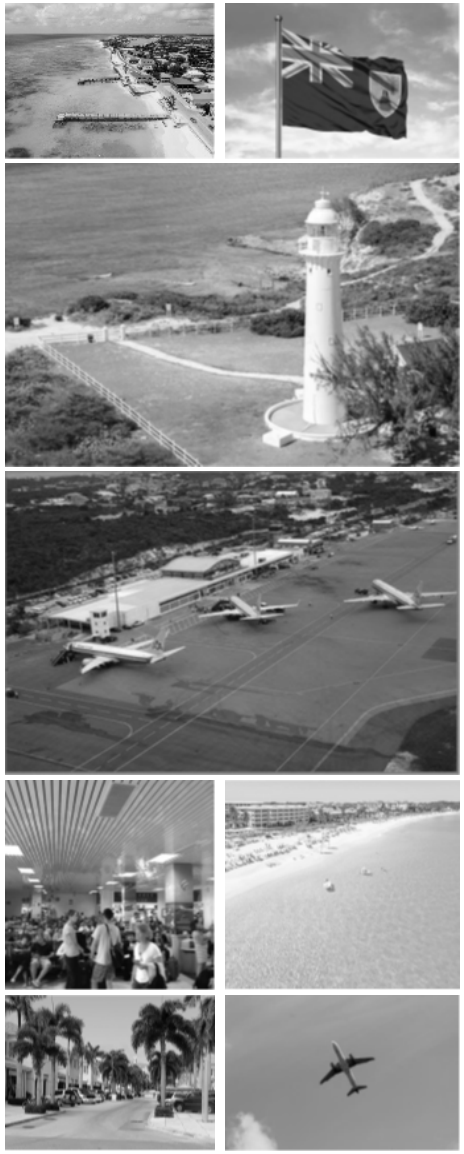

THE
GOVERNMENT OF THE
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TCIAA
TURKS AND CAICOS ISLANDS
AIRPORTS AUTHORITY

INTERMEDIATE INFRASTRUCTURE BUSINESS CASE FOR THE REDEVELOPMENT OF THE HOWARD HAMILTON INTERNATIONAL AIRPORT

ANNEX 1. DUE DILIGENCE REPORT

ANNEX 1.2 INDICATIVE DEVELOPMENT PLAN & INVESTMENT PROGRAMME

INDICATIVE DEVELOPMENT PLAN & INVESTMENT PROGRAM

CONTENT

CHAPTER 1

Introduction

Current infrastructure condition & compliance

Capacity-demand analysis

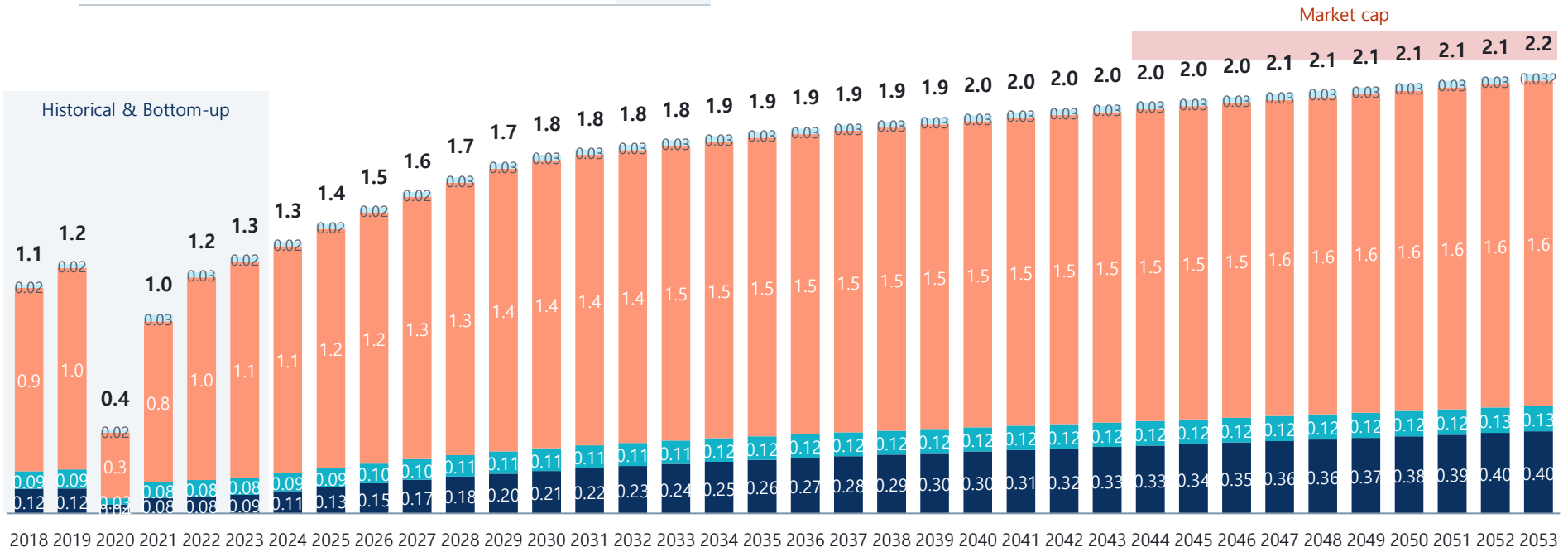
Infrastructure development plan

Investment plan

The airport development plan is based on the traffic figures forecasted for the concession period ('23-'53), which estimate to reach 2.2 Mpax at PLS by 2053

PLS Traffic forecast (Mpax)

	CAGR '19-'23	CAGR '23-'30	CAGR '30-'40	CAGR '40-'53	CAGR '23-'53
Dom	-6.9%	12.6%	3.8%	2.2%	5.1%
Caribbean	-0.5%	4.2%	0.6%	0.5%	1.4%
International	1.8%	4.2%	0.6%	0.5%	1.4%
FBO	4.7%	1.8%	1.0%	0.9%	1.2%
Total	**2.9%**	**4.9%**	**1.0%**	**0.8%**	**1.8%**



Source: ALG analysis

Design parameters forecast are driven by the annual traffic and are the key parameters when sizing airports' infrastructure: ATM/h, stands, and PHPs

Key design drivers

	2022	2025	2030	2035	2040	2045	2050	2055
Annual traffic (Mpax & '000 ATMs)	1.16	1.40	1.74	1.85	1.93	2.00	2.08	2.16
	31.7	36.9	46.3	49.8	51.5	52.5	53.4	54.2
Peak hour ATMs	19	21	23	24	25	25	25	26
Stands (Code C+B)	15	17	20	21	21	21	21	21
Peak hour passengers (PHP)	1,837	1,919	2,032	2,068	2,094	2,117	2,142	2,168

Source: TCIAA VDR, OAG, ALG analysis

The investment program is defined based on the results of the infrastructure analysis of the main airport facilities: airfield, apron, PTB, and surface access

Infrastructure Analysis Methodology

	Current infrastructure diagnosis & compliance	Gap analysis and infrastructure development	Required investments

Airfield	– **Compliance with regulations** of current infrastructure
	– **Aircraft range analysis** from PLS with the current runway length
	– **Capacity assessment** for the **existing airfield**
		– **Demand-capacity analysis** based on the demand forecasts and the diagnosis of current infrastructure
		– **Infrastructure development plan** in order to provide the airport with the sufficient capacity to accommodate expected demand
		  – **Airfield expansions** (parallel taxiway, turning pad, etc.)
		  – **Apron expansions** (narrow body, wide body additional stands, general aviation, etc.)
		  – **Passenger terminal** (current terminal expansion / new PTB, parking and access road, etc.)
		  – **Surface access system** (curbside expansion, car parking expansion, etc.)
			– Definition of an **investment plan** for the airport based on **unit prices** for the region
			  – **Investment CapEx** associated with planned infrastructure developments
			  – **Major maintenance (RepEx)** in the short, medium and long term

Apron	– Available apron surface and **number of stands** – **Identification of aircraft that can use current stands** and compliance with regulations		
PTB	– Analysis of the **current passenger terminal area** – **Determination of other current infrastructure capacities** based on benchmarks of similar airports in the region and outside		
Surface access	– Analysis of the **airport access system including airport road, curbside, and car parking facilities**		

Source: ALG analysis

CHAPTER 2

Introduction

Current infrastructure condition & compliance

Capacity-demand analysis

Infrastructure development plan

Investment plan

Providenciales Airport (PLS) is a code 4E airport with a RWY of 9,200 x 148 ft, no parallel taxiway, a 92,322 ft² commercial passenger terminal and 3 FBOs

Providenciales International Airport Layout

Providenciales Airport (PLS)		
Elevation / Temperature		6 m / 32ºC
Approach type		Visual and non-instrument
Operating hours		06:00 - 20:00, local time
RWY 10-28	Dimensions	9,200 x 148 ft
	Strip	9,593 x 492 ft
	RESAs	787 x 492 ft

Source: Google Earth, TCAA AIP (partially available), ALG analysis

An initial assessment based on ICAO's Annex 14 shows that PLS is compliant with ICAO standards

Preliminary analysis of compliance works related to the requirements of ICAO's Annex 14

ICAO Annex 14

Volume I: Aerodrome Design & Operations

Eighth Edition, July 2018

- Compliance of the current airport infrastructure status and operation has been assessed for each airport system and subsystem with respect to ICAO's Annex 14 standards and recommendations
- Overall, the airport is compliant with ICAO´s SARPs
- A summary of the compliance of each of the main systems/subsystems is presented in the indexed list on this slide
- A detailed analysis of each subsystem is presented in the next slides
- A first analysis shows that no non-compliances have been found in PLS

Runway	✓
Runway slopes	✓
Runway shoulders	✓
Runway strips	✓
Runway End Safety Areas (RESA)	✓
Clearways (*)	✓
Stopways (*)	✓
Taxiways	✓
Taxiways shoulders	✓
Taxiways strips	✓
Road-holding positions	✓
Aprons	🔍

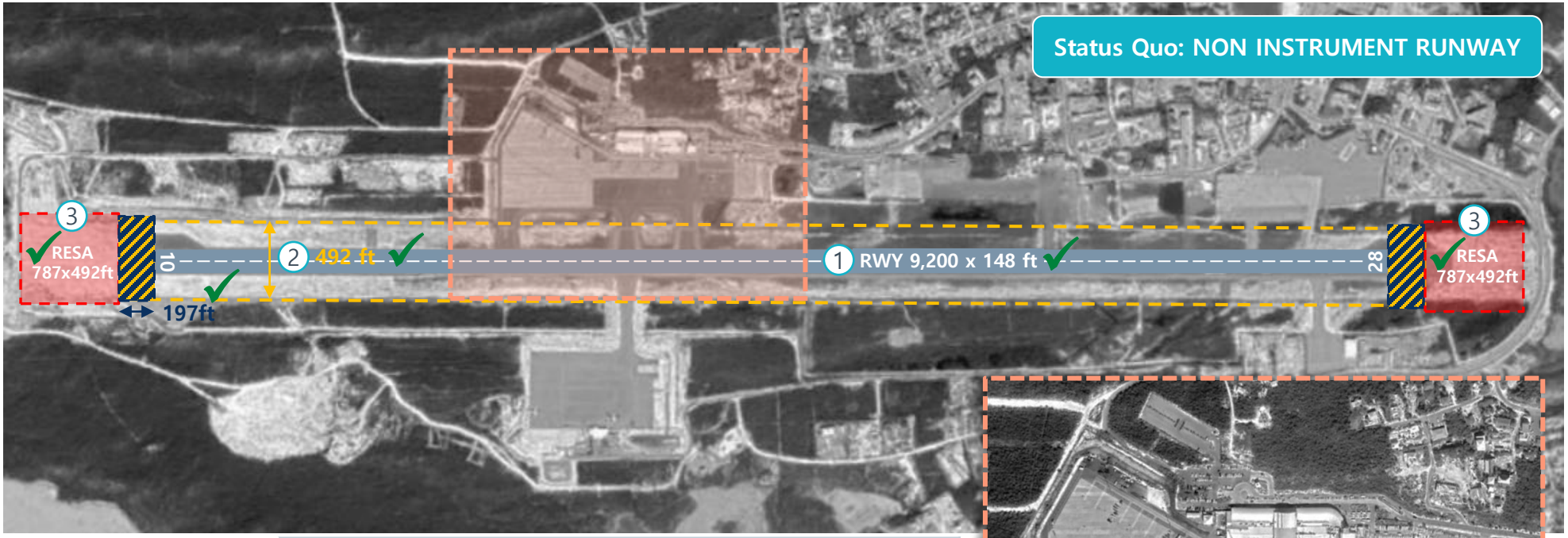
✓ System compliant 🔍 Reviewed in detail

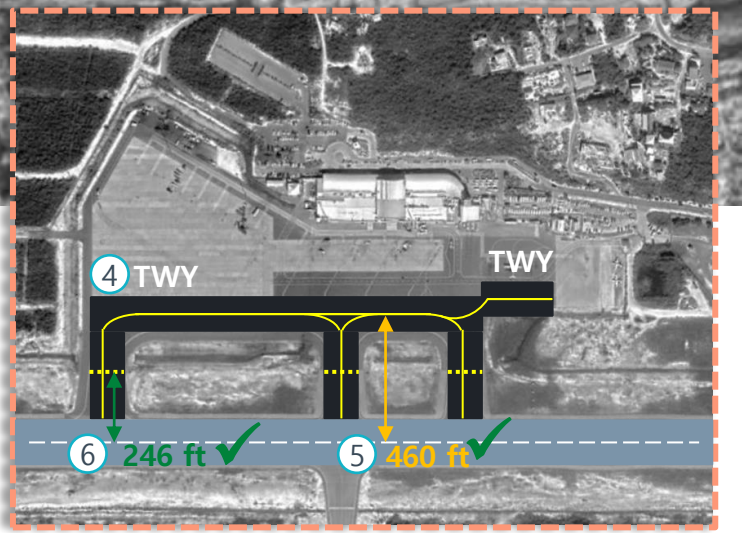
Source: ICAO Annex 14; ALG analysis

Note: (*) No CWY nor SWY is formally defined at PLS as per the AIP Turks and Caicos AD 2.1-6

PLS complies with ICAO SARPs for non instrumental runway, but non-compliances would arise if the runway was classified as instrumental (1/2)

Compliance with ICAO Annex 14





		Annex 14 ICAO
1	RWY width & shoulders	Width 148ft and 197ft with shoulders for code 4E
2	RWY strip length RWY strip width	197ft before THR and beyond the end of RWY for code 4 246ft on each side of RWY centerline for Non-Instrument code 4
3	RESAs length RESAs width	295ft from the end of the strip for code 4 At least twice of the RWY width
4	TWY width & shoulders	Width 76ft and 125ft with shoulders for code 4E
5	Min distances	353ft between RWY & TWY centerlines for Non-Instrument code 4E
6	Holding bays	246ft from the RWY holding position to the RWY centerline for Non-Instrument code 4

Source: Google Earth, ICAO Annex 14, ALG analysis

PLS complies with ICAO SARPs for non instrumental runway, but non-compliances would arise if the runway was classified as instrumental (2/2)

ICAO compliance for 4E code airport

ICAO Annex 14
Volume I: Aerodrome Design & Operations
Eighth Edition, July 2018

Assessment of the airports' infrastructure compliance with ICAO Annex 14 standards and recommendations related to **technical design and safety of the operation**

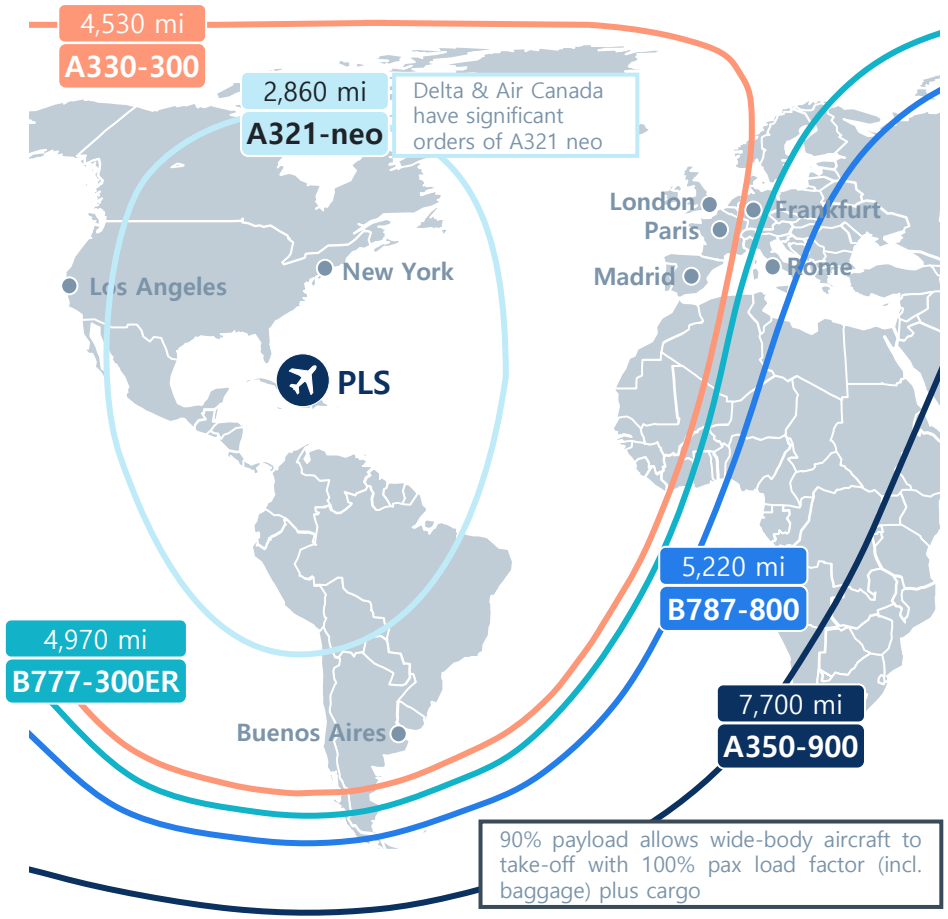
R Recomendación **S** Standard

	ICAO SARP		Existing situation	Compliance
R	**RWY width & shoulders**	Width 148ft and 197ft with shoulders for code 4E	Width 148ft, 200ft with shoulders	✓
S	**RWY strip length**	197ft before THR and beyond the end of RWY for code 4	Length 2,924ft (9,200ft + 197ft before THR and beyond end of RWY)	✓
	RWY strip width	246ft on each side of RWY centerline for Non-Instrument code 4	Width 492ft	✓
S	**RESAs length**	295ft from the end of the strip for code 4	Length 787ft	✓
	RESAs width	At least twice of the RWY width	Width 492ft	✓
R	**TWY width & shoulders**	Width 76ft and 125ft with shoulders for code 4E	Width 90ft, 170ft with shoulders in TWYs "G", "A", "B"	✓
R	**Minimum distances**	353ft between RWY & TWY centerlines for Non-Instrument code 4E	460ft	✓
S	**Holding bays**	246ft from the RWY holding position to the RWY centerline for Non-Instrument code 4	246ft	✓

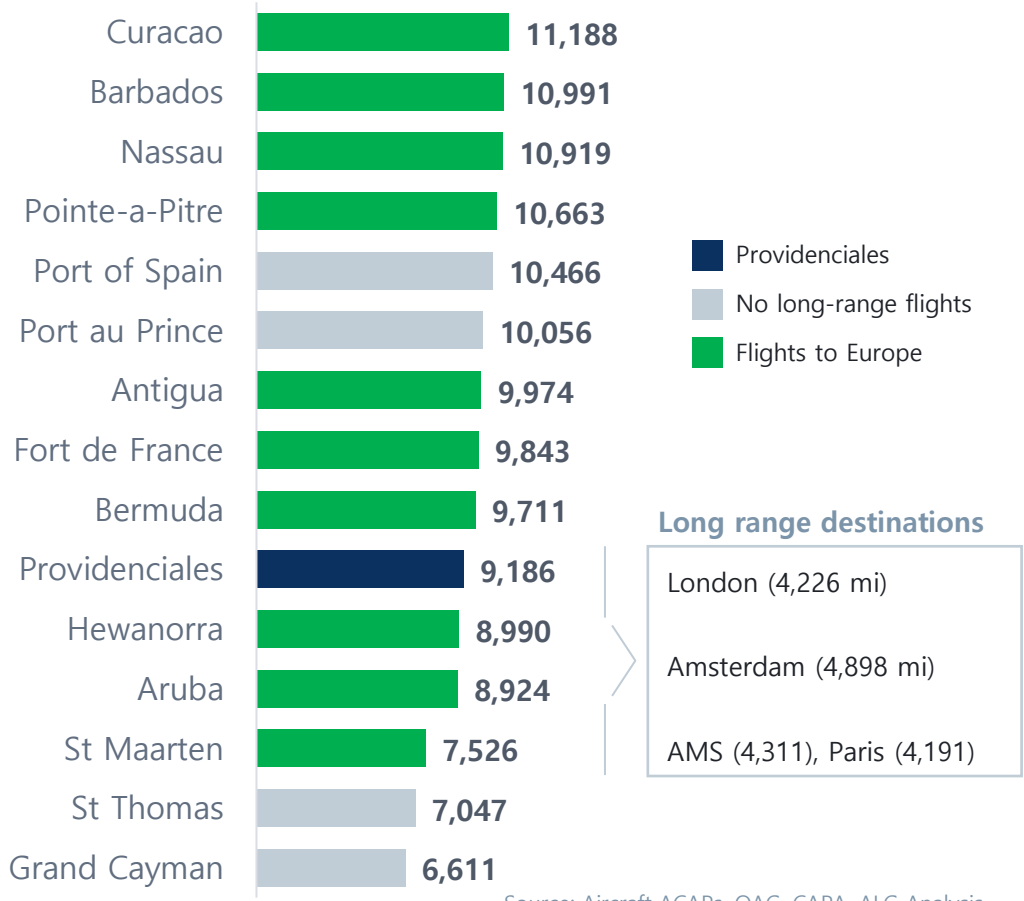
Source: OACI Annex 14 8th Edition, AIP (May 2016), Google Earth and ALG analysis

Runway length (9,200m) allows aircraft to reach Europe with no penalization on pax load factor, without any constrain accordingly to the ATM forecast

Aircraft Range from PLS (90% Payload)



Caribbean Airports Runway Length Benchmark (ft)

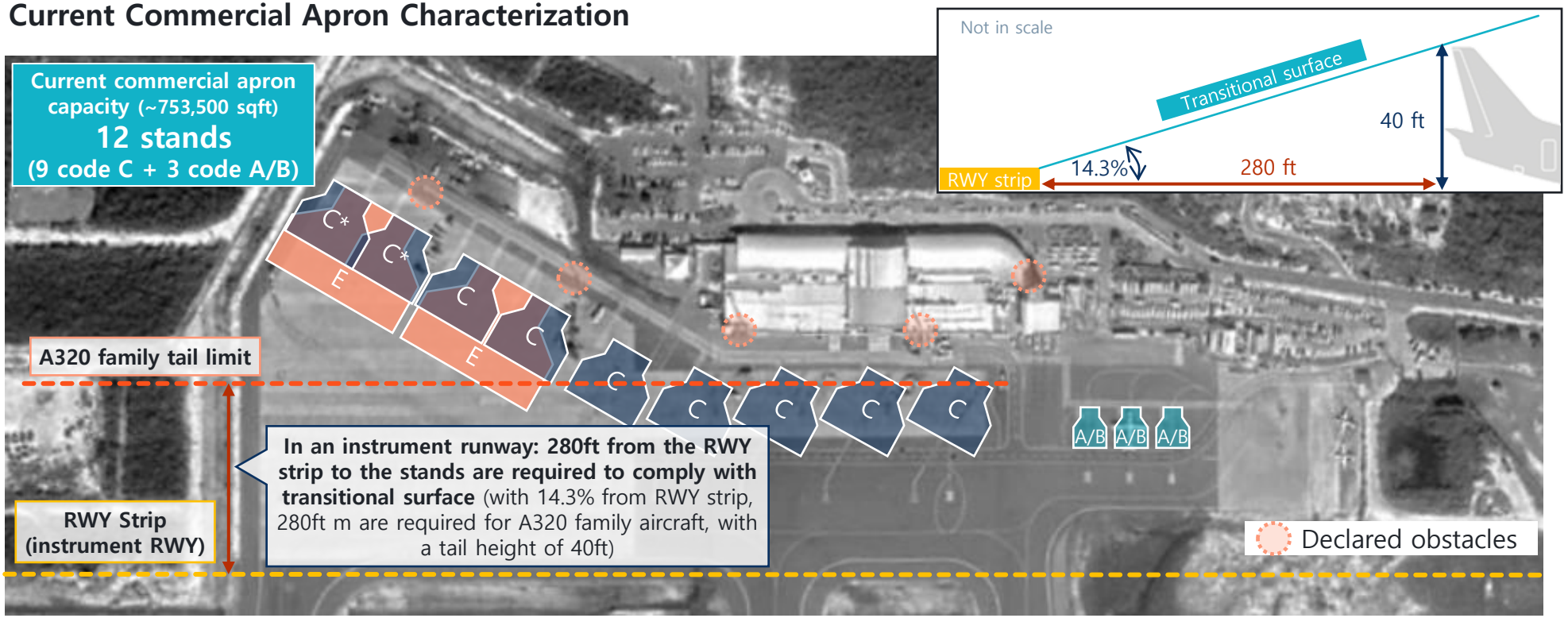


Source: Aircraft ACAPs, OAG, CAPA, ALG Analysis

If needed, the airport could expand its TODA ~650 meters by paving the RESA (THR 10) "starter extension", while keeping landing declared distances unaltered (for them to work as RESAs when landing) as some airports have done

PLS commercial apron has a capacity of 12 stands (3 code A/B + 9 C). Non-compliances would arise if the runway was classified as instrumental

Current Commercial Apron Characterization



*Distance between these stands is shorter than the recommended one for type C stands although it could still serve smaller Type C aircraft (e.g. ATR instead of A321)

- Providenciales airport has **9 (5+4) code C stands when the 2 code E stands are not in use** (each code E stand disables 2 code C stands). The airport's commercial apron has also **3 code A/B stands**
- As the runway is declared as non instrument runway, the airfield is compliant with ICAO SARPs
- In case the runway was declared instrumental, the Code C stands in front of the terminal **would not comply with the transitional surface**, which is a typical issue in other airports of the region *(see next slide)*
- Obstacles are already declared as per the AIP amendment (floodlighting,...)

