EXECUTIVE SUMMARY

BACACHERI AIRPORT
SBBI/BFH

November/2020

Content

Figures **3**

Tables **4**

Introduction **5**

1 Market Report **6**

1.1 Overview 6

1.2 Demand forecasts 9

1.2.1 Peak demand and restrictions 10

2 Engineering Studies **11**

2.1 Existing Conditions 11

2.1.1 Current Situation 11

2.1.2 Installed Capacity Evaluation 13

2.2 Demand Studies 15

2.3 Necessities Plan 16

2.4 Alternatives Study 21

2.5 Development Plan 22

2.5.1 Phase 1 22

2.5.2 Phase 2 23

2.6 CAPEX 24

3 Environmental Studies **26**

4 Economic And Financial Evaluation **39**

Figures

Figure 2-1: Study Methodology 11
Figure 2-2: Current Facilities Situation 12
Figure 2-3: Patrimonial Limits of the Airport Site 13
Figure 2-4: Demand Forecast Summary 16
Figure 2-5: Necessities Plan 17
Figure 2-6: Phasing and Works Estimated Schedule 21
Figure 2-7: Proposed Alternatives 21
Figure 2-8: Development Plan – Phase 01 Implementations 23
Figure 2-9: Development Plan – Phase 02 Implementations 24
Figure 3-1: Category And Source Of The Passives 28
Figure 3-2: Quantity And Percentage Of The Passives By Category 28
Figure 3-3: Quantity And Percentage Of Passives By Risk Class 29
Figure 3-4: Impact Of The Adequation Constructions On Soil Uses And Coverage 31
Figure 4-1: Total revenues during concession 40
Figure 4-2: Revenue per movement benchmark 40
Figure 4-3: Costs and expenses during concession (prior to grant values) 41
Figure 4-4: EBITDA and EBITDA margins during concession 42
Figure 4-5: CAPEX during concession 43
Figure 4-6: Free cash flow to firm (non-discounted – prior to grant values) 44
Figure 4-7: Cumulative discounted free cash flow to firm (net of grant payments) 45
Figure 4-8: Contribution and dividend flows, non-discounted (post-payment of grants) 46

Tables

Table 2-1: Runway Capacity 14
Table 2-2: Taxiways Capacity 14
Table 2-3: Other Components Capacity Summary 14
Table 2-4: Main Components Necessity Summary 18
Table 2-5: CAPEX – Summary per Phase 25
Table 2-6: Components Summary 25
Table 4-1: Obligations to be met prior to signing the contract 42

INTRODUCTION

The Infrastructure Ministry published, in the Union Official Journal, in the Edition Number 52, on March 18th, 2019, the Public Call Notice 2/2019, with the main goal to select projects, surveys, investigation and technical studies to subsidize the modelling of the concessions for the expansion, exploitation, and maintenance of the following airports:

South Cluster

Curitiba/PR – Afonso Pena;
Foz do Iguaçu/PR – Cataratas;
Navegantes/SC – Ministro Victor Konder;
Londrina/PR – Governador José Richa;
Joinville/SC – Lauro Carneiro de Loyola;
Bacacheri/PR;
Pelotas/RS;
Uruguaiana/RS – Rubem Berta;
Bagé/RS Comandante Gustavo Kraemer.

North Cluster

Manaus/AM – Eduardo Gomes;
Porto Velho/RO – Governador Jorge Teixeira de Oliveira;
Rio Branco/AC – Plácido de Castro;
Cruzeiro do Sul/AC;
Tabatinga/AM;
Tefé/AM;
Boa Vista/RR – Atlas Brasil Cantanhede.

Central Cluster

Goiânia/GO – Santa Genoveva;
São Luís/MA – Marechal Cunha Machado;
Teresina/PI – Senador Petrônio Portella;
Palmas/TO – Brigadeiro Lysias Rodrigues;
Petrolina/PE – Senador Nilo Coelho;
Imperatriz/MA – Prefeito Renato Moreira.

According to the Public Call Notice 2/2019, the Grupo de Consultores em Aeroportos (GCA) presented the following reports for each airport: **Market Reports, Engineering Studies, Environmental Studies and Economic and Financial Evaluation**. Furthermore, it presented a complementary Economic Financial and Evaluation Report, for each Cluster, which aimed the economic financial feasibility assessment of the airports that form the Cluster.

The purpose of the Executive Summary is to present the main arguments, information and conclusions of each one of Bacacheri Airport/PR – SBBI/BFH report. For a better understanding of the studies, it is recommended the reading of the reports.

1 MARKET REPORT

This section presents a Summary of the Market Report for the **Bacacheri Airport/PR** (IATA BFH or ICAO SBBI), which is entirely devoted to general and charter aviation operations and logged 28 thousand operations in 2018.

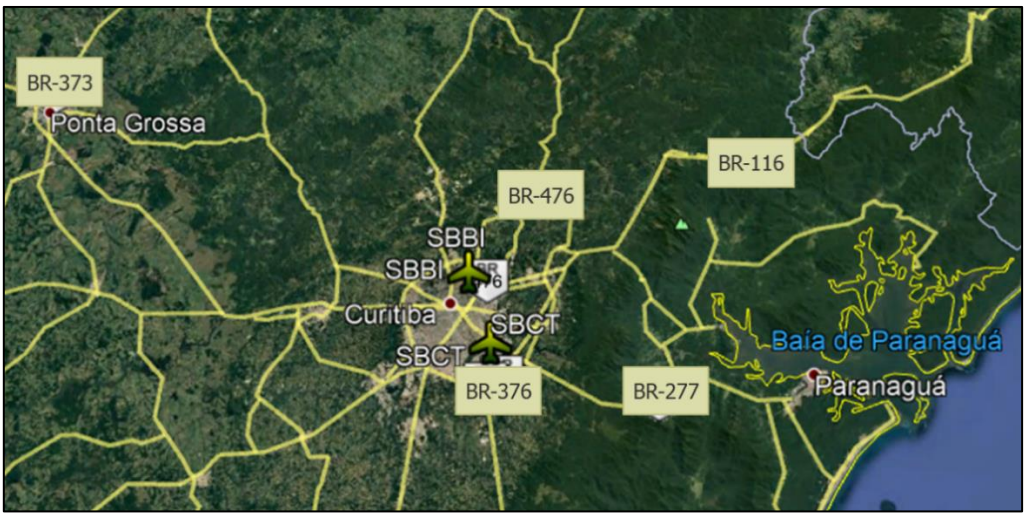
1.1 Overview

The airport lies in the city of Curitiba, district of Bacacheri. Curitiba is the eighth most populous city in Brazil[1] and its Metropolitan Region includes developed industrial facilities, with particular emphasis on the automotive industry. The city also has an advanced services industry and tourist attractions like the Civic Center and the Botanical Garden.

As Figure 1-1 shows, the Airport lies close to the Ports of Paranaguá (75 km), the seaport with the third largest handling volume in Brazil, and Antonina (78 km). Paranaguá has facilities for large agribusiness operations, in addition to facilities dedicated to general cargo, both in containers and bulk, and liquid bulk operations.

SBBI also lies 130 km distant from the city of Ponta Grossa, which is relevant in terms of both population and the economy, with particular emphasis on the slaughtering business and soybean milling.

Figure 1-1: Curitiba, surroundings and highways

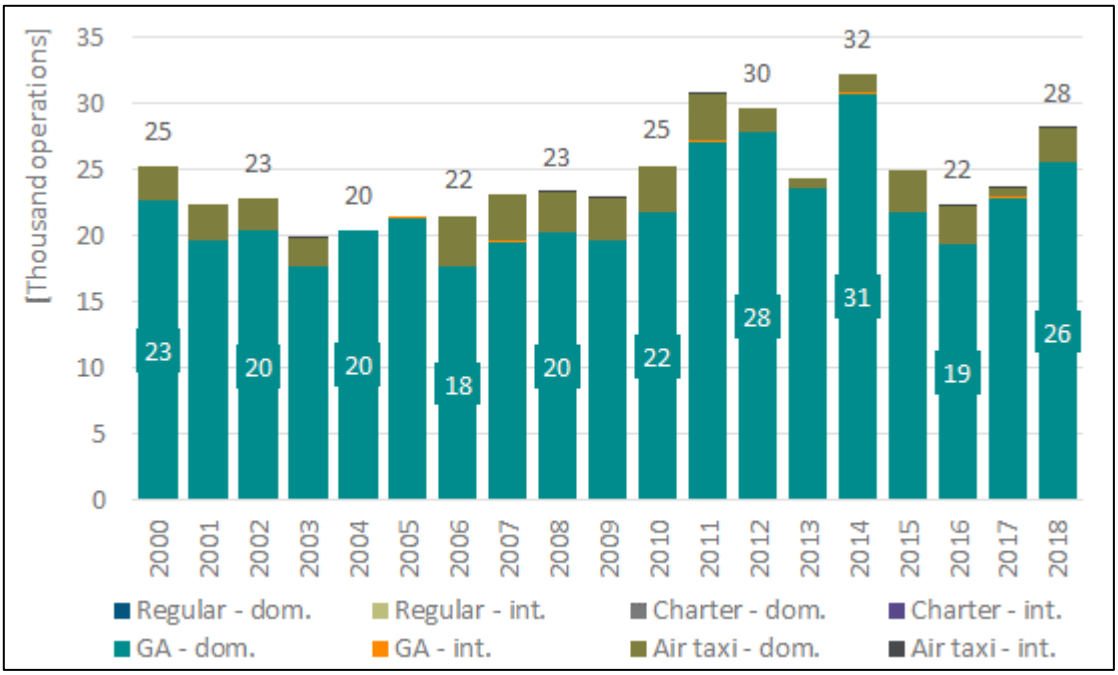


Source: Google Earth.

Amid years of severely oscillating demand, the Airport logged 28 thousand operations in 2018, of which 91% were domestic general and 9% were domestic air taxi flights (Figure 1-2).

[1] Source: https://cidades.ibge.gov.br/brasil/pr/curitiba/panorama. Estimated population in 2019.

Figure 1-2: Annual history of operations (takeoffs and landings) for the Airport and passengers per operation



Source: Infraero.

In 2018, 78% of Airport's operations had origins/destinations in the South region of Brazil and 18% involved the Southeast region[2]. Figure 1-3 shows general aviation routes operating at SBBI in 2018 (line thickness reflects relative route frequency).

[2] Source: Associação Brasileira da Aviação Geral (ABAG).

Figure 1-3: Map of the Airport's domestic routes in 2018

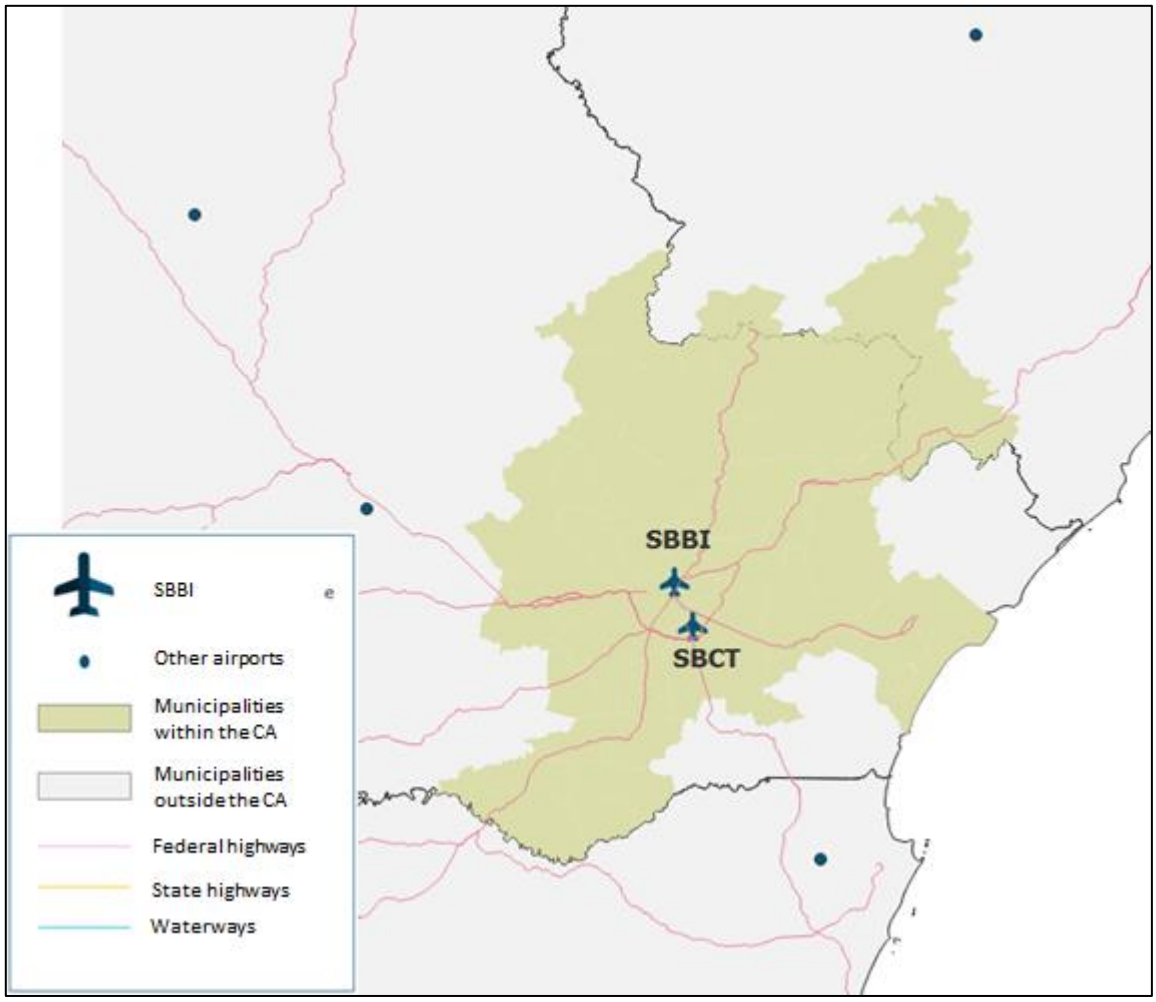
Source: ABAG and GCA Consortium.

