as a result no specific data about water consumption is available yet.

An independent entity monitors periodically water quality in several locations at the airport. Samples on drinking water are regularly tested to determine chlorine levels. These controls enable long-term water quality assurance.



Figure 35: Test to detect residual chlorine
Source: picture provided by AERIS

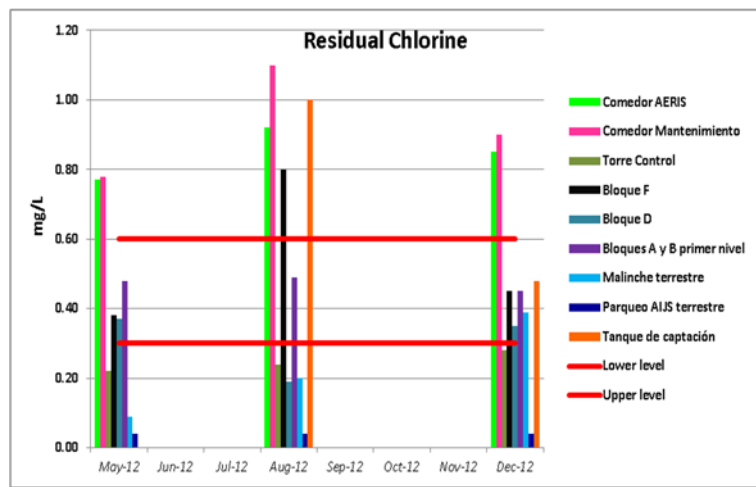


Figure 36: Results of the test to measure residual chlorine
Source: picture provided by AERIS

According to the Environmental Analysis Report³⁶, semi-annual or quarterly monitoring measures keep track of the water quality. Currently AERIS is implementing an annual program to monitor water quality³⁷, which allows for a more detailed identification of any possible impact. Thanks to this level of control it is possible to detect water pollution sources and act in with celerity. Monitoring tests have also been conducted in ground water, surface water, waste water and rain water.

³⁶ Environmental Analysis Report, by Siel-Siel in 2009, page 13

³⁷ Annual Program of Monitoring Water Quality -2013 AIJS; Monitoring of groundwater; Monitoring surface water; Effluent monitoring; Monitoring rainwater.

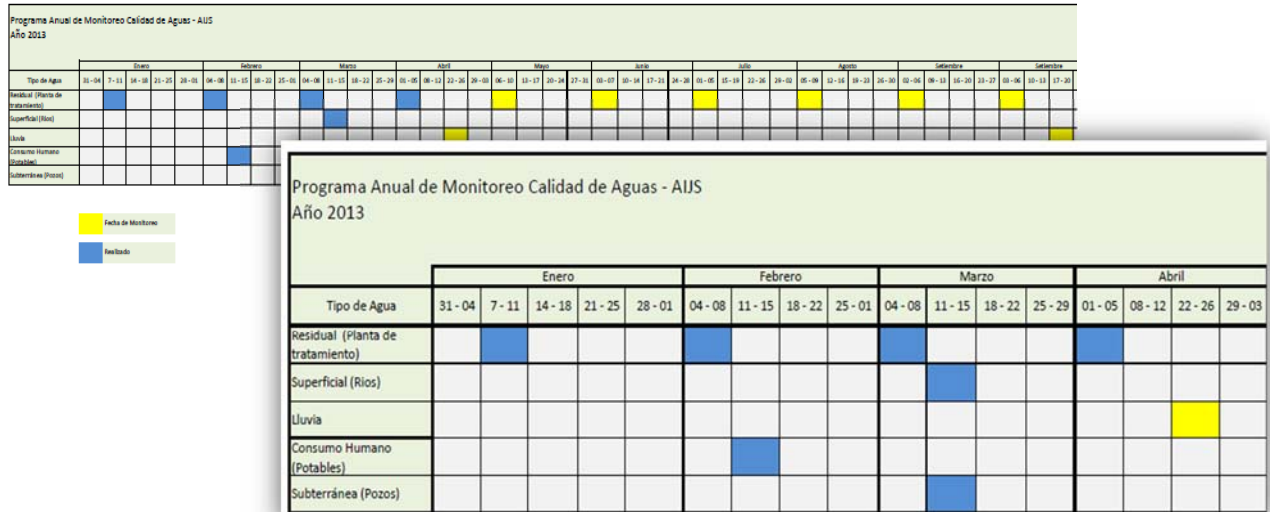


Figure 37: Program for water monitoring. Waste water plant; surface water; storm water; fresh water and ground water.

■ Scheduled monitoring
 ■ Monitoring already carried out.
 Source: Table provided by AERIS

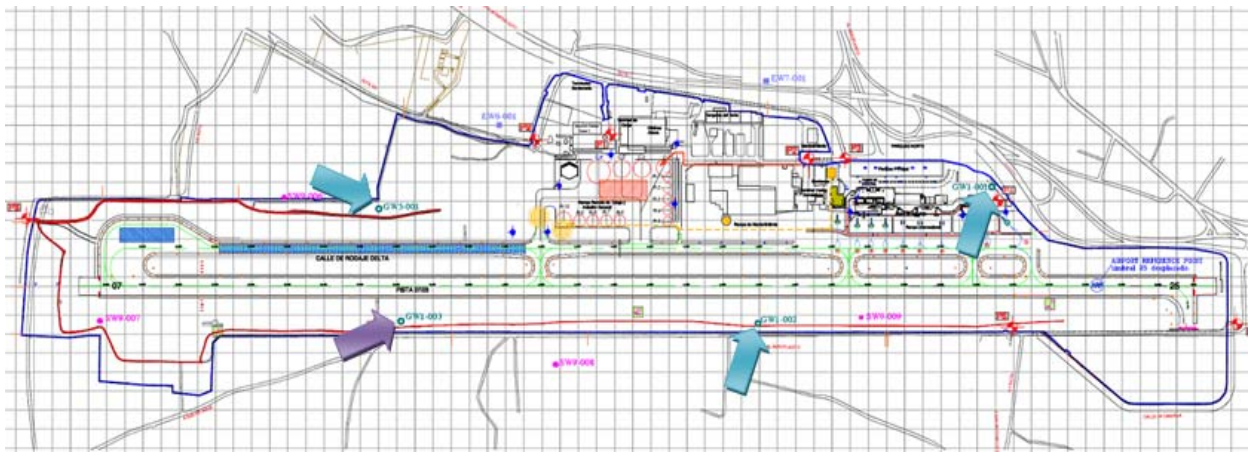


Figure 38: Monitoring of surface water
Source: Documentation provided by AERIS

➔ Wells that are monitored regularly.
 ➔ Not monitored wells.

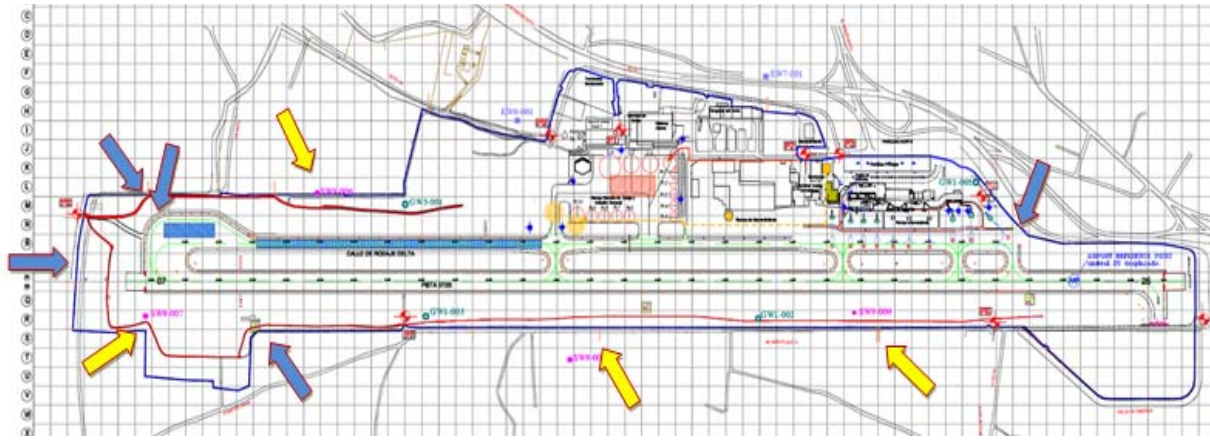




Figure 39: Monitoring of stormwater  Stormwater sampling points. (Historical)  Possible new sampling points
Source: Documentation provided by AERIS

4.3.6 Non applicable credits

One credit has been evaluated as non-applicable in this category. The referred credit is *RA1.7 Provide for Deconstruction & Recycling*. It is considered non-applicable since the project is an expansion and retrofit, with limited new construction.

4.3.7 Resource Allocation category, Summary of results

The distribution of credits for the Resource Allocation category, as well as the level of performance achieved in each of those credits is shown in the table below.

22	MATERIALS	RA1.1 Reduce Net Embodied Energy	0	Non Achieving	18	NA
23		RA1.2 Support Sustainable Procurement Practices	0	Non Achieving	9	
24		RA1.3 Used Recycled Materials	5	Enhanced	14	
25		RA1.4 Use Regional Materials	6	Enhanced	10	
26		RA1.5 Divert Waste From Landfills	6	Enhanced	11	
27		RA1.6 Reduce Excavated Materials Taken Off Site	5	Superior	6	
28		RA1.7 Provide for Deconstruction & Recycling	0	Not Applicable	0	
29	ENERGY	RA2.1 Reduce Energy Consumption	7	Enhanced	18	NA
30		RA2.2 Reduce Pesticide and Fertilizer Impacts	4	Improved	20	
31		RA2.3 Commission & Monitor Energy Systems	11	Conserving	11	
32	WATER	RA 3.1 Protect Fresh Water Availability	2	Improved	21	NA
33		RA3.2 Reduce Potable Water Consumption	4	Improved	21	
34		RA3.3 Monitor Water Systems	11	Conserving	11	
		RA0.0 Innovate Or Exceed Credit Requirements	0	Non Achieving		8
		RA	61		170	

Figure 40: Summary of results in Resource Allocation category

The RA category has the fourth best performance of this project, obtaining 61 points out of 170, which represents 36% of the total.

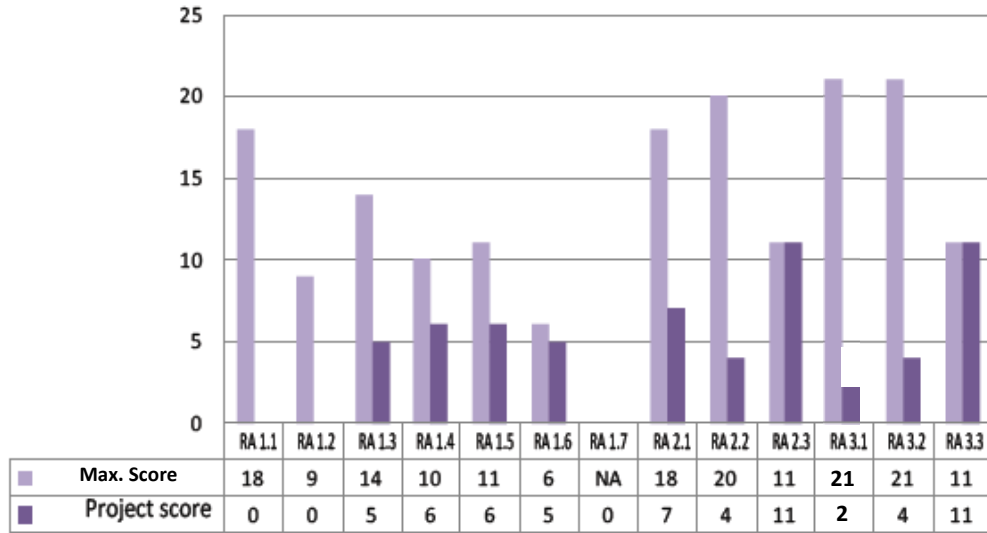


Figure 41: Summary of results in Resource Allocation category

4.4 NATURAL WORLD

The Natural World category addresses “how to understand and minimize negative impacts while considering ways in which the infrastructure can interact with natural systems in a synergistic, positive way.”³⁸ The NW category is divided into 14 credits related to project siting (NW 1.1, NW 1.2, NW 1.3, NW 1.4, NW 1.5, NW 1.6, and NW 1.7), impacts on land and water (NW 2.1, NW 2.2, NW 2.3) and biodiversity (NW 3.1, NW 3.2, NW 3.3, NW 3.4).

35	NATURAL WORLD	SITING	NW1.1 Preserve prime habitat			9	14	18		
36			NW1.2 Protect wetlands and surface water	1	4	9	14	18		
37			NW1.3 Preserve prime farmland			6	12	15		
38			NW1.4 Avoid adverse geology	1	2	3	5			
39			NW1.5 Preserve floodplain functions	2	5	8	14			
40			NW1.6 Avoid unsuitable development on steep slopes	1		4	6			
41			NW1.7 Preserve greenfields	3	6	10	15	23		
42	NATURAL WORLD	L&W	NW2.1 Manage stormwater		4	9	17	21		
43			NW2.2 Reduce pesticide and fertilizer impacts	1	2	5	9			
44			NW2.3 Prevent surface and groundwater contamination	1	4	9	14	18		
45	NATURAL WORLD	BIODIVERSITY	NW3.1 Preserve species biodiversity	2			13	16		
46			NW3.2 Control invasive species			5	9	11		
47			NW3.3 Restore disturbed soils					8	10	
48			NW3.4 Maintain wetland and surface water functions	3	6	9	15	19		
						15	33	86	165	169

Figure 42: Natural World credit distribution

³⁸ Envision Guidance Manual, p.116

4.4.1 Preserve prime habitat and farmlands, greenfields and biodiversity

All expansion works at SJO, will be carried out within the current boundaries of the airport. Land uses within a 2km radius of the facility include residential, commercial, and industrial areas. There are also some small sections dedicated to agriculture. Thus, being located within a previously developed site, the airport expansion has minimal impacts on prime habitat or any other land that has been identified as having high ecological value.

The area where SJO is currently located is classified as “premontane wet forest.” This is one of the most damaged ecosystems in Costa Rica. In the airport surroundings, the forest cover has been entirely removed for more than 1 km. Very few vegetated areas remain, on the banks of the rivers. Lately a protocol³⁹ has been established, describing pruning procedures.

The biodiversity in the area is scarce considering the limited vegetation within the boundaries of the airport. Existing fauna is mainly small rodents and birds.⁴⁰ One of the goals of controlling surrounding vegetation is to reduce to zero the risk associated with the existence of wildlife in the vicinity of the airport and their interference with flight takeoff and landing. Environmental Impact Assessment for phases III and IV will also include a fauna evaluation, with the goal of establish prevention, mitigation, and monitoring measures. A committee assesses wildlife sightings or collisions with birds.⁴¹

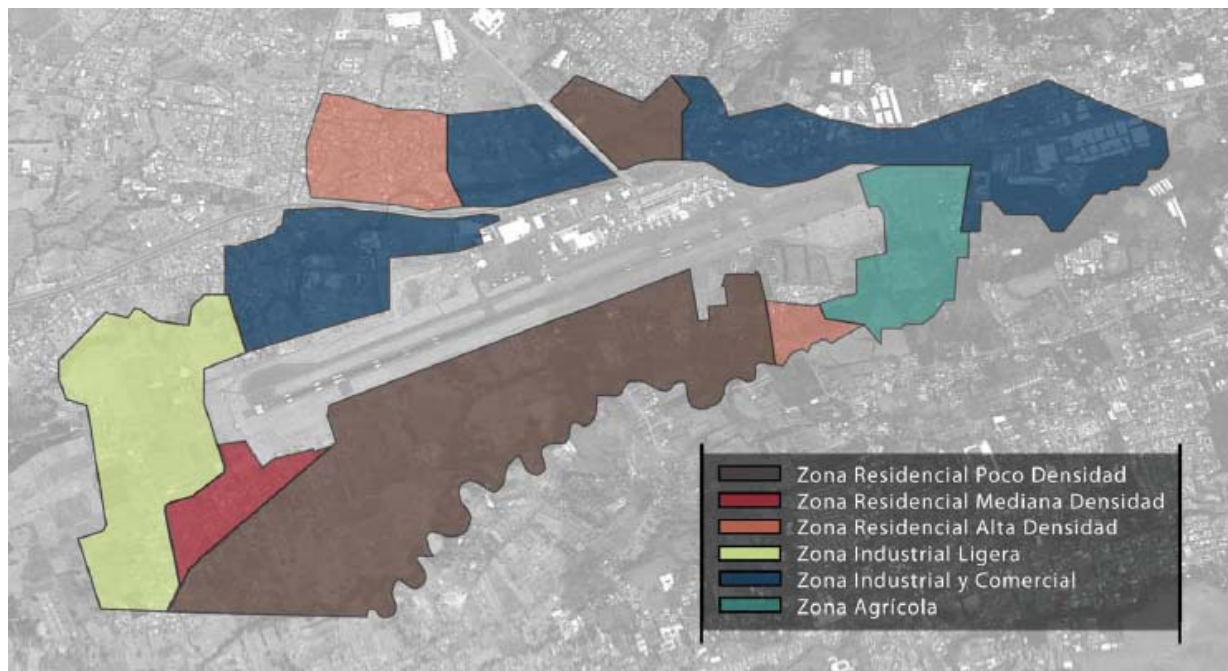


Figure 43: Land use around the airport. Source: Master plan, updated August 2011 page 1-33

³⁹ P-14018: procedure to follow in the case of cutting trees.

⁴⁰ Initial Environmental and Social Impact Assessment. By Futuris, Chapter 8 “Biodiversity” 38-40 Page 130.

⁴¹ F-190 Form of sighting fauna, F-193 Collisions with wildlife in AIJS notification form.

4.4.2 Protect and maintain surface water.

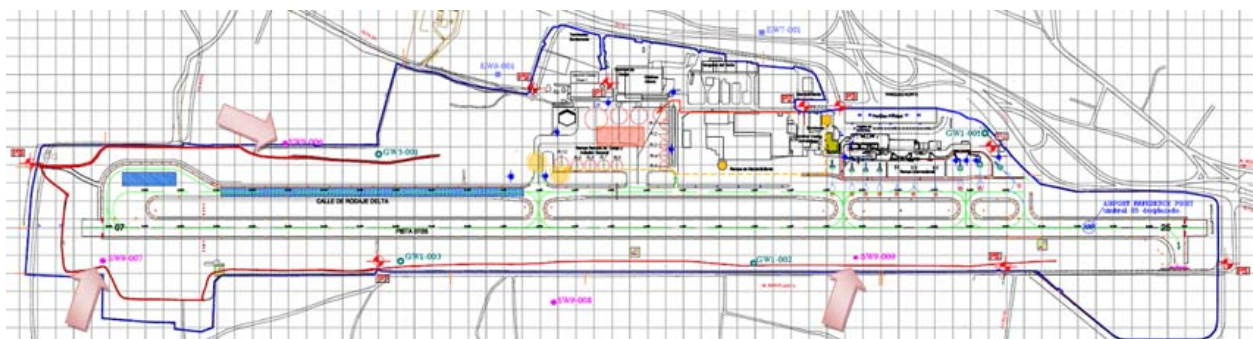
SJO airport is located in an area within the fluvial system of Alajuela, between the basin of the Río Grande de Tárcoles and the watershed of the Río Virilla. There are no permanent water concentrations within SJO boundaries. However, the Ciruelas River passes nearby, around 180 meters to the north, and the Segundo River almost 275 meters to the south. These rivers crosses industrial, commercial, agricultural, and residential areas which generate waste, usually discharged into the river without treatment.

