



AIRLINE BENEFITS AT A MULTI-AIRPORT CITY

The commercial benefits from a fuel, payload and carbon perspective with the introduction of Cape Winelands Airport (ICAO: FAWN) into Cape Town, South Africa.



01 BACKGROUND

Cape Winelands Airport (ICAO:FAWN) is currently being developed to become Cape Town's second airport for the city, performing a complementary role to the main Cape Town International Airport (ICAO: FACT). Comprising a 3.5km Code F runway system, the new Cape Winelands Airport will be able to accommodate all wide-body aircraft currently serving the region, thereby addressing capacity constraints. Most importantly, however, are the fuel and payload benefits that will be enabled to all current and future airlines operating to the city, specifically because of the existence of a second airport.

02 CURRENT SITUATION

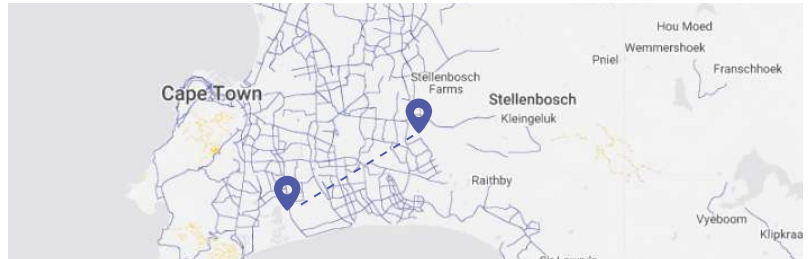
Cape Winelands Airport is 16 nautical miles away from Cape Town International Airport. The next closest Code F international airport is 789 nautical miles away, i.e. OR Tambo International Airport in Johannesburg (ICAO: FAOR). This means that for the majority of flight operations into Cape Town, airlines are carrying substantial amounts of contingent fuel-sufficient to divert for 2 hours to Johannesburg in case of emergency. Every flight. This situation is unique to South Africa given the limited aviation infrastructure available within the country of size approximately twice the size of France.

03 RESERVE (CONTINGENT) FUEL WEIGHT SAVED WITH A CLOSER ALTERNATE

Depending on the type of aircraft, 2 hours of fuel carries a substantial amount in weight (approximately: A380 – 18 tonnes, B747 – 15 tonnes, B777 A350 – 9 tonnes, etc). With the introduction of Cape Winelands Airport, airlines will be able to adjust their flight and fuel planning by selecting Cape Winelands Airport as their destination alternate on flights inbound to Cape Town instead of OR Tambo International Airport. These two destination alternates differ by 773 nautical miles, thereby reducing their contingent fuel requirements by 2 hours, and therefore a reduction of carried Fuel on Board (FOB). This saved weight has tremendous commercial and environmental value.

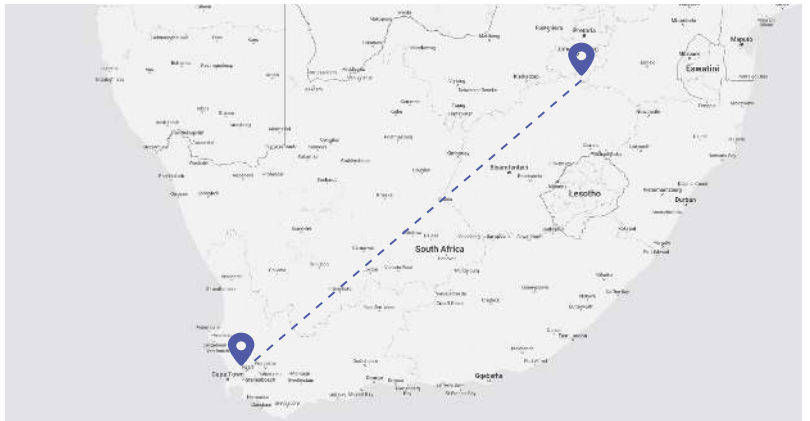
FAWN/CWA CAPE WINELANDS - FACT/CTIA CAPE TWN INTL

16 miles / 25km



FAWN/CWA CAPE WINELANDS - FAO/JNB JOHANNESBURG

789 miles / 1,270km



03 FUEL & PERFORMANCE ANALYSIS BY PACE AEROSPACE ENGINEERING



Using its Pacelab Mission Suite software (PLMS) and specific aircraft performance data, PACE Aerospace Engineering GmbH were appointed to conduct a critical evaluation of the benefits that are enabled resulting from the contingent fuel weight savings. These can be categorised as follows:

Payload Benefits

Where an operation is currently payload limited due to aircraft weight constraints, the existence of Cape Winelands Airport will result in a reduction of these payload limitations, thereby increasing revenue on flights into Cape Town.