Catchment area

Because general aviation passengers are more sensitive to total transit time, the catchment area was defined as the municipalities to which the Airport is closest in terms of commuting time,[3] or at the most 1 hour more distant than the closest competing airport.[4]

[3] Estimation of the commuting time between a city and the airport used the Qualp website (https://qualp.com.br/)
[4] Airports with paved takeoff and landing runways and a minimum length of 500 meters.

Figure 1-4: Airport CA according to the REGIC



Source: ANAC and GCA Consortium.

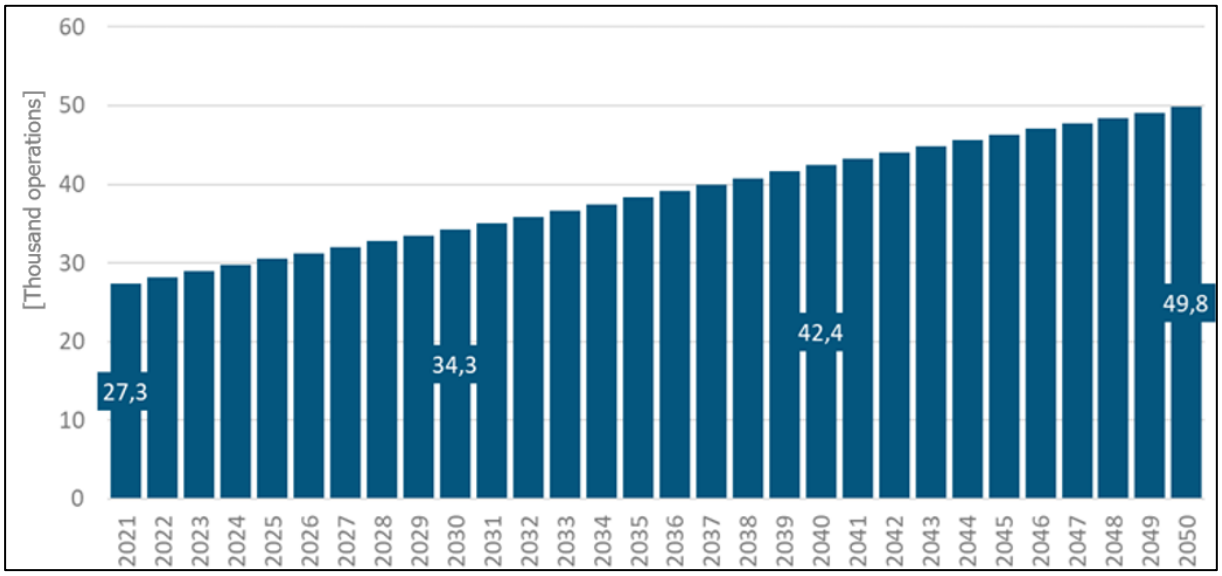
1.2 Demand forecasts

Total aircraft operations are forecast based on the ratio of the number of general aviation operations at the Airport to the Brazilian general aviation fleet (taking into account the effects of the pandemic), both obtained from regressions using several independent variables, such as Brazil GDP, manufacturing GDP and QAV[5] prices in the South region of Brazil. Then total passengers are estimated based on usual pax/operation parameters.

According to the study's forecasts, in 2050, the final full ear of the concession, the Airport will log 50 thousand general aviation operations (corresponding to an estimated 112 thousand general aviation passengers), for an annual average growth rate of 2.1% over the period.

[5] Jet fuel.

Figure 1-5: Forecast General Aviation operations at the Airport



Source: GCA Consortium.

1.2.1 Peak demand and restrictions

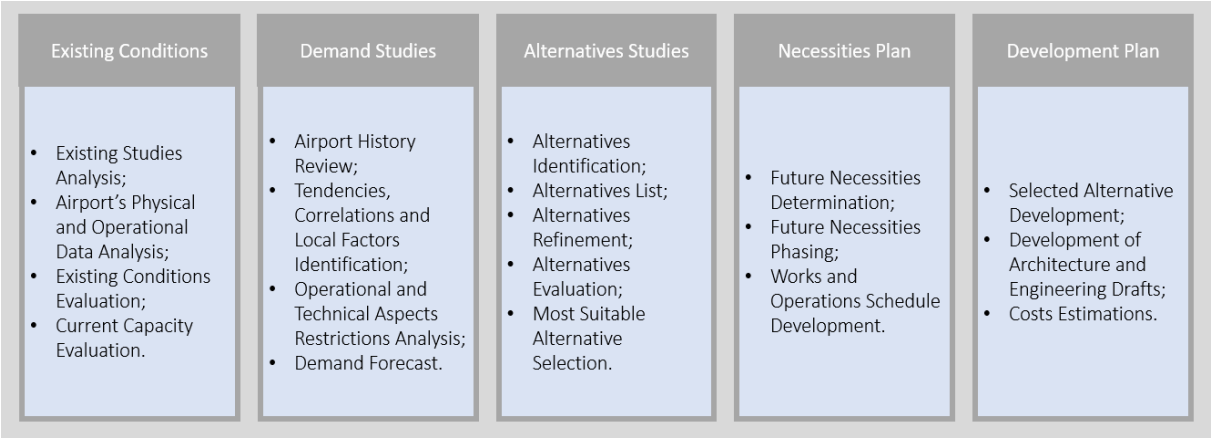
For the runway system, the study assumes the highest one-hour flow of aircraft over a period of one year. Results have been calculated for 2018 based on Infraero records and forecast according to domestic peak-factor benchmarks (peak demand/annual demand). The forecasts show that the Airport will reach a peak of 33 general aviation aircraft runway operations per hour in 2050. No restrictions on growth are expected in the light of forecast improvement and expansion works.

2 ENGINEERING STUDIES

This section presents the Executive Summary of the Engineering Studies for the concession of Bacacheri Airport – SBBI/BFH.

The Engineering Studies Report has been developed according to the methodology presented in Figure 2-1.

Figure 2-1: Study Methodology



Source: GCA Consortium.

Below, in brief explanations, the results and premises of each phase of the studies are presented. For further details, please check the complete studies report.

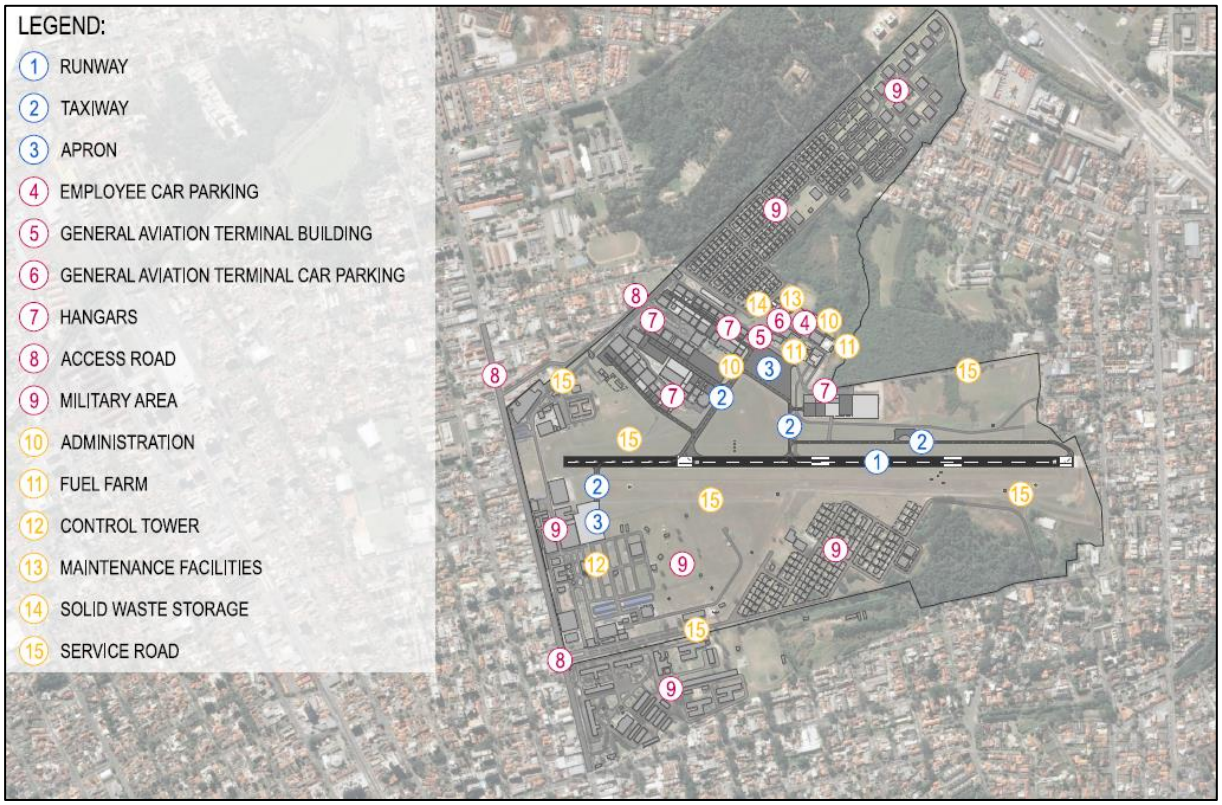
2.1 Existing Conditions

2.1.1 Current Situation

The current situation characterization is extremely important for an appropriate development of the Airport Site. Through it, it's possible to have an accurate understanding of the existing restrictions and opportunities for the expansion of the Airport complex. Among other aspects, the comprehension of the current situation involves operational, security, legal and social-environmental matters.

In order to characterize the present situation, it has also been evaluated the current operation and it has been done the identification of the existing infrastructures, by on-site visits, and of the main development plans and available studies. The Figure 2-2 illustrates the identification of the main existing facilities.

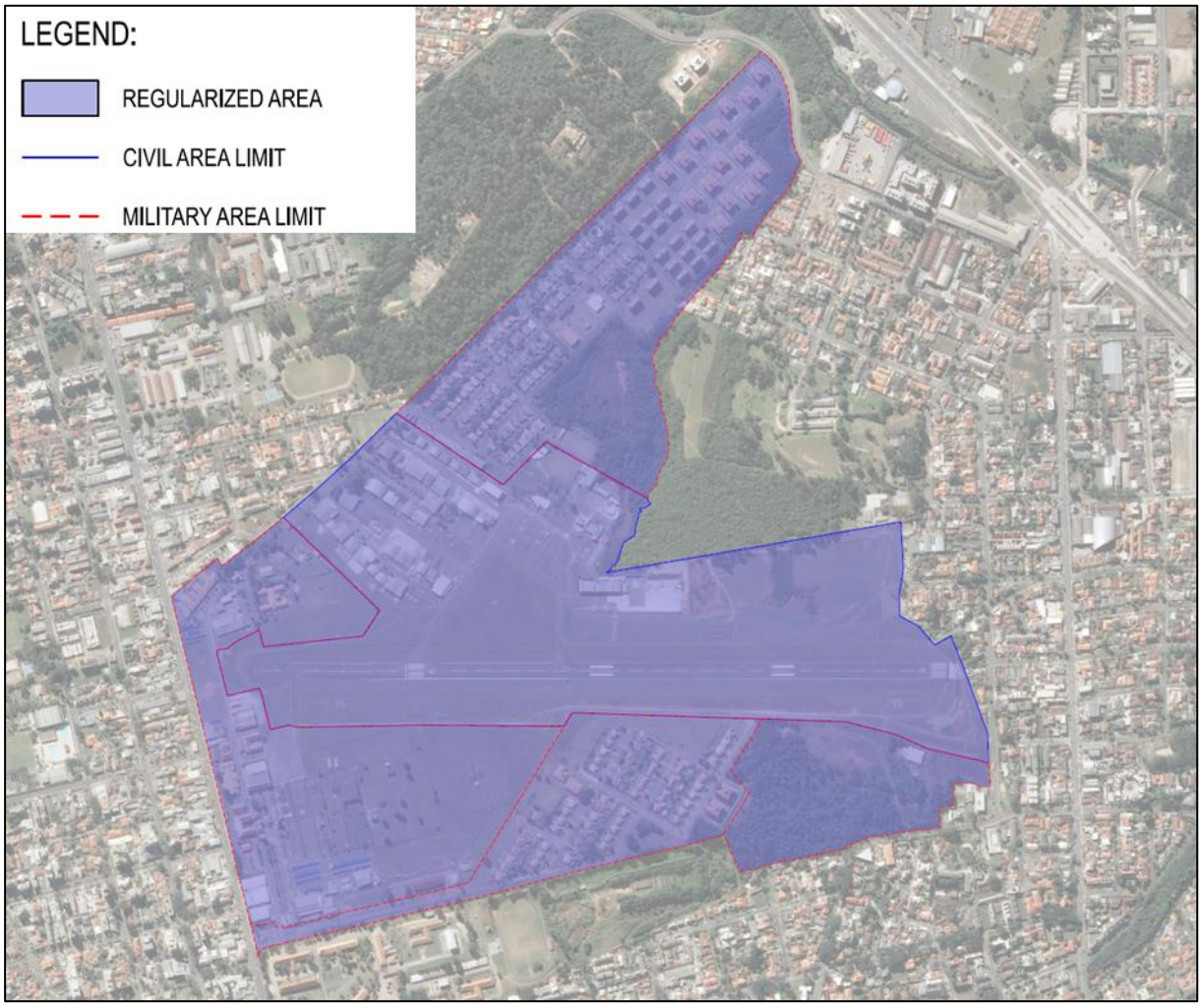
Figure 2-2: Current Facilities Situation



Source: GCA Consortium.