Occasionally, contaminant spills from SJO have been identified, impacting the referred water bodies. The most frequent impacts, at both moderate and high levels are spillages and discharges of substances into the rivers without pre-treatment⁴². Measures should be taken to prevent this from happening again in the future. Sedimentation also poses a problem, and at times “(...) *Sediments can reach superficial waters trough runoff originated on construction sites. Impacts related with concrete and cement products could result from mixer’s onsite cleaning.*”⁴³

A monitoring process has been established, aiming to preserve water quality. Samples are taken monthly, in several points at Ciruelas and Segundo Rivers as well as within the perimeter of the airport. Samples are taken upstream, downstream, and at the discharge point of the water treatment plant, at Ciruelas River. There are no water discharges into the Segundo River, and in this case the samples are taken from locations upstream and downstream.

Test results have proved that values for biological oxygen demand (BOD); chemical oxygen demand (COD); suspended solids and coliforms are above maximum allowed levels in some of the samples studied. The Surface Water Quality Program has been recently implemented, and water quality is expected to improve in the following years.

The maps bellow show the location of the surface monitoring points. The first map describe monitoring points for surface water within SJO Airport. The second map describes locations for monitoring effluents.

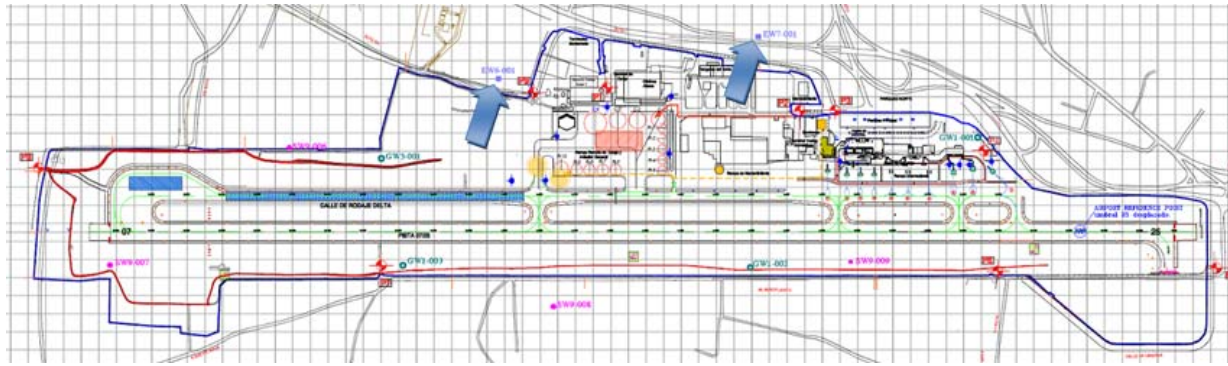


→ Surface water monitoring points within the SJO. Additionally take two in Río Segundo and three specimens in river plum.

Figure 44: Monitoring of surface water / Source: Documentation provided by AERIS

⁴² F-1406, Matrix of Aspects and Impacts

⁴³Environmental and Social Management Report by IDB, Oct. 2009, point 5.5 page 12.



Location of effluents monitoring points.

Figure 45: Monitoring of effluents/ Source: Documentation provided by AERIS



Figure 46: Surface water samples in Ciruelas River / Source: Documentation provided by AERIS



Figure 47: Discharge point into the Ciruelas River.
Source: Picture taken during onsite visit, April 2013



Figure 48: Downstream overview Ciruelas
Source: Picture taken during onsite visit, April 2013

A wastewater treatment plant was built during phase I to avoid using the existing septic tanks which were in deficient conditions. Pollution related with hydrocarbons also poses a challenge to water quality conservation, considering that currently, out of 25 existing tanks, 14 do not meet requirements “ (...) Those tanks are currently in non-compliance with standard industry codes (National Fire Protection Association - NFPA 30). Most of the non-compliance issues are related to improper venting and spill containment.”⁴⁴.

Most of the wastewater produced within the boundaries of the airport is conducted to the treatment plant, currently working at 50% capacity. The plant discharges treated effluents into the Ciruelas River. This river is highly polluted due to waste water from industries and residences, which receive no previous treatment⁴⁵.



Figure 49: Waste water treatment plant.
Source: Picture taken during onsite visit, April 2013



Figure 50: Industries surrounding the river.
Source: Picture taken during onsite visit, April 2013

⁴⁴ Phase I Environmental Site Assessment by Tylin International, December 10, 2012, Chapter 6.3 Storage Tanks, page 22.

⁴⁵ Environmental and Social Management Report by IDB, Oct. 2009, point 5.34 page 16.

4.4.3 Prevent ground water contamination.

The airport and its surroundings are very sensitive to ground water pollution. SJO site is located over the Barva aquifer. This aquifer supplies potable water to several communities in the region and as such, the contamination of it would represent a considerable negative impact. Phase I of the Environmental Site Assessment ⁴⁶(ESA), developed in December 2010⁴⁷, states: “The main objective of the ESA was to identify the presence (confirmed or possible), use, or discharge on the property of hazardous substances or petroleum products, following parameters defined at ASTM E 1527-05 (Standard Practices for Environmental Assessment of Sites), in order to establish a recognized environmental condition (REC).⁴⁸”

The risk of ground pollution under SJO is considered high, especially at COOPESA’s hangar. However, studies have not been conducted there so far. COOPESA is an independent MRO (Maintenance, Repairs and Operations) company, providing maintenance services to aircrafts. COOPESA’s parcel is excluded from the scope of works of the concessionaire, AERIS. Hence, neither actions that take place within COOPESA’s facilities, nor the land they occupy are under AERIS’s control or responsibility. The pollution of this area has been clearly stated as a pre-existing condition, documented since 2001.⁴⁹ At the moment of writing the present report, this is one of the most critical environmental problems found at the airport.



Figure 51: Sample of contaminated soil.
Source: Picture provided by AERIS

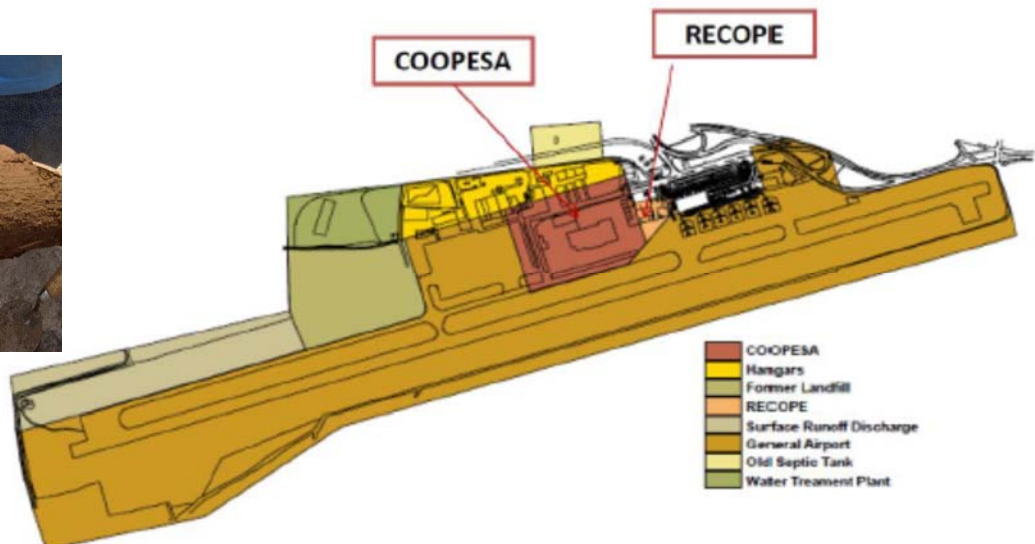


Figure 52: Areas with the highest risk of soil pollution inside the airport
Source: Figure provided by AERIS

⁴⁶ Phase I Environmental Site Assessment Process and the guidelines as published by the State of Alberta, Canada: ALBERTA TIER 1 Soil and Groundwater Remediation Guidelines (2010) and ALBERTA TIER 2 Soil and Groundwater Remediation Guidelines (2010).

⁴⁷ Teresa A. Thomas, CIEC, Phase I Environmental Site Assessment by Tylin International, December 10, 2012.

⁴⁸ Recognized environmental condition(s) (REC) is defined as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the properties. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. For more details see: <http://www.astm.org/Standards/E1527.htm>

⁴⁹ Analysis Report by Siel-Siel in, chapter 5.8, page 37



Figure 53: Overview of COOPESA installation / Source: Picture taken during onsite visit, April 2013.

Within COOPESA's facility, the most repeated impacts in both moderate and high levels are spillages and discharges of substances into the sewer system without pre-treatment.⁵⁰ Those actions pose a threat to soil and water quality. Several repairs have been conducted in the hydrocarbon tanks to prevent spillages. After the relocation of the facilities, it is expected that newer tanks and equipment will safeguard the environment. Furthermore, a clean-up operation must be carried out at the place.



Figure 54: Process of cleaning up of the soil.
Source: Picture provided by AERIS

⁵⁰ Document F-1406: Matrix of Aspects and Impacts.

Besides COOPESA, one of the biggest source of contamination was the Costa Rican Petroleum Refinery (RECOPE) plant. RECOPE was relocated in Phase I, and the soil in this area has been cleaned up.

4.4.4 Reduce pesticides and control invasive species

As specified in the Analysis Report, pruning aimed to reduce the number of wild animals⁵¹, especially birds, at the airport. The referred document states that it is necessary: *“To have a landscape plan for the gardens of the area and provide proper maintenance to the remaining green areas. Consider the weather and the elements characteristic of the region, including the use of native vegetation, but taking into account the need to avoid attracting birds for safety reasons”*⁵².

4.4.5 Restore disturbed soils, protect slopes and manage storm water.

The Storm water management plan focused on the development and improvement of drainage systems, as well as the protection of slopes. The various works developed in phase II have not increased substantially impervious areas⁵³. Therefore, the amount of storm water directed to the drainage system has not changed much after the completion of phase II.

Occasional overflow issues were observed two years ago on contiguous properties and preventive measures, such as the constructions of barriers, have been executed since.⁵⁴ A Storm Water Pollution Prevention Plan (SWPPP) will be implemented in the near future. The plan is expected to increase areas of water storage inside the boundaries of the airport, and subsequently decrease the speed and flow of water in the existing drains, contributing to prevent flooding events in the future.

An exhaustive monitoring process has been carried out during the execution of the slopes. The main goal was to avoid landslides and soil erosion. As mentioned in the Regency Environmental Reports, slope construction has been supervised. In most cases slopes are in good conditions. Nevertheless, specific issues of embankment erosion have been observed.⁵⁵

Measures have been put in place to prevent haulage of sediments during excavations processes.

4.4.6 Non applicable credits.

There are two non-applicable credits in this category, *NW1.5 Preserve Floodplain Functions* and *NW3.1 Preserve Species Biodiversity*. The first one is not applicable since the project is not located in a floodplain. The second one is not applicable considering that one of the goals of airport regulations is to reduce risks associated with the existence of wildlife in the vicinity of the airport to zero.

⁵¹ Analysis Report, by Siel-Siel in 2009, page 25.

⁵² Annual maintenance Plan, 2012 page 19, 27, 31, and 35.

⁵³ The only impervious area added was Hold Pad 07, see figure 2, num 2.

⁵⁴ See figure 55

⁵⁵ Regency Environmental Report, num. 96. Page 26 C20 // Regency Environmental Report, num. 97. Monitoring 06/08/2011 Page 3, 07/21/2011, 08/17/2011 page 6// Regency Environmental Report, num. 99. Monitoring 10/27/2011 page 4// Regency Environmental Report, num. 104. Monitoring 10/05/2011, page 7// Regency Environmental Report, num. 107. Monitoring 08/09/2012 page 7/ page 24.



Figure 55: Measures to prevent landslides.
Source: Picture taken during onsite visit, April 2013



Figure 56: Measures to prevent overflows.
Source: Picture taken during onsite visit, April 2013

4.4.7 Natural World, Summary of results

The distribution of credits as well as the level of performance achieved in each credit are shown in the table below.

35	NATURAL WORLD	SITING	NW1.1 Preserve Prime Habitat	14	Conserving	18	NA
36			NW1.2 Preserve Wetlands and Surface Water	9	Superior	18	
37			NW1.3 Preserve Prime Farmland	12	Conserving	15	
38			NW1.4 Avoid Adverse Geology	2	Enhanced	5	
39			NW1.5 Preserve Floodplain Functions	0	Non-applicable	0	
40			NW1.6 Avoid Unsuitable Development on Steep Slopes	4	Superior	6	
41			NW1.7 Preserve Greenfields	23	Restorative	23	
42	L & W	NW2.1 Manage Stormwater	4	Enhanced	21	NA	
43		NW2.2 Reduce Pesticides and Fertilizer Impacts	1	Improved	9		
44		NW2.3 Prevent Surface and Groundwater Contamination	9	Superior	18		
45	BIODIVERSITY	NW3.1 Preserve Species Biodiversity	0	Non-applicable	0	NA	
46		NW3.2 Control Invasive Species	5	Superior	11		
47		NW3.3 Restore Disturbed Soils	8	Conserving	10		
48		NW3.4 Maintain Wetland and Surface Water Functions	6	Enhanced	19		
		NW0.0 Innovate or Exceed Credit Requirements	0	Non Achieving		8	
		NW	97			173	

Figure 57: Summary of results in Natural World category

The Natural World category has the highest level of achievement at this case study, with a score of 57%. The project achieved 97 out of 173 points in this category.

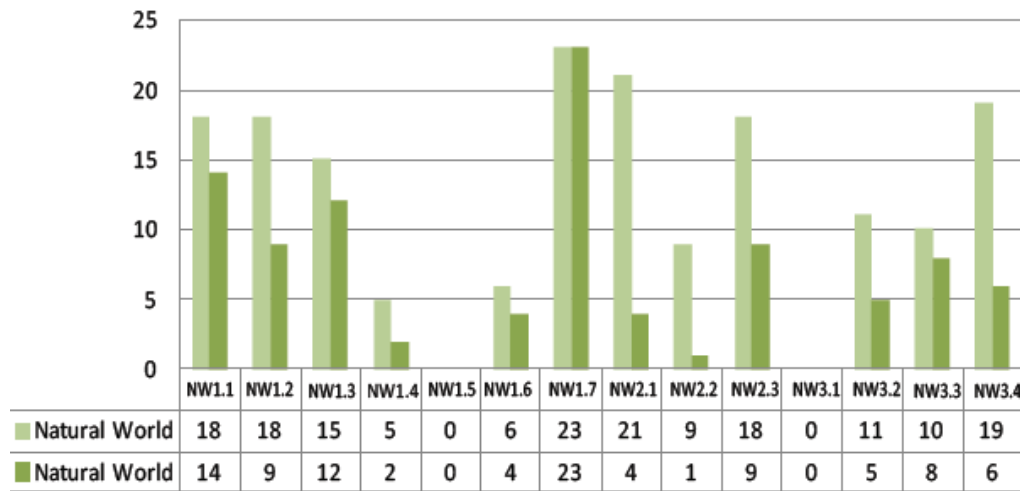


Figure 58: Summary of results in Natural World category

4.5 CLIMATE AND RISK

Envision’s Climate and Risk category is divided in two main sub-categories, emissions and resilience. The main goals of the category are to “minimize emissions that may contribute to increased short and long-term risks” and “to ensure that infrastructure projects are resilient to short-term hazards or long-term altered future conditions.”⁵⁶ The credits are distributed as follows, Emissions (CR.1.1, CR. 1.2) Resilience (CR.2.1, CR. 2.2, CR.2.3, CR. 2.4, CR. 2.5).

49	Emission	CR1.1 Reduce greenhouse gas emissions	4	7	13	18	25
50		CR1.2 Reduce air pollutant emissions	2	6		12	15
51	Resilience	CR2.1 Assess climate threat				15	
52		CR2.2 Avoid traps and vulnerabilities	2	6	12	16	20
53		CR2.3 Prepare for long-term adaptability				16	20
54		CR2.4 Prepare for short-term hazards	3		10	17	21
55		CR2.5 Manage heat islands effects	1	2	4	6	
			12	21	39	100	101

Figure 59: Climate and Risk credit distribution.

4.5.1 Reduce greenhouse gas (GHG) emissions and pollutants

An Air Quality Management technical report has been conducted for phases III and IV. Within this report, a list describes the potential impacts to air quality from construction and operations. An inventory of activities, initiatives and timelines describe efforts to reduce emissions. According to this report, “In the future (year 2020) a total of 81,690 annual operations are projected in the “no actions” scenario. Proposed

⁵⁶ Envision Guidance Manual, p.150

projects would not increase the total number of aircrafts or change the existing or projected fleet mix at AIJS."⁵⁷

As a result of the emissions assessment, the report states that *"proposed projects would not cause annual net emissions that would equal or exceed relevant thresholds of identified pollutants, considered to be dangerous, therefore, significant negative impacts to air quality are not expected."*⁵⁸

Furthermore, a carbon footprint management plan has been developed, including several recommendations to reduce CO2 emissions. However, it is important to stress that this plan refers to the airport facilities, and not to airplanes: *"(...) conditions of maintenance and operation of aircrafts or ground service equipment are not under the control of AERIS, within the framework of authority and responsibilities established in the concession contract. The referred cases are excluded from the Interested Management Contract."*⁵⁹

The report addresses eight pollutants: particulate solid matter MP10; particulate solid matter MP2.5; ozone; carbon monoxide; sulfur oxides; nitrogen oxides; lead; and noxious odors. National and international regulations were used in the assessment.⁶⁰ Documentation states that *"AERIS is committed to the execution of all its work within the framework required by Costa Rican law. In addition, it is regulated by a number of additional frameworks (requirements, conditions, standards, protections, obligations, and performance parameters)."*⁶¹

An exhaustive emissions inventory for the period of 2013-2020 is included in the Air Quality Technical Report (see table 9). Besides, a dispersion analysis was developed, to assess if airport operations would result in unacceptably high emission levels in nearby public areas. Documents presented state that: *"maximum likely assessed concentration levels for the scenario "proposed actions" are described at Table 11, page 18. At the table it is possible to see that none of the considered standards would be exceeded with the implementation of the proposed projects."*⁶²

At the time of the drafting of this report, the results of the measures proposed to reduce emissions were not evaluated yet.

⁵⁷ Environmental and Social Impact Assessment for Phases III and IV. Draft air quality technical report, by Landrum & Brown, Incorporated, March 2013, page 9.

⁵⁸ Ibid, page 8.

⁵⁹ Ibid, page 18

⁶⁰ Regulation Num.30221 Regulation on Atmospheric Pollutants (national); IFC Environmental; Health and Safety Guidelines. General Guidelines: Emissions to the Air, and Air Quality Environment (international); WHO Air Quality Guidelines–World Health Organization (international).

⁶¹ Environmental and Social Impact Assessment for Phases III and IV. Draft air quality technical report, by Landrum & Brown, Incorporated, March 2013, page 5.

⁶² Ibid, page 17.

4.5.2 Assess climate threat, avoid traps and vulnerabilities

There is no information about a climate impact assessment or adaptation plan that identifies climate change risks and possible responses. Such plan should consider risks and possible changes in operating conditions in case of higher temperatures, increased frequency and intensity of storms, increased or extended floods and similar factors, as well as outlining strategies for recovery *vis à vis* extreme events. This plan could contribute to extend the lifespan of the facilities.