Source: Google Earth, TCAA AIP, ALG analysis

Other airports in the region do not comply with ICAO requirements for transitional surface but their operation is not affected by this infringement

Benchmark of Caribbean Airports not compliant with Annex 14 Transitional Surface requirements

Saint Kitts International Airport

Saint Kitts and Nevis

0.5 Mseats 2019

- Code E aircraft operate at St. Kitts apron although it does not comply with transitional surface required for the A320 (Code C)
- 740ft from the RWY centerline are required to comply with the transitional surface (460ft strip + 280ft to clear A320 height)

Santiago de Cuba International Airport

Cuba

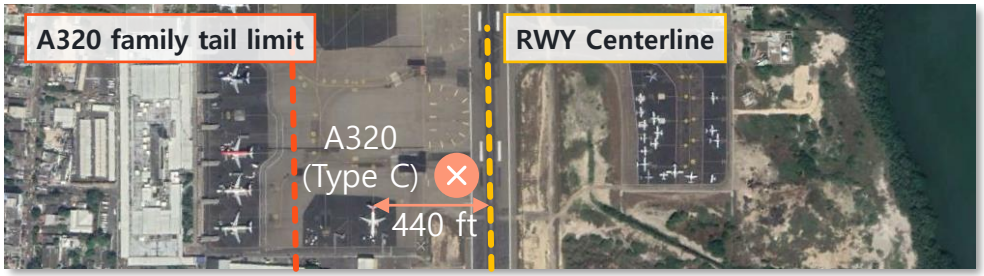
0.5 Mseats 2019

- Santiago de Cuba airport makes aircraft park parallel to the runway to prevent aircraft from penetrating the transitional surface to a larger extent
- Code D and E aircraft (B767 and A330) regularly operate at the airport

Cartagena International Airport

Colombia

6.4 Mseats 2019



- In 2005, the airport expanded its apron and included 4 additional stands that penetrate the transitional surface
- Code D and E aircraft (B767, A330 and A340) regularly operate at the airport

It is a common practice in the region to comply with transitional surface requirements in new infrastructure developments and warning about non-compliant current infrastructure in the AIP, thus not affecting airport operation

CHAPTER 3

The capacity-demand analysis will establish the required infrastructure investments to cope with the expected demand

	Methodology	Infrastructure system	Design parameter
Airfield	– **Methodology applied based on simulations developed by ALG,** FAA AC 150/5060-5, ACRP Report 79 and the runway capacity analysis tool developed by ALG – Current airport procedures as well as KCAA airspace procedures have been taken into account in the analysis	– **Runways** – **Taxiways system**	**ATMs/h**
Apron	– The **apron capacity-demand analysis is based on the peak demand for stands**, i.e. the total number of aircraft parked or remaining on the ground at the airport at any given time	– **Stands**	**Stands**
PTB	– Methodology based on **IATA Airport Development Reference Manual (ADRM), Edition 11 calculation criteria assuming an Optimum Level of Service** – The analysis is **adapted to forecasted design parameters**, airport particularities, national regulations and industry standard processing times as well as typical values for the airport under study	– **Terminal building passenger processing systems** (check-in, security, immigration, boarding areas, baggage claim, customs, departure hall, arrivals hall)	**PHPs**
Surface access	– Methodology based on **Transportation Research Board (TRB) manuals and ALG analysis** – The operational procedures considered for the complementary analyses are based on industry trends	– **Airport Access System** – **Car park** – **Curbside**	**PHPs**

Source: ALG analysis

PLS airfield capacity is 7 ATM/h according to site visit inputs; but published schedules show higher peaks, which should be translated into delays

Disconnect between airfield capacity and public schedules

Declared Capacity
(site visit info)

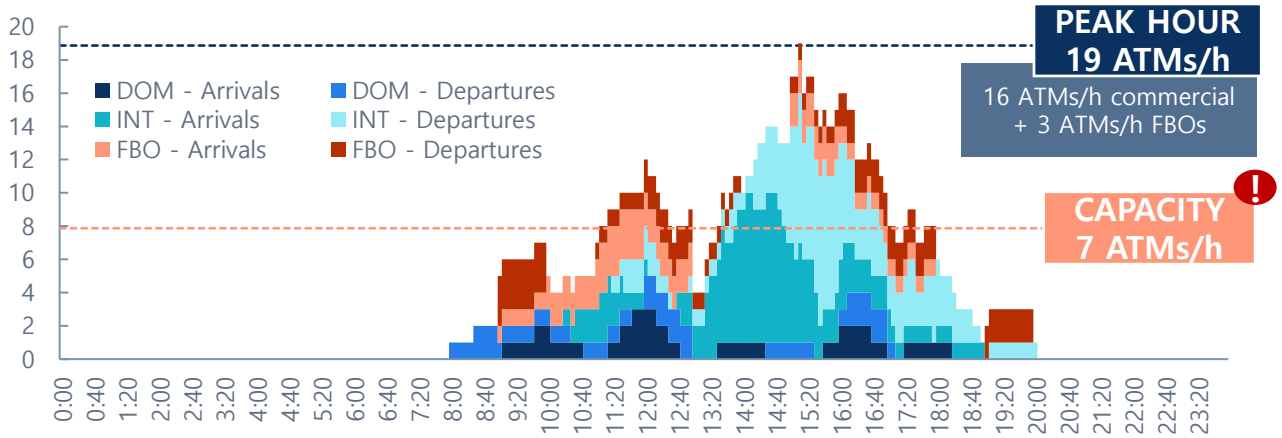
7 ATM/h

Demand peak

16 scheduled ATM/h + 3 ATM/h FBO

Peak day profile for ATM/h (Source: TCIA)

Peak day:
Saturday 08/01/2022



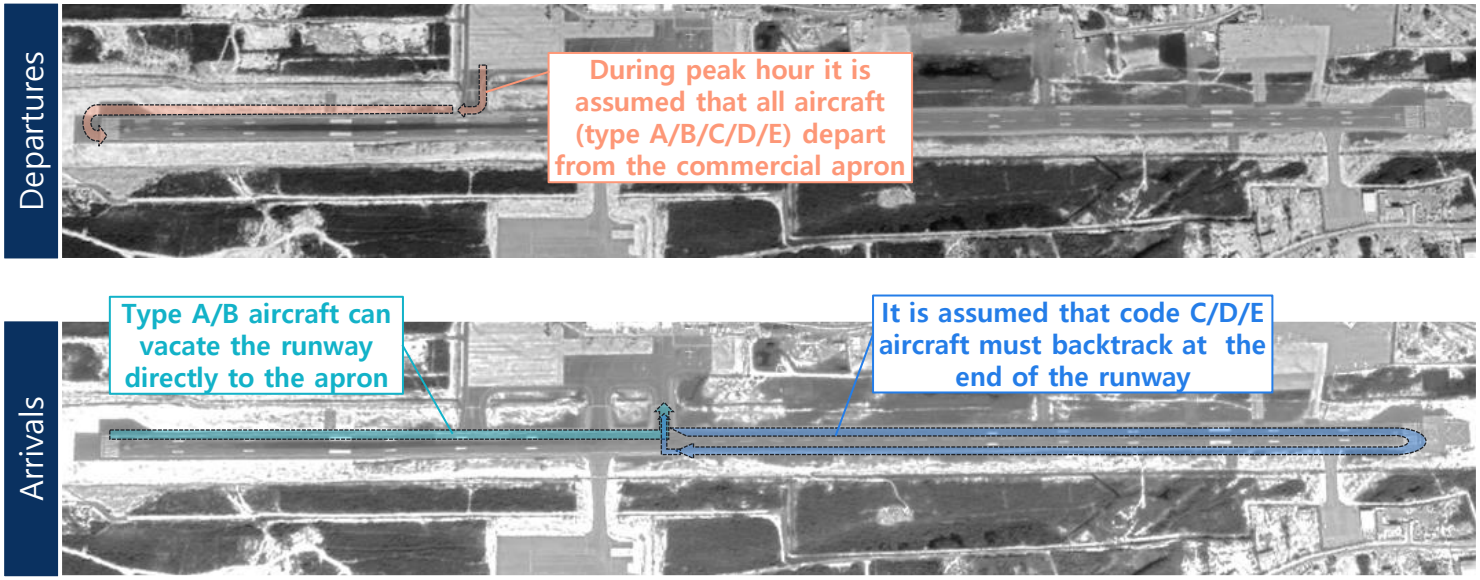
- In 2022, PLS had **16 ATM/h scheduled in the peak day** (Saturday 8th January) plus 3 ATM/h of FBO. In 2019, this figure was even higher, with the peak day registering 18 ATM/h.
- The airport has a non instrument runway and **arrivals are separated ~15 min** as indicated in the site visits. With this separation, capacity can **difficulty increase above 7 ATM/h**.
  - Pending info on which Air navigation systems are and will be available in the airport
  - Despite site visit indicates 7 ATM/h, higher capacity could currently be in place during peaks, given that there are delays but they seem to be under reasonable limits. The differences between scheduled flights and runway capacity usually imply that a certain number of flight need to be delayed.

Source: OAG, Public information, ALG analysis

Even the airport personnel declared to have 7 ATM/h in the site visit, higher capacity is currently in place

The airport personnel declared that arrivals are separated 15 min (900 seconds), which causes a bottleneck between sequences of arrivals

Departures and Arrivals Paths and Separation Times



Assumptions

- **Assumes** that **all code C/D/E** aircraft **are backtracking at the end of the runway** after their landing, following ICAO procedures
- A **separation time of 15 minutes** is assumed, as per information received during the **Site Visit**
- Even though a 2,000 meters landing roll *could be* enough for most code C, it is not clear at this stage that this is the current procedure at PLS

NOTE: *Separation matrix times based on the results from the analysis*

Arrival → Arrival

1st aircraft	2nd aircraft		
	A/B	C	D/E
Type A/B	~900	~900	~900
Type C	~900	~900	~900
Type D/E	~900	~900	~900

Arrival → Departure

1st aircraft	2nd aircraft		
	A/B	C	D/E
Type A/B	~135	~135	~135
Type C	~340	~340	~340
Type D/E	~350	~350	~350

Departure → Arrival

1st aircraft	2nd aircraft		
	A/B	C	D/E
Type A/B	~900	~900	~900
Type C	~900	~900	~900
Type D/E	~900	~900	~900

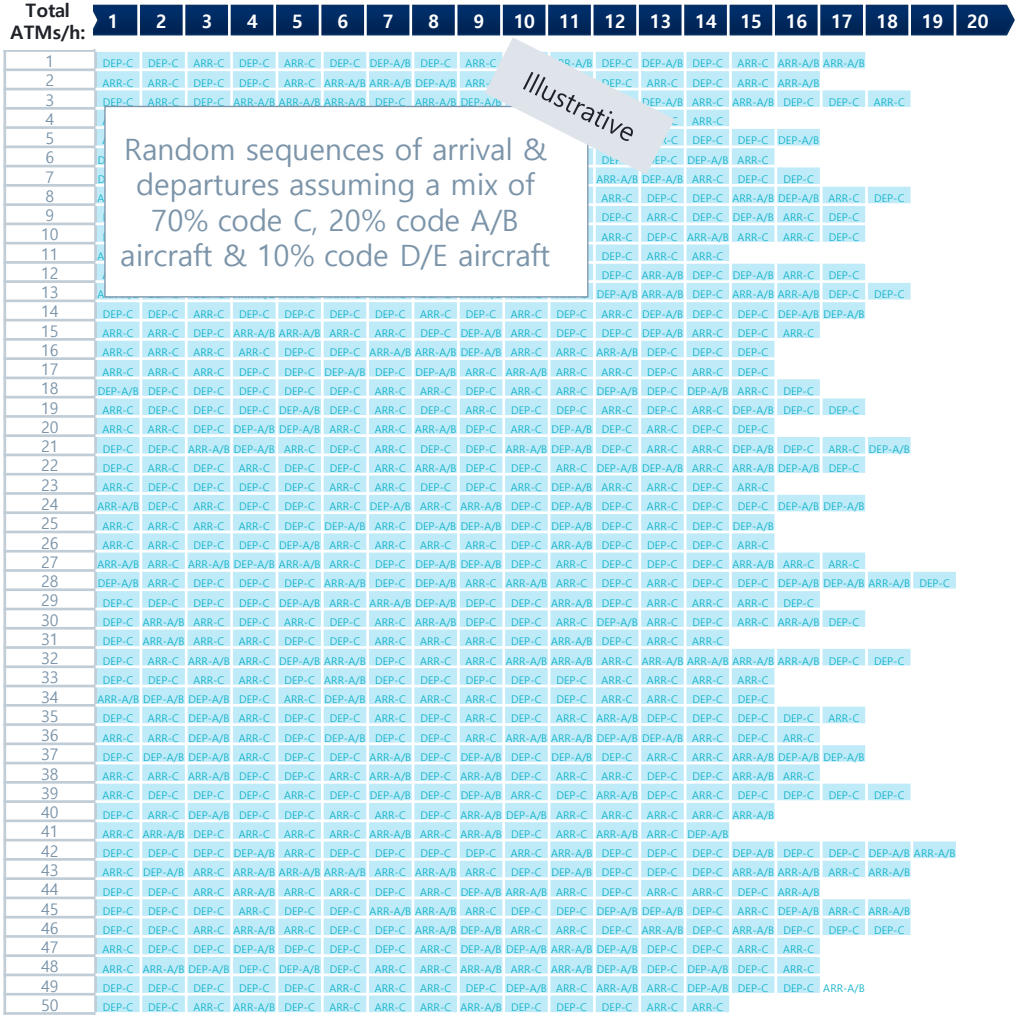
Departure → Departure

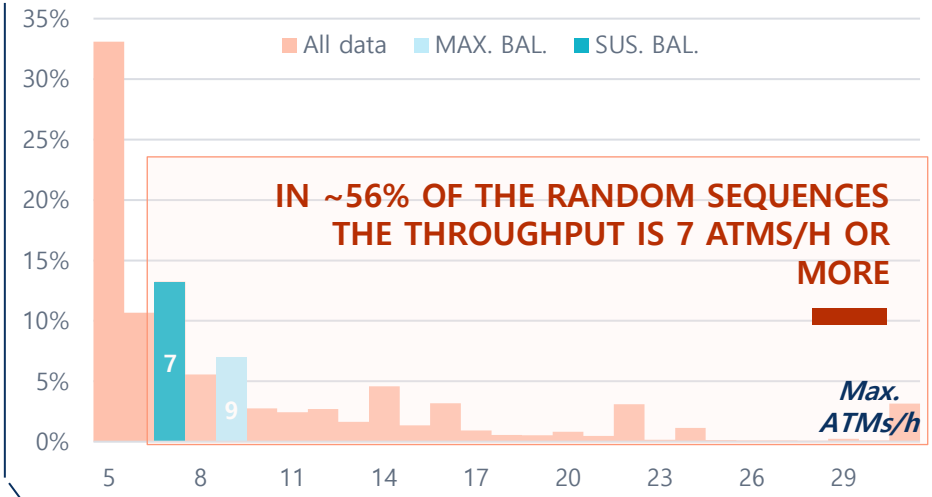
1st aircraft	2nd aircraft		
	A/B	C	D/E
Type A/B	~120	~120	~120
Type C	~120	~120	~120
Type D/E	~120	~120	~120

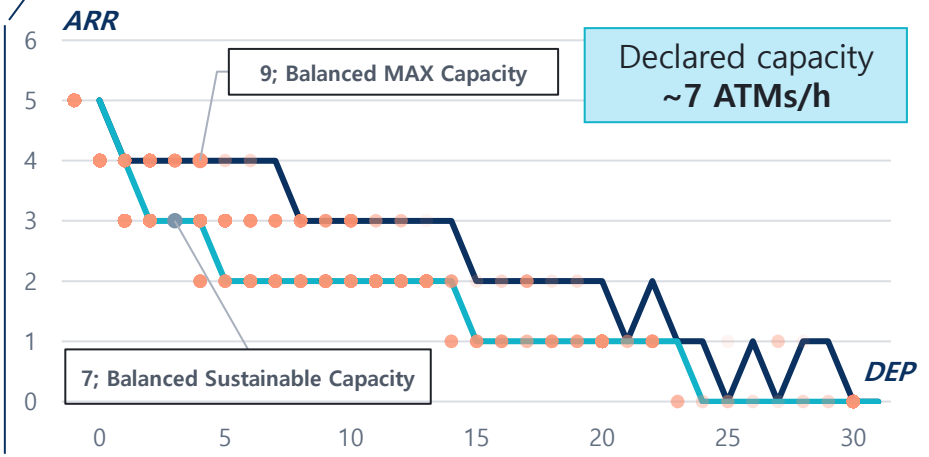
Source: FAA, OACI, Site Visit, ALG analysis

Assuming that aircraft were separated 15min, the capacity would be 7-9 ATMs/h as declared by the airport personnel

Analysis of Random Sequences of Operation and Resulting ATMs/h throughput







Source: FAA, OACI, ALG analysis

Even the airport declared that arrivals are separated 15min and capacity is 7 ATM/h, it seems that a shorter separation is being used during peak times

Declared situation

Sustainable Capacity	**7 ATM/h**
Max Balanced Cap.	**9 ATM/h**

Arrival → Arrival

1st aircraft	2nd aircraft		
	A/B	C	D/E
Type A/B	~900	~900	~900
Type C	~900	~900	~900
Type D/E	~900	~900	~900

For a Code C aircraft:

Approach time (8 nm): **900s**
Runway Occupancy Time: **250s**

Current situation

Sustainable Capacity	**14 ATM/h**
Max Balanced Cap.	**19 ATM/h**

Arrival → Arrival

1st aircraft	2nd aircraft		
	A/B	C	D/E
Type A/B	~275	~400	~400
Type C	~275	~440	~400
Type D/E	~275	~440	~430

For a Code C aircraft:

Approach time (8 nm): **191s**
Runway Occupancy Time: **250s**

- The airport personnel declared that arrivals are separated 15 min (900 seconds), which implies a capacity of 7 ATM/h
- Despite site visit indicates 7 ATM/h, higher capacity could currently be in place during peaks, given that there are delays but they seem to be under reasonable limits
- Preliminary, the Consultant estimates that a separation of ~8 NM could be used during peak times to handle the demand of 16 scheduled ATM/h plus the additional FBO aircraft operating in the peak hour (+3 ATM/h)
- In Latin America and the Caribbean typical separations in approach phase are ~8 NM

Demand shows peaks of 16 scheduled ATM/h plus the FBO operations, so higher capacity than the one declared is currently in place

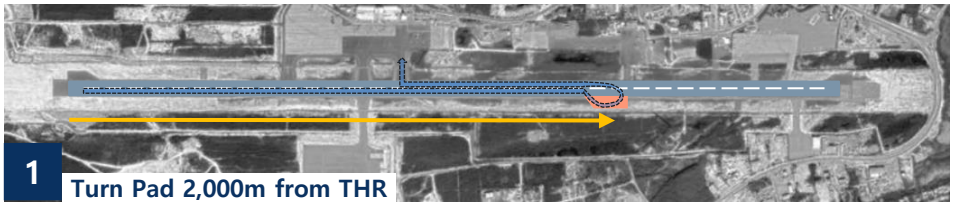
Source: ALG analysis

Several infrastructure solutions have been analysed to assess the impact of implementing each one

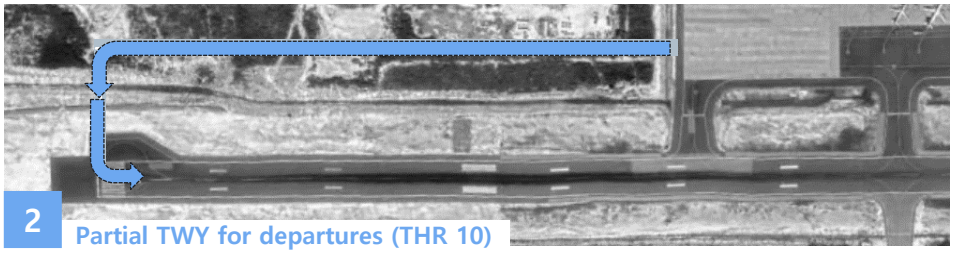
Current situation and summary of potential airfield capacity improvements

Sustainable Capacity	14 ATM/h
Max Balanced Cap.	19 ATM/h

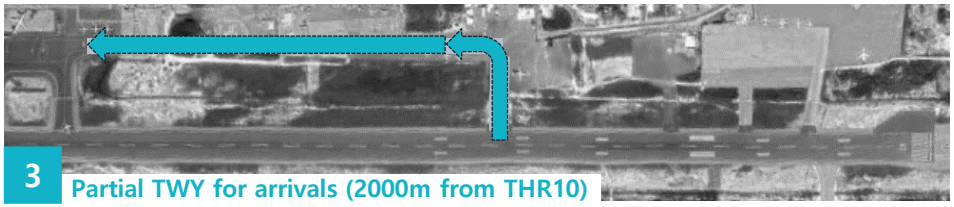
- First step would be the **construction of a turn pad** to facilitate backtracking without reaching the end of the runway, as similar Caribbean airports have applied
- The next step is to build a **parallel TWY connected to THR10**, which would reduce the time needed between departures
- Another option is to build a **parallel TWY for arrivals**, which would reduce the time between arrivals as aircraft could vacate the runway faster
- The last option is to build the **full parallel TWY**, which would allow to achieve the best performance



17-19 ATMs/h
(+ 3 vs. 8 NM separation)



19-21 ATMs/h
(+ 2 ATM/h compared to only turn pad)



20-22 ATMs/h
(+ 3 ATM/h compared to only turn pad)

26-28 ATMs/h
(+ 9 ATM/h compared to only turn pad)

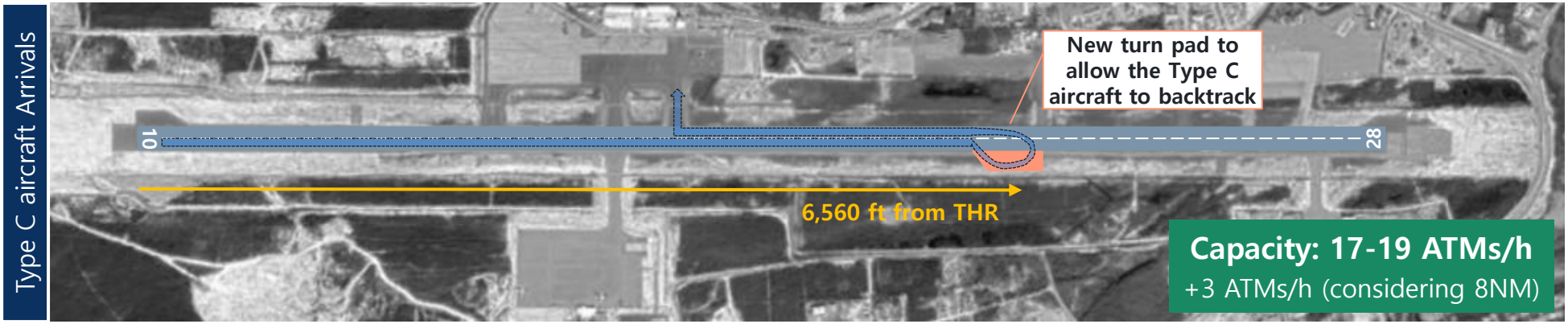
Source: ALG analysis

A quick-win after reducing separation between approaches is the construction of a turn pad, common in Caribbean airports. Capacity increases to 17-19 ATM/h

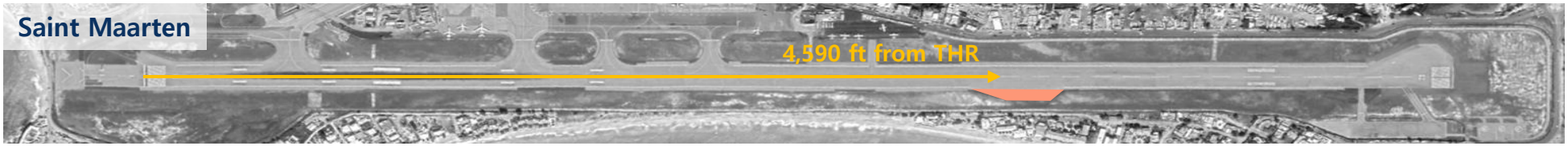
New Turn Pad at 6,560 ft for Arrivals

Runway Occupancy Time: 250s → 150s

1



Other airports in the region already have a turn pad in order to reduce runway occupancy time in arrivals



Source: Google Earth, ALG Analysis

The new turn pad would normalize backtracking of aircraft before reaching the end of the runway, a practice already performed by some aircraft without complying with ICAO guidelines (only allowed if there is a turn pad enabled)

The development of a TWY connecting the apron and THR 10 would have a minimal impact, increasing airfield capacity to 19-21 ATMs/h (+2 ATMs/h)

New Partial Parallel TWY for Departures

Time from apron to THR: 90s → <10s

2

Departures

The **construction of a TWY** connecting the commercial apron and THR 10 **would reduce the time needed for departures** as aircraft would not need to taxi in the runway and use the turn pad to take-off

Arrival → Departure

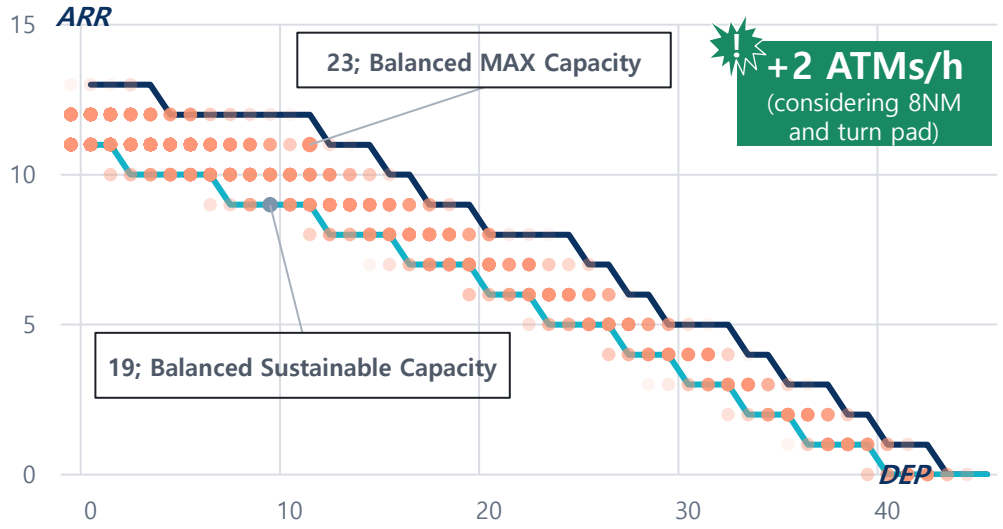
1st aircraft	2nd aircraft		
	A/B	C	D/E
Type A/B	~50s (-85s)		
Type C	~150s (-190s)		
Type D/E	~190s (-160s)		

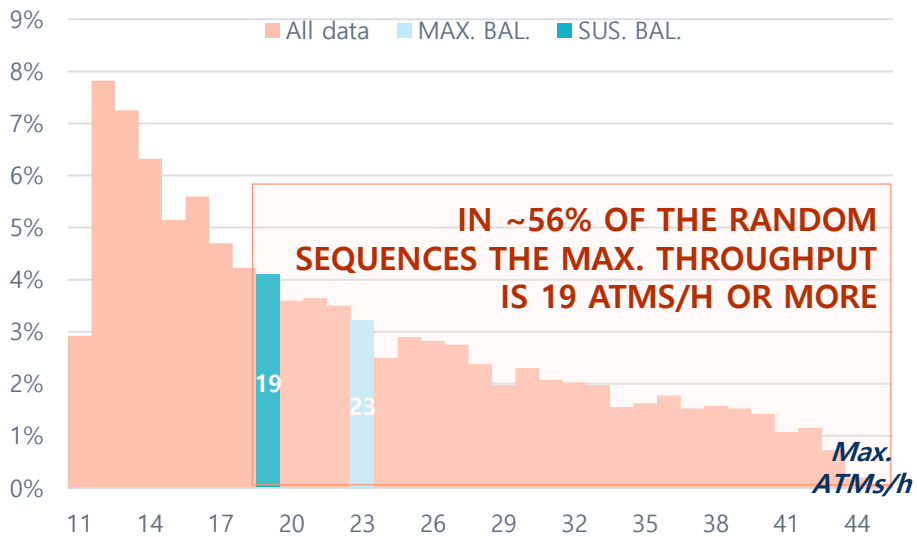
Departure → Departure

1st aircraft	2nd aircraft		
	A/B	C	D/E
Type A/B	~60s (-60s)		
Type C	~90s (-30s)		
Type D/E	~120s		

Analysis: 8 NM between ARRs, 20% Type A/B, 70% Type C & 10% Type D/E

Source: FAA, OACI, ALG analysis





The development of a TWY at 6,560 ft from THR10 (for arrivals) would increase airfield maximum capacity up to 20-23 ATMs/h (+3 ATMs/h)

New Partial Parallel TWY for Arrivals

Runway Occupancy Time: 250s → ~66s

3

The **construction of a TWY for arrivals** would reduce the time needed for arrivals given that **aircraft would not need to use the runway to backtrack and taxi** to the apron, vacating the RWY earlier and reducing ROT

Arrival → Arrival

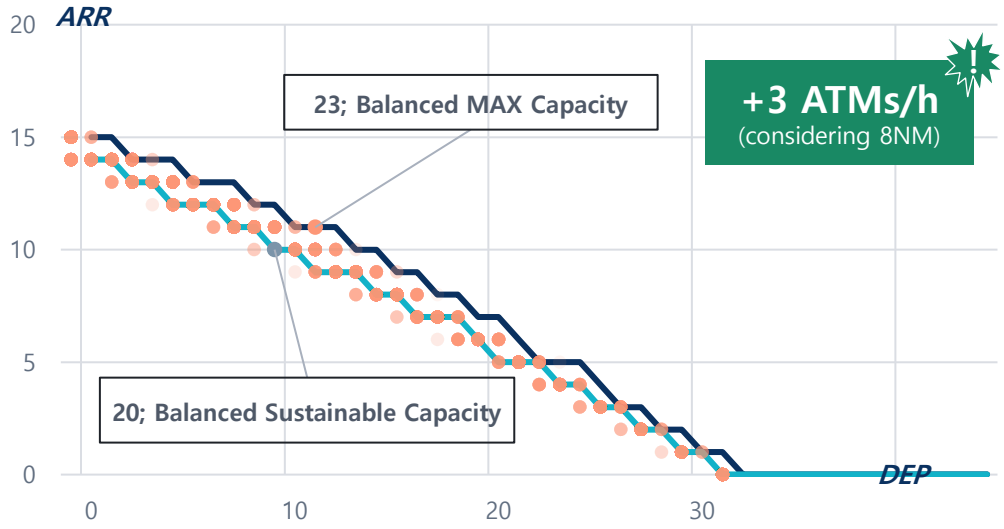
1st aircraft	2nd aircraft		
	A/B	C	D/E
Type A/B	~274s	~223s (-180s)	~239s (-160s)
Type C			
Type D/E		~261s (-180s)	~273s (-160s)

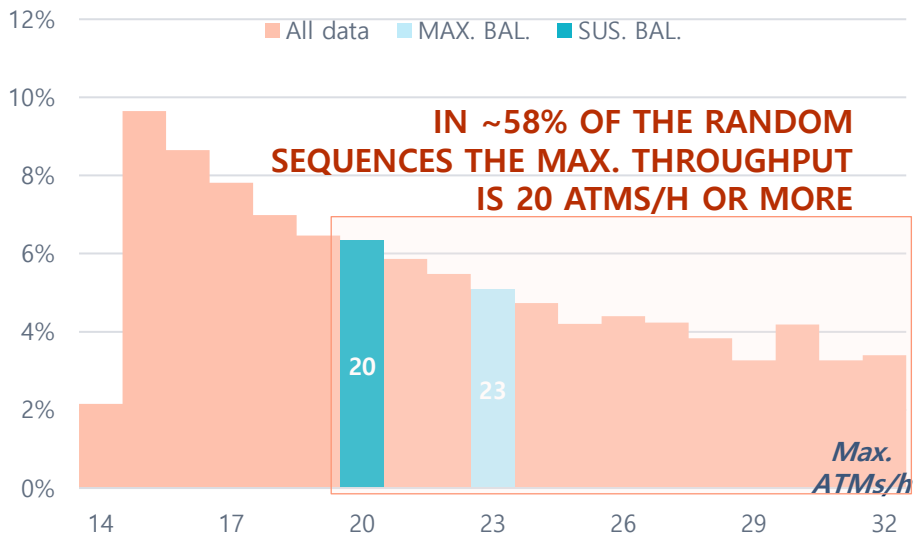
Arrival → Departure

1st aircraft	2nd aircraft		
	A/B	C	D/E
Type A/B	~127s (-10s)		
Type C	~153s (-190s)		
Type D/E	~183s (-170s)		

Analysis: 8 NM between ARRs, 20% Type A/B, 70% Type C & 10% Type D/E

Source: FAA, OACI, ALG analysis





The maximum capacity would be achieved developing a full TWY, which would increase capacity up to 26-28 ATMs/h

New Full Parallel TWY for Departures and Arrivals

Departures & Arrivals

Arrival → Arrival

1st aircraft	2nd aircraft A/B	C	D/E
Type A/B	~230s (-45s)	~153s (-250s)	~138s (-260s)
Type C		~191s (-250s)	
Type D/E			~173s (-260s)

Arrival → Departure

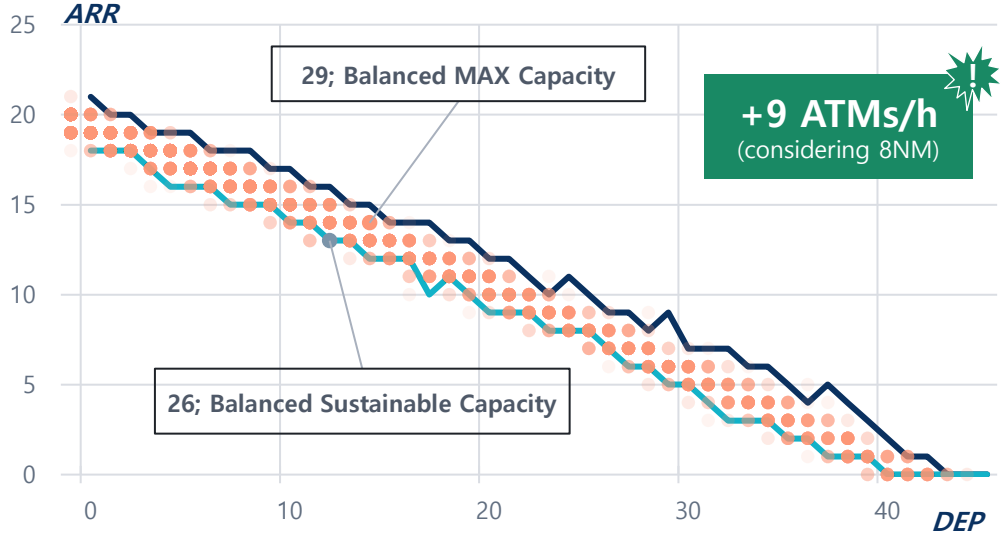
1st aircraft	2nd aircraft A/B	C	D/E
Type A/B	~44s (-90s)		
Type C	~70s (-270s)		
Type D/E	~100s (-250s)		