Furthermore, regarding the present patrimonial situation, it should be noted that the airport under study is in a regularized patrimonial area. The regularized area belongs to the Federal Union in possession of INFRAERO, Air Force and Brazilian Army Command. The Figure 2-3 presents the patrimonial situation of the Airport.

Figure 2-3: Patrimonial Limits of the Airport Site



Source: Google Earth, GCA Consortium.

According to the SAC/MI guidance, until the start of the concession period, the ongoing works must proceed. From this date on, the remaining services must be completed by the concessionaire and the remaining costs considered in the financial modeling of this study. Since there are no work in progress in the Airport expected to be completed until this date, there won't be residual costs related to these works to be considered by CAPEX.

2.1.2 Installed Capacity Evaluation

The analysis of the installed capacity is one of the phases in the existing conditions evaluation process. In this stage are evaluated the capacity conditions according to the appropriate levels of service. Thus, it has been developed the capacity assessment for all airport systems. The installed capacities of the main systems are presented below.

2.1.2.1 Runway, Taxiway and Apron System

Table 2-1 and Table 2-2 summarize the results obtained from the installed capacity analysis and the existing demand for the runaways, taxiways and aprons systems. The taxiways were assessed based on geometric width and code of the aircraft design restrictions.

Table 2-1: Runway Capacity

Component	Current Capacity	Demand	Situation
Runway (mov/h)	27,3	25	Suitable

Source: GCA Consortium.

Table 2-2: Taxiways Capacity

Taxiway	Width (m)	Width Without Shoulders (m)	RBAC154 Code	Critical Aircraft	Situation
Taxiway A	7,5	7,5	Restricted B	C208	Not Suitable
Taxiway B	7,5	7,5	Restricted B	C208	Not Suitable
Taxiway C	15	15	B	C208	Suitable
Taxiway D	13	13	Restricted B	C208	Not Suitable

Source: AIP, GCA Consortium.

For Bacacheri Airport, it was not necessary to assess the capacity of the apron system, since the airport does not have a commercial aviation apron and the existing apron is intended for small aircraft only.

2.1.2.2 Passenger Terminal System

Bacacheri Airport has no passenger terminal building.

2.1.2.3 Other Facilities

Regarding the current condition of other systems, the following observations can be noticed, about the present situation described on Table 2-3.

Table 2-3: Other Components Capacity Summary

Component	Facilities Description
Aeronautical Infrastructure	• **Operation:** presents technical capability for day/night non-precision VFR/IFR operation for both thresholds (18-36). With PAPI systems at both thresholds, the runway is capable of landing jet aircraft by either threshold.
Cargo Terminal System	• **Cargo Terminal Building:** suitable to current demand. • **Airside Aprons:** suitable to current demand. • **Landside Aprons:** suitable to current demand. • **Cargo Terminal Parking:** suitable to current demand.
General Aviation System	• **General Aviation Terminal:** not suitable to current demand. • **General Aviation Aprons:** not suitable to current demand. • **General Aviation Hangars:** suitable to current demand. • **General Aviation Terminal Parking:** suitable to current demand.

Component	Facilities Description
Administration and Maintenance System	• **Administration:** suitable to current demand. • **Maintenance:** suitable to current demand.
Operation Support System	• **Fuel Farm:** suitable to current demand. • **Fire Fighting Installations:** suitable to current demand.
Airlines Support System	• **Cargo Processing:** suitable to current demand. • **Airlines Support Maintenance:** suitable to current demand. • **Maintenance and Hangars:** suitable to current demand.
Industrial Support System	• **Mail:** suitable to current demand. • **Catering:** suitable to current demand. • **Airport Services:** suitable to current demand.
Basic Infrastructure System	• **Electric Power:** not suitable to current demand. • **Water Consumption:** not suitable to current demand. • **Sewage Treatment:** suitable to current demand. • **Solid Waste:** suitable to current demand.

Source: GCA Consortium.

2.2 Demand Studies

In order to evaluate the current capacity to accommodate the forecast demand and the investments needs over the concession period, market reports and forecasts of passenger demands, aircrafts operations and freight have been developed. The Figure 2-4 shows the results of the studies of demand.

Figure 2-4: Demand Forecast Summary

Source: Market Reports.

2.3 Necessities Plan

Given the demand projections and the installed capacity, the infrastructures required to meet the expected demand were evaluated for all airport systems. The following Figure 2-5, shows a summary of infrastructure needs for the airport throughout the development stages considered for the period of analysis. The requirements of each stage are based on the existing infrastructure in face of the projected demand. Thus, the installed infrastructures have been kept, reallocated or expanded according to the anticipated needs.

Figure 2-5: Necessities Plan

SBBI	Phase 1	Phase 2	Phase 3
Airside System			
Runway	Intervention	Suitable	0
Taxiways	Intervention	Suitable	0
Aprons	Intervention	Intervention	0
Ground Handling Equipments	Suitable	Suitable	0
Passenger Terminal System			
Passenger Terminal Building	Intervention	Suitable	0
Car Parking	Suitable	Suitable	0
Access Roads	Suitable	Suitable	0
Aeronautical Infrastructure			
Navigation Aids	Intervention	Suitable	0
Air Cargo Terminal System			
Air Cargo Terminal Building	Suitable	Suitable	0
Car Parking	Suitable	Suitable	0
Access Roads	Suitable	Suitable	0
General Aviation System			
General Aviation Terminal Building	Intervention	Suitable	0
Aprons and Taxiways	Suitable	Suitable	0
Car Parking	Suitable	Suitable	0
Access Roads	Suitable	Suitable	0
Administration and Maintenance System			
Administration	Suitable	Suitable	0
Maintenance	Suitable	Suitable	0
Operations Support System			
Fuel Farm	Intervention	Suitable	0
Firefighting Building	Suitable	Suitable	0
Airlines Support System			
Air Cargo and Maintenance Facilities	Suitable	Suitable	0
Maintenance and Hangars	Suitable	Suitable	0
Industrial Support System			
Mail	Suitable	Suitable	0
Catering	Suitable	Suitable	0
Airport Services	Suitable	Suitable	0
Basic Infrastructure System			
Eletric Power	Intervention	Suitable	0
Water Consumption	Intervention	Intervention	0
Sewage Treatment	Suitable	Suitable	0
Solid Waste	Suitable	Suitable	0

Source: GCA Consortium.

Furthermore, an infrastructure needs summary for the airport with its main information and components over the 30 years considered for the analysis period is presented in Table 2-4.

Table 2-4: Main Components Necessity Summary

SBBI	Current	Phase 01	Phase 02
DEMAND	**2018**	**15 Years**	**30 Years**
Annual Passengers Movements			
Regular Aviation	-	-	-
General Aviation	63,062	85,339	111,999
Total	63,062	85,339	111,999
Cargo (tons)			
Total	-	-	-
Aircraft Movements			
Passengers	-	-	-
Air Cargo	-	-	-
General Aviation	28,115	38,301	49,815
Total	28,115	38,301	49,815
RUNWAY SYSTEM			
Design Aircraft Code	B	B	B
Number of Runways	1	1	1
Runway Length (m) (1)	1,090	930	930
Operation Type	NPA	NPA	NPA
APRON SYSTEM			
Passengers Apron (2)			
Contact Stands	-	-	-
Remote Stands	-	-	-
Total Number of Stands	-	-	-
Cargo Apron (2)			
Total Number of Stands			
PASSENGERS TERMINAL SYSTEM			
Departure Peak Hour Capacity	-	-	-
Arrival Peak Hour Capacity	-	-	-
Terminal Building			
Total Area (m^2)	-	-	-

SBBI	Current	Phase 01	Phase 02
Baggage Handling System			
Processing Capacity (bhp)	-	-	-
Car Parking			
Total Area (m²)	-	-	-
Number of lots	-	-	-
Curbside			
Departure Curbside Length (m)	-	-	-
Arrival Curbside Length (m)	-	-	-
Total Length (m)	-	-	-
Ground Handling Equipment			
Total Area (m²)	-	-	-
CARGO TERMINAL SYSTEM			
Cargo Terminal Building Area (m²)	-	-	-
GENERAL AVIATION SYSTEM			
General Aviation Terminal (m²)	550	950	1,190
Total Number of Stands	16	25	35
General Aviation Terminal Car Parking	1,100	1,100	1,100
Hangars and Aprons Area (m²)	57,830	57,830	57,830
ADMINISTRATION AND MAINTENANCE SYSTEM			
Administration [(3)]			
Total Area (m²)	440	440	440
Maintenance			
Total Area (m²)	180	180	180
OPERATION SUPPORT SYSTEM			
Fuel Farm			
Total Area (m²)	2,360	3,860	3,860
5-day storage (m³)	392	555	701
Fire fighting Building			
Category	Exempted	Exempted	Exempted
Total Area (m²)	1,485	-	-

SBBI	Current	Phase 01	Phase 02
AIRLINES SUPPORT SYSTEM			
Maintenance Area (m²)	-	-	-
Cargo Processing Area (m²) (4)	-	-	-
Aircraft Maintenance Area (m²)	-	-	-
INDUSTRIAL SUPPORT SYSTEM			
Mail Area(m²)	-	-	-
Catering Area (m²)	-	-	-
Airport Services Area (m²)	-	-	-
BASIC INFRASTRUCTURE SYSTEM			
Water Tank (m³)	12	42	62
Solid Waste Area (m²)	70	70	70
Electric Power Area (m²)	-	200	200
Sewage Treatment Units (5)	- (6)	-	-

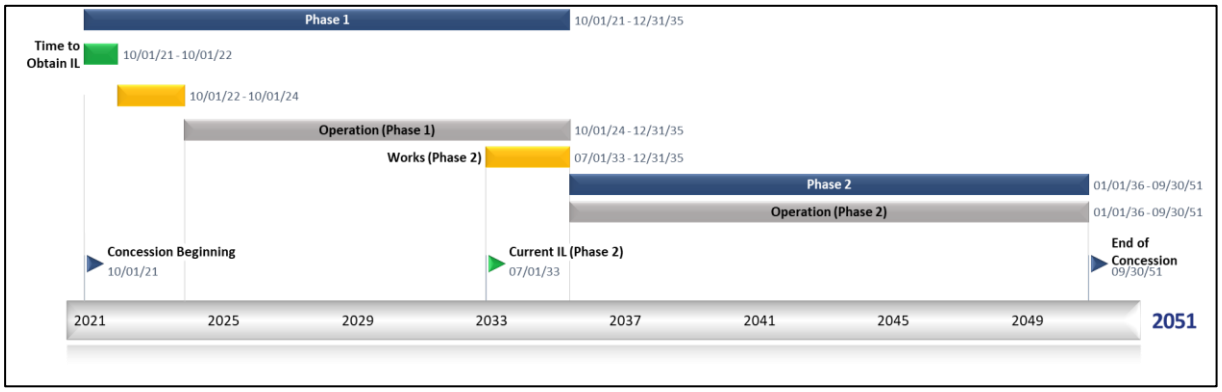
(1) It's been considered the Landing Distance Available (LDA).
(2) The cargo apron can be reversible, that means, shared with the commercial aviation.
(3) The area can be considered inside the PTB.
(4) Area can be considered inside the PTB or Cargo Terminal Building.
(5) Compact Sewage Treatment Unit, D70 model.
(6) Currently the airport doesn't have an area designated to Sewage Treatment Units.

Source: GCA Consortium.

After scheduling needs, based on the capacity of the airport systems, it was possible to define for each component when the interventions should be initiated, so that the service level can be maintained throughout the period.

Considering the concession starts in 2021, it's estimated a 12-month period to get the installation licenses (IL) necessary to start the works. After obtaining those licenses, the work can be started. Thus, as a result of the interaction of several planning elements, the work and operation phases were set, as shown in Figure 2-6.

Figure 2-6: Phasing and Works Estimated Schedule



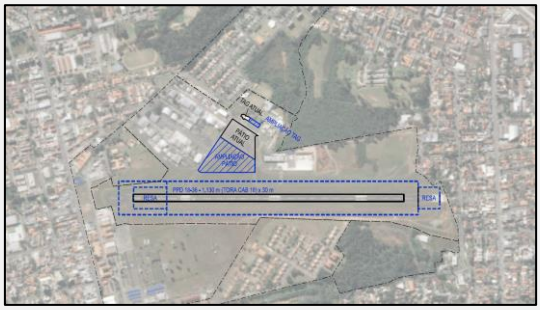
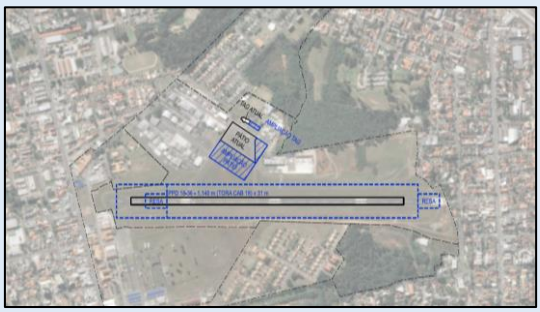
Source: GCA Consortium.