Fuel Consumption Benefits

Where an operator is able to reduce its take-off weight without carrying additional payload, it is instead able to reduce its fuel consumption on flights into Cape Town.

Carbon Benefits

Where an operator is able to reduce its fuel consumption, it consequently reduces its carbon footprint by a factor of 3.16kg of CO₂ per kg of reduced fuel consumption.

Analysis was performed across a basket of aircraft on a basket of routes across a range of load factors flying into Cape Town, with various industry standard assumptions made, (e.g. fuel policy and cabin configuration etc) across two scenarios, i.e. with Cape Winelands Airport as the designated alternate versus with Johannesburg as the designated alternate.

To demonstrate this impact, an excerpt from the evaluation on the FRA-CPT route using the A350-900 only have been summarized below.

Sector Parameters:

Route Paring: FRA - CPT

Main sector distance: 5204 nautical miles

Diversion Distance, JNB alternate: 789 nautical miles

Diversion Distance, CWA alternate: 16 nautical miles

Trip flight levels: IFR RVSM, eastbound

Fuel Policy: JAR 3%

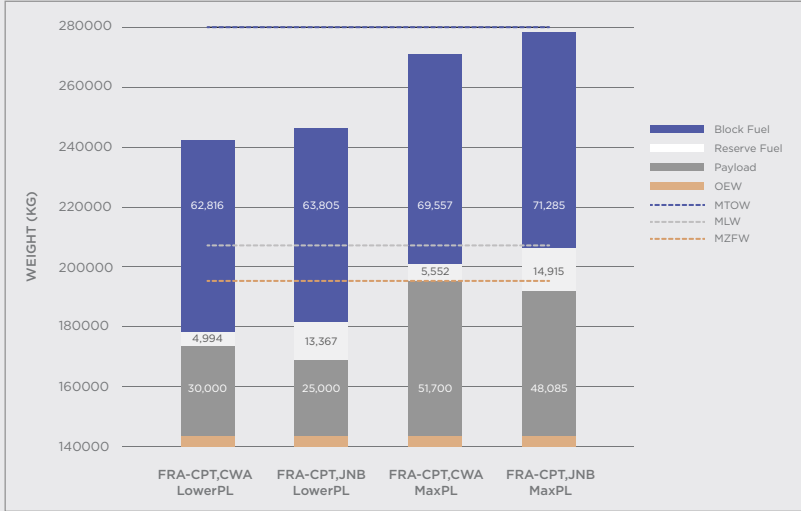
Temperature: ISA

Winds: Statistical, Annual, 85%

BENEFITS PER FLIGHT		AIRCRAFT: AIRBUS A350 ORIGIN: EUROPE	
BENEFIT TYPE	KG	%	
RESERVE FUEL UPLIFT (DECREASE)	9 363 kg	63%	
PAYLOAD CAPACITY (INCREASE)	3 615 kg	8%	
FUEL CONSUMPTION (DECREASE)	2 007 kg	3%	
CO2 EMISSIONS (DECREASE)	6 563 kg	3%	