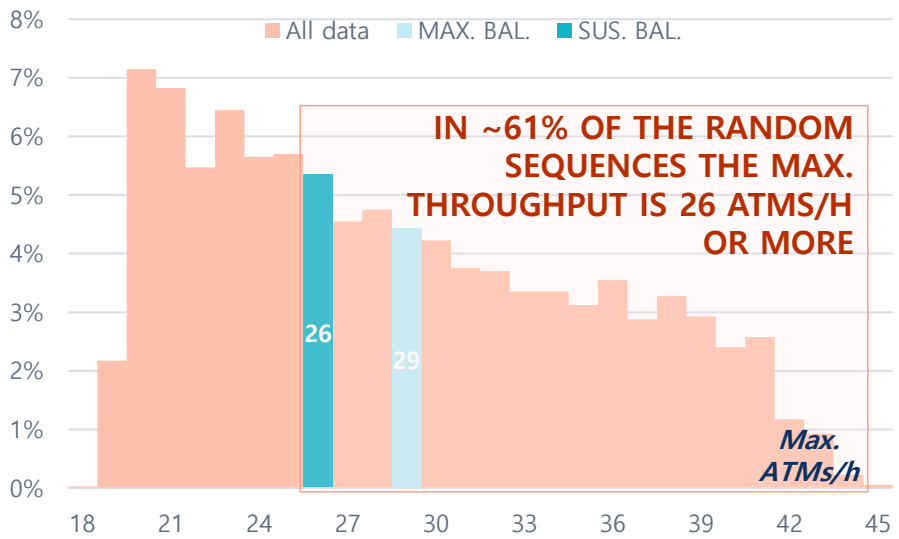
Departure → Departure

1st aircraft	2nd aircraft A/B	C	D/E
Type A/B	~60s (-60s)		
Type C	~90s (-30s)		
Type D/E	~120s		~90s

Analysis: 8 NM between ARRs, 20% Type A/B, 70% Type C & 10% Type D/E

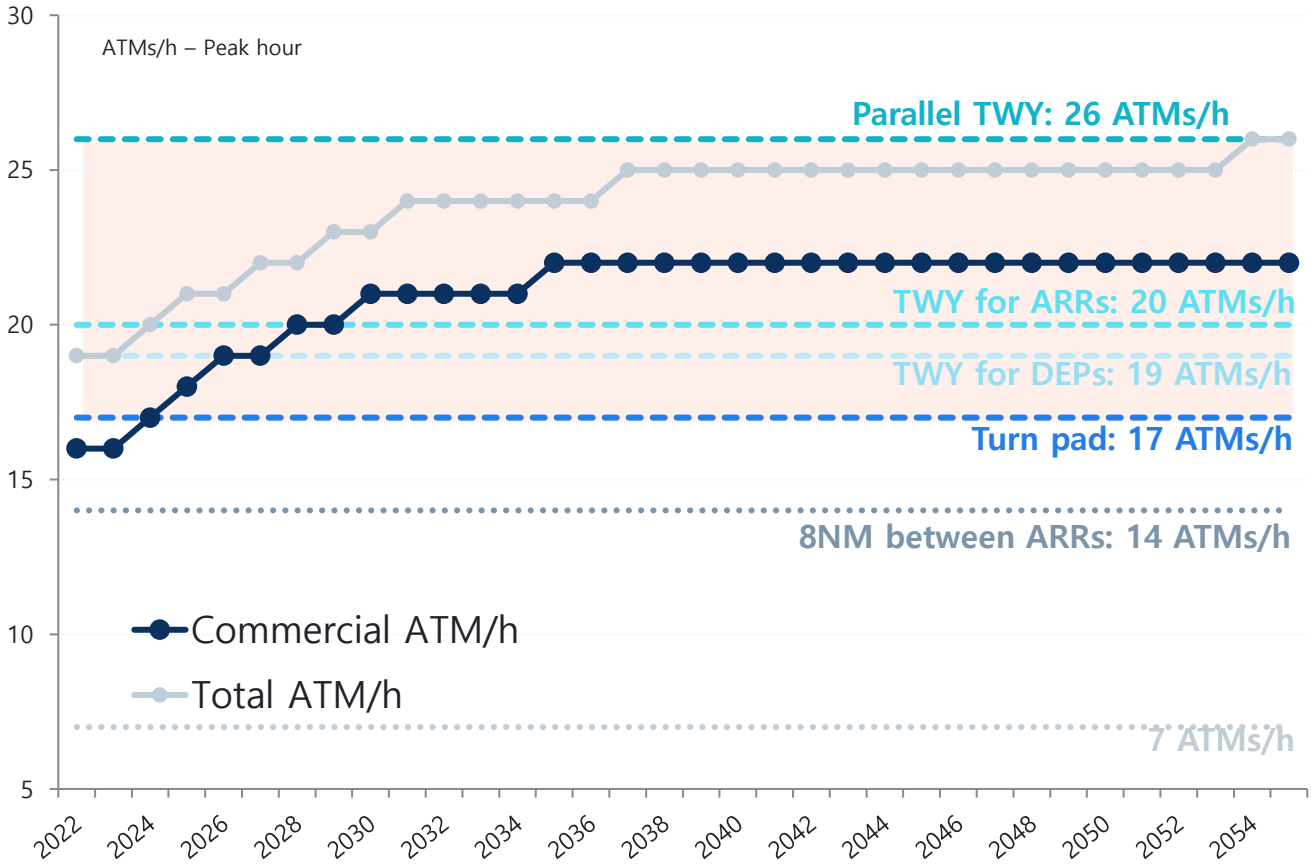
Source: FAA, OACI, ALG analysis





As a quick win, PLS should construct a turn pad and restrict FBO in the peak hour; the parallel taxiway should be fully operational in 2028

Capacity-Demand Analysis – Airfield



Source: OAG, ALG Analysis

Current situation 2022

- PLS handles 19 ATM/h in the peak hour: 16 scheduled ATM/h (commercial traffic) plus 3 ATM/h of FBO aircraft
- Current capacity estimated to be ~14 ATM/h (with 8 NM aircraft separation in approach phase)

Quick wins in PLS:

- Restrict FBO traffic in the peak hour
- Construct a turn pad to increase capacity to 17 ATM/h

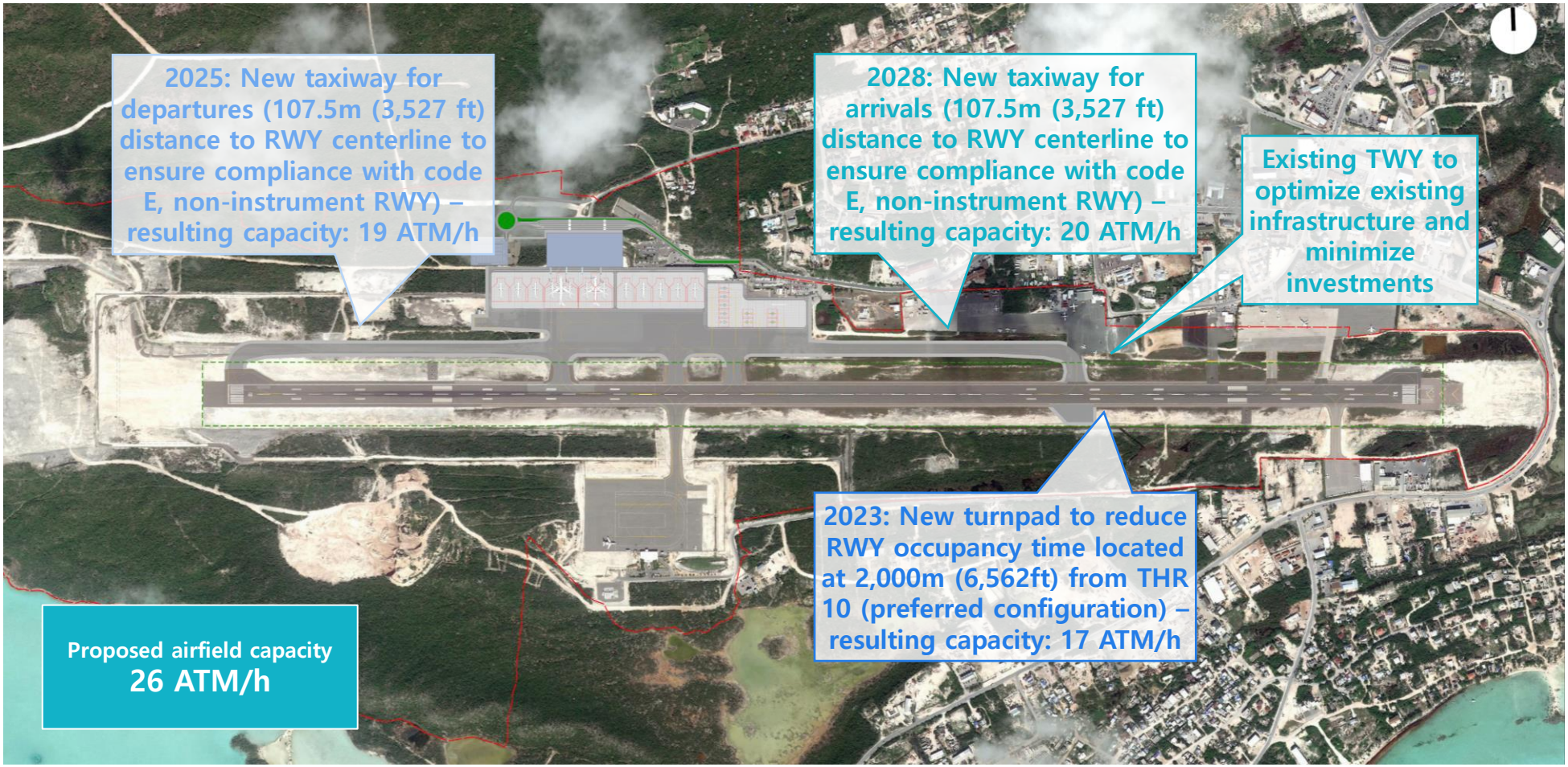
Short/mid term

- Construct the taxiway for departures (required in 2025)
- Construct the taxiway for arrivals (required in 2028)
- With this parallel taxiway the airfield can handle the demand in the long term
- FBO could restart operating in the peak hour once the parallel taxiway is operational

The current ATMs/h profile of PLS, concentrating operation activity in a few daily hours as usual in Caribbean airports, requires early infrastructure development despite having relatively low volume of annual ATMs

Three phases have been proposed to increase airfield capacity: a new turnpad (2023), the TWY for departures (2025) and the TWY for arrivals (2028)

Airfield proposed development



Source: ALG analysis

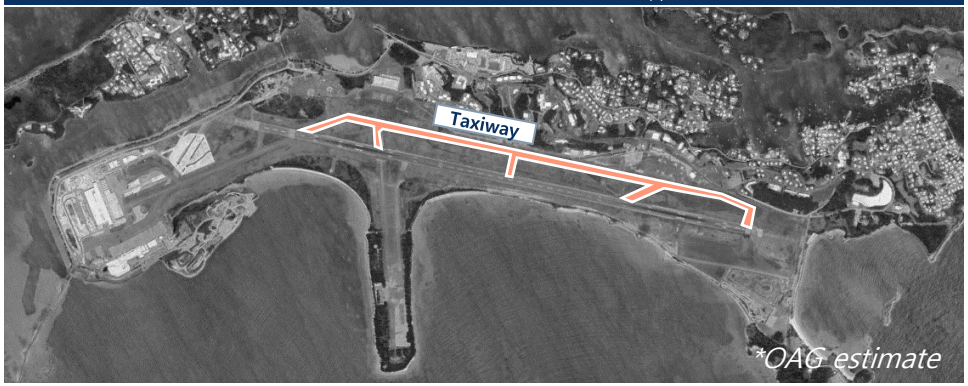
The development solution for PLS airfield is in line with the existing infrastructure of other Caribbean airports with similar operation profile (1/2)

Caribbean Airports with a Full Parallel Taxiway

Nasau (NAS) 3.90 Mpax (2019)

Barbados (BGI) 2.3 Mpax (2019)

Bermuda (BDA) 0.93 Mpax* (2019)



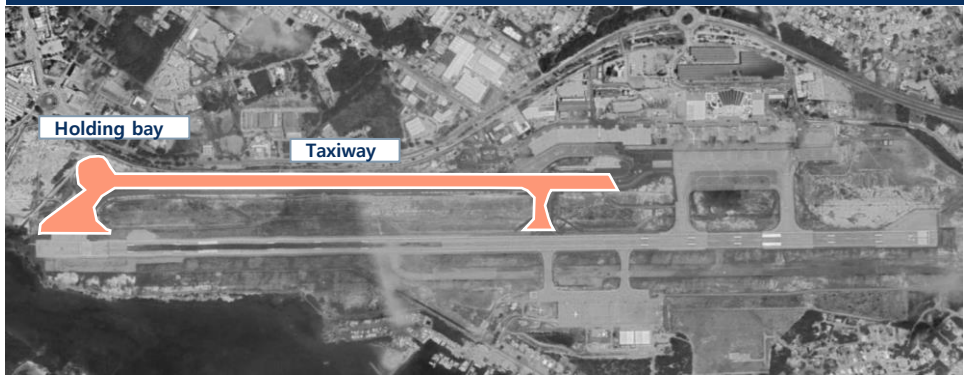
Curaçao (CUR) 1.23 Mpax*(2019)

Source: Google Earth, CAPA, OAG

The development solution for PLS airfield is in line with the existing infrastructure of other Caribbean airports with similar operation profile (2/2)

Caribbean Airports with a Partial Parallel Taxiway + Turn Pads

Aruba (AUA) 2.53 Mpax (2019)



Guadeloupe (PTP) 2.49 Mpax (2019)

St Maarten (SXM) 1.49 Mpax* (2019)

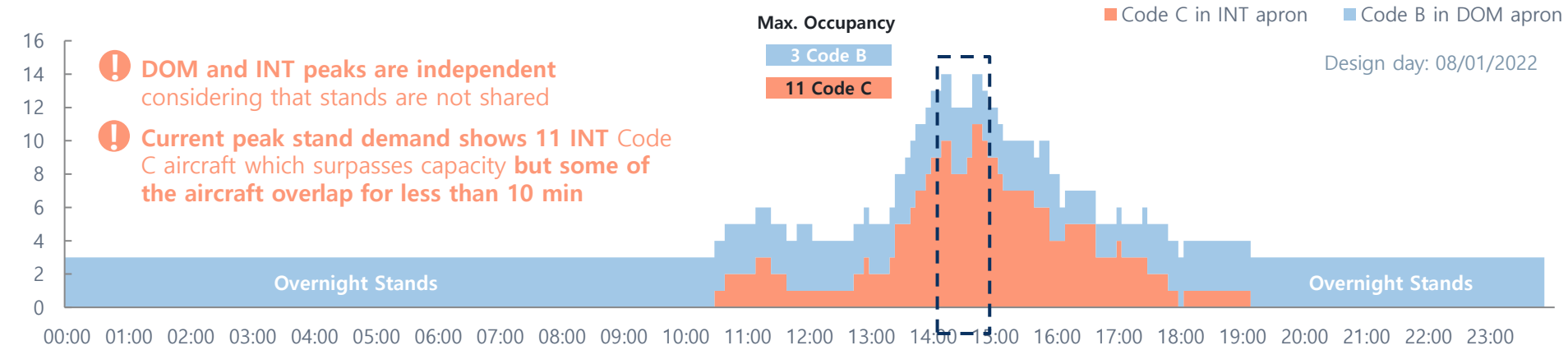
Antigua (ANU) 0.84 Mpax*(2019)

Source: Google Earth, CAPA, OAG

PLS commercial apron has capacity for up to 12 stands (3 code A/B + 9 code C), which is not enough to accommodate existing demand (2022)

Apron current capacity

Stands demand – Design day 2022

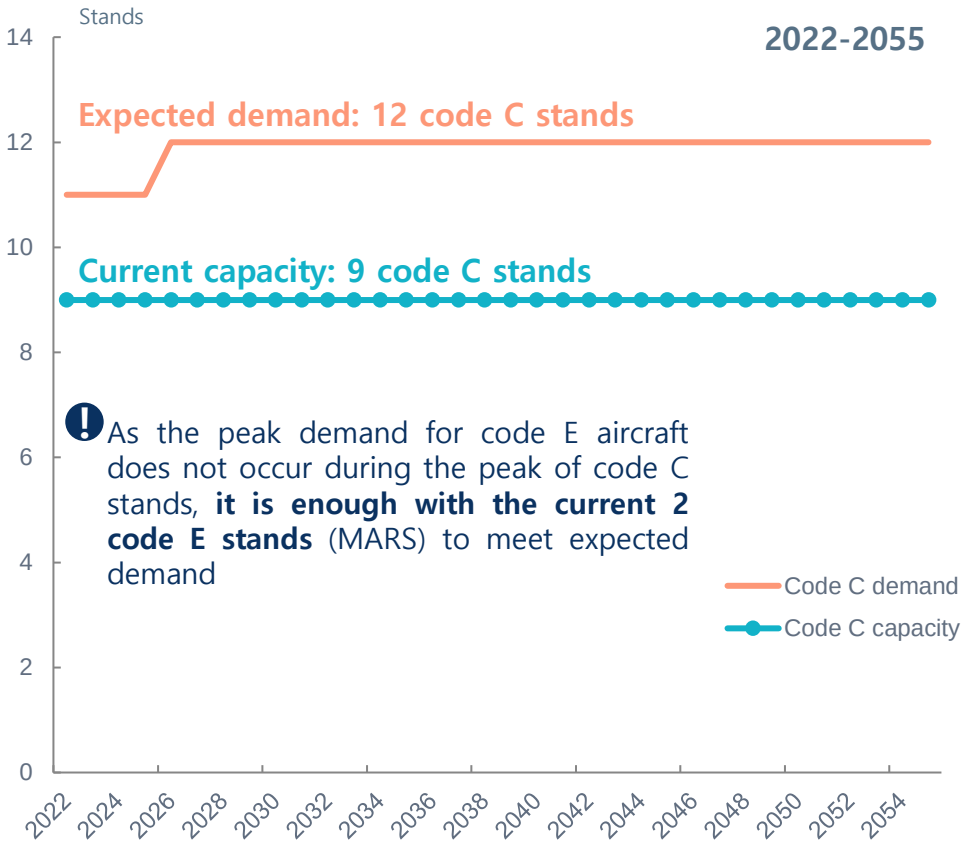


Source: Google Earth, TCAA AIP, OAG, ALG analysis

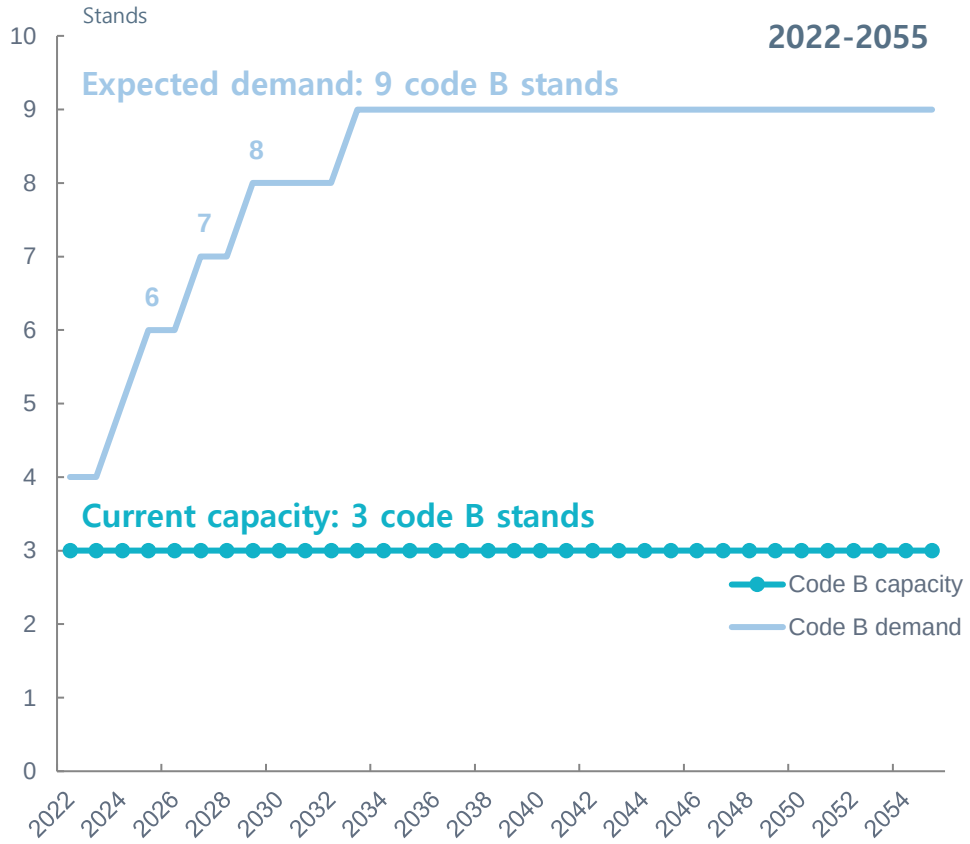
The capacity-demand analysis shows that current apron is not enough to accommodate the short-term demand and thus expansions are envisaged

Apron – Capacity-demand analysis

Code C Stands



Code B Stands



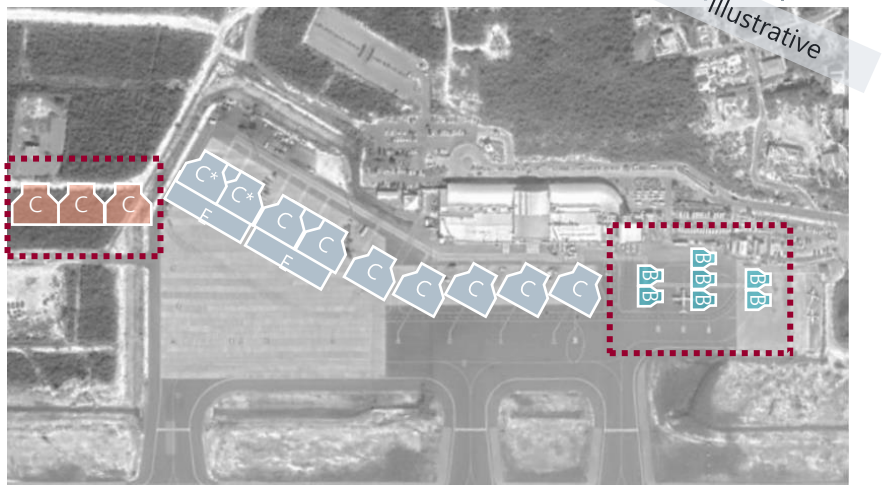
The projection of stand demand shows a substantial increase in DOM stands (9 DOM +12 INT) given the annual traffic increases expected in this segment

Two construction phases have been proposed to increase the apron capacity: quick wins to provide +3C & +4B and short/mid term in line with the new PTB

QUICK WINS

Reconfiguration of existing DOM apron and minor expansion of INT apron to the West

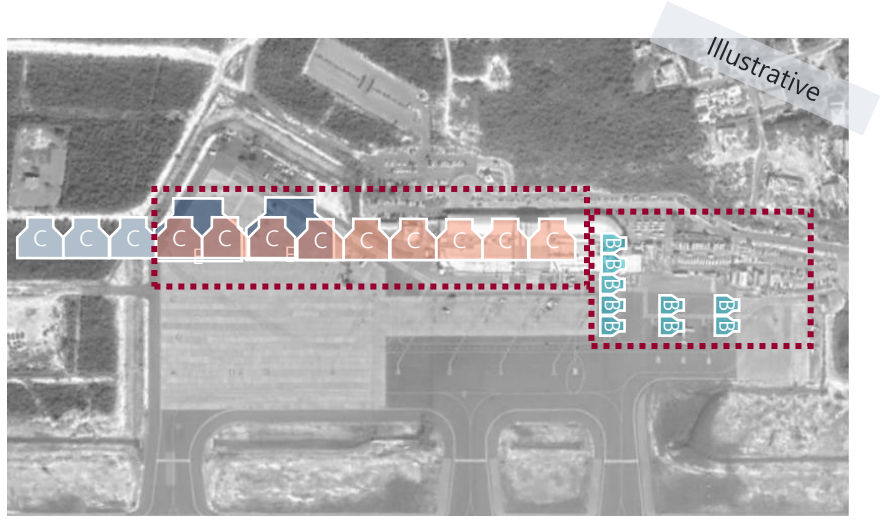
- Reconfiguration of the current domestic stands to increase capacity to up 7 code B stands
- Expansion of existing international commercial apron to the west to provide 3 additional code C stands
  - No reconfiguration works envisaged at existing international commercial stands



SHORT/MID TERM

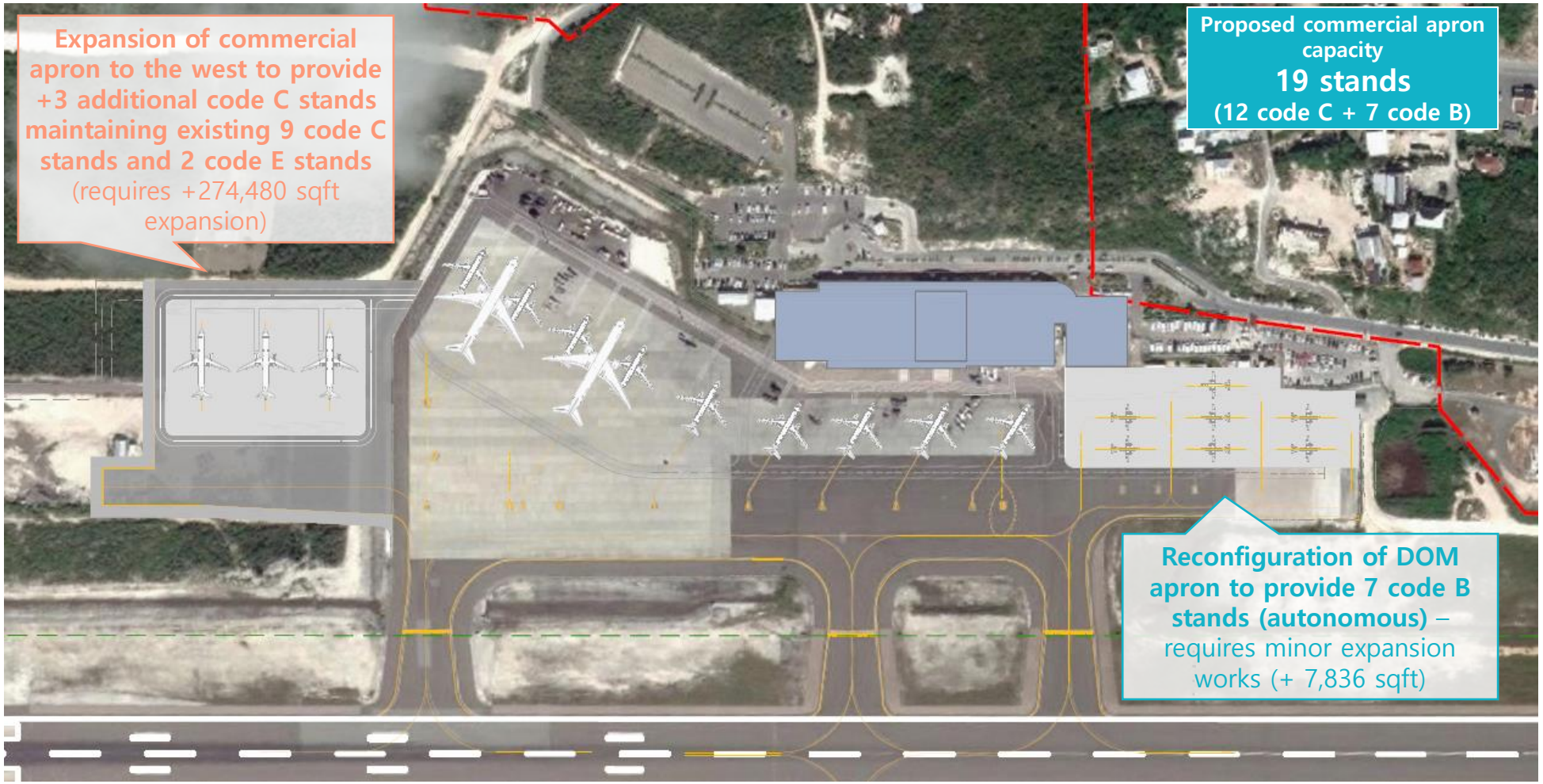
Reconfiguration and expansion of existing DOM apron and reconfiguration and expansion of INT apron to the North

- Reconfiguration and expansion of the domestic stands to increase capacity to up 9 code B stands
- Reconfiguration and expansion of existing international commercial apron to the west to provide 12 code C stands with an inner taxiway compliant with the new parallel taxiway



Quick wins: reconfiguration of DOM stands to increase capacity (up to 7 code B stands) and expansion of INT stands (+3 code C stands)