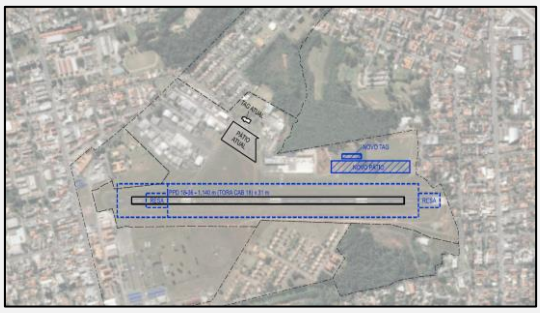
2.4 Alternatives Study

In order to choose the best alternative for the development of the airport site, it was considered the best solution for all infrastructure non-conformities, allowing the future development of the airport site in an optimized way, assuring a high level of service for all installations, minimizing the interference in the existing facilities and presenting compatible costs with the airport revenues during the concession period.

The proposed alternatives and their main characteristics are presented in Figure 2-7.

Figure 2-7: Proposed Alternatives

Alternative 01		• Master Plan; • Runway with 1,130 m x 30 m, corresponding to TORA of threshold 18; • General aviation terminal extension of 400 m^2 (Costs > R$ 4 MM); and • Apron reform and extension of 18,000 m^2 (Costs > R$ 7 MM).
Alternative 02		• Adapted Master Plan; • Runway with 1,140 m x 30 m, corresponding to TORA of threshold 18; • General aviation terminal extension of 400 m^2 (Costs > R$ 4 MM); and • Apron reform and extension of 15,000 m^2 (Costs > R$ 3 MM).

Alternative 03		• Runway with 1,140 m x 30 m, corresponding to TORA of threshold 18; • New general aviation terminal implementation with 675 m² (Costs > R$ 3 MM); • New apron implementation with 26,000 m² (Costs > R$ 9 MM); and • Necessity of building new accesses and other infrastructure.

Source: GCA Consortium.

The presented costs were obtained from reference figures by square meter (m²) and have the purpose to compare in a macro way the different alternatives. The detailed cost analysis was made only for the chosen alternative and it is presented in the CAPEX report.

From the studied solutions, it is observed that alternative 03 clearly presents the highest costs of implementation, without bringing significant capacity gains to the system and, therefore, was discarded.

Alternatives 01 and 02 are based on the premises of the Master Plan, with alternative 02 having a slightly lower cost, in addition to a better geometric configuration for the Runway and aircraft apron, being therefore chosen as the most advantageous.

2.5 Development Plan

After the selection of the most appropriate alternative and the Requirement Plans, it was designed the airport's development plan for the concession period. Furthermore, it was developed an architecture and engineering preliminary design. Thus, the costs of the project and operation along the implementation phases were estimated in order to enable the airport economic-financial modeling.

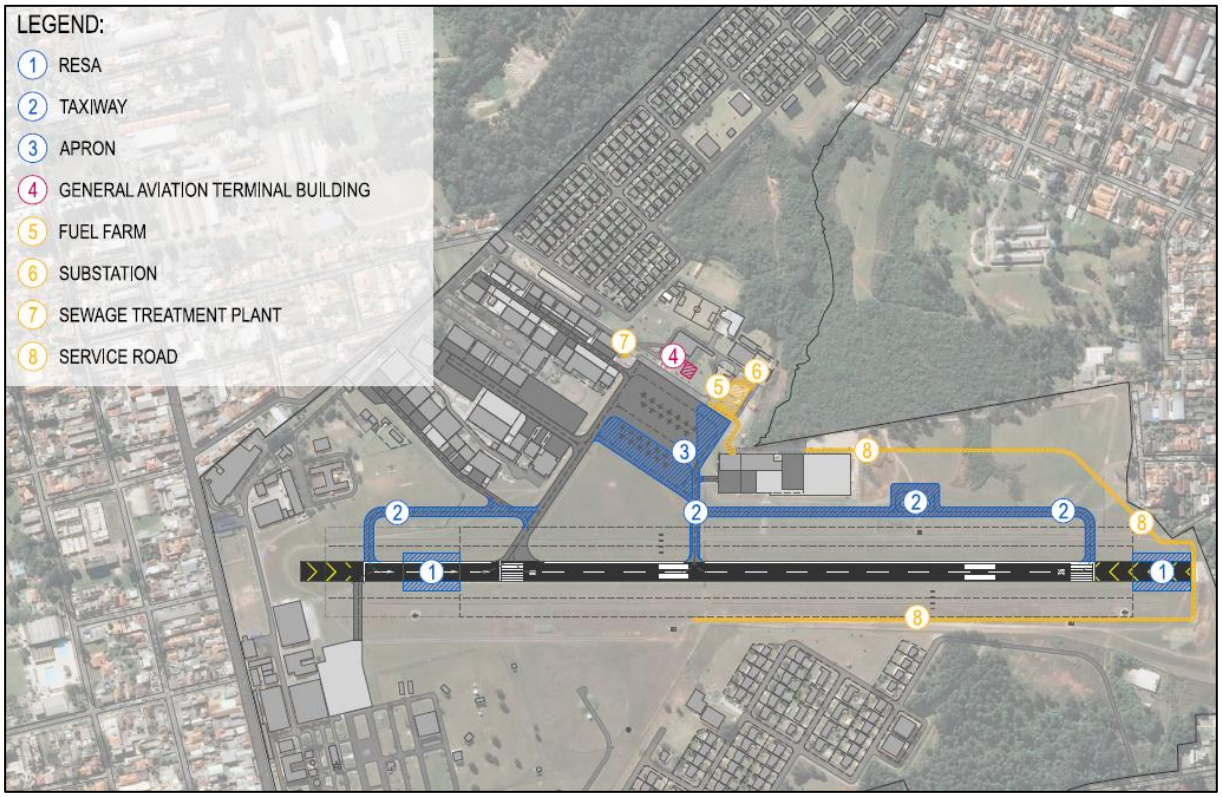
Below, the main investments for each phase of the planning are presented, as well as the implementation plants identifying the interventions at the airport and their subsequent level of details.

2.5.1 Phase 1

The first phase of the concession is expected to occur between the years 2024 and 2035, since the period between 2021 and 2024 will be used to get both the environmental licenses and carry out the constructions, so that all proposed works meet the demand of the year 2035.

In the Figure 2-8, it is presented the implementation proposed to Bacacheri Airport, considering Phase 01.

Figure 2-8: Development Plan – Phase 01 Implementations



Source: GCA Consortium.

The main interventions proposed in this phase are:

- Implementation of RESA on the thresholds 18 and 36;
- Displacement of threshold 18 by 310 m and displacement of threshold 36 by 150 m;
- Runway 18/36 strip leveling;
- Runway, taxiway and apron drainage system adequation;
- Adequation of access taxiways A and B width from 7.5 m to 15.0 m;
- Displacement of the taxiway A axis to the distance of 38.5 m from the runway 18/36 axis;
- Taxiways E, F and G implementation;
- Reform and extension of apron 1.

2.5.2 Phase 2

The second phase of the operation is expected to be between the years 2036 and 2051, since the period for obtaining the environmental licenses and carrying out the constructions happen in the previous phase, in order to all proposed works meet the demands of the year 2050.

In Figure 2-9, it is presented the proposed implementation for Bacacheri Airport, considering the Phase 02.

Figure 2-9: Development Plan – Phase 02 Implementations

Source: GCA Consortium.

The main intervention proposed for this phase is the apron 1 extension.

2.6 CAPEX

To elaborate the budget for the planned investments, prices were considered in accordance with the reference tables of SINCRO and SINAPI, in order to get referential unit cost per airport component. It was also considered the BDI rate, according to the TCU guidance and SICRO methodology. So, from the planned investments, unit costs and BDI rate, it was obtained the budget for the investments to the airport development. The Table 2-5 summarize the investments by implementation phase.

Table 2-5: CAPEX – Summary per Phase

DESCRIPTION	VALUES [R$]
Phase 1 Airport Expansion	31,212,081.17
Phase 2 Airport Expansion	11,913,641.80
Airport Expansion Subtotal	43,125,722.98
Phase 1 Airport Expropriations	-
Phase 2 Airport Expropriations	-
Airport Expropriations Subtotal	-
CAPEX Total	**43,125,722.98**

Source: GCA Consortium.

The Table 2-6 compiles the investment, maintenance and expropriation expenses values for each phase, considering the investments used for the resurfaces in the runaway system (which is included in “Maintenance” in Table 2-6).

Table 2-6: Components Summary

DESCRIPTION	DEVELOPMENT (R$)	MAINTENANCE (R$)	EXPROPRIATION (R$)	VALUES (R$)
Phase 1 Airport Expansion	25,926,497.05	5,285,584.12	-	31,212,081.17
Phase 2 Airport Expansion	4,718,332.06	7,195,309,75	-	11,913,641.80
Airport Expansion Subtotal	**30,644,829.11**	**12,480,893.87**	**-**	**43,125,722.98**
Phase 1 Airport Expropriations	-	-	-	-
Phase 2 Airport Expropriations	-	-	-	-
Airport Expropriations Subtotal	**-**	**-**	**-**	**-**
CAPEX Total	**30,644,829.11**	**12,480,893.87**	**-**	**43,125,722.98**

Source: GCA Consortium.

3 ENVIRONMENTAL STUDIES

The Report 3 – Environmental Studies was elaborated to comply with the *Public Notice (Edital de Chamamento Público) N. 2/2019* regarding projects presentation, surveys, investigations and technical studies required to subsidize the concession modeling for expansion, exploration and maintenance of the Airport of Bacacheri.

The report presents all the environmental studies performed in the field and in the office, by means of primary and secondary data, including a detailed assessment of every document provided by the Secretariat of Civil Aviation (*Secretaria de Aviação Civil – SAC)*, disclosed in Data Room, and of environmental processes verified at the Municipal Secretariat of Environment (*Secretaria Municipal de Meio Ambiente - SMMA*).

These data oriented the technical field visit to the Airport of Bacacheri, which occurred on May 8th, 2019.

Environmental studies were conducted in order to meet the guidelines presented by the public notice, considering that all of the requirements were properly addressed in the report, according to certain analytical chronology, by means of careful evaluation of the airport's compliance with the respective licensing procedures, expansion studies, master plans and previous environmental studies. The Airport of Bacacheri is located in the urban region of the municipality of Curitiba, in the state of Paraná. Operations began in the 1930s, still as a training and capacity building site for the Ministry of Aeronautics and Paraná Aeroclub. Under INFRAERO management since the 1980s, the airport has undergone major renovations. In the mid-90s, it started operating with national airlines and, after the inauguration of Afonso Pena airport, it started to have exclusive service for executive and general aviation aircraft.

In 2012, an exclusive building for the administrative team was inaugurated at the aerodrome and the entire air navigation structure was renovated, which now has a meteorological structure and an AIS (Aeronautical Information Service) room to improve flight safety.

Regarding environmental regularity, the Airport of Bacacheri is regular concerning the operating licensing of its current activities and infrastructure. The Municipal Secretariat of Environment (*Secretaria Municipal de Meio Ambiente - SMMA*) of Curitiba Municipality is responsible for the environmental licensing of the enterprise. Information on the Operating Licenses (OL) is detailed below.

Chart 3-1: Operating License Data

License	Issuing Agency	Issue	Expiration	Status
OL n. 20000283	SMMA Curitiba Municipality	Aug. 19, 2020	Aug. 19, 2024	Effective

Source: GCA Consortium.

The report detailed the compliance *status* of Operating Licenses (OL) The technical team responsible for the studies asked SMMA for authorization to view the processes, according to protocol 01-054901 / 2019, in order to know the full content of the issues relating to the environmental situation of the airport of Bacacheri, from 2014 to 2019 .

Since the beginning of its operations, the enterprise received several expansion and improvement constructions. The environmental report presents the main actions, constructions, intended constructions and their respective environmental licenses obtained after 2013.

The following documents were surveyed and reported, regarding the airport manager: authorizations, license agreements and other licenses, including those obtained by its concessionaire enterprises. A list of ongoing agreements, with the activities susceptible to licensing, was also presented.

Regarding the regularity of the enterprise, notifications and non-compliances of the airport were surveyed and exhibited to several agencies, National Agency of Sanitary Vigilance (*Agência Nacional de Vigilância Sanitária -Anvisa*) and National Agency if Civil Aviation (*Agência Nacional de Aviação Civil -ANAC*).