Certain vulnerabilities linked to the project, such as increases in air pollution and road congestions have been identified, representing clear opportunities for improvement.

4.5.3 Prepare and adapt to long and short term hazards

Among the main short-term hazards are the spills of hazardous substances, mainly fuel and hydrocarbons. In the event of accidental spills, proper protocols must be followed by qualified personnel. At SJO airport, protocols to minimize accidental spillovers of fuel⁶³ and other substances such as Polychlorinated Biphenyls⁶⁴ are properly established. Documentation presented states that an assessment of contaminated sites will be carried out when executing Phases III and IV. This evaluation will include contaminated sites occupied during Phase II. Soil pollution is described in several reports as a pre-existing condition.⁶⁵ The graphs below show the spills (in liters) during the last three years, as well as data collected in the current year.

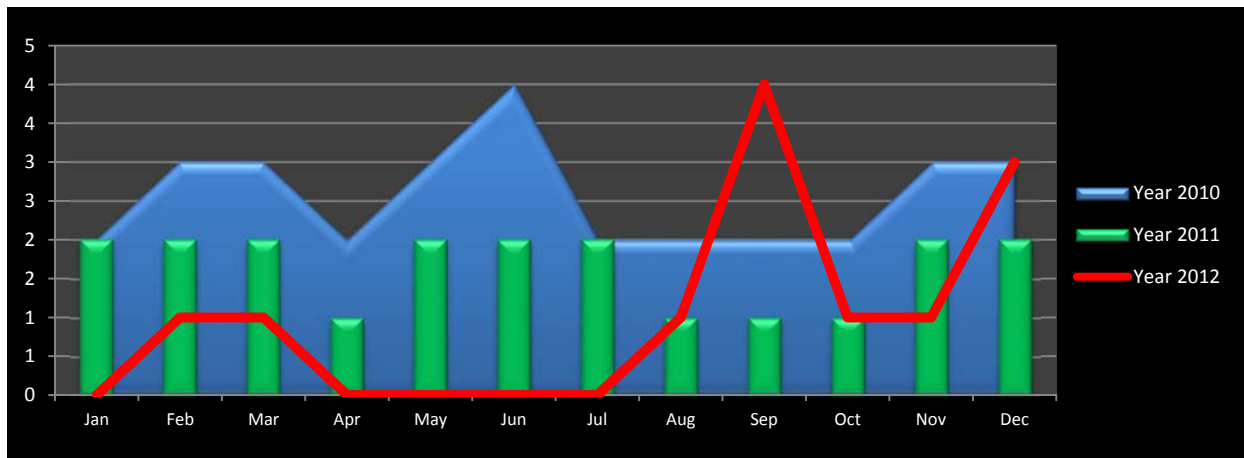


Figure 60: Spills on the ramp (liters) years 2010/ 2011/2012 / Source: Provided by AERIS, Environmental department.

⁶³ P-14019 Procedure for receiving and discharge of fuel in the tank of storage block F at SJO.

⁶⁴ P-14028 Emergency Response by Polychlorinated Biphenyls spills.

⁶⁵ Analysis Report, by Siel-Siel in 2009, page 31.



Figure 61: Spills on the ramp (liters) year 2013 / Source: Provided by AERIS, Environmental department.

To avoid future spills, supply and storage spaces must have adequate security measures. Handling of hazardous materials also requires proper facilities. This is particularly relevant, after finding substances such as polychlorinated biphenyls (PCBs), semi-volatile substances, volatile herbicides, metals, organochlorine pesticides, and organophosphorous pesticides within COOPESA area.⁶⁶

An inventory of PCB and ozone depleting substances is required for 2013. Furthermore, the Environmental and Social Impact Assessment⁶⁷ and the Plan of Response to Emergencies in the Passenger Terminal (MA-199) include a list of possible natural hazards that could affect SJO.⁶⁸ Based on the specific location of the airport, natural threats such as seismic and volcanic activity, torrential rain, tornados, or strong winds have been taken into consideration. Until now, no special measure to increase the resiliency of infrastructural systems has been put in place.

Besides, risks associated with long term climate change or adaptability strategies have not been considered yet.

4.5.4 Climate and Risk category, summary of results.

The distribution of credits as well as the level of performance achieved in each credit is shown in the table below.

49	EMISSION	CR1.1 Reduce Greenhouse Gas Emissions	4	Improved	25	8
50		CR1.2 Reduce Air Pollutant Emissions	2	Improved	15	
51	RESILIENCE	CR2.1 Assess Climate Threat	0	Non Achieving	15	
52		CR2.2 Avoid Traps And Vulnerabilities	0	Non Achieving	20	
53		CR2.3 Prepare For Long-Term Adaptability	0	Non Achieving	20	
54		CR2.4 Prepare For Short-Term Hazards	10	Superior	21	
55		CR2.5 Manage Heat Island Effects	0	Non Achieving	6	
		CR0.0 Innovate Or Exceed Credit Requirements	0	Non Achieving		
		CR	16		122	

Figure 62: Summary of results in Climate and Risk category

⁶⁶ Phase I Environmental Site Assessment by Tylin International, December 10, 2012, page 2.

⁶⁷ Initial Environmental and Social Impact Assessment. By Futuris, Chapter 13 "Hazardous substances" Page 59 to 67/ Chapter 13.3.2 "Overview of current conditions" 61-63

⁶⁸ MA-199 "Plan of Response to Emergencies in the Passenger Terminal. Version 2" Chapter 1.9.1 "External conditions" pages 12-15 /Appendix 2 to 2.12, Emergency Tabs by sector/ Appendix 10. Atlas of natural hazards, Canton in the Alajuela. (Map)

SJO expansion project had its lowest performance in this category, by obtaining 16 out of 122 points, which represents 13% of the total.

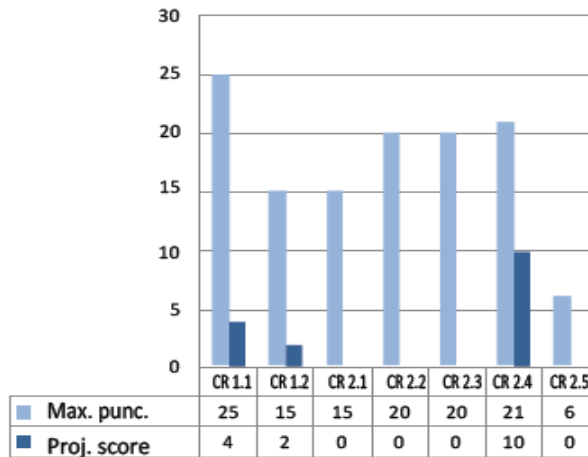


Figure 63: Summary of results in Climate and Risk category

5 RESULTS AND CONCLUSION

Evaluation criteria is very specific in all of the five different categories. In Quality of Life, the project obtained 69 out of 122 points, which represents 57% of the total points. This assessment is supported by the notion that the expansion of the airport will have a significant impact on the growth and development of the country. The project is expected to promote the economy and provide employment in the area.

The second category, Leadership, gained 61 points out of 121, or 50% of the total. The commitment to achieve sustainable or environmental goals is clearly stated. Protocols to address environmental impacts establish long-term monitoring processes, effective during construction and operation phases. Project design has taken into consideration the need of flexibility, necessary to face future expansions related with increases in the demand. Public consultations were carried out during expropriation and resettlement processes associated with SJO expansion. Processes for stakeholder involvement have been developed recently.

In the Resource Allocation category, the percentage of achievement is 36% with 61 points out of 170 in total. Different factors have been decisive for the performance of this category, such as the re-use of construction materials, especially ground coming from excavations that is used for filling or leveling. The efficient integration of existing and new facilities represents another positive aspect of this project. Strategies such as these have resulted in a reduced use of raw materials in the construction, as well as high recycling rates in the operation. Different residues are being sorted out and processed by several specialized companies. However, there is no evidence that materials used in the expansion were selected due to the fact that are totally or partially recycled or reused. A criteria of aesthetic homogeneity has prevailed so far. This is a clear improvement opportunity for SJO airport.

A number of recommendations were formulated to prevent fresh water contamination, including the avoidance of mixing rainwater with wastewater or hydrocarbons. Potential risks to fresh water in the

construction phase were identified and assessed. Several samples and analyses of water quality are periodically carried out in different parts of the airport. These assessments are made by an independent institution.

In the fourth category, Natural World, the project scored 97 out of 173 points, a percentage of 57. This is the best performance of the project in all five categories. This assessment obeys to different factors, including the fact that the expansion will be carried out within the current boundaries of the airport, in previously intervened areas. As a consequence, the expansion will not have a negative impact over prime habitat or any other land of high ecological value. In terms of slope erosion, exhaustive monitoring has been carried out during their construction. Impacts related with storm water have also been addressed, in order to prevent soil erosion.

Other activities such as those that generate debris or solid waste, the use of heavy machinery, and material handling have been considered as potential sources of impacts on the site. Most of the soils disturbed during construction have been restored and compacted. There is evidence about past ground and water contamination events, as well as hydrocarbon leakages into the rivers surrounding the SJO. Measures must be put in place to prevent this from happening again in the future. Vulnerability of the groundwater due to possible spills is addressed in the project.

The last category, Climate and Risk, achieved 16 points out of 122, equivalent to 13%. A greenhouse gas inventory has been developed, and an Air Quality management plan is scheduled for 2013. SJO expansion project monitors the eight principal air pollutants, following national and international regulations. However, until now there are no assessments referred to impacts associated with climate change (neither for short or long term). Adaptation measures or strategies to avoid heat island effects have not been considered either. All these aspects constitute clear opportunities for improvement in the management of SJO airport.

The graphics below portray the performance of the project and the total number of points achieved per category, benchmarked against the different award levels. The International Airport Juan Santamaría in Costa Rica with 299 points qualifies for a **Golden award**.

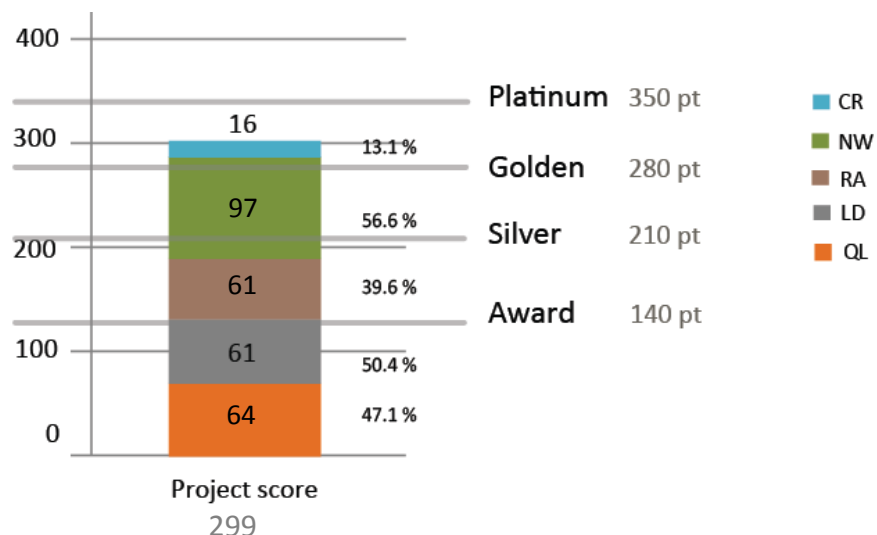


Figure 64: Awards levels

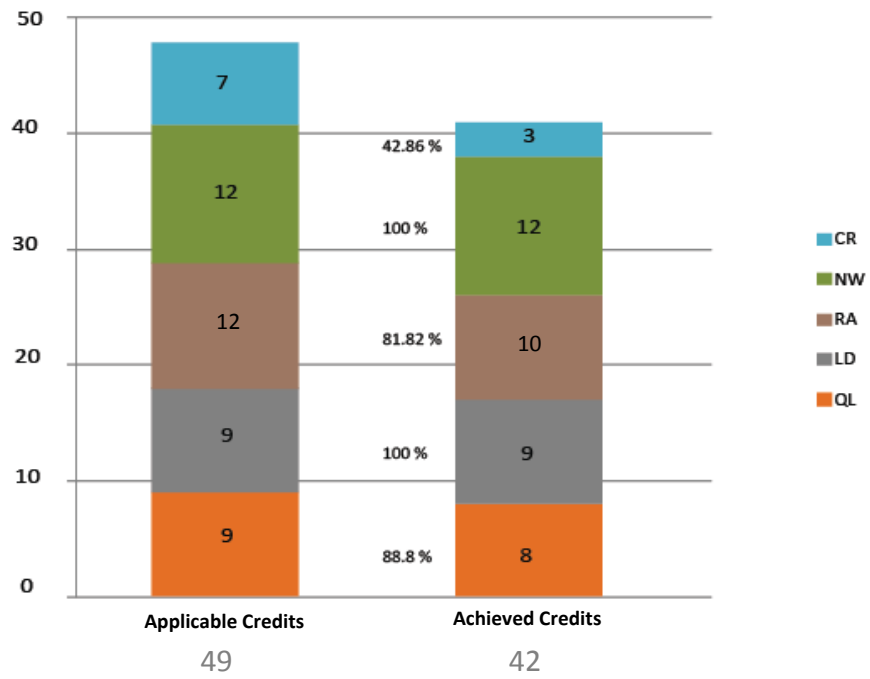


Figure 65: applicable and achieved credits per category

6 APPENDIX A: PICTURES



Figure 1: Re-use of excavated material



Figure 2: Re-use of excavated material



Figure 3: Communities surrounding the airport.



Figure 4: Communities surrounding the airport.



Figure 5: School close to the airport.



Figure 6: Church close to the airport.



Figure 7: Drainage systems



Figure 8: Drainage systems



Figure 9: General view from the airstrip.



Figure 10: General views from the airstrip.



Figure 11: Retaining wall to prevent floodings on adjacent properties.



Figure 12: Element to prevent drainage clogs.



Figure 13: Prevention of embankments erosion.



Figure 14: Prevention of embankments erosion



Figure 15: COOPESA hangar.



Figure 16: COOPESA hangar.



Figure 17: Water treatment plant.



Figure 18: Water treatment plant.



Figure 19: Discharge point of water treatment plant.



Figure 20: General view of Ciruelas River.



Figure 21: General view of the terminal.



Figure 22: General view of the terminal.



Figure 23: Illumination of the terminal.



Figure 24: Stairs stop when there is no public



Figure 25: Recycling of solid waste.



Figure 26: Treatment of bio-hazardous waste.

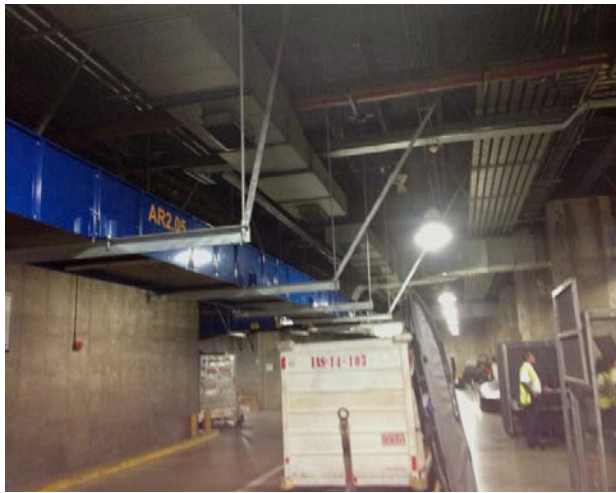


Figure 27: New carousel, lower zone



Figure 28: New carousel, upper zone



Figure 29: Main ways of transportation



Figure 30: Windmill located in the parking

7 APPENDIX B: ACRONYMS

ACRONYMS	ENGLISH DESIGNATION	SPANISH DESIGNATION
SETENA	National Technical Environmental Secretariat	Secretaría Técnica Nacional Ambiental
ESMR	Environmental and Social Management Report.	Informe de Gestión Ambiental y Social.
PGA	Environmental Management Plan	Plan de Gestión Ambiental
OFGI	Supervisory Agency	Órgano fiscalizador
CETAC	Technical Council of Civil Aviation	Consejo Técnico de Aviación Civil
DGAC	Directorate-General of Civil Aviation	Dirección General de Aviación Civil
RA	Environmental Manager	Responsable ambiental
SJO	International designation of Juan Santamaría airport.	Designación internacional del aeropuerto Juan Santamaría.
APCR	Alterra Partners Costa Rica	Alterra Partners Costa Rica
RECOPE	Costa Rican petroleum refinery	Refinadora Costarricense de Petróleo
MRO	Maintenance, repair and operations.	Mantenimiento, reparación y operaciones
CGI	Management Contract in force	Gestión de contratos en vigor
COOPESA	Cooperative for industrial services to aircraft	Cooperativa Autogestionaria de Servicios Aeroindustriales R.L

8 APPENDIX C: ENVISION POINTS TABLE

			Improved	Enhanced	Superior	Conserving	Restorative	
1	QUALITY OF LIFE	PURPOSE	QL1.1 Improve community quality of life	2	5	10	20	25
2			QL1.2 Stimulate sustainable growth and development	1	2	5	13	16
3			QL1.3 Develop local skills and capabilities	1	2	5	12	15
4		WELLBEING	QL2.1 Enhance public health and safety	2			16	
5			QL2.2 Minimize noise and vibration	1			8	11
6			QL2.3 Minimize light pollution	1	2	4	8	11
7			QL2.4 Improve community mobility and access	1	4	7	14	
8			QL2.5 Encourage alternative modes of transportation	1	3	6	12	15
9			QL2.6 Improve site accessibility, safety and wayfinding		3	6	12	15
10		COMMUNITY	QL3.1 Preserve historic and cultural resources	1		7	13	16
11			QL3.2 Preserve views and local character	1	3	6	11	14
12			QL3.3 Enhance public space	1	3	6	11	13
			13	27	62	150	151	
13	LEADERSHIP	COLLABORATION	LD1.1 Provide effective leadership and commitment	2	4	9	17	
14			LD1.2 Establish a sustainability management system	1	4	7	14	
15			LD1.3 Foster collaboration and teamwork	1	4	8	15	
16			LD1.4 Provide for stakeholder involvement	1	5	9	14	
17		MNGMT.	LD2.1 Pursue by-product synergy opportunities	1	3	6	12	15
18			LD2.2 Improve infrastructure integration	1	3	7	13	16
19		PLANNING	LD3.1 Plan for long-term monitoring and maintenance	1	3		10	
20			LD3.2 Address conflicting regulations and policies	1	2	4	8	
21			LD3.3 Extend useful life	1	3	6	12	
			10	31	56	115	31	
22	RESOURCE ALLOCATION	MATERIALS	RA1.1 Reduce net embodied energy	2	6	12	18	
23			RA1.2 Support sustainable procurement practices	2	3	6	9	
24			RA1.3 Use recycled materials	2	5	11	14	
25			RA1.4 Use regional materials	3	6	9	10	
26			RA1.5 Divert waste from landfills	3	6	8	11	
27			RA1.6 Reduce excavated materials taken off site	2	4	5	6	
28			RA1.7 Provide for deconstruction and recycling	1	4	8	12	
29		ENERGY	RA2.1 Reduce energy consumption	3	7	12	18	
30			RA2.2 Use renewable energy	4	6	13	16	20
31			RA2.3 Commission and monitor energy systems		3		11	
32		WATER	RA3.1 Protect fresh water availability	2	4	9	17	21
33			RA3.2 Reduce potable water consumption	4	9	13	17	21
34			RA3.3 Monitor water systems	1	3	6	11	
			29	66	112	170	62	
35	NATURAL WORLD	SITING	NW1.1 Preserve prime habitat			9	14	18
36			NW1.2 Protect wetlands and surface water	1	4	9	14	18
37			NW1.3 Preserve prime farmland			6	12	15
38			NW1.4 Avoid adverse geology	1	2	3	5	
39			NW1.5 Preserve floodplain functions	2	5	8	14	
40			NW1.6 Avoid unsuitable development on steep slopes	1		4	6	
41			NW1.7 Preserve greenfields	3	6	10	15	23
42		L&W	NW2.1 Manage stormwater		4	9	17	21
43			NW2.2 Reduce pesticide and fertilizer impacts	1	2	5	9	
44			NW2.3 Prevent surface and groundwater contamination	1	4	9	14	18
45		BIODIVERSITY	NW3.1 Preserve species biodiversity	2			13	16
46			NW3.2 Control invasive species			5	9	11
47			NW3.3 Restore disturbed soils				8	10
48			NW3.4 Maintain wetland and surface water functions	3	6	9	15	19
			15	33	86	165	169	
49	CLIMATE	Emission	CR1.1 Reduce greenhouse gas emissions	4	7	13	18	25
50			CR1.2 Reduce air pollutant emissions	2	6		12	15
51		Resilience	CR2.1 Assess climate threat				15	
52			CR2.2 Avoid traps and vulnerabilities	2	6	12	16	20
53			CR2.3 Prepare for long-term adaptability				16	20
54			CR2.4 Prepare for short-term hazards	3		10	17	21
55			CR2.5 Manage heat islands effects	1	2	4	6	
			12	21	39	100	101	
Cumulative Total			79	178	355	700	514	