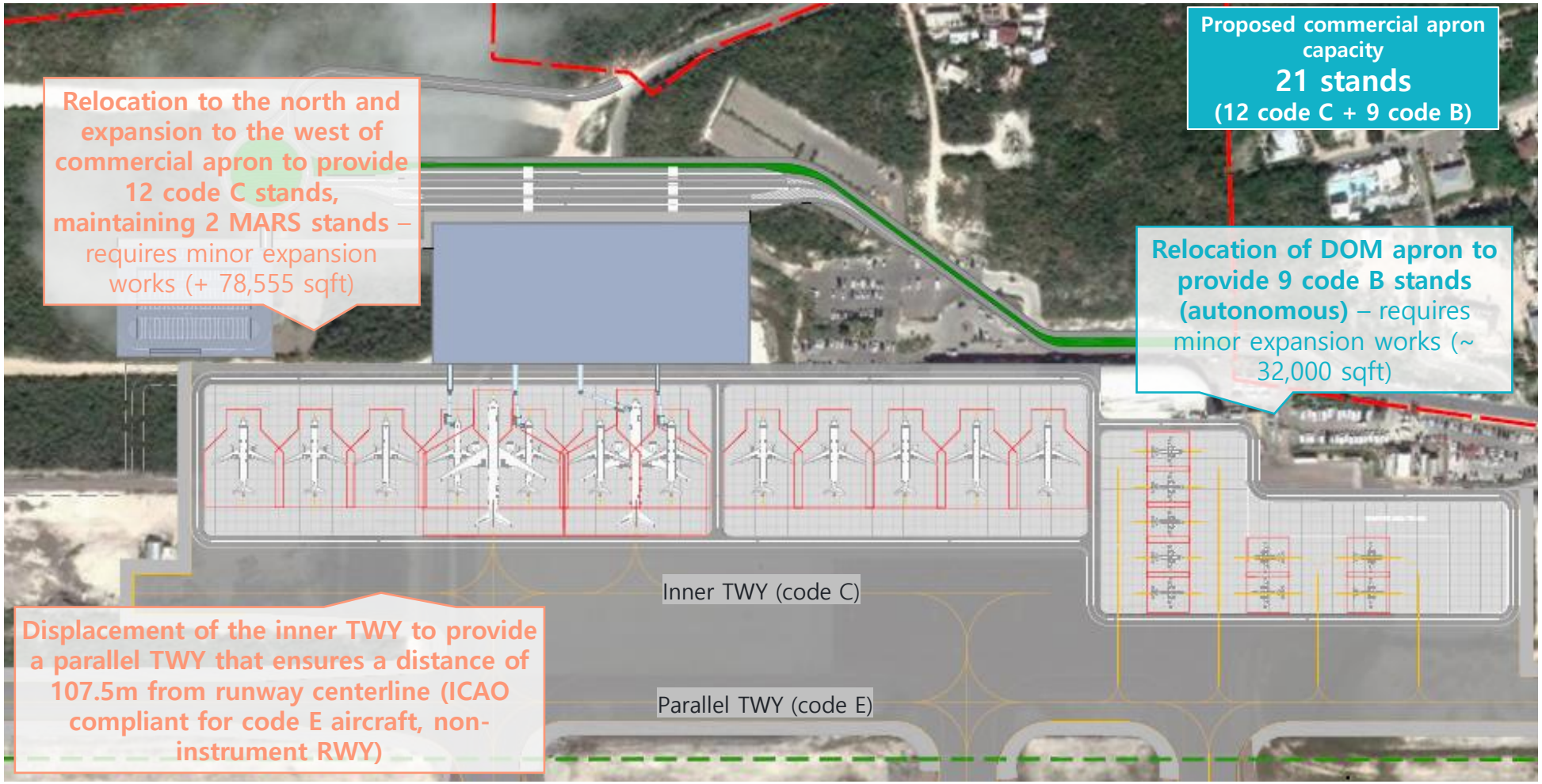
Commercial apron proposed development – Phase I



Source: ALG analysis

Short/mid term: expansion of DOM and INT stands to the northwest to increase capacity and provide a parallel taxiway

Commercial apron proposed development – Phase II

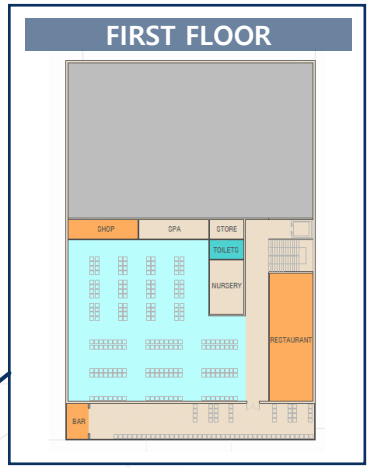


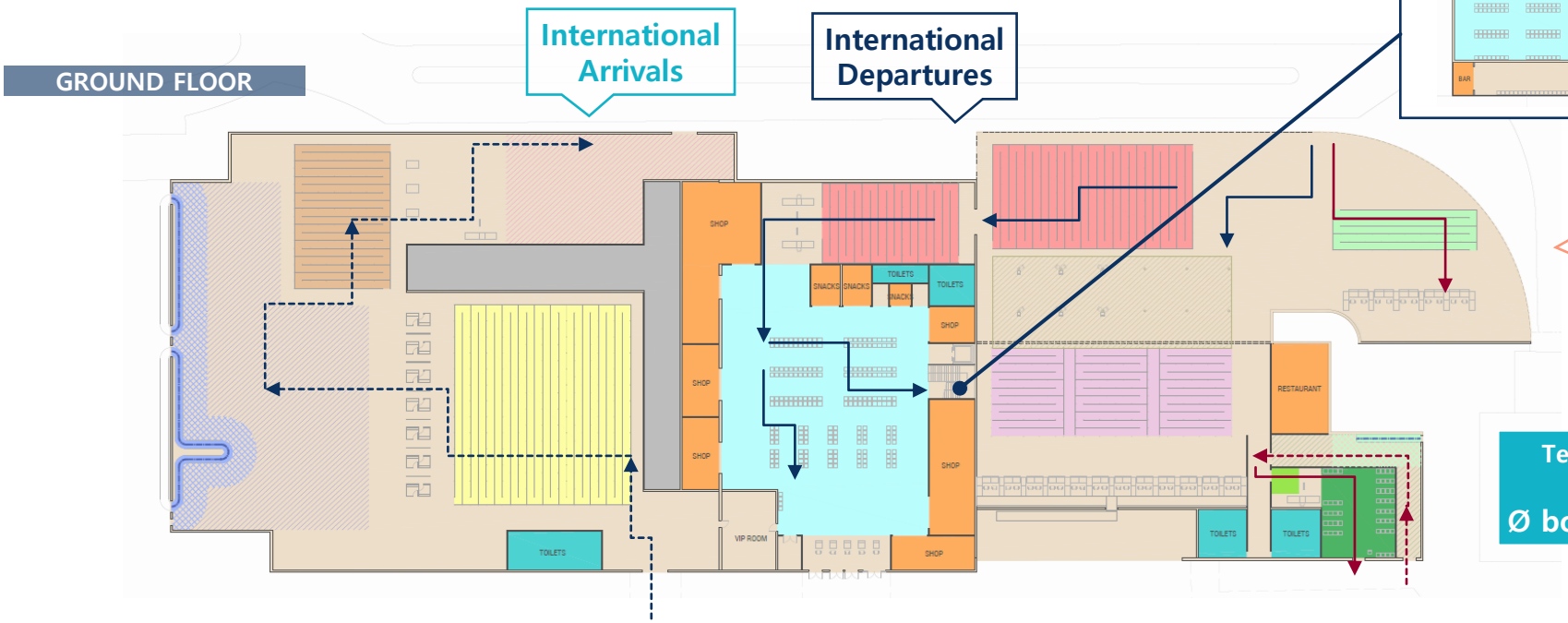
Source: ALG analysis

Providenciales terminal building has an area of 92,322 ft², most of it devoted to international flights; the airport shows saturation in some subsystems

Terminal Overview and Passenger Flows

DOM Departure | DOM Arrival | INT Departure | INT Arrival

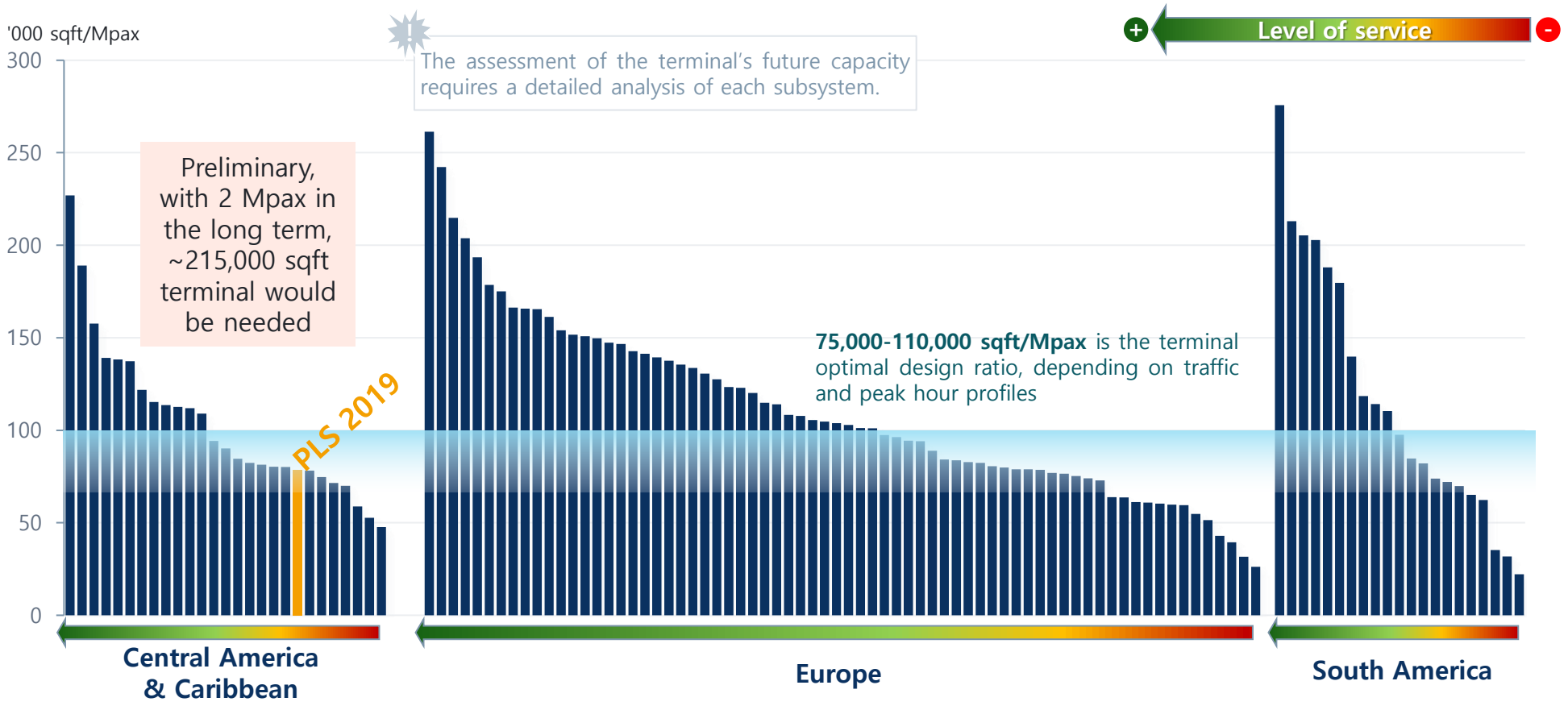




Source: Site Visit, ALG analysis

Based on international benchmarks, the expansion of the terminal building will be needed to upgrade the level of service as traffic grows

Terminal Building Area vs. Passenger Traffic Benchmark (2019)

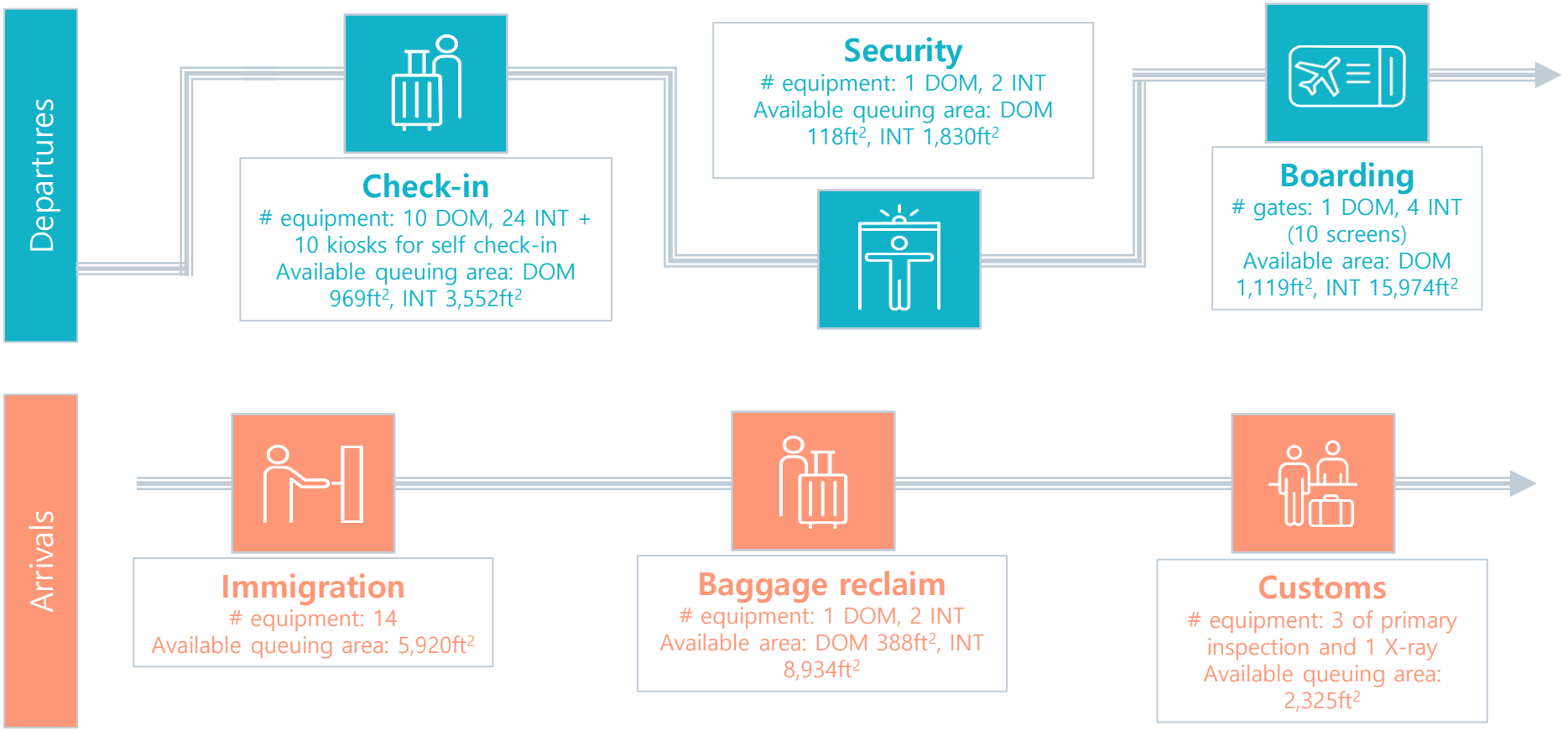


Sources: Satellite images, airport websites, FlightGlobal

Initial analysis suggest that PLS may require a ~215,000 sqft terminal building in the long term to handle 2 Mpax

The PTB capacity has been assessed following IATA ADRM 11th Edition methodology per passenger processing facility assuming an optimum LoS

Inputs for passenger processing facilities requirements estimation (existing capacity)



Sources: Public Information, VDR, IATA, ALG Analysis

The analysis is adapted to airport particularities and national regulations considering forecasted design parameters and industry standard processing times (refer to next slides)

The C-D analysis is based on airport particularities, industry standard processing times, and an optimum Level of Service (IATA)

Inputs for passenger processing facilities requirements estimation (1/6)

RFI pending

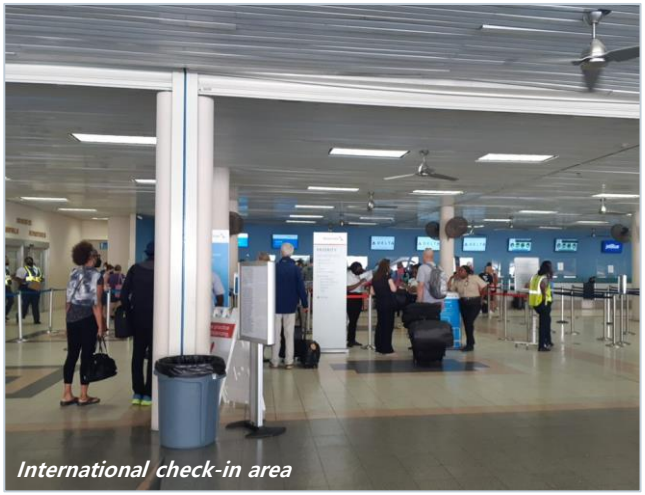
Departures

Check-in
equipment: 10 DOM, 24 INT + 10 kiosks for self check-in
Available queuing area: DOM 969ft², INT 3,552ft²

Security
equipment: 1 DOM, 2 INT
Available queuing area: DOM 118ft², INT 1,830ft²

Boarding
gates: 1 DOM, 4 INT (10 screens)
Available area: DOM 1,119ft², INT 15,974ft²


Domestic check-in area


International check-in area

Input parameters for IATA analysis:

- ? Processing time: 180s in traditional check-in, 120s in self check-in
- ? Proportion of business passengers: 7% of the total PHPs
- ? % of people using check-in: 100%
- ✓ Space per pax: 14 ft²
- ✓ Max queuing time: 20min economy, 5min business

✓ **IATA LoS Optimum**

Source: Public information, VDR, IATA and ALG Analysis

The C-D analysis is based on airport particularities, industry standard processing times, and an optimum Level of Service (IATA)

Inputs for passenger processing facilities requirements estimation (2/6)

RFI pending

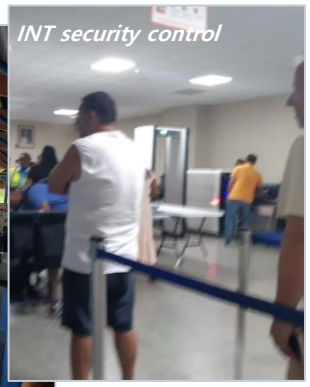
Departures

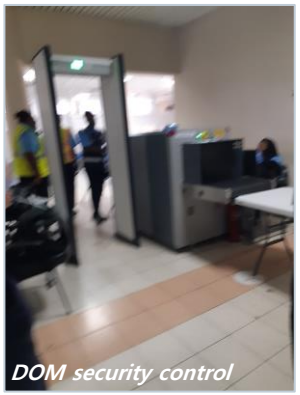
Check-in
equipment: 10 DOM, 24 INT + 10 kiosks for self check-in
Available queuing area: DOM 969ft², INT 3,552ft²

Security
equipment: 1 DOM, 2 INT
Available queuing area: DOM 118ft², INT 1,830ft²

Boarding
gates: 1 DOM, 4 INT (10 screens)
Available area: DOM 1,119ft², INT 15,974ft²


Additional security control queuing area located at DEP hall


INT security control


DOM security control

Input parameters for IATA analysis:

- Processing time: DOM 20s
- Processing time: INT 30s
- Space per pax: 10.8 ft²
- Max queuing time: 10min

IATA LoS Optimum

Source: Public information, VDR, IATA and ALG Analysis

The C-D analysis is based on airport particularities, industry standard processing times, and an optimum Level of Service (IATA)

Inputs for passenger processing facilities requirements estimation (3/6)

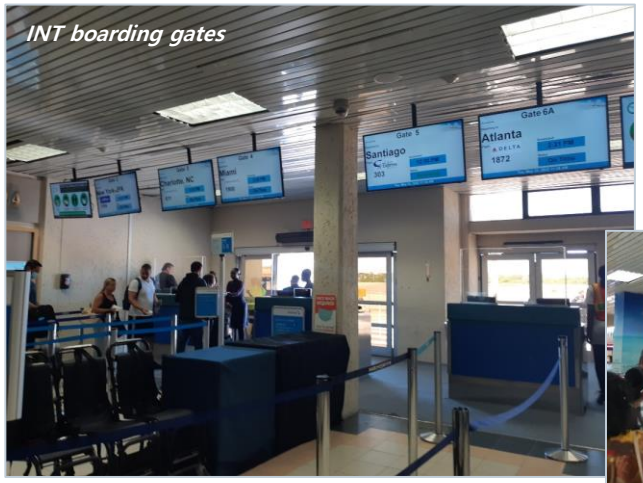
RFI pending

Departures

Check-in
equipment: 10 DOM, 24 INT + 10 kiosks for self check-in
Available queuing area: DOM 969ft², INT 3,552ft²

Security
equipment: 1 DOM, 2 INT
Available queuing area: DOM 118ft², INT 1,830ft²

Boarding
gates: 1 DOM, 4 INT (10 screens)
Available area: DOM 1,119ft², INT 15,974ft²



Input parameters for IATA analysis:

- Turnaround time: 1.7 h
- Average pax/ATM: INT ~233, DOM ~35
- Seat ratio: 50%
- Space per pax: 12.9 ft² per standing person and 19.4 ft² per seated person

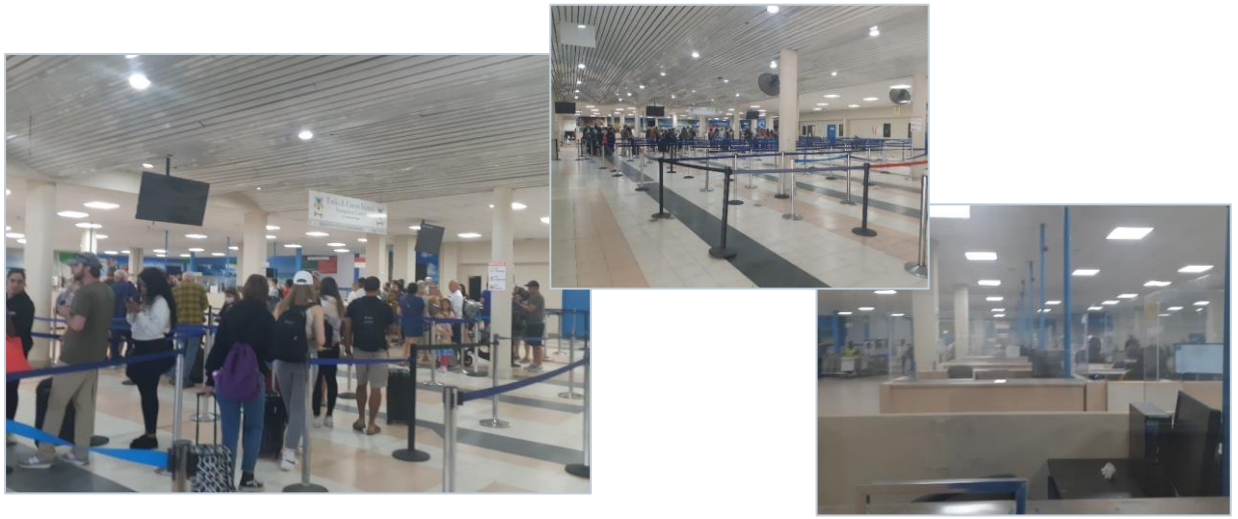
IATA LoS Optimum

Source: Public information, VDR, IATA and ALG Analysis

The C-D analysis is based on airport particularities, industry standard processing times, and an optimum Level of Service (IATA)

Inputs for passenger processing facilities requirements estimation (4/6)

RFI pending



Input parameters for IATA analysis:

- Processing time per pax: 90s (gradually reduced up to 60s to take into account the new automated passport control booths that optimize processing time)
- Max queuing time: 10min
- Space/pax: 10.8 ft²

Arrivals

Immigration
equipment: 14
Available queuing area: 5,920ft²

Baggage reclaim
equipment: 1 DOM, 2 INT
Available area: DOM 388ft², INT 8,934ft²

Customs
equipment: 3 of primary inspection and 1 X-ray
Available queuing area: 2,325ft²

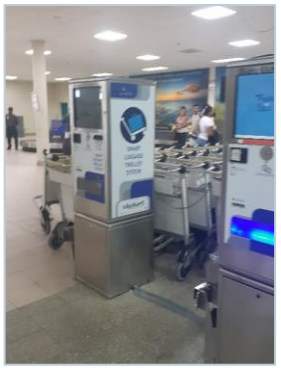
IATA LoS Optimum

Source: Public information, VDR, IATA and ALG Analysis

The C-D analysis is based on airport particularities, industry standard processing times, and an optimum Level of Service (IATA)

Inputs for passenger processing facilities requirements estimation (5/6)

RFI pending



Input parameters for IATA analysis:

- ? Average claim device occupancy time: DOM 15 min, INT 25 min
- ? Claim frontage per pax: 1.3 ft
- ✓ Space per pax: 16.2 ft²

Arrivals

Immigration
equipment: 14
Available queuing area: 5,920ft²

Baggage reclaim
equipment: 1 DOM, 2 INT
Available area: DOM 388ft², INT 8,934ft²

Customs
equipment: 3 of primary inspection and 1 X-ray
Available queuing area: 2,325ft²

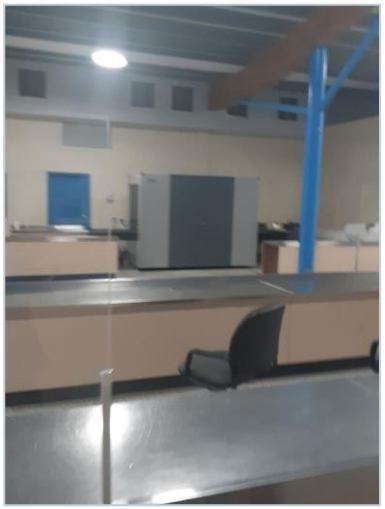
✓ **IATA LoS Optimum**

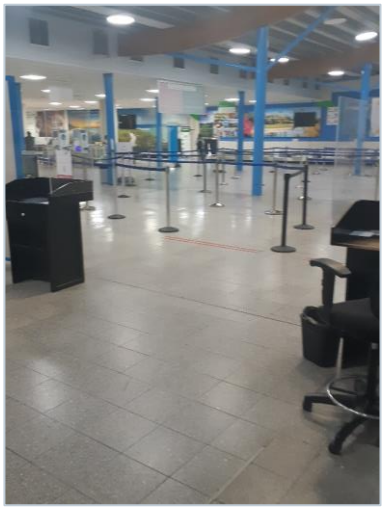
Source: Public information, VDR, IATA and ALG Analysis

The C-D analysis is based on airport particularities, industry standard processing times, and an optimum Level of Service (IATA)

Inputs for passenger processing facilities requirements estimation (6/6)

RFI pending





Input parameters for IATA analysis:

- ? Ratio of pax inspected: 7%
- ? Processing time: 20s for primary inspection and 20s at X-ray facility
- ✓ Space per pax: 14 ft²
- ✓ Max queuing time: 5min for primary inspection and 5min for X-ray

Arrivals

Immigration
equipment: 14
Available queuing area: 5,920ft²

Baggage reclaim
equipment: 1 DOM, 2 INT
Available area: DOM 388ft², INT 8,934ft²

Customs
equipment: 3 of primary inspection and 1 X-ray
Available queuing area: 2,325ft²

✓ **IATA LoS Optimum**

Source: Public information, VDR, IATA and ALG Analysis

The analysis shows major congestion in the terminal building already with the current condition and 1.2 Mpax, especially for INT subsystems' equipment

Results for the IATA analysis of terminal capacity – Equipment Requirements

		Available	2022	2027	2035	2045	2053
	Annual Passengers (Mpax)		**1.2**	**1.6**	**1.9**	**2.0**	**2.2**
Departures	**Check-in - International**	**24**	**138%**	**146%**	**150%**	**154%**	**158%**
	Required equipment		33	35	36	37	38
	Check-in - Domestic	**10**	**30%**	**40%**	**50%**	**50%**	**60%**
	Required equipment		3	4	5	5	6
	Self Check-in - International	**10**	**60%**	**60%**	**70%**	**70%**	**70%**
	Required equipment		6	6	7	7	7
	Self Check-in - Domestic	**0**	**0%**	**0%**	**0%**	**0%**	**0%**
	Required equipment		0	0	0	0	0
	Security Control - International	**2**	**250%**	**250%**	**250%**	**300%**	**300%**
	Required equipment		5	5	5	6	6
	Security Control - Domestic	**1**	**100%**	**100%**	**100%**	**100%**	**100%**
	Required equipment		1	1	1	1	1
	Gates - International	**4**	**200%**	**250%**	**225%**	**225%**	**225%**
	Required equipment		8	10	9	9	9
	Gates - Domestic	**1**	**200%**	**600%**	**800%**	**800%**	**800%**
	Required equipment		2	6	8	8	8
Arrivals	**Immigration - International**	**14**	**143%**	**121%**	**114%**	**114%**	**114%**
	Required equipment		20	17	16	16	16
	Baggage Belts - International	**2**	**150%**	**150%**	**150%**	**150%**	**150%**
	Required equipment		3	3	3	3	3
	Baggage Belts - Domestic	**1**	**100%**	**100%**	**100%**	**100%**	**100%**
	Required equipment		1	1	1	1	1
	Customs - Primary inspection	**3**	**33%**	**33%**	**33%**	**33%**	**33%**
	Required equipment		1	1	1	1	1
	Customs - X-ray	**1**	**100%**	**100%**	**100%**	**100%**	**100%**
	Required equipment		1	1	1	1	1

The number of check-in counters is not enough to accommodate the existing demand

INT security control is saturated causing long queuing areas that are allocated in front of the check-in area requiring +3 additional lanes

The terminal has 4 INT boarding gates, which are not enough to accommodate the existing demand (although there are 10 screens)

The C-D analysis assumes the reduction of the average passenger processing time as a result of the new automated passport control booths that are planned at the airport

INT baggage claim belts are not enough to accommodate the existing demand (2022). The belt's length does also not provide an adequate LoS

95% No congestion | 100% Full capacity | 115% Congestion | 140% Saturation

Source: ALG Analysis

In terms of areas, congestion is more evident in DOM areas, while the INT boarding area and baggage claim area is also congested