The information on past notices and fines do not oblige the next manager, which is not responsible for their payments. However, the current airport manager is responsible for eliminating the facts that originated such notices, as well as for managing ongoing mitigating or recovering actions

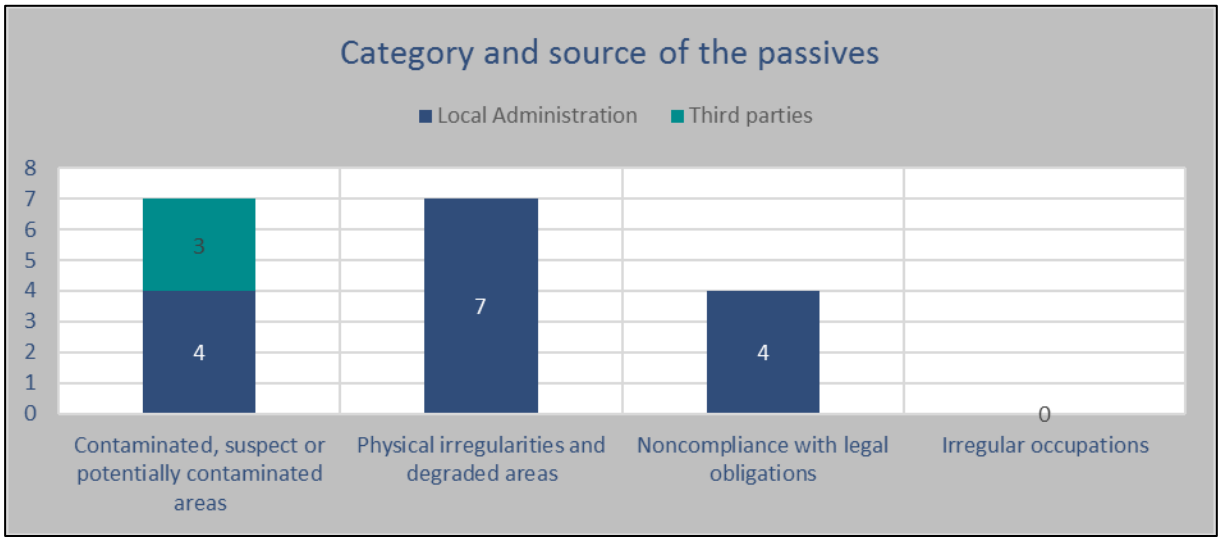
A socio-environmental assessment of the Airport of Bacacheri was performed and presented by means of the socio-environmental diagnosis in this report, considering the following aspects:

- Soil Use and Coverage including approaches to water resources, permanent preservation areas (APP) and vegetation;
- Irregular superficiaries and occupations in the airport assets area;
- Potential of Cave Occurrence;
- Mining rights;
- Fauna and Fauna Risk;
- Noise;
- Atmospheric Emissions;
- Energy;
- Basic Sanitation including approaches to water supply, effluents, solid waste and drainage system;
- Degraded areas, erosions and silting;
- Environmental Risks/Emergencies;
- Conservation Units, Protected Assets and Communities, including the analysis of heritage, archeological or pre-historical sites and traditional communities;
- Stakeholders engagement;
- Environmental Management System.

The Airport of Bacacheri has pending actions in environmental area that shall be improved or corrected by the new airport manager, such as: full compliance with all conditions of the operational license, preparation and implementation of a PGRH, IPF and PGRF, as well as, implementation of the effective monitoring plan for atmospheric emissions and actions to control and reduce energy and water consumption, elaboration of PGRS and its effective implementation.

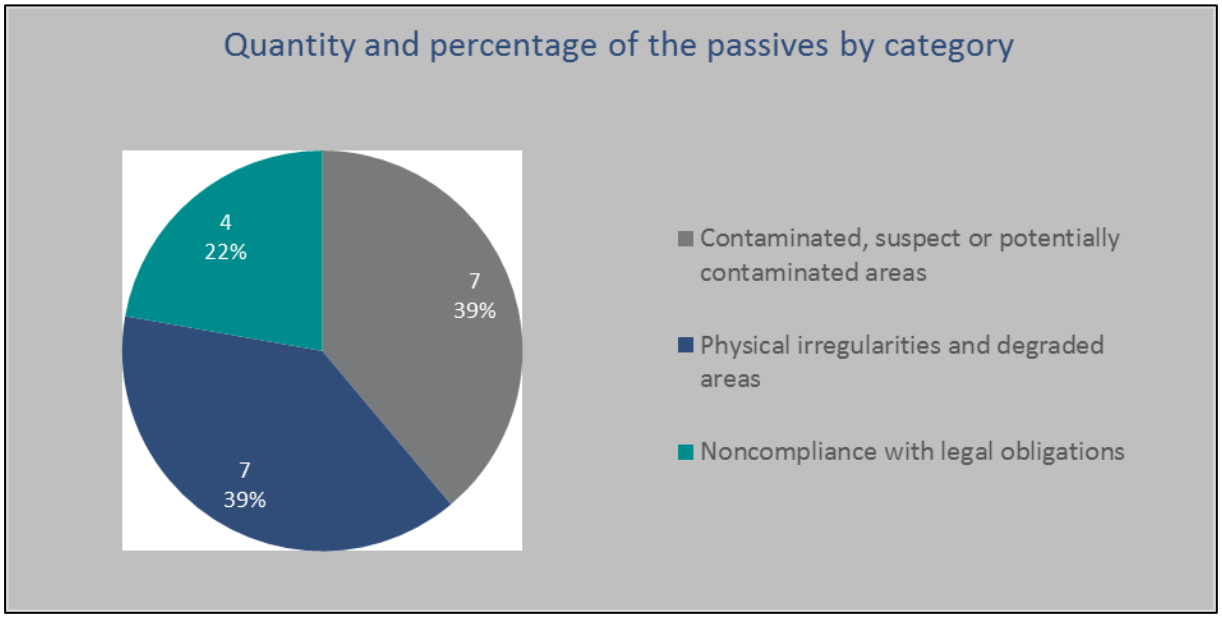
During the preparation of this document, existing socio-environmental passives were surveyed, evaluated and priced. For the Airport of Bacacheri, 18 passives were identified. From the four passive categories evaluated, 07 were related to contaminated areas, 07 to physical irregularities and degraded areas and 04 to noncompliance with legal obligations. No passives related to irregular occupations were identified.

Figure 3-1: Category And Source Of The Passives



Source: GCA Consortium.

Figure 3-2: Quantity And Percentage Of The Passives By Category

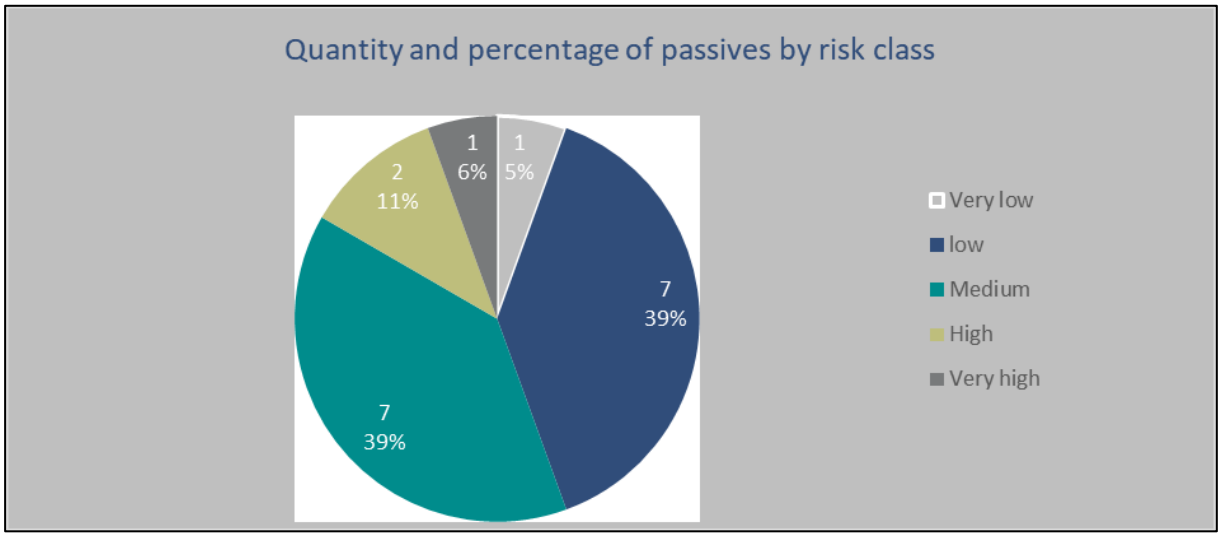


Source: GCA Consortium.

The classification of passives identified according to their Risk Class was assessed based on a methodology adapted from FMEA (*Failure Mode and Effects Analysis).*

Considering the current scenario, the Airport of Bacacheri presents passives classified as of *Very High, High, Medium, Low and Very Low* risks. The passives classified as of High risk shall be managed in the short run, and the passives classified as of *Medium to Very Low* risk may be managed according to their respective criticalities in short or medium term.

Figure 3-3: Quantity And Percentage Of Passives By Risk Class



Source: GCA Consortium.

The study includes a detailed analysis of current and future compatibility of the airport activities and soil use, dedicated to verify if the protection plan against obstacle, the noise zoning plan and airport safety area were properly incorporated in the guidelines and legislation that regulates the occupation of the airport's neighboring areas.

In order to guarantee the good development of the enterprise, the neighboring areas shall continue to be compatible with the airport activities. To achieve this goal, the airport manager shall update and approve the appropriate plans, especially in case of meaningful alterations in operation and infrastructure.

The study also estimated the number of people affected by aeronautical noise levels, both for the Current Scenario and for the Future Development Scenario. For the Current Scenario of the airport, the noise contours of 65 dB already go beyond the heritage area of the airport site, thus impacting external areas. The socioenvironmental impacts are not intensified in the Future Scenario, since the 65 dB noise contours will affect the reduced external area in relation to the Current Scenario, according to data in the chart below.

Chart 3-2: Aeronautical Noise Impacts On The Neighboring Population In The Current And Future Scenario

Area inside noise contours	Number of people living inside the contours		Number of residences inside the contours	
	Current Contours	Future Contours	Current Contours	Future Contours
65 -70dB	47	10	14	3
70 - 75dB	7	0	2	0
75 - 80dB	-	-	-	-
80 - 85dB	-	-	-	-

Source: GCA Consortium.

Regarding risks to the Fauna, the study identified the main focuses of attraction inside the Airport Safety Area (ASA), a circular area with 20 km of radius, marked from the geometric center of the longest runway. We highlight the focus related to irregular waste disposal, agricultural areas, refrigerators and grain storages.

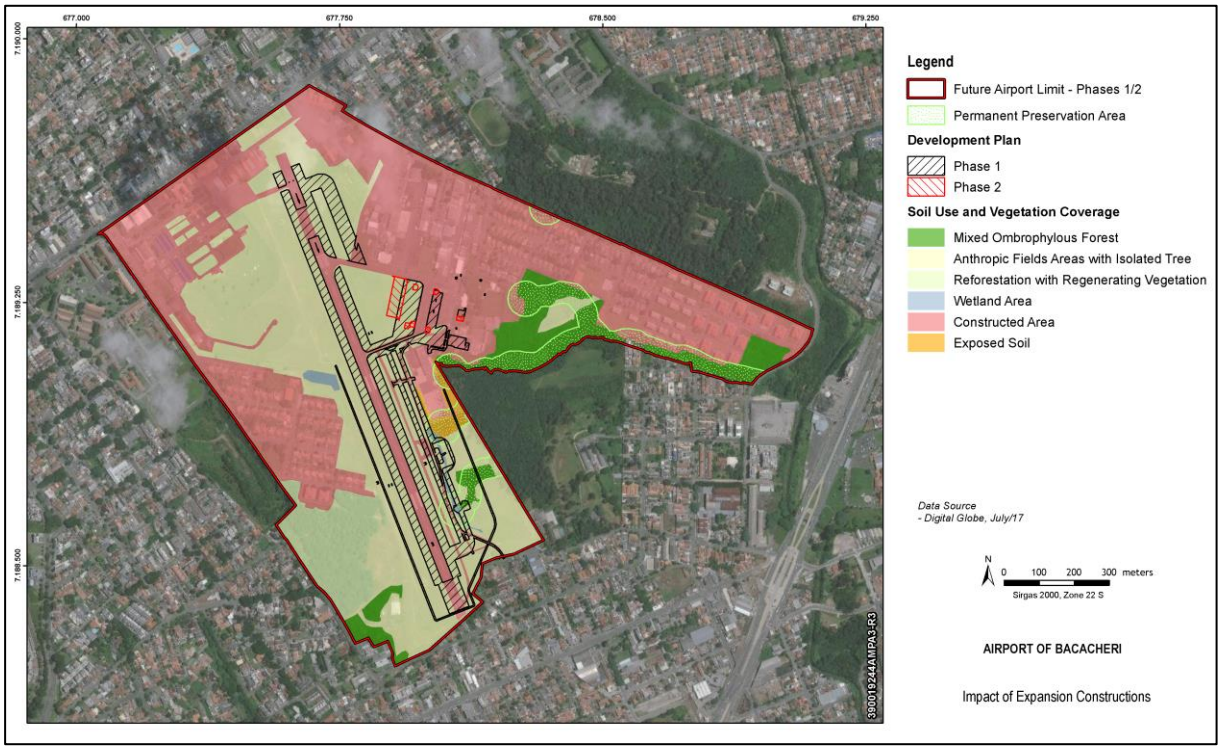
Thus, the airport manager shall help the municipality to monitor the focuses and to develop educational actions in order to avoid the appearance of new focuses.