9 APPENDIX D: CREDIT DETAILS

INTERNATIONAL AIRPORT JUAN SANTAMARIA, COSTA RICA: CREDIT SPREADSHEET WITH DETAILS

QUALITY OF LIFE			
	INTERNATIONAL AIRPORT JUAN SANTAMARIA, COSTA RICA		RECOMMENDATIONS
QL1.1 Improve Community Quality of Life	10	<p>Superior</p> <p>The expansion of the Airport Juan Santamaría represents a great contribution to the development of the county. As indicated in several documents such as the Environmental and Social Management Report (ESMR) "The <i>Noise levels measurement are taken semi-annually at four locations defined in the Environmental Management Plan ; [...]. The results obtained indicate that the site noise levels are below permissible daytime levels and are in compliance with the WBG/IFC standards. (See Table 4)</i>". According to the <i>Master Plan, updated August 2011</i>, there are some concerns in affecting some of the houses, a hospital or and a church surrounding the area. As a consequence of the expansion and modernization of the Airport, some years ago, it was determined the necessity to expropriate approximately 14 hectares. Most of the expropriations have been already carried out. Some measures were taken at that time to assess community needs in terms of resettlements after the expropriations. A future <i>Social Management Program Plan</i> has been developed in the current year 2013 as indicated at the <i>Environmental and Social Management Plan Actions - Juan Santamaría International Airport</i> matrix point 10.2. Here are shown several measures to promote community engagement, community communication procedure, and initiatives to improve social conditions.</p> <p><i>Source: Matrix Environmental and Social Management Plan Actions - Juan Santamaría International Airport, point (10.2) // Master Plan, updated August 2011 page 1-2. // Initial Environmental and Social Impact Assessment. By Futuris, Page 130 // Environmental and Social Management Report (ESMR) by IDB October, 2009. Page 8/ Annex 1: Impact and compensation measures (2003 update).// ESHS Management System Social Plan 2013.</i></p>	<p>*Periodic update of the Management System Social Plan.</p> <p>*Futures lenders visit.</p> <p>*Implementation and monitoring of the measures presented at the Management System Social Plan.</p>
	13	<p>Conserving.</p> <p>The expansion of Juan Santamaría airport increases the economic growth and development, not just in the area but throughout the country. As seen in the <i>Master Plan</i>, part of the economy of Costa Rica is based in tourism, agriculture and export of electronic products. Most of the time the distribution of those depends of the air transportation. "The Airport is connected with non-stop services to 27 international markets in 15 countries and handles approximately 82,000 metric tons of air cargo per year. Currently, 18 passenger and 7 cargo airlines serve the Airport. "Costa Rica has a well established tourism industry with a large, steady proportion of international visitors coming from the United States. The Airport is well positioned to take advantage of this growth as it handles 86% of the international traffic to Costa Rica. Since 2002, passenger growth has increased on average over 8% per year." All the studies conducted indicate that if these works are not performed in the coming years the existing airport will be insufficient for the services required. The transportation of goods and passengers will grow exponentially based on the forecasts for the year 2015 and 2025. New routes will be developed in the coming years.</p>	<p>* Analyses showing the new jobs that will be created from the design, construction and operation of the project.</p> <p>*Analyses showing the effects of the delivered work on local productivity. Reduce congestion, increased operation capacity.</p> <p>*Evidence of new employment opportunities that will be created, and the educational programs that will be conducted.</p>
QL1.2 Stimulate Sustainable Growth & Development			

		<p><u>Source</u> : Matrix Environmental and Social Management Plan Actions - Juan Santamaría International Airport, point (10.2; 10.3) // Master Plan, updated August 2011 page 1-2 and 2-3 "Historical and projection based passenger" // MA-14000 Manual of the System of Environmental Management, Social Health and Safety, page 4 // Environmental and Social Management Report by IDB. Page2.</p>	
QL1.3 Develop Local Skills and Capabilities	2	<p>Enhance</p> <p>There is potential for employment in engineering companies, constructors etc. This project would likely lead to hundreds of jobs over the coming years, as well as providing a great profit in local economies. "During construction, as many as 300 workers will be required between direct hires and subcontractors..." as specified in <i>Environmental Analysis Report</i>, an aspect of interaction with the Community hiring local people is presented just as a suggestion. Several documents indicate the importance of developing skills to avoid risks and accidents, and to provide high quality services to the different users. Some of those documents, such as <i>Environmental Management Plan</i> by Siel-Siel, show the importance of giving priority to hiring, duly trained, local labor for the execution of the works.</p> <p>The data available according to the rate of employment of the area is shown in <i>Environmental Impact Assessment 2001</i> and <i>Environmental and Social Management Report</i> by IDB, 2009 in the section B Socio-economic Description of the Immediate Project Area among others. At the last document it is shown that "The Canton's employment rate is of 95.92% of the economically active work force. Urban economic activities revolve mainly around the service sector, while rural activities include agriculture and eco-tourism." This data has not been updated in the <i>Initial Environmental and Social Impact Assessment</i> from 2011. Most of the highly qualified works such as noise or, ground contamination assessment have been conducted by foreign companies, mainly American.</p>	<p>*Specific commitments for hiring local workers, including disadvantages groups, or disabled people.</p> <p>*Better explanation of the required skilled employees in relation to overall project employment.</p> <p>*Better explanation of the education and training programs.</p>
		<p><u>Source</u> : Matrix, Environmental and Social Management Plan Actions - Juan Santamaría International Airport, point (10.2; 10.3), point 6.3 // Annual maintenance Plan, 2012 page 71, "training" // Environmental Management Plan by Siel-Siel page 8, C22; C59 // MA-14000 Manual of the System of Environmental Management, Social Health and Safety Chapter 6, "Training, awareness and competence of the staff", page 18. // Environmental Impact Assessment 2001 (EslA), Chapter 8.2.1, page 101, 102 // Environmental Analysis Report, by Siel-Siel 2009, Page 18 // Environmental and Social Management Report by IDB, Oct. 2009, Page 4 and10.</p>	
QL2.1 Enhance Public Health And Safety	16	<p>Conserving</p> <p>The project, as well as the subsequent monitoring processes, has taken into account the exposures and risk created by the use of new materials, technologies, and methodologies. Apart from those considerations expressed in the different manuals, master plans, etc. Futuris Consulting S.A, have conducted several site visits pointing out the changes required to minimize the risk. Specific methodologies and protocols have been applied to the treatment and management of hazardous material. One example is the treatment used to refurbish the runway. The material used is a bituminous substance with a specific application methodology. The risks associated to this works have required an independent risk evaluation.</p>	<p>* Approval and sign-off by the appropriate environmental and public health and safety officials.</p> <p>* Clearly stated health and safety methodologies and protocols to be passed to the constructor contractor.</p>

		<p><i>Source : Matrix, Environmental and Social Management Plan Actions - Juan Santamaría International Airport, point 6.3 // MA-14000 Manual of the System of Environmental Management, Social Health and Safety Chapter 11, "Occupational health and safety" page 31. // MA-14002 Manual of good practices for construction work in the SJO Chapter 2, page 4-8 // MA-14003 Manual safety, prevention of occupational hazards and environmental protection for works in SJO Chapter 8, "Assessment and risk management" page 13-17 // Construction EHS Risk Review, by Environmental, Health and Safety Advisors. Report June 2010 and update August 2010 // I-178 Events, Incidents and Accidents in SJO // I-14027 Management of hazards and risks associated to Polychlorinated Biphenyls (PGBs) // Special Report by Environmental Regency, modification of PGA, version II, page 25. Chapter 1.7; C21 to C25 // Environmental Management Plan by Siel-Siel page 6, C13-C16.</i></p>	
QL2.2 Minimize Noise And Vibration	8	<p>Conserving</p> <p>Studies have been undertaken to assess the level of noise and vibrations in 2010 and 2015 as a result of the airport expansion. Some plans are attached to the <i>Master Plan</i>, in which we can easily differentiate the exposure to the level of noise. Monitoring of environmental noise has been taken between 2002 and 2009 by Siel - Siel, at six different points around the airport. An updated noise monitoring plan has been created in the last months, February 2013. Some recommendations have been provided in this document to reduce the noise impact in the surrounded communities. Other measures were already proposed in the Initial Environmental and Social Impact Assessment. December 2011, Page 79, Table 15.5 "Measures to consider" to prevent this problem. As shown in the <i>Environmental and Social Management Report</i> by IDB is specified "Noise levels measurement are taken semi-annually at four locations defined in the <i>Environmental Management Plan</i> ; [...] The results obtained indicate that the site noise levels are below permissible daytime levels and are in compliance with the WBG/IFC standards" It would be required to determine what is the real noise impact, and if that level, is or is not admissible.</p>	<p>*Monitor of the implementation process for the measures proposed at the "Environmental and Social Impact Assessment For Phases III and IV".</p>
		<p><i>Source : Matrix, Environmental and Social Management Plan Actions - Juan Santamaría International Airport, point 7 // MA-14002 Manual of good practices for construction work in the SJO Chapter 2.1, page 4 and annex 3.1 page 10 // MA-14003 Manual safety, prevention of occupational hazards and environmental protection for works in SJO, Chapter 9.3.2, page 22 // Master Plan, updated August 2011 , chapter 7.1 page 7-2 to 7-10 // Environmental Management Plan by Siel-Siel page 9, C27-C32. // Initial Environmental and Social Impact Assessment by Futuris. Chapter 15, Page 75 to 79. // Environmental Regency Report, num. 97. Chapter 2.1.1, C1 page 8 // Environmental and Social Management Report by IDB, Oct. 2009, page 8 // Environmental Analysis Report, by Siel-Siel 2009, page 13, 14 graph 1. // Environmental and Social Impact Assessment For Phases III and IV, February 2013, by Landrum & Brown, Incorporated.</i></p>	
QL2.3 Minimize Light Pollution	8	<p>Conserving</p> <p>As presented in the <i>Annual Maintenance Plan 2012</i> several companies are in charge of the proper daily illumination of the airport, both inside and outside. The main purpose is for the safety and glare prevention. These lights are also used as navigation tools. Indoor areas are intended to promote the best use of natural light to reduce energy consumption. Glare and light pollution is consider covered by following the regulations that control the illumination into the airports, mainly by safety reasons.</p> <p><i>Source: Master Plan, updated August 2011 , Chapter 1.4.4, page 1-13.// MA-208 Annual Maintenance Plan 2012 version 2 page 27, points from 6.1 to 6.9 ; page 55-56 // MA-14003 Manual safety, prevention of occupational hazards and environmental protection for works in SJO Chapter 9.3.7, page 24 .</i></p>	<p>*Use of light barriers, in case of affection to any specific area.</p> <p>*Development of lighting zone levels appropriate for the needs of the different areas.</p>

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">QL2.4 Improve Community Mobility And Access</p>	<p>0</p>	<p>Non_Applicable</p> <p>The project does not provide new alternative methods of community mobility and access, apart from the ones that we can currently find. (See map "Master Plan, updated August 2011" page 1-24) The roads that access the airport are the main way of communication in the area. Some future changes are expected to be done to improve accessibility to the airport and prevent traffic jams in the area. This credit is non applicable to the project since is considered out of the current phase.</p> <p><i>Sources: Master Plan, updated August 2011" Chapter 1.6.1, page 1-21; Chapter 1.12.8 page 1-40; Chapter 3.4.1.1 page 3-48; Chapter 4.3 page 4-55 to 4-69 // Special Report by Environmental Regency, modification of PGA, version II , page 20. Chapter 1.2.2 // Environmental and Social Management Report by IDB, Oct. 2009, point 5.32 page 16,</i></p>	<p>*Assessment studies and reports addressing the effects of the constructed work on access and mobility or in the amount of traffic.</p> <p>* Detail studies taking into consideration reports, memoranda, minutes of meetings with managers and operators covering access to adjacent facilities amenities and transportation.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">QL2.5 Encourage Alternative Modes of Transportation</p>	<p>0</p>	<p>Non_Applicable</p> <p>The project does not provide alternative modes of transportation. The access to the airport is by roads and. Currently 2013; these roads are operating at their maximum capacity. Expansions of the parking areas have been done in the phase II, and are going to be increased in the phase III and IV. The main modes of transportation to the airport are private cars, public bus, hotel transportation (shuttle), and taxi. This credit is considered non applicable since the concession of the airport does not specify the construction of alternative modes of transportation new ways of transportation.</p> <p><i>Sources: Master Plan, updated August 2011" Chapter 1.6.2, pages 1-22; 1-49; 3-53; 3-58.</i></p>	<p>*Location and design drawings showing proximity and accessibility to the transportation facilities.</p> <p>* Location and design drawings showing parking availability.</p> <p>*Documentation showing how the walkways, trails are usable as alternative mode of transportation, where these exist.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">QL2.6 Improve Site Accessibility, Safety & Wayfinding</p>	<p>6</p>	<p>Superior</p> <p>There are daily inspections to control the proper lettering and signage into the terminal and outside. This issue is regulated according to international standards. The perimeter paths to the airport, as well as access and parking ramps, are reviewed daily. Specific signage was installed while the execution of the interior and exterior works. It avoided dangers and disturbance for both workers and passengers. The construction will proceed in phases to minimize affects to normal airport operations. According to <i>Regency Environmental Reports num.101</i>, posters providing general information about the project are prominently displayed. As indicated in Futuris' report Initial Environmental and Social Impact Assessment on the surroundings of administrative offices, there are areas without sidewalk, implying a safety danger for pedestrians</p> <p><i>Sources: "Master Plan, updated August 2011" Chapter 1.6.3, page 1-23 to 1-26; Chapter 1.12.8 page 1-40; Chapter 3.4.1.1 page 3-48; Chapter 4.3 page 4-55 to 4-69 // Special Report by Environmental Regency, modification of PGA, version II , page 20. Chapter 1.2.2// MA-208 "Annual Maintenance Plan, 2012" version 2 page 5; page 55. //Initial Environmental and Social Impact Assessment. By Futuris, table 17.4, page 122 point 3.2.// Regency Environmental Reports num. 101 page 24, C30.</i></p>	<p>*Design documents and plants showing how the project has restored safety and access in the adjacent areas, and to the surroundings of the administrative offices.</p>

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">QL3.1 Preserve Historic And Cultural Resources</p>	<p>0</p>	<p>Non_Applicable</p> <p>The possibility of finding archaeological heritage is very remote, for this reason this credit is considered non applicable. <i>"The risk of archaeological site impact is insignificant as the Project is being conducted within built areas. An archeological study was completed for Phase I and II and the results were approved by SETENA. Although the chances to find archeological remains are minimal, the Project has a chance find procedure as part as its Environmental Management Plan"</i>. All employees on excavations works must know the procedure P-14014 Archaeological findings. <i>"Prior to initiating the required earthworks for the Project, notify the National Museum of Costa Rica so they program the necessary actions."</i></p> <hr/> <p><i>Sources: Special Report by Environmental Regency, modification of PGA, version II, page 29, C36// Environmental Management Plan by Siel-Siel page 4, C2 // MA-14003 Manual safety, prevention of occupational hazards and environmental protection for works in SJO Chapter 9.2.2, page 19 // P-14014 Archaeological findings // Environmental Impact Assessment 2001 (EslA), Chapter 11.2.1, page 131, paragraph 2.3 // Environmental and Social Management Report by IDB, Oct. 2009, point 5.8 page 12 // Environmental Analysis Report, by Siel-Siel 2009, page 22, point 2.</i></p>	<p>*In case of archeological findings a specific protocol must be followed. All the existent reports, memoranda, minutes of meetings and required regulatory and resource agencies should be collected.</p> <p>*Qualifications of historic/cultural preservations judged on experience with similar sites.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">QL3.2 Preserve Views And Local Character</p>	<p>0</p>	<p>Not Achieving</p> <p>There is no evidence in the documentation provided that maintaining local character and reducing negative impacts on community views was considered during design. The expansion will be carried out within the current boundaries of the SJO. The main activities in the perimeter area (2km away from the airport) are mainly: residential, commercial, and industrial. There are also small areas dedicated to agriculture. Some regulations are stated in Environmental Impact Assessment, regarding the conservation of the landscape and visual effects. There is no study that considers the perception of residents, and neighbors of the landscape and the visual effects of the airport. The master plan does not provide instructions about the landscape and visual effects management in chapter 7, Environmental Evaluation.</p> <hr/> <p><i>Sources: Special Report by Environmental Regency, modification of PGA, version II, page 27, C.27// Initial Environmental and Social Impact Assessment. By Futuris; Chapter 3.1, page 9/ Chapter 3.3, page 10/ Chapter 9, Page 41 to 43. // Environmental Impact Assessment 2001, Chapter 5.1, page 25.</i></p>	<p>*Creation of plans drawings and reports, identifying important elements of the site character.</p> <p>*Existing policies and regulations regarding publics' views, and design guidelines.</p> <p>*An inventory of all natural landscape features to be protected.</p> <p>*Designation of which features must be preserved, contract should include penalties for non-compliance</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">QL3.3 Enhance Public Space</p>	<p>1</p>	<p>Improved</p> <p>The project has no long term adverse effects on existing public spaces. After the terminal refurbishment nicer spaces were created for public use. In the past the terminal was just small and just allow to the passengers.</p> <hr/> <p><i>Sources: Master Plan, updated August 2011</i></p>	<p>*Studies of the impact of the project of existing public spaces, and in the way of using those new spaces</p> <p>*Plans, drawings showing the scope and extent of any restoration efforts to be made in public space.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">QL0.0 Innovate Or Exceed Credit Requirements</p>	<p>0</p>	<p>N/A</p>	
<p>64</p>			