Results for the IATA analysis of terminal capacity – Area Requirements

		Available	2022	2027	2035	2045	2053
	Annual Passengers (Mpax)		**1.2**	**1.6**	**1.9**	**2.0**	**2.2**
Departures	**Departures & Arrivals Hall**	**6,727**	**186%**	**200%**	**210%**	**215%**	**219%**
	Required Area (sqft)		12,522	13,445	14,095	14,435	14,705
	Check-in Area - International	**3,552**	**82%**	**88%**	**91%**	**93%**	**94%**
	Required Area (sqft)		2,928	3,111	3,218	3,305	3,326
	Check-in Area - Domestic	**969**	**21%**	**29%**	**40%**	**40%**	**50%**
	Required Area (sqft)		205	280	388	388	484
	Security Control - International	**1,830**	**59%**	**59%**	**59%**	**71%**	**71%**
	Required Area (sqft)		1,076	1,076	1,076	1,292	1,292
	Security Control - Domestic	**118**	**273%**	**273%**	**273%**	**273%**	**273%**
	Required Area (sqft)		323	323	323	323	323
	Boarding Areas - International	**15,974**	**117%**	**125%**	**130%**	**132%**	**133%**
	Required Area (sqft)		18,623	19,959	20,745	21,056	21,304
	Boarding Areas - Domestic	**1,119**	**256%**	**292%**	**418%**	**509%**	**578%**
	Required Area (sqft)		2,861	3,274	4,677	5,694	6,476
Arrivals	**Immigration - International**	**5,920**	**27%**	**28%**	**29%**	**29%**	**29%**
	Required Area (sqft)		1,604	1,668	1,722	1,722	1,722
	Baggage Claim - International	**8,934**	**173%**	**165%**	**172%**	**174%**	**176%**
	Required Area (sqft)		15,476	14,743	15,324	15,553	15,737
	Baggage Claim - Domestic	**388**	**99%**	**113%**	**182%**	**222%**	**253%**
	Required Area (sqft)		384	440	707	860	978
	Customs	**2,325**	**18%**	**18%**	**18%**	**18%**	**18%**
	Required Area (sqft)		420	420	420	420	420

INT queuing area for security screening would be enough if there were 5 lanes available

DOM queuing area for security screening is not enough to accommodate the existing demand

INT boarding area is also congested showing the need of increasing the facility in the short-term

DOM boarding area shows significant congestion level requiring to double existing capacity to provide an adequate LoS

INT baggage claim area shows significant congestion, i.e. existing area is not enough to provide an adequate LoS

95% No congestion | 100% Full capacity | 115% Congestion | 140% Saturation

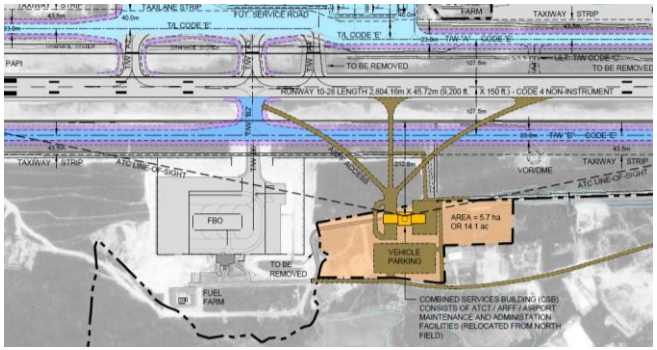
Source: ALG Analysis

Given the current saturation of the terminal, two development phases have been considered to cope with the expected demand without constrains

On-going projects

In PLS

- Several on-going projects in the airport (South area)
  - A new control tower
  - ARFF facilities are being relocated
  - Maintenance & administration facilities
- Other: e-Gates, canopy projects



QUICK WINS

Refurbishment of the current terminal building

- Reconfiguration of the current terminal to increase the level of service
  - Expand the international pax area using domestic area and move domestic flows to current ARFF area
  - Expand international lounge moving the airlines to a temporary building

SHORT/MID TERM

Construction of a new passenger terminal building

- A new terminal building is the preferred option after the site visit and consultation talks carried out
- Estimated area of 20,000 – 25,000 sqm (to be commissioned by 2028)
- Architecture to take into account the local atmosphere (Caribbean look & feel) and the high-class product offering

Quick wins: relocation of DOM facilities to ARFF area (17,200 ft²), reconfiguration and expansion of existing PTB to the west increasing ~9,500 ft²

Terminal quick wins & passenger flows

Area of expansion | DOM Departure | DOM Arrival | INT Departure | INT Arrival

FIRST FLOOR

Capacity to accommodate demand until 2028

Total area of 119,000 ft²

including 21,500 ft² INT boarding area

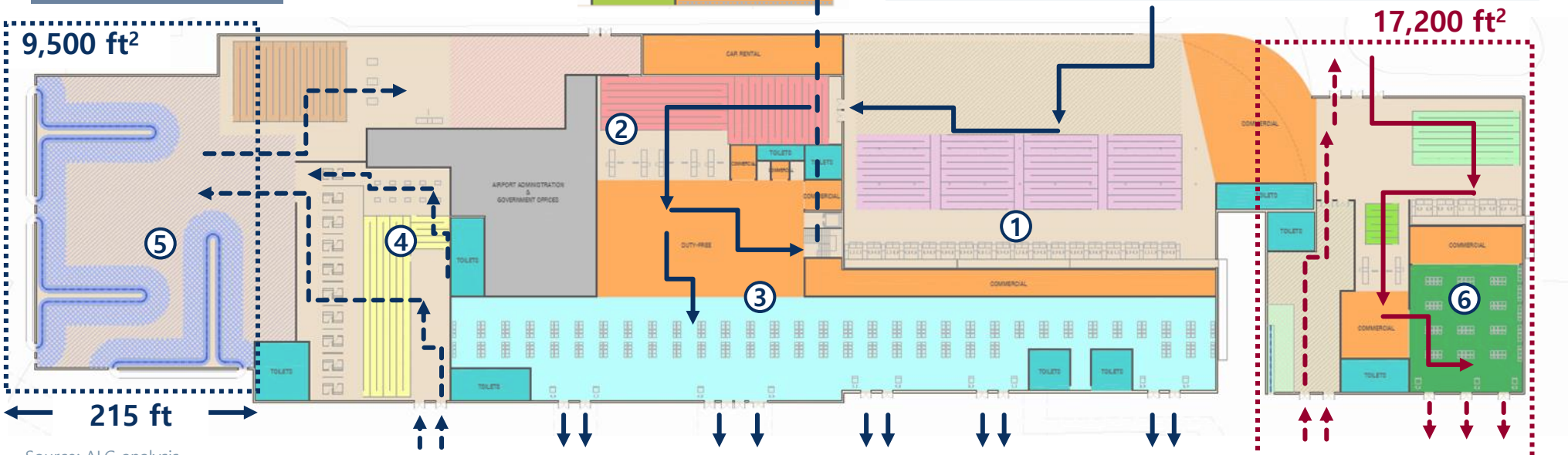
22,600 ft² commercial area

1,600 ft² new VIP lounge

Expansion y reconfiguration of existing terminal

1. Relocation and expansion of INT check-in counters including free space for make-up area
2. Expansion of security control with three additional lanes
3. Increased INT boarding area including walk-through duty free, additional boarding gates, relocation of VIP lounge, provide a food court area and increase seating area
4. Reconfiguration of immigration including the provision of automated passport control booths
5. Expansion of INT baggage belts length and new belt
6. Relocation and expansion of DOM facilities

GROUND FLOOR

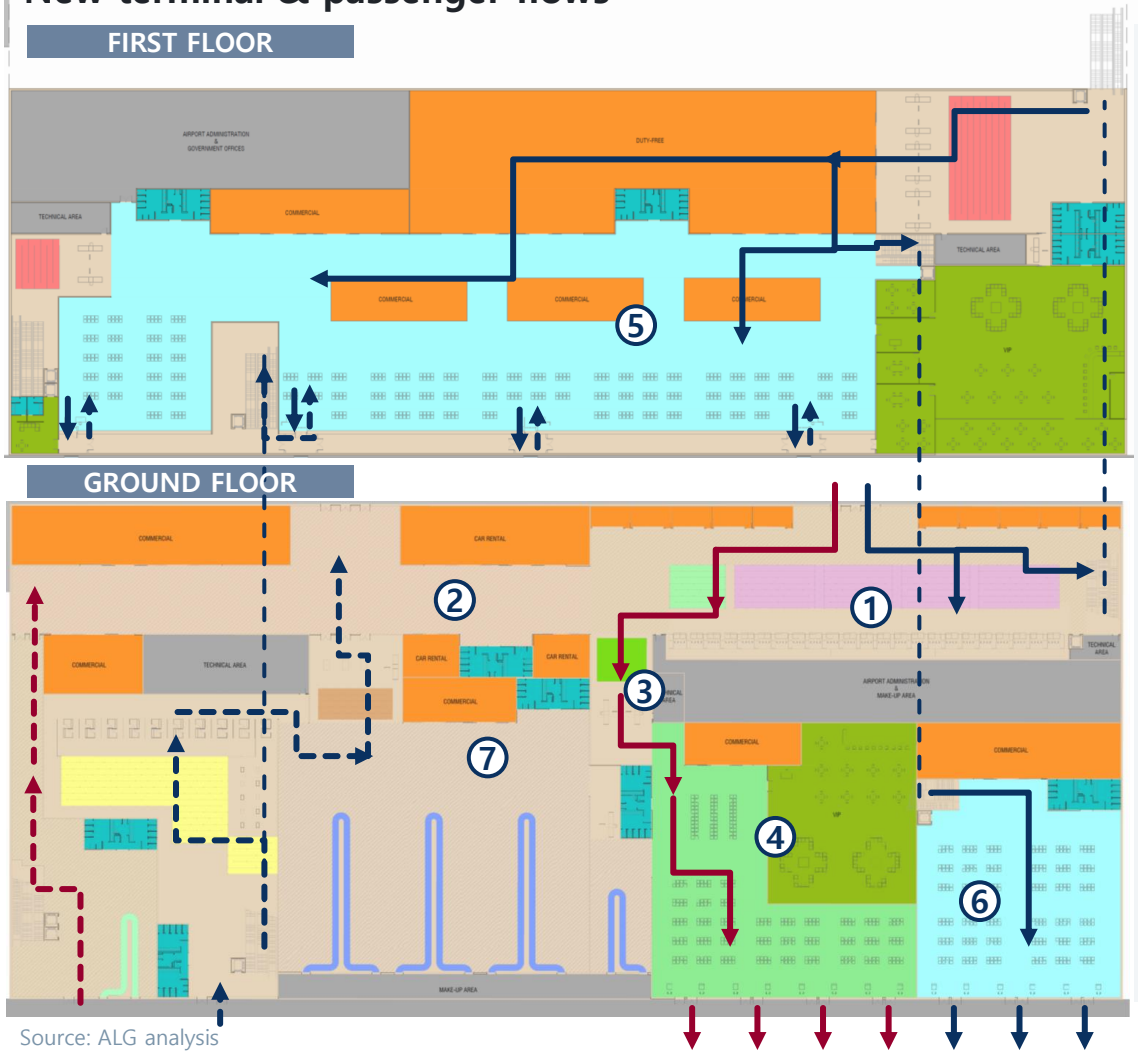


Source: ALG analysis

New terminal: two-floor building of ~270,000 ft² including DOM and INT facilities with an overall capacity of approx. 2.5 Mpax

New terminal & passenger flows

DOM Departure DOM Arrival INT Departure INT Arrival



Source: ALG analysis

New terminal building

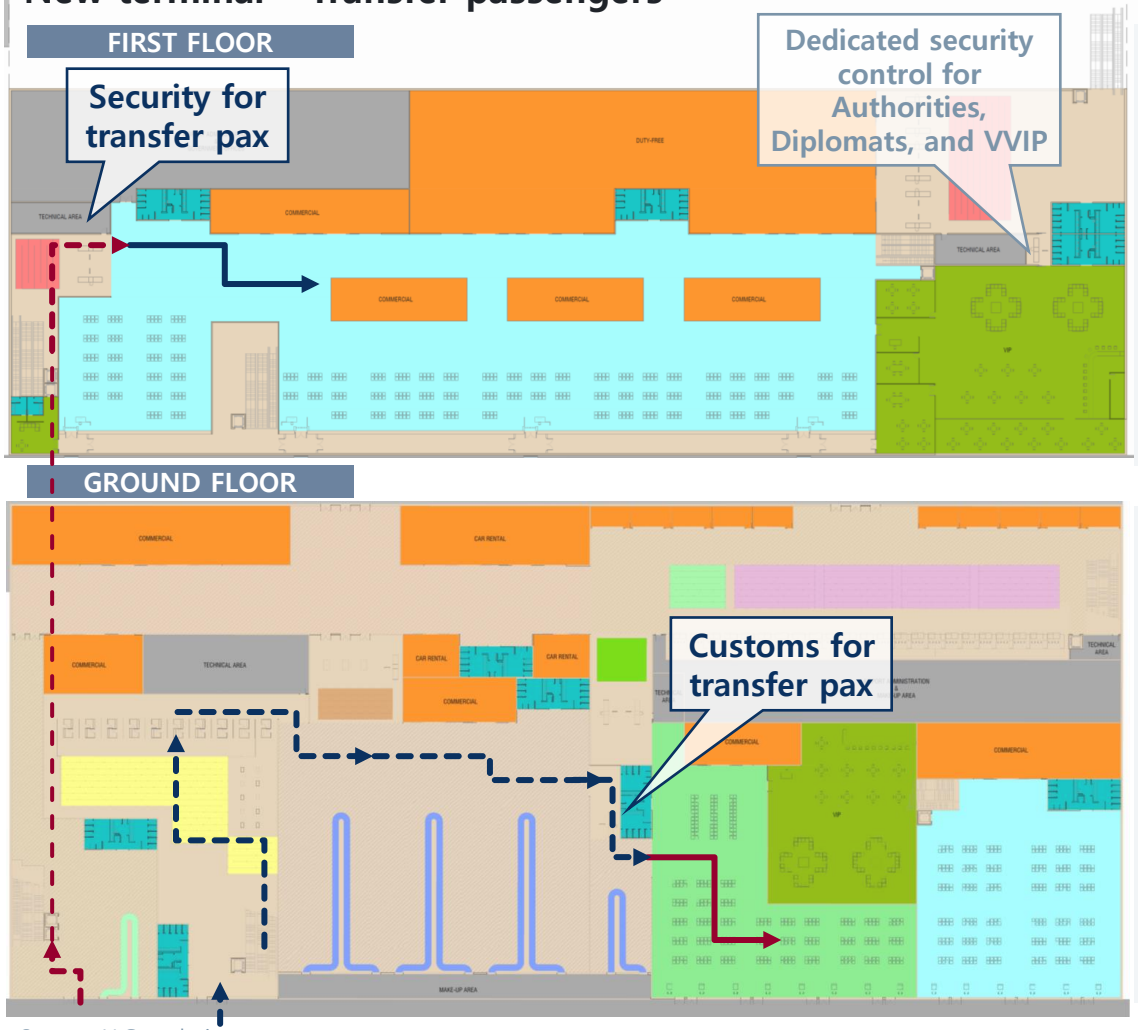
1. Common check-in (DOM&INT) including departures hall with additional space for airlines, technical areas and make-up area
2. Common arrivals and departures hall with significant commercial areas to allocate car rental facilities as well as restaurants and other retail areas
3. Domestic security control including two lanes and additional queuing area
4. Domestic boarding area with a dedicated VIP area to improve the passenger's experience as well as increase non-aeronautical revenues of the airport
5. International departing facilities located mainly on first floor including security control and boarding area with walk-through duty-free, other commercial areas, and an exclusive VIP lounge. Four boarding bridges are also considered to improve the passenger's experience
6. Remote international boarding area with commercial facilities on the ground floor to provide additional boarding gates and holdroom area
7. International arrivals facilities located at ground floor including automated passport control, long baggage belts, and customs

Resulting ratio	~122,000 sqft/Mpax

Specific facilities for transfer passengers (DOM-INT and INT-DOM) are proposed in the new terminal given the importance thereof

New terminal – Transfer passengers

DOM Departure | DOM Arrival | INT Departure | INT Arrival



DOM – INT

- DOM passengers with connecting flights will have the possibility of directly entering the INT boarding lounge after passing through a specific security control located on the first floor

INT – DOM

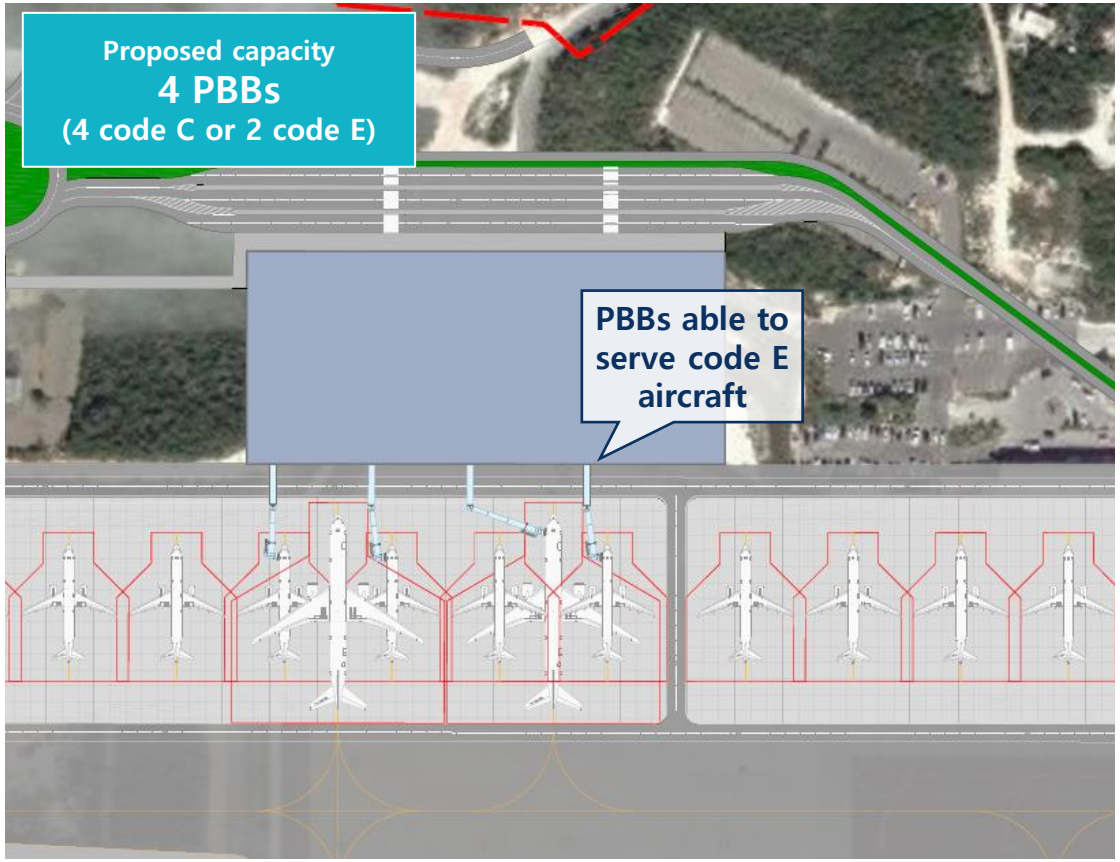
- INT passengers with connecting flights will have the possibility of directly entering the DOM boarding lounge after passing through immigration and collecting their baggage
- A specific customs and baggage belt for transfer passengers is proposed in order to ensure the security requirements

Source: ALG analysis

The new terminal building includes four boarding bridges to serve up to four code C aircraft simultaneously and improve the passenger experience

Proposed passenger boarding bridges at PLS

PBBs subject to architecture design



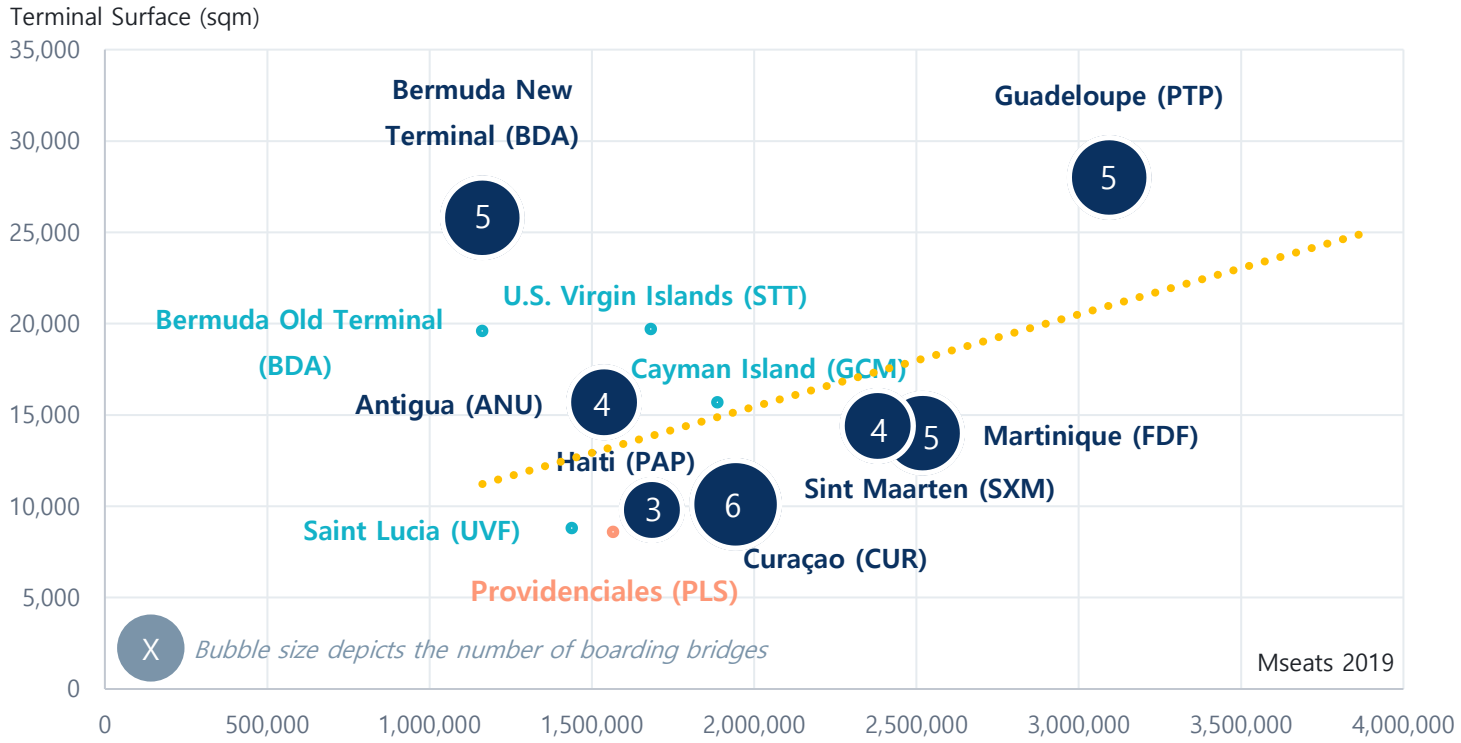
Mpax/PBB estimation	
Parameter	**Value**
Turnaround time *(min)*	96
Buffer between turnarounds *(min)*	5
Operational hours *(h)*	8
Max daily ATM/PBB *(2 ATM/rotation)*	4.8
Pax/ATM	95
Max daily kpax/PBB	0.9
Max annual Mpax/PBB	0.33
Safety factor	20%
Annual Mpax/PBB	**0.26**
Annual INT pax 2053	1.72
% of pax served by PBB	60%
Required PBBs	**3.92**

Source: ALG Analysis

With the proposed boarding bridges 60% of 2053 INT demand at PLS would be covered (~1Mpax of 1.7 Mpax)

The proposed boarding bridges are aligned with similar airports located in "high yield" destinations in the Caribbean which have 4-6 PBBs

Caribbean Airports Terminal Dimensions Benchmark



Source: OAG, ALG analysis

The airport has a single road access that connects the airport with the town of Providenciales

Road access and curbside current situation

- The main access to the airport is via the **Airport Road, a two lane paved road** (one lane each direction) that suits regular vehicles
- Other secondary roads serve the airport connecting the public parking and FBOs' buildings

Source: Google Earth, ALG analysis

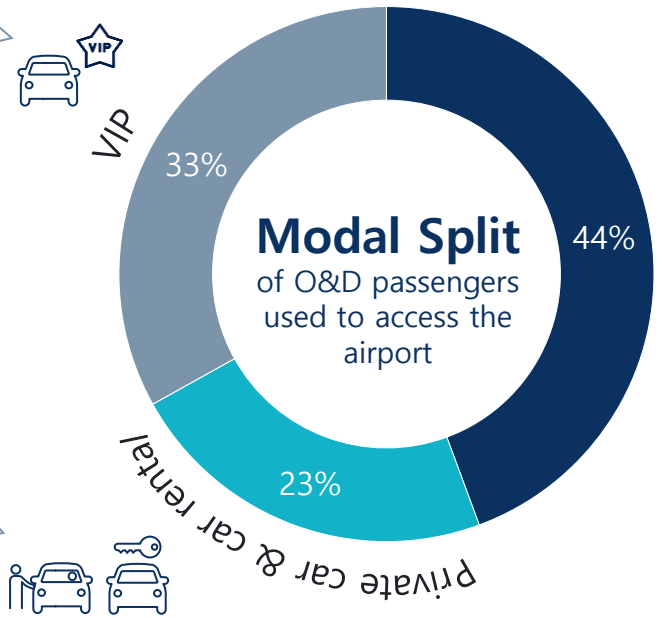
The demand generated by the airport is composed of the number of movements associated with passengers, visitors and employees (1/2)

Traffic characterization and operating parameters for vehicle demand estimation

Modal split based on the resulting average of the survey conducted by TCIAA during three consecutive days (30th July 2022, 31st July 2022, and 1st August 2022) at the exact time each day

VIP service is assumed to be the second mode of transport and are **allowed to use the DEP&ARR curbside**

Private car and car rental are the first mode of transport. Generally, car rental do not use the DEP&ARR curbside



Taxi is assumed to be the first mode of transport and are **allowed to use both DEP&ARR curbside.** In addition, there is a dedicated parking/waiting area for taxis

No airport transfers, which are usually performed with minibuses & minivans and use the DEP&ARR curbside, have been considered for vehicle demand estimation

Source: TCIAA Curbside traffic survey (July 2022), ALG Analysis

The surface access capacity-demand analysis has been developed based on the survey information gathered by TCIAA

The demand generated by the airport is composed of the number of movements associated with passengers, visitors and employees (2/2)

Traffic characterization and operating parameters for vehicle demand estimation

RFI pending

Assumptions subject to validation

	User	Pax / Vehicle	Dwell Time	Required Length*
Curbside	Ride/Own	2.5 pax/v	3 min	23 ft/space
	Taxi	3 pax/v	2 min	23 ft/space
	VIP	3 pax/v	2 min	23 ft/space
	Transfer	10.0 pax/v	5 min	49 ft/space
Car rental	Car rental	2.5 pax/v	-	23 ft/space

	User	Pax / Vehicle	Dwell Time	Required Length*
Curbside	Ride/Own	2.5 pax/v	3 min	23 ft/space
	Taxi	3 pax/v	2 min	23 ft/space
	VIP	3 pax/v	2 min	23 ft/space
	Transfer	10.0 pax/v	5 min	49 ft/space
Car rental	Car rental	2.5 pax/v	-	23 ft/space

*Length used to calculate the overall total curbside length required accounting for the loss of spaces due to layout constraints.