Based on all these surveys, the main goal of the study was fulfilled, especially regarding the legal and environmental restrictions of the airport and its neighboring areas. Socio-environmental criteria to be incorporated to the project were identified and oriented the Development Plan in order to minimize environmental impacts.

The airport presents areas of Mixed Rain Forest, Cerrado physiognomies, in addition to regenerated reforestation, stretches of anthropized vegetation and anthropic field with isolated trees.

Therefore, the Development Plan for the Airport considered every restriction and environmental criteria surveyed in the study. The solution proposed is the one with the lowest environmental impact in the airport region and that allows its compliance with applicable legislation. The following figure shows the impact of expansion works on soil use and coverage.

Figure 3-4: Impact Of The Adequation Constructions On Soil Uses And Coverage



Source: GCA Consortium.

Evaluating the construction works impact on soil use and coverage in the Airport of Bacacheri, during the Development Plan implementation in its two phases, two interventions shall be made: in the Anthropic Fields areas with isolated tree individuals (69.42%); in the wetland areas (2.38%), in the Mixed Ombrophylous Forest contact areas (0.74%); in the already constructed areas (26.90%) and in areas with exposed soil (0.57%). Interventions in APP will happen during Phase 1 and 2 (0,32% and 4.28% respectfully).

Concerning socio-environmental risks associated to the project, *i.e.*, situations that may impair or delay the execution of foreseen activities and constructions, one risk situation was identified and summarized below.

Chart 3-3: Risk And Their Respective Strategies To Minimization

Socio-environmental risk management at the Airport	
RISK SITUATION 1	Intense population density in the airport's surroundings
Identified risk	• Airport operations may affect the neighboring population with unpleasant levels of noise. • Conflicts between airport activities and surrounding soil use and occupations.
Strategies to minimize the risk	• To establish technical partnership with Bacacheri municipality to incorporate the Specific Noise Zoning Plan (PEZR) in municipal legislation and in the procedures of real estate approval in areas affected by the airport noise contours and other use and occupation restrictions concerning operational safety. • To perform educational and awareness activities with the surrounding Community on the importance of preserving and respecting the airport's property limits.

Source: GCA Consortium.

Considering that the local availability of input and raw material suppliers, and of waste disposal sites required to implement the Development Plan are essential to the Project feasibility, the Environmental Report listed potential licensed suppliers to help estimating costs in the Report of Engineering and Related Issues.

The study also presents the licensing guidelines required for the entire concession period, accompanied by the respective schedules for the implementation and operation phases of the airport.

For the operational phase, the Airport of Bacacheri is in compliance according to OL nr 20000283, valid until August 19, 2024.

In order to meet the conditions of the license, there are adjustments to be made: in the management of solid waste, in vehicle and equipment maintenance area and in the containment and drainage of area where chemicals and oils are stored. Therefore, if INFRAERO does not correct the pending issues until the airport's operational transfer period, the future administrator must provide the necessary regularizations. In addition, the entrepreneur must continue to meet the other conditions of the OL.

Based on these conditions, the chart below presents recommendations to the future airport manager, regarding the conduction of the airport's operating licensing:

Chart 3-4: Recommendations For Conducting The Airport's Operating Licensing

Recommendations for conducting the airport's operating licensing
Once you took over the airport's management, you must request the license titularity transference to your name and CNPJ.
During the airport operation, all the constraints of the future Regularization Operating License (or similar) must be addressed. Periodical reports on the activities' execution must be presented to the environmental agencies.
To request the OL renewal at least 120 days before its expiration date, according to paragraph 4th of article 12 of Complementary Law n. 140, from December 8, 2011.
After the end of each construction phase, if authorized by means of an Installation License, the entrepreneurship shall request these constructions to be included in the current operating license, avoiding the issuing of several OL for the same airport enterprise.

Source: GCA Consortium.

Besides of the operating environmental licensing of the airport, the airport operating activities will be regular by the issuing of authorizations, exemptions and complementary grants and documentation approval by regulatory public agencies. The chart below presents the estimated timeframes used in the present study.

Chart 3-5: Estimated Timeframes For Other Authorizations, Grants And Licenses

Description	Estimated timeframe	TOTAL
Regularization/Renewal/ Transference of Grant for water resources use (AA[1]) and Grant Issuing (OC[2])	2 months (AA[1]) 2 months (OC[2])	4 months
Regularization of Federal and State Technical Registration (AA[1])	2 months (AA[1])	2 months
Elaboration/Regularization/Renewal of IPF and PGRF (AA[1]) and validation in ANAC (OC[2])	15 months (AA[1]) 3 months (OC[2])	18 months
Elaboration /Regularization of noise contours and PZR (AA[1]) and validation and registration in ANAC (OC[2])	6 months (AA[1]) 3 months (OC[2])	9 months
Regularization of PBZPA and PZPANA(AA[1]) and validation in ANAC and DECEA (OC[2])	6 months (AA[1]) 4 months (OC[2])	10 months
Mining block request to DNPM (AA[1]) and mining block issue (OC[2])	2 months (AA[1]) 2 months (OC[2])	4 months

Notes:

[1] AA- Airport manager

[2] OC- Responsible agency

Source: GCA Consortium.

In addition to the airport's operational environmental licensing, for the regularity of airport operational activities, authorizations, exemptions and complementary grants will need to be issued and

documentation approvals in public inspection agencies. In view of this scenario, the table below presents the deadline assumptions used in the present study.

To make the expansion works feasible, the entrepreneur must initiate new environmental licensing procedures with the environmental agency. Currently, there are not existing expansion licenses that may be applicable to the works expected for in the Airport Development Plan, proposed in Engineering and Related Studies. Considering the works planned for the Airport of Bacacheri, assumptions and deadline estimates were defined and presented in the chart below.

Chart 3-6: Licensing Assumptions For The Expansion And Adequation Constructions Of Airport Of Bacacheri

Evaluated aspects	Phase 1	Phase 2
Impact degree of the constructions	Medium	Medium
Licensing agency	SMMA (Municipal)	SMMA (Municipal)
Applicable licenses	PL and IL	IL effective from Phase 1*
Studies to be performed	RAP and PCA	-
Maximum estimated timeframe for studies and licensing	12 months	Effective licensing

*Municipal legislation foresees that IL may be renewed up to the constructions execution.

Source: GCA Consortium.

As recommended by Municipal Decree No. 362/2018 (for definition of studies) and Municipal Decree No. 1819/2011 (for definition of licenses and deadlines), the RAP and PCA must detail all horizons for expansion and adequacy of the airport, subsidizing the issuance of LP and LI for the works of Phase 1 and Phase 2.

For the feasibility of Phase 2, the airport administrator must regularly request the renewal of the LI until the beginning of the works, without the need for further studies or new authorizations. In addition, it is important to note that Municipal Decree No. 362/2018 indicates the need for the payment of Environmental Compensation (CA) for enterprises capable of causing environmental degradation and pollution, subject to the preparation of the RAP. In the case of implementation in phases, as in this study, the total value of CA could be divided equally by the number of phases foreseen in the initial project.

At the end of each phase of works, the entrepreneur must request the inclusion of the built and expanded infrastructure in the scope of the airport's current operating license.

The estimated timeframes for the environmental licensing of the constructions considered the impact degrees previously described, results being presented below.

Chart 3-7: Estimated Timeframes For Licensing Constructions Of Medium Environmental Impact

Description	Estimated timeframe
RAP elaboration for PL issue	3 months (AA[1])
PCA elaboration for IL issue (simultaneous to RAS elaboration)	3 months (AA[1])
RAP analysis and new PL issue	4 months (OA[2])
PCA review and compliance with the constraints after the PL issue	1 month (AA[1])
Analysis and new IL issue	4 months (OA[2])
TOTAL	**12 MONTHS**

Notes:

[1] AA- Airport manager

[2] OA- Environmental Agency

Source: GCA Consortium.

The airport manager should also analyze verify other authorizations required to enable the Development Plan, concerning the licensing in all its phases. The chart below summarizes this evaluation for Airport of Bacacheri.

Chart 3-8: Environmental Authorizations And Procedures Required For The Airport Of Bacacheri

Authorization/Procedure	Applicability for the Development Plan
Municipality Opinion	Applicable
Authorization for Vegetation Suppression (ASV) and/or Intervention in APP	Applicable
National Institute of Historical and Artistical Heritage (Instituto do Patrimônio Histórico e Artístico Nacional - IPHAN) Opinion	Applicable
Grant of water resources use	Applicable
Mining Block	Applicable
Authorization from Conservation Units Managers	Not applicable
Authorization for intervention in traditional communities or its surrounding zones	Not applicable
Obtainment of the Evaluation Report Malarigen Potential (Laudo de Avaliação do Potencial Malarígeno - LAPM) and Certificate of Sanitary Condition (Atestado de Condição Sanitária - ATCS)	Applicable

Source: GCA Consortium.

To achieve excellence in socio-environmental management, this study presented mitigation measures, suggestions on Sustainability Guidelines, Environmental Management System, Environmental Plans and Programmes and Environmental Development Indexes to the future airport manager, considering all the environmental subjects assessed herein.

Finally, the study presents the socio-environmental cost budget foreseen for the expansion constructions (CAPEX) and for the airport operation (OPEX), summarized below:

Chart 3-9: Socio-Environmental Costs In R$ Estimated For The Airport Of Bacacheri

Activity	Phase 1	Phase 2	TOTAL
Licensing and Analysis Fees	2,088.07	836.58	2,924.65
Environmental Studies	387,533.78	-	387,533.78
Environmental Management of the Constructions	1,647,028.86	2,052,654.34	3,699,683.20
Vegetation Suppression and Forest Compensation	21,504.07	-	21,504.07
Confirmatory Investigation of Passives	209,727.44	-	209,727.44
Environmental Passives Recuperation	-	-	-
Environmental Compensation*	117,701.78	13,260.69	130,962.47
Total	**2,385,584.00**	**2,066,751.61**	**4,452,335.61**

* Defined according to Municipal Decree n. 362/2018
Source: GCA Consortium.

Chart 3-10: Environmental OPEX Estimated For The Airport Of Bacacheri

Item	Activity	Total Cost (R$)
2.1	Environmental Licensing Fees	697,280.76
	OL Renewal	*1,673.16*
	TCFA – IBAMA	*695,607.60*
2.2	Operation Environmental Management	3,572,471.16
2.3	Elaboration of PBZPA and PZPANA	205,678.91
2.4	Fauna Management Programme	2,854,361.15
	PF and PGRF Elaboration	*2.494.361,15*
	Fauna handling actions	*360,000.00*
2.5	Noise Management Programme	89,252.79
2.6	Energy and Air Emissions Management Programme	23,817.19
2.7	Water Resources and Effluents Management Programme	3,313,271.07
	Sampling Plan Elaboration	*23,817.19*
	Water Resources Monitoring	*3,289,453.87*

Item	Activity	Total Cost (R$)
2.8	Solid Waste Management Programme	37,282.87
2.9	Social Communication, Environmental Education and Training	481,192.34
	TOTAL	**11,274,608.25**

Source: GCA Consortium.

The Environmental Studies maintained the innovations presented in the study is elaborated by GCA Consortium of the 5th Round of Airport Concessions from Federal Government, which culminated in the concession of 12 airports for private initiative. They are:

- Analysis of soil use and occupation inside noise contours, by means of identifying the quantity of residences and their respective areas, people and average quantity of people per residence based on census information (IBGE, 2010);
- Survey of focuses of fauna attraction, using criteria defined by specific aeronautical legislation;
- Survey and analysis of collision indexes involving aircrafts and fauna, according to data provided by CENIPA;
- Identification of areas vulnerable to the airport activities, since there are fauna and flora species of restrict distribution located in regions under the aerodrome influence, according to ICMBIO criteria;
- Risk evaluation of environmental passives based on a methodology adapted from FMEA (Failure Mode and Effects Analysis);
- Indexes proposition according to GRI Standards (version 2016) and GRI G4- Airport Operator Se*ctor Disclosures* (version 2013) references, correlating them to the Sustainable Development Goals (*Objetivos de Desenvolvimento Sustentável -ODS*), to the IFC Performance patterns, and with the guidelines of Global Pact.

In addition, with the participation of several professionals specialized in the environment area and with effective practice on airport operation, the flowing innovations were performed in the Environmental Studies:

- Identification of all kinds of irregular superficiaries and occupations in the property and the expansion area;
- Survey of potential cave occurrences in the airport area and its surroundings;
- Information on the existence of mineral deposits in the airport area and its surroundings;
- Evaluation of mining rights in the airport area and its surroundings;
- Amplification of identified classes of environmental passives and its respective results presented by an Excel spreadsheet, with friendly and intuitive interface;
- Survey on receptors sensitive to aircraft noise – public institutions, hospitals and schools – located inside the airport noise contours;
- Indication of licensed potential suppliers of inputs and raw materials, close to the airport, for the Development Plan constructions;
- Indication of licensed sites for adequate waste disposal, close to the airport;
- Evaluation of the airport position on the ranking of airports used for animal traffic, as well as proposition of actions to prevent traffic;

- Use of indicators from the Guide of Good Practices for Elaborating Indicators of Operational Safety elaborated by the Brazilian Group of Operational Safety in Airport Infrastructure (BAIST), published in August 2019;
- Quantification of the expansion construction impacts in Permanent Preservation Areas (APP) and proposition of differentiated forest compensation, according to local legislation;
- Use of data on water, obtained by SPT drilling performed by GCA, to guide the estimated budget of Confirmatory Investigations and sites with suspected contamination in the airport;
- Incorporation of sustainable proposals in the Development Plan;
- Definition of Sustainability guidelines for the airport operations, aligned with the policies adopted by the Ministry of Infrastructure.