LEADERSHIP			
	INTERNATIONAL AIRPORT JUAN SANTAMARIA, COSTA RICA		RECOMMENDATIONS
LD1.1 Provide Effective Leadership And Commitment	9	<p>Superior</p> <p>The commitment to achieve sustainable or environmental goals is shown in several documents. The line of responsibilities regarding the environmental aspects is well defined. The protocols to be followed in case of an environmental impact such as spills are clearly stated. As indicated in MA - 14000 there is specific training programs to deal with environmental issues. A new department in Environmental and sustainability issues was created in 2012. The sustainable performance is periodically reported to the other members into the organization. A list of objectives in sustainability issues has been published to determine the goals for the current year 2013.</p> <p><i>Sources: Environmental Management Plan by Siel-Siel page 25, C87-C90// MA-14000 Manual of the System of Environmental Management, Social Health and Safety Chapter 5, page 16/ Chapter 6, page 18// M-1156 Environmental protection and construction safety// Integrated Policy Management 14001/OHSAS 18001/ISO 26000 // Environmental objectives Aeries Holding Costa Rica S.A// Occupational health and safety objectives Aeries Holding Costa Rica S.A.</i></p>	<p>* Publication of ongoing significant actions taken to improve sustainable performance.</p>
LD1.2 Establish A Sustainability Management System	7	<p>Superior</p> <p>The roles and responsibilities assigned are clearly stated, with lines of authority and protocols to follow in case of environmental impact. The control mechanisms of the environmental management are provided in the Special Report by Environmental Regency, modification of PGA, version II. Those were monitored during the construction phase through several Regency Environmental reports. There is a clear process from the location of a particular problem to the solution used.</p> <p>According to Regency Environmental Reports, in all contracts signed between AERIS and any subcontractor, environmental obligations must be accepted. There have been seen a full commitment from AERIS team to meet sustainable goals. Monitoring initiatives to promote sustainability have been recently implemented January 2013. These initiatives are mainly focused on energy and water consumption, and reduction of spills. Annual reports by Regency Environmental sum up the most important issues of that period and the different problems that still need to be addressed.</p> <p><i>Sources: Environmental Management Plan by Siel-Siel page 24-26, C84-C88 and C92-94// MA-14000 Manual of the System of Environmental Management, Social Health and Safety page 24// M-1156 Environmental protection and construction safety // P-14012 Notification of events that can cause significant environmental impacts // Environmental Bitacora in each Regency environmental report // Regency Environmental Report, Num 92, annex D. // POL-14001 Environmental, Social, health and safety policy // MA-208 Annual Maintenance Plan ,2012 version 2 page 58.// Average Drinking Water Consumption Indicator year 2013// Monthly Average Consumption of drinking water 2010 - 2012 Year SJO// Average Monthly Consumption of Electricity year 2013// Average monthly consumption of electricity 2009 - 2013 Year SJO// Environmental management system. Matrix of specific sustainability targets 2013 year.</i></p>	<p>*Document that compile the different processes and management in place.</p>

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">LD1.3 Foster Collaboration And Teamwork</p>	<p style="text-align: center;">8</p>	<p>Superior</p> <p>The owner and the project team have expressed a desire to improve sustainability in the expansion phase of the airport. The project team has approached the project as a set of systems interconnected among them. Weekly meetings are conducted to inform the team about the progress of the project and discuss about the different issues that affect several team works.</p> <p><i>Sources: MA-208 Annual Maintenance Plan, 2012 version 2 page 59. / F-904 Assistance control sheets to the periodical meetings.(June_23_2010 to Oct_05_2012)</i></p>	<p>*Planning of the whole system design, and the phases in which the different parties are involved on it.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">LD1.4 Provide For Stakeholder Involvement</p>	<p style="text-align: center;">5</p>	<p>Enhanced</p> <p>There have been several phases in terms of stakeholders’ involvement. Between 2000 to 2005 there was an expropriation process in which several public consultations were followed. “According to information available, the government followed all public participation requirements during the EIA approval process in 2001 and the government lead workshops and meetings to inform community residents of the expropriation and resettlement process from 2000 to 2005”(*).</p> <p>A process of identifying stakeholders affected by the project was addressed in the Initial Environmental and Social Impact Assessment, by Futuris, Dec 2011. As indicated in this document, no strategy for communication and relationship development with stakeholders was developed. As specify in the <i>Environmental and Social Management Report by IDB in 2009</i> “The sponsor does not have any specific plans or written procedures that detail ongoing communication and consultation with local communities during construction and operation phases.” Some pubic consultations were carried out during the expropriation and resettlement process. Other measures have been recently implemented, January 2013 such as surveys and electronic mailboxes and websites (http://190.10.79.155/buzonelectronico/) to assess the satisfaction of customers as well as a space on the web page for suggestions. This information must be used to create the strategy of communication with stakeholders. There is a procedure of community communication, P-14020 that is currently been followed by AERIS.</p> <p>Some information has been provided regarding procedures for internal and external communication, as well as the responsibilities of each AERIS department. (Look at P-1420). As is has been seen at ESHS Management Social Plan 2013, many different activities are been implemented to provide stakeholder involvement. Some of those measures are: Strengthening the education on sustainability issues and social responsibility; Involvement with topics of interest; Develop of a communication strategy and involvement for stakeholder.</p> <p><i>Sources: Environmental Management Plan by Siel-Siel pages 22,23, C79-C81// MA-14000 Manual of the System of Environmental Management, Social Health and Safety Chapter 7,page 21// P1420 Communal Communication Procedure // Initial Environmental and Social Impact Assessment, by Futuris; Chapter 17, page 108- 133/ table 17.4 page 123-124 pints 4.14 to 4.17/ table 17.6 page 129// F-027-1 Complains, claims or suggestions// I-035 Suggestions program for SJO employees// Matrix Environmental and Social Management Plan Actions - Juan de Santa Maria International Airport, point 10.2,10.3.// Environmental Impact Assessment 2001 (EsIA), Chapter 8.6 “Local Perception on the Project” page 105 / Chapter 8.7. “Communal Infrastructure” page 106. // P-14020 Communal Communication Procedure // Environmental and Social Management Report by IDB, Oct. 2009, point 7.3 page 22 / (*) Table 3. Project Compliance with IDB Policies; page 29.//ESHs Management Social Plan 2013 System.</i></p>	<p>*Policies and business practices that ensure fair and equitable assessment and action. Letters, memoranda, notes and minutes that control its application.</p>

LD2.1 Pursue By-Product Synergy Opportunities	1	<p>Improved</p> <p>There is no data identifying any specific program for using unwanted materials from nearby facilities. To reduce the project cost, and the use of raw material, the soil from the excavations was used in fillings, leveling. It was stored in the collection areas to be used when needed.</p> <p><i>Sources: Regency Environmental Report num. 96. (VI-2011) page 20. C10</i></p>	*Records of byproducts synergy opportunities, identifies assessed and Pursued. Result of pursuing.
LD2.2 Improve Infrastructure Integration	7	<p>Superior</p> <p>The design improvements in the project tried to integrate the airport with existing infrastructure, especially surrounding roads. Several alternatives were considered and evaluated to determine which affected existing infrastructure the least. Short and long term impacts have been addressed.</p> <p><i>Sources: Master Plan, updated August 2011 Chapter 4, pages 4-1 to 4-82. // Environmental Management Plan by Siel-Siel pages 22, 23, C79-C81.</i></p>	*Documentation in how to incorporate and take advantage of valuable community assets.
LD3.1 Plan For Long-Term Monitoring & Maintenance	10	<p>Conserving</p> <p>Long-term monitoring and maintenance have been considered for construction and subsequent phases. There is a maintenance plan which is updated yearly and applicable to all the airport installations. This plan is supervised by Civil Aviation to its approval.</p> <p>There are training programs for monitoring and maintenance. Responsibilities for operational control and monitoring are clearly stated. The protocols to deal with non-conformities as well as corrective and preventive actions are also explained. The budget invested each year in maintenance, as well as the projected subsequent year's budget, are specified in the maintenance manual.</p> <p>Several monitoring programs have been implemented this year. The main aspects been monitored are energy and water consumption, strategies to prevent spills and solid pollution.</p> <p><i>Source: MA-14000 Manual of the System of Environmental Management, Social Health and Safety Chapter 10, page 28-30/ Chapter 12, page 35-37/ Chapter 13, page 37-39/ Chapter 15, page 42,43 // Environmental Management Plan by Siel-Siel page 26, C92// Annual Maintenance Plan, 2012 page 21-21 , "budget" page 71, "training".// Environmental Impact Assessment 2001 (EsIA), Chapter 12.2, page 138.//Monitoring programs; Surface water Monitoring Segundo River; Surface water Monitoring Ciruelas River; Underground Water Monitoring; Drainage systems; Drinking water. Residual Chlorine monitoring 2012; Drinking water. Bacteriological analysis, Chlorine water 2012; Discharge limits for wastewater effluents</i></p>	<p>*Designation of persons or organizations to assigned to monitor and maintain the constructed works.</p> <p>* Assurance that these resources will be in place following the delivery of the project.</p>

LD3.2 Address Conflicting Regulations & Policies	8	<p>Conserving</p> <p>There have been identified two different conflict regulations which could create barriers to the implementation of sustainable practices. The first conflict refers to the location of COOPESA. This Aircraft maintenance facility is not directly dependent from AERIS. To continue the expansion process as expected, the COOPESA relocation is required. It has been proved that the ground under the facility is currently polluted. This pollution presumably comes due the spills of hazardous material basically hydrocarbons during the time that the facility has been in service. It is planned the cleaning up of the ground after the relocation of COOPESA. Currently year 2013, there is no information about when this process is going to happen. The second affecting the future expansion is the growth of the surrounded communities. One of the criteria to minimize the impacts in the nearby communities is to prevent its development towards the airport limits. Currently there is not an overlap between the expansion plans and the urban development plans. National or international regulations have been applied according to the standards.</p> <p><i>Source: MA-14000 Manual of the System of Environmental Management, Social Health and Safety Chapter 3, page 12// Environmental, Social, Health & Safety Numerical Standards, pages 1 to 19. // Environmental Management Plan by Siel-Siel page 25, C89.</i></p>	*Increase efforts and perseverance in working with regulators to resolve conflicts.
LD3.3 Extend Useful Life	6	<p>Superior</p> <p>The design of the project has taken into consideration future expansions and reconfigurations, as well as flexibility for future alternatives. In terms of materials and durability the project is being built according to law regulations.</p> <p><i>Sources: Master Plan, updated August 2011 Chapter 4, page 4-71 / Alternatives Evaluation Matrix page 4-29.</i></p>	*Documentation showing the specification of durable materials and how these improve upon industry norms.
LD0.0 Innovate Or Exceed Credit Requirements	0	N/A	
61			

RESOURCE ALLOCATION			
	INTERNATIONAL AIRPORT JUAN SANTAMARIA, COSTA RICA		RECOMMENDATIONS
RA1.1 Reduce Net Embodied Energy	0	<p>Not_Achieving</p> <p>No data is available to prove that life cycle energy assessment was performed in accordance to recognized and accepted methodologies.</p>	<p>*An estimation of the Life-cycle energy assessment should be done.</p> <p>*Give information about embodied energy of the significant materials.</p> <p>*Strategies to reduce the embodied energy.</p>
RA1.2 Support Sustainable Procurement Practices	0	<p>Not_Achieving</p> <p>According to <i>Regency Environmental</i> reports, in all contracts signed between AERIS and any subcontractor environmental obligations must be accepted. There is no specific data about suppliers' performance according to sustainable procurement. It is unknown if materials have been purchased from suppliers that follow sustainable practices. The policies and criteria for suppliers' identification and selection are more focused on the socio-labor compliance management than the application of good practices in sustainability. There are several tables that analyze working conditions and labor relationships. As indicated in the document <i>I-802</i>, other criteria to evaluate suppliers are based on the service quality offered to consumers, but neither refers to the implementation of sustainable practices.</p> <p><i>Source: I-802 Assessment and Reassessment of suppliers// Initial Environmental and Social Impact Assessment, by Futuris; Chapter 16, page 80-107.</i></p>	<p>*A sustainable procurement program considering of polices and criteria for supplier identification and selection.</p> <p>*Certification of materials and suppliers.</p>
RA1.3 Used Recycled Materials	5	<p>Enhanced</p> <p>Reuse of excavated soil is mentioned in the documentation for purposes such us filling or leveling. It is unknown the exact percentage of the total materials that is being used for this purpose.</p> <p>There is a protocol to authorize specific materials that are not commonly used into the airport. By analyzing the technical characteristics of the material, they allow its future use. There is no information about promotion of materials with recycled content as criteria to authorize its usage. One of the drivers to choose the current expansion alternative was to maximize the use of the existing infrastructure.</p> <p><i>Source: Master Plan, updated August 2011 Chapter 4, pages 4-1 to 4-82.// MA-14003 Manual Safety, Prevention of Occupational Hazards and Environmental Protection for Works in SJO, Chapter 9.3.6, page 24 "</i></p>	<p>*Quantification of the total amount of materials and the percentage of total project materials by weight or volume that is reused or recycled.</p> <p>* Documentation about quality and performance criteria required for the intended application.</p> <p>* Design documents showing the structures reused.</p>

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">RA1.4 Use Regional Materials</p>	<p>6</p>	<p>Enhanced</p> <p>Some of the materials for this phase of the expansion such as asphalt and concrete, were locally sourced. One of the main material, the soil, is been reused from the excavations that are taking place into the boundaries of the airport. As specified in MA-1124 “building materials used by all commercial subcontractors, must respect the same features, qualities and construction procedures [...] In this way, all the works inside the terminal, must harmonize and complement in design with the existing ones”. Therefore, the materials will likely be specified from the same sources as the existing material.</p> <p><i>Source: MA-1124 Construction Works Manual at SJO. Annex D, page 51.</i></p>	<p>*Calculations of percentage of total project materials by costs that are locally sourced.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">RA1.5 Divert Waste From Landfills</p>	<p>6</p>	<p>Enhanced</p> <p>Certain documentation shows waste management efforts achieve a high rate of recycling. The Table 11.4, from the Environmental and Social Impact Assessment shows waste recycling increased considerably from 2006 to 2010. The procedure for recycling in the SJO passenger terminal is shown in document P-14017. The annual report 2012 states that the percentage of recycled material has increased in the last three years. As a result, the amount of waste sent to the sanitary landfill has decreased since 2010. Evidence shows that different residues are being sorted and processed by different specialized companies. For example "Services Ecologicos M.B.B. S.A" recycles items such as cardboard, paper, newspaper, plastic bags, plastic bottles, aluminum cans, or fluorescent lamps, among others. Used oil and absorbent material, are also recycled.</p> <p>As indicated by the Regency Environmental reports, The Waste Management Plan, approved by the Ministry of Health, is currently implemented. The Environmental and Social Management Report by IDB mention “With the expansion of the airport, pressure on local government services is expected. The most important services impacted will be the increased use of local landfills for the non-international waste.”</p> <p><i>Source: MA-14002 Manual of good practices for construction work in the SJO Chapter 2.4, page 6. // Special Report, modification of PGA, version II, Chapter 1.2.4, page 21, Chapter 1.10, page 28. //Environmental Management Plan by Siel-Siel , page 7, C18-C21.page 15, C50-C60.//Initial Environmental and Social Impact Assessment, by Futuris, chapter 11, Page 49-53./ table 11.4 Amount of recycling materials in the last years (2006-2010)// Regency Environmental Report. Num.92, Annex 4, waste management// Regency Environmental Report. Num.94, page 16, C28// Regency Environmental Report. Num.96, page 20, C10. // P-14017 Management of Recycling in the SJO Passenger Terminal// Environmental and Social Management Report by IDB, Oct. 2009, point 5.11 page 13. // Matrix of recycling of non-hazardous waste per month.</i></p>	<p>* Calculation that shows the real amount of waste produced at the construction phase, levels achieved and treatment of hazardous products.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">RA1.6 Reduce Excavated Materials Taken Off Site</p>	<p>5</p>	<p>Superior</p> <p>There is no information about the percentage of excavated materials taken off site. The vast amount of soil has been stockpiled into the boundaries of the airport for future reused. As shown in several reports of Environmental Regency, only the necessary soil for the completion of the works is excavated. Several alternatives have been evaluated at the Master Plan, Table 4-4, to determine the best possible project. One of the criteria for choosing this option was to minimize the amount of excavated material.</p> <p><i>Source: Master Plan, updated August 2011, chapter 4.2.1 page 4-35. /Table 4-4. Page 4-36// Regency Environmental Report. Num.96, page 15, C2.</i></p>	<p>* There are no documents with the exact amount of excavated materials taken off site.</p>

RA1.7 Provide for Deconstruction & Recycling	0	<p>Not_Applicable</p> <p>Considering that most of the project was an excising area, this credit for deconstruction and recycling has been considered non applicable. There is no evidence that the materials used for the construction of this phase have been chosen based on criteria of reconstruction and recycling for future use.</p>	<p>* There is no data about efforts to use recycled materials.</p> <p>* There are not documents available showing materials easily disassembled.</p>
RA2.1 Reduce Energy Consumption	7	<p>Enhanced</p> <p>Some measures to reduce energy consumption have been recently implemented. Some of these measures are the maximization of natural light, the use of more efficient illumination, the use of wind generators to supply electricity to the parking lot, the installation of solar panels into the airside to create electricity and the installation of escalators which stops automatically when there are no users. Several estimations in terms of reduction of energy consumption have been done in the last months, but it is expected that the reduction of energy throughout the project life cycle, will be significant.</p> <p><i>Source: Initial Environmental and Social Impact Assessment, by Futuris, chapter 10, Page 44-48./Chapter 10.3.2 page 46,47./ MA-14003 Manual Safety, Prevention of Occupational Hazards and Environmental Protection for Works in SJO Chapter 9.3.7, page 24-25.</i></p>	<p>*Calculations for the projects estimate annual energy consumption over the life of the project are required.</p> <p>*Existence of reports, memoranda etc, from project team and owner that shows the energy reduction strategies.</p>
RA2.2 Use Renewable Energy	4	<p>Improving</p> <p>There is not specific information about what is the percentage of energy supplied by renewable sources. As previously expressed they have been recently implemented new ways of renewable energy such us one wind generator that provides electricity to the parking lot and some solar panels.</p> <p><i>Source: Initial Environmental and Social Impact Assessment, by Futuris, chapter 10, Page 44-48.</i></p>	<p>*There is no data about the percentage of renewable energy used to meet energy needs.</p> <p>* There is no information about the use of solar energy, wind, solar, biomass, geothermal etc...</p>
RA 2.3 Commission & Monitor Energy Systems	11	<p>Conserving</p> <p>There is a periodically commissioning procedure according to energy and mechanical systems. Those procedures for monitoring are established in a long -term period, considering the importance of the correct performance of the all import.</p> <p><i>Source: Initial Environmental and Social Impact Assessment, by Futuris, chapter 10.3.2, Page 46-47.</i></p>	<p>*Independent authority that monitored energy systems.</p> <p>*Documentation of commissioning requirements in the contract documents.</p> <p>* Rationale as to how the monitoring equipment may enable more efficient operations over the industry norm.</p>
RA3.1 Protect Fresh Water Availability	2	<p>Improved</p> <p>SJO does not extract water directly from aquifers. Drinking water is provided to the airport by the national agency trough a centralized system. Water quality assessments are made periodically by an independent entity, in several locations at the airport. Some measures to optimize water consumption have been identified, such as the reuse of water utilized in tests of fire prevention equipment, or the adoption of waterless urinals.</p> <p>Other projects are expected to be implemented in short and long terms, in order to ensure water availability. An example of such initiatives is project 601 "Water tank and pump station".</p>	<p>*Plans and documentation should be presented to prove that all those measures have been taken into account.</p> <p>*Calculations considering the average peak demands and long term needs.</p>