Source: ALG analysis

The use of the airport access road has been estimated for both, departure and arrivals flow

Traffic volume estimation (access road)

Traffic forecast	2022	2023	2027	2028	2030	2035	2040	2045	2050	2053
MPax Total (O/D)	**1.2**	**1.3**	**1.6**	**1.7**	**1.8**	**1.9**	**2.0**	**2.0**	**2.1**	**2.2**
PHP Total	**150**	**161**	**239**	**254**	**281**	**333**	**370**	**403**	**436**	**457**
PHP Departures	143	155	245	263	293	350	391	426	462	485
PHP Arrivals	143	153	226	240	266	314	348	379	410	429
Employees / shift peak	**182**	**191**	**230**	**237**	**248**	**248**	**243**	**236**	**228**	**223**
One-direction vehicles traffic – Departures + city traffic	**696**	**712**	**777**	**792**	**812**	**825**	**830**	**833**	**838**	**838**
Private vehicle - Passengers and visitors	285	290	309	314	320	327	331	335	340	342
Taxi - Passengers	156	159	169	172	175	179	181	183	186	187
VIP - Passengers	116	118	126	128	131	133	135	137	139	140
Private vehicle - Employees	122	128	154	159	166	166	163	158	153	149
Buses - Passengers	0	0	0	0	0	0	0	0	0	0
Additional off-airport traffic (vehicles)	17	17	19	19	20	20	20	20	20	20
One-direction vehicles traffic – Arrivals + city traffic	**705**	**721**	**785**	**797**	**818**	**829**	**834**	**837**	**841**	**842**
Private vehicle - Passengers and visitors	290	294	313	317	323	329	333	337	341	344
Taxi/APP - Passengers	158	161	171	173	177	180	182	184	187	188
VIP - Passengers	118	120	128	129	132	134	136	138	139	140
Private vehicle - Employees	122	128	154	159	166	166	163	158	153	149
Buses - Passengers	0	0	0	0	0	0	0	0	0	0
Additional off-airport traffic (vehicles)	17	18	19	19	20	20	20	20	21	21

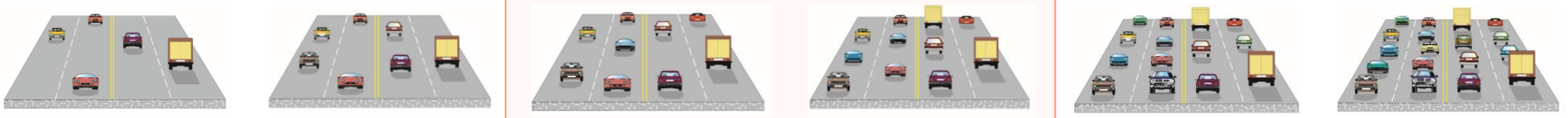
Source: TCIAA Curbside traffic survey (July 2022), ALG analysis

- Passenger flow is based on peak hour
- An increase in the employee's demand for airport access is considered to account for the increase in traffic and commercial/real estate activities
- For employees using their own vehicle, it is considered that their arrival is distributed generating a 40% coincidence with the peak of passengers
- The fact that the access road is mainly for the exclusive use of the airport means that the additional demand for vehicles outside the airport is reduced (assumed a hypothesis of 2.5% over the peak of passengers and employees)
- Further studies should evaluate the simultaneous (ARR+DEP) peaks and the effect of a recirculation rate for vehicles that can drop off a pax and pick other up in sequence

The airport access road is expected to show congestion during peak times in the long term

Access road capacity-demand analysis

A	B	C	D	E	F
330 vehicles/h per lane	540 vehicles/h per lane	790 vehicles/h per lane	1,030 vehicles/h per lane	1,290 vehicles/h per lane	>1,290 vehicles/h per lane



Reference for the peak hour analysis

Note: The flows have been adjusted with a security factor of 0.90 for heavy vehicles and 0.90 for light vehicles for non-regular users of the road

Traffic forecast	2022	2023	2027	2028	2030	2035	2040	2045	2050	2053
MPax Total (O/D)	**1.2**	**1.3**	**1.6**	**1.7**	**1.8**	**1.9**	**2.0**	**2.0**	**2.1**	**2.2**
PHP Departures	143	155	245	263	293	350	391	426	462	485
PHP Arrivals	143	153	226	240	266	314	348	379	410	429
One-direction vehicles traffic – Departures	**696**	**712**	**777**	**792**	**812**	**825**	**830**	**833**	**838**	**838**
Required lanes - LoS C	1	1	1	1	2	2	2	2	2	2
LoS provided based on existing lanes	C	C	C	C	D	D	D	D	D	D
One-direction vehicles traffic – Arrivals	**705**	**721**	**785**	**797**	**818**	**829**	**834**	**837**	**841**	**842**
Required lanes - LoS C	1	1	1	2	2	2	2	2	2	2
LoS provided based on existing lanes	C	C	C	D	D	D	D	D	D	D

- Preliminary results show that **a widening would serve to alleviate congestion** in the forecasted period, although **additional actions (outside the scope of the concession) may be required** at the end of the forecasted period
- There are measures that could potentially improve the forecasted traffic volumes

Source: TCIAA Curbside traffic survey (July 2022), ACRP 40, ALG analysis

Note: An average speed of 56 km/h has been considered

Both terminal access curbsides are currently congested and expected to continue showing signs of saturation

Curbside capacity-demand analysis

A
Use < 70%

B
Use < 85%

C
Use < 100%

D
Use < 120%

Standard Level of Service for the peak hour

E
Use < 135%

F
Use > 135%

Existing length and curbside use

Traffic forecast	2022	2023	2027	2028	2030	2035	2040	2045	2050	2053
MPax Total (O/D)	**1.2**	**1.3**	**1.6**	**1.7**	**1.8**	**1.9**	**2.0**	**2.0**	**2.1**	**2.2**
Vehicles in Departures curbside	142	144	154	156	159	162	165	167	169	170
Vehicles in Arrivals curbside	144	146	156	157	161	164	166	168	170	171
Departures curbside (required length)	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Curbside use (ft)	463	472	502	511	521	531	538	545	553	557
LoS provided based on existing length	E	E	E	E	E	E	E	E	E	E
Arrivals curbside (required length)	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Curbside use (ft)	470	478	509	514	526	535	541	548	555	559
LoS provided based on existing length	E	E	E	E	E	E	E	E	E	E

- Preliminary results show **congestion of the departures and arrivals access curbside**
- **Operational measures** (access & parking restrictions, pay-per-use, etc.) **could mitigate the curbside saturation but departures curbside already shows congestion in 2022**

Source: TCIAA Curbside traffic survey (July 2022), ACRP 40, ALG analysis

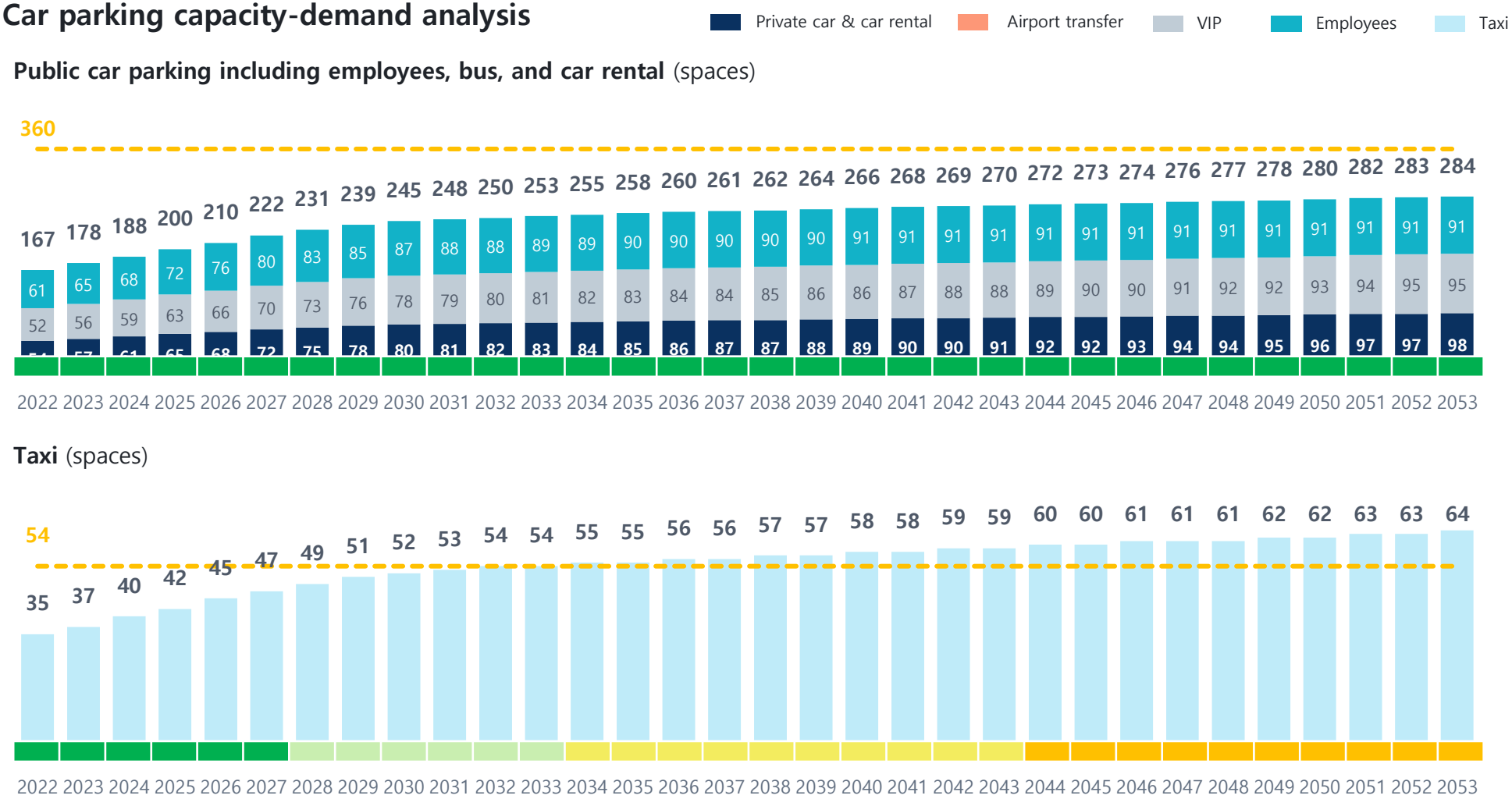
The airport has a public car parking which accommodates private car & car rental, employees' cars and buses/minivans

Car parking current situation

Source: Google Earth, ALG analysis

Taxi car parking facilities require expansion works in the short/mid term while public parking spaces are enough to cope with the demand

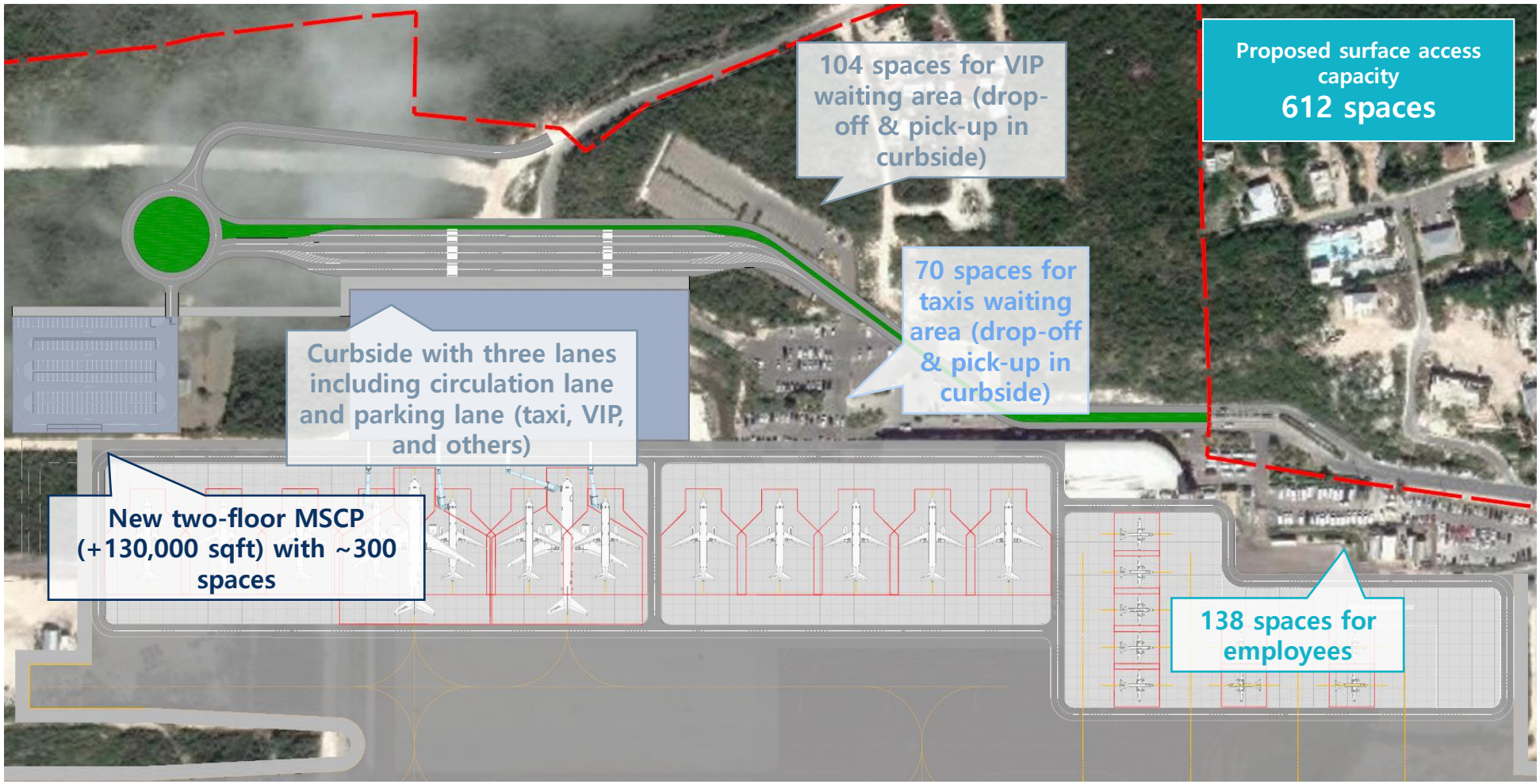
Car parking capacity-demand analysis



Source: TCIAA Curbside traffic survey (July 2022), Google Earth, ALG analysis

The surface access development plan is aligned with the construction of the new terminal providing an overall car parking capacity of ~610 spaces

Surface access proposed development



Source: ALG analysis

CHAPTER

4

Introduction

Current infrastructure condition & compliance

Capacity-demand analysis

Infrastructure development plan

- **Drawings**
- **Terminal 3D model**

Investment plan

CHAPTER

4.1

Introduction

Current infrastructure condition & compliance

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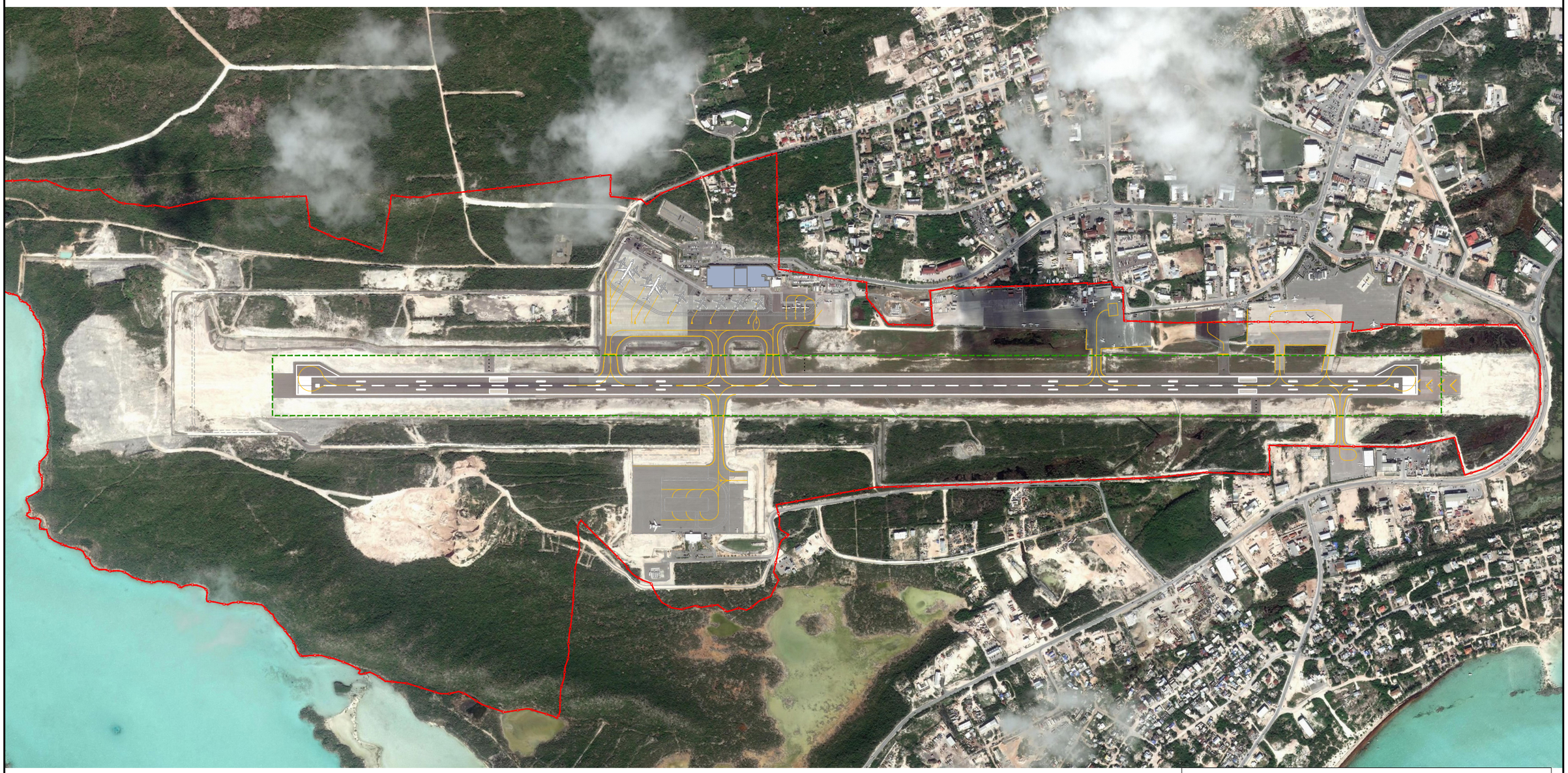
- Terminal 3D model

Investment plan



EXISTING AIRPORT PROPERTY AREA

EXISTING RUNWAY STRIP

Notes:

1. Drawing to be used for planning purposes only.
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3. The existing situation drawings are not as-built drawings.
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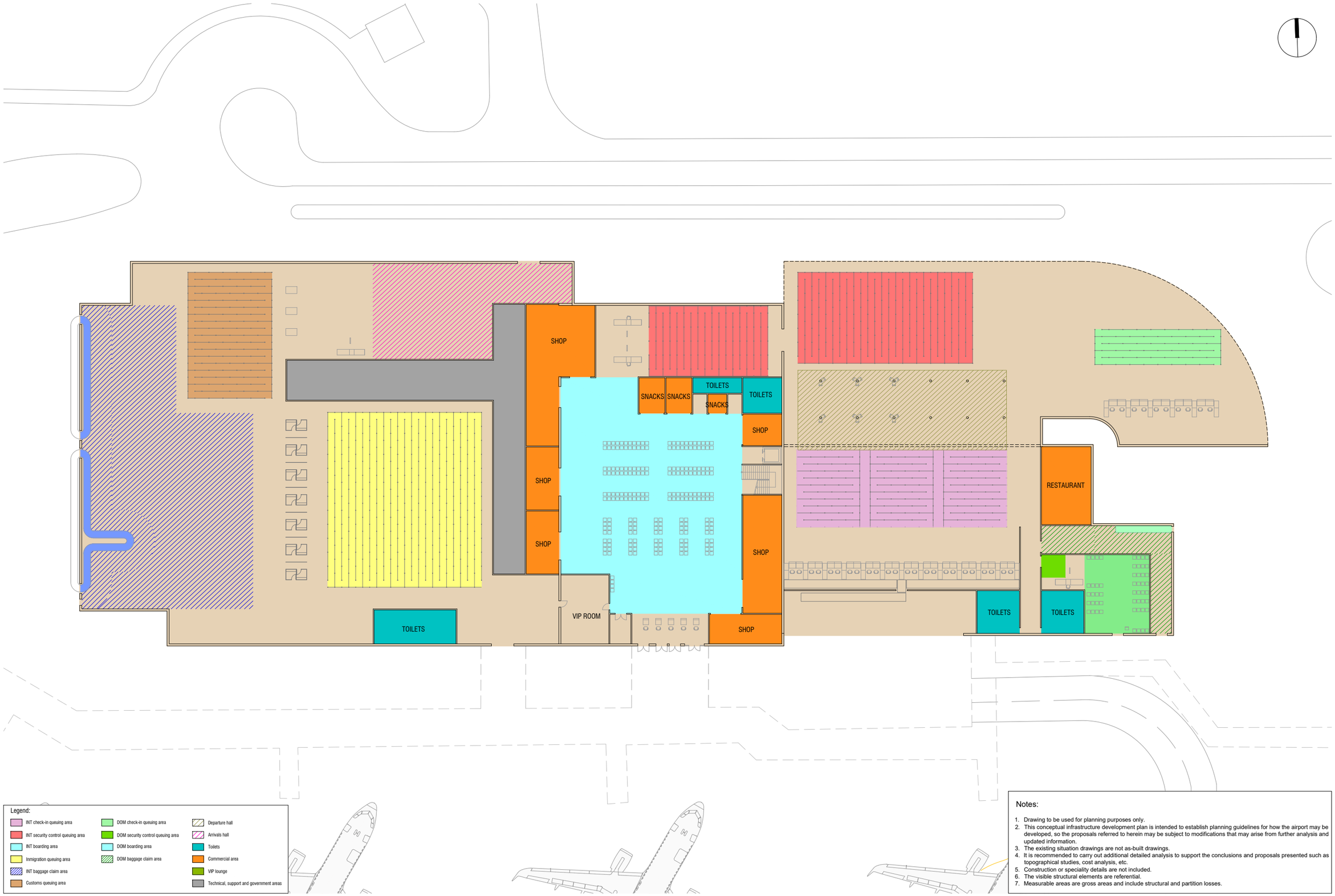
5. Construction or speciality details are not included.
6. The visible structural elements are referential.
7. Measurable areas are gross areas and include structural and partition losses.

CLIENT: THE GOVERNMENT OF THE TURKS & CAICOS ISLANDS	CONSULTANT: ALG Transport & Infrastructure GIDE	PROJECT: PROVIDENCIALES INT'L AIRPORT (PLS) REDEVELOPMENT PROJECT TECHNICAL, FINANCIAL AND LEGAL CONSULTANT	SCALE: 1: 10.000 ORIGINAL A3	0 100 200m GRAPH	DATE: JULY 2022 FILE NAME: Providenciales (existing).dwg	DRAWING TITLE: EXISTING SITUATION GENERAL PLAN	DRAWING NUMBER: 1 PAGE 1 OF 3



Legend:

- INT check-in queuing area
- INT security control queuing area
- INT boarding area
- Immigration queuing area
- INT baggage claim area
- Customs queuing area
- DOM check-in queuing area
- DOM security control queuing area
- DOM boarding area
- DOM baggage claim area
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- VIP lounge
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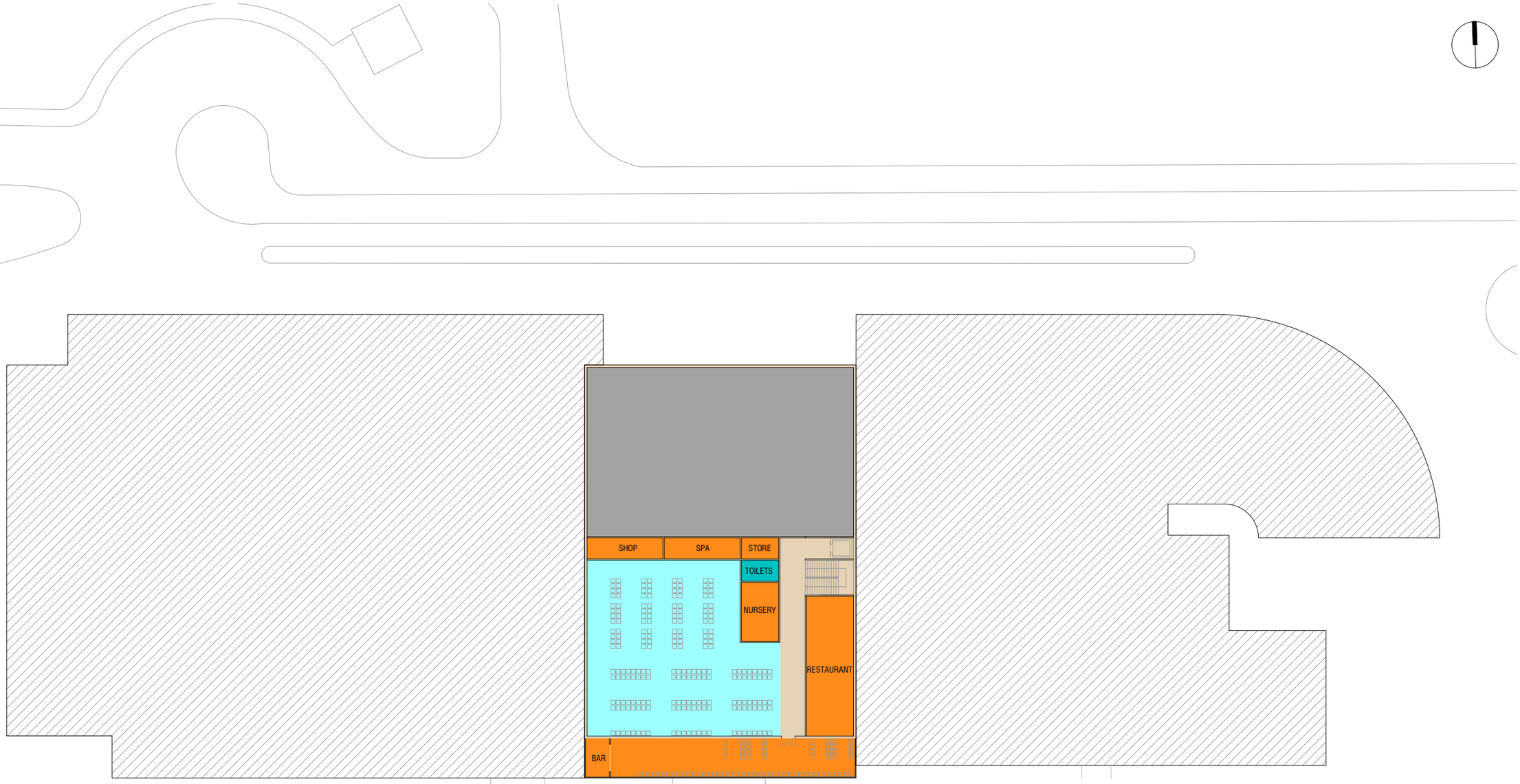

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PROJECT:
PROVIDENCIALES INT'L AIRPORT (PLS)
REDEVELOPMENT PROJECT
TECHNICAL, FINANCIAL AND LEGAL CONSULTANT

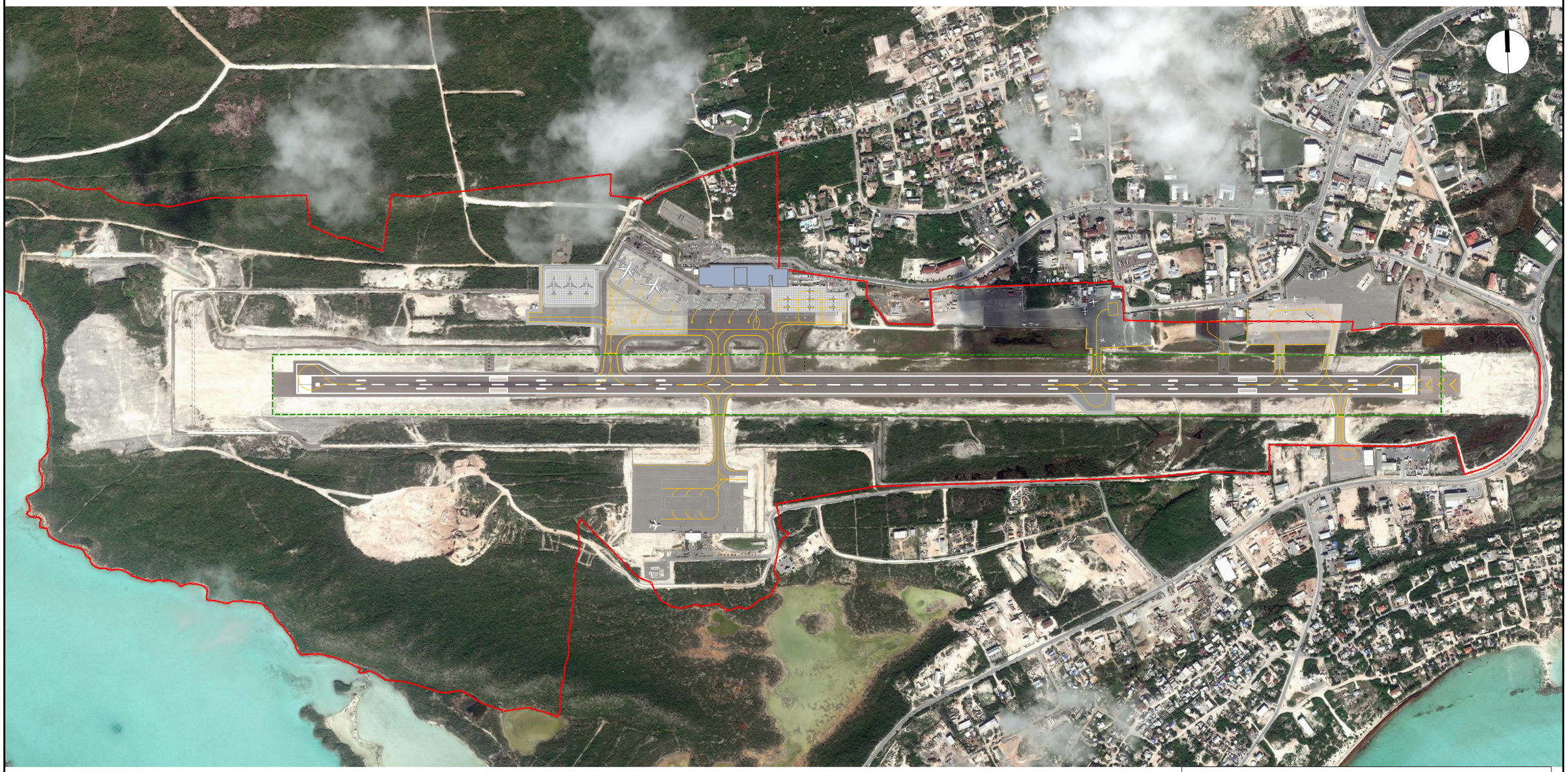
SCALE: 1: 500 ORIGINAL A3 — 0 5 10m GRAPH

DATE: JULY 2022

FILE NAME: Providenciales (existing).dwg

DRAWING TITLE:
EXISTING SITUATION
PASSENGER TERMINAL BUILDING
FIRST FLOOR

DRAWING NUMBER: 1



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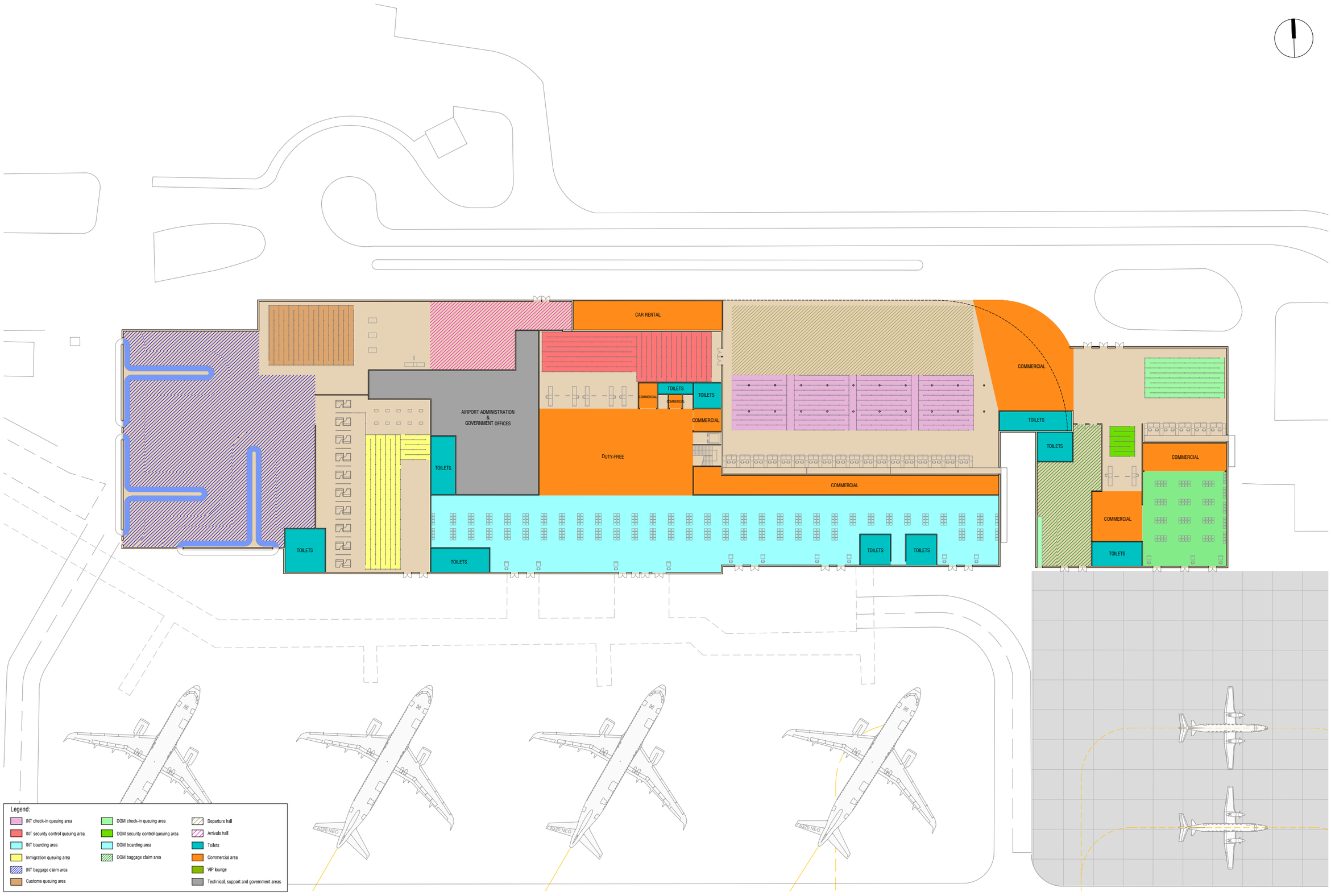
CLIENT: THE GOVERNMENT OF THE TURKS & CAICOS ISLANDS	CONSULTANT: ALG Transport & Infrastructure GIDE	PROJECT: PROVIDENCIALES INT'L AIRPORT (PLS) REDEVELOPMENT PROJECT TECHNICAL, FINANCIAL AND LEGAL CONSULTANT	SCALE: 1: 10.000 ORIGINAL A3 — 0 100 200m GRAPH	DATE: JULY 2022 FILE NAME: Providenciales (quick wins).dwg	DRAWING TITLE: QUICK WINS GENERAL PLAN	DRAWING NUMBER: 2 PAGE 1 OF 3