4 ECONOMIC AND FINANCIAL EVALUATION

This section presents the Executive Summary of the Economic and Financial Evaluation for the 30-year concession of **Bacacheri Airport - SBBI** modelled between 01/October/2021 and 30/September/2051. Currently, the airport's total revenue is R$8.9MM and its EBITDA margin is 26% (considering 2018 data)[6].

Revenues

The economic and financial evaluation is based on revenue projections which include:

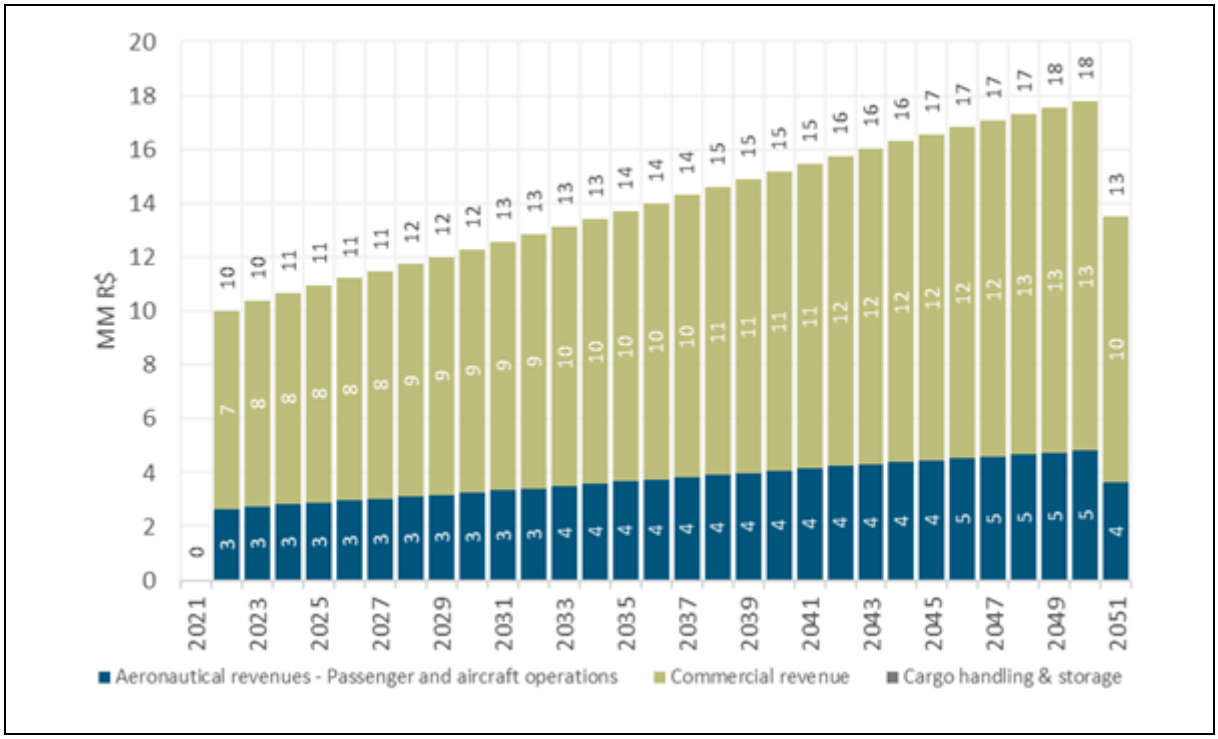
- Aeronautical revenues, resulting from regulated fees on the various operation types. These have been categorized as passenger and aircraft fees and cargo handling and storage fees;
    - Aeronautical revenues – passengers and aircraft operations: applicable to both passenger flows (domestic and international boarding or connection fees) and aircraft operation and parking, by operation type (domestic and international landing and parking fees, and landing and boarding and parking fees for general aviation);
    - Cargo handling and storage: due for cargo handling and storage services where rendered directly by the Airport operator at the air cargo terminal (TECA), and may divide into import, export and domestic cargo;
- Commercial revenues, related to services and goods provided to passengers, airlines and other business users, i.e. retail, food & beverages, car parking, aircraft fuelling, car rental etc.

Forecasts for aeronautical revenues are based on expected Airport throughput, which include passenger flows, cargo, mix of aircraft types and aircraft operations, and their respective fees. Meanwhile, forecasts for commercial revenues consider not only expected demands and their respective impacts over each category of business, but also efficiency gains resulting from contract renegotiations between the concessionaire and the lessees of commercial areas, following market benchmarks.

Total revenues are expected to grow an average of 2.0%p.a. between 2023 and 2050 (first and final full year of the concession). Aeronautical revenues will increase during the concession period, from 26% in 2023 to 27% in 2050.

[6] All monetary value presented in this report is given in constant Real (R$) values based on January/2019 real prices, following SAC/MI guidance.

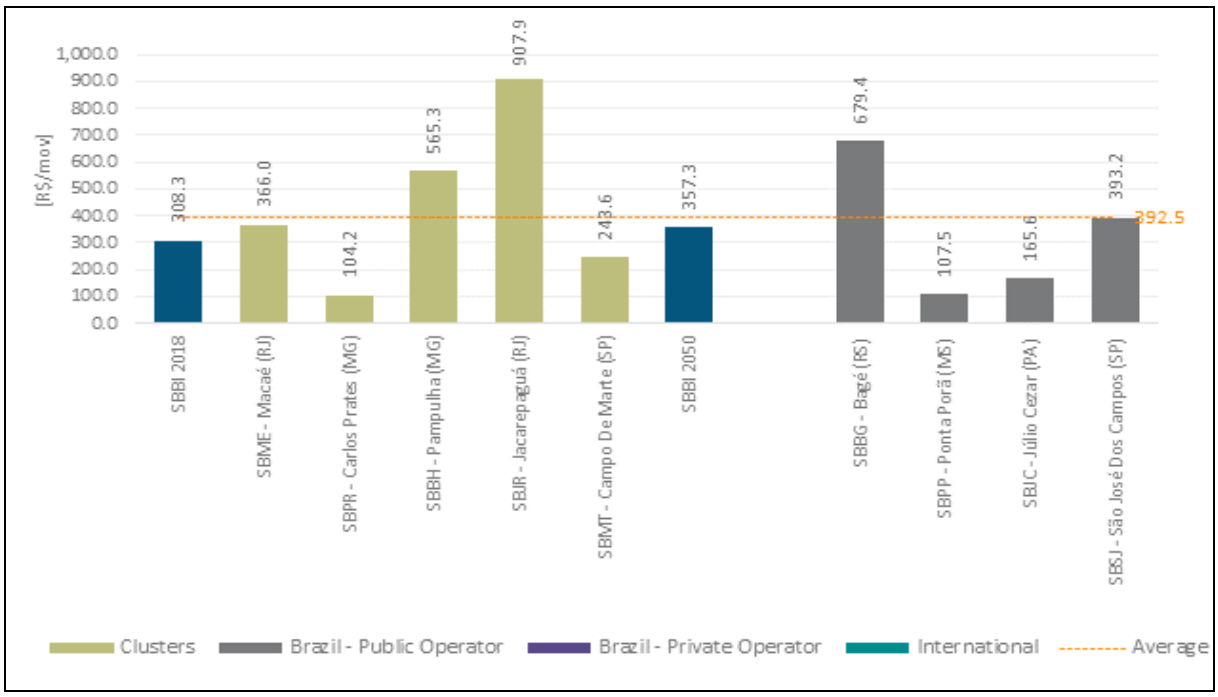
Figure 4-1: Total revenues during concession



Source: GCA Consortium.

In 2050, the Airport's revenue per movement will be R$357.3. Airport indicators are in line with the average of comparable airports (Figure 4-2).

Figure 4-2: Revenue per movement benchmark



Source: GCA Consortium.

Costs and expenses

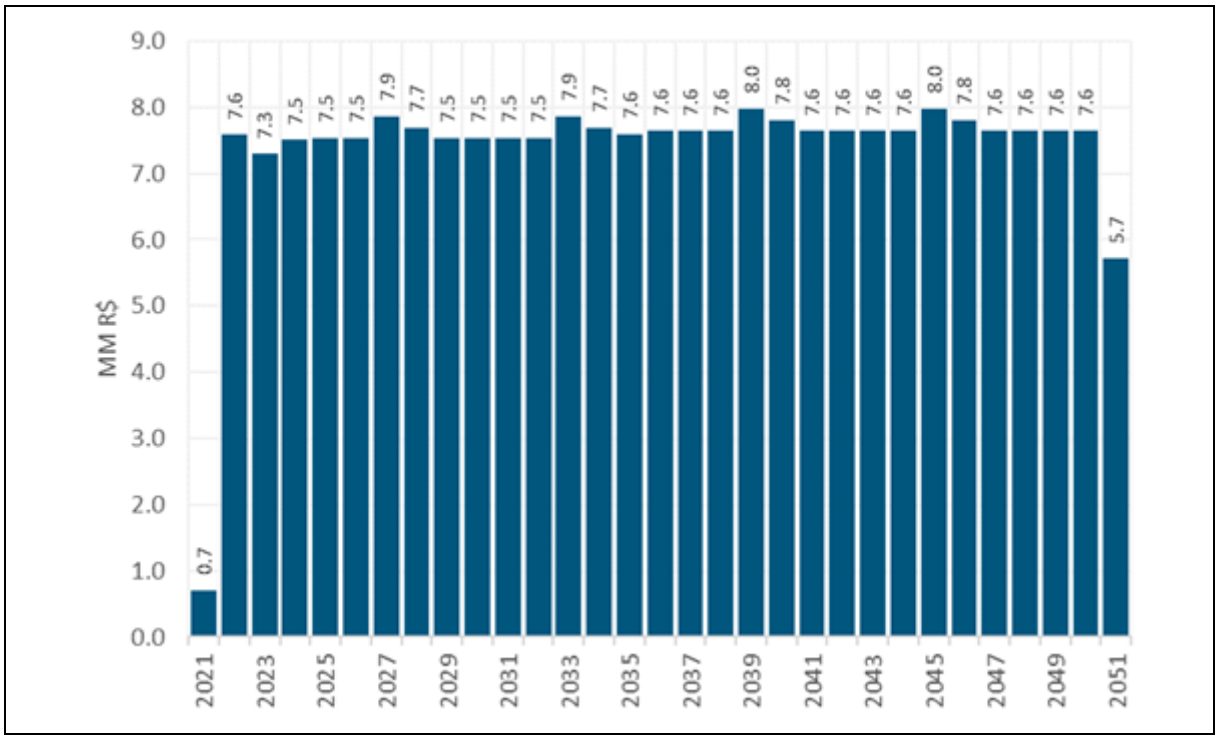
Airport operating costs and expenses are mainly related to personnel and outsourced services, in addition to utilities and public services and consumables.

After the concession, the concessionaire will take up new obligations, which include performance bond, socio-environmental expenses and property tax (IPTU). The concessionaire must also pay grants, applicable according to the feasibility of the concession and therefore not discussed under this item.

Costs and expenses forecast take into account the most appropriate forecast drivers for each item, that is, the variables that best explain the evolution of the observed costs. Additionally, costs and expenses forecasts were based on current values and considered initial efficiency gains derived from private management as well as economies of scale, determined from benchmark analyses.

Airport costs and expenses ranged around R$ 7.6MM over the concession period (Figure 4-3). Personnel and Land tax (IPTU) costs are the most significant, representing 57% and 18% of total costs in 2050, respectively.

Figure 4-3: Costs and expenses during concession (prior to grant values)



Source: GCA Consortium.

It is important to emphasize that, before entering into the concession agreement, the concession holder will be required to settle funds for Infraero's staff readjustment program, reimbursement to authors of the feasibility studies, and compensation to São Paulo stock exchange (B3) for holding the auction. (Table 4-1).