		<p><i>Source: MA-14003 Manual Safety, Prevention of Occupational Hazards and Environmental Protection for Works in SJO Chapter 9.3.3, page 23 // Special Report, Modification of PGA, version II, table 3 page 14. // MA-14002 Manual of Good Practices for Construction Work in the SJO Chapter 3.3, page 14/ Chapter 3.6, page 21// Environmental Management Plan by Siel-Siel, page 18, C61-C67.// Initial Environmental and Social Impact Assessment, by Futuris, Chapter 4. Page 12-15. // Master Plan, updated August 2011 page 1-43; page 6-15 project 601; page 6-19 project 602// Environmental Analysis Report, by Siel-Siel in 2009, page 13 //Environmental and Social Management Report by IDB, Oct. 2009, point 5.34 page 16.</i></p>	<p>*Calculations of the volume of fresh water discharged after use</p>
RA3.2 Reduce Potable Water Consumption	4	<p>Improved</p> <p>As previously specify some measures are being implemented to reduce potable water consumption. An example is the reuse of the water required for the tests on fire systems or the usage of non-water urinals.</p> <p>There is not specific data about the reduction in water consumption since the different measures have been recently implemented. Is believed that in a long period, the water reduction will be significant.</p> <p><i>Source: Special Report, modification of PGA, version II, Chapter 1.6 page 24, Chapter 1.11 page 28. // Initial Environmental and Social Impact Assessment. By Futuris, Chapter 5 and 6// Regency Environmental Report, num. 94. Chapter 2.2.3, C9 page 11. // Regency Environmental Report, num. 97. Chapter 2.2.3, C9 page 10. // Regency Environmental Report, num. 102. Annex 3. // Matrix "Environmental and Social Management Plan Actions - Juan Santamaría International Airport", point 4.</i></p>	<p>*Design documents demonstrating the incorporation of water savings strategies into design.</p> <p>*Calculations estimating annual water consumption over the life of the project.</p>
RA3.3 Monitor Water Systems	11	<p>Conserving</p> <p>Several analyses are periodically carried out by an independent entity in different parts of the airport to ensure water safety. These controls have been incorporated to enable long term water quality monitoring.</p> <p>According to the Environmental Analysis Report, by Siel-Siel in 2009 "Regarding surface and ground water quality, it is important to mention that as part of its environmental monitoring system, APCR has done periodical measures, usually semi-annual or quarterly, to track its quality. APCR has been monitoring 3 groundwater wells, the 2 above mentioned rivers, and 7 storm water outlets". The integration of these monitoring systems allows identifying any possible impact, and implementing the measures to correct and prevent it. Monitoring has been conducted in ground water, superficial water, waste water and fresh water. As a result of this monitoring have been detected certain substances above the limits. These are Biological Oxygen Demand (BOD) 5, 20; Chemical oxygen demand (COD); Suspended Solids or coliforms. Measures to correct these levels are been developed.</p> <p><i>Source: Initial Environmental and Social Impact Assessment. By Futuris, Chapter 5 and 6// Regency Environmental Report, num. 94. Chapter 2.2.3, C9 page 11. // Regency Environmental Report, num. 102. Annex 3.// Environmental Analysis Report, by Siel-Siel in 2009, page 13// Annual program of monitoring water quality - SJO; Monitoring of groundwater; Monitoring surface water; Effluent monitoring; Monitoring rainwater.</i></p>	<p>* Demonstrate threat data was periodically checked by an independent authority, independently of design and construction.</p> <p>* Documentation and specification identifying the installation.</p>
RA0.0 Innovate Or Exceed Requirements	0	N/A	
	61		

NATURAL WORLD		
	INTERNATIONAL AIRPORT JUAN SANTAMARIA, COSTA RICA	RECOMMENDATIONS
NW1.1 Preserve Prime Habitat	<p>14</p> <p>Conserving</p> <p>The expansion will be carried out within the current boundaries of the SJO. The main activities in the perimeter area (2km away from the airport) are mainly: residential, commercial, and industrial. There are also small areas dedicated to agriculture. The project does not affect prime habitat or any other land that has been identified as being of high ecological value.</p> <p>The area where SJO is currently located is classified as “Premontane Wet Forest”. This area is one of the most damaged in Costa Rica. In the surroundings of the Airport (1 km away), the forest cover has been removed entirely with very limited vegetated areas remaining on the banks of the rivers. There is a protocol in the P-14018 document which explains the procedure to follow in the case of cutting trees.</p> <p><i>Source: Initial Environmental and Social Impact Assessment. By Futuris, Chapter 3.3 page 10 // Environmental Impact Assessment 2001, Chapter 2.3, page 14, paragraph8/ Chapter 5.1, page 25. // “P-14018 Cutting of trees in the International Airport Juan Santamaría</i></p>	<p>*The project should research and document all areas of “prime habitat” near or in the site using local or national prime habitat information.</p>
NW1.2 Preserve Wetlands and Surface Water	<p>9</p> <p>Superior</p> <p>The area where the SJO is located is part of the fluvial system of Alajuela within the basin of the Río Grande de Tárcoles and the watershed of the Río Virilla. There are no permanent water concentrations within SJO. However, there is the Ciruelas River, more than 180 meters to the north, and the Segunto River, almost 275 meters to the south. The river crosses by industrial, commercial, agricultural, and residential areas which generate waste that is usually discharged into the river without any kind of treatment.</p> <p>There have been some occasional leakages of contaminants from the SJO to some of the rivers, which should be totally prevented and avoided in the future. According to the document F-1406, Matrix of Aspects and Impacts, the most repeated impact at both moderate and high levels is spillage and discharge of substances into the sewer system without pre-treatment. This represents a threat to surface water.</p> <p>As specified at Environmental and Social Management Report by IDB that “potential sources of sediments reaching surface water from construction sites include excavating, exposed ground surfaces and stockpiles. Sediments can reach surface waters via runoff from construction sites during rainfall events. Impacts from concrete and cement products would result from the on-site rinsing of equipment.”</p> <p>A Surface Water Quality Program is planned to be developed and implemented in the future. This would be executed as part of the Environmental Impact Assessment for phase 3 and 4.</p> <p><i>Source: Initial Environmental and Social Impact Assessment. by Futuris, Chapter 3 page 11 and 6/ Chapter 5 page 17/ Table 5.3 page 20.// : Matrix, Environmental and Social Management Plan Actions - Juan Santamaría International Airport, point 3.// F-1406, Matrix of Aspects and Impacts moderate impacts and high impacts // Environmental and Social Management Report by IDB, Oct. 2009, point 5.5 page 12.</i></p>	<p>* A site plan showing the final sign design, the boundaries of Vegetation and Soil Protection Zone (VSPZ)</p> <p>* A restoration plan outlining any efforts to restore wetlands or water bodies</p>
NW1.3 Preserve Prime Farmland	<p>12</p> <p>Conserving</p> <p>The expansion will be carried out within the current boundaries of the SJO. As a result no soils defined as prime farmland have been developed. Some of the expropriated areas are farmland. Those have not going to be developed in this phase or in the next ones.</p>	<p>*Prove the restoration of the prime land farm especially in places very damages such as mortar plants etc.</p>

		<p><u>Source: Initial Environmental and Social Impact Assessment by Futuris, Chapter 3.3 page 10 // Environmental Impact Assessment 2001, Chapter 2.3, page 14, paragraph 8/Chapter 5.1, page 25.</u></p>	<p>*Show how the restoration was accomplished</p>
NW1.4 Avoid Adverse Geology	2	<p>Enhanced</p> <p>Some information has been provided according to geologic formations, natural hazard risks, and groundwater formations in the Environmental Impact Assessment 2001. This document, in combination with the MA-199 Plan of Response to Emergencies in the Passenger Terminal, describes the relative potential natural hazards of the project based on the specific location and the strategies used in case of emergency. The main risks described are earthquake and smoke in case of volcanic eruption. According to the Environmental and Social Management Report by IDB “an Emergency Response and Preparedness Plan that identifies earthquakes as a significant disaster risk and delineates emergency response procedures and training to respond to this risk”</p> <p>The vulnerability of the groundwater due to possible spills is addressed in the document Initial Environmental and Social Impact Assessment by Futuris, December 2011. However, there is no mention of natural hazards risks. There is a procedure for the receiving and discharge of fuel explained in P-14019 Procedure for receiving and discharge of fuel in the tank of storage block F at SJO. It has been identify a potential risk of groundwater pollution especially under the COOPESA hangar. This is a service excluded from the scope of AERIS as per the CGI in effect. Hence, neither their actions nor the land they occupy are under the AERIS’s control or responsibility.</p>	<p>*Demonstrate that geotechnical investigation has been conducted.</p> <p>*What measures have been taken according to those results?</p>
		<p><u>Source: Initial Environmental and Social Impact Assessment, by Futuris December 2011, Chapter 14, pages 68-74// Environmental Impact Assessment 2001 (EsIA), Chapter 2.3, pages 14, 15/ Chapter 6.5.2 pages 78, 79/ Chapters 6.7.1; 6.7.2; 6.7.3/ Plan 17,” Environmental Susceptibility” page 93/ Chapter 12.5 Contingency Plan. // MA-199 Plan of Response to Emergencies in the Passenger Terminal pages 12-15/ Chapters 1.11.5.2; 1.11.5.3 pages 28, 39/ Chapters 2.4.3.4.1. // P-14019 Procedure for receiving and discharge of fuel in the tank of storage block F at SJO// Environmental and Social Management Report by IDB, Oct. 2009, point 6.11 page 20.</u></p>	
NW1.5 Preserve Floodplain Functions	0	<p>Non_applicable.</p> <p>The project is not located in what it is considered floodplain; as a result this credit is not applicable.</p> <p>The expansion will be carried out within the current boundaries of the SJO. The SJO lies within the watershed of the Rio Grande de Tarancoles. At the project level there are no permanent bodies of water, only runoff channels. While the execution of the project does not affect floodplain infiltration capacity, neither can it be considered to maintain or enhance riparian and aquatic habitat.</p> <p>According to the Plan of Response to Emergencies in the Passenger Terminal “Flood, is not considered a major threat since the facilities as a whole have proper drainage system, able to avoid the accumulation of rain. Likewise the storm drain system is adequate.” As specified in the Analysis Report, “Implement measures to prevent flooding in the SJO vicinities, especially considering the inclusion of new constructions.”</p>	
		<p><u>Source: Environmental Impact Assessment (EsIA) 2001, Chapter 2.3, page 14, paragraph 5,6/Chapter 5.1, page 25// MA-199 Plan of Response to Emergencies in the Passenger Terminal pages 15 d.2// Regency Environmental Report, num. 94. Page 29. // Regency Environmental Report, num. 95. Chapter. 5.2.4, C9 page 11 / 5.6, C19-C21 page 19, 20. //Analysis Report, by Siel-Siel in 2009, point 49 page 25.</u></p>	

<p>NW1.6 Avoid Unsuitable Development on Steep Slopes</p>	<p>4</p>	<p>Superior</p> <p>There are several documents focus on several measures to follow to avoid landslides and soil erosion. An exhaustive monitoring has been carried out during the execution of the slopes. In most of the Regency Environmental Reports the slopes are supervised. In most cases have been reported to be in good conditions. In occasional cases embankments erosion have been observed.</p> <p>Some measures such as placing obstacles to sediment at the foot of the slopes that are devoid of vegetation have been taken into consideration to prevent haulage of sediments during the excavations. After the onsite visit it was determined that the appearance of embankments is stable in most of the cases, without apparent danger of landslides. The monitoring of this area as well as the correct drainage of the slopes it is periodically supervised to keep the slopes in good conditions.</p> <p><i>Source: Environmental Management Plan by Siel-Siel page 4, C6- C8// MA-14002 Manual of good practices for construction work in the SJO Chapter 2.2 page 4 // Master Plan, updated August 2011 Chapter 1.4.7 page 1-16.// Special Report, modification of PGA, version II , Chapter 1.2.1, C2 page 19, Chapter 1.2.3 C5-C7 page 20.// Regency Environmental Report, num. 92. Page 5, monitoring 02/02/2011 1// Regency Environmental Report, num. 94. Page 5, monitoring 04/05/2011, 05/10/2011. //Regency Environmental Report, num. 95. Page 6, monitoring 05/04/2011, 05/18/2011/ page 33, recommendations/ page 39, pictures// Regency Environmental Report, num. 96. Page 26 C20 // Regency Environmental Report, num. 97. Monitoring 06/08/2011 Page 3, 07/21/2011, 08/17/2011 page 6// Regency Environmental Report, num. 99. Monitoring 10/27/2011 page 4// Regency Environmental Report, num. 104. Monitoring 10/05/2011, page 7// Regency Environmental Report, num. 107. Monitoring 08/09/2012 page 7/ page 24.</i></p>	<p>*Documentation to identify specific areas with landslides risk.</p>
<p>NW1.7 Preserve Greenfields</p>	<p>23</p>	<p>Restorative</p> <p>The expansion will be carried out within the current boundaries of the SJO. The total area was previously developed.</p> <p>Looking at the expropriations process that was carried out some years ago, we see that some of these areas were farmlands. Those areas have not been developed. As shown at the Analysis Report "The main economic activity is agriculture (livestock, coffee), located in the South and Southeast of the airport, and industrial activities along the perimeter of the airport and business in San Antonio and the Tejar Street. Of the respondents, 5% call their selves farmers". There is no information about the percentage of expropriated area considered farmland.</p> <p>Part of the project has been located in a contaminated area that previously has to be cleaned. The space where RECOPE was located has already been cleaned. The area where COOPESA is currently located is believed polluted. To proceed with the cleaning up process COOPESA has to move to the new location, as it was expected.</p> <p><i>Source: Initial Environmental and Social Impact Assessment, by Futuris, Chapter 3.3 page 10 // Environmental Impact Assessment (EslA) 2001, Chapter 2.3, page 14, paragraph 8/Chapter 5.1, page 25.// Analysis Report, by Siel-Siel in 2009, page 17/ Annex 1: Impact and compensation measures (2003 update).</i></p>	

<p>NW2.1 Manage Stormwater</p>	<p>4</p>	<p>Enhanced</p> <p>Storm water is mainly addressed in terms of prevention to avoid soil erosion. During the excavation process several on-site visits took place to secure and avoid the sediment entrainment. The importance of minimizing the stormwater runoff and its impact on infrastructures has been pointed out in different reports. As specify as in the Environmental and Social Management Report “An erosion control program should be implemented to remove storm water from the work areas, providing sediment traps and energy dissipation areas to diminish the energy of the flow”</p> <p>The rainwater is conducted through a drainage system to the Ciruelas and Segundo rivers. According to Analysis Report “the storm water of the analyzed works would drain to the existing systems, systems that discharge their waters into two major rivers: Ciruelas and Segundo. This condition also remains valid up to this date. However, on this issue is important to mention that major difficulties have been reported, mainly due to poor condition and insufficient capacity (or total absence) of storm water drainage systems on areas across from the perimeter of the SJO boundaries, which receive the runoff coming from the SJO”</p> <p>The works developed in the last years to improve de slopes and the drainage systems. In this way is possible to prevent overflows in the surrounding communities. A report to increase the storage capacity has been designed, and the construction of those areas is expected to start in the coming months.</p> <p><u>Source:</u> <i>Initial Environmental and Social Impact Assessment</i>, by Futuris, Chapter 5 page 16-21. / Chapter 5.2 page 16. / “incidents” page 19...// <i>Special Report</i>, modification of PGA, version II, page 24, 25. Chapter 1.6. // <i>Analysis Report</i>, by Siel-Siel in 2009, page 10// <i>Environmental and Social Management Report</i> by IDB, Oct. 2009, point 6.2 page 18.</p>	<p>* Documents of the initial, final and post-development water storage. , infiltration, evaporation, cistern storage capacities etc...</p>
<p>NW2.2 Reduce Pesticides and Fertilizer Impacts</p>	<p>1</p>	<p>Improved</p> <p>According to the Maintenance Plan of SJO one of the tasks to perform is the fumigation of the gardens and green areas in the airside. One of the maintenance tasks is to control the vegetation growth to prevent the existence of fauna.</p> <p><u>Source:</u> <i>Annual maintenance Plan, 2012 page 19, 27, 31, 35.</i></p>	<p>*Operational policies for applying fertilizers and pesticides.</p> <p>*Documentation showing the mix of pesticides and fertilizers to be used on the finish projects</p>

<p>NW2.3 Prevent Surface and Groundwater Contamination</p>	<p>9</p>	<p>Superior</p> <p>Some problems of discharging contaminated water in the Ciruelas River have been described as well as water pollution by hydrocarbons. Although several documents explain the oil and hazardous substances are to be treated in a specific way, the Regency Environmental reports show that in some cases these measures have not been followed. The impact of groundwater pollution under SJO is considered high. As specify at the Analysis Report “there is enough evidence to demonstrate that groundwater is a pre-existing condition.” Different measures have been implemented to identify equipment and facilities containing potentially polluting substances and improving the conditions to avoid spills and leakages.</p> <p>The impact of groundwater pollution under SJO is considered high. One reason being, it constitutes the Barva aquifer that supplies potable water to many communities. There is evidence of accidental release of hazardous substances into monitored zones. As expressed before, there has been leakage of contaminants to the soil and the water, which should be totally prevented and avoided in the future. According to the document F-1406, Matrix of Aspects and Impacts, the most repeated impact in both moderate and high levels are spillage and discharge of substances into the sewer system without pre-treatment, and soil/ water contamination due to spills. There is a procedure for receiving and discharge of fuel explained in P-14019.</p> <p>A Management Plan for Contaminated Sites will be an outcome for the next phases III and IV. As specified in the matrix point 5.3, “Both phases I and II will be included in order to develop specific measures for prevention monitoring and control”. The improvement of the sewage systems and wastewater treatment also has a positive impact on the prevention of surface and groundwater contamination.</p> <p><i>Source: Matrix Environmental and Social Management Plan Actions - Juan Santamaría International Airport, point (5.3) // Environmental Management Plan by Siel-Siel page 6, C12 // Initial Environmental and Social Impact Assessment, by Futuris, Chapter 3.4/ 3.5 Page 10-11/ Chapter 14 // F-1406 Matrix of Aspects and Impacts moderate impacts and high impacts.// Regency Environmental report, num. 91. Chapter 2.2.2, C8 page 10 // Regency Environmental Report, num. 92. Page 3, visit 01/19/2011; 01/26/2011; 02/09/2011; Chapter 2.2.4 C17; C18/ Recommendations to prevent spills pages 24-28 // Regency Environmental Report, num. 94, visit 03/17/2011; 03/23/2011; C17; C18 // Regency Environmental Report, num. 95. Pages 12-15 C12; C13; C14 // Regency Environmental Report, num. 97. Visit 07/09/2011; C09 page 10; C17// Regency Environmental Report, num. 99. Page 5, visit 11/10/2011. // “P-14019 Procedure for receiving and discharge of fuel in the tank of storage block F at SJO”// Analysis Report, by Siel-Siel in 2009, page 10.” 5.12 Ground water conditions” //Monitoring programs; Surface water Monitoring Segundo River; Surface water Monitoring Ciruelas River; Underground Water Monitoring; Drainage systems; Drinking water. Residual Chlorine monitoring 2012; Drinking water. Bacteriological analysis, Chlorine water 2012; Discharge limits for wastewater effluents.</i></p>	<p>*Documentation of hydrogeology delineation studies, taking into consideration the complexity of the aquifers.</p> <p>*Documentation of long-term surface and long-term surface and ground water quality monitoring.</p> <p>*Spill and leak prevention and response plans.</p>
--	----------	--	--