CLIENT: THE GOVERNMENT OF THE TURKS & CAICOS ISLANDS	CONSULTANT: ALG Transport & Infrastructure GIDE	PROJECT: PROVIDENCIALES INT'L AIRPORT (PLS) REDEVELOPMENT PROJECT TECHNICAL, FINANCIAL AND LEGAL CONSULTANT	SCALE: 1: 700 ORIGINAL A3 — 0 7.5 15m GRAPH	DATE: JULY 2022 FILE NAME: Providenciales (quick wins).dwg	DRAWING TITLE: QUICK WINS PASSENGER TERMINAL BUILDING GROUND FLOOR	DRAWING NUMBER: 2 PAGE 2 OF 3

CLIENT: THE GOVERNMENT OF THE TURKS & CAICOS ISLANDS

CONSULTANT: ALG Transport & Infrastructure GIDE

PROJECT:
PROVIDENCIALES INT'L AIRPORT (PLS)
REDEVELOPMENT PROJECT
TECHNICAL, FINANCIAL AND LEGAL CONSULTANT

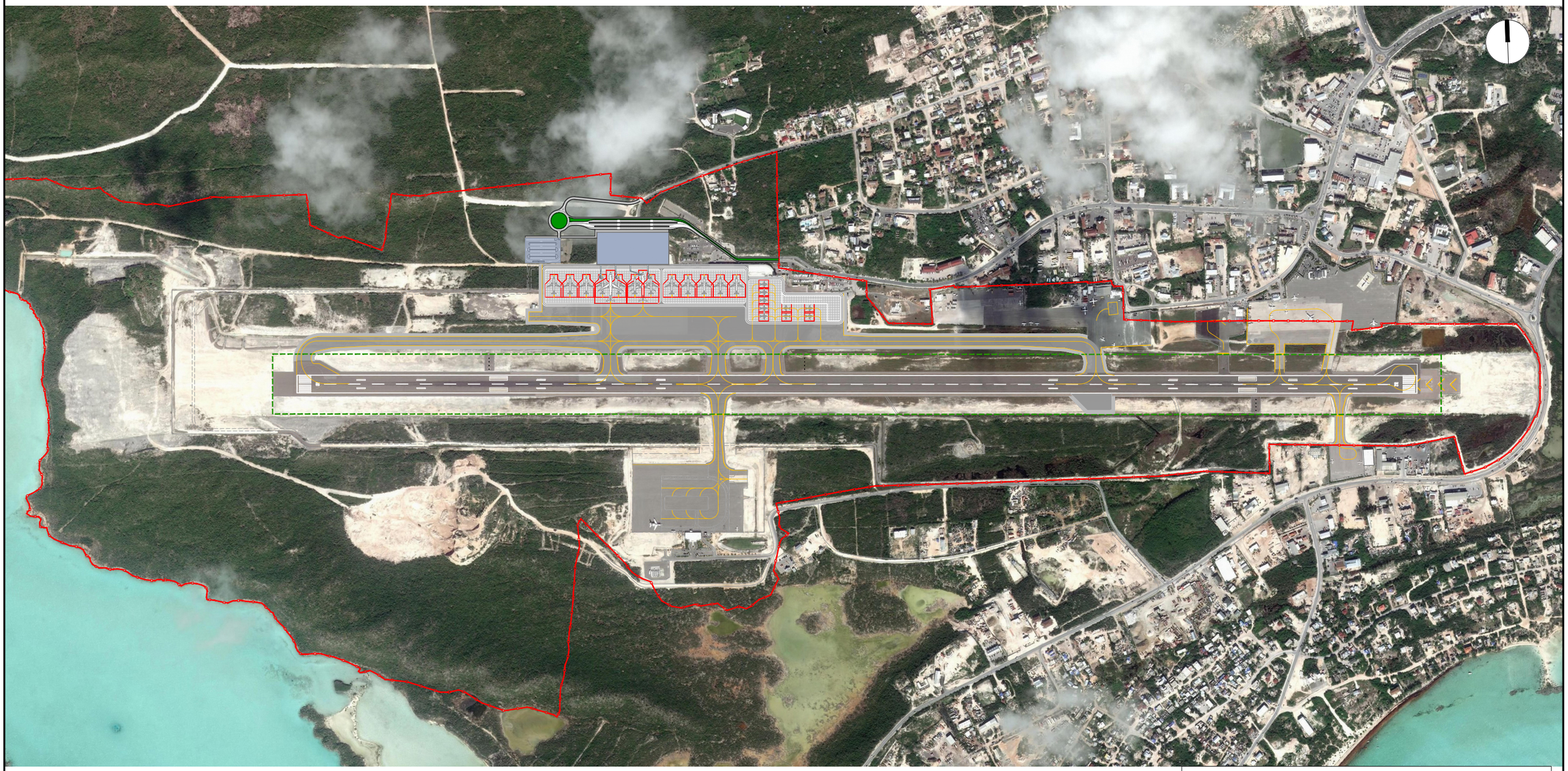
SCALE: 1: 700 (0 7.5 15m) ORIGINAL A3 GRAPH

DATE: JULY 2022

FILE NAME: Providenciales (quick wins).dwg

DRAWING TITLE:
QUICK WINS
PASSENGER TERMINAL BUILDING
FIRST FLOOR

DRAWING NUMBER: 2



EXISTING AIRPORT PROPERTY AREA
EXISTING RUNWAY STRIP

Notes:

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3. The existing situation drawings are not as-built drawings.
4. It is recommended to carry out additional detailed analysis to support the conclusions and proposals presented such as topographical studies, cost analysis, etc.
5. Construction or speciality details are not included.
6. The visible structural elements are referential.
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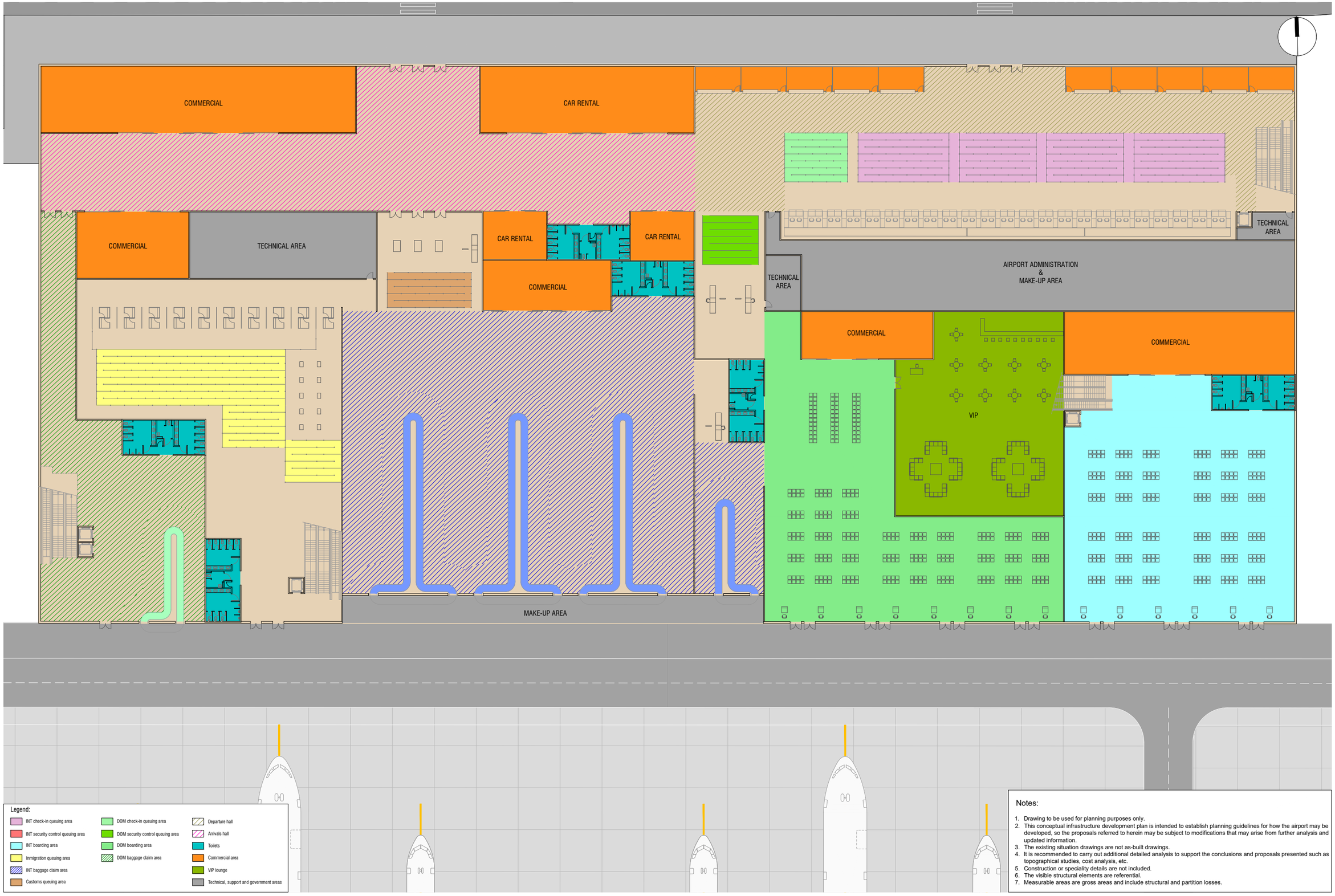
CLIENT:	CONSULTANT:	PROJECT:	SCALE:	DATE:	DRAWING TITLE:	DRAWING NUMBER:
THE GOVERNMENT OF THE TURKS & CAICOS ISLANDS	ALG Transport & Infrastructure GIDE	PROVIDENCIALES INT'L AIRPORT (PLS) REDEVELOPMENT PROJECT TECHNICAL, FINANCIAL AND LEGAL CONSULTANT	1: 10.000 ORIGINAL A3 0 100 200m GRAPH	JULY 2022 FILE NAME: Providenciales (development).dwg	SHORT/MID TERM DEVELOPMENT GENERAL PLAN	3 PAGE 1 OF 3



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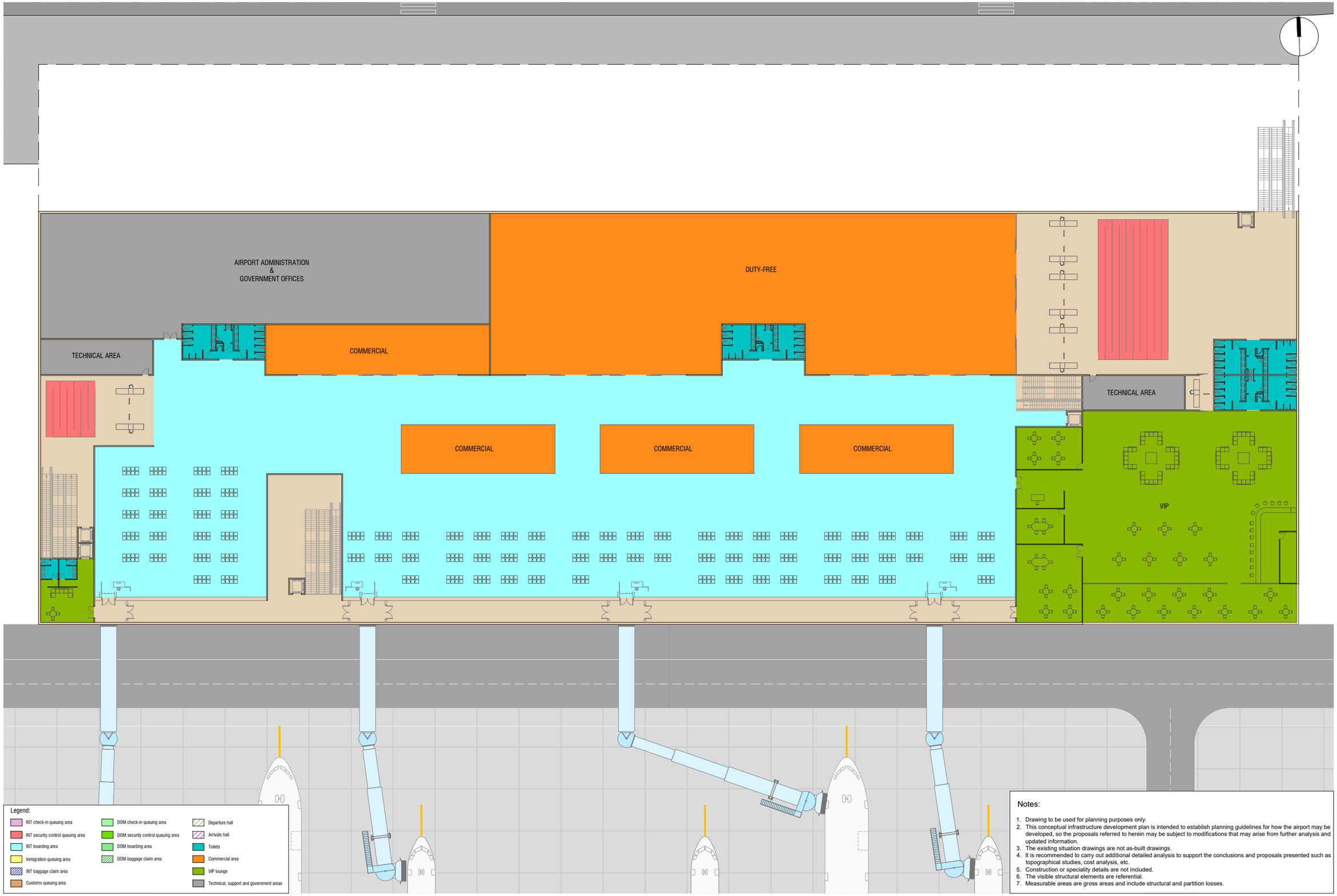

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CHAPTER

4.2

Introduction

Current infrastructure condition & compliance

Capacity-demand analysis

Infrastructure development plan

- Drawings
- **Terminal 3D model**

Investment plan

New PTB – Departures Access

Source: ALG analysis

New PTB – Airside

Source: ALG analysis

New PTB – Departures and arrivals hall

Source: ALG analysis

New PTB – Check-in

Source: ALG analysis

New PTB – International VIP lounge

Source: ALG analysis

New PTB – International boarding area

Source: ALG analysis

New PTB – International boarding area (commercial areas)

Source: ALG analysis

New PTB – International and domestic boarding gates

Source: ALG analysis

New PTB – Domestic boarding area (commercial area)

Source: ALG analysis

New PTB – Baggage claim

Source: ALG analysis

CHAPTER

5

Introduction

Current infrastructure condition & compliance

Capacity-demand analysis

Infrastructure development plan

Investment program

- **Methodology**
- **Results**

CHAPTER

5.1

Introduction

Current infrastructure condition & compliance

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The investment strategy has been defined under three categories of investment: expansion CapEx, compliance CapEx, and maintenance CapEx

Types of investments and responsibilities of the private investor

Investments	Driver	Obligatory nature
Expansion CapEx. Investment actions required in order to develop the airport's infrastructure and its processing capacity, and in general, the addition of new infrastructure, equipment or systems not previously existing $ $ $	**Demand evolution (*triggers:* PHP/ stands/Mpax)**	**Mandatory investments** linked to **demand triggers or pre-identified current needs**, whichever comes first
Compliance CapEx. To align the airport's infrastructure to the standard and recommended practices (SARPs) of ICAO mainly regarding the safety and security of the operation. This type of investment will adopt the form of capital investment actions or major maintenance and replacement actions	**Pre-identified non-compliances**	**Mandatory investments** in **the first four years** of the concession
Maintenance CapEx. Also referred to as "Maintenance and Replacement Investments" required to maintain the good and safe operating condition of existing infrastructure. Major maintenance actions may also be required to ensure regulatory compliance (e.g. major rehabilitation of a runway, taxiway or apron pavement to ensure the safe operation of aircraft) $	**Lifecycle of assets, last intervention and current condition**	A **minimum maintenance plan is requested from the bidder** as well as a commitment to carry out the proposed plan

Source: ALG analysis

Compliance investment are not envisaged for PLS given its current operation (VFR)

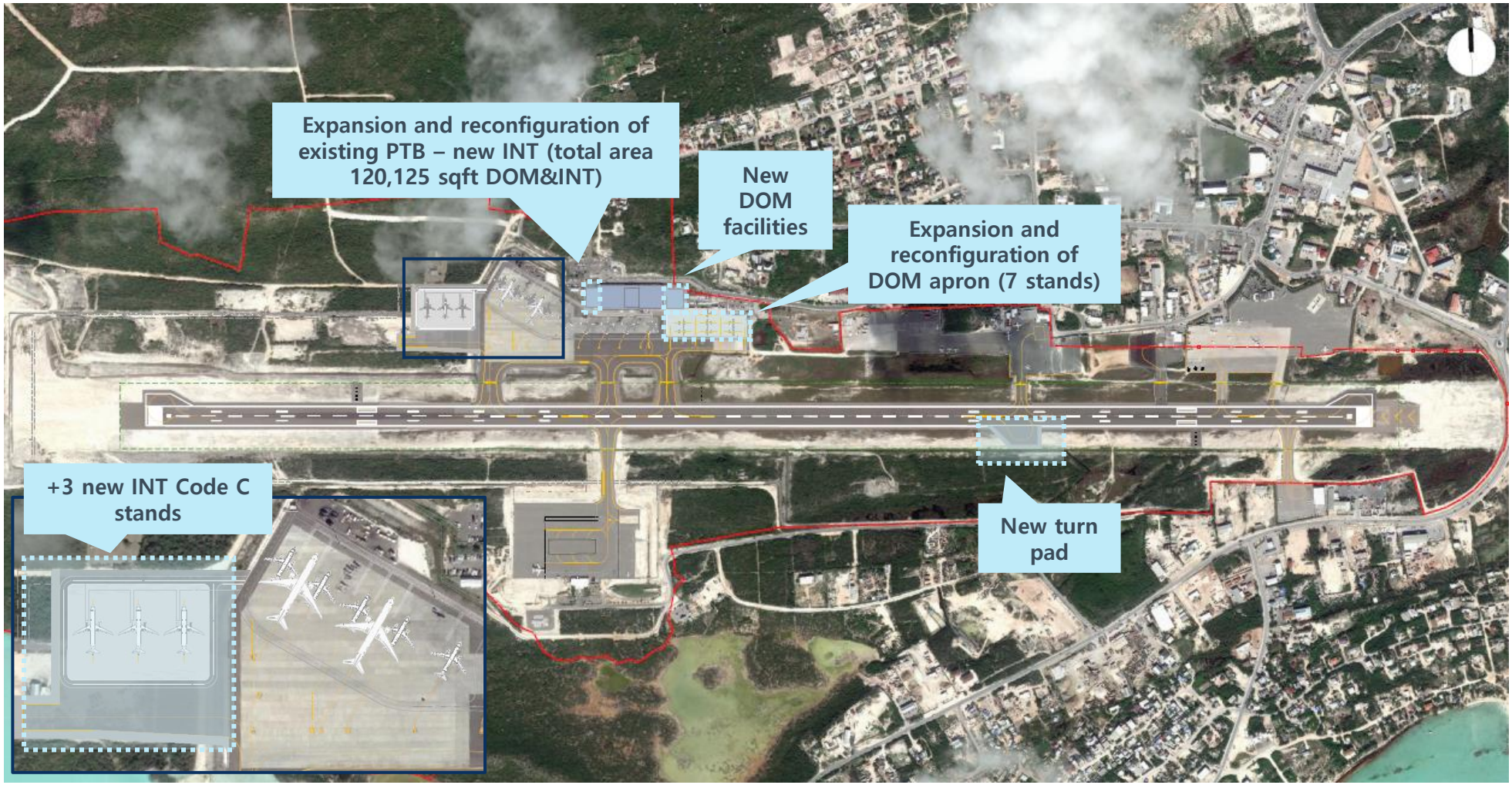
Two construction phases have been proposed to increase the airport's capacity: quick wins and short-term developments

	2022 Status Quo	2023-2024 Quick wins	2025-2028 Short/Mid Term developments
Airfield	**RWY 9,186 ft** Airfield Capacity **~14 ATMs/h**	**+ Turn Pad** **+ FBO restrictions** Airfield Capacity **~17 ATMs/h**	**+ TWY for DEP** **+ TWY for ARR** Airfield Capacity **26-28 ATMs/h**
Apron	**~750,000 sqft** Stand Capacity **9 code C + 3 code A/B**	**+ 282,000 sqft** Stand Capacity **12 code C + 7 code B**	**+ 110,555 sqft** Stand Capacity **12 code C + 9 code B**
PTB	**92,322 sqft** Terminal Capacity **0.9-1.2 Mpax**	**PTB expansion** **+ 26,700 sqft** Terminal Capacity **1.1-1.6 Mpax**	**New PTB of** **270,000 sqft** Terminal Capacity **2.5-3.6 Mpax**
Surface access	**92,322 sqft** Car parking Capacity **409 spaces**	-	**Expansion with new PTB** Car parking Capacity **612 spaces**

Source: ALG analysis

Quick wins: expansion and reconfiguration of existing PTB, INT and DOM apron, and construction of a new turn pad to increase RWY capacity

Proposed expansion works

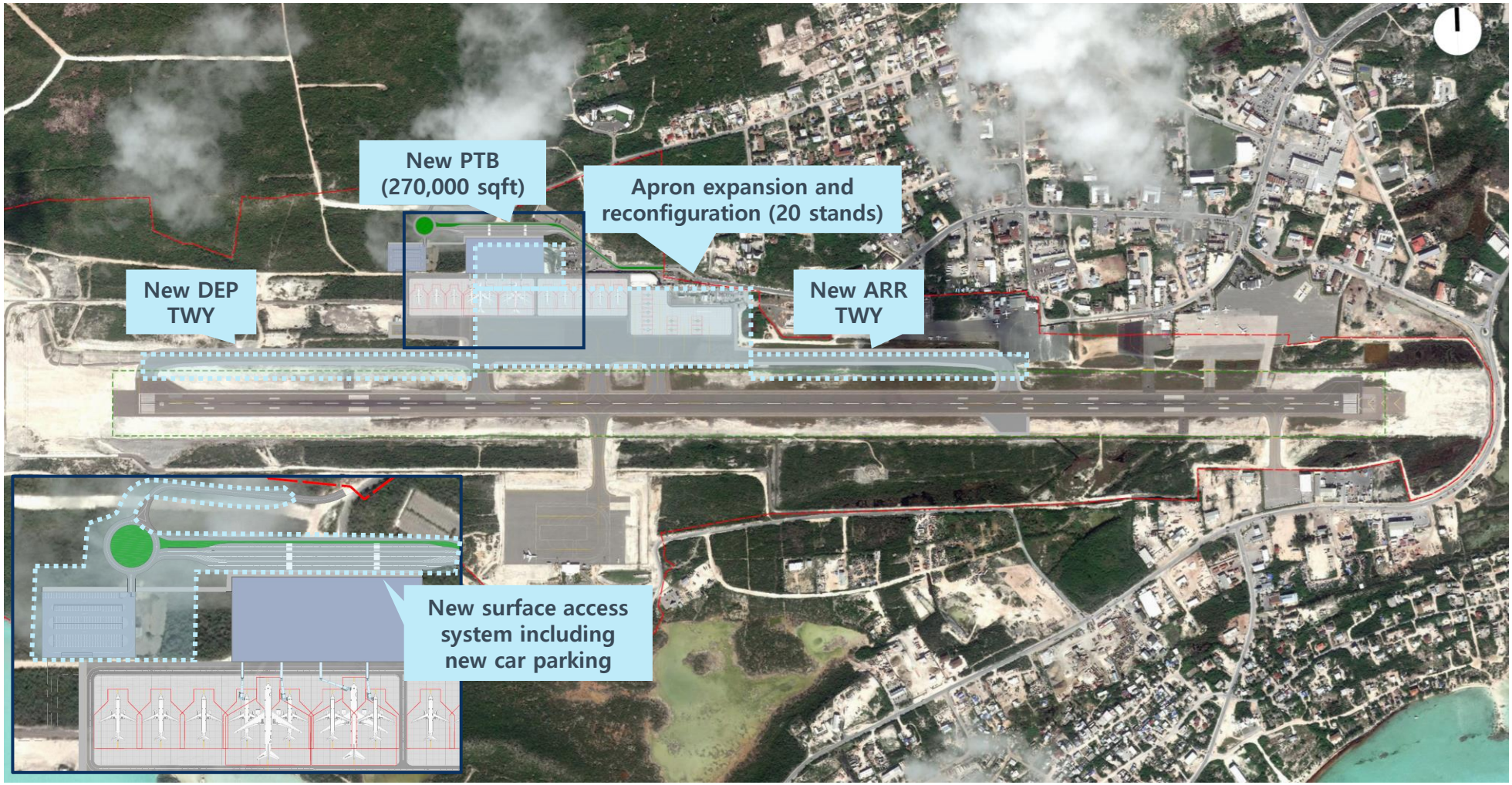


Source: Google Earth, ALG analysis

Expansion CapEx

Short/mid term: construction of a new PTB (DOM&INT), reconfiguration and expansion of commercial apron and construction of a parallel TWY

Proposed expansion works



Source: Google Earth, ALG analysis

Maintenance CapEx

Maintenance CapEx includes existing main facilities and equipment that represent the majority of infrastructure value

ID	Facility	Area (ft2)
1	RWY	1,811,000
2	TWY G	43,600
3	TWY A	43,600
4	TWY B	43,600
5	Apron - asphalt	445,600

ID	Facility	Area (ft2)
6	Apron - concrete	456,400
7	Lighting masts (units)	5
8	Passenger terminal retrofit and equipment	92,300
9	Public car parking	74,500
10	Taxi parking	18,300

ID	Facility	Area (ft2)
11	Airport road	25,200
12	Perimeter road	345,200
13	Perimeter fence (ft)	28,500
14	ATC TWR	5,700
15	RFFS facility and trucks (#3)	3,800

Source: ALG analysis

Maintenance CapEx includes also maintenance and replacement investments of new facilities proposed as part of the expansion CapEx

Unit cost references for expansion CapEx estimations and maintenance CapEx definition

Item	USD 2022	Unit	Lyfe cycle (year)	% Reinvest. /cycle	% Surface adjustment
RWY and TWYs					
RWY expansion	57	USD/sqft	-	-	-
TWY expansion	51	USD/sqft	-	-	-
RWY repavement	16	USD/sqft	20	100%	100%
TWY repavement	14	USD/sqft	20	100%	100%
Apron					
Apron expansion	71	USD/sqft	-	-	-
Apron repavement	18	USD/sqft	30	70%	70%
Apron repavement GA	8	USD/sqft	30	100%	100%
Lighting masts - New construction	110,600	USD/unit	-	-	-
Lighting masts - Replacement	110,600	USD/unit	25	100%	100%
Terminal					
Terminal construction	557	USD/sqft	-	-	-
Terminal redesign	139	USD/sqft	25	60%	40%
Cargo terminal construction	297	USD/sqft	-	-	-
Admin building construction	186	USD/sqft	-	-	-
Boarding Bridge	1,260,000	USD/unit	25	100%	100%
BHS	8,140,000	USD/unit	25	100%	100%
Terminal equipment	23	USD/sqft	25	60%	40%
Baggage belt	109,000	USD/unit	25	100%	100%