SUMMARY GRAPH, A350-900, FRA-CPT

SOURCE FLIGHTSFROM.COM



**FUEL UPLIFT
SAVING BETWEEN
BOTH SCENARIOS,
ASSUMING SAME
TAKE-OFF WEIGHT**

TAKEOFF WEIGHT (KG)	ISA, NO WIND					ISA, WIND: 85% ANNUAL				
	JNB		CWA		FUEL UPLIFT SAVING (KG)	JNB		CWA		FUEL UPLIFT SAVING (KG)
	TAL. FUEL (KG)	ACHIEVED PAYLOAD (KG)	TOTAL FUEL (KG)	ACHIEVED PAYLOAD (KG)		TOTAL FUEL (KG)	ACHIEVED PAYLOAD (KG)	TOTAL FUEL (KG)	ACHIEVED PAYLOAD (KG)	
205000	-	-	58199	3131	-	-	-	59434	1896	-
210000	-	-	59278	7052	-	-	-	60536	5794	-
215000	68094	3236	60354	10976	7739	69105	2225	61633	9697	7473
220000	69301	7029	61431	14899	7870	70334	5996	62729	13601	7605
225000	70564	10766	62550	18780	8015	71603	9727	63862	17468	7741
230000	71812	14518	63673	22657	8140	72896	13434	65019	21311	7877
235000	73070	18260	64808	26522	8262	74159	17171	66173	25157	7986
240000	74394	21936	65966	30364	8428	75484	20846	67343	28987	8142
245000	75720	25610	67158	34172	8562	76836	24494	68548	32782	8288
250000	77028	29302	68531	37799	8496	78166	28164	69893	36437	8272
255000	78360	32970	69663	41667	8696	79513	31817	71131	40199	8382
260000	79908	36422	70926	45404	8982	80966	35364	72314	44016	8652
265000	81265	40065	72226	49104	9039	82490	38840	73739	47591	8751
270000	82464	43866	-	-	-	83729	42601	74884	51446	8845
275000	84082	47248	-	-	-	85241	46089	-	-	-
277805	-	-	-	-	-	86051	48085	-	-	-

**FUEL BURN
SAVING BETWEEN
BOTH SCENARIOS,
ASSUMING SAME
PAYLOAD**

PAYLOAD (KG)	% OF MAX. PAYLOAD	ISA, NO WIND		ISA, WIND: 85% ANNUAL			
		JNB BLOCK FUEL (KG)	CWA BLOCK FUEL (KG)	FUEL BURN SAVING (KG)	JNB BLOCK FUEL (KG)	CWA BLOCK FUEL (KG)	FUEL BURN SAVING (KG)
27500	53%	62861	60360	2501	64585	62090	2496
30000	58%	63626	61066	2560	65370	62816	2554
32500	63%	64402	61791	2611	66189	63562	2627
35000	68%	65224	62536	2688	67022	64325	2697
37500	73%	66097	63325	2772	67908	65135	2773
40000	77%	66857	64055	2802	68683	65898	2784
42500	82%	67605	64813	2792	69450	66684	2767
45000	87%	68346	65589	2757	70212	67470	2743
47500	92%	69211	66403	2808	71099	68297	2803
50000	97%	-	67138	-	-	69049	-
51700	100%	-	67632	-	-	69557	-

04 ANNUAL BENEFITS FOR AN AIRLINE

The analysis demonstrates a significant per-flight benefit for an airline operator when designating Cape Winelands Airport as a destination alternate in flight and fuel planning. This reduction in fuel consumption and CO2 emissions, combined with reduced payload restrictions, creates a real opportunity for airlines to gain operational efficiency as well as maximise their commercial opportunities, thereby ultimately improving the bottom line by millions of Euros across their operations into Cape Town. Additionally, with CORSIA becoming mandatory in 2027 and the airline industry's commitment to achieving carbon net-zero by 2050, reducing their carbon footprint is becoming increasingly important from a social and cost perspective.

Annual consolidated benefits for a single airline could amount to:

ANNUAL BENEFIT		AIRCRAFT: AIRBUS A350 ORIGIN: EUROPE	
ANNUAL FREQUENCY	INCREASED PAYLOAD	REDUCED FUEL CONSUMPTION	REDUCED CO2
300	1 084 500 kg	623 102 kg	1 969 001 kg
400	1 446 000 kg	830 802 kg	2 625 335 kg
500	1 807 500 kg	1 038 503 kg	3 281 669 kg
600	2 169 000 kg	1 246 203 kg	3 938 002 kg
700	2 530 500 kg	1 453 904 kg	4 594 336 kg
800	2 892 000 kg	1 661 604 kg	5 250 670 kg

05 CONCLUSION

Because of South Africa's unique spatial dispersion of major international airports, the analysis performed by PACE Aerospace Engineering and Information Technology GmbH shows that the marginal benefit of one extra airport within the transport network can create tremendous commercial value for operators. This in itself creates a business case for additional airports in the region which Cape Winelands Airport is pursuing, with a strong likelihood of other similar opportunities existing around the world.



THANK YOU
GET IN TOUCH

Mark Wilkinson (Director)

Tel +27 76 126 3447

Email mark@capewinelands.aero