Table 4-1: Obligations to be met prior to signing the contract

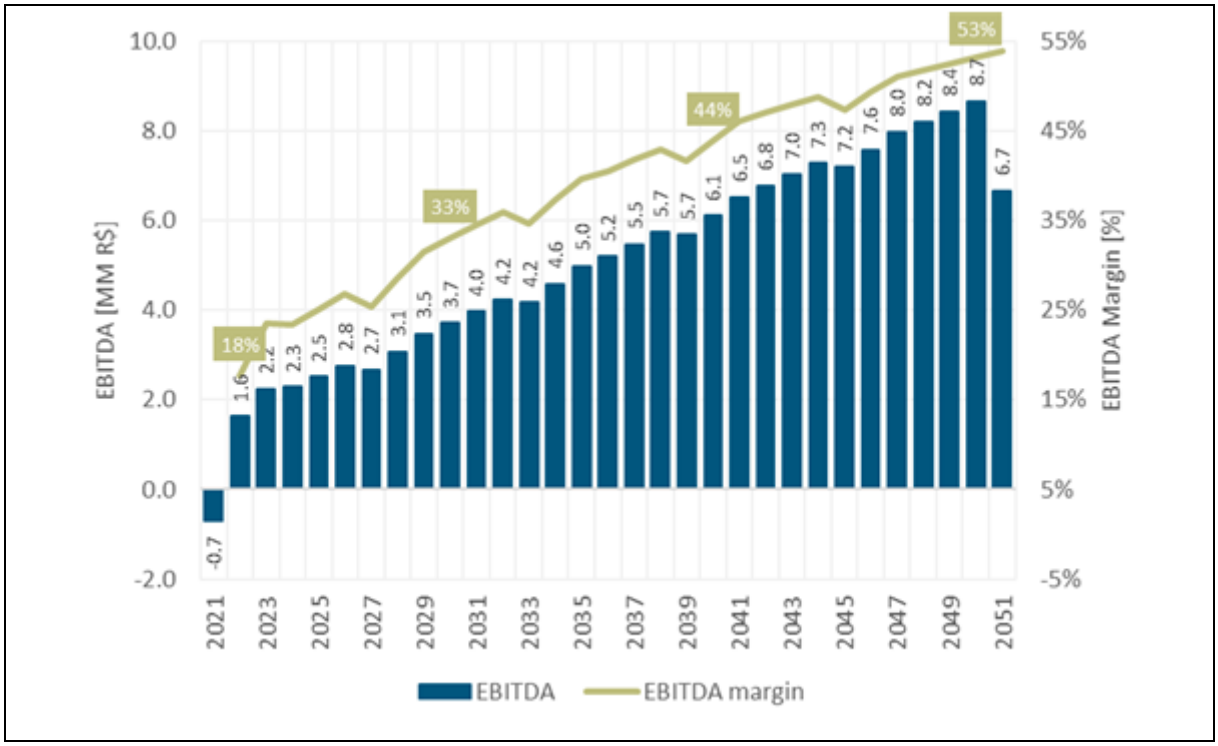
Values in MM R$	TOTAL
OBLIGATIONS TO BE MET PRIOR TO SIGNING THE CONTRACT	**(11.9)**
Funds for Infraero's staff readjustment program	(10.0)
Reimbursement to authors of the feasibility studies	(1.9)
Payment to B3 for holding the auction	(0.1)

Source: GCA Consortium.

EBITDA and margin

Net of grant payments, the concession EBITDA is forecast to be R$2.2MM in 2023 and to reach R$8.7MM in 2050 (Figure 4-4), with an average growth of 5.1%p.a. EBITDA margins increase is forecast throughout the concession due to expected economies of scale.

Figure 4-4: EBITDA and EBITDA margins during concession



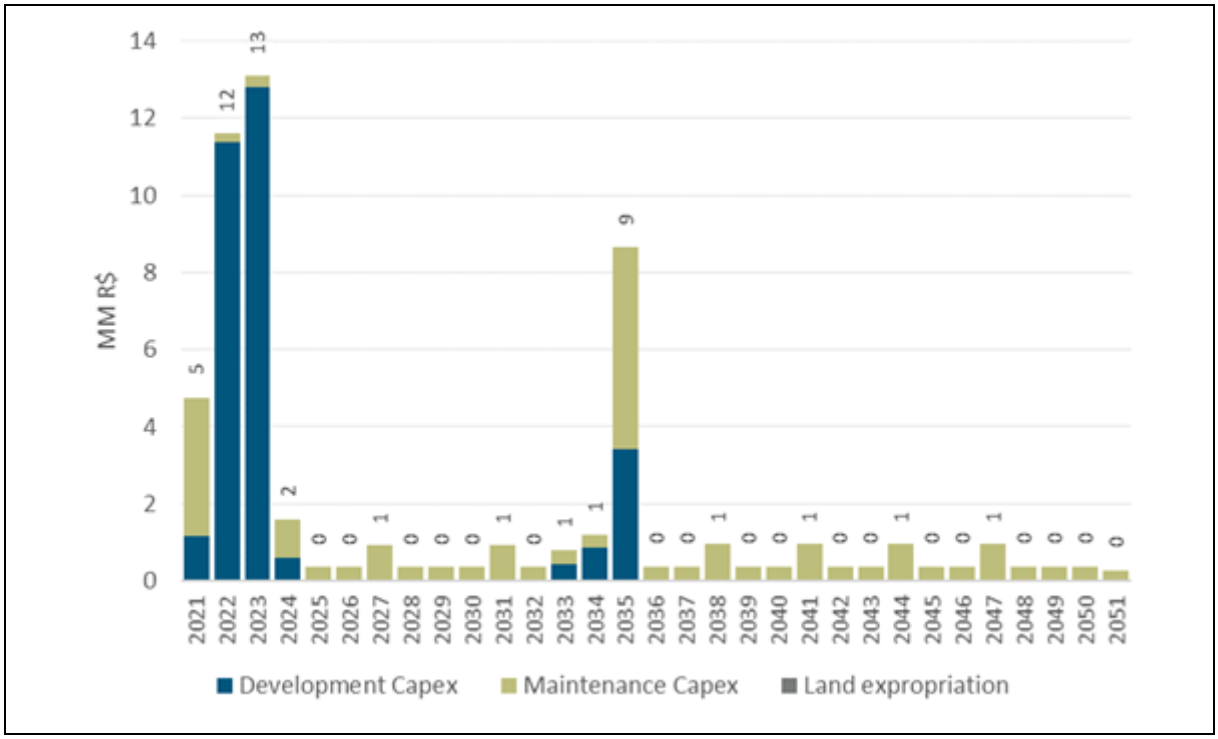
Source: GCA Consortium.

CAPEX

The development plan, expansion of airport assets to meet growing demands and ensure appropriate level of service, requires a total investment of R$54MM.

Development investments (topical and intended to expand airport assets, including expropriations) will be divided into different phases and amount to a total R$31MM. Maintenance investments (periodical and intended to maintain and replace assets, including re-paving cycles) add up to R$23MM throughout the concession period. (Figure 4-5).

Figure 4-5: CAPEX during concession

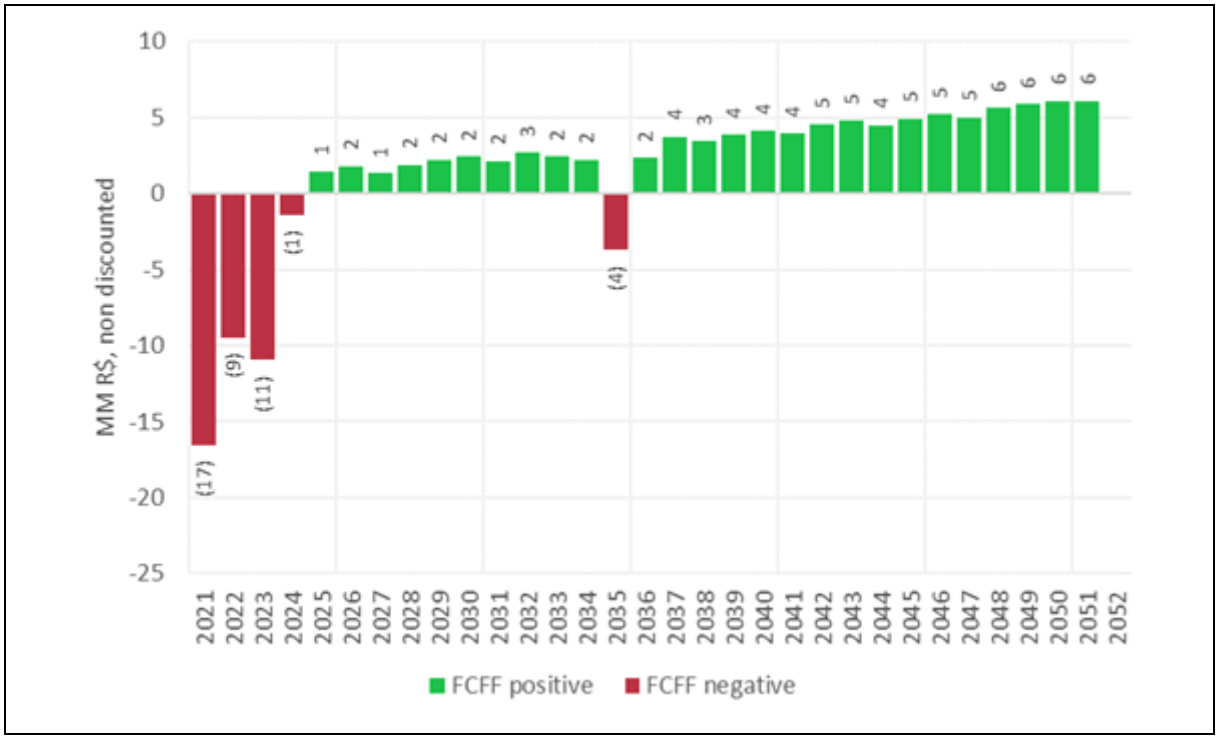


Source: GCA Consortium.

Evaluation of concession's financial feasibility

The project's forecasted free cash flow (FCFF) is presented in Figure 4-6, which shows the FCFF is positive during most of the concession, except during investment cycles, that require funding. The project's IRR, prior to grant values, is 4.8%p.a. (real) and its MIRR is 6.6%p.a. (real), lower than the cost of capital of 7.23%p.a., thus the concession is not financially feasible.

Figure 4-6: Free cash flow to firm (non-discounted – prior to grant values)

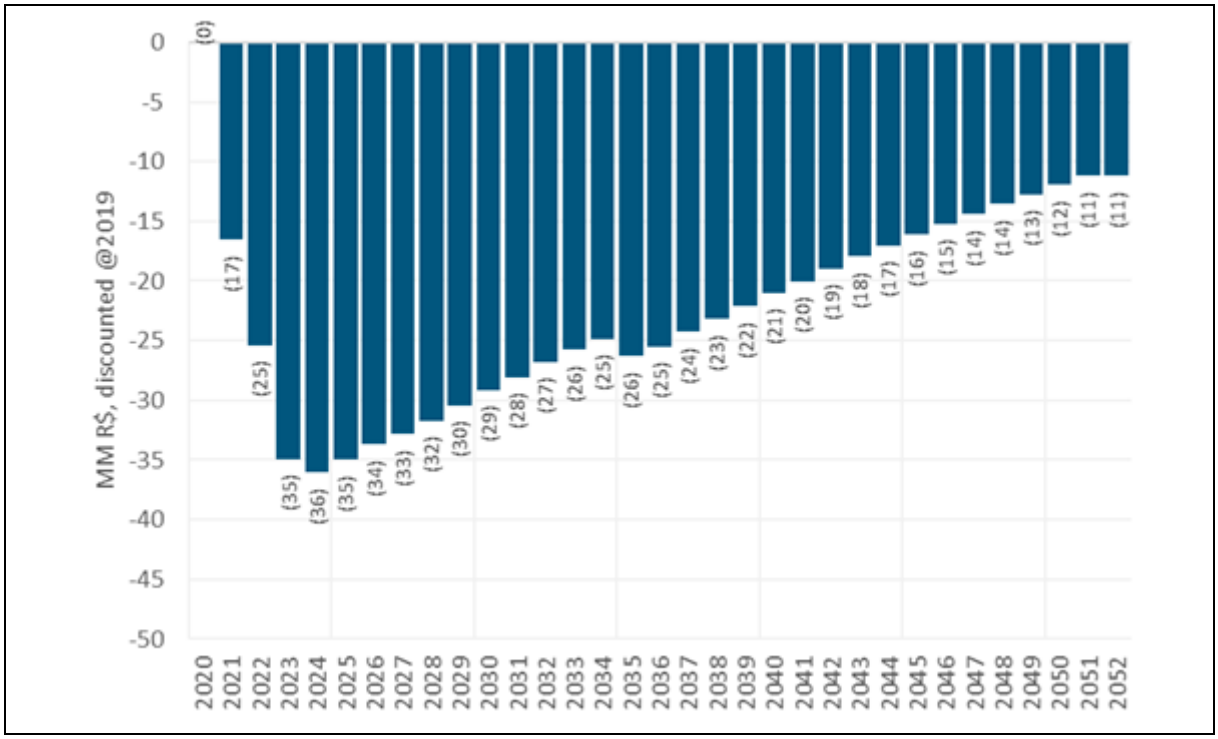


Source: GCA Consortium.

The cumulative discounted FCFF (given the referential weighted average cost of capital – WACC set at 7.23%p.a., real), from which the NPV net of grant payments is determined, is shown in Figure 4-7. Project does not offer a rate of return to its capital providers, consequently, the NPV is negative (**R$-11.2MM**). As such, the isolated concession of the Airport is not financially feasible and cannot support grant payments made out to the Government.

This result is mainly due to the high relevance of the initial investments to meet required airport's appropriate level of service in comparison with its restricted operating cash flow capacity (although this is positive).

Figure 4-7: Cumulative discounted free cash flow to firm (net of grant payments)



Source: GCA Consortium.

Attractiveness to shareholders

Analyses of the project's attractiveness to shareholders consider: (i) third-party funding (long term BNDES loan and issuing of debentures, given market conditions and minimum covenants); (ii) equity needs; and (iii) the possibility of dividend payments throughout the concession.

Figure 4-8 presents the forecast flows of capital injections and dividend distributions. The concessionaire needs to inject equity resourses during the first development phase. Dividend distribution up to 2036 is limited due to debt service and during funding and respective grace periods, being immediately followed by accumulated resource distribution. Thereafter, dividends will increase over the remainder of the concession period. Between 2049 and 2050 distribution is limited when minimum capital stock requirement must be met. By the end of the concession the paid-in capital is returned to shareholders.

Figure 4-8: Contribution and dividend flows, non-discounted (post-payment of grants)

Source: GCA Consortium.