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">NW3.1 Preserve Species Biodiversity</p>	<p style="text-align: center;">0</p>	<p>Non_applicable</p> <p>One of the goals into the boundaries of the airport is to reduce to zero the risk associated with the existence of wildlife, as a result this credit is considered as non applicable.</p> <p>The expansion will be carried out within the SJO. For that reason the biodiversity in the area is very limited. The existing fauna is mainly small rodents and birds. According to Analysis Report "Effect on flora or fauna, are zero (or close to zero), since all the remaining work will occur in previously disturbed sites."</p> <p>The EIA for phase III and IV will also incorporate a fauna evaluation that will generate a prevention, mitigation, and monitoring. There is a committee that assesses wildlife sightings or collisions with birds according to mark protocols evaluated using the F-190 Form of sighting fauna and F-193 Collisions with wildlife in SJO notification form. There is no evidence of species in the rivers adjacent to airport.</p> <hr/> <p><i>Source: Matrix "Environmental and Social Management Plan Actions - Juan de Santa Maria International Airport", point (9.2) // Environmental Management Plan by Siel-Siel page 19, C68-70 // Initial Environmental and Social Impact Assessment. By Futuris, Chapter 8 "Biodiversity" 38-40 Page 130./ Potential effects of "stormwater" page 20, Table 5.3/ potential effects of "landscapes and visual effects" page 42, Table 9.3/ potential effects of "hazardous substances" page 57, Table 12.5/ potential effects of "hazardous waste" page 64, Table 13.4/ potential effects of "noise" page 78, Table 15.4 // Regency Environmental Report, num. 94. C32 page 17. // Environmental Impact Assessment 2001 (EsIA), Chapter 8.0, page 95-97.</i></p>	<p>* Mapping of the different existent spices.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">NW 3.2 Control Invasive Species</p>	<p style="text-align: center;">5</p>	<p>Superior.</p> <p>Documentation provided address cutting vegetation to reduce weeds in the vicinity of the airport and the use of local species in the green areas. As specify at the Analysis Report "To have a landscape plan for the gardens of the area and provide proper maintenance to the remaining green areas. Consider the weather and the elements characteristic of the region, including the use of native vegetation, always taking into account the need to avoid attracting birds for safety reasons."</p> <hr/> <p><i>Sources: Special Report, modification of PGA, version II, page 7. Chapter 3.7 // Analysis Report, by Siel-Siel in 2009, page 25.</i></p>	<p>*Documentation of collaboration with National or local agencies or the qualifications of the biologist, ecologists or environmental professionals.</p> <p>*Prediction and prevention, strategies for minimizing potential for invasive species.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">NW3.3 Restore Disturbed Soils</p>	<p style="text-align: center;">8</p>	<p>Conserving</p> <p>Some activities such as debris, solid waste generation, movement of heavy machinery or material handling have been considered as a possible impact of the ground. Most of the soils disturbed during construction have been restored and compacted. The effects of excavation as shown in EsIA will be transient and reversible to its fullest extent.</p> <p>As shown in certain reports of environmental Regency, temporary zones of accumulation of materials once finished were compacted and subsequently restored.</p> <hr/> <p><i>Source: Special Report, modification of PGA, version II, page 9 Table 2/ page 20-21. C5,C6,C7.// Environmental Impact Assessment 2001 (EsIA), Chapter 10.2.2, page 117// Regency Environmental report, num. 96. Page 26, C19; C20.</i></p>	<p>*Calculation showing that 100% of disturbed soils have been restored.</p> <p>*Documentation of the soil re-uses.</p>

NW3.4 Maintain wetland and surface water functions.	6	<p>Enhanced</p> <p>Hydrologic connection and sediment transportation is achieved. The drainage systems for conducting water have been carried out but on many occasions do not include preserving the quality of water. The most repeated impact; in both moderate and high level are the discharge and spillage of substances into the sewer system without pre-treatment, and soil/ water contamination due to spills. As a result we cannot consider the water quality as preserved.</p> <p>According to the drag of sediments, some measures have been taken to prevent this possible problem. In the Environmental Regency reports the sediment issue has been address through monitoring. Sediment transport has only been observed in specific situations.</p>	<p>*Documentation that show how wetland or ground waters are connected.</p> <p>*Documentation showing how water quality will be maintained or enhanced.</p> <p>*Documentation demonstrating that sediment transport will no be disrupted by the propose project.</p> <p>* Documents for a professional team outlining strategies for ecosystems and a description of a restoration plan.</p>
		<p><u>Source:</u> Hydrologic connection: <i>Initial Environmental and Social Impact Assessment</i>, by Futuris, Chapter 5 page 16-21. / Chapter 5.2 page 16. / "incidents" page 19. // <i>Special Report</i>, modification of PGA, version II, page 24, 25. Chapter 1.6; Water quality: <i>F-1406, Matrix of Aspects and Impacts moderate impacts and high impacts</i>. Sediments transport: <i>Special Report</i>, modification of PGA, version II, Chapter: 1.2.1 page 19, C2/ Chapter: 1.2.3 page 20, C5/ Chapter: 1.2.4 page 21, C8/ Chapter: 1.6 page 24, C18; C19; C20// <i>Regency Environmental report</i>, num. 92. Page 5, visit 02/02/2011 // <i>Regency Environmental report</i>, num. 94. Page 29 "recommendations"// <i>Regency Environmental report</i>, num. 95. Page 6, visit 05/04/2011; 05/18/2011; chapter 5.6 page 19, C18 // <i>Regency Environmental report</i>, num. 96. Page 6, visit 07/01/2011; 07/15/2011 and 07/29/2011.</p>	
	0	N/A	
	97		

CLIMATE AND RISK		
	INTERNATIONAL AIRPORT JUAN SANTAMARIA, COSTA RICA	RECOMMENDATIONS
R1.1 Reduce Greenhouse Gas Emissions	<p>4</p> <p>Improved</p> <p>An Air Quality Management Program Plan has been created in March 2013. This plan describes the activities to maintain emissions inventories and any initiatives and timelines to reduce emissions. According to this report "<i>For the Future (2020) No Action conditions there are projected to be a total of 81,690 annual operations. The Proposed Projects would not increase the actual number of aircraft or change the existing or projected fleet mix at AIJS</i>" (page 9)</p> <p>As a result of the evaluation of the emissions, it has been stated "<i>the Proposed Projects would not cause annual net emissions that would equal or exceed the relevant de minimum thresholds as identified for the pollutants of concern, and therefore, would not be expected to result in adverse significant impacts to air quality</i>"</p> <p>The need to evaluate possible changes in terms of atmospheric emissions as a consequence of the expansion of the airport was already addressed in the original PGA, 2001. As shown in the master plan and Initial Environmental and Social Impact Assessment certain emissions, especially greenhouse gases have been valued and measured.</p> <p>A carbon footprint manage plan has been developed, with several recommendations to reduce carbon emissions. The reduction achieved, has not been measures. " <i>It is important to note that the conditions of maintenance or operation of aircraft or the ground service equipment, are not under the control of AERIS, within the framework of authority and responsibility established in the contract interested Management. This is so, because both of them are excluded services according to the Contract of Interested Management (CGI)</i>"</p> <p><u>Source:</u> Matrix, Environmental and Social Management Plan Actions - Juan Santamaría International Airport, point 8. "Air Quality Management". //Environmental Management Plan by Siel-Siel pages 8, 9 C23-C26.// MA-1124 Construction Works Manual at SJO. Chapter 9.1.2 page 203 a). Air Quality. // Master Plan, updated August 2011 Chapter 7.2 Air Quality. pages 7-11 to 7-22// Initial Environmental and Social Impact Assessment, by Futuris, Chapter 7 pages 29 to 37/ Chapter 7.3 page 34 / Chapter 10.3.2 "fuel consumption" page 46 // Analysis Report, Green House Gas Emissions Addendum to the Report, by Siel-Siel in 2009// Environmental and Social Impact Assessment for Phases III and IV. Draft air quality technical report, by Landrum & Brown, Incorporated, March 2013, page 9/ page 18, 19. Table 12-13.</p>	<p>*Documentation that proves that a lifecycle carbon assessment or carbon footprint analysis have been preformed.</p> <p>*Documentation of efforts to reduce carbon emissions and percentage reduction.</p>

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">CR1.2 Reduce Air Pollutant Emissions</p>	<p style="text-align: center;">2</p>	<p>Improved.</p> <p>In the last months March 2013, an Air Quality technical report has been conducted for phase III and IV. In this document there is a lists with the potential impacts related to air quality associated with the construction and operation of this phase of the project. The project addresses eight pollutants: particulate matter solid MP10, particulate matter solid MP2.5, ozone, carbon monoxide, sulfur oxides, nitrogen oxides, lead, and noxious odors National and international regulations were used: Regulation Num.30221 Regulation on Atmospheric Pollutants (national); IFC Environmental; Health and Safety Guidelines. General Guidelines: Emissions to the Air, and Air Quality Environment (international); WHO Air Quality Guidelines–World Health Organization (international). " <i>AERIS is committed to the execution of all its work within the framework required by Costa Rican law. In addition, it is regulated by a number of additional requirements (Requirements, conditions, standards, protections, obligations, and performance parameters)</i>"</p> <p>An exhaustive emissions inventory has been done in the Air Quality technical report, Table 9 The estimated emissions are been considered in the period (2013-2020). A dispersion analysis was also conducted to determine whether emissions at the Airport would result in unacceptably high emissions levels in public areas "The estimated probable maximum concentrations for the Proposed Action are provided in Table 11 page 18. As the table shows, none of the applicable standards would be exceeded from the Proposed Projects"</p> <p>In the Air Quality technical report , several tables have identified the emission “No action (2020) emissions inventory”, table 6, page 14; “Proposed action (2020) emissions inventory”, table 7, page 14, “ Annual net impact” table 8,page 15; “ Construction emissions inventory “Table 9 page 16.</p> <hr/> <p><i>Source: Initial Environmental and Social Impact Assessment, by Futuris, Chapter 10.3.2 “fuel consumption” page 46// Environmental, Social, Health & Safety Numerical Standards, Chapter 2.3 “Air quality” pages 3 to 8.// Environmental Management Plan by Siel-Siel page 4, C4 and C23 to C26.// MA-14002 Manual of good practices for construction work in the SJO Chapter 2.3 Air quality, page 5 // MA-14003 Manual safety, prevention of occupational hazards and environmental protection for works in SJO Chapter 9.3.1, air quality page 22 // MA-1124 Construction Works Manual at SJO. Chapter 9.1.2 a) page 203. // Special Report, modification of PGA, version II, page 29. Chapter 1.2; C35// Initial Environmental and Social Impact Assessment. By Futuris, Chapter 7, Page 37// Analysis Report by Siel-Siel in 2009, page 15// Environmental and Social Impact Assessment for Phases III and IV. Draft air quality technical report, by Landrum & Brown, Incorporated, March 2013, table 6,7 page 14; table 8 page 15; table 9 page 16; table 11 page 18.</i></p>	<p>*Monitoring and control program documents.</p> <p>*Documentation of expected emissions of the six criteria pollutants. Dust, ground level ozone, carbon monoxide, sulphur oxides, nitrogen oxides, lead and noxious odors</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">CR2.1 Assess Climate Threat</p>	<p style="text-align: center;">0</p>	<p>Not_Achieving</p> <p>There is no information about a climate impact assessment or adaptation plan that identifies climate change risks and possible responses. This plan should expose the risks and possible changes in operating conditions in case of higher ambient temperatures, increased frequency and intensity of storms, flooding, extended floods and more. This plan should expand the design life of the project. The plan should also address the recovery from extreme events.</p>	<p>* Documentation that prove that a Climate Impact Assessment and Adaptation Plan has been completed.</p> <p>*Documentation of community outreach during the process.</p>

<p>CR2.2 Avoid Traps And Vulnerabilities</p>	<p>0</p>	<p>Not_Achieving</p> <p>The available documentation provides some information regarding traps and vulnerabilities for the affected communities such as increasing air pollution in the area, and road congestion. No measures are taken to prevent these vulnerabilities in this phase.</p> <p>There are no references of the extent to which the project will be affected by climate change.</p>	<p>*Documentation outlining potential traps and vulnerabilities and associated costs and risks.</p> <p>*Documentation to identify and reduce potential risks taps and vulnerabilities.</p>
<p>CR2.3 Prepare For Long-Term Adaptability</p>	<p>0</p>	<p>Not_Achieving</p> <p>The documentation does not provide information regarding special measures for infrastructure systems to be resilient to the consequences of long-term climate change have been specified.</p> <p>No possible increasing of ambient temperature or any other long term adaptability has been addressed.</p>	<p>*Identification of specific measures taken to address the potential consequences of long-term climate change.</p> <p>*Identification of specific measures to prevent desertification, water and energy shortages or other critical materials.</p> <p>*Plans, design, documents that show restoration and rehabilitation efforts.</p>
<p>CR2.4 Prepare For Short-Term Hazards</p>	<p>10</p>	<p>Superior</p> <p>Some short- term hazards have been taken into consideration. The main man-made short-term hazard described is the risks of spills of hazardous goods, mainly fuel. In case of spills the proper protocols must be followed by personnel qualified to do so. There is a procedure for the receiving and discharge of fuel explained in P-14019 Procedure for receiving and discharge of fuel in the tank of storage block F at SJO, and other substances such as polychlorinated biphenyls, P-14028 Emergency Response by Polychlorinated Biphenyls spills.</p> <p>The documentation indicates that Terms of reference for the performance of the contaminated site assessment will be developed in the current year and applied to phases III and IV. Investigations will be carried out for contaminated soils in phase II. The contaminated soils have been described in several reports as pre-existing conditions. An inventory of PCB and ozone depleting substances is also required for 2013. To avoid a spill, supply sites and storage must have the appropriate security measures. There must be special spaces for the handling of hazardous materials.</p> <p>A list of possible natural hazards in the area is included in the Environmental Impact Assessment 2001 (EsIA) and in the MA-199 Plan of Response to Emergencies in the Passenger Terminal. Base on the specific location of the airport, natural threats such as seismic, volcanic, torrential rain, tornados, or strong winds have been taken into consideration. (Look at the map in Appendix 10)</p>	<p>* Provide a complete list of the strategies incorporated into the project to safeguard against these natural hazards.</p> <p>*Explanation of the strategies including how to cope with the expected hazards-</p> <p>*Documentation on how minimize the risk of future hazards.</p>

		<p><i>Source: Matrix Environmental and Social Management Plan Actions - Juan Santamaría International Airport, point (5.1 to 5.7 and 6.1 to 6.4) // Environmental Management Plan by Siel-Siel page 14,15 C46 to C49/ page 17 C58 // MA-14002 Manual of good practices for construction work in the SJO Chapter 2.5, 2.6, 2.7 page 6-7/ Annex 3.5 page 18-20/ Annex 3.6 page 21/ Annex 3.7 page 18 22 //I-14027 Management of Risks and Hazards associated with PCBs // Initial Environmental and Social Impact Assessment, by Futuris, Chapter 13 "Hazardous substances" Page 59 to 67/ Chapter 13.3.2 "Overview of current conditions" 61-63.// MA-199 Plan of Response to Emergencies in the Passenger Terminal. Version 2 Chapter 1.9.1 "External conditions" pages 12-15 /Appendix 2 to 2.12, Emergency Tabs by sector/ Appendix 10. Atlas of natural hazards, Canton in the Alajuela. (Map)// P-14019 Procedure for receiving and discharge of fuel in the tank of storage block F at SJO.// P-14028 Emergency Response by Polychlorinated Biphenyls spills.// P-14030 Disposal of contaminated waste with Polychlorinated Biphenyls.// Monitoring program spills generated in ramp years 2010,2011,2012.</i></p>	
CR2.5 Manage Heat Island Effects	0	<p>Not_achieving</p> <p>No information regarding managing heat islands effects has been provided.</p>	<p>*Documentation of the different buildings and surfaces of road built.</p> <p>*Calculations to demonstrate the energy absorbed and the increase of temperature in those areas.</p>
CR0.0 Innovate Or Exceed Credit Requirements	0	N/A	
	16		

299	INTERNATIONAL AIRPORT JUAN DE SANTA MARIA, COSTA RICA
-----	---

10 APPENDIX E: DATA PROVIDED

DOCUMENTATION PROVIDED. (ENGLISH)	DOCUMENTACION ENTREGADA. (ESPAÑOL)
General Information.	Información general
<ul style="list-style-type: none"> • Environmental Management Plan by Siel-Siel 2001 • Special Report by Environmental Regency, modification of PGA, version II. October 2011 • Environmental Viability resolution N°2799-2011-SETENA • Environmental Impact Assessment 2001 (EsIA) April 2001 	<ul style="list-style-type: none"> • Plan de Gestión Ambiental por Siel 2001 • Informe Especial de Regencia Ambiental, Modificación de la PGA, Versión II. Octubre 2011 • Viabilidad Ambiental, resolución N°2799-2011-SETENA • Estudio de Impacto Ambiental 2001 (EsIA) abril 2001.
<ul style="list-style-type: none"> • MA-208 Annual Maintenance Plan,2012 version 2 	<ul style="list-style-type: none"> • MA-208 Plan Anual de Mantenimiento
<ul style="list-style-type: none"> • Master Plan, updated August 2011 	<ul style="list-style-type: none"> • Plan Maestro, actualizado agosto de 2011
<ul style="list-style-type: none"> • Construction Environment Health & Safety Risk Review Summary, October, 2011 • Construction Environment Health & Safety Risk Review, by Environmental, Health and Safety Advisors. Report June 2010. 	<ul style="list-style-type: none"> • Resumen de Riesgos de Medio Ambiente, Seguridad y Salud en construcción, octubre 2011 • Riesgos de Medio Ambiente, Seguridad y Salud en construcción por los asesores de Medio Ambiente, Seguridad y Salud. Informe de junio de 2010.
<ul style="list-style-type: none"> • Construction Environment Health & Safety Risk Review, by Environmental, Health and Safety Advisors. Report update August 2010 	<ul style="list-style-type: none"> • Riesgos de Medio Ambiente, Seguridad y Salud en construcción por los asesores de Medio Ambiente, Seguridad y Salud. Informe de agosto de 2010
<ul style="list-style-type: none"> • Initial Environmental and Social Impact Assessment. By Futuris 	<ul style="list-style-type: none"> • Evaluación de Impacto Ambiental y Social inicial. Por Futuris
<ul style="list-style-type: none"> • Environmental and Social Management Plan Actions - Juan Santamaría International Airport 	<ul style="list-style-type: none"> • Plan de gestión y acciones Ambientales y Sociales - Aeropuerto Internacional Juan Santamaría
<ul style="list-style-type: none"> • Environmental and Social Management Report by IDB 	<ul style="list-style-type: none"> • Informe de Gestión Ambiental y Social del BID
<ul style="list-style-type: none"> • Environmental Analysis Report, by Siel-Siel 2009 	<ul style="list-style-type: none"> • Informe de Análisis Ambiente, Siel 2009
<ul style="list-style-type: none"> • Policy Management 14001/OHSAS 18001/ ISO 26000 	<ul style="list-style-type: none"> • Política de Gestión 14001/OHSAS 18001 / ISO 26000
<ul style="list-style-type: none"> • Environmental objectives AERIS 	<ul style="list-style-type: none"> • Objetivos Ambientales AERIS
<ul style="list-style-type: none"> • ESHS Management System Social Plan 2013 	<ul style="list-style-type: none"> • Sistema de Gestión de Plan Social 2013
<ul style="list-style-type: none"> • Environmental and Social Impact Assessment for phases III and IV. Draft Noise Technical Report 2013 	<ul style="list-style-type: none"> • Evaluación de Impacto Ambiental y Social para las fases III y IV. Proyecto de Informe Técnico de Ruido 2013
Procedures and manuals	Procedimientos y manuales
<ul style="list-style-type: none"> • Copy of F-122: G.C, sheet Action of Incidents, Accidents and Events in SJO. 	<ul style="list-style-type: none"> • Copia of F-122: G.C, Hoja de acción de incidentes, accidentes y eventos en AIJS.