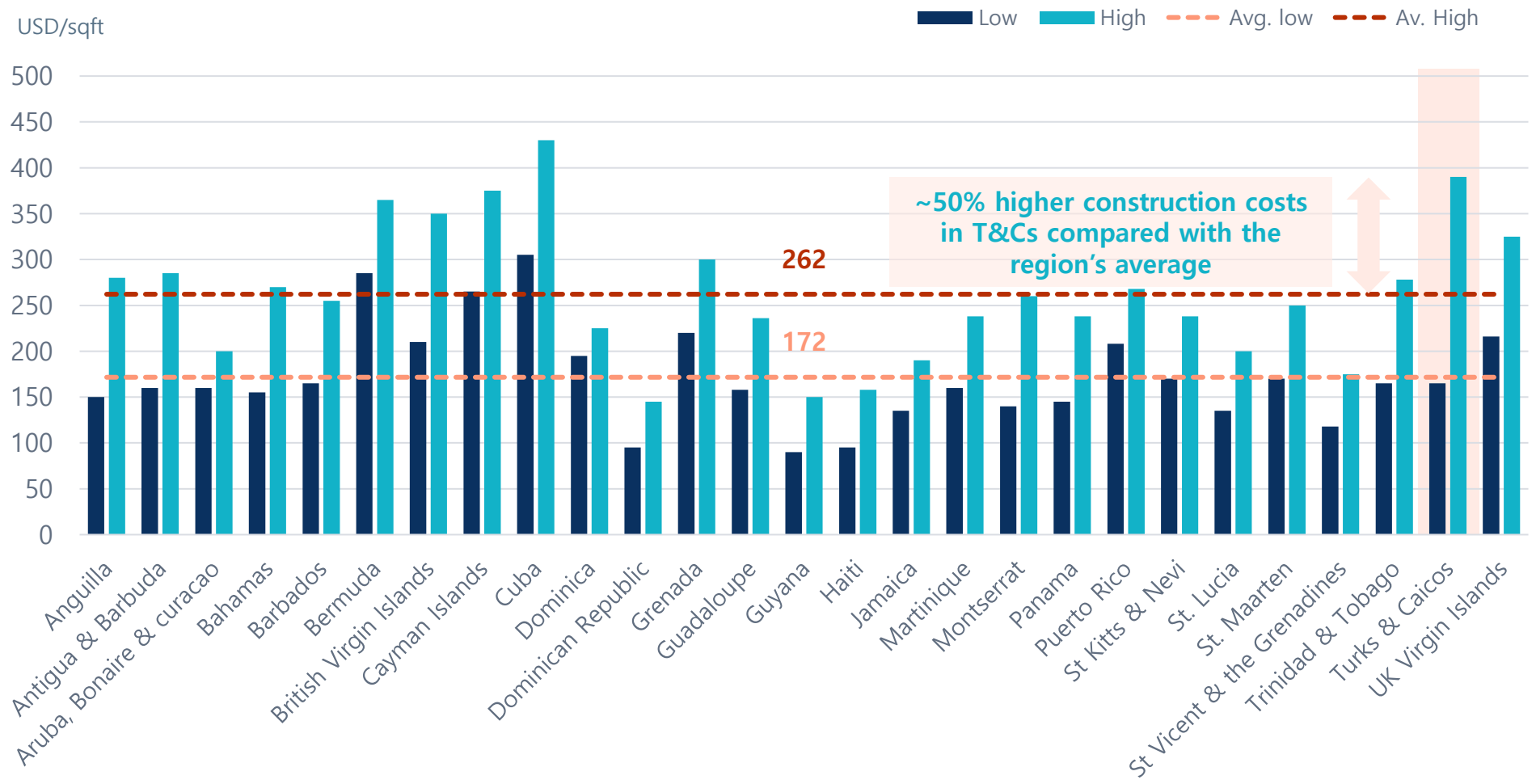
Item	USD 2022	Unit	Lyfe cycle (year)	% Reinvest. /cycle	% Surface adjustment
Parking and access					
Car Parking construction	20	USD/sqft	-	-	-
Car Parking repavement	5	USD/sqft	1	20%	10%
Road construction	13	USD/sqft	-	-	-
Road repavement	5	USD/sqft	1	20%	10%
Support facilities					
ATC Tower	269	USD/sqft	20	100%	100%
RFFS facilities	34	USD/sqft	20	100%	100%
RFFS Truck	1,090,000	USD/unit	20	100%	100%
Perimeter fence	37	USD/ft	1	100%	5%
Ambulance	106,000	USD/unit	15	100%	100%
Terminal demolition	16	USD/sqft	-	-	-
Demolitions	12	USD/sqft	-	-	-
Waste water treatment plant	1,000,000	USD/unit	30	100%	100%
Incinerator - Co-generation plant	2,280,000	USD/unit	30	100%	100%
Waste storage	55,000	USD/unit	30	100%	100%
Hydrocarbon separation plant	182,000	USD/unit	30	100%	100%
Power station	1,720,000	USD/unit	30	100%	100%

Source: ALG analysis

The resulting unit cost takes into account the estimated % of reinvestment and a surface/cost adjustment

The benchmark of the region's construction costs has identified that T&Cs building construction costs are ~50% higher than the average

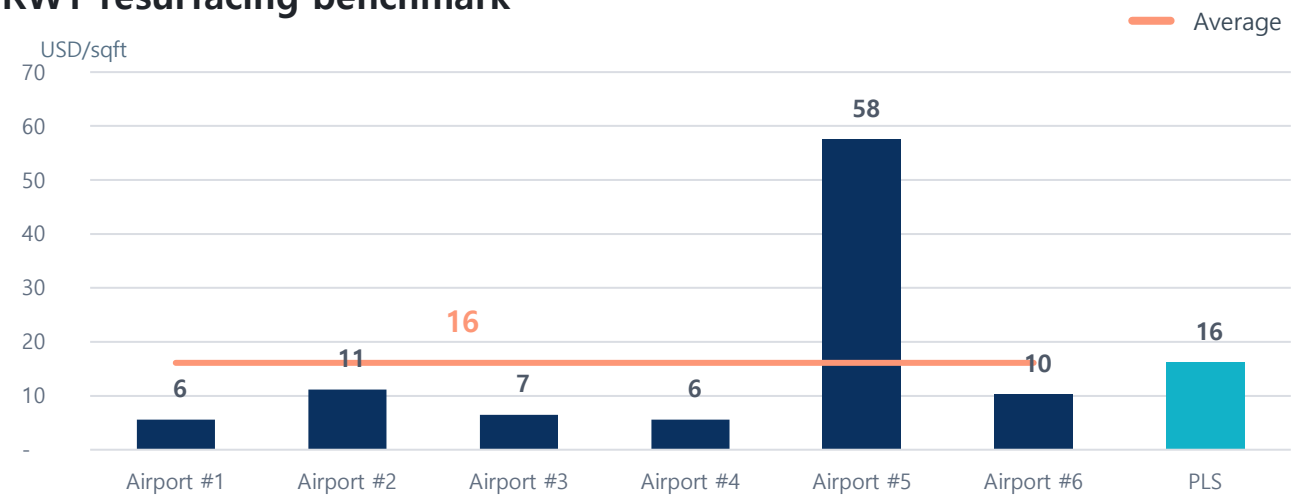
Caribbean construction costs benchmark (shopping centre)



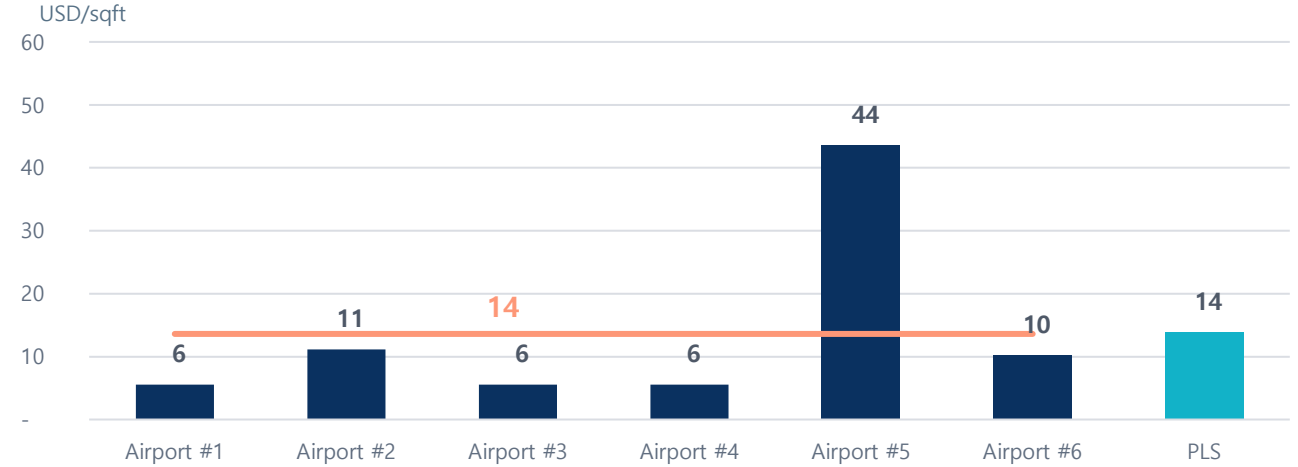
Source: 2021 Caribbean Report Construction Market Intelligence, ALG analysis

Benchmark of main unit costs on Caribbean airport projects and ALG hypothesis: Airfield resurfacing works

RWY resurfacing benchmark



TWY resurfacing benchmark



RWY resurfacing

The proposed unit cost for PLS (16 USD/ft2) is aligned with the region's benchmark average based on:

- Short construction works duration
- Highly dependent on machinery and less on construction materials
- Less massive manpower requirements to perform the works

TWY resurfacing

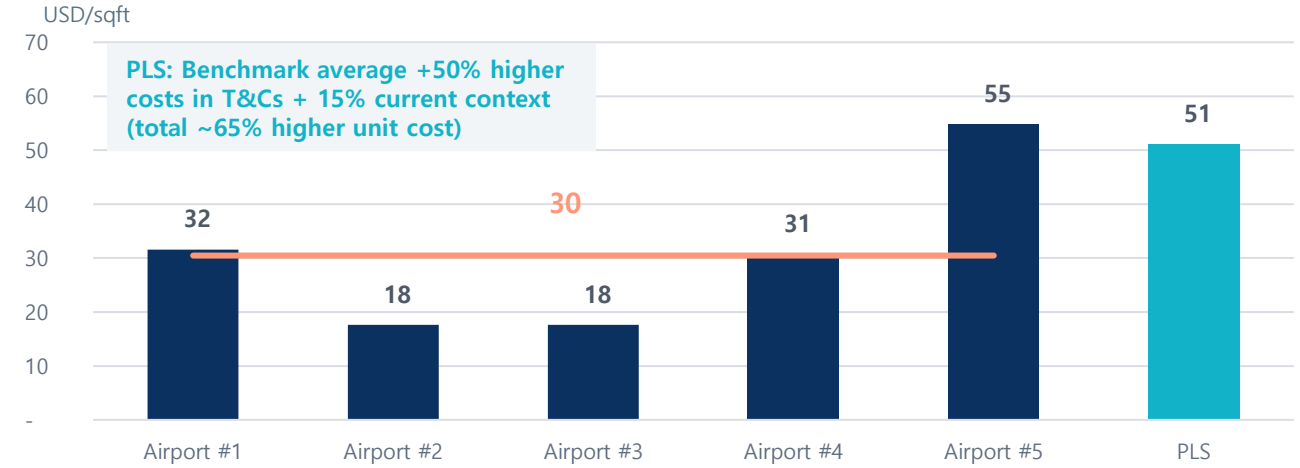
The proposed unit cost for PLS (14 USD/ft2) is aligned with the region's benchmark average based on:

- Short construction works duration
- Highly dependent on machinery and less on construction materials
- Less massive manpower requirements to perform the works

Benchmark of main unit costs on Caribbean airport projects and ALG hypothesis: Airfield construction/expansion works

Apron construction/expansion benchmark

TWY construction/expansion benchmark



Apron construction/expansion

The proposed unit cost for PLS (71 USD/ft2) is ~65% higher than the region's benchmark average based on:

- Mid/long construction works duration
- Highly dependent on construction materials
- Massive manpower requirements to perform the works

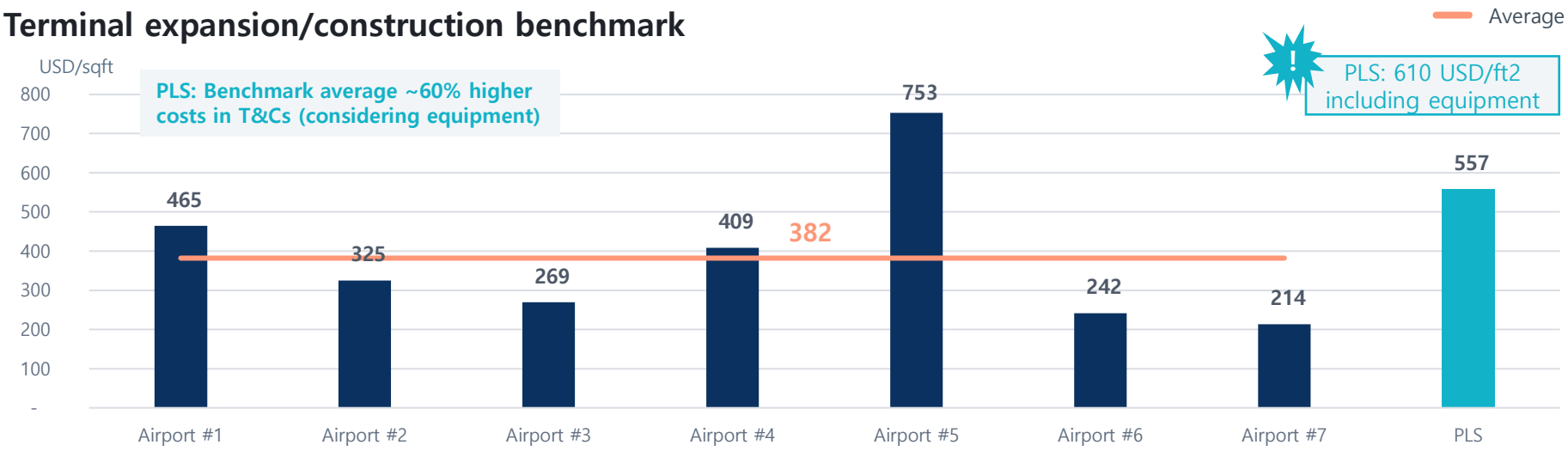
TWY construction/expansion

The proposed unit cost for PLS (51 USD/ft2) is ~65% higher than the region's benchmark average based on:

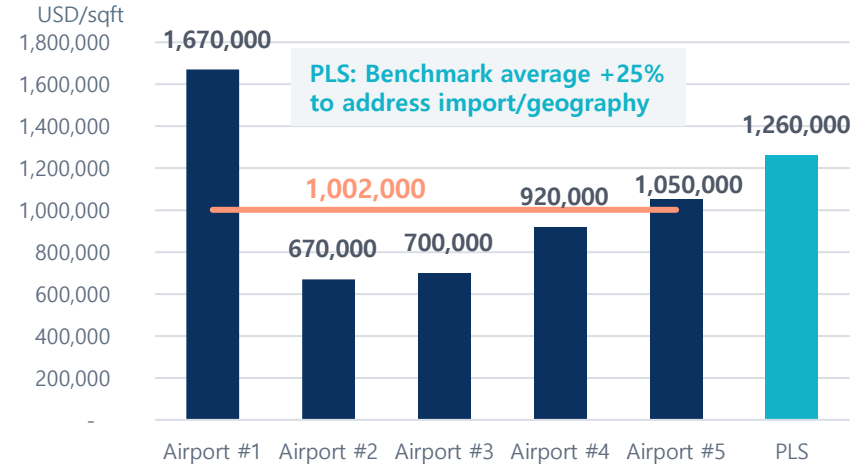
- Mid/long construction works duration
- Highly dependent on construction materials
- Massive manpower requirements to perform the works

Benchmark of main unit costs on Caribbean airport projects and ALG hypothesis: Landside construction works (terminal, PBBs, and surface car park)

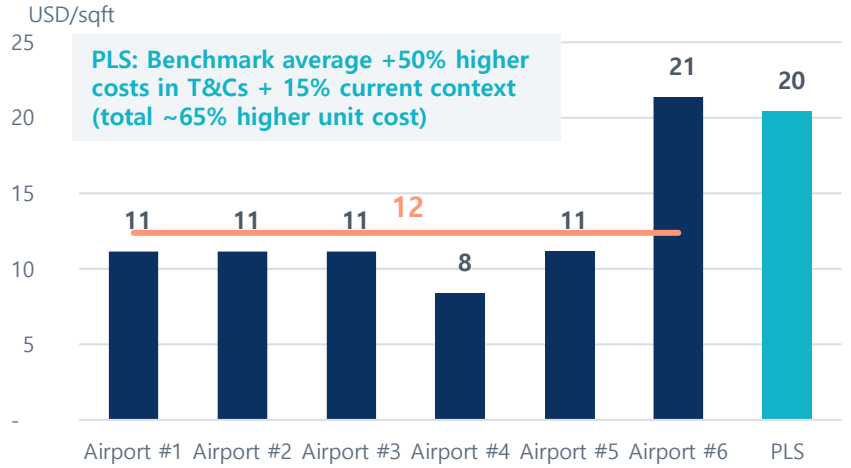
Terminal expansion/construction benchmark



PBBs benchmark



Surface car park construction/expansion benchmark



CHAPTER

5.2

Introduction

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- **Results**

Two different scenarios have been modelled: (1) Status Quo and (2) the entrance of a private specialized airport operator

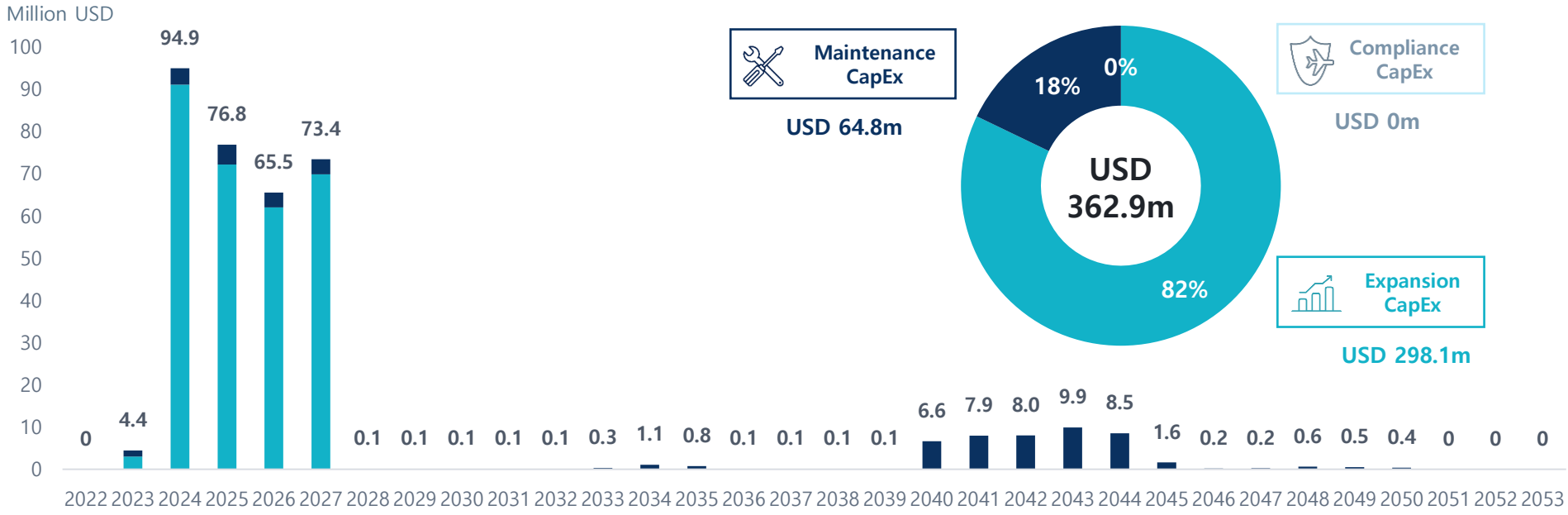
	STATUS QUO SCENARIO	PRIVATE OPERATOR SCENARIO
Ownership	TCIAA	TCIAA
Studied period	**30 years**	**30 years**
Operation, Maintenance, Construction	TCIAA + Technical Service Agreement (TSA) – O&M + ORAT contract – construction	Renowned International Airport Operator
Finance mechanism	TCIAA 100% Debt (Sovereign project guarantee)	Private: 70% Debt / 30% Equity for Expansion CapEx
	No impact on country's debt	
Government remuneration	TCIAA Dividends	PPP revenue share
Risk assessment	All risks remain on TCIAA	Relevant risk transferred to the Private Entity (design, construction delays, demand, operating cost, etc.)

Source: ALG analysis

Private operator

PLS would require an investment of USD 363m for the concession period, accounting expansion CapEx for 82% of total investment (USD 290m)

Investment plan (Million USD, constant values 2021, 2022-2053)



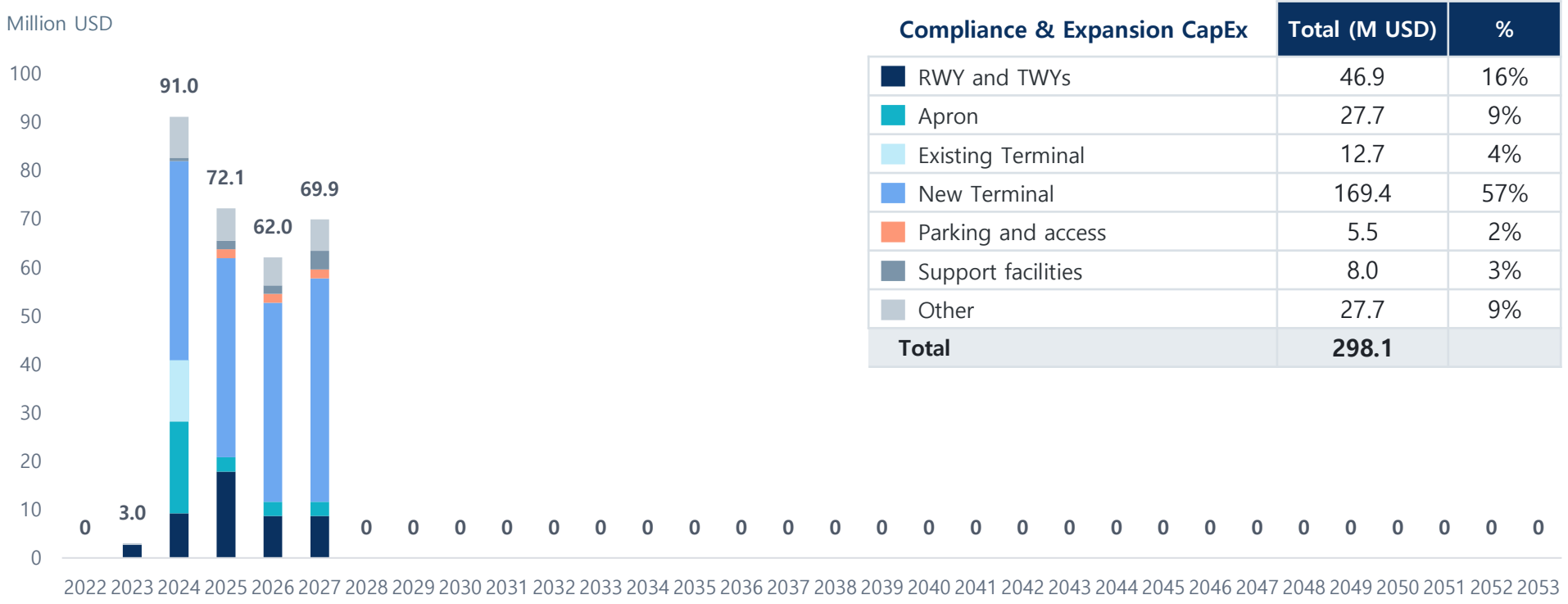
	2023-2024	2025-2028	2029-2053	Total 2023-2053
Expansion CapEx	USD 94.1m	USD 204.0m	-	USD 298.1m
Compliance CapEx	-	-	-	-
Maintenance CapEx	USD 5.3m	USD 11.8m	USD 47.7m	USD 64.8m
Total 2023-2053	USD 99.4m	USD 215.8m	USD 47.7m	USD 362.9m

Source: ALG analysis

Private operator

The largest expenditure of the expansion CapEx is the construction of the new Terminal Building, with a total value of USD 169.4m (~60% of total CapEx)

Expansion CapEx plan by category (Million USD, constant values 2021, 2022-2053)



Compliance & Expansion CapEx	Total (M USD)	%
RWY and TWYs	46.9	16%
Apron	27.7	9%
Existing Terminal	12.7	4%
New Terminal	169.4	57%
Parking and access	5.5	2%
Support facilities	8.0	3%
Other	27.7	9%
Total	**298.1**	

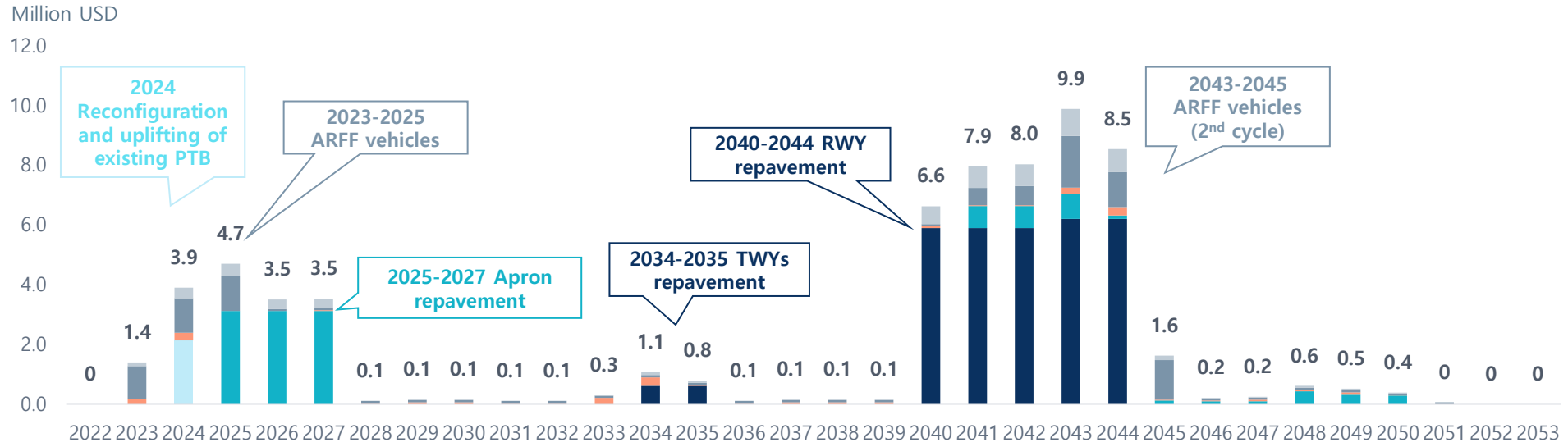
- Expansion CapEx is allocated at the beginning of the concession from 2024 to 2028
- The construction of the **new PTB (270,000 ft²) is the main expenditure of the concession and its costs is spread over four years (2024-2027)**
- The **major investment on the apron is in 2024** driven by the construction of the three code C stands (west)
- Investment in a **new turn pad and new TWYs for ARRs and DEPs** is required between 2023 and 2028 in order to **increase runway's capacity to accommodate the expected hourly demand**
- Other costs include preliminary studies (5%) and contingencies (5%)

Source: ALG analysis

Private operator

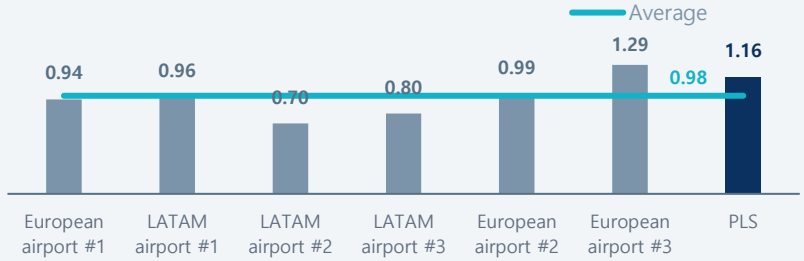
The largest expenditure of the maintenance CapEx is the repaving of the RWY & TWYs, with a total value of USD 31.3m (~50% of total maintenance CapEx)

Maintenance CapEx plan by category (Million USD, constant values 2021, 2022-2053)



Maintenance CapEx	Total (M USD)	%
RWY and TWYs	31.3	48%
Apron	13.1	20%
Terminal	2.1	3%
Parking and access	2.2	3%
Support facilities	10.3	16%
Other	5.9	9%
Total	**64.8**	

The resulting ratio of **major maintenance per passenger for PLS** is **aligned with the benchmarking average** (~1.0 USD/pax)

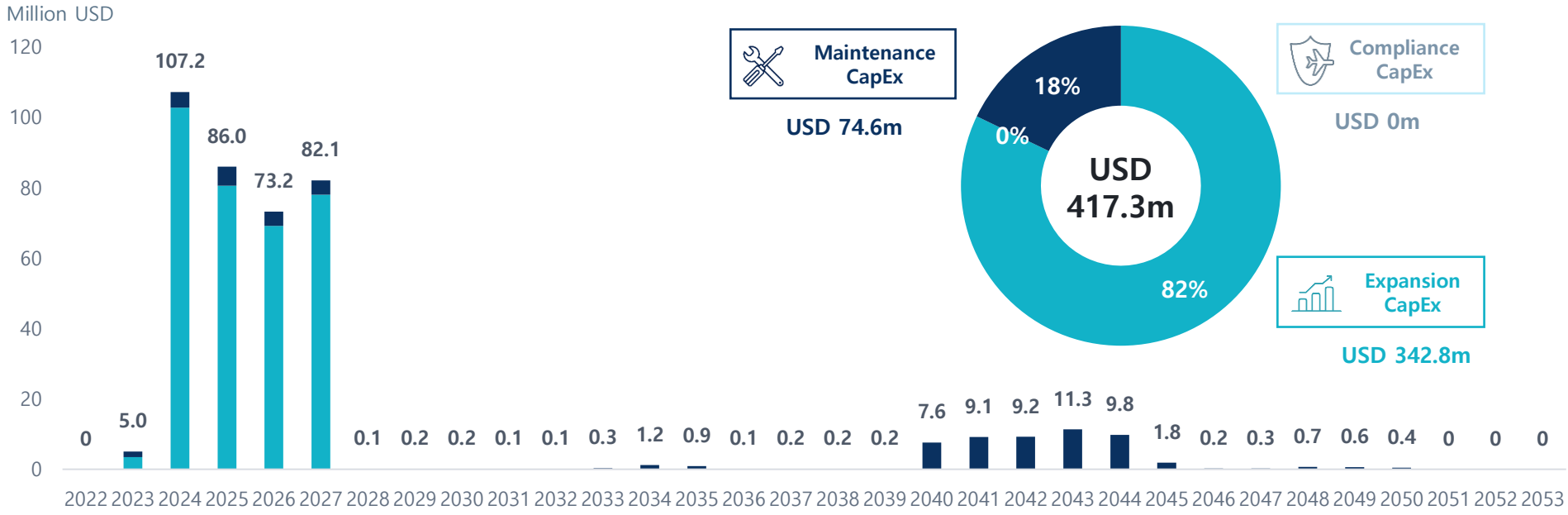


Source: ALG analysis

Status Quo

An additional 15% increase has been considered in case of being performed directly by TCIAA, resulting in USD 417.3m investment program

Investment plan (Million USD, constant values 2021, 2022-2053)



	2023-2024	2025-2028	2029-2053	Total 2023-2053
Expansion CapEx	USD 108.2m	USD 234.6m	-	USD 342.8m
Compliance CapEx	-	-	-	-
Maintenance CapEx	USD 6.1m	USD 13.6 m	USD 54.9m	USD 74.6m
Total 2023-2053	USD 114.3m	USD 248.2m	USD 54.9m	USD 417.3m

Source: ALG analysis