<ul style="list-style-type: none"> • F-027-1 Complains, claims or suggestions 	<ul style="list-style-type: none"> • F-027-1: Quejas denuncias o sugerencias de operadores.
<ul style="list-style-type: none"> • I-035 Suggestions program for SJO employees 	<ul style="list-style-type: none"> • I-035: Programa de sugerencias para los empleados de AIJS.
<ul style="list-style-type: none"> • I-178 Events, Incidents and Accidents in SJO 	<ul style="list-style-type: none"> • I-178: Atención de eventos, incidentes y accidentes en el AIJS.
<ul style="list-style-type: none"> • I-304: Handling and storage of special goods. 	<ul style="list-style-type: none"> • I-304: Manejo y almacenamiento de mercancías especiales.
<ul style="list-style-type: none"> • I-309: Damage to merchandise. 	<ul style="list-style-type: none"> • I-309: Daños en mercancías.
<ul style="list-style-type: none"> • I-802 Assessment and Reassessment of suppliers 	<ul style="list-style-type: none"> • I-802: Evaluación y reevaluación de proveedores.
<ul style="list-style-type: none"> • I-1133: Construction verification. 	<ul style="list-style-type: none"> • I-1133: Verificación de construcción.
<ul style="list-style-type: none"> • I-1313: Elaboration of financial reporting. 	<ul style="list-style-type: none"> • I-1313: Elaboración del reporte financiero.
<ul style="list-style-type: none"> • I-14027 Management of hazards and risks associated to Polychlorinated Biphenyls (PGBs) 	<ul style="list-style-type: none"> • I-14027 : Gestión de riesgos y peligros asociados a bifenilos policlorados (PCBs)
<ul style="list-style-type: none"> • M-1118: Design of construction works. 	<ul style="list-style-type: none"> • M-1118: Diseño de obras de construcción.
<ul style="list-style-type: none"> • M-1156 Environmental protection and construction safety. 	<ul style="list-style-type: none"> • M-1156: Protección ambiental y seguridad de construcción.
<ul style="list-style-type: none"> • MA-021-1: Compliance Manual. 	<ul style="list-style-type: none"> • MA-021-1: Manual de cumplimiento.
<ul style="list-style-type: none"> • MA-177: Operational Plan for the period of construction 	<ul style="list-style-type: none"> • MA-177: Plan Operativo para el Período de Construcción.
<ul style="list-style-type: none"> • MA-199 Plan of Response to Emergencies in the Passenger Terminal 	<ul style="list-style-type: none"> • MA-199: Plan de respuesta a situaciones de emergencia, en la terminal de pasajeros.
<ul style="list-style-type: none"> • MA-203: preventive maintenance of equipment and installations of the SJO Inspection Manual. 	<ul style="list-style-type: none"> • MA-203: Manual de inspección de mantenimiento preventivo de equipos e instalaciones del AIJS.
<ul style="list-style-type: none"> • MA-243: Operational administrative procedures Manual. 	<ul style="list-style-type: none"> • MA-243: Manual de Procedimientos Administrativo-Operacionales.
<ul style="list-style-type: none"> • MA-246: Training Manual to operate airport equipment. 	<ul style="list-style-type: none"> • MA-246: Manual de capacitación para operar equipos de aeropuerto.
<ul style="list-style-type: none"> • MA-633: Manual of standards for commercial services in the SJO. 	<ul style="list-style-type: none"> • MA-633: Manual de Estándares para Servicios Comerciales en el AIJS.
<ul style="list-style-type: none"> • MA-843: procurement policies Manual. 	<ul style="list-style-type: none"> • MA-843: Manual de políticas de compras.
<ul style="list-style-type: none"> • MA-921: Human Resources Policy Manual. 	<ul style="list-style-type: none"> • MA-921: Manual de Políticas de Recursos Humanos.
<ul style="list-style-type: none"> • MA-974: Organizational Structure.C28^o 	<ul style="list-style-type: none"> • MA-974: Estructura organizacional.
<ul style="list-style-type: none"> • MA-1124 Construction Works Manual at SJO 	<ul style="list-style-type: none"> • MA-1124: Manual de construcción de obras en el AIJS.
<ul style="list-style-type: none"> • MA-14000 Manual of the System of Environmental Management, Social Health and Safety 	<ul style="list-style-type: none"> • MA-14000: Manual del Sistema del Gestión Ambiental, Social, Salud y Seguridad. (SGASSS)
<ul style="list-style-type: none"> • MA-14002 "Manual of good practices for construction work in the SJO 	<ul style="list-style-type: none"> • MA-14002: Manual de buenas prácticas para trabajos de construcción en el AIJS.
<ul style="list-style-type: none"> • MA-14003 "Manual safety, prevention of occupational hazards and environmental protection for works in SJO 	<ul style="list-style-type: none"> • MA-14003: Manual de Seguridad, Prevención y Protección de Ambiente.

<ul style="list-style-type: none"> • MC-000: Quality Manual. 	<ul style="list-style-type: none"> • MC-000: Manual de calidad.
<ul style="list-style-type: none"> • MPO 7PEA: Emergency Plan. 	<ul style="list-style-type: none"> • MPO 7PEA: Plan de emergencia.
<ul style="list-style-type: none"> • P-009: Internal Audits. 	<ul style="list-style-type: none"> • P-009: Auditorías internas.
<ul style="list-style-type: none"> • P-013-1: Compliance with regulations related to suppliers. 	<ul style="list-style-type: none"> • P-013-1: Normativa de cumplimiento relacionada con proveedores.
<ul style="list-style-type: none"> • P-015-1: Compliance with regulations related to airlines and freighters. 	<ul style="list-style-type: none"> • P-015-1: Normativa de cumplimiento relacionada con aerolíneas y cargueros.
<ul style="list-style-type: none"> • P-016-1: Compliance with regulations related to commercial contractors. 	<ul style="list-style-type: none"> • P-016-1: Normativa de cumplimiento relacionada con Subcontratistas Comerciales.
<ul style="list-style-type: none"> • P-017-1: Compliance with regulations relating to employees and partners. 	<ul style="list-style-type: none"> • P-017-1: Normativa de cumplimiento relacionada con Empleados y Socios.
<ul style="list-style-type: none"> • P-020: Analysis and Improvement. 	<ul style="list-style-type: none"> • P-020: Análisis y mejora.
<ul style="list-style-type: none"> • P-021: Service non-compliant. 	<ul style="list-style-type: none"> • P-021: Servicio no conforme.
<ul style="list-style-type: none"> • P-022: corrective action. 	<ul style="list-style-type: none"> • P-022: Acción correctiva.
<ul style="list-style-type: none"> • P-023: Procedure of preventive action and improvement plans. 	<ul style="list-style-type: none"> • P-023: Procedimiento de acción Preventiva, y planes de mejora.
<ul style="list-style-type: none"> • P-026-1: compliance with regulations related with monitoring of transactions of customers, aircraft operators and suppliers. 	<ul style="list-style-type: none"> • P-026-1: Normativa de cumplimiento relacionada con monitoreo de transacciones de clientes, operadores aeronáuticos y proveedores.
<ul style="list-style-type: none"> • P-037: review by management. 	<ul style="list-style-type: none"> • P-037: Revisión por la dirección.
<ul style="list-style-type: none"> • P-038: Communication and evaluation of customer satisfaction. 	<ul style="list-style-type: none"> • P-038: Comunicación y evaluación de la satisfacción de los clientes.
<ul style="list-style-type: none"> • P-105: Operational safety. 	<ul style="list-style-type: none"> • P-105: Seguridad operacional.
<ul style="list-style-type: none"> • P-140: Control and supervision of works on the SJO. 	<ul style="list-style-type: none"> • P-140: Control y supervisión de trabajos en el AIJS.
<ul style="list-style-type: none"> • P-167: assistance to passengers with reduced mobility in the Juan Santamaría international airport. 	<ul style="list-style-type: none"> • P-167: Asistencia a pasajeros con movilidad reducida en el Aeropuerto Internacional Juan Santamaría.
<ul style="list-style-type: none"> • P-200: General airport maintenance system structure. 	<ul style="list-style-type: none"> • P-200: Estructura general del sistema de mantenimiento del aeropuerto.
<ul style="list-style-type: none"> • P-801 Procurement procedure. 	<ul style="list-style-type: none"> • P-801 Procedimiento de compras.
<ul style="list-style-type: none"> • P-901: Training procedure. 	<ul style="list-style-type: none"> • P-901: Procedimiento de capacitación.
<ul style="list-style-type: none"> • P-912 Recruitment, induction and section. 	<ul style="list-style-type: none"> • P-912 Reclutamiento, sección e inducción.
<ul style="list-style-type: none"> • P-971: Performance evaluation. 	<ul style="list-style-type: none"> • P-971: Evaluación del desempeño.
<ul style="list-style-type: none"> • P-1123: Coordination of construction. 	<ul style="list-style-type: none"> • P-1123: Coordinación de construcción.
<ul style="list-style-type: none"> • P-1201: Application and contracts control 	<ul style="list-style-type: none"> • P-1201: Solicitud y control de contratos.
<ul style="list-style-type: none"> • P-14004: Procedure to define the action areas. 	<ul style="list-style-type: none"> • P-14004: Procedimiento para definir las áreas de acción.
<ul style="list-style-type: none"> • P-14012 "Notification of events that can cause significant environmental impacts. 	<ul style="list-style-type: none"> • P-14012: Notificación y atención de eventos que puedan causar impactos ambientales significativos.
<ul style="list-style-type: none"> • P-14014 Archaeological findings. 	<ul style="list-style-type: none"> • P-14014: Hallazgos arqueológicos.
<ul style="list-style-type: none"> • P-14017 Management of Recycling in the SJO Passenger Terminal 	<ul style="list-style-type: none"> • P-14017: Manejo de reciclaje.

<ul style="list-style-type: none"> • P-14018 Cutting of trees in the International Airport Juan Santamaría. • P-14019 Procedure for receiving and discharge of fuel in the tank of storage block F at SJO. • P-14020 Communal Communication Procedure • P-14028 Emergency Response by Polychlorinated Biphenyls spills • P-14029: Management of chemicals that deplete the ozone layer. • P-14030 Disposal of contaminated waste with Polychlorinated Biphenyls. • Strategic plan AERIS August 2011. • POL-020-1: compliance with policies • POL-975: ethics policy and business conduct • POL-14001 Environmental, Social, health and safety policy. • Program for water monitoring. Waste water plant; superficial water; stormwater; fresh water and ground water • Matrix of spills on the ramp (liters), by AERIS, years 2010/ 2011/2012 • Recycling of non-hazardous waste per month years 2010/ 2011/2012 by AERIS. 	<ul style="list-style-type: none"> • P-14018: Tala de árboles en el Aeropuerto Internacional Juan Santamaría. • P-14019: Procedimiento para recepción y descarga de combustible. • P-14020: Procedimiento de comunicación comunal. • P-14028: Respuesta ante emergencias por derrames de bifenilos policlorados . • P-14029: Manejo de compuestos químicos que agotan la capa de ozono. • P-14030: Disposición de residuos contaminados con bifenilos policlorados (PCBs). • Plan estratégico AERIS Agosto 2011. • POL-020-1: Políticas de cumplimiento • POL-975: Política de ética y conducta de negocios. • POL-14001: Política Ambiental, Social de Salud y Seguridad. • Programa de monitoreo de agua. Planta de aguas residuales, el agua superficial, agua de lluvia, el agua dulce y el agua del suelo • Matriz de derrames en la rampa (litros), por AERIS, año 2010/2011/2012 • Reciclaje de desechos no peligrosos por año mes 2010/2011/2012 por AERIS.
Regency Environmental Report IRAS 91-100 (2011)	Informes de Regencia Ambiental IRAS 91-100 (2011)
<ul style="list-style-type: none"> • Regency Environmental Report, (IRA-91) • Regency Environmental Report, (IRA-92) • Regency Environmental Report, (IRA-93) • Regency Environmental Report, (IRA-94) • Regency Environmental Report, (IRA-95) • Regency Environmental Report, (IRA-96) • Regency Environmental Report, (IRA-97) • Regency Environmental Report, (IRA-98) • Regency Environmental Report, (IRA-99) • Regency Environmental Report, (IRA-100) 	<ul style="list-style-type: none"> • Informe de Regencia Ambiental (IRA-91) • Informe de Regencia Ambiental (IRA-92) • Informe de Regencia Ambiental (IRA-93) • Informe de Regencia Ambiental (IRA-94) • Informe de Regencia Ambiental (IRA-95) • Informe de Regencia Ambiental (IRA-96) • Informe de Regencia Ambiental (IRA-97) • Informe de Regencia Ambiental (IRA-98) • Informe de Regencia Ambiental (IRA-99) • Informe de Regencia Ambiental (IRA-100)
Regency Environmental Report, IRAS 101-107 (2012)	Informes de Regencia Ambiental IRAS 101-107 (2012)
<ul style="list-style-type: none"> • Regency Environmental Report (IRA-101) • Regency Environmental Report (IRA-102) • Regency Environmental Report (IRA-103) • Regency Environmental Report (IRA-104) • Regency Environmental Report (IRA-105) • Regency Environmental Report (IRA-106) • Regency Environmental Report (IRA-107) 	<ul style="list-style-type: none"> • Informe de Regencia Ambiental (IRA-101) • Informe de Regencia Ambiental (IRA-102) • Informe de Regencia Ambiental (IRA-103) • Informe de Regencia Ambiental (IRA-104) • Informe de Regencia Ambiental (IRA-105) • Informe de Regencia Ambiental (IRA-106) • Informe de Regencia Ambiental (IRA-107)

Aspects and impacts	Aspectos e impactos
<ul style="list-style-type: none"> • F-1406: Matrix of aspects and impacts. 	<ul style="list-style-type: none"> • F-1406: Matriz Aspectos e Impactos.
<ul style="list-style-type: none"> • Environmental aspects and impacts report 	<ul style="list-style-type: none"> • Informe de Aspectos e Impactos Ambientales
<ul style="list-style-type: none"> • P 1404: Identification and Evaluation of Environmental Aspects 	<ul style="list-style-type: none"> • P-1404 : Identificación y Evaluación de Aspectos Ambientales
<ul style="list-style-type: none"> • Phase I Environmental Site Assessment by Tylin International, December 10, 2012 	<ul style="list-style-type: none"> • Fase I de Evaluación Ambiental por Tylin Internacional, 10 de diciembre 2012
<ul style="list-style-type: none"> • Environmental and Social Impact Assessment For Phases III and IV. Draft air quality technical report, by Landrum & Brown, Incorporated, March 2013. 	<ul style="list-style-type: none"> • Evaluación de Impacto Ambiental y Social Para las fases III y IV. Proyecto de informe técnico de la calidad del aire, por Landrum & Brown, Incorporated, marzo de 2013.

Energy saving	Ahorro Energético
<ul style="list-style-type: none"> • Implementation energy savings plan 	<ul style="list-style-type: none"> • Plan de implementación ahorro energético
<ul style="list-style-type: none"> • Instituto Costarricense de Electricidad. Service request. 	<ul style="list-style-type: none"> • Instituto Costarricense de Electricidad. Solicitud de servicio
<ul style="list-style-type: none"> • I05-PR01-2010 instructions for the preparation of a manual of energy saving 	<ul style="list-style-type: none"> • I05-PR01-2010 Instructivo para la elaboración de un manual de ahorro de energía
<ul style="list-style-type: none"> • I06-PR01-2010 instructions for the application of the Protocol of validation 	<ul style="list-style-type: none"> • I06-PR01-2010 Instructivo para la aplicación del protocolo de validación
<ul style="list-style-type: none"> • ICE-PEE-P01-F11-standard policy 	<ul style="list-style-type: none"> • ICE-PEE-P01-F11-Estándar de política
<ul style="list-style-type: none"> • ICE-PEE-P01-A02 instructions to create the energy balance 	<ul style="list-style-type: none"> • ICE-PEE-P01-I03 Instructivo para elaborar el balance de energía
<ul style="list-style-type: none"> • I01-PR01-2009 organization of the Committee's energy efficiency V.1 	<ul style="list-style-type: none"> • I01-PR01-2009 Organización del comité de eficiencia energética V.1
<ul style="list-style-type: none"> • PR01-PR01-2009 Energy efficiency procedure program V1.2 	<ul style="list-style-type: none"> • PR01-PR01-2009 Procedimiento del programa de eficiencia energética V1.2
<ul style="list-style-type: none"> • D-1015-06 Committee profiles V3 	<ul style="list-style-type: none"> • D-1015-06 Perfiles Comité v3
<ul style="list-style-type: none"> • Study of billing and energy consumption April 2010. By "Diseños y Montajes Electromecánicos S.A" 	<ul style="list-style-type: none"> • Estudio de facturación y consumo eléctrico abril 2010. Realizado por: "Diseños y Montajes Electromecánicos S.A"
<ul style="list-style-type: none"> • Implementation Energy Savings Plan 	<ul style="list-style-type: none"> • Plan de implementación ahorro energético
<ul style="list-style-type: none"> • Monitoring of energy saving 	<ul style="list-style-type: none"> • Seguimiento de Ahorro Energético
<ul style="list-style-type: none"> • Meeting minutes - energy saving Committee 	<ul style="list-style-type: none"> • Meeting minutes - Comité de ahorro energético
<ul style="list-style-type: none"> • GO-QA-09-040 Affidavit Energy Consumption. Fiscal period 2008 	<ul style="list-style-type: none"> • GO-QA-09-040 Declaración jurada consumo energético. Periodo fiscal 2008
<ul style="list-style-type: none"> • GO-EHS-10-045 Affidavit Energy Consumption. Fiscal period 2009 	<ul style="list-style-type: none"> • GO-EHS-10-045 Declaración jurada consumo energético. Periodo fiscal 2009
<ul style="list-style-type: none"> • GO-EHS-11-049 Affidavit Energy Consumption. Fiscal period 2010 	<ul style="list-style-type: none"> • GO-EHS-11-049 Declaración jurada de consumo energético - Periodo fiscal 2010
<ul style="list-style-type: none"> • EHS-009-13 Affidavit Energy Consumption. Fiscal period 2012 	<ul style="list-style-type: none"> • EHS-009-13 Declaración jurada consumo energético. Periodo fiscal 2012